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Birds of Colombia 2015 and surveys during the filming of '*Colombia Magia Salvaje*'

Aves de Colombia 2015 y estudios durante la filmación de 'Colombia Magia Salvaje'

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Conservación Colombiana *es publicada gracias al apoyo de nuestros donantes:*

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Revision of the status of bird species occurring or reported in Colombia 2015, with discussion of BirdLife International's new taxonomy

Revisión del estatus de las especies de aves que han sido reportadas en Colombia 2015, con una discusión de la nueva taxonomía de BirdLife Internacional

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Abstract

Subtropical Pygmy-Owl *Glaucidium parkeri*, Fiery-tailed Awlbill *Avocettula recurvirostris* and Pale-rumped Swift *Chaetura egregia* are added to Colombia's bird checklist based on photographic records. Band-rumped Storm-Petrel *Oceanodroma castro*, Golden-spangled Piculet *Picumnus exilis*, Yellow-bellied Flycatcher *Empidonax flaviventris* and Yellow-throated Tanager *Iridisornis analis* are all elevated to the status of confirmed species occurring on the mainland, also following photographic records. We considered taxonomic proposals by del Hoyo & Collar (2014) using Tobias *et al*. (2010)'s "species scoring system". We studied possible changes relevant to Colombia in detail, based on new studies of vocalisations, our own fieldwork data and published molecular studies. We conclude that the following proposed Trochilidae (hummingbird) splits are supported by differentiation in voice: White-throated Wedgebill *Schistes albogularis* from Geoffroy's Wedgebill *S. geoffroyi* (Wedge-billed Hummingbird); Longuemare's Sunangel *Heliangelus clarisse* and Merida Sunangel *H. spencei* from Amethystine Sunangel *Heliangelus amethysticollis*; White-tailed Hillstar *Urochroa leucura* from Rufous-gaped Hillstar *U. bougeri*; and Humboldt's Sapphire *Amazilia humboldtii* from Gray's Sapphire *A. grayi*. In light of these positive assessments, we accepted proposed splits of morphologically distinctive hummingbirds in a little-vocalising genus: Perija Starfrontlet *Coeligena consita* and Golden Starfrontlet *C. eos* from Golden-bellied Starfrontlet *C. bonapartei* and Green Inca *C. conradii* from Collared Inca *C. torquata*. We adopt the proposed split of Double-banded Puffbird *Hypnelus bicinctus* from Rufous-throated Puffbird *H. ruficollis*, highlighting vocal differences. We suggest transfer of subspecies *striaticollis* to the *bicinctus* group. We split Splendid Woodpecker *Campephilus splendens* from *C. haematogaster* based on differences in voice, plumage, distribution and drumming behaviour. Carribean Coot *Fulica caribaea* is lumped with American Coot *F. americana* on account of widely reported intergradation. After studying vocal differentiation in three genera, we reject 10 proposed splits in Ramphastidae (toucans) of forms which either intergrade with one another or which are not as vocally distinct as sympatric toucans. Our vocal analyses instead suggest that the Groove-billed Toucanet subspecies *Aulacorhynchus sulcatus erythrognatus* of Venezuela may merit species rank. The widely adopted split of Andean Duck *Oxyura ferruginea* from Ruddy Duck *O. jamaicensis* is again rejected, due to well-documented intergradation in Colombia. We conclude that del Hoyo & Collar (2014)'s taxonomy has been useful and worthwhile in drawing attention to novel taxonomic situations, especially in Trochilidae. However, we suggest using the Tobias *et al*. (2010) system as a point of reference and not a sole criterion to determine taxonomic rank. After analysis of sound recordings of putative related species, we conclude that Providencia Vireo *V. approximans* merits species rank. We split the Blossomcrowns *Anthocephala*. Several amendments to genus and species names, English names and linear order are made, following recent publications. The Colombian checklist increases again to 1,921 species (excluding escapes), of which 1,846 are documented by 'confirmed' records on the mainland.

Keywords: species limits, new records, hummingbird, Trochilidae, toucans, Ramphastidae.

Resumen

Glaucidium parkeri, *Avocettula recurvirostris* y *Chaetura egregia* se agregan al listado de aves de Colombia, todas basadas en registros fotográficos. *Oceanodroma castro*, *Picumnus exilis*, *Empidonax flaviventris* e *Iridisornis analis* son elevadas al estado de 'especies confirmadas', debido también a nuevos registros fotográficos. Se discuten las propuestas taxonómicas de del Hoyo & Collar (2014), las cuales utilizan el "sistema de puntaje de especies" de Tobias *et al*. (2010). Consideramos posibles cambios relevantes para Colombia en detalle, basados en estudios de vocalizaciones, nuestras propias observaciones en el campo y las conclusiones de estudios moleculares realizados por otros autores. Concluimos que las siguientes separaciones de especies de Trochilidae (colibríes) pueden se adoptadas teniendo en cuenta diferencias en vocalizaciones: *Schistes albogularis* de *S. geoffroyi*; *Heliangelus clarisse* y *H. spencei* de *Heliangelus amethysticollis*; *Urochroa leucura* de *U. bougeri*; y *Aamzilia humboldtii* de *A. grayi*. Asi mismo, aceptamos otras dos separaciones

propuestas en Trochilidae, de poblaciones que son morfológicamente distintas pero poco vocales, estas son: *Coeligena consita* y *C. eos* de *C. bonpartei*; y *C. conradii* de *C. torquata*. Aceptamos la separación de *Hypnelus bicinctus* y *H. ruficollis*, destacando la existencia de diferencias en sus vocalizaciones. Sugerimos además transferir la subespecie *striaticollis* al grupo *bicinctus*. Separamos *Campephilus splendens* de *C. haematogaster* basado en diferencias en las voces, el plumaje y el comportamiento de 'tamboreo'. *Fulica caribaea* se une con *F. americana*, debido a la existencia de formas intermedias ampliamente reportadas. Posterior a un estudio vocal de tres géneros, rechazamos 10 propuestas separaciones de especies en Ramphastidae (tucanes) para las cuales se conocen formas intermedias, o no existen diferencias vocales tan marcadas como existen en especies simpátricas de la misma familia. Por otro lado, nuestros análisis vocales sugieren que *Aulacorhynchus sulcatus erythrognatus* de Venezuela podría ser elevado taxonomicamente a una especie aparte. La separación de *Oxyura ferruginea* y *O. jamaicensis* se rechaza nuevamente, debido a la existencia de formas intermedias en Colombia. Concluimos que la nueva taxonomía de del Hoyo & Collar (2014) ha sido útil e importante al resaltar varios casos taxonómicos nuevos, especialmente en Trochilidae. No obstante, aunque sugerimos utilizar el sistema de Tobias *et al.* (2010) como un punto de referencia, creemos que no debe ser el único criterio para delimitar especies de aves. Después de analizar grabaciones de especies relacionadas, concluimos que *Vireo approximans* debe ser elevado a una especie separada. También, separamos los colibríes del género *Anthocephala*. Finalmente, se realizaron varias modificaciones a los nombres de géneros y especies, nombres en inglés y el orden del listado. El listado de aves de Colombia aumentó nuevamente a 1,921 especies (excluyendo especies exóticas) de las cuales 1,846 han sido documentadas a través de registros confirmados en el continente.

Palabras clave: limites de especie, nuevo registro, picaflor, Trochilidae, tucán, Ramphastidae

Introduction

This is the 14th year of the national checklist of the Birds of Colombia. The list has grown steadily as a result of the country opening up as a location for birders and ornithologists. Our team has now worked on four editions of Colombia's checklist (Salaman *et al.* 2001, 2008b, 2009, 2010), three field guides (McMullan *et al.* 2010, 2011, McMullan & Donegan 2014) and various annual updates discussing new records, evaluating older ones and incorporating taxonomic changes (Salaman *et al.* 2008a, Donegan *et al.* 2009, 2010a, 2011, 2012, 2013, 2014). We are pleased that the checklist of Colombian birds is now available online at www.proaves.org (Donegan *et al.* 2015), to facilitate usage and updating. This paper sets out details of further changes to the Colombian list since our last update was published in December 2014. In particular, we analyse in detail many of the new taxonomic proposals by del Hoyo & Collar (2014) which are relevant to Colombia.

Species added

Subtropical Pygmy-Owl *Glaucidium parkeri*
This was newly recorded for Colombia on the southern East slope by Acevedo *et al.* (2015). Photographic records are presented, which experts familiar with the species have considered allow identification.

Fiery-tailed Awlbill *Avocettula recurvirostris*
A new species and genus for Colombia, recorded by Diego Calderón, Alison Bentley, Stewart Bentley, Geoffrey Bateman, Aurthur Denholm, Andrew Hawkins, Wendy Hawkins and Jorge González on 18 October 2014 near Mitú, dpto. Vaupés. Gabriel Utría Ortega obtained photographs on 22 November 2014 which have been published by Kirwan *et al.* (2015). The photograph unmistakeably allows identification. This species also occurs in the Amazonian region of both Ecuador and Brazil (del Hoyo & Collar 2014).

Pale-rumped Swift *Chaetura egregia*
Previously known only from tentative records in Colombia (Baruah 2012; discussed in Donegan *et al.* 2012) and mapped to Colombia's eastern border by Van Perlo (2009). Guy Kirwan, Pablo Flórez, Andrew Marshall, Neil Bostock, Mike Coverdale, Peter Shepherd and Filip Belldens obtained a photograph of this species on 28 September 2014, also near Mitú, published in Kirwan *et al.* (2015). A non-natural origin for this or the previous two species is implausible.

Changes of status

Band-rumped Storm-Petrel *Oceanodroma castro*
Elevated from unconfirmed (Obs) status to confirmed, in light of the photographic records of Digby *et al.* (2015) in this issue.

Golden-spangled Piculet *Picumnus exilis*
Elevated from unconfirmed (Obs) status to confirmed, in light of the photographic record of Rueda (2015) in this issue.

Yellow-bellied Flycatcher *Empidonax flaviventris*
A photographic record in Kirwan *et al.* (2015) by Nick Bayly at Sapzurro, Acandí, dpto. Chocó on 18 October 2014 is the first for continental Colombia. The species was known formerly only from records on San Andrés and Providencia. The photograph presented is clear and we agree it gives sufficient basis to treat this as a confirmed record.

Yellow-throated Tanager *Iridisornis analis*.
A photographic record by Delgado-C. *et al.* (2014) on the southern East slope of the Andes means that this species

can finally be added as confirmed for Colombia, following a long succession of sight records since the 1980s (e.g. Hilty & Brown 1986, Salaman *et al.* 1999, 2002).

Notes on other species

Double-crested Cormorant *Phalcrocorax auritus*. A decision is pended on the status of this species, which could change from SA (Obs) to SA based on the photographic record by Donegan & Huertas (2015). The photographs presented are distant and close-ups are grained, but the large bill, long, narrow neck and extensive gular pouch indicate that the bird was not *P. brasilianus*, consistent with observations.

Red-billed Ground-Cuckoo *Neomorphus pucheranii* is now known from a sound recording in Colombia made by Diego Calderón and others (Kirwan *et al.* 2015). We pend changing its category to "confirmed", awaiting proposed publication of sonograms elsewhere (D. Calderón *in litt.* 2015).

Perija Tapaculo *Scytalopus perijanus* has now been described by Avendaño *et al.* (2015). The previously unnamed Perija Tapaculo was widely recognised in other works, based on careful studies of specimens by Donegan & Avendaño (2008) who, *contra* Avendaño *et al.* (2015), treated it as an undescribed taxon of species rank (as did Donegan *et al.* 2009, Salaman *et al.* 2009, 2010, McMullan *et al.* 2010, 2011 and McMullan & Donegan 2014). The new scientific name is now reflected in the checklist.

Blue-and-gold Tanager *Bangsia arcaei* and **Black-and-yellow Tanager *Chrysothlypis chrysomelas*** were previously added as confirmed species for Colombia (Donegan *et al.* 2011) based on a report of specimens by Ruiz-Ovalle & Hurtado (2010) (cf. *Conservación Colombiana* 17: 37). Full details of these records, including photographs of specimens, observations and locality data, have now been published by Ruiz-Ovalle & Hurtado-Guerra (2014).

In addition to their new records of Yellow-throated Tanager, Delgado-C. *et al.* (2014) claimed first national records of **Masked Water-Tyrant *Fluvicola nengeta*** and **Pacific Hornero *Furnarius leucopus cinnamomeus***. They omitted to mention that both species are previously reported for Colombia with published photographic records (Luna 2011). Delgado-C. *et al.* (2014)'s records were made 3-10 months earlier in time than those of Luna (2011).

Moving the checklist to an online excel format from the previous MS Word-based format facilitated a recount of all categories, which is reflected in the first row of numbers in Table 2.

Subspecies

The following two newly described subspecies occur in Colombia:

- *Scytalopus griseicollis morenoi*: described by Avendaño & Donegan (2015), in place of unnamed "subsp.".
- *Basileuterus tristriatus sanlucasensis*: described by Salaman (2015), in place of unnamed "subsp.".

BirdLife Checklist Splits and Lumps

Del Hoyo & Collar (2014) split or lumped a number of non-passerine species based on the 'species scoring system' of Tobias *et al.* (2010). In the following sections, we consider these new taxonomic proposals in detail, for several species occurring in Colombia. The Tobias *et al.* (2010) system has been criticised on technical grounds and in some instances of its application (Remsen 2015, Bakker 2015, Sangster 2015) leading to a call for proposed new taxonomies in the work to be rejected (Remsen 2015). Particular criticisms refer to usage of a single scoring system for all birds, the emphasis on plumage characters over molecular or vocal analyses and treatment of groups which hybridise with one another. In light of these criticisms, rather than adopt all the changes wholesale, we consider proposed splits or lumps for various species which occur in Colombia in detail. In particular, we examine whether the splits have vocal or molecular support.

We have separated this discussion into several sections, first splits we have accepted, then lumps we have accepted. We then go through some proposed taxonomic changes which we do not accept, providing reasons. We mention proposed changes which have been pended for a future checklist update, generally where the situation in Colombia is not key to the outcome or where we have limited or no field experience with the proposed split species. We also pend proposals on parrots for a future update. In the accounts below, various differences between species cited by del Hoyo & Collar (2014) are denoted by referring the scores given for each in their assessment. Further information on the scoring system should be reviewed in Tobias *et al.* (2010) and del Hoyo & Collar (2014).

1. Accepted splits

Western Wedge-billed Hummingbird ('White-throated Wedgebill') *Schistes albogularis*
Eastern Wedge-billed Hummingbird ('Geoffroy's Wedgebill') *S. geoffroyi*

Wedge-billed Hummingbirds *Schistes* are a widely-distributed but poorly-known hummingbird genus, found at low densities in mid-elevation, forested Andean slopes. For example, Hilty & Brown (1986) considered them "local", Ridgely & Greenfield (2001) "uncommon and

local in the undergrowth of montane forest and forest borders" and Hilty (2003) "very uncommon and local". Only two subspecies are widely recognised (Dickinson & Remsen 2013). Nominate *geoffroyi* (Bourcier & Mulsant, 1843) is based on a type specimen with a nonsensical specified collection locality of "La Valée de Cauca près de Cathagene" (Cauca valley near Cartagena) but was probably collected in the East Andes of Colombia (Zimmer 1953). The other taxon, *albogularis* Gould, 1851 has a type specimen thought to have been collected on the west slope of the Andes in Pichincha, Ecuador. Subspecies *chapmani* Berlioz, 1941 has a type locality near Cochabamba in Bolivia. The name *personatus* has been associated with these birds but it is a synonym of *Augastes scutatus* (Zimmer 1953).

Figure 1. Wedge-billed Hummingbirds. Above: White-throated Wedgbill *S. albogularis*. Below: Geoffroy's Wedgebill *S. geoffroyi*. Top left: *S. albogularis* male, Ibagué, Tolima, Colombia (A. Quevedo). Top right: *S. albogularis* female, Mindo, Ecuador (D. Brinkhuisen, November 2009). Lower left: *S. geoffroyi* Primavera, Serranía de los Yariguíes, Santander, Colombia (M. Sharp, 2006). Lower right: *S. geoffroyi* Yanachaga-Chemillen National Park, Peru (L. Gabrielson, 3 October 2006).

Gould (1851, 1861), Boucard (1893-5), Hartert (1900), Cory (1918) and other earlier authors recognised two species in *Schistes*. Peters (1945) lumped them without justification. This was followed by Zimmer (1953), Meyer de Schauensee (1964, 1966, 1970), Hilty & Brown (1986), Dunning (1987), Fjelsdå & Krabbe (1990), Rodner *et al.* (2000), Salaman *et al.* (2001, 2008b, 2009, 2010), Ridgely & Greenfield (2001), Hilty (2003), Erize *et al.* (2006), Restall *et al.* (2006), Schulenberg *et al.* (2007), McMullan *et al.* (2010, 2011), McMullan & Navarrete (2013), McMullan & Donegan (2014), Fogden *et al.* (2014), Gill & Donsker (2015) and Remsen *et al.* (2015).

Ridgely & Greenfield (2001) noted that "Two rather different subspecies" occur on opposite Andean slopes in Ecuador. They drew attention to vocal differences, with East slope birds calling "simple, regularly spaced series of 'tsit' notes" (see also Schulenberg *et al.* 2007). Western slope birds give a "more complex series of 'tsit' notes interspersed with longer and higher-pitched 'tseeet' notes". Highlighting the plumage differences Ridgely & Greenfield (2001) stated that "Separate species are perhaps involved."

A western group ascribed by del Hoyo & Collar (2014) to *albogularis* is found on the western slope of the Andes in Ecuador and Colombia's West and Central Cordilleras. An eastern group (nominate form *geoffroyi*) was mapped on the east slope of Ecuador south to Bolivia, both slopes of the Eastern Cordillera of Colombia and north generally on mountains to the Coastal Cordillera in Venezuela.

Del Hoyo & Collar (2014)'s split is principally based on plumage differences. Western forms differ in their larger, brighter green throat patch and forehead (3), white of lower neck sides joining across breast (ns[2]), breast to vent shiny green versus paler green (ns[2]), short versus long white postocular (ns[2]), green versus bronzy-brown back to uppertail coverts (3), blue green versus yellowy-green uppertail (ns[2]), presence/absence of white tail tips (ns[1-2]), female with all-white throat versus spotted green throat (3) and slightly longer bill (no score). The differences are illustrated in Figure 1. *Schistes* is currently monotypic, so to compare these differences with those between related sympatric species, as proposed by Helbig *et al.* (2002) and Remsen (2005), requires other genera to be considered. Its closest relations are in *Colibri* (McGuire *et al.* 2014), where sympatric species such as Sparkling Violetear *C. coruscans* and Green Violetear *C. thalassinius* also differ in a combination of biometrics, plumage differences and voice.

We studied sonograms of *Schistes* and compared all available sound recordings subjectively. We found Ridgely & Greenfield (2001)'s vocal differences in Ecuador to hold true across the entire ranges of the proposed split taxa. Western populations give a slow, pleasant deliberate series of rather spaced-out, soft, high notes. Individual notes appear as a mixture of upstrokes and downstrokes and are of different maximum and minimum acoustic frequencies from one another. Eastern populations deliver a faster series of notes of equal frequency, bandwidth and note shape (Figure 2).

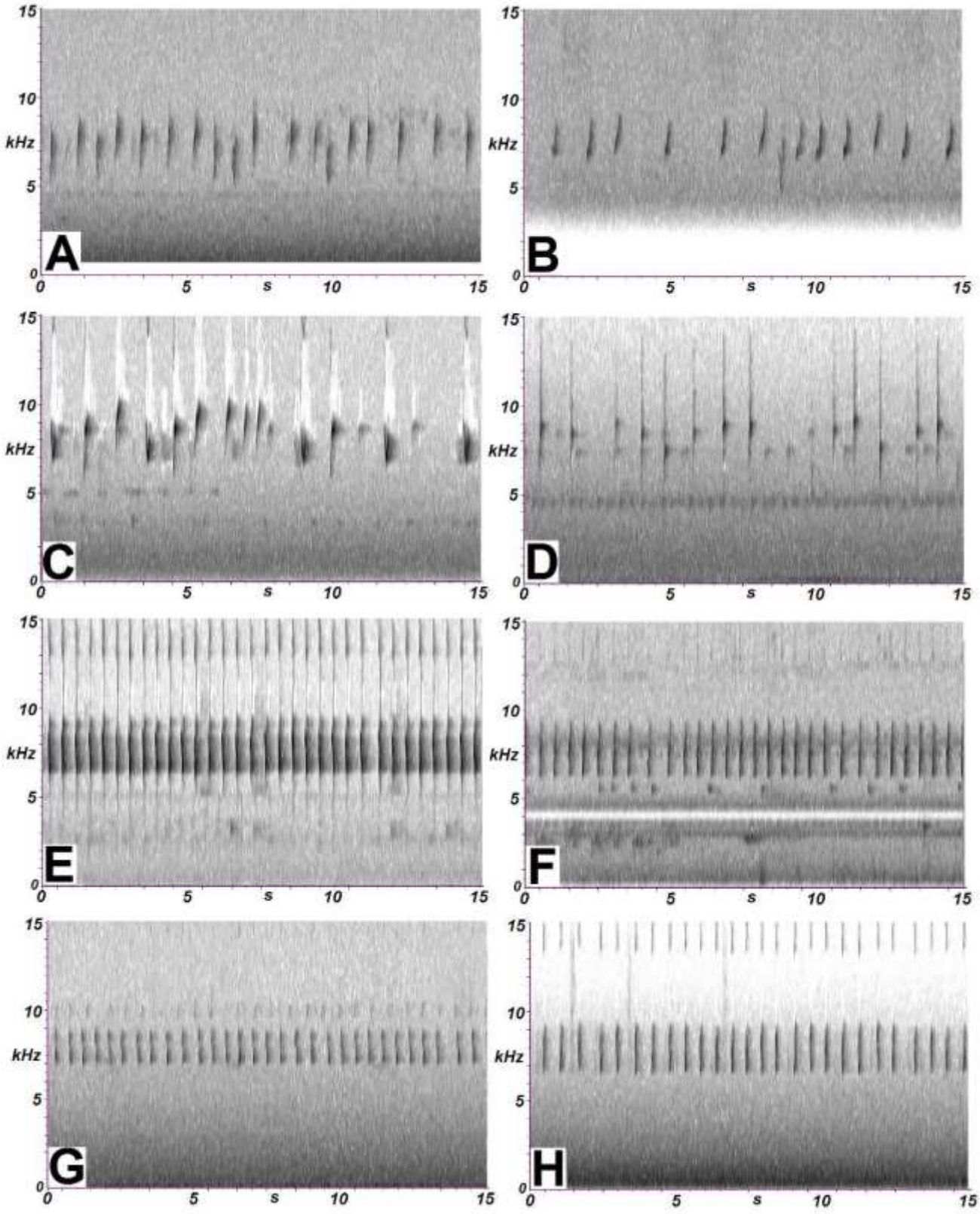

Figure 2. Songs of Wedge-billed Hummingbirds *Schistes* spp. A-D: White-throated Wedgebill *S. albogularis*. E-H: Geoffroy's Wedegbill *S. geoffroyi*. A. Parque Regional Barbas-Bremen, Filandia, Quindío, Colombia (XC131761: O.H. Marín-Gómez). B. *Idem* (XC129965). C. Reserva Los Cedros, Imbabura, Ecuador (XC21109: S. Olmstead). D. Buenaventura reserve, El Oro, Ecuador (XC5466: R. Hoyer). E. Henri Pittier NP, Aragua, Venezuela (XC209993: H. Matheve). F. RNA Reinita Cerulea, Serranía de los Yariguies, Santander, Colombia (XC13952: B. Davis). G. Guacamayos, Napo, Ecuador (XC251485: N. Krabbe). H. San Antonio, Satipo, Junín, Peru (XC152845: H. van Oosten).

We endorse del Hoyo & Collar (2014)'s proposed split on account of it having both morphological and vocal support.

Reversion to Gould (1861)'s more evocative vernacular names "White-throated Wedgebill" and "Geoffroy's Wedgebill" could be considered.

Longuemare's Sunangel *Heliangelus clarisse*
Amethystine Sunangel *H. amethysticollis*
Merida Sunangel *H. spencei.*

The taxonomic status of these three proposed species has been controversial for years. A number of names are available, from north to south: *spencei* Bourcier, 1847 has its type specimen from the Venezuelan Andes; *violiceps* Phelps & Phelps, 1953, has a type from the Perijá mountains; *verdiscutus* Phelps & Phelps, 1955, refers to the population in the northern East Andes near Tamá; *clarisse* Longuemare, 1841 occurs at high elevations in the main Eastern Cordillera of Colombia; *laticlavius* occurs in southern Ecuador and northern Peru; *decolor*, Zimmer, 1951, *apurimacensis* Weller, 2009, and *amethysticollis* d'Orbigny & Lafresnaye, 1838 all occur on the east slope in Peru, with the latter also in Bolivia. Boucard (1893-5) and Cory (1918) both treated *spencei*, '*clarissae*', *laticlavius* (Salvin's Sunangel) and *amethysticollis* specifically. Bourcier (1847) in the original description, Gould (1855), Elliot (1879), Salvin (1892) and Hartert (1900) all recognised both *spencei* and *clarisse* as species. Longuemare (1841) treated *clarisse* as a species prior to the description of *spencei*. *Heliangelus laticlavius* was recognised specifically in the description by Salvin (1892) and also by Hartert (1900).

Peters (1945) adopted a new taxonomy in which only two species were recognised: *clarisse* of the Colombian East Andes (including *spencei* of the Mérida range in Venezuela) and *amethysticollis* of Bolivia to Ecuador. Zimmer (1951) modified this further, describing subspecies *decolor* from northern Peru and lumping all of the others except *spencei* into *amethysticollis*. Zimmer (1951)'s treatment has been followed broadly since, including by Meyer de Schauensee (1964, 1966, 1970), Hilty & Brown (1986), Sibley & Monroe (1990), Ridgely & Greenfield (2001), Dickinson (2003), McMullan *et al.* (2010, 2011), McMullan & Navarrete (2013), McMullan & Donegan (2014), Dickinson & Remsen (2013), Fogden *et al.* (2014), Gill & Donsker (2015) and Remsen *et al.* (2015).

However, various alternative taxonomies have arisen. Schuchmann (1999), Hilty (2003) and Erize *et al.* (2006) all reverted to Peters (1945)'s taxonomy, splitting a broad *clarisse* (including *spencei*, *violiceps* and, when recognised, *verdiscutus*) from the rest of *amethysticollis*. Salaman *et al.* (2001) also split *clarisse* and further treated *violiceps* specifically. Dunning (1987), Fjeldså & Krabbe (1990) and Rodner *et al.* (2000) all adopted a different two-species approach, splitting *spencei* from *amethysticollis*, but including *clarisse*, *violifer* and all the other forms in the latter species. Restall *et al.* (2006) recognised *clarisse* (including *violifer* and *veriscutatus*) and *spencei* as species separate from *amethysticollis*. Schuchmann (1999) considered subspecies *verdiscutus* not to be valid, but Restall *et al.* (2006) considered it "clearly valid" and Hilty (2003) also recognised it.

Del Hoyo & Collar (2014) recognised each of *clarisse*, *spencei* and *amethysticollis* specifically. Focusing on *clarisse* versus *amethysticollis*, they highlighted the blackish versus green head sides of males (3), size of breast band in males (only scored 2, arguably should be higher when live individuals are considered: see Fig. 4), iridescence of green lower breast band (2) and extent of buff mottling on the lower belly (ns2). We would add that females are distinctive, having a black gorget streaked white in *clarisse* and, although sometimes overlooked in the literature, narrow bluish nuchal patch and bluish lower breast band (Fig. 4). Del Hoyo & Collar (2014) also highlighted differences between *spencei* and *clarisse*: in males the silvery-white versus emerald-green frons (3); broader white breast-band (2); less iridescent green lower breast-band; belly with more buff mottling (ns1); and shorter bill (2). They elucidated additional differences between *spencei* and the non-proximate *amethysticollis* group.

We reviewed available homologous vocalisations of all populations in this group and also those of Tourmaline Sunangel *H. exortis*, which is widely treated as a different species but whose range bisects that of the *amethysticollis* group. We found structural vocal differences between: (i) Merida Sunangel *H. spencei*, which gives a multi-note trill of comparatively narrow bandwidth; (ii) Longuemare's Sunangel *H. clarisse*, whose calls are comprised of one or two short notes with broad bandwidth; and (iii) subspecies *laticlavius* of southern Ecuador to northern Peru, the nominate population *amaethysticollis* of Peru and Bolivia (including available recordings attributable to the ranges of subspecies *apurimacensis* or *decolor*) and Tourmaline Sunangel *H. exortis*, whose calls comprise rapid trills of longer duration (which is particularly accentuated in the southernmost of these populations) and generally broad bandwidth (Fig. 3). We do not have examples of this kind of vocalisation for Tamá subspecies *verdiscutatus* or *violiceps* of Perijá, which are placed with *clarisse* by most authors who split *amethysticollis*. Ecuadorian, Peruvian and Bolivian populations showed broadly similar song structure, but some variation in acoustic frequency and call length. This variation should be studied in more detail as more species could potentially be recognised in this southern group. Subspecies *laticlavius* in particular may be another good species and was treated as such by Cory (1918) and earlier authors cited above.

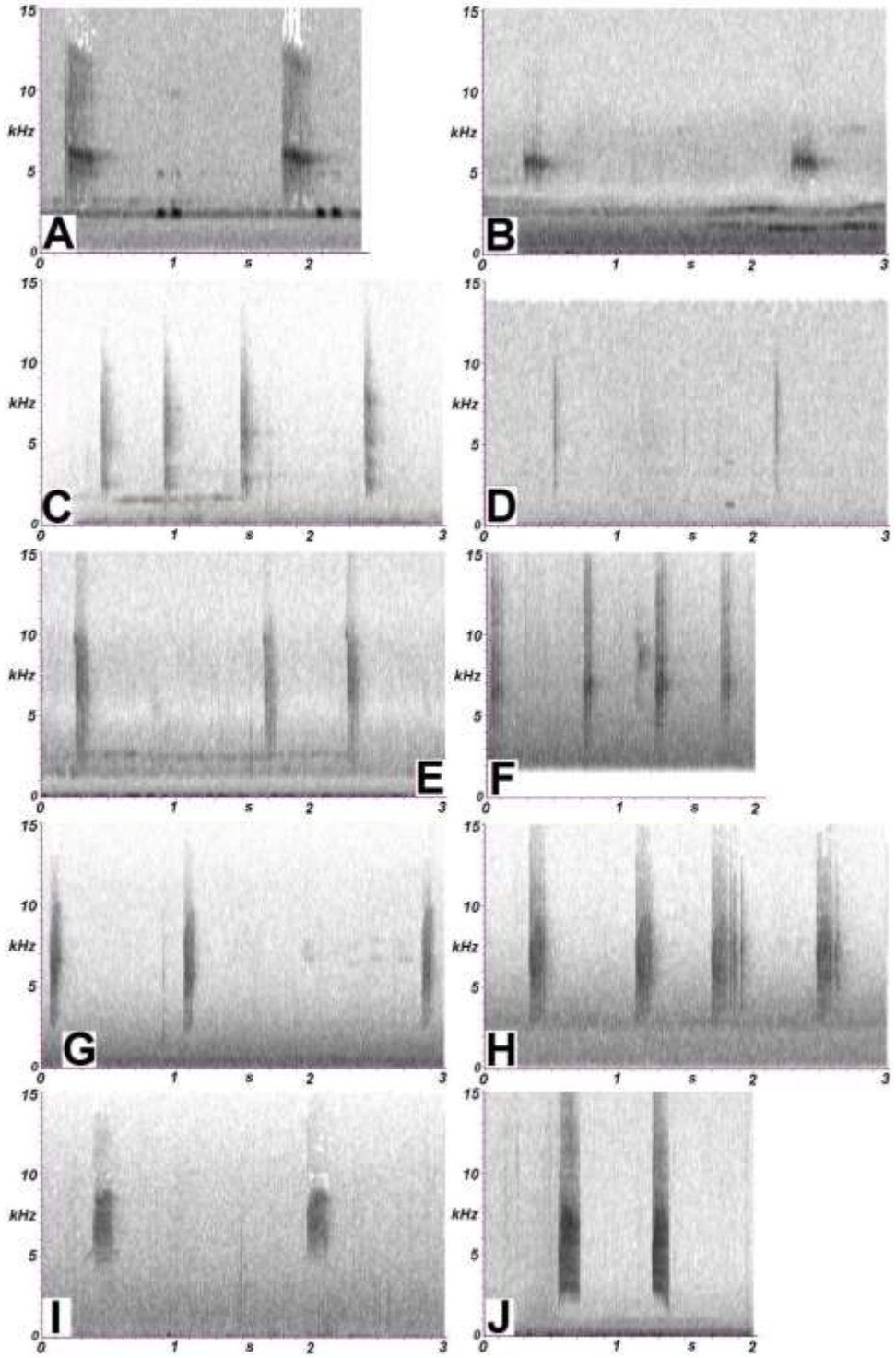

Figure 3. Calls of *Heliangelus* hummingbirds. A-B. Merida Sunangel *H. spencei* (Venezuelan Andes). C-D Longuemare's Sunangel *H. clarisse* (East Andes, Colombia). E-F. Tourmaline Sunangel *H. exortis* (West and Central Andes of Colombia and Andes of N Ecuador on both slopes). G-H. Amethystine Sunangel *H. amethysticollis laticlavius* (S Ecuador to N Peru). I-J. Amethystine Sunangel *H. amethysticollis* (subspp. *amethysticollis/decolor/apurimacensis*) (Bolivia and rest of Peru). A. Pico Humboldt Trail, Parque Nacional Sierra Nevada, Mérida, Venezuela (XC6883: N. Athanas). B. *Idem* (XC223881: P. Boesman). C. Villa de Leyva, Boyacá, Colombia (XC117783: S. Córdoba). D. Alto Cantagallos, San Vicente de Chucurí, Serranía de los Yariguies, Santander, Colombia (XC29397: T. Donegan). E. Entre La Romelia y El Planchon (PNN Munchique), Charguayaco, Vereda La Romelia, Mpio El Tambo, Cauca, Colombia (XC56436: B. López-Lanús). F. Guango Lodge, Napo, Ecuador (XC17324: A. Spencer). G. Reserva Tapichalaca, near Q. Cristopher Parson, Zamora-Chinchipe, Ecuador (XC250925: N. Krabbe). H. mid Gualaceo-Limón road, Morona-Santiago, Ecuador (XC257839: J. V. Moore). I. Carpish Tunnel, Huánuco, Peru (XC223877: P. Boesman). J. Cotapata, La Paz, Bolivia (XC73616: J. Tobias & N. Seddon).

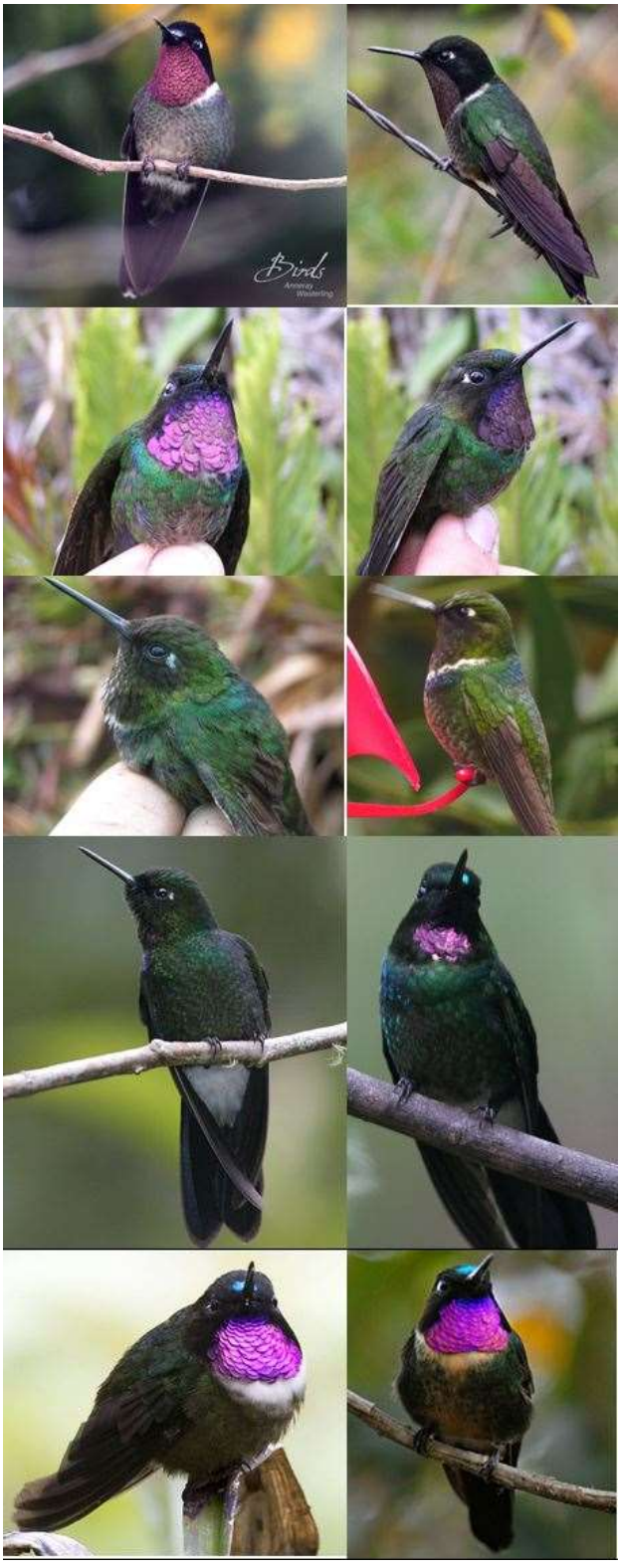

Figure 4. *Heliangelus* Sunangels. Top row: Merida Sunangel *H. spencei* Mérida, Venezuela (A. Westerling / anneray-birdsite.com) (both). Second row: Longuemare's Sunangel *H. clarisse*, males, Filo Pamplona, Serranía de los Yariguies, Santander, Colombia (B. Huertas / T. Donegan / J. Avendaño / Proyecto YARE, July 2006) (both). Third row: Longuemare's Sunangel *H. clarisse* females. Left: Lepipuerto, Serranía de los Yariguíes, Santander, Colombia (B. Huertas / T. Donegan / Colombian EBA Project, January 2005). Right: main East Andes, Colombia (O. Cortés). Fourth row: Tourmaline Sunangel *H. exortis* Guango Lodge, Ecuador (W. Hull, 8 January 2006) (both). Bottom row: Amethystine Sunangel *H. amethystisollis* group. Left: subsp. *laticlavius*, Tapichalaca, Ecuador (L. Hegedus, November 2007). Right: subsp. *apurimacensis*?, ACA's Wayqecha Biological Station, Kosnipata Valley, Cusco, Peru.

A most intriguing finding was the similarity between calls of *H. exortis* and *H. amethysticollis laticlavius*. These two taxa differ markedly in plumage (e.g. extent and coloration of gorget, presence/absence of white below the gorget in males and the presence/absence of a clean white vent). No intergradation or hybridisation has to our knowledge previously been reported.

In conclusion, we would minimally endorse recognising both *clarisse* and *spencei* as species separate from *amethysticollis*, given that they are vocally and morphologically so distinct from all the others. This results in the following new sequence:

- [Merida Sunangel *H. spencei* – extralimital]
- Longuemare's Sunangel *H. clarisse* (provisionally including *violiceps* and *verdiscutus*)
- Tourmaline Sunangel *H. exortis*.
- [Amethystine Sunangel *H. amethysticollis* (provisionally including *laticlavius*, *apurimacensis* and *decolor*) – extralimital]

With these splits and to avoid confusion with the broader group, we further propose reverting to Gould (1855) and Cory (1918)'s vernacular name, "Amethystine Sunanagel", for *H. amethysticollis*.

Rufous-gaped Hillstar *Urochroa bougeri*
White-tailed Hillstar *U. leucura*

Hillstars *Urochroa* occurring on slopes each side of the Andes (*bougeri* on the western slope and *leucura* on the eastern slope) have radically different plumages and so have been considered a possible split in some publications. Hilty & Brown (1986) considered them "very different". Ridgely & Greenfield (2001) noted that "two very different races occur in Ecuador … In view of their plumage and habitat differences, separate species may be involved; west-slope birds could be called the Rufous-gaped Hillstar". In the west, the species was considered "scarcer and more local" and "largely confined to the vicinity of mountain streams". This is consistent with our observations in the West Andes (e.g. Tambito, RNA Las Tangaras) where it is inevitably found over small mountain streams.

Unlike some other birds discussed here, *Urochroa* hillstars have been broadly lumped throughout taxonomic history, including by Boucard (1893-5), Hartert (1900), Cory (1918), Peters (1945) and more recent

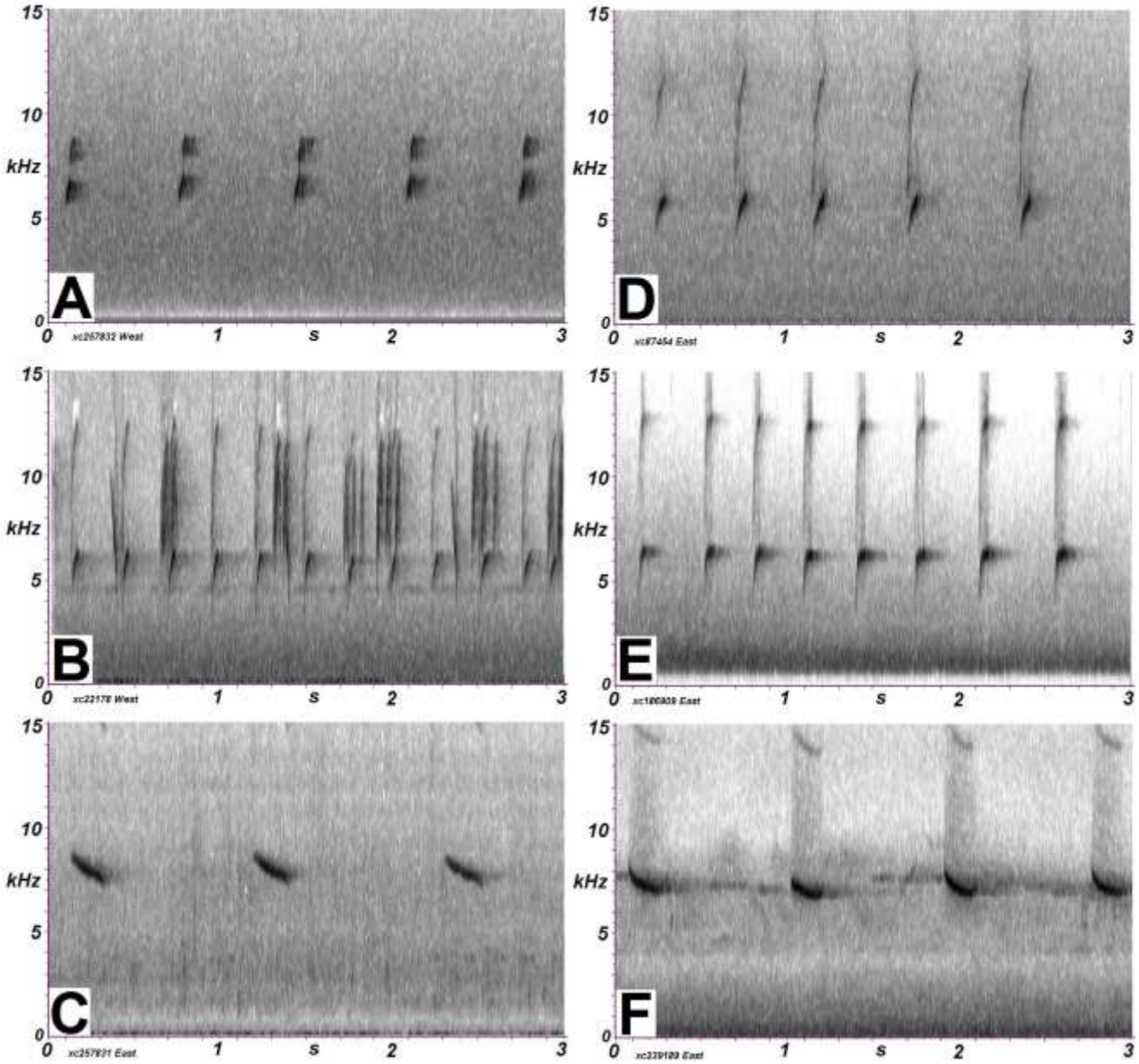

Figure 5B. Calls of the Hillstars. A-C Rufous-gaped Hillstar *Urochroa bougeri*. D-F White-tailed Hillstar *U. leucura* . A. Mindo, Pichincha, Ecuador (XC257832: J. V. Moore). B. road to San José del Palmar, Serranía de las Paraguas, Chocó, Colombia (XC22178: A. Spencer). C. km 11.6, Narupa-Loreto road, Napo, Ecuador (XC257831: J. V. Moore). D. La Guatemala, along the Rio Zuñag, Tungurahua (XC87454: A. Spencer). E. Napo, Ecuador (XC186909: G. Leite). F. km 11.6 Narupa-Loreto road, Napo, Ecuador (XC239189: N. Krabbe).

publications discussed in the above account for *Heliangelus*.

Del Hoyo & Collar (2014) drew attention to *leucura*'s less extensively rufous gape (3), glittering dark green versus dusky-bronze crown to back (3), bronzy-green versus blue-black central uppertail (2), male breast patch more violet, less deep turquoise blue (ns2) and more extensive white in tail, especially on outermost rectrix (ns2). Studies based on specimens may insufficiently appreciate the differences in tail plumage. The black outer tail feathers in *U. bougeri* make the tail appear dark when perched, compared to a broadly white tail (marked extensively on the four outermost rectrices) in perched *leucura* (Fig. 5).

Figure 5: *Urochroa* Hillstars. Top row: Rufous-gaped Hillstar *Urochroa bougeri*. Bottom row: White-tailed Hillstar *U. leucura*. Top left: RNA Las Tanagaras, Chocó, Colombia (T. Ellery, 30 October 2010). Top right: Montezuma Peak Road, Montezuma Peak, PNN Tatamá, Colombia (C. & M. Perkins / HBW Alive, 11 December 2014). Bottom left: Rio Pucuno, Sumaco, Ecuador (Francis Marion University). Bottom right: WildSumaco, Napo, Ecuador (N. Athanas, 13 June 2012).

The genus *Urochroa* is previously considered monotypic, making comparisons with related sympatric species (as proposed by Helbig *et al.* 2002 and Remsen 2015) tentative. Its closest relations are to *Heliodoxa* (McGuire *et al.* 2014), a genus with various sympatric or allopatric populations ranked as species, which differ principally in gorget coloration and tail shapes and lengths. The morphological differences between *Urochroa* compare favorably to those between recognised species in *Heliodoxa*, as illustrated by del Hoyo & Collar (2014, p. 285).

We reviewed vocalisations of both *Urochroa* populations based on materials in the Macaulay Library and xeno-canto. Sonograms were produced of all recordings and these were compared subjectively. Both western and eastern populations give at least one similar call, consisting of repeated upstrokes (Fig. 5B). Variation within populations exceeds that between populations in both acoustic frequency and speed for this kind of vocalisation. However, there are some small differences in note shape evident from the small sample (n=3 for each population). In western populations, notes appear more as straight lines on sonograms, while in eastern populations birds show a blob at the end of the note, where the call is loudest, reflecting accentuation of the end of the call. Eastern populations also give slower downstrokes as calls. There were no representatives of this kind of call in our vocal sample for western populations. In light of the combination of plumage, habitat and tentative vocal differences, we support splitting these two hummingbirds.

Humboldt's Sapphire *Amazilia humboldtii*
Gray's Sapphire *A. grayi*

Ridgely & Greenfield (2001) reverted to the taxonomy of earlier authors (e.g. Bourcier & Mulsant 1852, Gould 1861, Boucard 1893-5, Hartert 1900, Cory 1918) in treating *A. humboldtii* as "a monotypic species distinct from *H grayi* based on a number of striking plumage differences in both sexes, and on their entirely disjunct distributions and different habitats". *A. humboldtii* occurs near the Pacific coast of Colombia and Ecuador in humid habitats and low elevations, whilst *A. grayi* is present at higher elevations in the arid upper Cauca valley. Peters (1945) had lumped these "seemingly for no reason … influenced by … range confusion that resulted from native-collected skins with unreliable locality data" (Ridgely & Greenfield 2001). (Experts on the spellings of scientific names should consider further whether "*humboldti*" or "*humboldtii*" is the correct spelling for these birds, given that both forms appear in the literature cited above.)

There are significant differences in habitat use between these populations. Hilty & Brown (1986) first noted that *humboldtii* occurs "mainly near coast in humid forest borders, tall second growth and mangroves" with (presumably) *grayi* "in drier interior val. in scrubby or cultivated areas and lighter woodland borders". They cited "fewer" records from wet foothills and mountains in between. Ridgely & Greenfield (2001) later asserted that: "There is no evidence that the two come into contact." Stiles (2003) considered them to be separated vertically by 600 m of habitat that is unsuitable for either taxon. In Ecuador, *A. grayi* is found in "arid scrub and

gardens", *humboldtii* in "mangroves along the coast" (Ridgely & Greenfield 2001) and may only wander into

Figure 6. Sapphires. Left: Gray's Sapphire *Amazilia grayi* male, km 18, Valle del Cauca, Colombia (D. Calderón-F. www.colombiabirding.com). Middle and right: Humboldt's Sapphire *Amazilia humboldtii* near-adult male (middle) and female (right) Chocó, Colombia (T. Ellery, September 2014).

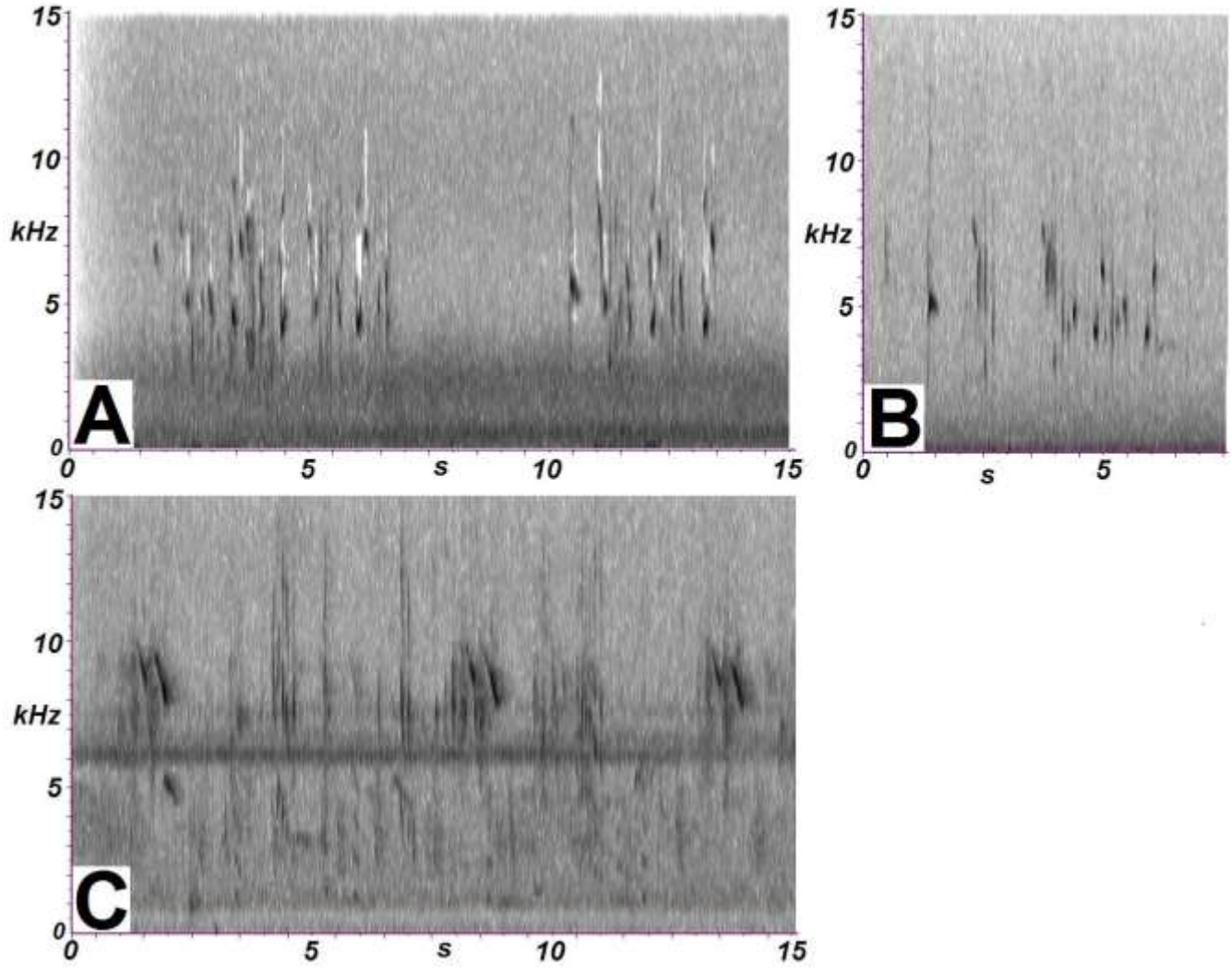

Figure 7. Songs of Sapphires. A-B: Gray's Sapphire *Amazilia grayi*. C: Humboldt's Sapphire *A. humboldtii*. A. Salinas, Imbabura, Ecuador (XC262877: J. Nilsson). B. 13 km N of Salinas, Imbabura, Ecuador (XC250992: N. Krabbe). C. La Pampa, near Cayapas-Mataje Ecological Reserve, Esmeraldas, Ecuador (XC261731: O. Jahn).

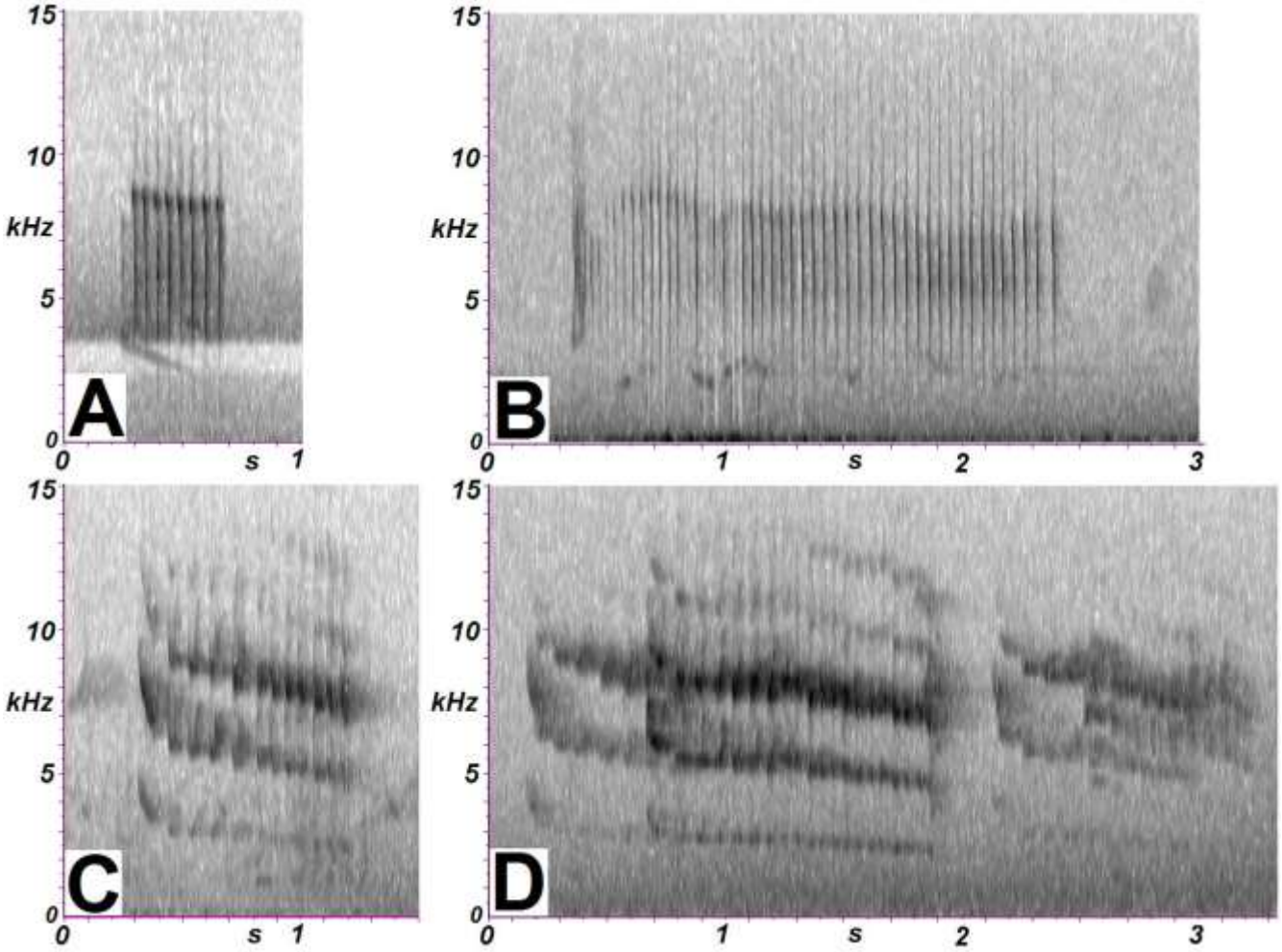

Figure 8. Calls of Sapphires. A-B: Gray's Sapphire *Amazilia grayi*. C-D: Humboldt's Sapphire *A. humboldtii*. A. 2.5 km NE of Tumbabiro, Imbabura, Ecuador (XC24465: P. Coopmans). B. 13 km N of Salinas, Imbabura, Ecuador (XC250991: N. Krabbe). C. Changuaral, Esmeraldas, Ecuador (XC165644: J. Nilsson). D. Idem (XC165642).

other habitats seasonally. Stiles (2003) studied plumage, morphometrics and habitats, concluding that the two forms should be split.

These taxa are already widely split, for example by: Rodner *et al.* (2000), Ridgely & Greenfield (2001), Salaman *et al.* (2001), Stiles (2003), Restall *et al.* (2006), McMullan *et al.* (2010, 2011), McMullan & Navarrete (2013), McMullan & Donegan (2014), Dickinson & Remsen (2013), Fogden *et al.* (2014), Gill & Donsker (2015), Remsen *et al*. (2015) and now del Hoyo & Collar (2014). They were lumped by Dunning (1987), Fjeldsa & Krabbe (1990), Schuchmann (1999), Dickinson (2003) and Erize *et al.* (2006), among others.

Del Hoyo & Collar (2014) focus again on plumage differences in revising Schuchmann (1999)'s lumped taxonomy. *A. grayi* differs from *A. humboldtii* in its green versus blue tail (3), near-diagnosably shorter bill (2), average longer wings and tail (1), extent of blue on head and throat (3) and whiter, less spotted underparts of the female (2). Differences in tail coloration are noteworthy because other *Amazilia* species, such as Copper-rumped Hummingbird *A. tobaci* and Copper-tailed Hummingbird *A. cupreicauda* differ principally in this feature and are arguably less distinct from one another. The scores greatly exceed the benchmark of 7 for species rank. Plumage differences are illustrated in Figure 6.

To our knowledge, no-one has examined voice in this group, probably because few sound recordings existed until recently. Comparisons of most-homologous-looking vocalisations reveal considerable vocal differentation. Songs of both species consist of a jumbled series of notes, which in *humboldtii* are longer and slower-delivered (Fig. 7). The trilling calls of *humboldtii* (n=2) are slower than those of *grayi* (n=2), with several undertones visible on sonograms and a different note shape (Fig. 8).

This combination of vocal, habitat and plumages differences in our view provides a strong rationale for continued recognition of two separate species, consistent with Ridgely & Greenfield (2001), Stiles (2003), del Hoyo & Collar (2014) and our current treatment.

Golden-bellied Starfrontlet *Coeligena bonapartei*
Perija Starfrontlet *Coeligena consita*
Golden Starfrontlet *Coeligena eos*

Subspecies *eos* of the Mérida range in Venezuela was split by Schuchmann (1999). Del Hoyo & Collar (2014) followed and also split *consita* of the Perijá mountains.

Figure 9. Starfrontlets. Top left: male Merida Starfrontlet *C. eos* Mérida, Venezuela (T. Ellery, Feb/March 2014). Top right: male Merida Starfrontlet *C. eos* Finca la Huérfana, El Cobre, Táchira, Venezuela (T. Noernberg / Internet Bird Collection). Middle left and right: male Perija Starfrontlet *C. consita* RNA Chamicero de Perija, Cesar, Colombia (J. Beck & K. Borgmann / birdsofpassage.wordpress.com, 27 April 2015). Bottom left and middle: male Golden-bellied Starfrontlet *C. bonapartei* Filo Pamplona, Serranía de los Yariguíes, Santander, Colombia (B. Huertas / T. Donegan / J. Avendaño / Proyecto YARE, July 2005). Bottom right: male Blue-throated Starfrontlet *C. helianthea* East Andes, Colombia (T. Ellery, July 2014).

C. bonapartei and *C. eos* were previously treated as separate species by Cory (1918) and Peters (1945), prior to *consita* being described. However, Wetmore & Phelps (1952), when describing *eos*, lumped all three forms. They highlighted the intermediate nature of *consita* in some aspects of its plumage as regards the other two. This was followed by Meyer de Schauensee (1964, 1966, 1970), Meyer de Schauensee & Phelps (1978), Hilty & Brown (1986), Dunning (1987), Fjelsdå & Krabbe (1990), Rodner *et al*. (2000), Salaman *et al.* (2001, 2008b, 2009, 2010), Krabbe *et al.* (2005), Restall *et al.* (2006), Erize *et al.* (2006), McMullan *et al.* (2010, 2011), McMullan & Donegan (2014), Fogden *et al.* (2014), Gill & Donsker (2015), Remsen *et al.* (2015) and Lopez *et al.* (2015), among others. Hilty (2003) accepted Schuchmann (1999)'s split of *eos* but placed *consita* in the same species with *bonapartei*.

Del Hoyo & Collar (2014) cite the following differences of *consita* from *bonapartei*: strong rufous band on wing [=proximate flight feathers: see Fig. 9] versus all-dusky wing (3), smaller and deeper blue central throat patch (2), brighter, more golden tail and underparts with rufescent discs on lower breast (ns2), pale leaf-green not full metallic green cap in male (ns2), bright orange versus white spot behind eye in female (2). And from *eos*: slightly longer bill (1), golden-green versus bronze-green-tipped pale rufous tail (3), smaller, bluer, less violet central throat patch in male (2), bright orange versus white spot behind eye in female (2), rufous-orange chin and throat versus cinnamon chin and throat with green discs in female (ns2), underparts more golden, less rufous so that eos looks darker on body but paler on tail than consita (ns1).

Remsen *et al.* (2015) rejected Schuchmann (1999)'s proposed split of *eos*, on the basis of Wetmore & Phelps (1952) because "intraspecific variation in several other undoubted species of *Coeligena* (*iris, torquata, violifer*) equals or exceeds that within a broad *bonapartei*". They also cited a lack of available specimens or collecting effort between the ranges of *consita* and *bonapartei*. However, it could instead be argued that *Coeligena* has historically been over-lumped. These particular *Coeligena* are high elevation species found only in elfin forest and paramo/forest ecotones. In studies of Serrania de los Yariguíes, mist-netting at multiple high elevation sites in primary habitats produced records of *bonapartei* only above 3,100 m elevation (Donegan *et al.* 2010b). In the Bogotá region, where elfin forests are found at lower elevations on slopes with regrowth scrub habitat, all modern sound recordings of this species in xeno-canto are above 2,500 m. Hilty & Brown (1986) specified a minimum elevation of 2,150 m. The separate ranges of *consita* and *bonapartei* in northern Colombia are bisected by the Ocaña depression (minimum elevation, *c*.1,200 m) which results in at least 150 km distance between land of suitable elevations. This barrier divides the range of several high elevation taxa which are recognised as species and co-occur with *Coeligena* in the same paramo ecotone, elfin forest and human-modified montane scrub habitats, such as Perija Tapaculo *Scytalopus perijanus* versus Pale-bellied Tapaculo *S. griseicollis* and Perija Thistletail *Asthenes perijana* versus White-chinned Thistletail *A. fuliginosa*. The comparators of Violet-fronted Starfrontlet *C. violifer* and Collared Inca *C. torquata* are less strongly-argued because these are

allopatric populations which del Hoyo & Collar (2014) also split. An unfavorable comparison with the morphologically diverse Rainbow Starfrontlet *C. iris* is noteworthy, but del Hoyo & Collar (2014) considered that group potentially to be in need of revision. A favorable comparison with differences between the nominate form of *bonapartei* and sympatric Blue-throated Sunangel *C. helianthea* (Fig. 9) can be made in support of this proposed split.

Vocal data are not available for several populations discussed here and *Coeligena* are not renowned songsters, as noted below for *C. torquata*. A molecular study is apparently in preparation, which should shed further light on this group. It promises to show "a complex evolutionary history of rapid divergence" (López *et al*. 2015). In the meantime, on account of plumage (Fig. 9) and distributions and taking into account our generally favorable assessments of other Trochilidae splits proposed by del Hoyo & Collar (2014), we provisionally accept this split. This could of course be reconsidered if necessary following the forthcoming molecular study.

Green Inca *Coeligena conradii*
Collared Inca *C. torquata*
Collared Inca is widespread in the Andes, with Green Inca restricted to the Venezuelan Andes and Tamá of Colombia. They are universally lumped in the literature cited for *C. bonapartei*, representing a novel modern split by del Hoyo & Collar (2014). They were however split from the time of *conradi*'s description by Bourcier (1847), Elliot (1879), Salvin (1892) and Cory (1918), among others. Peters (1945) lumped them and has been widely followed since. Cory (1918) placed Tamá specimens in *torquata*, but brilliant green birds referable to the Green Inca occur there, including in Colombia (Hilty & Brown 1986, Sanchez-Montaño *et al*. 2004). Green Inca males look superficially similar to female Collared Incas, having green not black overall plumage (4), lacking a bluish crown spot (2) and outer primaries edged rufous (1). Female Green Incas have a rufous throat (2). Del Hoyo & Collar (2014) also recognised Gould's Inca *C. inca* of Peru to Bolivia (previously recognised by Schuchmann 1999) and Vilcabamba Inca *C. eisenmanni* of Peru specifically. The split of Gould's Inca has some molecular support (McGuire *et al*. 2014).

Despite being a widespead and familiar hummingbirds of montane Andean forest, there are few sound recordings of these Incas available. They do not appear to vocalise frequently. In light of this, the strong morphological differentiation and positive assessments of other hummingbird taxonomic proposals in del Hoyo & Collar (2014), we adopt their new taxonomy here too. The males of the two proposed species are quite different (Fig. 10).

Figure 10. Incas of the East and Venezuelan Andes. Left: male Collared Inca *Coeligena torquata* Lepipuerto, Serranía de los Yariguíes, Santander, Colombia (B. Huertas / T. Donegan / Colombian EBA Project, January 2005). Right: male Green Inca *C. conradii* Estancia La Bravera, El Jají, Mérida, Venezuela (M. Wieser / Internet Bird Collection, 6 May 2013).

Russet-throated Puffbird *Hypnelus ruficollis*
Double-banded Puffbird *Hypnelus bicinctus*
Historically, these taxa were split, including by Sclater (1882), von Berlepsch & Hartert (1902), Cory (1919), Ridgway (1914), Wetmore (1939) and Peters (1948). Since Phelps & Phelps (1958) recommended an end to that, lumped treatments have prevailed: see Meyer de Schauensee (1964, 1966, 1970), Hilty & Brown (1986), Sibley & Monroe (1990), Rodner *et al.* (2000), Salaman *et al.* (2001, 2008b, 2009, 2010), Dickinson (2003), Hilty (2003), Erize *et al.* (2006), McMullan *et al.* (2010, 2011), Dickinson & Remsen (2013) and Remsen *et al.* (2015). McMullan & Donegan (2014) considered that "more than one species likely involved but they are universally lumped". Hilty & Brown (1986) and Hilty (2003) asserted that the two forms "hybridize" in the Maracaibo basin and Catatumbo lowlands of Colombia, presumably based on Phelps & Phelps (1958). The latter authors described a new subspecies *striaticollis* from the coast to the East of Maracaibo (Quisiro, Zulia to Debajuro, Falcón). A modern example from this population is shown in Figure 13. They considered that "This local race, with the incipient black band across the lower throat, is intermediate between the one-banded form *H. ruficollis* and the Double-banded form *H. bicinctus*. The only difference between the two is the lack of the second band in *ruficollis*. Their ranges do not overlap. We have in our collection a male specimen of *bicinctus* from Ciudad Bolivar, very far removed from the range of *ruficollis*, which is similar to the type of the new *striaticollis*, with the same incipient throat band, lined instead of solid black. These specimens indicate that the hitherto so-called species are conspecific, *bicinctus* being a subspecies of *ruficollis*."

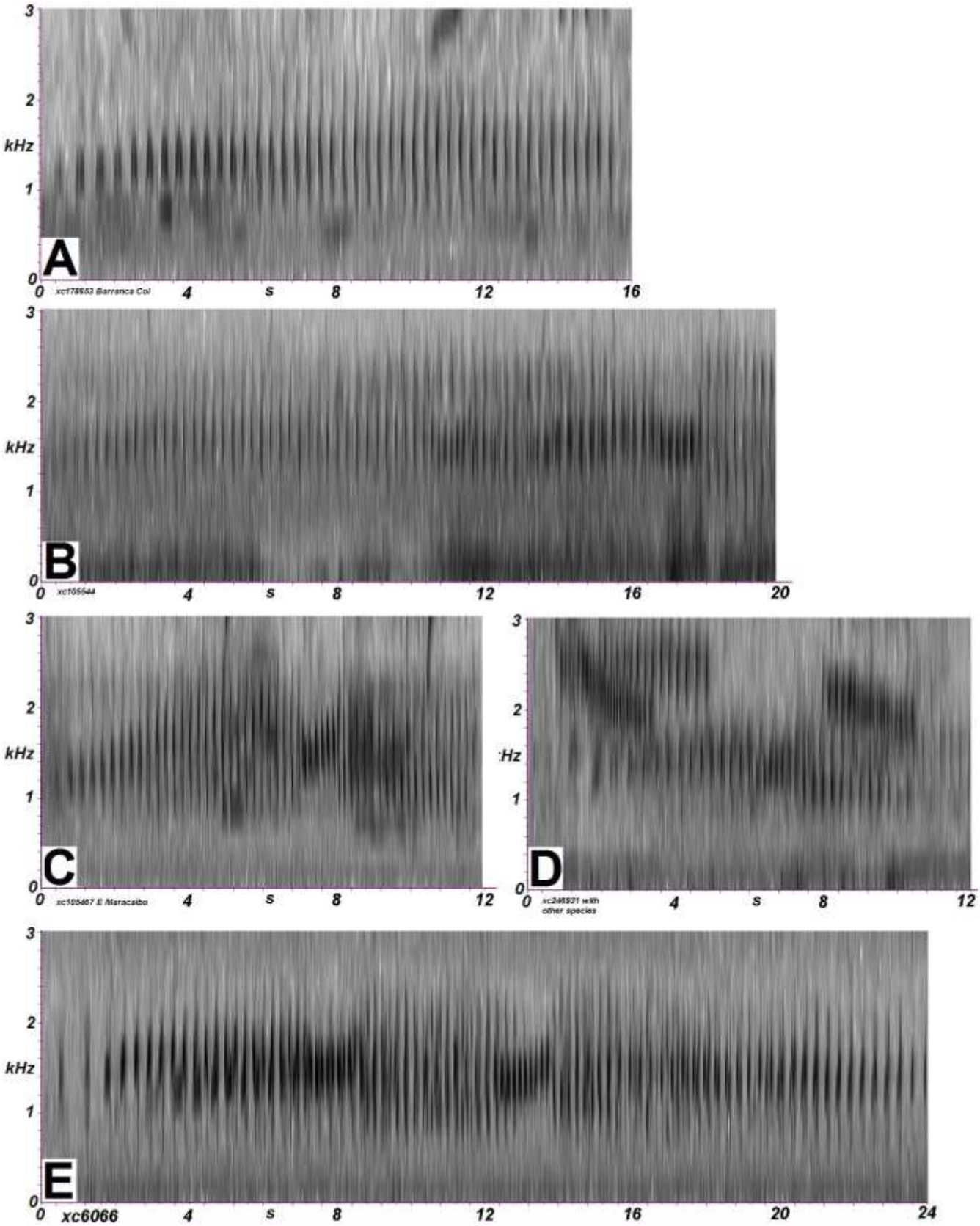

Figure 11. Puffbird songs and duets. A-C: Rufous-throated Puffbird *H. ruficollis*. D-E: Double-banded Puffbird *H. bicinctus*. A. Betulia, Santander, Colombia (XC178653: O. Cortés). B. Bachaquero, Venezuela (XC105544: A. Lastukhin, starting as a single note repeated call, illustrated as a close-up in Figure 12). C. *Idem* (XC105467). D. Los Llanos, Apure, Venezuela (XC246931: J. Klaiber). E. Hato Masaguaral, 54 km S of Calabozo, Aragua (XC6066: C. Parrish).

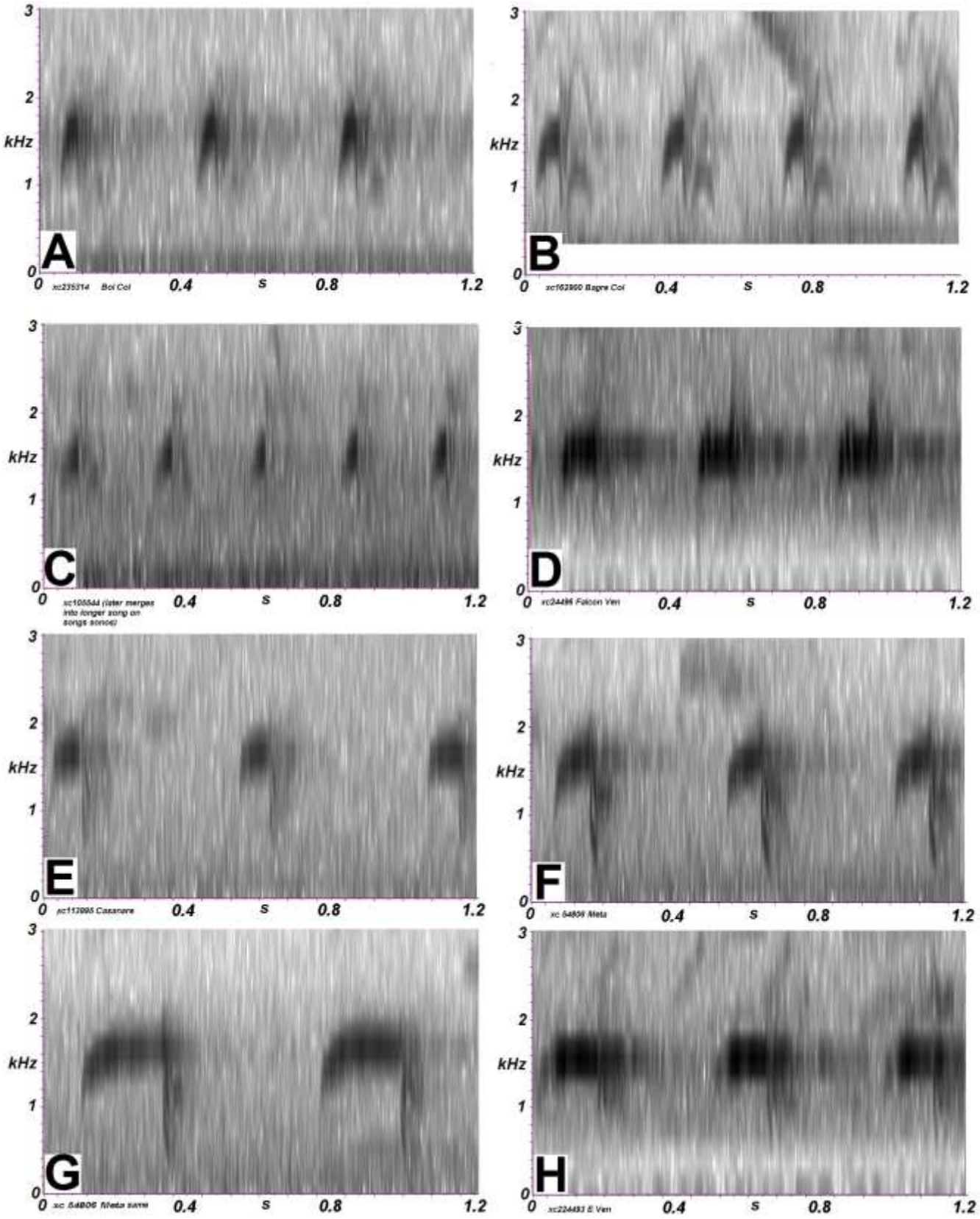

Figure 12. Puffbird repeated single note call extracts. A-C: Rufous-throated Puffbird *H. ruficollis*. D-H: Double-banded Puffbird *H. bicinctus*. A. San Juan Nepomuceno, Bolívar (XC234314: J.S. León-Lleras). B. El Bagre, Antioquia, Colombia (XC162900: J. A. Arango-Bermúdez). C. Bachaquero, Venezuela (XC105544: A. Lastukhin, extract of start of Figure 11B, before the call is followed by a song). D. La Misión Limestone hills, Falcón, Venezuela (XC224496: P. Boesman). E. vereda El Delirio, Orocue, Casanare, Colombia

(XC113995: S. Chaparro Herrera). F. Finca La Pradera, Parroquia Remolinos, Municipio Puerto López, Meta (XC54806: B. López-Lanús). G. *Idem*, extract of longer notes in same recording. H. Villa Lola area, Bolivar, Venezuela (XC224493: P. Boesman).

Figure 13. Puffbirds *Hypnelus*. Top row: Russet-throated Puffbird *H. ruficollis*. Bottom row: Double-banded Puffbird *H. bicinctus*. Above left: Armero, Tolima, Colombia (A. Quevedo, 14 November 2008). Above middle: Bahia Concha, Santa Marta, Colombia (A. Quevedo, 12 September 2007). Above right: near Santa Marta, Colombia (A. Quevedo, 8 January 2009). Below left: Puerto Gaitan, Meta (O. Cortés 31 September 2013). Below middle: Russet-throated Puffbird *Hypnelus "ruficollis" (=bicinctus) striaticollis* 20km south of Coro, Falcón state (N. Athanas, 7 August 2006). Below right: Cotumbo north of Maracay, Venezuela (N. Athanas).

Table 1: vocal data for *Hypnelus* calls

Taxon / Variable	**Call length (s)**	**Number of notes -1**	**Speed (notes/s)**	**Length of fourth note (s)**	**Max. acoustic frequency of fourth note (kHz)**
ruficollis group	11.19 ± 3.25 (6.56-16.34) (*n*=6)	36.67 ± 11.71 (20 - 53) (*n*=6)	3.27 ± 0.41 (2.97 – 4.07) (*n*=6)	0.07 ± 0.02 (0.05 – 0.09) (*n*=6)	1.81 ± 0.17 (1.49 – 1.97) (*n*=6)
bicinctus group	18.40 ± 14.62 (2.44-63.48) (*n*=15)	42.07 ± 28.34 (6 - 125) (*n*=15)	2.40 ± 0.38 (1.77 – 3.01) (*n*=15)	0.23 ± 0.06 (0.13 – 0.33) (*n*=14)	1.84 ± 0.12 (1.63 – 2.00) (*n*=14)
Diagnosability	N/A	N/A	Level 1 ($p<0.009$).	Levels 1 ($p<1x10^{-7}$), 2, 4. See note.	N/A

Note: [Levels 3 and 5 each narrowly missed by a difference between means of c.0.02kHz.]

Rasmussen & Collar (2002) doubted this interpretation, considering *bicinctus* a separate species from *H. ruficollis*. They reported any hybridisation to be unusual and not indicative of free interbreeding. Restall *et al.* (2006) treated *ruficollis* as: "Separated from Two-banded Puffbird in R&C on basis of morphological, plumage and vocal differences, with which we completely agree. Supposed intermediates between them were found to be juvenile and immatures of Two-banded Puffbird (Restall & Lentino in prep.)." Gill & Donsker (2015) and del Hoyo & Collar (2014) also now split these. (Restall *et al.* (2006) further drew attention to a "Rufous-throated group" comprising subspp. *coloratus* and *ruficollis* (smaller with proportionately heavier bill) and a "Paler group" of *decolor* and *striaticollis*. However, the ranges of some of these groups overlap, suggesting that variation may be individual or involve a "Gloger's Rule" pattern of paler birds in dryer habitats.)

We analysed sound recordings of the *ruficollis* and *bicinctus* groups (subject to a range adjustment discussed below) to consider possible vocal support for the proposed split. We found two main kinds of vocalisations for both populations, one in which repeated notes varied a little in volume, frequency and length over time, but which were relatively constant in note shape ("repeated notes": Fig. 12). This is often given in duet, particularly in western populations, with a second individual (female?) vocalising at lower frequencies immediately after the first individual (male?). Other vocalisations are more complex, also often given as a duet, but with notes of several different shapes given in sequences (Fig. 11).

We analysed calls statistically after measuring various vocal variables. The vocal sample included individuals from across the range of the two groups, including in northern Venezuela fairly close to the area east of Maracaibo where they separate. Only one vocalisation was analysed per recording. For calls, we measured number of notes (minus 1), call length (from the start of the call to the start of the last note) and speed (number of notes divided by length). The fourth note of the call was then measured for length and maximum acoustic frequency. Any "tails" of noise at the start or end of the fourth note were excluded for purposes of measuring frequency. When two birds vocalised in closely-coordinated duets, only the first vocalising individual's note was measured. The fourth note was chosen because some earlier notes can have unusual shapes or be of low volume and a note relatively close to the start of the call, which *bicinctus* delivers more slowly, seemed likely to elucidate differentiation. These data were subjected to statistical tests of diagnosability discussed in Donegan (2013).

Songs were not measured because a more complicated scheme for analysing these would need to be devised and the sample size for western populations was lower (n=4). This kind of vocalisation seemed to vary considerably within populations and included faster elements in both populations.

Vocal data is presented in Table 1. For calls, the fourth note of the Russet-throated group (<0.09s) was consistently shorter than in the Double-banded group (>0.13s). Statistically significant differences were found in this variable and there was no overlap in measurements. Despite the small sample size and resultant high student-*t* values, the "gold" standard (Level 5) test of diagnosability was missed only narrowly (0.02s of difference between means). Further studies might ascertain diagnosability by this standard with a greater sample or by considering measurements of different notes' lengths (e.g. 2nd, 3rd, 5th or 6th notes). Separately, song speed showed statistically significant differentiation with only a tiny overlap. We found calls of Russet-throated to have a different, more chevronned note shape, particularly comparing notes at the start of vocalisations. This results in calls being sharper-sounding, more like an *Aulacorhynhus* Toucanet than the Sandpiper-like calls of Eastern populations. The speed and note length data together show Double-banded recordings to have longer and slower-delivered notes in their calls, a difference which is particularly notable at the start.

Differences in calls are consistent east to the easternmost part of the range of Russet-throated group (east bank of the Maracaibo basin) and the westernmost part of the range of Double-banded group (in Falcón, Venezuela). Vocal differences are also consistent either side of the East Andes in Colombia, where *Hypnelus* are low elevation, dry habitat specialists that do not occur in the cooler and more humid Andes. There is no evidence of hybridisation in photographs on HBW Alive, including from relatively nearby locations in north-western Venezuela (in stark contrast with the situation involving many Ramphastidae, as discussed below). If there is a hybrid zone, we concur that it must be narrow and does not seem to prevent these two well-defined groups from persisting or vocalising differently (Rasmussen & Collar 2002).

A recent photograph of a live individual showing all features of subspecies *striaticollis* from close to the type locality shows the double banded pattern (which may not be so evident in specimens) and dark face side (Fig. 13) characteristic of the *bicinctus* group. Moreover, per Phelps & Phelps (1958), this supposed subspecies is very similar to some specimens collected further East, which are clearly of the *bicinctus* group. Del Hoyo & Collar (2014) did not recognise supposed intermediate subspecies *striaticollis* as a valid subspecies but (like all other authors) placed it in synonymy with other subspecies in the *ruficollis* group. Subspecies *striaticollis* (if it is valid) would in our view be better placed in the *bicinctus* group (*stat. nov.*). The reported

distributions of the two split species should be reset accordingly.

The plumage differences between the two proposed split populations are quite striking, as has so often been remarked upon in the literature cited above. *Hypnelus* is previously regarded as monotypic, so no examples of similar congeners can be compared. The plumage differences here do, however, compare favorably to those between demonstrably good puffbird species, such as White-whiskered Puffbird *Malacoptila panamensis* and Moustached Puffbird *M. mystacalis*, which replace one another by elevation in the Colombian Andes (Hilty & Brown 1986). In light of all the above, we now align ourselves with those who adopt this proposed split.

Sound recordings analysed in vocal study. Russet-throated XC234134, XC162900, XC105544, XC178652, ML69332, ML69333. Double-banded: XC113995, XC54806, XC244890, XC224496, XC204479, XC224493, ML172537, ML6707, ML69324, ML69325, ML69326, ML69327, ML69328, ML69329, ML69330. Other recordings in ML or XC contain only songs or other kinds of vocalisations. ML = Macaulay Library. XC = xeno-canto.org.

Splendid Woodpecker *Campephilus splendens*
Crimon-bellied Woodpecker *C. haematogaster*
These lowland to foothill woodpeckers have their ranges bisected by the high Andes. Rodner *et al.* (2000) noted that they may be separate species, citing "P. Salaman pers. comm.". Ridgely & Greenfield (2001) flagged that: "Two distinctly different races are found in Ecuador … have been considered separate monotypic species … and as they also appear to differ vocally, this treatment may well be correct." Restall *et al.* (2006) thought *splendens* "sometimes" to be considered a separate species. We could find no publication affording it species rank since the 19th century (e.g. Hartert 1898). The two forms seem to have been universally lumped since Ridgway (1914).

Del Hoyo & Collar (2014) drew attention to several novel morphological differences. In the western group, *C. splendens*, the cream moustachial extends down the neck, while in males of *C. haematogaster* it ends at the back of the head (2). The upper breast of *C. haematogaster* is more extensively black (3). *Campephilus splendens* has prominent buffy marks on the flight feathers (3), which are visible in the folded wing. Such markings are much reduced in *C. haematogaster*. *C. splendens* also has a different shade of scarlet on the crown (ns1) and more strongly barred underparts. These differences are illustrated in Figs. 18-19.

Both groups give various vocalisations, namely (i) repeated, high-pitched sharp notes with large gaps between them ("calls": Fig. 14); (ii) slow trills, given when more than one individual is present ("interaction calls": Fig. 15); and (iii) fast, unmusical and harsh rattles ("rattle calls": Fig. 16). Males also engage in drumming by repeatedly striking their bill against tree trunks (Fig. 17). We analysed each of these sounds, finding notable differences between the two proposed species. In our view, when these are considered alongside the morphological differences highlighted by del Hoyo & Collar (2014), the split is well-supported.

Calls (Fig. 14) differ, with *S. splendens* attaining higher maximum acoustic frequencies. In note shape, *C. splendens* calls are invariably comprised of symmetrical up-down strokes, whereas in *C. haematogaster*, note shapes are typically downstroke-shaped and of broader bandwidth. Some Eastern recordings (e.g. Fig. 14E) rarely show up-downstroke note shapes. The two populations at least differ in the frequency with which such shaped notes are used in calls.

Interaction calls have many undertones and overtones in both populations. In available recordings of *C. splendens* (Fig. 15), higher frequency tones (*c*.5-8kHz) are accentuated whilst in *C. haematogaster*, the lower tones at *c*.1-3kHz are strongest. Eastern populations seem to be able to accentuate different overtones in their rattle calls (Fig. 16) so it would be preferable to have a larger sample (currently *n*=3 each) to confirm if this is a real difference for interaction calls.

The most noteworthy differences were in drumming (Fig. 17). Drumming varies between different woodpecker species (e.g. Stark *et al*. 2008) but is little studied in the Neotropics for *Campephilus* (though see Swiston & Mennill 2009). Ridgely & Greenfield (2001) had previously highlighted differences: in the northwest (*splendens*), it "gives a strong double-rap" but, in the east, "drum a fast series of 2-3 loud raps sounding like a machine gun burst". McMullan & Donegan (2014) also elucidated differences in drumming: "6-tap" drum in *haematogaster* versus "2-tap" in *splendens*. Ridgely & Gwynne (1989) referred to a double-drum for western populations. In the west, all drums in our sample were of 2 notes and at faster drum speeds. In the East, drums consisted of more notes (typically 5-6, 3 in one recording) and were slower. Because these noises are produced through mechanical action, note shapes and tone are probably an effect of substrate composition (i.e. size, hardness and hollowness of wooden trunk). However, the number of 'knocks' in a drumming and their speed are more likely to be based on innate characters of the woodpecker population (e.g. neck muscle strength or nature and skull density), which affect their ability rapidly to move the head backwards and forwards for a period of time. In *splendens*, drumming is a sprint but *haematogaster* is more of a long-distance runner.

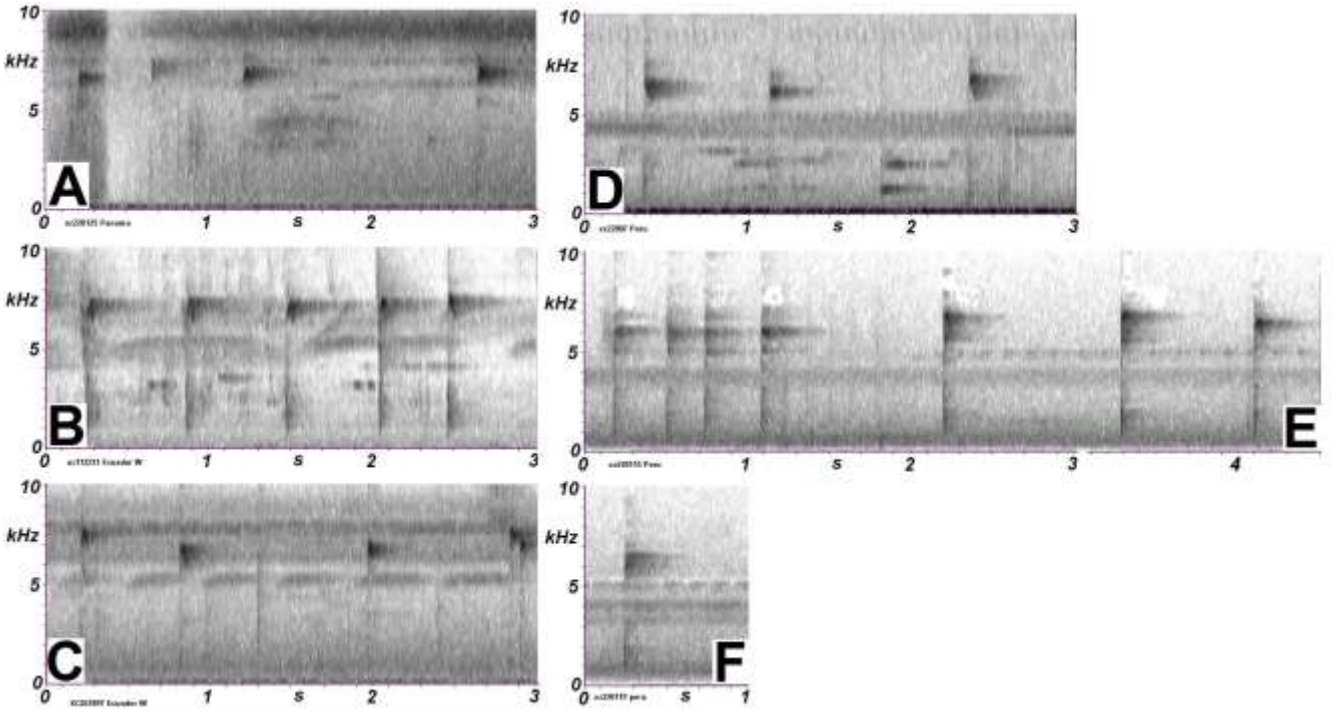

Figure 14. Calls of Crimson-bellied Woodpeckers. A-C: Splendid Woodpecker *C. splendens*. D-F: Crimson-bellied Woodpecker *C. haematogaster*. A. Nusagandi NP, Panama (XC220125: P. Boesman). B. La Union Road, 6.5 km NW of Alto Tambo, Esmeraldas, Ecuador (XC112231: T. Brooks). C. Esmeraldas: Corriente Grande, Río Guaduero, Ecuador (XC261897: O. Jahn). D. Capiri, Marcapata, Cusco, Peru (XC22807: D. Geale). E. Abra Patricia road, San Martín, Peru (XC220115: P. Boesman). F. *Idem* (XC220119).

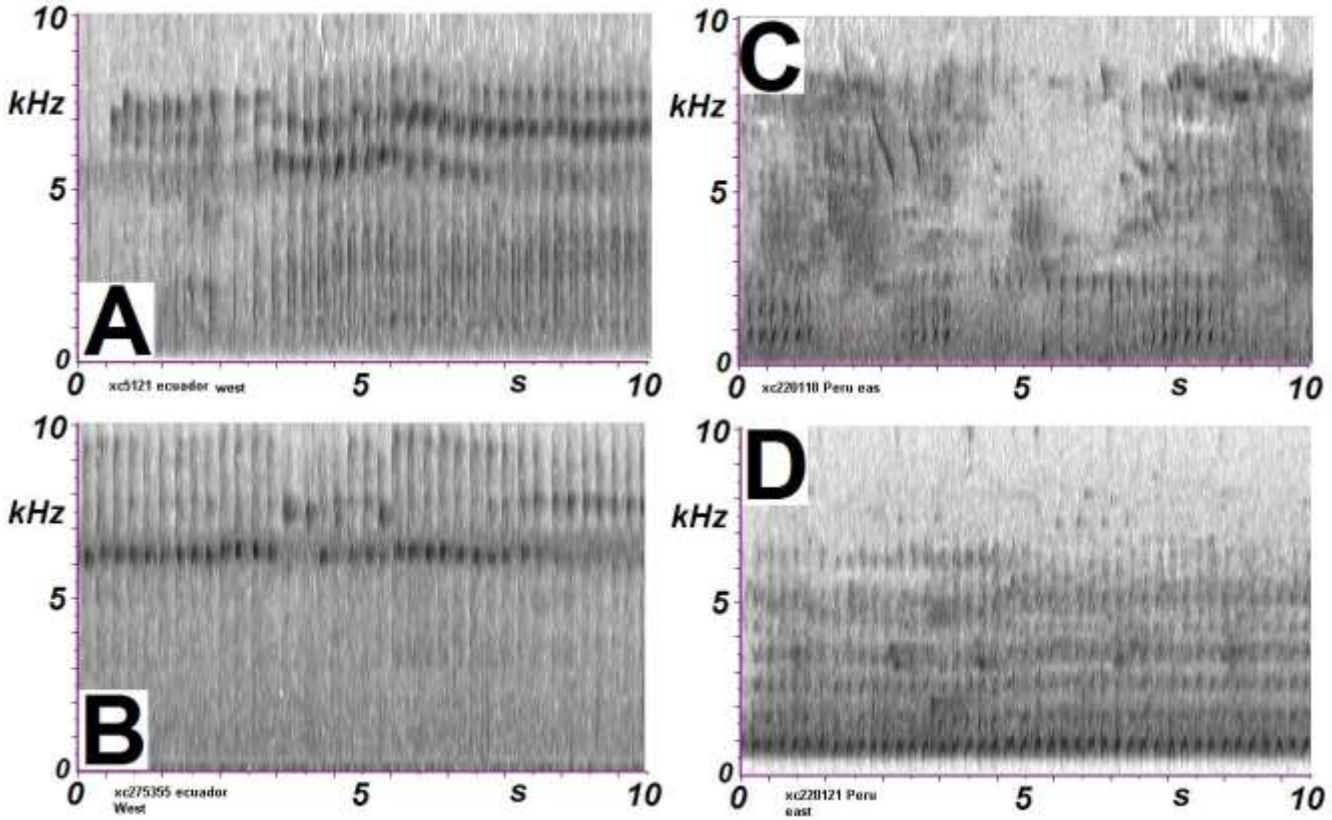

Figure 15. Interaction calls of Crimson-bellied Woodpeckers. A-B: Splendid Woodpecker *C. splendens*. C-D: Crimson-bellied Woodpecker *C. haematogaster*. A. Milpe, Pichincha, Ecuador (XC5121: N. Athanas). B. Esmeraldas: Palma Real, Río Santiago, Ecuador (XC275355: P. M. Valenzuela). C. Villa Rica-Oxapampa road, Pasco, Peru (XC220118: P. Boesman). D. *Idem* (XC220121).

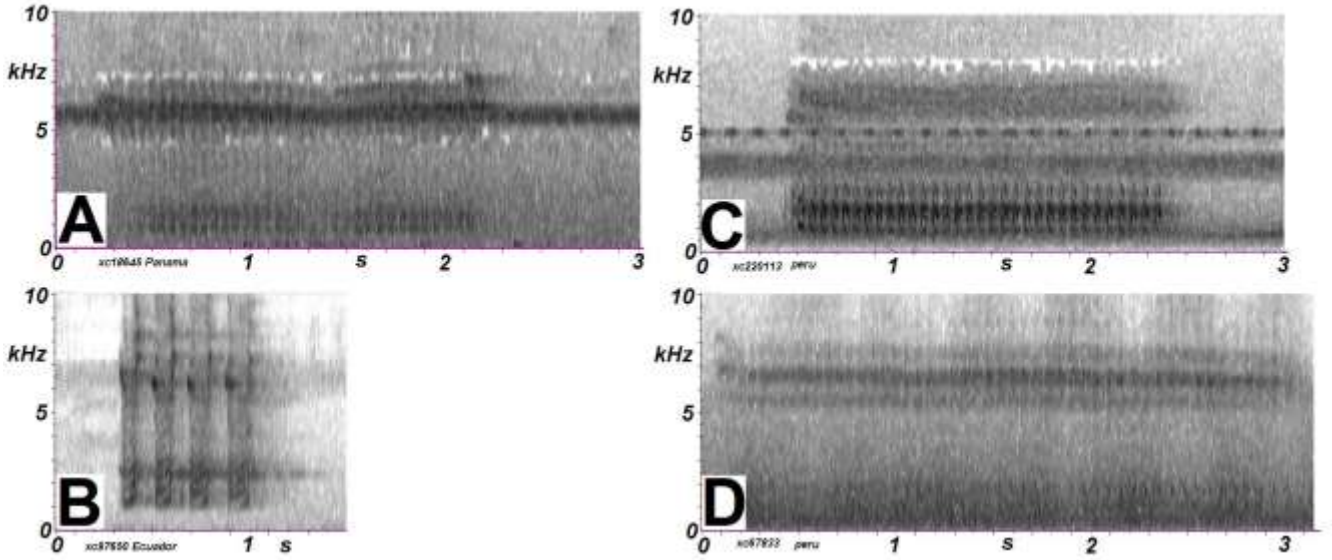

Figure 16. Crimson-bellied Woodpeckers rattle calls: A-B: Splendid Woodpecker *C. splendens*; C-D: Crimson-bellied Woodpecker *C. haematogaster*. A. Burbayar Lodge, Nusagandi, Panama (XC18645: K. Allaire). B. La Union Road, 6.5 km NW of Alto Tambo, Esmeraldas, Ecuador (XC97650: A. Spencer). C. Abra Patricia road, San Martín, Peru (XC220113: P. Boesman). D. Manu Road above San Pedro, Cusco, Peru (XC67833: F. Lambert).

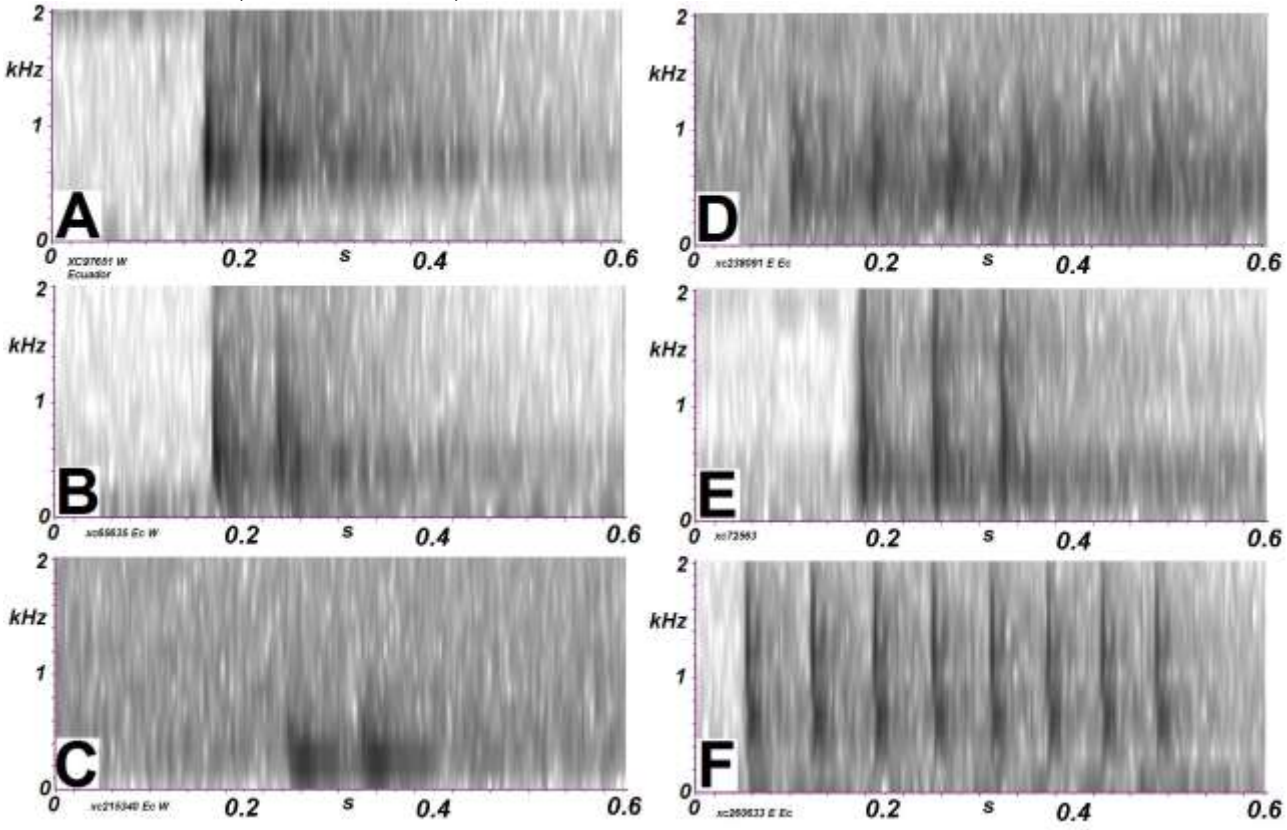

Figure 17. Drumming of Crimson-bellied Woodpeckers: A-C: Splendid Woodpecker *C. splendens*; D-F: Crimson-bellied Woodpecker *C. haematogaster*. A. La Union Road, 6.5 km NW of Alto Tambo, Esmeraldas, Ecuador (XC97651: A. Spencer). B. Rio Silanche, Pedro Vicente Maldonado, Pichincha, Ecuador (XC65635: A. Spencer). C. Un Poco del Chocó, Pichincha, Ecuador (XC215340: J. Fischer). D. West slope of Cordillera de Cutucú, Morona-Santiago, Ecuador (XC238091: N. Krabbe). E. Wildsumaco, 5km NW of Guagua Sumaco, Napo, Ecuador (XC72563: A. Spencer). F. km 35, Narupa-Loreto road, Napo, Ecuador (XC260633: M. Lysinger).

Figure 18. Crimson-bellied Woodpeckers. Left: all of Crimson-bellied Woodpecker *C. haematogaster* Mocoa-Pasto road, Putumayo, Colombia (01°4'44.08"N 76°43'54.73"W) (P. Salaman). Right: all of Splendid Woodpecker *C. splendens* El Bagre, Antioquia, below Serranía de San Lucas (P. Salaman / A. Cuervo / J. M. Ochoa / T. Donegan / Proyecto EBA Colombia, August 1999). Note the more raised crest, reduced eye stripe and marked primaries of *C. splendens*.

Figure 19. Crimson-bellied Woodpeckers. Upper Left and middle left: Crimson-bellied Woodpecker *C. haematogaster*. Right and bottom: Splendid Woodpecker *C. splendens*. Same individuals as in Figure 18.

Rattle calls were variable in the few recordings available, such that it is difficult to draw conclusions as to the existence or nature of any differences (Fig. 16). McMullan & Donegan (2014) referred to a "shorter more relaxed" laughter call of *splendens*, based on the vocalisation in Figure 16B. However, a greater sample is needed to evaluate whether this kind of call is absent in *haematogaster*. Ridgely & Greenfield (2001) considered that, in the east, these birds call "stk! St-kr-r-r-r-r-r-r!" but in the west; "stk!". Del Hoyo & Collar (2014) cited these same vocal differences. This may be a result of comparing non-homologous vocalisations.

Others of del Hoyo & Collar (2014)'s proposed splits in Picidae have been criticised (Remsen 2015). This is a difficult family in which to propose changes to taxonomies solely on the basis of plumage for allopatric populations. Nonetheless, we consider that differentiation in voice, drumming behaviour and morphology discussed here would be unusual for conspecifics in this family and, on balance, much prefer this new arrangement.

We also note that many textbooks, including del Hoyo & Collar (2014), map *splendens* (or western *haematogaster*) as occurring only west to the San Lucas range in northern Colombia. However, it also occurs on the west slope of Serranía de los Yariguíes in Santander (J. Avendaño records in Donegan *et al*. 2010b) and in RNA Pauxi pauxi (Cerro de la Paz, Santander) (T. Ellery, obs.), near the western base of the East Andes.

Common Snipe *Gallinago gallinago*
Wilson's Snipe *Gallinago delicata*
This is a split which we have previously adopted. It was accepted as a taxonomic change, since the relevant account in *Handbook of the Birds of the World* was published, by del Hoyo & Collar (2014).

Vermiculated Screech-Owl *Megascops vermiculatus*
Guatemalan Screech-Owl *M. guatemalae*
This split follows the conclusions of König & Weick (2008) that these two taxa (and other forms such as *napensis* of Eastern Colombia) should be treated as separate species on morphological and vocal grounds. Dantas *et al.* (2015) subsequently published a detailed study of *Megascops*, in which these two taxa were afforded species rank, taking into account their substantial genetic differences and results of previous studies. We follow del Hoyo & Collar (2014) and Dantas *et al*. (2015)'s proposals to split these two taxa as a first step to resolving taxonomy of the group. Colombian populations should all be referred to as Vermiculated Screech-Owl *M. vermiculatus* under this arrangement.

2. Accepted lumps

Carribean Coot *Fulica caribaea*
American Coot *F. americana*
Del Hoyo & Collar (2014) lumped these, considering *caribaea* a morph and not recognising it even as a subspecies. These two widely-recognised species differ from one another principally in coloration of the knob at the top of the frontal shield (Fig. 20), which in *caribaea* is yellow and in *americana* is red. Both morphs are found in the northern Caribbean to Florida, with mixed pairs reported on Cuba, Hispaniola and the Virgin Islands among others (Bond 1961, Roberson & Baptista 1988, Raffaele *et al.* 1998, McNair & Cramer-Burke 2006). Wanderers or examples of *caribaea* morphs can be found in Florida also. Vocalisations are considered identical (Bond 1961).

Figure 20. Colombian Coots *Fulica*. Above: Caribbean Coot *F. americana caribaea* La Guajira, Colombia (P. Salaman / T. Ellery). Below: American Coot *F. a. columbiana* Bogotá, Colombia (O. Cortés, 21 October 2014).

Colombia is unique in supporting populations of all three recognised subspecies. *F. a. americana* is a vagrant to San Andrés island (Donegan & Huertas 2015), *F. a. caribaea* is recently recorded in open marshlands of north Colombia (Ellery 2013) where it is probably a rare resident and *F. a. columbiana* is a localised population of high elevation wetlands in the East Andes and Cauca valley (Hilty & Brown 1986). A recent second national mainland record of Caribbean Coot is shown in Figure 20. High elevation *columbiana* and low elevation *caribaea* occupy different habitats in Colombia. Subspecies *columbiana* is morphologically more similar

to 'true' *americana* than *caribaea*, despite the range disjunctions, perhaps suggesting a vagrant origin. Taxonomic studies have focused to date on the Caribbean populations, but should also consider those in the Andes.

We accept this proposed lump. In addition to reported intergrades, other coots such as Andean Coot *F. ardesiaca* show polymorphism in frontal shield coloration. However, we would propose to retain *caribaea* as a subspecies, reflecting the diagnosability of most individuals. At least in Colombia, the three subspecies names refer to identifiable populations with different distributions.

3. BirdLife Checklist splits not adopted

Ruddy Duck *Oxyura jamaicensis*
Andean Duck *O. ferruginea*
Andean resident proposed species *ferruginea* is represented by subspecies *andina* in Colombia (Hilty & Brown 1986). North American *O. jamaicensis* has been recorded on San Andrés island as a vagrant (Salaman *et al.* 2008). *O. ferruginea* was afforded species rank by Livezey (1995) who considered it more closely related to Lake Duck *O. vittata* of southern South America. Hellmayr & Conover (1948), Siegfried (1976), Ridgely & Greenfield (2001), Salaman *et al.* (2001), Jaramillo (2003), Erize *et al.* (2006), Carbonell *et al*. (2007), McMullan & Navarrete (2013) and del Hoyo & Collar (2014) split these birds on this basis. Other authors have lumped them, such as Blake (1977), Johnsgard (1979), Adams & Slavid (1984), Fjeldså (1986), Hilty & Brown (1986), Fjeldså & Krabbe (1990), Carboneras (1992), Asociación Bogotana de Ornitología (2000), Dickinson (2003), Salaman *et al.* (2008b, 2009, 2010), McMullan *et al.* (2010, 2011), Dickinson & Remsen (2013), McMullan & Donegan (2014) and Remsen *et al*. (2015). Several authors, including Todd (1979), Adams & Slavid (1984), Hilty & Brown (1986), Fjeldså (1986), Fjeldså & Krabbe (1990), ABO (2000) and McMullan & Donegan (2014) drew attention to subspecies *andina* of Colombia being intermediate in its plumage features between *jamaicensis* and *ferruginea*. Birds with white cheeks similar to *jamaicensis*, entirely black cheeks similar to *ferruginea* and mixed black/white cheeks are all found in the Bogotá region (e.g. Fig. 21).

McCracken & Sorenson (2005)'s molecular study of the group concluded that "the lack of shared haplotypes between *O. j. jamaicensis* and *O. j. ferruginea* suggests long-standing historical isolation. In contrast, *O. j. andina* shares haplotypes with *O. j. jamaicensis* and *O. j. ferruginea*, which supports Todd's (1979) and Fjeldså's (1986) hypothesis that *O. j. andina* is an intergrade or hybrid subspecies of *O. j. jamaicensis* and *O. j. ferruginea*." Consistent with this, Muñoz-Fuentes *et al.* (2013) sampled five *andina* and found "out of the five individuals studied, four had mtDNA haplotypes that were identical to haplotypes from North America, whereas the other haplotype was identical to those of other tropical Andean individuals." It is unclear where *andina* would be placed under any split. Given the existence of an intermediate population, we prefer to maintain these as a single species.

Figure 21. Ruddy Ducks *O. jamaicensis andina*. Top left: more '*jamaicensis*'-like; bottom right more *'ferruginea*'-like, others between. All taken on same body of water and date at Parque La Florida, Bogotá (T. Ellery, 1 October 2015).

Lesser Pied Puffbird *Notharcus subtectus*
Greater Pied Puffbird *N. tectus*
These populations, separated by the Andes, differ in the size of the breast band, presence/absence of white spots on the crown, extent of white wing patch and bill and tail lengths (del Hoyo & Collar 2014). Ridgely & Greenfield (2001) commented that these are "Two rather different races" and McMullan & Donegan (2014) flagged that "more than one species may be involved". However, they were univerally lumped in modern literature prior to del Hoyo & Collar (2014). A "higher pitched and possibly more piping, less modulated" song was noted by the latter authors. Variation in voice seems highly complex, based on available recordings, with several different kinds of call given by different populations (e.g. Schulenberg *et al.* 2007) and broad overlap in the note shapes and frequencies across vocalisations as a whole. A detailed study into the functions of different kinds of song and their comparability between populations would shed further light on the status of these populations. This split is pended rather than rejected.

Toucan (Ramphastidae) splits
A number of toucans proposed for species rank by del Hoyo & Collar (2014) are discussed in the following sub-sections. Several of them hybridise rampantly with one another in broad zones of contact or form intermediate populations, such as *Ramphastos cuvieri* & *R. tucanus*, *R. culminatus* & *R. vitellinus* and *R. culminatus & R. ariel*. Reported hybridisation does not necessarily mean that conspecific treatment is obligatory, because many demonstrably good biological species hybridise infrequently with one another (especially in groups such as Anatidae and Trochilidae) either at very low

frequencies, in situations involving hybrid sterility or otherwise not resulting in significant gene flow between populations. However, the extent of collections in South America, particularly remote parts of NW Colombia and N and NE Brazil where toucan hybridisiation and intermediates are reported has been relatively sparse. As a result, any instances of hybridisation need careful study before concluding that conspecificity is inappropriate (cf. Parkin *et al*. 2003). In the case of toucans, studies exist confirming substantial gene flow between populations which have been considered separate species (Haffer 1967, 1974, Weckstein 2005, Patané *et al.* 2009). In several cases, hybridisation among toucans occurs across broad regions (Haffer 1974, Patané *et al.* 2009).

In Colombia, there are several morphologically similar toucan species which co-occur in sympatry which are demonstrably good species. These provide a useful comparator for assessing species limits between allopatric toucans under the comparative approach advocated by Helbig *et al*. (2002) and Remsen (2005).

- In the *Ramphastos* group, Chocó Toucan *R. brevis* and Yellow-throated Toucan *R. ambiguus swainsonii* are sympatric in the Chocó. They show virtually no morphological differences, except for *R. brevis*' smaller overall size, but differ unmistakeably in voice. *R. brevis* calls involve repeated, single notes with broad bandwidth and of an insect-like quality, *c*.0.3 s long. This is one of Haffer (1974)'s "croakers". In contrast, *R. ambiguus* songs involve three notes, c.0.5 s long "dios-te-de" with a "yelping" quality.
- Cuvier's Toucan *R. (tucanus) cuvieri* and Channel-billed Toucan *R. (vitellinus) culminatus* are sympatric in Colombian Amazonia. In morphology, the two differ principally in the breast coloration (yellow/white). Morphological distinctions within each of these broader species (*sensu* Haffer 1974) are more substantial than those between sympatrics, as is discussed below. The two again differ vocally. *R. (v.) culminatus* gives single insect-like notes (rather like *R. brevis*) and *R. (t.) cuvieri* gives more complex "dios-te-de" calls (rather like *R. ambiguus*). The differences between and ranges of sympatric "yelper" and "croaker" groups have been well-documented throughout Amazonia (Haffer 1974) and they have been recovered as reciprocally monophyletic in molecular studies (Weckstein 2005, Patané *et al.* 2009).
- The Emerald Toucanet *A. prasinus* (subspecies *albivitta* or *griseigularis*) and Crimson-rumped Toucanet *A. haematopygus* are broadly sympatric in premontane to lower montane cloud forests and borders at *c*.1,400-2,500 m throughout the Colombian Andes. Their voices are similarly structured, consisting of incessantly repeated hoarse barks. With experience, however, the calls can be told apart. *A. haematopygus* has lower-pitched calls (*c*.<2kHz vs. >2 kHz) which are comprised of longer notes (*c*.0.2 vs 0.1 s) delivered more slowly (*c*.2 vs. 2.5+ notes/s). See Figure 24. They differ in morphology (e.g. presence/absence of a red rump) and bill coloration (red versus black-and-yellow) also.
- Groove-billed Toucanet *A. (sulcatus) calorhynchus* and *A. prasinus lautus* replace one another by elevation in the Santa Marta mountains, the former at lower and dryer elevations. *A. sulcatus* is greyer green overall in its plumage and has more extensive yellow markings on the proximal lower mandible. Both give incessant, hoarse barks as calls. However, the songs of *calorhynchus* are faster (c. 3 notes/s versus c. 2 notes/s) and marginally longer in duration. It could be said that the song of *calorhynchus* consists of mostly call notes with short gaps between notes, while that of *lautus* consists of mostly silence with short notes interspersed.

In Colombia, these four "good" sympatric congeneric Ramphastidae species are all vocally distinct from one another by several vocal variables. All of them also show at least some morphological differentiation.

Cuvier's Toucan *Ramphastos cuvieri*
Red-billed Toucan *R. tucanus*

Western Amazonian *R. cuvieri* differs from *R. tucanus* of north-eastern Amazonia principally in the latter's more extensively red mandibles. It also has a yellow (not orange or red) rump and yellowish lower breast. Subspecies *inca* of species group *cuvieri* has some red on the bill. Nominate *cuvieri* has an orange rump, between red and yellow edgings. Haffer (1974) reported *tucanus* and *cuvieri* to hybridise in northern and eastern Amazonia. Hilty (2003) more recently highlighted the presence of intermediates in Amazonas state of Venezuela. Various authors (Cory 1919, Peters 1948, Meyer de Schauensee 1964, 1966, 1970, Sibley & Monroe 1990, Rodner *et al.* 2000, Salaman *et al.* 2001, Restall *et al.* 2006, Erize *et al.* 2006) have split these two populations. However, since Haffer (1974) many persons to have considered the species have lumped them (e.g. Hilty & Brown 1986, Dunning 1987, Sick 1993, Ridgely & Greenfield 2001, Short & Horne 2001, Dickinson 2003, Hilty 2003, Souza 2004, Schulenberg *et al.* 2007, Salaman *et al.* 2008b, 2009, 2010, Van Perlo 2009, McMullan *et al.* 2010, 2011, Dickinson & Remsen 2013, McMullan & Navarrete 2013, McMullan & Donegan 2014, Remsen *et al.* 2015). Weckstein (2005) found *cuvieri* and *tucanus* together to form a monophyletic group. Subsequently, Patané *et al.* (2009), with broader sampling of individuals, found neither *cuvieri* nor *tucanus* to be monophyletic, consistent with Haffer (1974)'s observations that they intergrade with one another. However, the two taxa when combined were found to be monophyletic. We found no diagnostic vocal differences between these taxa based on a review of recordings in the xeno-canto collection. We continue to treat these named populations as part of the same species.

Figure 22. Channel-billed Toucans *Ramphastos vitellinus* in Colombia. Left: "Citron-throated" Toucan *R. v. citreolaemus* Serranía de las Quinchas, Boyacá (A. Quevedo, 17 May 2006). Right: "Yellow-ridged" Toucan *R. v. culminatus* Reserva Halcón Colorado, Villavicencio, Meta (A. Quevedo, 30 July 2005). We have prepared a collage including WA photographs showing plumage variation elsewhere in this group, which is available from the authors privately due to copyright restrictions.

Citron-throated Toucan *R. citreolaemus*
Channel-billed Toucan *R. vitellinus*
Yellow-ridged Toucan *R. culminatus*
Ariel Toucan *R. ariel*

Two supposed species in this group occur in Colombia, with *citreolaemus* west of the Andes and *vitellinus* in Amazonia. The other forms occur principally in Brazil and neighbouring countries, with *ariel* in the Atlantic region and East Amazonia, *vitellinus* also in North Amazonia and *culminatus* in western and southern Amazonia (including subspecies *pintoi*) under del Hoyo & Collar (2014)'s new taxonomic arrangement. Colombian populations differ strikingly from one another in bill coloration (blue versus yellow bill ridge; presence/absence of orange at proximal base to both mandibles; yellow versus blue proximal upper mandible; extensive versus narrow mark on upper mandible) and some aspects of plumage (yellowish versus entirely white breast) (Fig. 22).

Haffer (1974) found members of this group occurring East of the Andes, namely 'subspecies' *vitellinus*, *culminatus* and *ariel*, to intergrade with one another in broad hybrid zones, illustrated therein and mapped more recently by Patané *et al.* (2009). Examples of intermediates are common in specimen collections and modern photographic databases such as WikiAves Brazil (WA). We found several examples of "*pintoi*" (e.g. WA685598: D.W. Santos), *pintoi / vitellinus* intermediates (e.g. WA1638463: R.N. Cipriani), *vitellinus / culminatus* intermediates (e.g. WA1237040: J.A. Daffonseca), *ariel / vitellinus* intermediates (e.g. WA1082657: C. A. Borges) in this online photographic collection.

Since Haffer (1974), many authorities have lumped these populations, including Sick (1993), Ridgely & Greenfield (2001), Short & Horne (2001), Weckstein (2005), Schulenberg *et al.* (2007), Salaman *et al.* (2008b, 2009, 2010), Van Perlo (2009), Patané *et al.* (2009), McMullan *et al.* (2010, 2011), Honkala & Niiranen (2010), Souza (2004), McMullan & Navarrete (2013), McMullan & Donegan (2014) and Remsen *et al.* (2015). However, Cory (1919), Meyer de Schauensee (1964, 1966, 1970), Hilty & Brown (1986), Dunning (1987), Sibley & Monroe (1990), Rodner *et al.* (2000), Salaman *et al.* (2001), Erize *et al.* (2006) and Restall *et al.* (2006) all split *citreolaemus*, *vitellinus* and *culminatus*. Historically, *ariel* has been treated as a species (e.g. Cory 1919).

Molecular studies (Weckstein 2005, Patané *et al.* 2009) paint an interesting picture consistent with Haffer (1974)'s conclusions. The South-east Atlantic population of *ariel* includes individuals that are sister to all other toucans in this group in phylogenies, with *citreolaemus* samples being the next most basal, this being the sister group to a clade including "all the others" in Amazonia, including Amazonian *ariel*. Patané *et al.* (2009) considered the only isolating mechanism in the Amazonian region to be in the lower part, where the wide river separates subspecies "*pintoi*" and *ariel* morphotypes to the South (usually included within the *culminatus* group) from northern *vitellinus* populations. There is then a broken anti-clockwise ring of hybridisation across the rest of Amazonia, which Hilty (2003) considers to be more intense towards the headwaters of major rivers. Monophyly was not supported for any of del Hoyo & Collar (2014)'s proposed species in these studies. This is because subspecies *ariel* includes individuals which are sister to all others (from the Atlantic region) while

northern *ariel* populations have molecular biology similar to other Amazonian birds.

The position of *citreolaemus* with respect to the other taxa is arguably different as it occurs west of the Andes and so it is allopatric with respect to all the other taxa, except perhaps in north-western Venezuela. Hilty (2003) split *citreolaemus* only from *vitellinus* (which was retained as a group including all the other taxa), on the basis that these low-elevation populations were separated by the Andes and there is no evidence that they hybridise or possibility of this occurring. Despite this approach, he mapped one *vitellinus* record from north of the Mérida Andes. Such a sequence is undesirable as it creates a polyphyletic *R. vitellinus* (Patané *et al*. 2009) and the plumage differences between *citreolaemus* and others are less than those between populations which freely intergrade in Amazonia.

We inspected sound recordings on xeno-canto and noted some previously unrecognised vocal variation. Birds west of the Andes (*citreolaemus*) differ somewhat in voice from Amazonian birds, with calls consisting of shorter duration notes which are delivered faster (*c*.1 note/s versus >*c*.1 note/s in *vitellinus*). Atlantic *ariel* have calls with longer note duration. Haffer (1974), who last considered vocal differentiation, lacked recordings from west of the Andes referable to *citreolaemus*. Patané *et al.* (2009) discussed whether *ariel* could be split into two subspecies: Atlantic and Amazonian, citing morphometric differences and mtDNA differentation. This proposition should be investigated further. In particular, apparent small vocal differences between Atlantic and Amazonian and trans-Andean populations should be investigated statistically. Because *ariel*'s type was collected in Rio de Janeiro, the name is referable to the Atlantic population. Publishing a description of Amazonian populations of *ariel*, even as a subspecies, would be difficult in light of reported intergradation.

A three-species approach recognising (i) Atlantic *ariel*, (ii) an Amazonian *vitellinus/culminatus/pintoi/'ariel'* swarm and (iii) *citreolaemus*, may ultimately be an alternative feasible taxonomic treatment and is one that has limited molecular and vocal support. However, mtDNA variation within the group as a whole (1.31%) is low to moderate and sampling of Atlantic *ariel* to date is restricted to the far south of its range (Patané *et al.* 2009). Given that Haffer (1974)'s detailed study, the results of recent molecular studies and our studies of morphological variation based on modern photography are all consistent with a broader lump, we would not advocate such a treatment at this stage. In conclusion, we feel unable to support del Hoyo & Collar (2014)'s new taxonomy, or any of the other alternate split taxonomies that have been adopted in the past. We prefer instead to apply Haffer (1974)'s sequence for now.

Emerald Toucanet *Aulacorhynchus prasinus* splits

This toucan has for decades been treated as a widely distributed species of mountains from Central America to the Andes. Navarro *et al*. (2001) studied morphological variation focusing on Central American forms but also noting some differentiation among South American subspecies. They proposed numerous splits. Puebla-Olivares *et al.* (2008) and Bonnacorso *et al.* (2011) found *prasinus* to be monophyletic, but split it into eight phylogenetic species based on plumage and molecular differences. Several of the proposed split taxa occur in Colombia: *lautus* of Santa Marta, *albivitta* of the East Andes and *griseigularis* of the Central and West Andes. Puebla-Olivares *et al.* (2008) considered that relevant characters differentiating their eight clades "are important in social and reproductive behavior in the Ramphastidae … therefore, they could facilitate reproductive isolation in cases where populations came into contact" and that "the clades that we have identified likely represent species entities recognizable under the biological, evolutionary, and phylogenetic concepts". Some other authorities have followed such an approach, notably Gill & Donsker (2015). However, these proposals have not been widely accepted in the subsequent fieldguide or checklist literature (Schulenberg *et al*. 2007, Salaman *et al.* 2010, McMullan *et al.* 2010, 2011, Dickinson & Remsen 2013, McMullan & Navarrete 2013, McMullan & Donegan 2014, Remsen *et al.* 2015). Del Hoyo & Collar (2014) recognised six of Puebla-Olivares *et al*. (2008) and Bonnacorso *et al.* (2009)'s eight species, placing Colombian populations in a single species group, *albivitta*. Haffer (1974) and Short & Horne (2001, 2002) in contrast considered the various allopatric taxa that make up this group to be no more distinctive than those in the genus that are known to intergrade.

We examined sonograms of all claimed split species from throughout the range of *A. prasinus*. Spectograms of each taxon proposed for species rank by Puebla-Olivares *et al.* (2008) and Bonnacorso *et al.* (2011) are set out in Figure 24. All species give repeated croak noises comprising up-down-strokes, peaking typically at just below 2kHz at a rate of 2-3 notes/s. There appear to be some minor geographical or individual variations in acoustic frequency, speed and perhaps note shape. We have not studied vocalisations statistically, but the differences are unimpressive when compared to those between sympatric *Aulacorhynchus* species in Colombia. We therefore reject all of the splits proposed for Colombia and retain a broad *A. prasinus*, comprised of multiple morphologically distinctive subspecies. Conservation issues raised by the new taxonomy discussed by Bonnacorso *et al.* (2011) seem less pressing than for some other taxa studied here, given that these birds are often common in secondary habitats and forest borders.

Figure 23. *Aulacorhynchus* Toucanets of Colombia. Top left: Emerald Toucanet *A. prasinus albivitta* El Talisman, Serranía de los Yariguies, Santander (B. Huertas / T. Donegan / E. Briceño / Proyecto EBA Colombia, January 2003). Top right: *A. p. griseigularis* near Medellín, C. Andes (T. Ellery, December 2014). Lower left: *A. p. lautus* El Dorado, Santa Marta (T. Ellery, January 2015). Lower right: Yellow-billed Toucanet *A. sulcatus calorhycnhus* Santa Marta, below RNA El Dorado (T. Ellery, January 2015).

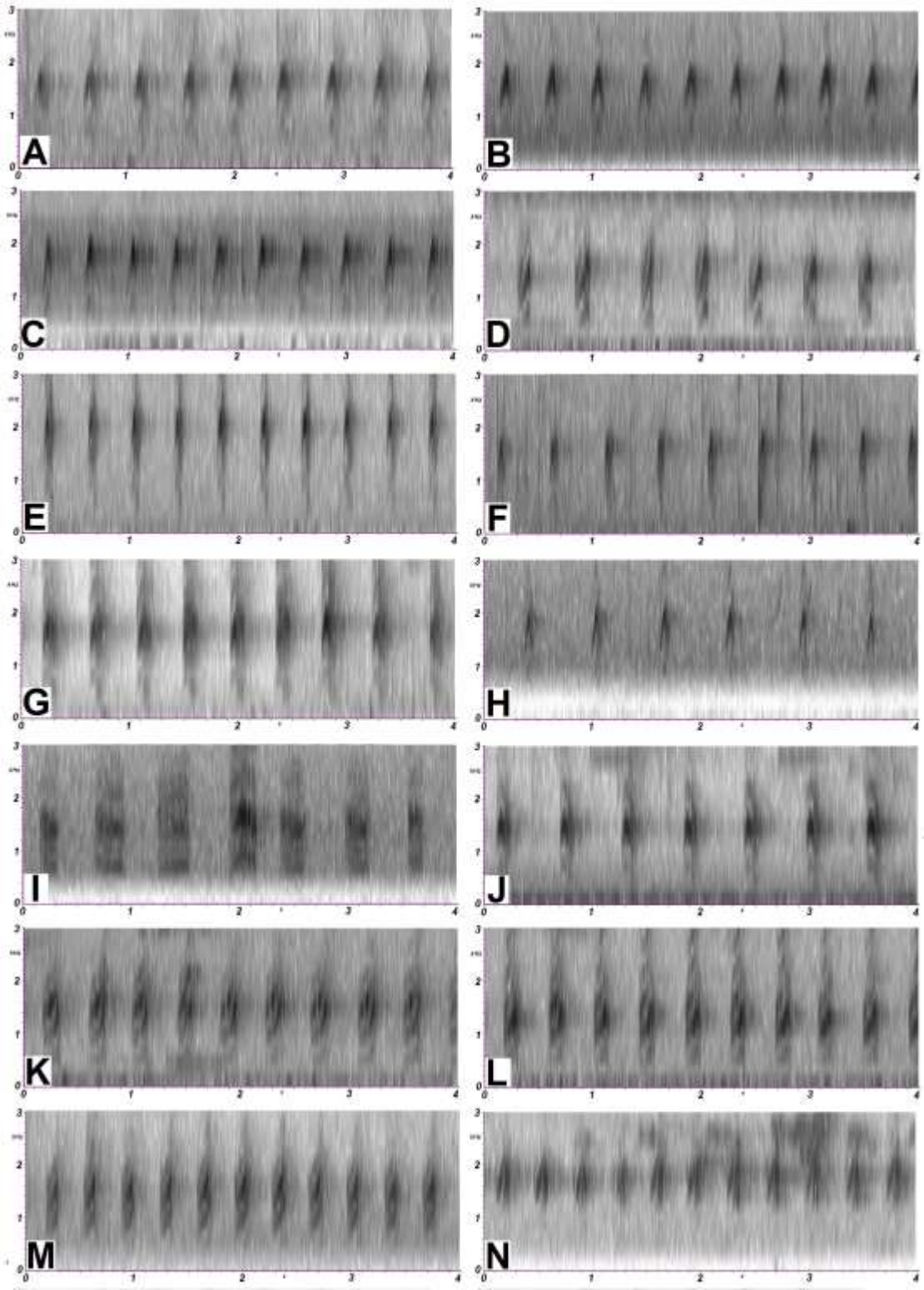

Figure 24. Songs of *Aulacorhynchus* toucanets. A. Emerald Toucanet *Aulacorhynchus prasinus cognatus* Darién, Panama (XC60792: K. Allaire). B. *A. p. caeruleogularis* Chiriquí, Panama (XC31808: A. Spencer). C. *A. p. prasinus* Morazan, El Salvador (XC198333: G. Funes). D. *A. p. wagleri* Oaxaca, Mexico (XC219401: P. Boesman). E. *A. p. albivitta* Tolima, Central Andes, Colombia (XC52684: B. López-Lanús). F. *A. p. griseigularis* Risaralda, West Andes, Colombia (XC117909: S. Córdoba). G. *A. p. lautus* Santa Marta, Colombia (XC235595: N. Krabbe). H. *A. p. atrogularis* San Martín, Peru (XC219372: P. Boesman). I. Blue-throated Toucanet *A. coeruleicinctus* Pasco, Peru (XC219373: P. Boesman). J. Red-rumped Toucanet *A. haematopygus* Valle, West Andes, Colombia (XC117679: J. López). K. Groove-billed Toucanet *A. sulcatus calorhynchus* Santa Marta, Colombia (XC235596: N. Krabbe). L. *A. s. calorhynchus* Mérida, Venezuela (XC219396: P. Boesman). M. *A. s. sulcatus* Aragua, Coastal Cordillera, Venezuela (XC219397: P. Boesman). N. *A. s. erythrognatus* Paria peninsula, Sucre, Venezuela (XC219400: P. Boesman).

Groove-billed Toucanet *Aulacorhynchus sulcatus*
Yellow-billed Toucanet *A. s. calorhynchus*
These toucans were widely split in the 1800s-1900s, with yellow-billed *A. calorhynchus* restricted to the Santa Marta, Perija and Mérida mountains; and red-billed *A. sulcatus* considered to occur in the coastal cordillera and Sucre mountains of Venezuela. Schwarz (1972) noted that the two forms have a hybrid zone in western Venezuela (Cerro Platillón and mountains of north-west Lara state). Intermediates between the traditional *sulcatus* and *calorhynchus* groups have been studied in their molecular biology and are highlighted in published phylogenies (Bonaccorso *et al.* 2011). Despite this, various modern authors continue to split them, notably Rodner *et al.* (2000), Hilty (2003), Erize *et al.* (2006), Restall *et al*. (2006) and now del Hoyo & Collar (2014). Bonaccorso *et al.* (2011) found these two northern groups to be monophyletic when taken together but also mutually monophyletic (if hybrids or intermediates are placed with the *calorhynchus* group), in a 50% Bayesian majority rule consensus tree, although with low (<1% mtDNA) differentiation.

We found these two proposed split groups to include populations that are vocally very similar (Figure 24K-M). Both proposed species have populations that give upturned notes of similar length, shape, duration and speed and with a clear undertone. On account of the differences in bill colour found between hybridising *Ramphastos*, the molecular data and more striking vocal differences that exist between sympatric *Aulacorhynchus*, we do not accept this split.

Surprisingly, we found subspecies *erythrognathus* of the Paria peninsula and Sucre mountains, which has never previously been recognised specifically, to be vocally distinct from other *sulcatus/calorhynchus* populations. Assuming the identification of recordings to be correct, it has a different note shape to its calls, with no undertone visible on sonograms (Fig. 24N). This population has an orange bill base on both mandibles, which is more extensive than the yellow lower mandible base in other *A. sulcatus*. A split *A. s. erythrognathus* would not be monophyletic with respect to other *A. sulcatus* (Bonaccorso *et al.* 2011). Its status should be investigated further and has no bearing on the Colombian checklist.

4. Extralimital splits with no impact on the scientific names of Colombian species

The following splits by del Hoyo & Collar (2014) were not considered in detail here, owing to a lack of personal experience of the authors with all treated forms. The position of populations in Colombia is not central to the taxonomic treatment of these proposals. No changes to scientific names or numbers of species occurring in Colombia would result from any of these splits.

Black-capped Petrel *Pteerodroma hasitata*
Jamaican Petrel *P. caribbaea*
Jamaican Petrel is considered sufficiently distinct by del Hoyo & Collar (2014) to merit species rank, on account of plumage and biometric differences. It is considered probably extinct and has not been recorded in Colombia.

(Greater) Band-winged Nightjar *Caprimulgus longirostris*
Certain isolated and vocally distinct taxa occurring outside Colombia were split from *C. longirostris* (see further Spencer 2010 and Sigurdsson & Cracraft 2014).

Black-throated Brilliant *Heliodoxa schreibersii*
Black-breasted Brilliant *H. whitelyana*
The montane, southern Peruvian form *whitelyana* has been proposed as a split from a widespread Amazonian species.

Fiery Topaz *Topaza pyra*
Crimon Topaz *T. pella*
This split involves separation of a north-east Amazonian species from *T. pyra*, which would still be the named form which occurs in Colombia.

Long-billed Hermit *Phaethornis longirostris*
Ecuadorian Hermit *P. baroni*
Mexican Hermit *P. mexicanus*.
The newly split *baroni* may occur in south-west Nariño but there are no confirmed records to date of which we are aware (Biomap Alliance Participants 2015). There are only a few sound recordings available of *baroni*, which makes any assessment of rank difficult. This is a quite vocal hummingbird genus. Studies of lekking calls are probably critical to unravelling the group's taxonomy.

Gull-billed Tern *Gelochelidon nilotica*
Australian Gull-billed Tern *G. macrotarsa*
These forms would split out in Asia and we therefore express no comment on the proposal.

Common Squirrel-Cuckoo *Piaya cayana*
Mexican Squirrel-Cuckoo *Piaya mexicana*
This widespread species would be split in northern Central America.

Crimson-mantled Woodpecker *Colaptes rivolii*
Black-crowned Woodpecker *C. atriceps*
The latter refers to populations occurring in southern Peru and Bolivia.

Lineated Woodpecker *Dryocopus (Hylatomus) lineatus*
Dusky-winged Woodpecker *D. fuscipennis*
Newly split *fuscipennis* may range into southern Nariño, but is presently treated as extralimital.

5. Other pended splits

We do not consider the following splits by del Hoyo & Collar (2014) in detail, due to a lack of personal experience of the authors with all treated forms or due to question marks over the proposed treatment, which may merit further investigation. In most cases, the position of populations in Colombia is not central to taxonomic treatments. Several of these changes would result in a different scientific name for a species occurring in Colombia as a result of an extralimital split, because the nominate form would cease to be present in the country.

Northern Band-tailed Pigeon *Patagioenas fasciata*
Southern Band-tailed Pigeon *P. albilinea*
These proposed split species separate out in Costa Rica. A detailed vocal study would be welcomed, given the importance of voice in distinguishing pigeon species and the innate nature of some kinds of vocalisations in this family (cf. Donegan & Salaman 2012).

European Herring Gull *Larus argentatus*
American Herring Gull *L. smithosonianus*
Del Hoyo & Collar (2014) split Herring Gulls on a trans-Atlantic basis, citing the "current trend to accept this arrangement" but without applying species scoring tests. This split treatment was criticised by Remsen (2015), but it is widely adopted (e.g. Sangster *et al*. 2007, Dickinson & Remsen 2013).

Approximately 40% of adult birds can supposedly be identified by experienced observers on the basis of mantle pigmentation, minor aspects of wing patterning or bill morphology. This percentage increases with younger birds, with first winters claimed to be 90% diagnosable and second winters 70% diagnosable (Lonergan & Mullarney 2004).

Molecular (mtDNA) differentiation paints a different picture, with *smithsonianus* sister to, or in a group sister to, several European taxa including *argentatus* (e.g. Crochet *et al.* 2002, Liebers-Helbig *et al.* 2010). Actual mtDNA distance is relatively low. These results might be explained by occasional hybridisation between sympatric *Larus* species, which is well documented, leading to molecular distance being greater between species whose breeding territories are more distant from one another.

We doubt that these two proposed species would meet the requirements of species scoring tests or biological species concepts because adults are non-diagnosable vocally or morphologically.

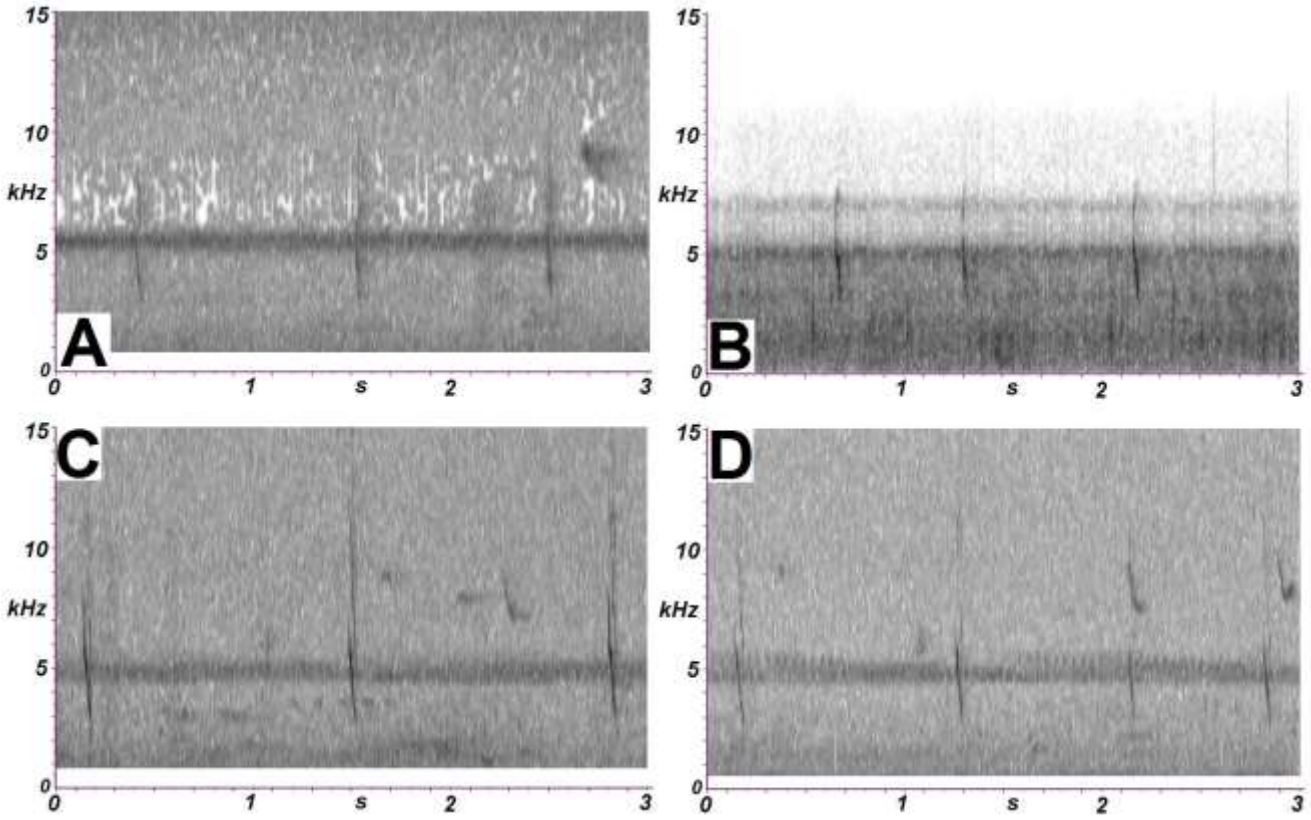

Figure 26. Calls of some *Lophornis* Coquettes. A-B: Festive Coquette *L. chalybeus*. C-D: "Butterfly Coquette" *L. verreauxii*. A. APA Capivari Monos, São Paulo, Brazil (XC187479: M. A. Melo). B. Fazenda Castanheiras (APA -Bororé - Colonia), São Paulo, Brazil (XC34807: M. A. Melo). C. Estancia Caparu-Lagunitas, Santa Cruz, Bolivia (XC53237: J. Quillen Vidoz). D. *Idem* (XC53238).

Butterfly Coquette *Lophornis verreauxii*
Festive Coquette *L. chalybeus*

Del Hoyo & Collar (2014) proposed restricting *L. chalybeus* to the Atlantic forest of Brazil, which would make *L. verreauxii* the new name for more widespread western Amazonian populations of Colombia, Ecuador, Venezuela, Brazil and Guyanan countries. Males of *L. verreauxii* have an elongated crest (3, most conservatively), which is absent in *L. chalybeus*. The two have different tail coloration in both sexes (2) and underparts coloration (2), which is most prominent in females. None of Meyer de Schauensee (1964, 1966, 1970), Hilty & Brown (1986), Dunning (1987), Sick, (1993), Fjelsdå & Krabbe (1990), Rodner *et al.* (2000), Souza (2004), Salaman *et al.* (2001, 2008b, 2009, 2010), Ridgely & Greenfield (2001), Dickinson (2003), Hilty (2003), Erize *et al.* (2006), Restall *et al.* (2006), Schulenberg *et al.* (2007), Honkala & Niiranen (2010), Van Perlo (2009), McMullan *et al.* (2010, 2011), Dickinson & Remsen (2013), McMullan & Navarrete (2013), McMullan & Donegan (2014) or Fogden *et al.* (2014) commented on these as a possible split, although Restall *et al.* (2006) highlighted morphological differences between the two subspecies occurring in Venezuela.

We pend a decision on this split for various reasons. First, although the name for Colombian populations would change, the key region for understanding the taxonomy of this group falls outside Colombia. Secondly, the reported score of 7 is borderline. Thirdly, Restall *et al.* (2006) illustrate *klagesi* of eastern Venezuela as having a different crest length from *verreauxii*. Del Hoyo & Collar (2014) placed this subspecies with *verreauxii* but did not comment on the differentiation of *klagesi*.

An inspection of sonograms suggests that *L. chalybeus* call notes may attain lower minimum frequencies (Fig. 26) and have a different pattern of overtones. However, the available sample is small (n=2 for *chalybeus* and n=3 for *verreauxii*) and these differences need confirming with a greater vocal sample. Subspecies *klagesi* is not represented in our vocal sample. Sound recordings and further morphological comparisons involving *klagesi* should be considered prior to making taxonomic changes in this group. The morphological differences between some populations are quite striking and del Hoyo & Collar (2014)'s taxonomies seem generally robust for hummingbirds. As a result, we suspect strongly that one or more splits may be warranted.

Collared Araçari *Pteroglossus torquatus*
Stripe-billed Araçari *P. sanguineus*

Haffer (1967, 1974) and Short & Horne (2001, 2002) considered these two groups to interbreed in north-western Colombia and so treated them as conspecific. In split taxonomic arrangements, *torquatus* has a bifurcated range in both the Magdalena valley and Central America, with *sanguineus* in the Colombian and Ecuadorian Chocó (Del Hoyo & Collar 2014). No hybridisation is recorded and populations separate on either slope of footbills below the west slope of the West Andes. However, in the Darién, a narrow hybrid zone exists in Colombia (Haffer 1974). Ridgely & Gwynne (1989) noted that a *torquatus* x *sanguineus* AMNH specimen taken in the Darién of Panama showed hybridisation also to be taking place on the other side of the border. Some Remsen *et al*. (2015) participants commented on the very narrow nature of this hybrid zone, which is probably only 20 km wide (from N to S), straddling the Atlantic to the Pacific coast. Most birds in Colombia appear "pure" in their plumage (e.g. Fig. 25). Haffer (1974) considered the two to show "uninhibited hybridisation" in the Darién region, which indicates that "color differences between these forms do not assure reproductive isolation".

Figure 25. Locally captured Collared Araçari *Pteroglossus torquatus* in captivity. Honduras, El Carmen, Serannía de los Yariguies, Santander, Colombia (T. Donegan / Proyecto YARE, January 2006).

Many authors such as Dunning (1987), Short & Horne (2001, 2002), McMullan *et al.* (2010, 2011), Salaman *et al.* (2008b, 2009, 2010), McMullan & Donegan (2014), Remsen *et al.* (2015) lump these as a result. In contrast, Hilty & Brown (1986), Sibley & Monroe (1990), Dickinson (2003), Rodner *et al.* (2000), Salaman *et al.* (2001), Erize *et al.* (2006), Restall *et al*. (2006), Pereira & Wajntal (2008), Patel *et al.* (2011) and Gill & Donsker (2015) ranked *sanguineus* as a species. Lumped treatments are more controversial today after Pereira & Wajntal (2008) and Patel *et al.* (2011) found sampled

individuals of nominate *torquatus* to be sister to a group including Fiery-billed Araçari *P. frantzii* and other populations in the *torquatus* group. Splitting of *torquatus* would be necessary to maintain the monophyly of currently recognised species. However, this study was based only on samples of *sanguineus* from Ecuador and of *torquatus* from central Panama so is not informative of the situation either in the Magdalena valley or the Darién hybrid zone.

Our inspection of sound recordings elucidated no obvious differences between *sanguineus* and *torquatus*. Therefore, on the basis of the approach to species limits in toucans discussed above, and on account of intergradation in north-west Colombia and southern Panama, we provisionally retain these two taxa as conspecific for now. We could accept this split despite the hybrid zone (which is very narrow) and lack of vocal differences if molecular data were more convincing, but the sampling for this group to date is insufficient. Molecular studies based on samples from the hybrid zone and Magdalena valley should be prioritised.

Black-spotted Barbet *Capito niger*
Gilded Barbet *C. auratus*
This split would result in a name change for eastern Colombian populations, with *niger* becoming restricted to the Guyanan shield. A number of other distinctive subspecies occur in this complex, which were not proposed for species rank.

White-necked Puffbird *N. hyperrhynchus*
Guianan Puffbird *N. macrorhynchus*
These two morphologically distinctive puffbirds have been widely either split or lumped by different authors. A split would result in a name change for Colombian populations. The key study area for these birds is in northern Brazil and the Guyanan shield. We would be broadly in favour of re-splitting these based on the strong morphological differences involved, but those working in northern Amazonia would be better qualified to comment.

Ringed Woodpecker *Celeus torquatus*
Amazonian Black-breasted Woodpecker *C. occidentalis*
Atlantic Black-breasted Woodpecker *C. tinnunculus*
Only one of these three proposed species occurs in Colombia, namely *C. occidentalis* in Amazonia. The form *torquatus* of north-east South America is very different from the other two morphologically. Picidae is a group which, like Ramphastidae, may not be well-suited to the species scoring system in some cases (Remsen 2015; although see above discussion of *Campephilus* for a new proposal in this family with vocal and other support). We pend a decision on this split, in the hope that insights from those who know these populations better in Brazil and Venezuela may come to light.

6. Parrot splits

Del Hoyo & Collar (2014) split the following Psittaciformes which occur in Colombia:

- Black-legged Parrot *Pionus xanthomerius* (which occurs in Leticia, Amazonas) from Yellow-tailed Parrot *P. xanthurus* and Green-thighed Parrot *P. leucogaster*.
- Northern Festive Amazon *A. bodini* (of the Orinoco drainage, including in eastern Colombia) from Southern Festive Amazon *A. festiva* (of the Amazonian drainage, including in eastern Colombia).
- Red-lored Amazon *A. autumnalis* (of Central America and northern and western Colombia) from Lilacine Amazon *A. lilacina* (of the Ecuadorian Chocó) and Diademed Amazon *A. diadema* (of Amazonian Brazil).
- Southern Mealy Amazon *A. guatemalae* (of South America) from Northern Mealy Amazon *A. farinosa* (of Central America), as also suggested by Wenner *et al*. (2012).
- Painted Parakeet *Pyrrhura picta* (of the Guyanan shield and eastern Venezuela*)* from Sinu Parakeet *P. subandina* (presumed extinct, of Sinú drainage below PNN Paramillo, Colombia), Perija Parakeet *P. caeruleiceps*, and other extralimital forms.
- Scarlet-fronted Parakeet *Psittacara wagleri* (of the Colombian Andes) from Cordillera Parakeet *P. frontatu* (of the Ecuadorian and Peruvian Andes).
- Choco Parakeet *P. pacifica* (of the Colombian and Ecuadorian Chocó) from Maroon-tailed Parakeet *P. melanura* (of Amazonia and the upper Magdalena valley).
- Turquoise-winged Parrotlet *Forpus spengeli* (of northern Colombia) from Blue-winged Parrotlet *Forpus xanthopterygius* (of Amazonia and eastern South America), as subsequently suggested by Bocalini & Silveira (2015).

Parrots can be a difficult group taxonomically, due to voice being learned. Some of the populations listed above are almost unknown in life. In light of the number of other situations examined this year, it has not been possible to carry out a detailed review of the taxonomy of all these birds also. These proposals will therefore be pended whilst we study specimens in detail and collate further fieldwork data.

Conclusions and observations on del Hoyo & Collar (2014), committee-based taxonomies and the Tobias *et al.* (2010) scoring system

In the texts above, we conclude that del Hoyo & Collar (2014)'s splits for Trochilidae (hummingbirds) occurring in Colombia are generally solid (6 splits are accepted and 5 largely extralimital situations pended). For other small

families, we accepted splits or lumps in Bucconidae (puffbirds) (1, with 2 pended), Picidae (woodpeckers) (1 with 2 pended), Rallidae (rails and other gallinaceous waterbirds) (1), Scolopacidae (snipes) (1) and Strigidae (owls) (1). We rejected new taxonomic proposals in Anatidae (ducks, 1) and Ramphastidae (toucans, 12, of which 3 could potentially be recut following further studies, and 1 pended). Various other situations, largely involving extralimital forms, were also pended.

Del Hoyo & Collar (2014) have drawn attention to several strong candidates for species rank, various of which lacked recent attention. The attempted expediency and internal consistency of their approach are noteworthy. There is also a conservation imperative. As an example, the now critically-endangered Blue-bearded Helmetcrest *Oxypogon cyanolaemus* was first recognised as a result of work connected with this initiative (Collar & Salaman 2013) and rediscovered soon after attention had been drawn to its taxonomic status and plight (Rojas & Vasquez 2015). Other threatened, formerly non-recognised species, such as *Coeligena consita*, were doubtless sleep-walking towards extinction owing to a lack of attention. Taxonomy is critical for conservation, because unless species limits are accurate, resources will be diverted towards the wrong priorities. This initiative reflects a concern of many conservationists that the taxonomic tools with which we work are blunt, inconsistent and inaccurate.

We would contrast the expediency of del Hoyo & Collar (2014) with the frustrating inaction of current processes for taxonomic change in the ornithological community. From making a taxonomic finding in the field, lab or museum to preparing a manuscript of sufficient quality for some journals or committees might take 3-5 years, with a good wind. It then might take a year or more for peer review, another six months to see a paper published, a year or more before a proposal is put to a committee and 1-3 years for the committee to pontificate upon it. In the event of a positive outcome, BirdLife International would then consider its own taxonomic approach. If it agreed, then, the next year, it would assess threats. IUCN would finally reflect BirdLife treatments in its threatened species designations some time after that. Situations such as *Oxypogon* have been addressed more quickly, due to rapid publication in this journal, rapid submission of proposals to ornithological committees and NGO attention, but this is more the exception than the norm. The entire process from discovery to recognition of an engangered bird species can more typically take 10 years, which is hardly appropriate given the current rate of habitat loss in many parts of the tropics.

The expediency, rationality and consistency issues facing taxonomy and conservation in general, which del Hoyo & Collar (2014) rightly seek to address, are well-illustrated by several cases relevant to Colombia:

- 'Paltry' Tyrannulets in the *Zimmerius improbus / vilissimus* group were split by Ridgely & Tudor (1994). This was endorsed in a short note within a paper in this journal, which included sonograms and a photograph of specimens of proximate forms (Donegan *et al.* 2009). A further re-arrangement was supported by Rheindt *et al.* (2013)'s molecular study. They proposed splitting populations in the two original sub-groups into more species. Newly recognised or proposed forms occurring in Colombia are illustrated in Donegan *et al.* (2012) and McMullan & Donegan (2014). All relevant splits are accepted by Gill & Donsker (2015) but not by the American Ornithologists' Union's South American committee (AOU-SACC) or North American committee (AOU-NACC). Remsen *et al*. (2015) (AOU-SACC) rejected Ridgely & Tudor (1994) proposals and Donegan *et al.* (2009)'s supporting materials, largely on grounds of subjective quality of the publications and the promise of a forthcoming study which appeared four years later. Now some six years since the proposal was made and 21 years since Ridgely & Tudor (1994)'s split was first proposed, these authorities have not reconsidered yet. The vocal, morphological and molecular differentiation between some of these tyrannulets is such that they might better be placed in different genera than as conspecifics. Some populations have small distributions and narrow elevational ranges, meaning that they may be endangered.

- The Santa Marta subspecies *lehmanni* of Black-throated Tody-Tyrant *Hemitriccus granadensis* is vocally quite distinct from Colombian Andean races (T. Ellery data), but there seems little point publishing on this topic when ornithological authorities would probably wish to see a study also involving Peruvian populations before revising the taxonomy of this group. Requirements of some committees for a broad geographical study of entire groups are a barrier to recognising endangered local populations worthy of species rank. Similar situations exist with Grey-breasted Wood-Wren *Henicorhina leucophrys* and Rufous Antpitta *Grallaria rufula*, both of which in Colombia comprise multiple good species that are well-known to observers. Both have been subjects of "very soon to be published" studies for a decade or more. Again considering the Perijá mountains, probably Phelps' Brush-Finch *Arremon perijanus* and Perija Antpitta *Grallaria (rufula) saltuensis* should both be categorised as endangered or critically endangered species. The *Arremon* split was subject to a published molecular and vocal study in a major ornithological journal that has been widely accepted by all relevant committees, whilst the *Grallaria* remains in a state of perpetual review resulting in *saltuensis* attracting less attention from conservationists and governmental policy-setters.

- Observers visiting ProAves' new reserve in Perija are often baffled as to why some of its most distinctive residents are split whilst others are not. Another example from this region is the Perija Brush-Finch *Atlapetes nigrifrons*. This was proposed for species rank almost a decade ago in a peer-reviewed publication in a reputable ornithological journal (Donegan & Huertas 2006). The split is also supported by published a vocal study in this journal (Donegan *et al*. 2014). Unpublished molecular data is inconsistent with any close relation to Yellow-breasted Brush-Finch *A. latinuchus* (C.D. Cadena in Remsen *et al*. 2015). Several members of Remsen *et al*. (2015) doubted Donegan & Huertas (2006)'s results or interpretations and rejected this split, preferring to wait for a molecular study (involving one of their members) to be published before making taxonomic changes. The promised molecular study has not been published 9 years on. During that time, deforestation of lower elevations of the Perija mountains, which supposedly harbour no endemic bird species worthy of protection, has been catastrophic. (Political instability has principally complicated conservation action in this region until very recently, but the situation has not been prioritised.) There were suggestions that this taxonomic change should not take place without a broader taxonomic review, although that seems misplaced given that Donegan & Huertas (2006) and Donegan *et al*. (2014) studied morphology and voice respectively of the entire *latinuchus* group, concluding in each case that *nigrifrons* was exceptionally different. Gill & Donsker (2015) accepted this split in 2014, but Remsen *et al*. (2015) have not reconsidered it yet.

- Sapphire-bellied Hummingbird *Lepidopyga lilliae* is widely thought to be a colour morph and not a valid species. It was recognised as a species by del Hoyo & Collar (2014) and even Donegan & McMullan (2014, reluctantly, with a note that it is probably invalid). This 'species' is treated as critically-endangered by BirdLife International, so continues to distract observers' and conservationists' attention. Studies that might be acceptable to committees as a basis for taxonomic change remain unpublished.

This situation of delay is compounded because AOU-SACC, the main taxonomic committee for South America, presided over a broad rejection of many sensible taxonomic changes proposed in field guides by Ridgely & Tudor (1989, 1994) and Ridgely & Greenfield (2001) based on research in Ecuador and elsewhere in South America. After moving to AOU-SACC treatments for the Colombian bird checklist (Salaman *et al.* 2008b), we have spent much time and effort re-studying some of these situations and re-adopting previously accepted splits, for example in *Geotrygon* (Donegan & Salaman 2012) and *Sirystes* (Donegan 2013). In contrast to the treatment of Colombia's endemic *Zimmerius* and *Atlapetes* species, these taxonomic proposals were accepted promptly by both Remsen *et al*. (2015) and Gill & Donsker (2015). Work on such situations distracts researchers' attentions from publishing more original taxonomic pieces.

Members of some committees often will cite a lack of sufficient data or detailed study, in respect of proposals in the field guide or some periodical literature, to reject proposed taxonomic changes, meaning that the taxonomy of the Bible of the museum community (the *Peters Checklist*: e.g. Peters 1945, 1948) can be retained. Taxonomic arrangements based on decades-old, brief and unsubstantiated viewpoints and a fraction of the specimen or vocal data that exists today are thus preferred over the conclusions of more detailed studies, including those published in reputable journals. In particular, modern reinterpretations of morphological and distribution data, even if based on large new datasets, are regarded by some persons as an unacceptable method for revisiting *Peters Checklist* taxonomies: vocal support is near-obligatory and molecular data is preferred. Proposals for *Atlapetes* (discussed above) and Slate-crowned (Guianan) Antpitta *Grallaricula nana kukenamensis* are examples of this. Such approaches fail to take into account an unfortunate reality that many 'species' occurring in South America have broad distributions and occur across large, topographically difficult areas (some of which are remote, inaccessible or politically unstable) or are rare, meaning that we may not reasonably demand gap-free datasets. Where gaps do exist, it should be acceptable to use comparative approaches to determine a provisional status by considering those characters which can be analysed and available data.

Another barrier to a more rational avian taxonomy emerging is a preoccupation among the community with relative trivia: English name hyphenation, linear orders of lists, competing vernacular names and the spellings of scientific names. In our recent field guides for Colombia (McMullan *et al*. 2010, 2011, McMullan & Donegan 2014), we adopted a straightforward approach to such trivia that others would be encouraged to consider:

- The International Code for Zoological Nomenclature should be followed without modification or deviation (cf. Nemésio *et al*. 2013).

- Where more than one competing vernacular name in widespread usage exists (regionally or more generally), they can both be denoted.

- Parkes (1978) made sensible proposals for the formation and hyphenation of English names

which should best be followed. These were widely used for decades until Gill & Donsker (2015) and Remsen *et al*. (2015)'s hyphen wars.

We also, sometimes reluctantly, deal with these more trivial issues in this annual series of papers and other publications. In an ideal world, committees who have unresolved species rank issues to address should prioritise consideration of those instead.

A final confounding issue is that many birds have a distribution within the region of competence of multiple committees, who sometimes take different approaches. Different committees are staffed by different persons who may have different perspectives about avian taxonomy, particular situations or particular publications. European committees often split populations which U.S. committees lump, resulting in widespread confusion among users of bird names and inconsistent treatments towards inter-continental vagrants and pan-global species, such as the Herring Gull *Larus argentatus* (where we would side with the AOU's approach for now, as discussed above). Our work with the Colombian checklist and field guides may be considered a further source of confusion, although it predates (by many years) attempts by other ornithologists to publish a rival Colombian checklist ("El Listero Clandestino" in Remsen *et al*. 2015). Del Hoyo & Collar (2014)'s work might be cited in such terms also, given its overlap of scope with other world lists (e.g. Dickinson & Remsen 2013, Gill & Donsker 2015). Separate developments in contemporaneous taxonomic initiatives ultimately tend to get ironed out over (many) years, through follow-up studies, although this is not always satisfactory as discussed above.

We are unable to be optimistic that the heliocentric taxonomic changes discussed in this paper will be reflected in some international or regional committee checklists for many years. Some will doubtless cite the somewhat superficial nature of the discussions above and the absence of a sufficiently good study to change treatments. More detailed treatises by authors with better credentials including more detailed statistical analyses based on perfect data sets in more important journals may be published one day and lead others to accept some of del Hoyo & Collar (2014)'s proposals. Additional research into the molecular biology of some of these forms might also give more confidence. However, that should not in our view prevent taxonomists taking views based on existing data, nor changing such views later should it become necessary to do so. We are all collectively "fiddling while Rome burns", if being closed-minded to new findings that may challenge preconceptions or requiring perfect data sets for change. We agree with the principle that those working on taxonomic questions should consider only taxonomic issues, because that is what we do. However. this principle does not preclude the possibility of decision-making based on existing data sets, nor changing taxonomies back to how they were, if a further publication refutes findings of a previous one.

The above criticisms of the current *modus operandi* of ornithological taxonomy are set out partially as a result of the visceral reaction to del Hoyo & Collar (2014)'s work on the part of some members of the ornithological establishment (Remsen 2015, Sangster 2015). Clearly, we do not agree with all of del Hoyo & Collar (2014) taxonomic changes either. By conservatively pending many of them, criticisms of inaction and unreasonable demand for more data may apply to us too, but this was done principally for situations not involving Colombia. We are a small group working with the world's largest national fauna, so must prioritise. We hope that experts in other regional or national faunas can consider others of these new taxonomic proposals in more detail, and soon.

Rather than abandonment or restriction of the Tobias *et al*. (2010) system (Remsen 2015), we would instead draw the following conclusions:

1. *The species scoring system should not be used in isolation*. *Appropriate benchmarks for different families under the scoring system should be considered*. The non-passerines comprise a diverse group of bird families. Intra-specific plumage differentiation in toucans (as measured by the scoring system) exceeds that found in hummingbirds, based on this study. We would restrict any abandonment of proposed new 'scoring system'-based taxonomies (Remsen 2015) to Ramphastidae and *Oxyura jamaicensis*, for now. In contrast, we agreed with at least some taxonomic changes proposed to six diverse non-passerine families. A "one size fits all" score of 7 as a benchmark for species rank was supported by other data in our study for several ecologically diverse families, but it does not seem appropriate for all birds. The scoring system should be used as a guide and point of reference, like other statistical frameworks for assessing species rank (cf. Isler *et al*. 1998).

2. *The species scoring system can be used to identify novel situations in need of revision*. Some of the splits covered here are ones which we originally proposed or have previously adopted (e.g. *Campephilus splendens*, *Amazilia humboldtii*). Other proposals were novel to us. We were surprised and intrigued to find out how solid some of the proposals were. National, regional and international committees' lists can be enhanced by considering del Hoyo & Collar (2014)'s taxonomic proposals.

3. *The species scoring system is a useful and helpful benchmark*. The concept and analyses behind it are, generally speaking, solid. The outputs of the system

can give greater confidence to new taxonomic proposals.

4. *Consistency and fair consideration of new methods*. It is easier to criticise a new idea than to come up with one, but that does not necessarily mean that the innovation was wrong or cannot be improved upon or worked with.

Other splits

Santa Marta Blossomcrown *Anthocephala floriceps*
Tolima Blossomcrown *A. berlepschi*
We follow Lozano-Jaramillo *et al.* (2014) in splitting these two Colombian endemic hummingbirds, principally based on the data and photographs presented by F. G. Stiles in Remsen *et al.* (2015).

Figure 27. Tolima Blossomcrown *A. berlepschi* Vereda Cai, Ibagué (A. Quevedo, 22 April 2015).

Providencia Vireo *Vireo approximans*
Thick-billed Vireo *V. crassirostris*
Bond (1961) noted that Thick-billed Vireo gives a song "with many variations", "but on Old Providence it utters a simple chatter like that of a Mangrove Vireo". Thick-billed Vireo is not otherwise distributed close to Providencia: it breeds in the Bahamas, Turks & Caicos Islands, Cayman Islands, Haiti (Tortuga) and northern Cuba, with vagrants in Florida, USA (Raffaele *et al*. 1998). Presumably due to distributions and voice, Raffaele *et al.* (1998) considered that the records of Thick-billed Vireo on Providencia were misidentified and relate instead to Mangrove Vireo *V. pallens*. Brewer (2010) therefore placed *approximans* in *pallens*. Raffaele *et al*. (1998)'s reference to "records" led McMullan *et al.* (2010, 2011) and McMullan & Donegan (2014) erroneously to consider *crassirostris* a "rare boreal migrant" when it is a resident species. Hilty & Brown (1986), McNish (2003) and Salaman *et al.* (2001, 2008b, 2009, 2010) also each continued to treat *crassirostris* as the species occurring on Providencia. A further possible taxonomy emerged more recently when *approximans* was split by Gill & Donsker (2015).

Recent molecular studies of the family do not include samples of *V. caribaeus* or *V. (?.) approximans* (Slager *et al*. 2014). In the absence of other data, we reviewed vocalisations of Providencia Vireo and possible related species (San Andrés Vireo *V. caribaeus*, Thick-billed Vireo *V. crassirostris* and Mangrove Vireo *V. pallens*). We compared vocalisation structures subjectively, in order to assess relations.

Figure 28. Colombia's endemic insular vireos. Above: San Andrés Vireo *V. caribaeus* (A. Quevedo, 24 October 2005). Below: Providencia Vireo *V. approximans* (P. Salaman, 27 October 2001 at 13°20'36.86"N, 81°23'17.18"W). Note the differences in tertial markings and crown/mantle coloration.

In Figure 29, sonograms of some of the recordings inspected are shown, demonstrating vocal variability in each of the species studied. Mangrove Vireo has a highly variable vocal repertoire. Its vocalisations all consist of a note of a particular shape which is repeated again and

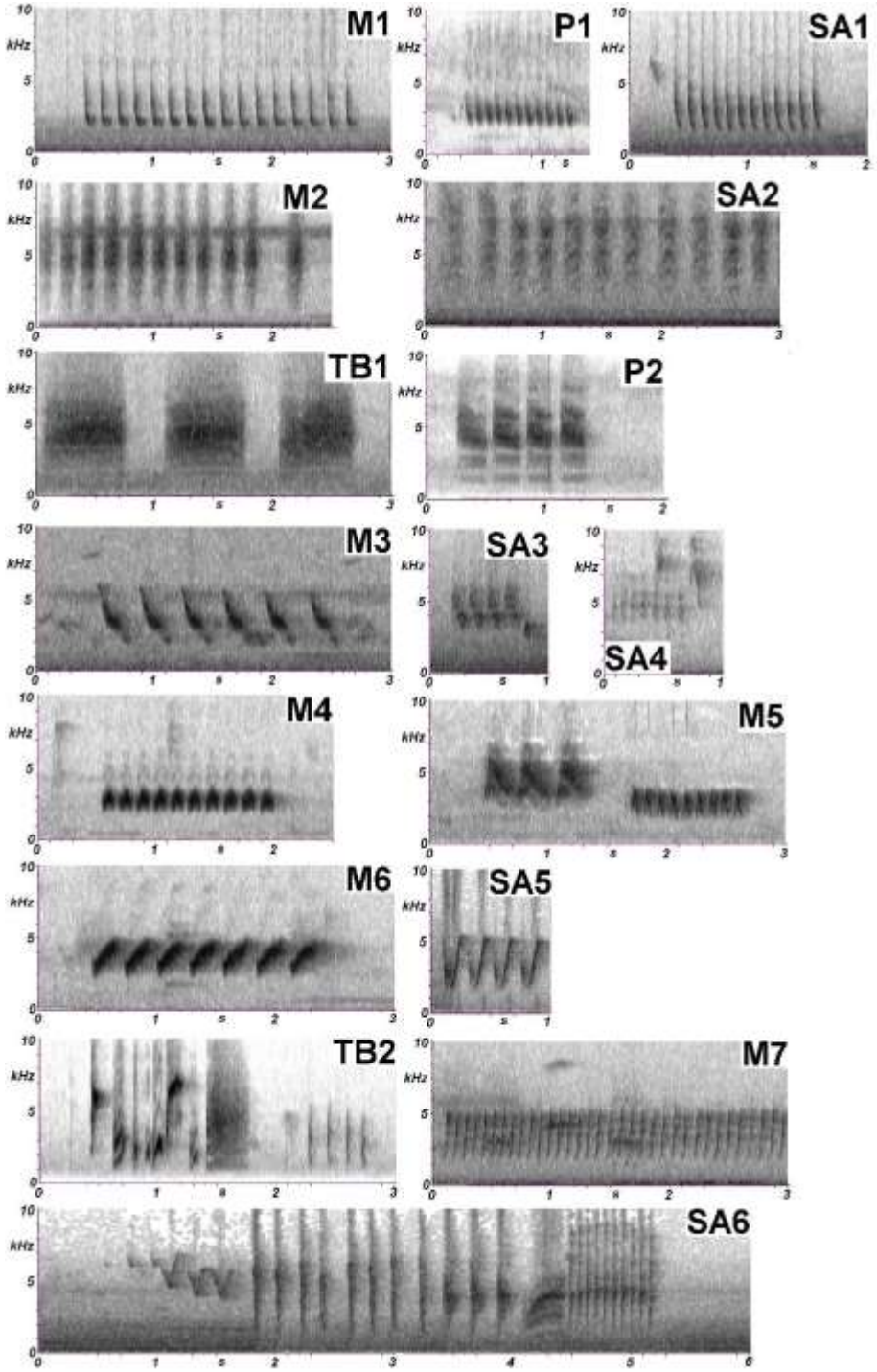

Figure 29. Vocalisations of Mangrove Vireo *V. pallens* (M), Providencia Vireo *V. approximans* (P), San Andrés Vireo *V. caribaeus* (SA) and Thick-billed Vireo *V. crassirostris* (TB). First row, repeated downstroke calls. M1 Las Coloradas Rd, Yucatán, Mexico (XC103432: N. Larsen). P1 Providencia, Colombia (XC185550: J.A. Alonso de Juan). SA1 El Radar road, San Andrés, Colombia (XC7768: T. Mark). Rows 2-3 Grating or contact calls. M2 Bahía de San Lorenzo, Honduras (XC143350: J. van Dort). SA2 Scrub west of San Luis, San Andrés, Colombia (XC86773: T. Donegan). TB1 Cayo Peradon Grande, Cuba (XC256884: H. Matheve). P2 Providencia, Colombia (XC185547: J.A. Alonso de Juan). Rows 4-5, Slower downstroke calls and up-downstroke calls. M3 XC103420 (as XC103432). SA3 El Radar road, San Andrés, Colombia (XC7770: T. Mark). SA4 Big Pond, San Andrés, Colombia (XC86783:T. Donegan). M4 Tikal National Park, old airstrip, Peten, Guatemala (XC125977: M. Nelson). M5 Carambola Gardens, Sandy Bay, Roatán, Bay Islands (XC264269: M. McKewy Mejía). Row 6, Upstroke calls. M6 Tikal National Park, Petén, Guatemala (XC125976: M. Nelson). SA5 San Andrés island, Colombia (XC82864: C. Gómez). Rows 7-8, More complex or longer calls. TB2 Cayo Peradon Grande, Cuba (XC256885: H. Matheve). M7 Marble Hill Farms, José Santos Guardiola, Bay Islands, Honduras (XC185199: O. Komar). SA6 San Andrés island, Colombia (XC82872: C. Gómez).

Table 2. Summary of changes resulting in changes of numbers of species in particular categories and new species total. For key to codes used in header, see Donegan *et al*. (2015).

Change	Species	Conf.	Obs.	Obs Bog	SA.	SA Obs	Obs+	Bog	Ext	Int	Int Obs	Esc	Esc Obs	Total
2014 Checklist totals		**1,833**	**46**	**1**	**13**	**7**	**3**	**4**	**1**	**3**	**1**	**[9]**	**[7]**	**1912 [1,928]**
Species added	Subtropical Pygmy-Owl *Glaucidium parkeri*	+1												
	Fiery-tailed Awlbill *Avocettula recurvirostris*	+1												
	Pale-rumped Swift *Chaetura egregia*	+1												
Splits	Western Wedge-tailed Hummingbird *Schistes albogularis*	+1												
	White-tailed Hillstar *Urochroa leucura*	+1												
	Perija Starfrontlet *Coeligena consita*	+1												
	Green Inca *Coeligena conradii*	+1												
	Double-banded Puffbird *Hypnelus bicinctus*	+1												
	Splendid Woodpecker *Campephilus splendens*	+1												
	Santa Marta Blossomcrown *Anthocephala floriceps*	+1												
Lump	Carribean Coot *Fulica caribaea*	-1												
Changes of status	Band-rumped Storm-Petrel *Oceanodroma castro*	+1	-1											
	Golden-spangled Piculet *Picumnus exilis*	+1	-1											
	Yellow-bellied Flycatcher *Empidonax flaviventris*	+1			-1									
	Yellow-throated Tanager *Iridisornis analis*	+1	-1											
Overall Change since 2014 Checklist		**+13**	**-3**		**-1**									
New totals per category 2015		**1,846**	**43**	**1**	**12**	**7**	**3**	**4**	**1**	**3**	**1**	**[9]**	**[7]**	**[1,937]**
Less escaped species														**[-16]**
TOTAL BIRD SPECIES FOR COLOMBIA														**1,921**

again. Different particular vocalisations often have very different note shapes, but variation in note shapes within each call is minimal. Our sample includes calls consisting of repeated: downstrokes (Fig. 29, M1, M3), upstrokes (Fig. 29, M6, M7), harsh notes appearing as a wall of noise on sonograms (Fig. 29, M2) and symmetrically shaped up-down notes (Fig. 29, M4, M5). In contrast, Thick-billed Vireo vocalisations are more complex, with multiple differently shaped notes typically occurring in particular vocalisations (Fig. 29, TB2) other than alarm calls (Fig. 29, TB1).

All four species give harsh alarm calls. In Thick-billed Vireo (Fig. 29, TB1), the individual notes are longer than in any other species studied here. In Mangrove Vireo (Fig. 29, M2) and San Andrés Vireo (Fig. 29, SA2), individual notes are of similar length, but in San Andrés Vireo higher tones are accentuated and up or up-down shaped note shapes are visible on sonograms. In Providencia Vireo, gaps between notes are shorter than in other species and notes are longer than both Mangrove and San Andrés Vireos.

Three of the populations also give songs comprising fast downstrokes (Fig. 29, M1, SA1, P1), which in Mangrove Vireo are slowest and in Providencia Vireo are of narrowest bandwidth.

San Andrés Vireo and Thick-billed Vireo both give highly complex songs comprising a variety of different note types (Fig. 29, SA6); examples of these were not found in other populations.

Neither San Andrés Vireo nor Providencia Vireo is an obligate mangrove species. Both are found on dry scrub, typically at slightly higher elevations, being rare or absent in mangroves. Mangrove Vireo is common in the mangroves of the Yucatán, although it does occur in some inland habitats.

Overall, we would concur with Brewer (2010)'s transfer of *V. approximans* to *V. pallens* as a more accurate reflection of relations than retaining it with *V. crassirostris*. However, we prefer treating Providencia Vireo as a separate species in light of its vocal and plumage differences from other congeners.

This split results in no change in numbers on the Colombian checklist, only a change in the name for the vireo occurring on Providencia.

Tricolored Brush-Finch *Atlapetes tricolor*
Choco Brush-Finch *A. crassus*
This split is accepted on the basis of vocal and molecular analyses by Sánchez-González *et al*. (2014). Only the latter occurs in Colombia.

Genus names, linear order, spellings, English names and pended proposals

The following changes to names and orders, which are either under consideration or have been accepted by Remsen *et al.* (2015), are relevant to Colombia and adopted here. Proposal numbers and, where appropriate, key references supporting these changes are cited below:

569. Revise the generic classification of the Mountain-Tanagers (Sedano & Burns 2010) (T. Donegan).
607. Recognize a new species-level taxonomy of trumpeters (Psophiidae) (Ribas *et al.* 2012) (T. Pegan & J. Hruska); option 1, which results in no change to species or subspecies in the Colombian checklist).
641. Change English names of: (A) Bay-winged Cowbird, (b) Red-breasted Blackbird and White-browed Blackbird, and (C) Band-tailed Oropendola and Casqued Oropendola (J.V. Remsen).
644B. Modify linear sequence of species in Phoenicopteridae (Torres *et al.* 2014) (A. Jaramillo).
649. Revise linear sequence of species in Fregatidae (Kennedy & Spencer 2004) (J.V. Remsen).
650. (A) Resurrect *Mustelirallus* for *Porzana albicollis* and (B) transfer *Neocrex* to *Mustelirallus* (García *et al.* 2014) (J.V. Remsen).
651. Resurrect *Porphyriops* for *Gallinula melanops* (García *et al.* 2014) (J.V. Remsen).
653. Change English name Brush-Finch to Brushfinch (J.V. Remsen & T. Schulenberg).
654. Elevate *A. f. berlepschi* to species rank (Lozano *et al.* 2014) (see above).
656. Revise generic classification of 6 species of *Hylophilus*: (A) resurrect *Pachysylvia* and (B) recognize *Tunchiornis* (Slager *et al.* 2014, Slager & Klicka 2014).
660. English names for Lineated Woodcreeper group (only part B relevant for Colombia) (J. V. Remsen).
661. Revise linear sequence of Vireonidae (Slager *et al.* 2014) (D. Slager).
663. Change English name of *Ramphastos ambiguus* (J.V. Remsen).
665. Revise the classification of sandpipers and turnstones (Arenariinae) (Gibson & Baker 2012) (R. C. Banks)
669. English names of the Blossomcrowns (F.G. Stiles).
670. Recognize *Scytalopus perijanus* as a valid species (Avendaño *et al.* 2015) (see above).
678. Spelling of the name for *Dives warszewiczi* is *Dives warczewiczi* (Manuel A. Plenge).
680. Revise linear sequence of cuckoos (Cuculidae) (Sorenson & Payne 2015) (T. Schulenberg).

The following are pended:

628. Reassign species currently placed in *Myrmeciza* into 12 genera (Isler *et al.* 2013) (part G only).
648. Revise classification of the Phalacrocoracidae (Kennedy & Spencer 2014) (J. V. Remsen).
675. Change South American siskins from the genus *Sporagra* to the genus *Spinus* (E. J. Beckman and C. C. Witt) (Beckman & Witt 2015). New generic arrangements for these birds (*Spinus*, *Sporagra* or *Carduelis*) are proposed with each molecular paper that is published, making fools of us all.

Threat Categories

Updates to the threat status of species occuring in Colombia were made following a further review by BirdLife International that concluded during autumn 2015:

Red Knot *Calidris canutus* LC to NT
Yellow-headed Manakin *Xenopipo flavicapilla* NT to VU
Chestnut-capped Piha *Lipaugus weberi* EN to CR

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Un registro confirmado de *Picumnus exilis* para Colombia

A confirmed record of Picumnus exilis for Colombia

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Nota Corta / Short Note

Picumnus exilis es una especie de carpintero pequeño, encontrada en Brazil, Guyana, Suriname, Guayana Francesa y Venezuela (Winkler & Christie 2002). Se considera presente también en Colombia (Salaman *et al*. 2010, McMullan & Donegan 2014, Verhelst & Salaman 2015), basado en varios registros visuales mencionados en Hilty & Brown (1986), Kingston *et al*. (1992) y Donegan *et al*. (2010).

Visite el municipio de Inírida, Guainía, en febrero del año 2013, donde tuve la posibilidad de apreciar la especie *P. exilis* con algún detenimiento y tomar fotos de un macho adulto (Fig. 1). Este registro fue realizado en el camino a Caño Bonito, a menos 10 minutos del casco urbano. El individuo observado estaba forrajeando en compañía de otras especies de aves.

La especie *P. lafresnayi* también ocurre en el área. Sin embargo, *P. exilis* puede ser diferenciado debido al extenso color blanco/amarillo sobre la frente y bigote, el color rojo de la cabeza y los puntos pequeños sobre la espalda y las coberteras de las alas (Winkler & Christie 2002). Este parece constituir el primer registro "confirmado" que ha sido publicado de la especie para Colombia basado en fotografías, aunque posiblemente otras personas también lo han observado en la región.

Figura 1. Fotografía de *Picumnus exilis* en Guainía.

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Caribbean Colombia: Pelagic Bird observations in 2014 and 2015

Caribe de Colombia: observaciones de aves pelágicos entre 2014 y 2015

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Abstract
Two large areas of Caribbean Colombia, covering over 20,000 sq km combined, were surveyed during June to August 2014 and again during December 2014 to February 2015. The distances from the coast of mainland Colombia ranged from 40 km to 250 km. Two observers were employed on shifts during all daylight hours for a total of 81 days, with a third observer on call. The total numbers of birds seen were low, but included sightings of species not previously confirmed from Carribbean waters off mainland Caribbean Colombian. These included the first confirmed national record of Band-rumped Storm Petrel *Oceanodroma castro* for the country, new records of White-tailed Tropicbird *Phaethon lepturus* and first confirmed Caribbean records of Red-footed Booby *Sula sula*. An unusual pink-breasted plumage of Audubon's Shearwater *Puffinus lherminieri* was observed, which may be due to stain or pollutant staining.

Keywords Pelagic, Colombia, Atlantic, new records.

Resumen
Dos largas areas del Caribe colombiano que cubren cerca de 20,000 kilometros cuadrados fueron evaluados durante junio y agosto del 2014 y nuevamente en diciembre 2014 a febrero 2015. La distancia a la costa fue entre 40 km y 150 km. Dos observadores durante 81 días efectuaron observaciones durante el dia, con un tercer observador de guardia. El número total de aves observadas fue bajo, pero incluyó registros interesantes de especies no confirmadas previamente en aguas del Caribe colombiano. Estos incluyen el primer registro confirmado del paíño de Madeira (*Oceanodroma castro*), nuevos registros del rabijunco común (*Phaethon lepturus*) y primeros registros confirmados del Caribe del piquero patirrojo (*Sula sula*). Se observó un plumaje de color rosa de pecho inusual de Pardela de Audubon (*Puffinus lherminieri*) que al parecer se debería por manchas de contaminantes.

Parablas clave pelagico, Colombia, Atlántico, nuevos registros

Introduction

Our knowledge of the pelagic birdlife of Colombia's Caribbean is limited at present (although see Naranjo 1994, Estela 1994, Estela *et al*. 1994 and other publications cited below). The region is not a significant fishery and is away from major shipping routes: the Panama Canal traffic mostly moves well north of the Colombian shelf. As a result, the area has been subject to few studies, none of them particularly intensive. Now, the offshore Oil & Gas industry has started investigations into deep waters off Colombia. As a result, an opportunity has arisen to make extended observations during preliminary work that may involve bathymetric and environmental base line surveys.

Methods

From late June 2014 until early August 2014 and from mid-December 2014 to the middle of February 2015, we carried out continuous daylight observations of all marine mammals and bird life in various locations in the Colombian Caribbean. The observations did not include migration periods. As a result, very few non-marine species were seen. The areas surveyed are shown in Figure 1. Water depths varied from 2,200 m to 3,800 m in the north area and from 600 to 3,000 m in the southern area. Much of the surveyed area was between 50 km and 100 km offshore, and all of it was within the 200 nautical mile recommendation for acceptable continental national records in South America (Remsen *et al*. 2015) and all observation points fall within Colombian national waters.

There was no fishing activity observed. No enticements such as 'chumming' were used to attract birds to the vessel, in order to ensure we had an unbiased sample of seabird presence and movements.

A northern study area, off Santa Marta, was surveyed in three periods, 11 July 2014 to 2 August 2014, 19 to 22 December 2014 and 18 January to 10 February 2015. In this northern area, the weather was consistently windy; 64% of the July/August survey period had winds at or greater than Beaufort force 8, gale or above. The winds were north east to easterly. Although sea conditions were poor, with wave heights often over 3 m and up to 6 m on occasions, visibility was good and there was very little rain. During the worst of the weather, very few birds were seen. Indeed, during a 4-day period in mid-July, no birds were seen at all. The short survey in December in the northern area was cut short by heavy seas. Early January 2015 had very poor weather in the Colombian Caribbean with more gale force winds and choppy seas (see also Donegan & Huertas 2015 in relation to the similar situation on San Andrés Island). The weather was only marginally better in late January with the last two days of the survey in February being the only days with

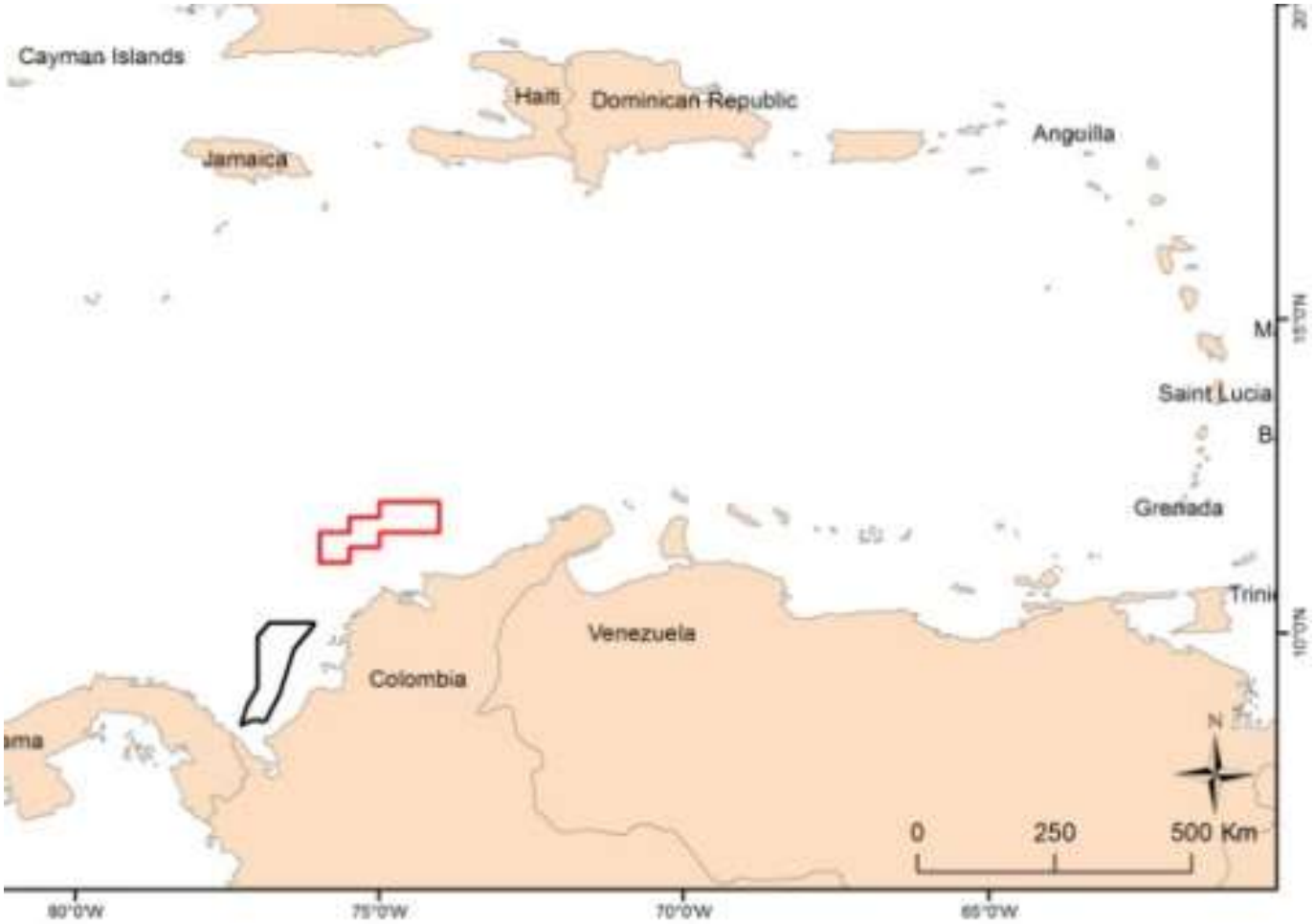

Figure 1. Observation Areas. The northern area (north of Santa Marta, marked red) had 51 days' observation. The southern area (west of Cartagena, marked black) had 40 days' observation.

slight seas in the northern area. Again, in January, several days passed without a bird being seen.

A southern study area, to the west of Cartagena, had better sea conditions during both periods of observation from 26 June 2014 to 9 July 2014 and 25 December 2014 to 17 January 2015 and both periods had a longer species list and greater numbers of birds observed than the northern area.

Results

The numbers of birds seen were low. In both the boreal summer and winter periods, up to four continuous days resulted in no observations at all. The most regularly seen species were boobies Sulidae, particularly, Masked Booby *Sula dactylatra* (Plate 1) and Brown Booby *Sula leucogaster* (Plate 2). However, their distributions were very different (Table 1; Figs. 2-3). Brown Boobies were common in the southern area both in July and January but much rarer in the northern area. The opposite was true of Masked Boobies. In the western area, 51 individual Brown Boobies were seen, with a greater density in the southern section of it, but only a single Masked Booby was seen. In the northern area, just five individual Brown Boobies were observed but twenty individual Masked Boobies were seen at seven widely spread locations.

The only other species reaching double figures of observations during the 81 days of observation was the Magnificent Frigatebird *Fregata magnificens*, which is an abundant species on Colombia's coasts and sometimes drifts further out to sea, but these were observed only in the southern area, where seven were seen.


Plate 1. Masked Boobies regularly used the ship's updraft to wait for fish to surface and often stayed with the vessel for several hours (Javier Alarcón, 12 January 2015).

Plate 2. Brown Boobies were the commonest sightings, but far rarer in the north than the south (Javier Alarcón, 27 December 2014).

In addition to these three commoner species, Red-footed Boobies *Sula sula* were seen on two days during January in the southern area and one each in July and January in the northern area (Plates 7-8). Two were brown phase and two were white phase. No white-tailed brown phase birds were observed. Red-footed Boobies would stay on the boat for longer periods than any other species, resting and preening whilst perched on masts. One bird seen in the northern area stayed around the vessel from early 29 January 2015 until nightfall on 30 January 2015. Relevant coordinates for these observations and distances from the shore in each case are set out in Table 1. Red-footed Booby is known from various sight records in Colombia and has been considered to occur broadly in the Carribean region, but the species was only recently 'confirmed' for the country based on birds photographed on Malpelo in the Pacific (López-Victoria & Estela 2007; see Donegan *et al*. 2010). This species has been recorded previously on San Andrés Island (McNish 2003) but these records represent the first confirmed records of this species for the Colombian continental Caribbean region.

Table 1: Red-footed Booby *Sula sula* observations.

Date	No. of individuals	Coordinates	Distance from shore
2/8/14	1	11^{o}50.55'N, 75^{o}33.10'W	56 km
15/1/15	1	09^{0}40.85'N, 76^{o}50.15'W	89 km
16/1/15	1	09^{0}14.91'N, 76^{o}58.42'W	68 km
29/1/15	1	12^{0}03.36'N, 75^{0}17.86'W	236 km

A White-tailed Tropicbird *Phaethon lepturus* stayed with the vessel for 15 minutes on 7 February 2015 in the northern area (11^{o}38.95'N, 75^{o}38.27'W, 43 km from shore) using the ship's updraft to hover over the bridge. It arrived just after 14.00 hrs and in the bright sunny weather it looked a beautiful pure white bird with translucent wings. The dark primaries and covert marks were visible through the wings from underneath. The bird showed no barring when the upper-wing was seen as it left us and it appeared to be a fully adult bird. The bill was a bright orange. The streamers were quite long but not the extreme length that the observers had seen before in this species. The assumption is that it was an adult but not in full breeding plumage. No photograph was taken. There are only previously sight records of this species for Colombia (Hilty & Brown 1986; Salaman *et al*. 2010) of which this is another example, albeit one by multiple observers experienced with the species.

Two Band-rumped Storm Petrels *Oceanodroma castro* were observed on 28 June 2014 at *c*.13:05 in the southern study area. They were photographed 300 m from the boat (Plates 3,4) but seen closer, at 10^{0}03.24'N, 76^{0}24.39'W, 77 km distance from shore.

Plate 3 Two Band-rumped Storm Petrels (Paola López, 28 June 2014). Original shot and close-up.

The relatively direct flight often with slightly bowed wings and including long glides immediately suggested Band-rumped Storm Petrels. The narrow bright white rump band, square ended tail, with no feet visible beyond the tail plus the greyish covert bar that did not quite reach the leading edges of the wings confirmed the identification. The wings were either too dark or rather long for Elliot's Storm-Petrel *Oceanites gracilis*, Wilson's Storm-Petrel *Oceanites oceanicus* or Leach's Petrel *Oceanodroma leucorhoa* and the tail too square-ended (Harrison 1983). Two photographs (Plates 3-4) were obtained of the two birds, which in our view are sufficient to confirm the identification without doubt. This species has been reported previously based on 1983 sight records in the Pacific region of Colombia (Hilty & Brown 1986) but there are, to our knowledge, no previous confirmed national records.

Plate 4. One of the same two Band-rumped Storm Petrels as in Plate 3, showing the wing covert bar well (Paola López). Original shot and close-up.

Other notable observations included Black-capped Petrels *Pterodroma hasitata* during both the winter and summer observation periods in the southern area. Dates and coordinates for Black-capped Petrels observations were 26 June 2014 ($10^0$27.83'N, $76^0$18.27'W), a flock of four on 28 June 2014 ($10^0$09.28'N, $76^0$20.41'W) and singletons on 6 January 2015 ($09^0$30.92'N, $76^0$54.90'W) and 26 January 2015 ($12^0$21.95'N, $74^0$04.03'W).

Audubon's Shearwaters *Puffinus lherminieri* were also seen in the southern area in the summer period, with 6 individuals observed on 30 June 2014 and one each on 6 and 7 July 2014. None were seen during the winter months. At least three individuals showing pink underparts like the individual in Plate 5 were observed in June. The assumption is these were individuals from the subspecies breeding in offshore Panama (*loyemilleri*) or Providencia Island in the Caribbean. The pink coloration was not an artifact of photography. It may be from soil staining in the burrow or could have been caused by pollutants, although it looks remarkably neat for staining. This unusual plumage feature should be investigated further. If caused by soil-staining, then these birds must breed during this period.

Plate 5. Audubon's Shearwater *(Puffinus lherminieri*) (Paola López, 30 June 2014).

Table 2: Audubon's Shearwaters *Puffinus lherminieri* observations.

Date	No. of individuals	Coordinates	Distance from shore
30/6/14	2	$09^0$03.55'N, $76^0$52.66'W	46 km
30/6/14	4	$09^0$02.51'N, $76^0$51.11'W	44 km
6/7/14	1	$09^0$54.45'N, $76^0$55.41'W	114 km
7/7/14	1	$10^0$15.61'N, $76^0$56.32'W	139 km

Two large shearwaters were seen in both July and January in the northern area on 24 July 2014 at $12^0$05.58'N, $75^0$19.12'W and 21 December 2014 at $12^0$02.08'N, 74° 03' 50".W", but they were too distant to be identified. They looked too pale for Sooty Shearwater *Puffinus griseus*. Cory's Shearwater *Calonectris diomedea* was suspected and this species has been recorded recently in the Caribbean from a salvaged specimen (Ruiz-Guerra & Cifuentes-Sarmiento 2010; see Donegan *et al*. 2011).

Plate 6. A Brown Noddy welcomed us to the northern area on the but was the only individual seen in the 81 days of observation (Israel Ribeiro, 19 December 2012).

Terns were seen occasionally throughout the survey but were never common. Four species were positively identified. They were Brown Noddy *Anous stolidus* on 19 December 2014 in the northern Area (12^{o}00.84'N, 74^{o}19.12'W) when a single bird rested on the vessel (Plate 6). A flock of 8 Black Noddies *Anous minutus americanus* were seen on 1 July 2014 close to the boat in the southern area (09^{o}23.28'N, 76^{o}58.86'W). Two Forster's Terns *Sterna forsteri* in non-breeding plumage were seen on 4 July 2014 in the southern area (08^{o}59.63'N, 77^{o}07.75'W). A single Royal Tern *Thalasseus maximus* was seen in the northern area (12^{o}22.67' 74^{o}48.10') on 30 July 2014. On four occasions, large feeding flocks of mixed terns were seen, often accompanied by boobies, and, in the southern area, Magnificent Frigatebird. These feeding flocks were pale terns i.e. not noddies, and up to 20 in number. They were seen on the 12 and 20 July in the northern area and the 3 and 4 January in the southern area. The 4 January flock included birds of different sizes. Royal Tern, 'Commic' Tern *Sterna spp.* and Sandwich Tern *Thalasseus sandwichensis* were likely all involved. Royal Terns, Common Terns, and Sandwich Terns were seen commonly within 10-20 miles of the shore, but were otherwise absent and rare in deep water.

The only gull species identified was Laughing Gull *Leucophaeus atricilla* on 1 and 6 January 2015 in the southern area and on 27 January 2015 in the northern area. Several distant gulls seen on three occasions were consistent with Laughing Gull, but they were too distant to identify positively.

In the southern area, Pomarine Skuas/Jeagers *Stercorarius pomarinus* (Plates 9 & 10), were seen three times on 9, 12 and 16 January 2015. The pale phase bird shown in Plate 10 travelled with the boat and was seen very closely. Dark phase birds were more distant, at 200-300m (Plate 9). There are very few records of this species in Colombia (though see Estela *et al*. 2004, Salaman *et al*. 2008).

Only 8 observations of non-pelagic species were made and 5 of these were all on 1 August 2014. Herons and Hirundines dominated these observations. The Purple Martin was perhaps unexpected compared to other congeners. It was a bright, shiny male. The dates of these observations suggest that passage was just starting when we left the area in early August.

Table 3: non-pelagic species recorded.

Species	**Date**	**W/N area**	**Coordinates**
Great Egret *Ardea alba*	05/07/14	W	09^{o}19.24N, 77^{o}07.75'W
Great Blue Heron *Ardea herodias*	01/08/14	N	12^{o}20.21'N, 74^{o}36.01'W
Osprey *Pandion haliaetus*	01/08/14	N	12^{o}20.21'N 74^{o}33.07'W
Black-necked Stilt *Himanotopus mexicanus*	08/07/14	W	09^{o}59.94'N 76^{o}28.63'W
Brown-chested Martin *Progne tapera* (Plate 11)	31/12/14	W	09^{o}28.19'N 76^{o}36.15'W
Purple Martin *Progne subis*	01/08/14	N	12^{o}20.20'N, 74^{o}25.14'W
Hirundinidae sp., Likely *Stelgidopteryx* sp.	01/08/14	N	12^{o}20.23'N, 74^{o}44.36'W
Barn Swallow *Hirundo rustica*	01/08/14	N	12^{o}19.98'N, 75^{o}00.35'W

Table 4 Three commonest species, numbers of days and numbers of individuals observed

Area	**August**	**Observation Days**	**Brown Booby Days/Individuals**	**Masked Booby Days/Individuals**	**Magnificent Frigatebird Days/Individuals**
W	June/July	16	13/51	1/1	7/13
N	July/August	28	3/4	7/7	0
W	December/ January	24	18/21	3/4	5/8
N	December/ January/February	23	4/5	14/20	0

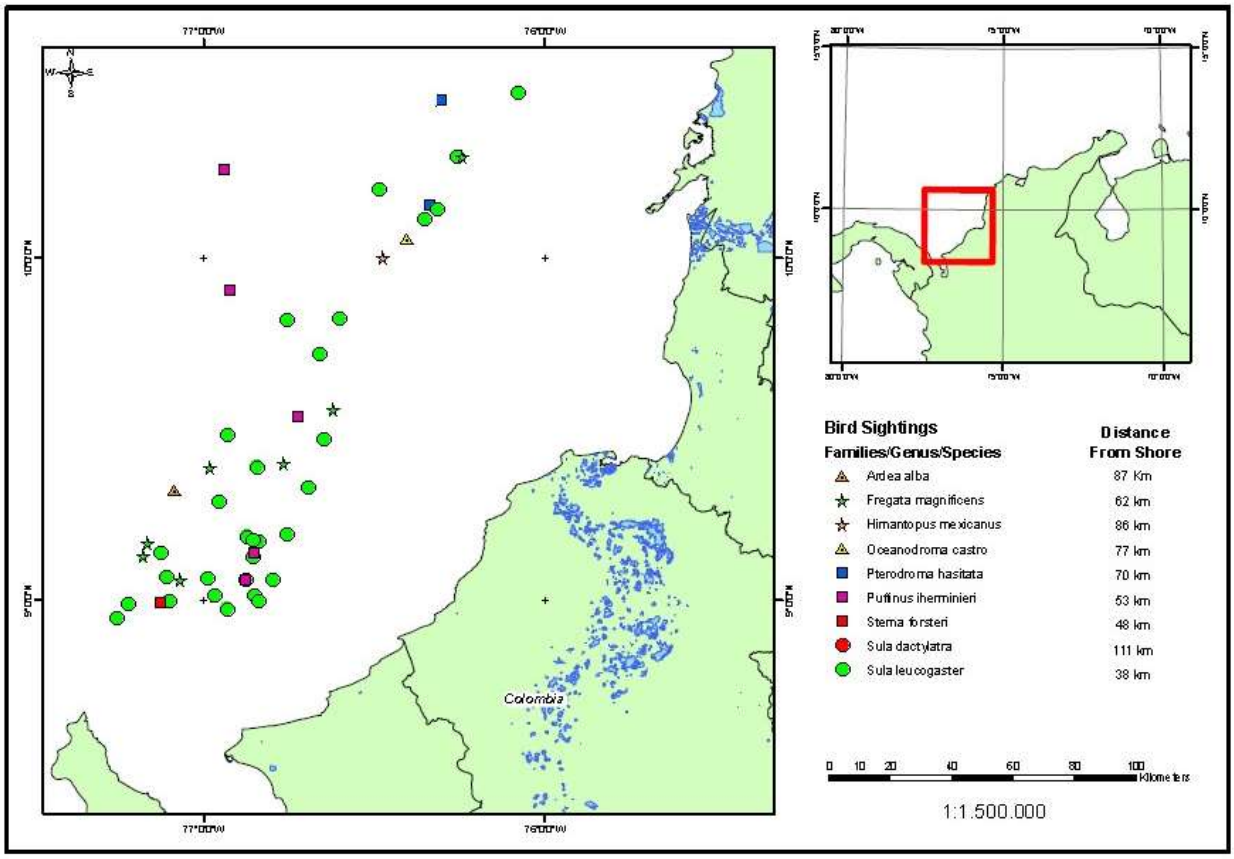

Figure 2. Western Area sightings during June 26th to July 12th. Minimum distance from shore for the observation of each species is listed.

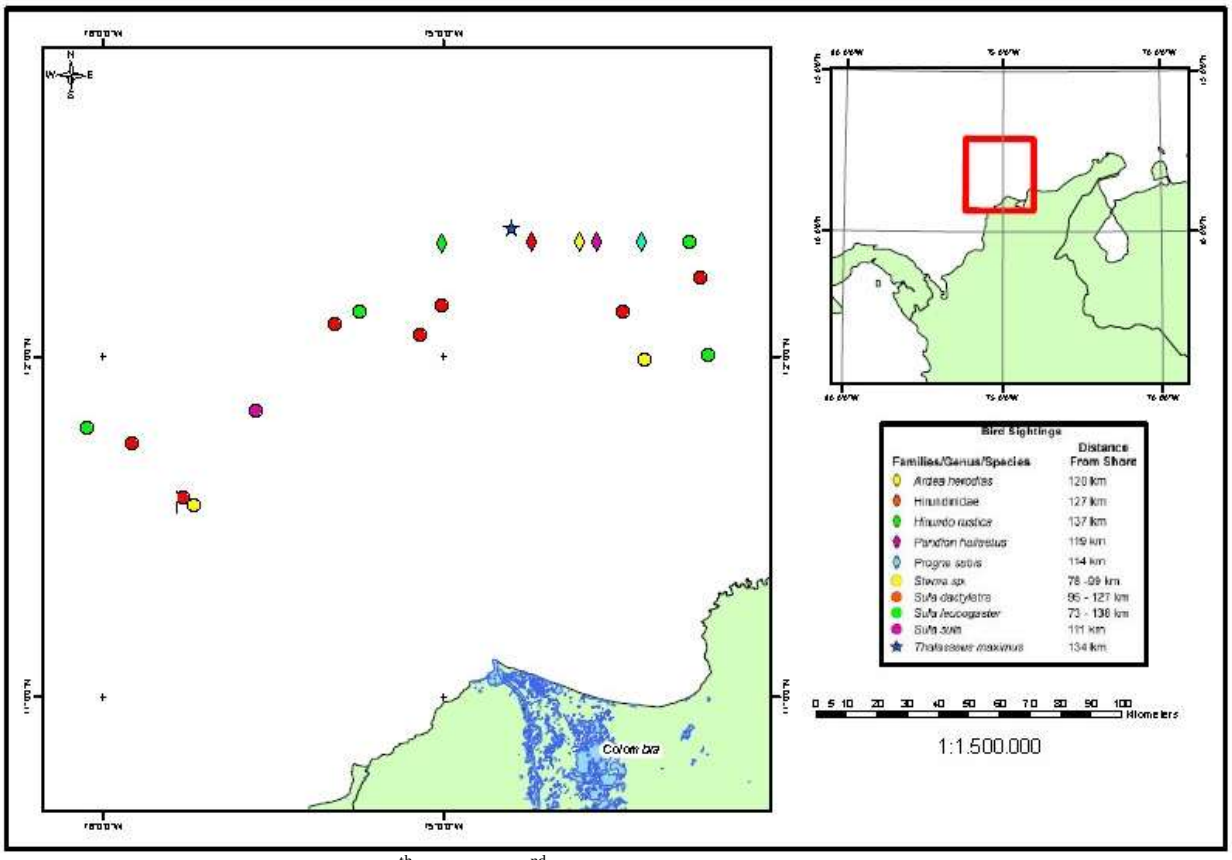

Figure 3. Northern Area sightings during July 11th to August 2nd Minimum distance from shore for the observation of each species is listed (with a range for Brown and Masked Boobies).

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Plate 7. Red-footed Boobies were not common, only 4 were observed but when seen they usually stayed for a long time (Israel Ribeiro, 16 January 2015).

Plate 8. Two brown phase and two white phase Red footed Boobies were seen (Paola López).

Plate 9. A distant Dark morph Pomarine Skua on (Israel Ribeiro, 9 January 2015).

Plate 10. A much closer view of a pale phase Pomarine Skua (Javier Alarcón, 12 January 2015).

Plate 11. Herons and Hirundines dominated the non-pelagics and during January only this Brown-chested Martin was seen out of habitat (Israel Ribeiro, 31 December 2014).

Listado de las aves de las reservas las Tángaras, Gorrión-Andivia y Lora Carirosada de los Andes Occidentales de Colombia

Checklist of Bird Reserves Las Tángaras, Gorrión-Andivia and Lora Carirosada in the western Andes of Colombia.

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Resumen

Las Reservas Naturales de las Aves (RNA) Las Tángaras, Gorrión Andivia y Lora Carirosada han sido declaradas recientemente como áreas protegidas. Se encuentran en una región estratégica para la observación y contemplación de las aves y la conservación de los ecosistemas a través de la vinculación y participación de las comunidades locales en los procesos de consolidación y manejo del área en el Chocó Biogeográfico. Se presenta un acercamiento a la composición de aves de las tres RNA, creando el listado actualizado por medio de reconocimiento de bibliografía, bases de datos y observaciones que han sido realizados de investigadores en las reservas. Adicionalmente, se realizaron discusiones sobre las especies de mayor interés y prioridad de conservación. Se presenta un listado de 434 especies de aves registradas para las tres reservas, de las cuales 346 especies fueron registradas para RNA Las Tángaras, 141 especies para la RNA Gorrión Andivia y 191 especies para RNA Lora Carirosada, otorgando un aporte sobre la composición actual de la avifauna de esta zona de los Andes Occidentales de Colombia.

Palabras clave RNA Las Tángaras, RNA Gorrión Andivia, RNA Lora Carirosada, Andes Occidentales, Aves, Chocó.

Abstract

The Bird Nature Reserves (RNA) Las Tángaras, Gorrión Andivia y Lora Carirosada have been declared recently as protected areas. They are found in a strategic region for observation and contemplation of birds and the conservation of ecosystems through the entailment and participation of local comunities in the consolidation and the management processes for the Chocó biogeographical region. We present a discussion of the composition of the birds of these RNA, presenting an updated list compiled through bibliography, databases and observations that have been made by researchers in the reserves. Additionally, discussions are presented about the species of most interest and conservation priority. A list of 435 species birds is presented for the three reserves; of which, 346 species are recorded in Las Tángaras, 142 species in Gorrión Andivia, and 191 species in Lora Carirosada, constituting a contribution in relation to the current composition of the birds in this part of Colombia's Western Andes.

Key words RNA Las Tángaras, RNA Gorrión Andivia, RNA Lora Carirosada, Western Andes, Birds, Chocó.

Introducción

La región del Chocó Biogeográfico incluye parte de la Vertiente de la Cordillera Occidental del Pacífico (Etter 1998, Olson *et al.* 2001). Es una de la zonas del planeta que alberga mayor biodiversidad y en ella residen un sin número de comunidades indígenas y afrodescendientes, conformando un territorio complejo en el ámbito socio-ecosistémico (Hurtado *et al.* 2007). Es uno de los sitios del norte de los Andes considerado como Hostpot de biodiversidad (Myers *et al.* 2000), definido como una de las 57 áreas con grandes concentraciones de especies endémicas de Suramérica (Andrade 1993) y uno de los centros de endemismo más importantes del país y del mundo (Hernández-Camacho *et al.* 1992, Stattersfield *et al.* 1998).

La importancia de esta zona está precedida por poseer la más alta diversidad de especies de aves en Colombia, contendiendo la mayor concentración de especies endémicas o con distribución restringida, con 24 especies, de las cuales 21 se encuentran por debajo de los 2.000 msnm (Terborgh & Winter, 1982, Hilty & Brown 2001, Renjifo *et al.* 2002, Renjifo *et al.* 2014, Ocampo-Peñuela & Pimm 2014). Según Franco & Bravo (2005) se cataloga como una de las áreas importantes para conservación de las aves de los Andes Tropicales, debido a que posee especies con mayor restricción y discontinuidad geográfica que en cualquier otra parte del mundo (Ocampo-Peñuela & Pimm 2014). Es identificada como una de las regiones con alta prioridad para la conservación de aves del planeta (Ocampo-Peñuela & Pimm 2014). Recientemente López-Ordóñez *et al.* (2013) valoran obras y estudios dirigidos a esta zona del país que ha enriquecido notablemente el conocimiento sobre la distribución de las aves, afinando y ampliando mejor sus rangos a partir de nuevos registros, aportando información sobre aspectos ecológicos y comportamentales. Con ello y otros estudios

citados aquí, se han aproximado a la realidad del estado de la avifauna de esta región, ya que muchas zonas han sido poco estudiadas e inexploradas lo que dificulta una adecuada comprensión de patrones de diversidad por los evidentes vacíos en la distribución de las especies.

La Fundación ProAves adelanta acciones de conservación de la biodiversidad del Chocó biogeográfico fundamentando sus esfuerzos y estrategias en la disminución de las diferentes amenazas que actualmente se evidencian en la zona, como son la deforestación de bosques para dar paso a sistemas agropecuarios y la extracción de recursos mineros (Fundación ProAves 2013). El aunar esfuerzos para la ampliación y fortalecimiento de áreas de conservación en la ecoregión del Chocó por medio de estrategias de mitigación de factores tensionantes que se encuentren en el área de amortiguación de las reservas, permitirá salvaguardar y custodiar de una forma más efectiva los hábitats para la flora y fauna silvestre (Fundación Proaves 2013). Con ello, se ha promovido en superficies altamente degradadas, planes de restauración ecológica integrando revegetalizaciones y enriquecimiento de bosques con especies de plantas nativas para aumentar la oferta de hábitats, recuperando secuencialmente la función y estructura de las coberturas naturales perdidas. Un ejemplo relevante es que por medio de estas acciones se ha protegido casi el 80% de la cuenca de la quebrada Sánchez, un afluente importante en la cuenca alta del Río Atrato (Fundación ProAves 2015).

El objetivo de este artículo es proporcionar información sobre la avifauna actual presente en tres Reservas Naturales de las Aves de la Fundación ProAves que se encuentran ubicadas en la cordillera de los Andes Occidentales a través de compilación de información procedente de diversas fuentes, identificando las especies con alta prioridad de conservación (endémicas y amenazadas), esperando que el listado contribuya al conocimiento de la avifauna de esta región de Colombia, buscando incentivar su protección y potencializar su visita.

Métodos

Área de estudio

Las Reservas Naturales de las Aves Las Tángaras, Gorrión Andivia y Lora Carirosada son ubicadas en el municipio del Carmen de Atrato, en el departamento de Chocó. Según Holdridge (1986), las reservas comprenden zonas de vida de bosque muy húmedo premontano (bmh-PM), bosque muy húmedo (bmh-MB) y bosque pluvial montano bajo (bp-MB) y selvas subandinas en las faldas de la Cordillera Occidental (1.000-2.400 m.s.n.m), consideradas por Cuatrecasas (1958) como Selvas y Bosques Andinos desde los 2.400 hasta 3.800 msnm.

La Reserva Natural de las Aves Las Tángaras fue creada en octubre del año 2009 con la misión de proteger el hábitat de dos especies de aves endémicas: la tángara de Tatamá (*Bangsia aureocincta*) y la tángara aurinegra (*Bangsia melanochlamys*). El municipio del Carmen de Atrato fue vinculado a la Alianza para la Cero Extinción en Colombia en octubre del 2010. Posee 3.100 hectáreas y es una de las áreas protegidas más importantes para Colombia ofreciendo protección a los bosques nublados y montanos lluviosos del chocó biogeográfico con una gran representación a nivel de especies y ecosistemas. Posee uno de los bosques tropicales más diversos e importantes de la tierra, protegen la cuenca del Río Atrato que sirve como un recurso económico vital para decenas de miles de habitantes que viven en las comunidades aledañas (Fundación ProAves 2015). Se destaca el hecho de encontrarse cerca de resguardos indígenas de Zabaleta y Playa, donde habitan los Emberá Katío, Emberá Chamí, Emberá Dovida y comunidades afrodescendientes (Fundación Proaves 2015).

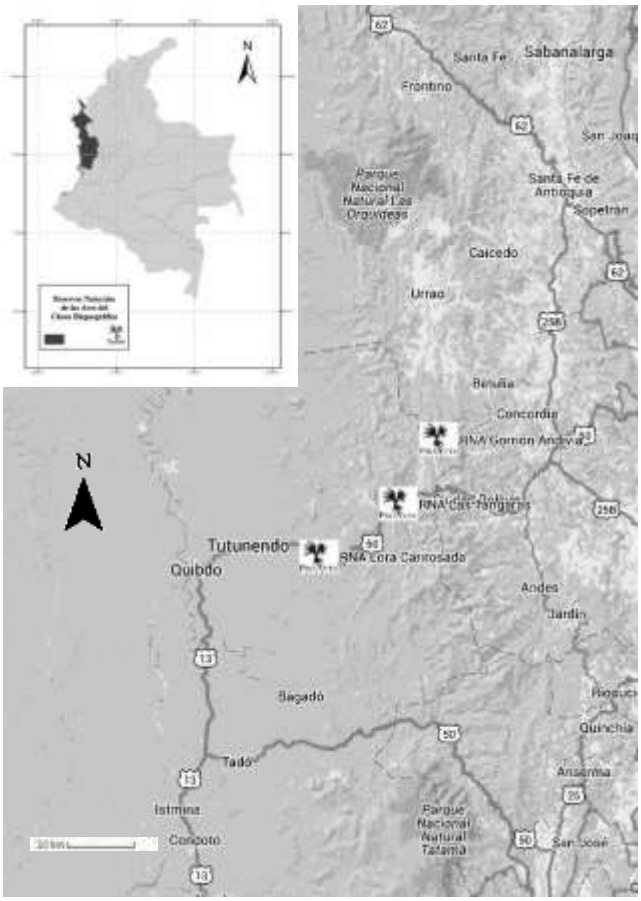

Figura 1. Ubicación geográfica de las Reservas Naturales de Aves las Tángaras Gorrión-Andivia y Lora Carirosada de la cordillera occidental. Fuente: Adaptado de Google maps.

La Reserva Natural de las Aves Gorrión Andivia fue creada en el año 2012 con el objetivo de conservar el hábitat del gorrión tangarino (*Oreothraupis arremonops*) y del cucarachero de munchique (*Henicorhina negreti*) ambas especies amenazadas, catalogadas por la IUCN en estado vulnerable (VU) y en peligro crítico (CR) respectivamente (Fundación ProAves 2015). También protege el hábitat de diferentes especies de aves endémicas como el picaflor pechirrufo (*Diglossa gloriosissima*) (EN), la cotinga alirufa (*Ampelion rufaxilla*) y el tapaculo

ocelado (*Acropternis orthonyx*). El área total de la reserva es de 467.8 hectáreas de bosques húmedos tropicales (Fundación Proaves 2015).

La Reserva Natural de las Aves Lora Carirosada fue creada en el año 2014 principalmente para conservar el hábitat de la Lora Carirosada (*Pyrilia pulchra*). Cuenta con aproximadamente 312 hectáreas. Esta reserva hace parte del complejo de áreas protegidas ubicadas a través de la cuenca del Rio Atrato (Fundación Proaves 2015).

Tabla 1. Especificaciones de las Reservas las Tángaras Gorrión-Andivia y Lora Carirosada.

Reservas	Coordenadas	Elevación (m)	Área Ha	Temp °C	Precip. mm
Las Tángaras	5°50'32.8" N 76°11'51.2" W	1.250 a 3.400	3100	8 a 23	4.000
Gorrión Andivia	5°59'10.2" N 76°06'23.1" W	2.500 a 3.000	402	6 a 21	4.000
Lora Carirosada	5 43 25.2" N 76 22 32.9" W	260 a 400	312	16 a 28	4.000

Métodos

Para la elaboración del listado de las aves presentes en las Reservas Naturales de las Aves Las Tángaras, Gorrión-Andivia y Lora Cari-Rosada se tuvieron en cuenta las observaciones personales de OC (2014-2015), publicaciones de nuevos registros y listados de las tres reservas subidos a la base de datos de eBird. Se validó y confirmo la información de los registros con las guías de aves de Colombia (Hilty & Brown 1986, 2001, Mc Mullan *et al.* 2010) y el libro de Birds of Northern South America (Restall *et al.* 2006). Adicionalmente, para afirmar los registros, se revisaron publicaciones que estuviesen en rangos geográficos y altitudinales similares a los que conforman las reservas (Salaman 1994, Salaman (Ed.) 1994, Donegan & Davalos 1999, Stiles 1998a, Cuervo et al 2003, Flores *et al.* 2004, Echeverry & Córdoba 2007, Ayerbe *et al.* 2008, Calderón *et al.* 2011, López *et al*. 2013). Se consultó publicaciones sobre aves amenazadas (Negret 2001, Renjifo *et al.* 2002, Renjifo *et al.* 2014) complementando al listado con información sobre la distribución geográfica, especies endémicas y casi endémicas (Chaparro-Herrera *et al.* 2014). Adicionalmente se agregaron discusiones de 10 especies que poseen alta prioridad de conservación en las tres reservas (Renjifo *et al.* 2002, Renjifo *et al.* 2014).

Resultados

A partir de esta revisión se obtuvo un listado de 434 especies de aves registradas pertenecientes a 266 géneros, 45 familias, y 18 órdenes taxonómicos del total de las tres Reservas Naturales de las Aves, en las que se priorizaron las observaciones realizadas en las tres reservas por el presente estudio y registros de diversos observadores en el base de datos eBird (ver listado taxonómico) (**Tabla 2**). Incluye una especie migratoria austral, 29 especies migratorias boreales, 37 especies casi endémicas y 12 especies endémicas. Entre estos registros, se destacan la presencia de la tángara de Tatamá (*Bangsia aureocincta*), la tángara aurinegra (*Bangsia melanochlamys*), el verderón del Chocó (*Vireo masteri*), el musguerito gargantilla (*Iridosornis porphyrocephala*), el picaflor canela (*Diglossa Indigotica*), el corretroncos barbiblanco (*Margaronis stellatus*) y varias especies de colibríes como *Coeligena wilsonii*, *Boissaneaua jardini y Heliodoxa imperatrix* como especies amenazadas o endémicas**.** Se registran 36 especies que se encuentran en alguna categoría de amenaza nacional o a nivel mundial, cuatro en Peligro Crítico (CR), seis En Peligro (EN), 13 en estado Vulnerable (VU) (**Figura 3**).

Tabla 2. Diversidad taxonómica de la avifauna de cada una de las Reservas Naturales de las Aves de los Andes Occidentales.

Reservas	Familias	Especies
Las Tángaras	45	346
Gorrión Andivia	38	141
Lora Carirosada	31	191

Según el listado total de las reservas ubicadas en esta zona de la cordillera occidental, la familia Thraupidae es la más diversa con 61 especies (14%) seguida de Tyrannidae con 51 especies (12%), Trochilidae con 40 especies (9 %) y Furnariidae con 28 especies (7%) (**Figura 2**). Estudios realizados en rangos altitudinales y geográficos similares a la RNA Tángaras muestran alguna similaridad en composición taxonómica. Por ejemplo Donegan & Davalos (1999) en la Reserva Natural Tambito en el departamento del Cauca (02°30'N 77°00'W) en un rango altitudinal entre los 1400-2400 msnm se registraron 313 especies incluidas en 45 familias taxonómicas y Flores *et al.* (2004) en elevaciones superiores se registraron 154 especies 37 familias taxonómicas (**Tabla 3)**. Comparando los resultados de estas dos investigaciones con la RNA Las Tángaras se evidencia alguna similaridad en estas tres localidades de la cordillera occidental en cuanto número de familias registradas (**Figura 4**).

Tabla 3. Diversidad taxonómica de tres estudios realizados en los Andes Occidentales.

Reservas	Localidad	Familias	Especies
Donegan & Davalos 1999	RN Tambito	45	313
Flores *et al.* 2004	RNA Colibrí del Sol	37	154
Actual estudio	RNA Las Tángaras	45	348

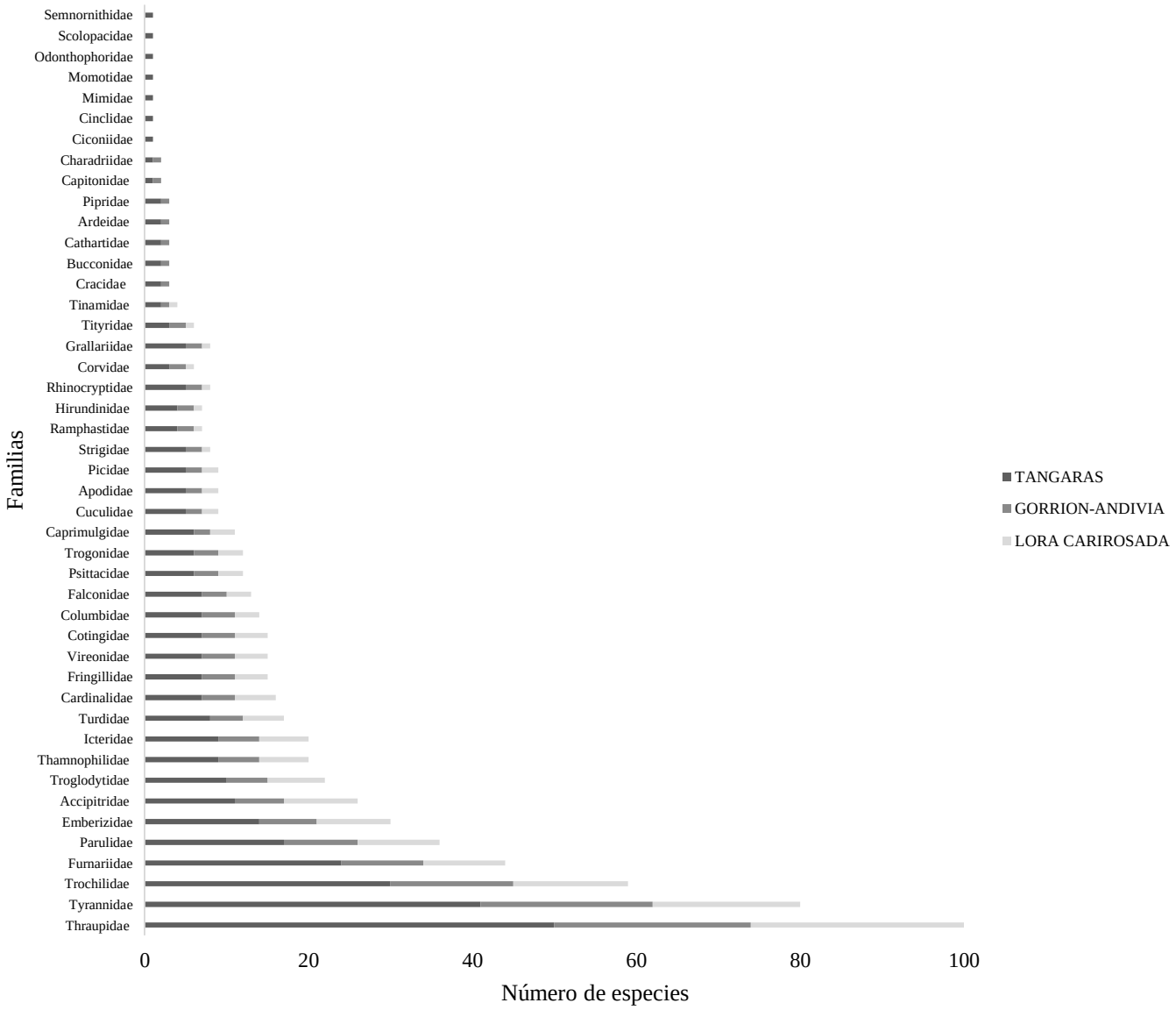

Figura 2. Representatividad de las familias de aves presentes en las Reservas Naturales de las Aves Las Tángaras, Gorrión Andivia y Lora Carirosada ubicadas en Carmen de Atrato Chocó, Colombia..

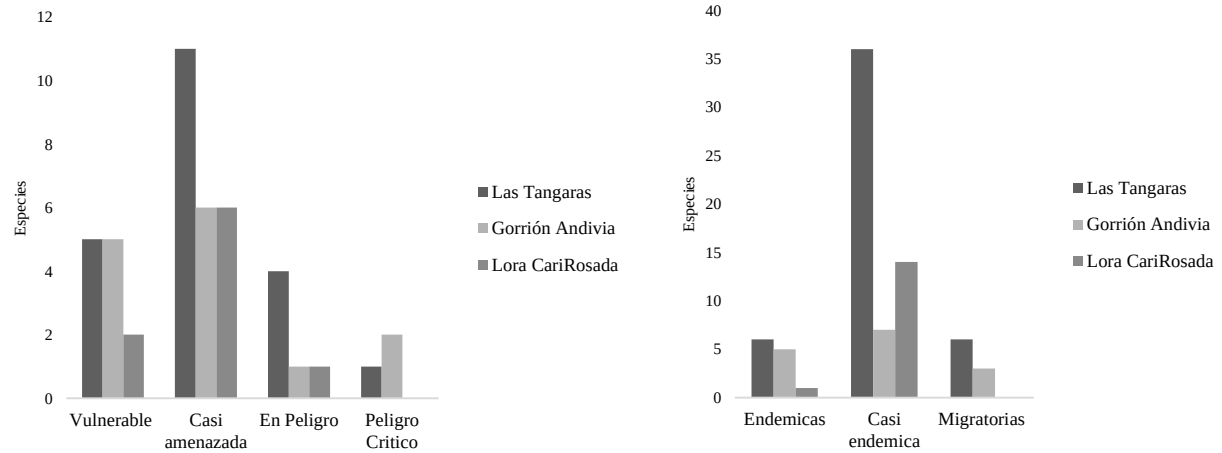

Figura 3. Categorías de amenaza y distribución de las especies registradas en las Reservas Naturales de las Aves Las Tángaras, Gorrión Andivia y Lora Carirosada ubicadas en Carmen de Atrato Chocó, Colombia.

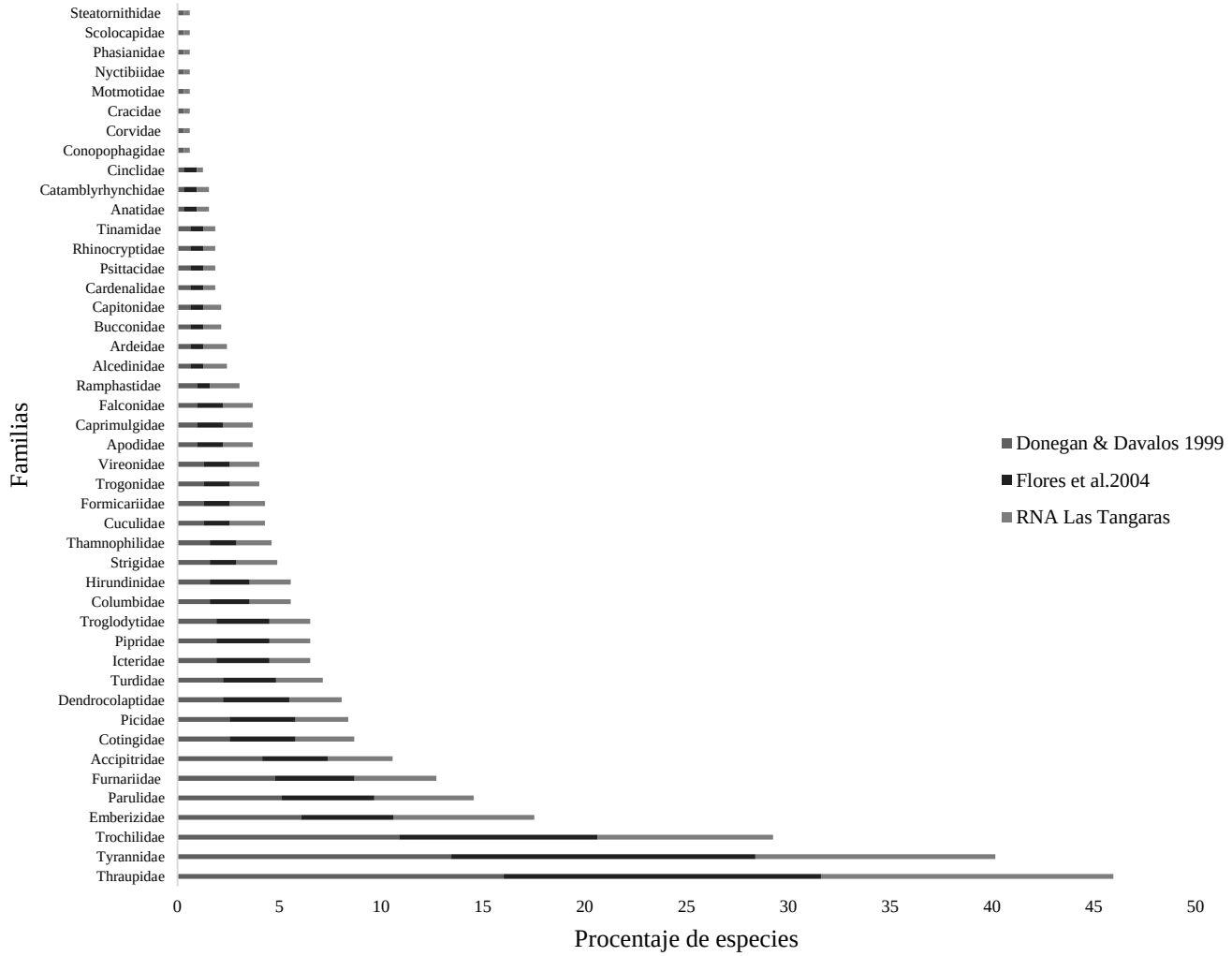

Figura 4. Representatividad de las familias de acuerdo con el porcentaje del número total de especies en estudios desarrollados en rangos altitudinales similares a la RNA Las Tángaras en los Andes Occidentales de Colombia.

Discusión

Gracias a este primer acercamiento a la composición de la avifauna de estas tres reservas naturales de las aves, se evidencia la importancia sobre su diversidad y complejidad ecosistémica, considerándose como una de las localidades más importantes para la conservación de las aves distribución restringida y especies amenazadas del país. Sin duda, hay presiones constantes en la zona de amortiguamiento de las reservas que merecen ser monitoreadas, continuando con una administración efectiva como se ha venido realizando desde su declaración, vinculando constantemente a las comunidades locales e incentivando el aviturismo de manera comprometida y responsable.

Este manuscrito abre la puerta para realizar investigaciones que incrementen el conocimiento de las comunidades y poblaciones de aves de las Reservas Naturales de Aves de la cordillera occidental, con estos registro buscar blindar activamente la protección de los bosques y hábitats con esfuerzos enmarcados en la gestión y participación. Esta zona de alto endemismo requiere sin duda estrategias de conservación efectivas que protejan activamente sus hábitats.

Para las tres reservas, destacamos ocho especies que por criterios de distribución y categorías de amenaza poseen alta prioridad de conservación para la región del Chocó biogeográfico. Estas especies focales son elementos fundamentales para la conservación de los ecosistemas que habitan y desde luego motivan su visita a observarlas a través del ecoturismo.

Munchique Wood-Wren *Henicorhina negreti*

El cucarachero de Munchique *Henicorhina negreti* (Troglodytidae), es una especie endémica de Colombia (Chaparro-Herrera *et al.* 2013), descrita por Salaman *et al.* (2003) basado en estudios en el Parque Nacional Natural Munchique. Actualmente, se categoriza como Vulnerable (VU) al nivel nacional pero al nivel mundial en Peligro Critico (CR) (Renjifo *et al.* 2014, Birdlife International 2015). Fue registrado por primera vez en el departamento del Chocó por Van Oosten & Cortés (2009).

Figura 5. Munchique Wood-Wren *Henicorhina negreti*. Oswaldo Cortes.

Golden winged Warbler *Vermivora chrysoptera*
La Reinita Alidorada *Vermivora chrysoptera* (Parulidae), es una especie migratoria boreal que se reproduce en el sureste de Canadá y noreste de los Estados Unidos (Lobo–y–Henríques & Arteaga 2013). Se categoriza como una especie Casi Amenazada (NT) (BirdLife International 2015) pero en Colombia se considera actualmente en Preocupación menor (LC) (Renjifo *et al.* 2014). Migra hacia Centroamérica y el norte de Suramérica (especialmente a través de la vertiente Caribeña) (Lobo–&–Henriques & Arteaga 2013) en septiembre y marzo donde es rara a poco común (Ridgely & Tudor 1989). Ocupa un sin número de hábitats en las reservas, desde áreas en regeneración hasta bosques secundarios y bordes de bosque (cf. BirdLife International 2015).

Gold-ringed Tanager *Bangsia aureocincta*
La Bangsia de Tatamá *Bangsia aureocincta* (Thraupidae), es una especie endémica de Colombia que habita el área de influencia del Cerro Tatamá en los límites de los departamentos de Risaralda, Chocó y Valle del Cauca (Chaparro-Herrera *et al.* 2013, Sedano 2014). Actualmente se encuentra Vulnerable (VU) al nivel nacional y en Peligro (EN) nivel a mundial (Renjifo *et al.* 2014, Birdlife International 2015). Su rango de elevación está restringido al bosque húmedo montano bajo poco intervenido, desde 1350 hasta 2195 msnm (Sedano 2014).

Figura 6. Gold-ringed Tanager *Bangsia aureocincta* RNA Las Tangaras. Alonso Quevedo/Fundación ProAves.

Chestnut-bellied-Flowerpiercer *Diglossa gloriosissima*
La diglosa pechirufa *Diglossa gloriosissima* (Thraupidae) es una especie endémica de Colombia (Hilty & Brown 1986, Stiles 1998a, Salaman *et al.* 2009, Chaparro-Herrera *et al.* 2013), que habita únicamente en algunas regiones altas de la cordillera occidental (Hilty & Brown 1986, Restall *et al.* 2006, BirdLife International 2015). Se encuentra Vulnerable (VU) a nivel nacional y nivel mundial en Peligro (EN) (Renjifo et al 2014, BirdLife International 2015). Su rango altitudinal esta entre los 3000 y 3750 msnm de altitud (Carantón 2014).

Figura 7. Chestnut-bellied-Flowerpierce *Diglossa gloriosissima* RNA Las Tanagras. Oswaldo Cortes

Baudo Oropendola *Psarocolius cassini*
La oropéndola Chocóana *Psarocolius cassini* (Icteridae) se registra en el río Truandó y la divisoria de los ríos Baudó y Atrato en la parte norte del Chocó (Hernández-Jaramillo & Calderón-Franco 2014, Birdlife international 2015). Se encuentra En Peligro (EN) a nivel nacional y mundial (Renjifo *et al.* 2014, BirdLife International 2015). Su hábitat se restringe a bosques pluviales húmedos entre los 100 y 365 msnm (Hernández-Jaramillo & Calderón-Franco 2014, BirdLife International 2015).

Figura 8. Baudo Oropendola *Psarocolius cassini*. Oswaldo Cortes.

Tanager Finch *Oreothraupis arremonops*
El Gorrión tangarino *Oreothraupis arremonops* (Thraupidae) es una especie casi endémica (Chaparro et al 2013) que tiene una distribución restringida en la vertiente del Pacífico de los Andes occidentales siendo muy rara y local (Echeverry-Galvis & Córdoba-Córdoba 2007, BirdLife International 2015). Según Renjifo et al. (2014) esta especie se encuentra actualmente en Colombia en Preocupación menor (LC) pero se categorizada como Vulnerable (VU) a nivel mundial (BirdLife International 2015). Su rango altitudinal se encuentra entre 1200 y 2800 metros de altitud (Renjifo *et al*. 2002).

Figura 9. Tanager Finch *Oreothraupis arremonops* RNA Gorrión Anvidia. Alonso Quevedo/Fundación Proaves.

Yellow-eared Parrot *Ognorhynchus icterotis*
Loro orejiamarillo *Ognorhynchus icterotis* (Psittacidae) es una especie casi endémica (Chaparro-Herrera *et al*. 2013) que se distribuía a lo largo de los Andes colombianos y en el norte de Ecuador (Hilty & Brown 1986). Se considera En Peligro (EN) a nivel nacional y mundial (Renjifo *et al.* 2014, BirdLife International 2015). Se distribuye principalmente entre 1600 y 3000 msnm pero puede llegar hasta los 3400 metros (Hilty & Brown 1986, López-Lanús & Salaman 2002, Murcia-Nova *et al.* 2009).

Figura 10. Yellow-eared Parrot *Ognorhynchus icterotis* Oswaldo Cortes.

Red-bellied Grackle *Hypopyrrhus pyrohypogaster*
El chango colombiano Hypopyrrhus pyrohypogaster (Icteridae) es una especie endémica de los Andes colombianos (Chaparro-Herrera et al. 2013) se registra en las tres cordilleras de Colombia (Collar et al. 1992, Birdlife-International 2015). Se encuentra Vulnerable (VU) a nivel nacional y mundial (Renjifo et al. 2014, BirdLife International 2015). H. pyrohypogaster tiene una distribución restringida y su rango altitudinal esta entre 1200 y 2400 msnm, siendo localmente abundante en el norte de la cordillera Occidental (BirdLife International 2015).

Chocó Vireo *Vireo masteri*
El Vireo del Chocó *Vireo masteri* (Vireonidae), es una especie Casi Endémica, poco común y muy discreta (Chaparro-Herrera *et al.* 2013, Gómez & Amaya-Villarreal 2014) restringida a la vertiente occidental de la cordillera Occidental de Colombia (Renjifo *et al.* 2002, Jahn *et al.* 2007, Brinkhuizen 2009, BirdLife International 2011). Esta especie se encuentra Vulnerable (VU) a nivel nacional y en Peligro (EN) a nivel mundial (Renjifo et al 2014, BirdLife international 2015). *V. masteri* se encuentra entre los 850 y 1600 msnm, principalmente en bosques premontanos maduros y húmedos (Salaman & Stiles 1996, BirdLife International 2011).

Figura 11. Chocó Vireo *Vireo masteri.* Fundación Proaves.

Red-bellied Grackle *Hypopyrrhus pyrohypogaster*
El chango colombiano *Hypopyrrhus pyrohypogaster* (Icteridae) es una especie endémica de los Andes colombianos (Chaparro-Herrera et al. 2013) se registra en las tres cordilleras de Colombia (Collar *et al*. 1992). Se encuentra Vulnerable (VU) a nivel nacional y mundial (Renjifo et al. 2014, Birdlife International 2015). *H. pyrohypogaster* tiene distribución restringida y su rango altitudinal esta entre 1200 y 2400 msnm. La pérdida de hábitat por cambios de uso del suelo y actividades extractivas son las principales amenazas de esta especie (Ocampo et ál. 2012).

Conclusiones

Por medio de la recopilación de información para conocer la composición actual de la avifauna de las tres RNA de la Fundación Proaves, se encontraron 434 especies distribuidas en 266 géneros y 45 familias taxonómicas. La vertiente del pacifico se estima tener 958 especies de aves (Rangel 2004). Comparando los valores con la actual riqueza de avifauna de la región del Chocó incluyendo su orografía que son aproximadamente 853 especies las tres reservas tendrían cerca el 40 % de las especies de aves del país presentes en esta ecoregión (Stiles 1983a). Está presente contribución aporta el 22% de la aves de Colombia, contribuyendo a que sea cada vez más protegida y visitada.

Figura 12. Proaves Red-bellied Grackle *Hypopyrrhus pyrohypogaster***.** Oswaldo Cortes.

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Listado taxonómico / *Taxonomic list*

Se realizó la revisión taxonómica de las especies teniendo en cuenta la nomenclatura y el orden filogenético de acuerdo al listado de ProAves (Donegan *et al*. 2015), el cual sigue generalmente la clasificación de las especies de aves de América del Sur del Comité de Clasificación de América del Sur (SACC) Remsen *et al.* (2015). Las categorías de amenaza de la IUCN y su distribución actual en Colombia por Chaparro-Herrera *et al* (2014).

Taxón / taxon	Nombre común		Reserva / Reserve			Distribución geográfica / Distribuction geographic	Estado de Amenaza IUCN	Fuente
	Ingles	Español	RNA-T	RNA-GA	RNA-LC			
Tinamidae								
Nothocercus julius	Tawny breated tinamou	Tinamú Leonado	X	X			LC	1
Nothocercus bonapartei	Highland Tinamou	Tinamú Montañero	X	X			LC	1
Cracidae								
Chamaepetes goudotii	Sickle-winged Guan	Pava Maraquera	X		X		NT	1
Aburria aburri	Wattled Guan	Pava Negra	X	X			LC	1
Odontophoridae								
Odontophorus hyperythrus	Chestnut Wood-Quail	Perdiz Colorada	X	X		E	NT	1,13
Ardeidae								
Tigrisoma fasciatum	Fasciated Tiger-Heron	Vaco Cabecinegro	X		X		LC	1
Bubulcus ibis	Cattle Egret	Garcilla Bueyera	X	X	X		LC	1,2
Ciconiidae								
Mycteria americana	Wood Stork	Cabeza de Hueso	X				LC	3
Cathartidae								
Cathartes aura	Turkey Vulture	Guala Cabecirroja	X	X	X		LC	1
Coragyps atratus	(American) Black Vulture	Gallinazo Negro	X	X	X		LC	1
Accipitridae								
Elanoides forficatus	Swallow-tailed Kite	Aguililla Tijereta	X				LC	2
Elanus leucurus	White-tailed Kite	Gavilan Maromero	X				LC	2
Harpagus bidecaatus	Double-toothed Kite	Gavilán Lagartero	X	X	X		LC	1
Accipiter collaris	Semicollared Hawk	Azor Collarejo	X	X	X		NT	1
Accipiter striatus	Sharp-shinned Hawk	Gavilán Americano			X		LC	1
Morphnarchus princeps	Barred Hawk	Gavilán Príncipe	X		X		LC	1
Rupornis magnirostris	Roadside Hawk	Gavilán Caminero	X	X	X		LC	1,8
Buteo platypterus	Broad-winged Hawk	Gavilán Aliancho	X	X	X	MB	LC	1
Geranoaetus albicaudatus	White-tailed Hawk	Gavilán Coliblanco	X	X	X		LC	1
Spizaetus ornatus	Ornate Hawk-Eagle	Águila Coronada	X				NT	1
Spizaetus isidori	Black-and-chestnut Eagle	Águila Crestada	X	X	X		VU	1
Parabuteo leucorrhous	White-rumped Haw	Busardo Culiblanco			X		LC	1
Cryptoleucopteryx plumbea	Plumbeous Hawk	Gavilán Pizarra	X				NT	1
Falconidae								

Caracara cheriway	Crested Caracara	Caracara Moñudo	X		X		LC	1
Milvago chimachima	Yellow headed Caracara	Pigua	X		X		LC	1
Falco sparverius	American Kestrel	Cernícalo Americano	X	X	X		LC	1
Falco columbarius	Merlin	Esmerejón	X	X		MB	LC	1
Falco femoralis	Aplomado Falcon	Halcón plomizo			X		LC	3
Falco peregrinus	Peregrine falcon	Halcón Peregrino	X	X		MB	LC	1
Falco rufigularis	Bat Falcon	Halcón Murcielaguero	X				LC	2
Micrastur ruficollis	Barred Forest-Falcon	Halcón-montés Pajarero					LC	1
Charadriidae								
Vanellus chilensis	Southern Lapwing	Pellar Teru-teru	X		X		LC	2
Scolopocidae								
Actitis macularius	Spotted Sandpiper	Andarríos Manchado	X				LC	1
Columbidae								
Patagioenas fasciata	Band-tailed Pigeon	Paloma Collareja	X	X			LC	1
Patagioenas plumbea	Plumbeous Pigeon	Paloma Plomiza	X		X		LC	1
Patagioenas subvinacea	Ruddy Pigeon	Paloma Colorada	X		X		VU	1
Patagioenas speciosa	Scaled Pigeon	Paloma Escamada	X		X		LC	1
Claravis pretiosa	Blue Ground Dove	Tortolita Azulada			X		LC	1
Leptotila verreauxi	White-tipped Dove	Paloma rabiblanca			X		LC	1
Leptotrygon veraguensis	Olive backed Quail-Dove	Paloma-perdiz			X		LC	1
Columbina talpacoti	Ruddy Ground-Dove	Tortolita Rojiza	X				LC	1
Zecarygon frenata	Mourning Dove	Paloma Perdiz Gorgiblanca	X				LC	1
Zenaida auriculata	Eared Dove	Torcaza Naguiblanca	X				LC	1
Psittacidae								
Ognorhynchus icterotis	Yellow-eared Parrot	Loro Orejiamarillo	X			E	EN	1
Bolborhynchus lineola	Barred Parakeet	Periquito Barrado	X	X			LC	1
Brotogeris jugularis	Oranged chinned Parakeet	Periquito Bronceado	X		X		LC	1
Hapalopsitta amazonina	Rusty faced Parrot	Cotorra Montañera		X			VU	1
Pionus menstruus	Blue headed Parrot	Cotorra Cabeciazul	X	X	X		LC	1
Pionus chalcopterus	bronze winged Parrot	Cotorra Oscura	X		X		LC	1
Pyrilia pulchra	Rose faced Parrot	Lora Carirosada			X	CE	LC	1
Pyrilia pyrilia	Safron headed Parrot	Lorito Cabecigualdo			X	CE	NT	1
Amazona mercenarius	Scaly-naped Parrot	Lora Andina	X	X			LC	1
Cuculidae								
Coccyzus americanus	Yellow billed Cuckcoo	Cuco Americano	X	X		MB	LC	1
Crotophaga major	Greater Ani	Garrapatero Grande	X		X		LC	1
Crotophaga ani	Smooth-billed Ani	Garrapatero Piquiliso	X		X		LC	1
Tapera naevia	Striped Cuckcoo	Cuco Sin-fin o Tres Pies	X		X		LC	1

Piaya cayana	Squirrel Cuckoo	Cuco-ardilla Común	X	X			LC	1
Strigidae								
Megascops choliba	Torpocal Screech-Owl	Currucutú	X		X		LC	1
Megascops albogularis	White throated Screech-Owl	Autillo gorjiblanco		X			LC	1
Megascops colombianus	Colombian Screech-Owl	Autillo Colombiano	X		X	CE	NT	1
Ciccaba virgata	Mottled Owl	Búho Moteado	X				LC	1
Strix albitarsis	Rufous-banded Owl	Cárabo Patiblanco	X				LC	1
Glaucidium jardinii	Andean Pygmy-Owl	Mochuelo Andino		X			LC	1
Glaucidium nubicola	Cloud forest Pygmy-Owl	Buhito Nubícola	X				VU	1
Caprimulgidae								
Chordeilis acutipennis	Sand coloured Nightawk	Chotacabras Chico	X		X		LC	1
Systellura longirostris	Band winged Nightjar	Chotacabras Serrana		X		MA	LC	1
Lurocalis rufivecaris	Rufous-bellied Nighthawk	Chotacabras Buchirrufo	X	X			LC	1
Nyctidromus albicollis	Common Pauraque	Bujío	X		X		LC	1
Uropsalis lyra	Lyre-tailed Nightjar	Guardacaminos Lira	X		X		LC	1
Uropsalis segmecaata	Swallow-tailed nightjar	Guardacaminos Golondrina	X	X	X		LC	1
Nyctiphrynus rosenbergi	Choco Poorwill	Guardacaminos del Chocó	X			CE	NT	1
Apodidae								
Streptoprocne rutila	Chestnut-collared Swift	Vencejo Cuellirrojo	X	X	X		LC	1
Streptoprocne zonaris	White-collared Swift	Vencejo collarejo	X	X	X		LC	1
Chaetura brachyura	Short-tailed Swift	Vencejo Rabicorto	X		X		LC	1
Chaetura cinereivecaris	Gray-rumped Swift	Vencejo Cenizo	X		X		LC	1
Trochilidae								
Eutoxeres aquila	White-tipped Sicklebill	Picohoz Coliverde	X		X		LC	1
Phaethornis striigularis	Striped throated Hermit	Ermitaño Gorgiestriado	X		X		LC	1
Phaethornis guy	Green Hermit	Ermitaño Verde	X				LC	1
Phaetornis yaruqui	Tawny-bellied Hermit	Ermitaño Aleonado			X	CE	LC	1
Phaethornis syrmatophorus	Tawny-bellied Hermit	Ermitaño Ventrihabano	X				LC	1,7
Doryfera ludovicae	Green-fronted Lancebill	Pico de Lanza Frentiverde	X				LC	1,2
Heliothryx barroti	Purple-crowned Fairy	Hada Coliblanca	X		X		LC	1
Schistes geoffroyi	Wedge-billed Hummingbird	Colibrí Picocuña	X				LC	1
Colibri delphinae	Brown Violetear	Colibrí Pardo	X	X			LC	1
Colibri coruscans	Sparkling Violetear	Colibrí Chillón	X				LC	13
Adelomyia melanogenys	Speckled Hummingbird	Colibrí Pechipunteado	X	X			LC	1
Lafresnaya lafresnayi	Mountain Velvetbreast	Colibrí Aterciopelado		X			LC	1
Ensifera ensifera	Sword-billed hummingbird	Colibrí Picoespada		X			LC	1
Aglaiocercus coelestis	Violet-tailed Sylph	Cometa Colivioleta		X		CE	LC	1

Aglaiocercus kingii	Long tailed Sylph	Silfo de King			X		LC	1
Haplophaedia aureliae	Greenish Puffleg	Calzoncitos Verdoso	X				LC	1
Heliangelus exortis	Tourmaline Sunangel	Ange Gorgiturmalina	X	X			LC	1
Coeligena wilsoni	Brown Inca	Inca Pardo	X			CE	LC	1
Coeligena torquata	Collared Inca	Inca Collarejo		X			LC	1
Coeligena orina	Dusky Starfrontlet	Inca de Antioquía		X		E	CR	1
Boissonneaua flavescens	Buff-tailed Coronet	Colibrí Chupasavia		X			LC	1
Boissonneaua jardini	Velvet-purple Coronet	Colibrí Sietecolores	X				LC	1
Eriocnemis vestita	Glowing Puffleg	Calzadito Reluciente			X		LC	1
Ramphomicron microrhynchum	Purple-backed Thornbill	Colibrí Piquicorto Común			X		LC	1
Metallura williami	Viridian Metaltail	Metalura Verde			X		LC	1
Metallura tyrianthina	Tyrian Metaltail	Metalura Tiria			X		LC	1
Ocreatus underwoodii	Booted Racket-tail	Cola de Raqueta Pierniblanco	X				LC	1
Urochroa bougueri	White-tailed Hillstar	Colibrí Nagüiblanco	X		X		LC	1
Urosticte benjamini	Purple-bibbed Whitetip	Colibrí de Gargantilla	X				LC	1
Heliodoxa imperatrix	Empress Brilliant	Diamante Emperador	X			CE	LC	1
Heliodoxa jacula	Green-crowned Brilliant	Diamante Frentiverde	X				LC	1
Calliphlox mitchellii	Purple-throated Woodstar	Rumbito Pechiblanco	X		X	CE	LC	1
Chlorostilbon melanorhynchus	Western Emerald	Esmeralda Occidental	X		X	CE	LC	1
Thalurania colombica	Green-crowned Woodnymph	Ninfa Coroniazul	X		X		LC	1
Amazilia tzacatl	Rufous-tailed Hummingbird	Amazilia Colirrufa	X		X		LC	1
Amazilia franciae	Andean Emerald	Amazilia Andina	X				LC	1
Amazilia amabilis	Blue-chested Hummingbird	Amazilia amable			X		LC	1
Amazilia saucerrottei	Steely-vented Hummingbird	Amazilia Coliazul	X				LC	1
Chaetocercus mulsant	White-bellied Woodstar	Rumbito Buchiblanco	X				LC	1
Discosura conversii	Green Thorntail	Cola de Lira Verde	X				LC	1
Trogonidae								
Pharomachrus auriceps	Golden-headed Quetzal	Quetzal Colinegro	X	X			LC	1
Pharomachrus antisianus	Crested Quetzal	Quetzal Crestado	X				LC	1
Trogon collaris	Collared Trogon	Trogón Collarejo	X				LC	1
Trogon personatus	Masked Trogon	Trogón Enmascarado	X		X		LC	1
Trogon comptus	Choco Trogon/ Blue tailed Trogon	Trogón Ojiblanco	X		X	CE	LC	1
Capitonidae								
Capito maculicoronatus	Spot-crowned Barbet	Cabezón Pechiblanco			X		LC	1
Eubucco bourcierii	Red-headed Barbet	Torito Cabecirrojo	X				LC	1
Euchrepomis callinota	Rufous-rumped Antwren	Tiluchí de Rabadilla Ru	X	X			LC	1
Semnornithidae								

Semnornis ramphastinus	Toucan Barbet	Compas	X		X	CE	NT	1
Momotidae								
Momotus aequatorialis	Highland Motmot	Barranquero Andino	X				LC	1
Bucconidae								
Malacoptila mystacalis	Moustached Puffbird	Bigotudo Canoso	X				LC	1
Malacoptila panamensis	White-whiskered Puffbird	Bigotudo Dormilón	X				LC	1
Ramphastidae								
Aulacorhynchus prasinus	Emerald Toucanet	Tucancito Esmeralda	X	X			LC	1
Aulacorhynchus haematopygus	Crimson-rumped Toucanet	Tucancito Culirrojo	X				LC	1
Andigena nigrirostris	Black-billed mountain toucan	Tucán Piquinegro		X			LC	1
Ramphastos brevis	Choco Toucan	Tucán del Chocó			X	CE	LC	1
Ramphastos ambiguus	Black-mandibled Toucan	Tucán Guarumero	X				LC	1
Pteroglossus torquatus	Collared Aracari	Pichí Bandeado			X		LC	1
Picidae								
Melanerpes rubricapillus	Red-crowned Woodpecker	Carpintero Habado	X		X		LC	1
Picoides fumigatus	Smoky-brown Woodpecker	Carpintero Pardo	X	X			LC	1
Veniliornis dignus	Yellow-vented Woodpecker	Carpintero Buchiamarillo	X				LC	1
Picumnus olivaceus	Olivaceous Piculet	Carpinterito Oliváceo	X		X		LC	1
Colaptes rubiginosus	Golden-olive Woodpecker	Carpintero Cariblanco	X	X	X		LC	11
Campephilus pollens	Powerful Woodpecker	Picamaderos Poderoso			X		LC	1
Furnariidae								
Automolus ochrolaemus	Buff-throated Foliage-gleaner	Hojarasquero Oliváceo			X		LC	1
Campylorhamphus pusillus	Brown-billed Scythebill	Guadañero Estriado	X				LC	7
Sclerurus mexicanus	Tawny-throated Leaftosser	Raspahojas Picudo	X				LC	1
Synallaxis albescens	Pale bellied spinetail	Chamicero Pálido	X		X		LC	1
Synallaxis unirufa	Rufous Spinetail	Pijuí Rufo		X			LC	1
Synallaxis azarae	Azara's Spinetail	Chamicero Piscuís	X				LC	12
Cranioleuca erythrops	Red-faced Spinetail	Chamicero Rubicundo	X				LC	1
Premnornis guttuligera	Rusty-winged Barbtail	Corretroncos Alirrufo	X	X			LC	1
Premnoplex brunnescens	Spotted Barbtail	Corretroncos Barranquero	X	X			LC	1
Hellmayrea gularis	White-browed Spinetail	Pijuí Paramero		X			LC	1
Margarornis stellatus	Fulvous-dotted Treerunner	Corretroncos Barbiblanco	X			CE	NT	1
Margarornis squamiger	Pearled Ttreerunner	Subepalo Perlado			X		LC	1
Pseudocolaptes lawrencii	Buffy Tuftedcheek	Corretroncos Barbiblanco	X				LC	1
Pseudocolaptes boissonneautii	Streaked Tuftedcheek	Corretroncos Cuelliblanco	X				LC	1

Anabacerthia striaticollis	Montane Foliage-gleaner	Hojarasquero Montañero	X	X			LC	1
Anabacerthia variegaticeps	Scaly-throated Foliage-gleaner	Hojarasquero del Pacífico	X				LC	1
Syndactyla subalaris	Lineated Foliage-gleaner	Hojarasquero Listado	X	X			LC	1
Philydor rufum	Buff-fronted Foliage-gleaner	Hojarasquero Ocráceo	X		X		LC	1
Thripadectes flammulatus	Flammulated Treehunter	Hojarasquero Grande	X	X	X		LC	1
Thripadectes ignobilis	Uniform Treehunter	Hojarasquero Buchioscuro	X		X	CE	LC	1
Xenops rutilans	Streaked Xenops	Xenops Estriado	X	X	X		LC	1
Xenops minutus	Plain Xenops	Xenops Pardusco	X				LC	14
Dendrocincla tyrannina	Tyrannine Woodcreeper	Trepatroncos Cordillerano	X		X		LC	1
Glyphorynchus spirurus	Wedge-billed Woodcreeper	Trepatroncos Picocuña	X		X		LC	1
Xiphorhynchus triangularis	Olive-backed Woodcreeper	Trepatroncos Perlado	X		X		LC	1
Xiphorhynchus erythropygius	Spotted Woodcreeper	Trepatroncos Manchado	X				LC	14
Lepidocolaptes lacrymiger	Montane Woodcreeper	Trepatroncos Montañero	X	X			LC	1
Thamnophilidae								
Gymnopithys bicolor	Bicolored Antbird	Hormiguero bicolor			X		LC	1
Taraba major	Great Antshrike	Batará Mayor			X		LC	1
Thamnophilus atrinucha	Western Slaty-Antshrike	Batará Pizarroso Occidental			X		LC	1
Thamnophilus unicolor	Uniform Antshrike	Batará Unicolor	X	X			LC	1
Dysithamnus puncticeps	Spot-crowned Antvireo	Batarito Coronipunteado			X		LC	1
Dysithamnus occidentalis	Bicolored Antvireo	Hormiguero Occidental	X			CE	VU	1
Epinecrophylla fulviventris	Checker-throated Antwren	Hormiguerito leonado			X		LC	1
Myrmotherula ignota	Colombian Antwren	Hormiguerito de Griscom			X		LC	1
Myrmotherula schisticolor	Slaty Antwren	Hormiguerito Pizarroso	X		X		LC	1
Herpsilochmus axillaris	Yellow-breasted Antwren	Hormiguerito Pechiamarillo	X	X			VU	1
Drymophila striaticeps	Streak-headed Antbird	Hormiguerito Estriado occidental	X		X		LC	1
Microrhopias quixensis	Dot-winged Antwren	Hormiguerito del Quijos			X		LC	1
Euchrepomis callinota	Rufous-rumped Antwren	Hormiguerito Culirrufo	X		X		LC	1
Cercomacroides tyrannina	Dusky Antbird	Hormiguero Negruzco	X		X		LC	1
Cercomacroides parkeri	Parker's Antbird	Hormiguero de Parker	X			E	LC	1
Myrmeciza exsul	Chestnut-backed Antbird	Hormiguero Dorsicastaño			X		LC	1
Myrmeciza zeledoni	Zeledon´s Antbird	Hormiguero Inmaculado del Chocó	X		X		LC	1
Cymbilaimus lineatus	Fasciated Antshrike	Batará Lineado			X		LC	1
Grallariidae								
Grallaria guatimalensis	Scaled Antpitta	Tororoi Doriescamado	X				LC	1

Grallaria flavotincta	Yellow-breasted Antpitta	Tororoi Rufoamarillo	X			CE	LC	1
Grallaricula flavirostris	Ochre-breasted Antpitta	Tororoi Piquigualdo	X		X		NT	1
Grallaria rufula	Rufous or Chestnut Antpitta	Tororoí Rufo		X			LC	1
Grallaria squamigera	Undulated Antpitta	Tororoí Ondoso		X			LC	1
Grallaria alleni	Moustached Antpitta	Tororoí Bigotudo	X			CE	VU	1
Grallaria nuchalis	Chestnut-naped Antpitta	Tororoí Nuquicastaño		X			LC	1
Grallaria fenwickorum	Urrao Antpitta	Tororoí de Urrao	X			E	CR	1
Grallaricula nana	Slate-crowned Antpitta	Ponchito Enano			X		LC	11
Rhinocryptidae								
Scytalopus sp.	Alto de Pisones Tapaculo	Tapaculo de Alto de Pisones	X				LC	1
Scytalopus canus	Paramillo or Paramo Tapaculo	Churrín Paramero	X			E	EN	1
Scytalopus spillmanni	Spillmann's Tapaculo	Tapaculo de Spillmann	X	X			LC	1
Scytalopus vicinior	Nariño Tapaculo	Tapaculo de Nariño	X			CE	LC	1
Scytalopus latrans	Blackish tapaculo	Tapaculo Negruzco	X	X			LC	1
Scytalopus chocoensis	Choco Tapaculo	Tapaculo del Chocó	X			CE	LC	1
Acropternis orthonyx	Ocellated tapaculo	Tapaculo ocelado		X			LC	1
Tyrannidae								
Phyllomyias nigrocapillus	Black-capped Tyrannulet	Mosquerito Capirotado		X			LC	1
Phyllomyias cinereiceps	Ashy-headed Tyrannulet	Tiranuelo Cenizo	X				LC	1
Mecocerculus leucophrys	White-throated Tyrannulet	Piojito Gargantilla		X			LC	1
Mecocerculus poecilocercus	White-tailed Tyrannulet	Piojito Coliblanco		X			LC	1
Mecocerculus stictopterus	White-banded Tyrannulet	Piojito Alifranjeado	X				LC	1
Leptopogon superciliaris	Slaty-capped Flycatcher	Atrapamoscas Sepia	X				LC	2
Leptopogon rufipectus	Rufous-breasted Flycatcher	Orejero Pechirrufo	X				LC	1
Camptostoma obsoletum	Southern Beardless-Tyrannulet	Tiranuelo Silvador	X		X		LC	1
Elaenia flavogaster	Yellow-bellied Elaenia	Elaenia Copetona	X		X		LC	1
Elaenia frantzii	Mountain Elaenia	Elaenia Montañera	X	X			LC	1
Elaenia chiriquensis	Lesser Elaenia	Elaenia Chica	X				LC	1
Pseudotriccus ruficeps	Bronze-olive Pygmy-Tyrant	Tiranuelo Broncioliva		X			LC	1
Pseudotriccus pelzelni	Bronze-olive Pygmy-Tyrant	Tiranuelo Bronceado	X				LC	1
Hemitriccus granadensis	Black-throated Tody-Tyrant	Pichochato Carinegro	X	X			LC	1
Zimmerius chrysops	Golden-faced Tyrannulet	Tiranuelo Cejiamarillo	X	X			LC	1
Phylloscartes poecilotis	Variegated Bristle-Tyrant	Atrapamoscas Variegado	X		X		LC	1
Phylloscartes ophthalmicus	Marble-faced Bristle-Tyrant	Atrapamoscas Marmóreo	X	X	X		LC	1
Phylloscartes superciliaris	Rufous-browed Tyrannulet	Tiranuelo de Viscera	X		X		LC	1

Mionectes striaticollis	Streak-necked Flycatcher	Atrapamoscas Estriado	X	X	X		LC	1
Mionectes olivaceus	Olive-striped Flycatcher	Atrapamoscas Oliváceo	X		X		LC	1
Myiotriccus ornatus	Ornate Flycatcher	Atrapamoscas Ornado	X		X		LC	1
Lophotriccus pileatus	Scale-crested Pygmy-Tyrant	Tiranuelo Crestibarrado	X		X		LC	1
Hemitriccus granadensis	Black-throated Tody-Tyrant	Titirijí Gorginegro	X	X	X		LC	1
Todirostrum cinereum	Common Tody-Flycatcher	Espatulilla Común	X		X		LC	1
Myiophobus flavicans	Flavescent Flycatcher	Atrapamoscas Amarillento	X		X		LC	1
Nephelomyias pulcher	Handsome Flycatcher	Atrapamoscas elegante	X				LC	1
Myiophobus fasciatus	Bran-colored Flycatcher	Atrapamoscas Pechirrayado	X		X		LC	1
Pyrrhomyias cinnamomeus	Cinnamon Flycatcher	Atrapamoscas Canelo	X				LC	1
Empidonax virescens	Acadian Flycatcher	No tiene nombre	X		X	MB	LC	1
Empidonax traillii	Willow flycatcher	Atrapamoscas Saucero	X		X	MB	LC	1
Empidonax alnorum	Alder Flycatcher	Atrapamoscas Alisero	X		X	MB	LC	1
Contopus cinereus	Tropical Pewee	Pibí Tropical	X				LC	9
Contopus cooperi	Olive-sided Flycatcher	Pibí Boreal	X	X	X	MB	NT	1
Contopus fumigatus	Smoke-colored Pewee	Pibí Oscuro	X		X		LC	1,2
Contopus sordidulus/virens	Western Wood-Pewee	Pibí Occidental	X			MB	LC	1
Sayornis nigricans	Black Phoebe	Atrapamoscas Cuidapuentes	X	X	X		LC	1
Ochthoeca cinnamomeivecaris	Slaty-backed Chat-Tyrant	Pitajo Torrentero	X				LC	1
Ochthoeca frontalis	Crowned Chat-Tyrant	Pitajo Coronado		X			LC	1
Ochthoeca diadema	Yellow-bellied Chat-Tyrant	Pitajo Diademad		X			LC	1
Ochthoeca rufipectoralis	Rufous-breasted Chat-Tyrant	Pitajo Pechirrufo		X			LC	1
Myiozetetes cayanensis	Rusty-margined Flycatcher	Suelda Crestinegra	X				LC	1
Myiozetetes similis	Social Flycatcher	Suelda Social	X	X			LC	1
Myiozetetes cayanensis	Rusty-margined Flycatcher	Bienteveo Alicastaño	X				LC	1
Conopias cinchoneti	Lemon-browed Flycatcher	Suelda Cejiamarilla	X	X			VU	1
Myiodynastes chrysocephalus	Golden-crowned Flycatcher	Atrapamoscas Lagartero	X	X			LC	1
Tyrannus melancholicus	Tropical Kingbird	Sirirí Común	X	X	X		LC	1
Tyrannus tyrannus	Eastern Kingbird	Sirirí Norteño	X		X	MB	LC	1
Myiarchus tuberculifer	Dusky-capped Flycatcher	Atrapamoscas cabecinegro	X		X		LC	1
Myiotheretes fumigatus	Smoky Bush-Tyrant	Birro Ahumado			X		LC	1
Myiarchus cephalotes	Pale-edged Flycatcher	Atrapamoscas Montañero	X				LC	1
Machetornis rixosa	Cattle Tyrant	Sirirí Bueyero	X				LC	1
Rhynchocyclus fulvipectus	Fulvous-breasted Flatbill	Picoplano Pectoral	X	X			LC	1

Serpophaga cinerea	Torrent Tyrannulet	Tiranuelo Salta Arroyo	X		X		LC	1
Cotingidae								
Rupicola peruvianus	Andean Cock-of-the-rock	Gallito de Roca Andino	X				LC	1
Snowornis cryptolophus	Olivaceous Piha	Guardabosques Oliváceo	X				LC	1
Ampelion rubrocristatus	Red-crested Cotinga	Cotinga Crestirrojo	X				LC	1
Ampelioides tschudii	Scaled Fruiteater	Frutero Escamoso		X			LC	1
Ampelion rufaxilla	Chestnut-crested Cotinga	Cotinga Cresticastaño	X				LC	1
Pipreola jucunda	Orange-breasted Fruiteater	Frutero Pechirrojo	X				LC	1
Pipreola aureopectus	Golden-breasted Fruiteater	Frutero Pechidorado	X				LC	1
Pipreola riefferii	Green-and-black Fruiteater	Frutero Verdinegro		X			LC	4
Pyroderus scutatus	Red ruffed Fruitcrown	Toropisco Montañero	X				LC	1
Ceratopipra erythrocephala	Long-wattled Umbrellabird	Saltarín cabecidorado	X				LC	3
Pipridae								
Masius chrysopterus	Golden-winged Manakin	Saltarín Moñudo	X				LC	1
Machaeropterus deliciosus	Club-winged Manakin	Saltarín Relámpago	X			CE	LC	1
Xenopipo holochroa	Green Manakin	Saltarín Verde			X		LC	1
Manacus manacus	White-bearded Manakin	Saltarín Barbiblanco			X		LC	1
Tityridae								
Pachyramphus versicolor	Barred Becard	Cabezón Barrado	X	X			LC	1
Pachyramphus polychopterus	White-winged Becard	Cabezón Aliblanco	X		X		LC	1
Schiffornis veraepacis	Western Schiffornis	Saltarín Mirlo del Chocó	X				LC	1
Vireonidae								
Cyclarhis nigrirostris	Black-billed Peppershrike	Verderón Piquinegro	X	X			LC	1
Vireolanius leucotis	Slaty capped Shrike-Vvireo	Verderón Real	X				LC	1
Vireo flavifrons	Yellow throated Vireo	Verderón Cariamarillo	X			MB	LC	1
Vireo masteri	Choco Vireo	Verderón del Chocó	X			CE	EN	1
Vireo leucophrys	Brown-capped Vireo	Verderón Montañero	X	X			LC	1
Vireo olivaceus	Red-eyed Vireo	Verderón Ojirrojo	X	X			LC	1
Vireo flavoviridis	Yellow-green Vireo	Verderón Verdiamarillo	X	X		MB	LC	1
Corvidae								
Cyanolyca pulchra	Beautiful Jay	Urraca del Chocó	X		X	CE	NT	1
Cyanolyca armillata	Black-collared Jay	Chara Collareja		X			LC	1
Cyanocorax affinis	Black-chested Jay	Carriquí Pechiblanco	X				LC	1,7
Cyanocorax yncas	Green Jay	Carriquí Verdiamarillo			X		LC	11,13
Hirundinidae								
Pygochelidon cyanoleuca	Blue-and-white Swallow	Golondrina Blanquiazul	X	X	X		LC	1

Atticora tibialis	White-thighed Swallow	Golondrina Selvática	X	X	X		LC	1
Stelgidopteryx ruficollis	Southern Rough-winged Swallow	Golondrina Gorgirrufa	X	X	X		LC	1
Hirundo rustica	Southern Rough-winged Swallow	Golondrina Barranquera			X	MB	LC	11
Orochelidon murina	Brown-bellied Swallow	Golondrina Ventriparda			X		LC	12
Progne subis	Purple Martin	Golondrina Púrpura	X			MB	LC	1
Troglodytidae								
Troglodytes aedon	House Wren	Cucarachero Común	X		X		LC	1, 2
Troglodytes solstitialis	Mountain Wren	Cucarachero Motaraz	X				LC	1
Campylorhynchus albobrunneus	White-headed Wren	Cucarachero Cabeciblanco	X		X		LC	1
Pheugopedius spadix	Sooty-headed Wren	Cucarachero Cabecinegro	X		X	CE	LC	1
Pheugopedius mystacalis	Whiskered Wren	Cucarachero Bigotudo	X		X		LC	1
Cacaorchilus nigricapillus	Bay Wren	Cucarachero Ribereño			X		LC	1
Cinnycerthia olivascens	Sharpe's Wren	Cucarachero Sepia	X	X			LC	1
Cinnycerthia unirufa	Rufous Wren	Cucarachero Rufo	X		X		LC	10
Henicorhina negreti	Munchique Wood-Wren	Cucarachero de Munchique		X		E	CR	1
Henicorhina leucophrys	Gray-breasted Wood-Wren	Cucarachero Pechigrís	X				LC	1
Henicorhina leucosticta	White-breasted Wood-Wren	Cucarachero Pechiblanco			X		LC	1
Cyphorhinus thoracicus	Chestnut-breasted Wren	Cucarachero Flautista	X		X		LC	1
Cinclidae								
Cinclus leucocephalus	White-capped Dipper		X	X			LC	1
Turdidae								
Catharus dryas	Spotted Nightingale-Thrush	Zorzal Pechiamarillo	X				LC	1
Catharus fuscescens	Grey cheeked Thrush	Zorzal Rojizo	X		X	MB	LC	1
Catharus ustulatus	Swainson's Thrush	Zorzal Buchipecoso	X	X	X	MB	LC	1
Myadestes ralloides	Andean Solitaire	Solitario Andino	X	X	X		LC	1
Ecaomodestes coracinus	Black Solitaire	Solitario negro	X		X	CE	LC	1
Turdus ignobilis	Black-billed Thrush	Mirla Embarradora	X				LC	1
Turdus fuscater	Great Thrush	Trogón Enmascarado	X	X			LC	1
Turdus serranus	Glossy-black Thrush	Mirla Serrana	X	X	X		LC	1
Mimidae								
Mimus gilvus	Tropical Mockingbird	Sinsonte Común	X	X	X		LC	1
Thraupidae								
Creurgops verticalis	Rufous-crested Tanager	Buscaquiches Rufo	X				LC	1
Ramphocelus flammigerus	Flame-rumped Tanager	Toche Enjalmado	X		X		LC	1
Ramphocelus dimidiatus	Crimson backed Tanager	Toche Pico de Plata	X				LC	1
Tachyphonus rufus	White-lineated Tanager	Parlotero Malcasado	X				LC	1

Tachyphonus delatrii	Tawny-crested Tanager	Parlotero Occidental			X		LC	1
Tachyphonus luctuosus	White-shouldered Tanager	Parlotero Aliblanco	X				LC	1
Thraupis episcopus	Blue-gray Tanager	Azulejo Común	X		X		LC	1
Thraupis palmarum	Palm Tanager	Azulejo Palmero	X		X		LC	1
Thraupis cyanocephala	Blue-capped Tanager	Azulejo Montañero	X	X			LC	1
Bangsia melanochlamys	Black-and-gold Tanager	Tángara Aurinegra	X	X			VU	1
Bangsia aureocincta	Gold-ringed Tanager	Tangara del Tatamá	X	X		E	EN	1
Buthraupis montana	Hooded Mountain-Tanager	Gavilán Aliancho	X	X			LC	1
Cnemathraupis eximia	Black-chested Mountain-Tanager	Azulejo Pechinegro	X				LC	1
Dubusia taeniata	Buff-breasted Mountain-Tanage	Tangara Pechifulva		X			LC	1
Sericossypha albocristata	White-capped Tanager	Tangara Coroniblanca		X			VU	1
Chlorornis riefferii	Grass-green Tanager	Clorornis Patirrojo	X	X			LC	1
Anisognathus somptuosus	Blue-winged Mountain-Tanager	Tángara Primavera	X	X			LC	1
Anisognathus lacrymosus	Black-chinned Mountain-Tanager	Tángara del Pacífico	X		X		LC	1
Anisognathus notabilis	Black-chinned Mountain-Tanager	Tangara Barbinegra	X				LC	1
Anisognathus lacrymosus	Lachrymose Mountain-Tanager	Tangara Lacrimosa	X	X			LC	1
Iridosornis porphyrocephalus	Purplish-mantled Tanager	Musguerito Gargantilla	X		X	CE	NT	1
Chlorochrysa phoenicotis	Glistening-green Tanager	Tángara Esmeralda	X		X	CE	LC	1
Tangara vitriolina	Scrub Tanager	Tángara Rastrojera	X		X	CE	LC	1
Tangara larvata	Golden-hooded Tanager	Tángara Collareja	X		X		LC	1
Tangara rufigula	Rufous-throated Tanager	Tángara Barbirrufa	X			CE	LC	1
Tangara nigroviridis	Beryl-spangled Tanager	Tángara Verilina	X	X			LC	1
Tangara labradorides	Metallic-green Tanager	Tangara Verdinegra	X			CE	LC	1
Tangara gyrola	Bay-headed Tanager	Tángara Cabicirrufa	X				LC	1
Tangara vassorii	Blue-and-black Tanager	Tangara Azulinegra		X			LC	1
Tangara xanthocephala	Saffron-crowned Tanager	Tángara Coronada	X				LC	1
Tangara parzudakii	Flame-faced Tanager	Tángara Rubicunda	X	X			LC	1
Tangara arthus	Golden Tanager	Tangara Dorada	X	X			LC	1
Tangara inornata	Plain Tanager	Tangara Cenicienta	X		X		LC	1
Tangara lavinia	Rufous-winged Tanager	Tangara Alirrufa			X		LC	1
Tangara johannae	Blue-whiskered Tanager	Tangara Bigotuda			X	CE	NT	1
Tangara florida	Emerald Tanager	Tángara Esmeralda ??	X		X		LC	1,5
Tangara icterocephala	Silver-throated Tanager	Tángara Amarilla	X		X		LC	1
Tangara palmeri	Grey-and-gold Tanager	Tangara Grisdorada			X	CE	LC	1
Tangara heinei	Black-capped Tanager	Tángara Capirotada	X				LC	1
Tangara labradorides	Metallic-green Tanager	Tángara Verdiplata	X				LC	11
Dacnis cayana	Blue Dacnis	Dacnis Azul	X		X		LC	1

Iridophanes pulcherrimus	Golden-collared Honeycreeper	Mielero Opalino	X				LC	1
Chrysothlypis salmoni	Scarlet-and-white Tanager	Tangara Rojiblanca	X			CE	LC	1
Cyanerpes caeruleus	Purple hooneycreeper	Mielero Cerúleo	X		X		LC	1
Diglossa sittoides	Rusty Flowerpiercer	Picaflor Canela	X	X	X		LC	1
Diglossa indigotica	Indigo Flowerpiercer	Picaflor del Chocó	X			CE	LC	1
Diglossa albilatera	White-sided Flowerpiercer	Picaflor Flanquiblanco		X			LC	1
Diglossa cyanea	Masked Flowerpiercer	Picaflor de Antifaz		X			LC	1
Diglossa brunneiventris	Black-throated Flowerpiercer	Pinchaflor Gorjinegro	X				LC	1
Diglossa gloriosissima	Chestnut-bellied Flowerpiercer	Pinchaflor Ventrirrufo	X			E	EN	1
Diglossa caerulescens	Bluish Flowerpiercer	Picaflor Azul	X		X		LC	1
Coereba flaveola	Bananaquit	Mielero Común	X		X		LC	1
Tiaris olivaceus	Yellow-faced Grassquit	Semillero Cariamarillo	X		X		LC	1
Catamblyrhynchus diadema	Plushcap	Gorrión Afelpado	X	X			LC	1
Oreothraupis arremonops	Tanager-Finch	Cerquero Tangarino		X	X		VU	1
Chlorophanes spiza	Green Honeycreeper	Mielero Verde			X		LC	1
Cnemoscopus rubrirostris	Scarlet-and-white tanager	Chococito Escarlata	X	X			LC	1
Haplospiza rustica	Slaty Finch	Gorrión Pizarra			X		LC	1
Hemispingus atropileus	Black-capped Hemispingus	Hemispingo Capirotado	X				LC	14
Mitrospingus cassinii	Dusky-faced Tanager	Maraquera Carisucia	X				LC	14
Pipraeidea melanonota	Fawn-breasted Tanager	Viuva de Antifaz	X				LC	1
Saltator atripennis	Black-winged Saltator	Saltador Alinegro	X				LC	1
Saltator maximus	Buff-throated Saltator	Saltador Ajicero	X				LC	1
Sporophila corvina	Variable Seedeater	Espiguero Variable	X			CE	LC	1
Sporophila funerea	Thick-billed Seed-Finch	Arrocero Piquigrueso	X				LC	1
Sporophila nigricollis	Yellow-bellied Seedeater	Espiguero Capuchino	X				LC	1
Volatinia jacarina	Blue-black Grassquit	Espiguero Saltarín	X	X				1
Emberizidae								
Zonotrichia capensis	Rufous-collared Sparrow	Gorrión Copetón	X	X			LC	1
Arremon brunneinucha	Chestnut-capped Brush-Finch	Gorrión Montés Collarejo	X	X			LC	1
Arremon castaneiceps	Olive Finch	Pinzón Oliva	X	X			LC	1
Arremon atricapillus	Black-headed Brush-Finch	Gorrión Montés Cabecinegro	X		X		LC	1
Atlapetes albinucha	White-naped Brush-Finch	Gorrión Montés de Nuca Blanca	X		X		LC	1
Atlapetes crassus	Choco Brush-Finch	Gorrión Montés del Chocó	X	X	X		LC	1
Atlapetes schistaceus	Slaty Brush-Finch	Gorrión Montés Pizarroso	X				NT	1
Atlapetes latinuchus	Yellow-breasted Brush-Finch	Gorrión Montés Cabecirrufo	X				LC	1
Chlorospingus flavopectus	Commom Bush-Tanager	Montero Ojiblanco	X				LC	1

Chlorospingus flavigularis	Yellow-throated Bush-Tanager	Montero Gorgiamarillo		X			LC	1
Chlorospingus semifuscus	Dusky Bush-Tanager	Montero Grisáceo			X		LC	1
Chlorospingus canigularis	Ashy-throated Bush-Tanager	Montero Pectoral	X				LC	1
Oryzoborus funereus	Thick-billed Seed-Finch	Semillero Piquigrueso	X				LC	1
Cardinalidae								
Piranga flava	Hepatic Tanager	Piranga Bermeja	X		X		LC	1
Piranga rubra	Summer Tanager	Piranga Abejera	X		X	MB	LC	1
Piranga leucoptera	White-winged Tanager	Piranga Aliblanca	X		X		LC	1,2
Piranga rubriceps	Red-hooded Tanager	Piranga Cabecirroja	X	X			LC	1
Pheucticus ludovicianus	Rose-breasted Grosbeak	Picogordo Degollado	X	X	X	MB	LC	1
Habia cristata	Crested Ant-Tanager	Habia Copetona	X			E	LC	1
Chlorothraupis stolzmanni	Ochre-breasted Tanager	Guayabero Ocre	X			CE	LC	13
Parulidae								
Setophaga pitiayumi	Tropical Parula	Reinita Tropical	X		X		LC	1
Leiothlypis peregrina	Tenessee Warbler	Reinita verderona	X		X	MB	LC	1
Geothlypis philadelphia	Mourning Warbler	Reinita Enlutada	X			MB	LC	1
Setophaga cerulea	Ceruelean Warbler	Reinita Cerúlea	X			MB	VU	1
Setophaga petechia	Yellow Warbler	Reinita Dorada	X	X	X	MB	LC	1
Setophaga pensylvanica	Chestnut-sided Warbler	Reinita de Pensilvania	X		X	MB	LC	1
Setophaga ruticilla	American Redstart	Candelita Norteña	X	X	X	MB	LC	1
Setophaga fusca	Blackburnian Warbler	Reinita Gorjinaranja	X	X	X	MB	LC	1
Vermivora chrysoptera	Golden winged warbler	Reinita Alidorada	X		X	MB	NT	1
Mniotilta varia	Black-and-white Warbler	Cebrita Trepadora	X	X	X	MB	LC	1
Cardellina canadensis	Canada Warbler	Reinita de Canadá	X	X		MB	LC	1
Myioborus miniatus	Slate-throated Whitestart	Abanico Pechinegro	X	X	X		LC	1
Myiothlypis chrysogaster	Golden-bellied Warbler	Arañero Oliváceo	X	X			LC	1
Myiothlypis coronata	Russet-crowned Warbler	Arañero Coronado	X	X	X		LC	1
Myiothlypis fulvicauda	Buff-rumped Warbler	Arañero Ribereño	X				LC	1
Myiothlypis luteoviridis	Citrine Warbler	Reinita Citrina			X		LC	11
Basileuterus tristriatus	Three-striped Warbler	Arañero Cabecirrayado	X				LC	1
Protonotaria citrea	Prothonotary Warbler	Reinita Cabecidorada	X			MB	LC	1
Icteridae								
Psarocolius angustifrons	Russet-backed Oropendola	Oropéndola Variable	X				LC	1
Psarocolius cassini	Baudo Oropendola	Cacique de Cassin			X	E	EN	1
Psarocolius wagleri	Chestnut-headed Oropendola	Oropéndola Cabecicastaña			X		LC	1
Hypopyrrhus pyrohypogaster	Red-bellied Grackle	Cacique Candela	X			E	VU	1
Cacicus uropygialis	Scarlet-rumped Cacique	Cacique Subtropical			X		LC	1

Icterus chrysater	Yellow-backed Oriole	Turpial Montañero		X			LC	1
Molothrus bonairiensis	Shiny Cowbird	Chamón Común	X				LC	1
Molothrus oryzivorus	Giant Cowbird	Chamón Gigante	X		X		LC	1
Sturnella magna	Eastern Meadowlark	Chirlobirlo	X	X			LC	1
Amblycercus holosericeus	Yellow-billed Cacique	Arrendajo Negro	X				LC	1
Psarocolius decumanus	Crested Oropendola	Oropéndola Crestada	X				LC	4
Fringillidae								
Sporagra xanthogastra	Yellow-bellied Siskin	Jilguero Pechinegro	X				LC	1
Euphonia xanthogaster	Orange-bellied Euphonia	Eufonia Buchinaranja	X	X			LC	1
Euphonia fulvicrissa	Fulvous vented Euphonia	Eufonia Fulva	X	X			LC	1
Euphonia minuta	White-vented Euphonia	Eufonia Culiblanca			X		LC	1,2
Euphonia cyanocephala	Golden-rumped Euphonia	Eufonia Cabeciazul	X				LC	1
Chlorophonia pyrrhophrys	Chestnut-breasted Chlorophonia	Clorofonia Ferruginosa	X		X		LC	1
Chlorophonia flavirostris	Yellow-collared Chlorophonia	Clorofonia Collareja	X			CE	LC	1
Chlorophonia cyanea	Blue naped Chlorophonia	Clorofonia Verdiazul	X	X			LC	1
Astragalinus psaltria	Lesser Goldfinch	Jilguero Menor	X	X			LC	1

Distribución: Migratoria boreal (MB), Migratoria austral (MA), Endémica (E), Casi Endémica (CE).

Categorías IUCN: Extinta (EX), Extinta en estado silvestre (EW), En peligro crítico (CR), En peligro (EN): Vulnerable (VU), Casi amenazada (NT), Preocupación menor (LC), Datos insuficientes (DD), No evaluado (NE).

Reservas: RNA-T: Las Tangaras; RNA-GA: Gorrión Andivia; RNA-LC: Lora Carirosada.

Fuente: 1. Observaciones personales de Oswaldo Cortes (OC); Registros eBird**:** 2. Adam Timpf 3. Avery Bartels 4.Celeste Paiva 5.Christopher Burney 6. Gustavo Bautista 7. Jeff Skevington 8. John DeLuca 9. John Kvarnback 10. Joseph Blowers 11. Juan Ochoa 12. Matthew Sarver 13. Tad Blank 14. Todd Boland.

Cada punto cuenta. Nuevos registros encontrados durante una evaluación rápida de diversidad en uno de los tepuyes del Parque Nacional Serranía de Chiribiquete, durante la filmación del documental de National Geographic 'Wild Colombia' y de la película 'Colombia Magia Salvaje'.

What's the point? New biodiversity records from a rapid assessment of a tepuy in PNN Serranía de Chiribiquete during the filming of the National Geographic documentary 'Wild Colombia' and the feature film 'Colombia Magia Salvaje'.

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Abstract: A short study was made of a tepui in Serranía de Chiribiquete, Colombia, focusing on Lepidoptera but also some other faunal groups (Coleoptera, Aves). This was done as part of filming of the documentary *Wild Colombia* and feature film *Colombia Magia Salvaje*. 86 morphospecies of Lepidoptera were identified, including 21 butterflies. These include a first national record of *Marpesia berania* (Hewitson, 1852), a new elevational record for *Eunica anna* (Cramer, 1780) and a new species of Erebidae. Other results of the expedition included the first ever filming of significant precolumbian artwork depicting animal species. This short study is an example of how nature filming can work together with rapid biodiversity studies, producing results for both disciplines.

Keywords: Lepidoptera, Butterflies, Moths, Coleoptera, beetles, birds, new records, wall paintings

Resumen: Se realizó un estudio corto de la diversidad principalmente de Lepidoptera, pero también de otros grupos faunísticos (Coleoptera, Aves), en uno de los tepuis de la Serranía de Chiribiquete, Colombia . Este estudio fue parte de la filmación del documental *Wild Colombia* y parte de la película *Colombia Magia Salvaje*. Se identificaron 86 morfoespecies de Lepidoptera incluyendo 21 mariposas diurnas. Este reporte incluye el primer registro publicado para Colombia de *Marpesia berania* (Hewitson, 1852), una ampliación del rango altitudinal de *Eunica anna* (Cramer, 1780) y una nueva especie de Erebidae. Otros resultados de la expedición incluyen la primera filmación de pinturas rupestres precolombinas en la zona. Este estudio rápido es un ejemplo del beneficio de registrar rigurosamente la biodiversidad en un sitio durante una filmación, produciendo resultados en ambas disciplinas.

Palabras clave: Lepidoptera, mariposas, polillas, escarabajos, aves, nuevos registros, pinturas precolombinas.

Introducción

En conexión con la película *Colombia Magia Salvaje (www.magiasalvaje.org)* y el documental *Wild Colombia* del canal National Geographic (NatGeo Wild), y con la colaboración de varias organizaciones colombianas como la Fundación Ecoplanet, se realizó una expedición rápida a la Serranía de Chiribiquete a comienzos del mes de octubre del año 2014. La expedición tenía tres objetivos principales. Primero, de ilustrar la posibilidad de encontrar novedades en la fauna colombiana en remotos lugares utilizando métodos de una evaluación rápida. Segundo, de redescubrir (y filmar en alta definición por primera vez) unas pinturas murales de origen precolombino y tercero, filmar escenarios espectaculares y desconocidos de la Serranía de Chiribiquete para el documental y película.

El Parque Nacional Natural (PNN) Serranía de Chiribiquete, se encuentra ubicado en los departamentos de Guaviare y Caquetá en el sur de Colombia. Esta localizado entre las provincias biogeográficas de la Amazonia y la Guyana. Este PNN, establecido en 1989,

Figura 1. Paisaje de Serranía de Chiribiquete, Tepui estudiado a la derecha © F. Forero.

ocupa la sección más occidental de esta última con formaciones de mesetas calizas (Foster 2002). Estas montañas se separan por kilómetros de espesa selva y son conocidas como tepuyes —del Arawak 'tepui' o 'tepuy' (Castaño-Uribe 1999). Los tepuyes son imponentes formaciones sedimentarias muy antiguas en el techo de la amazonia y con formación geológica distintiva, los cuáles alcanzan elevaciones de más de 500 metros y en sus partes más elevadas, albergan una fauna y flora muy particular. En otras zonas en la Amazonia en Venezuela, Brasil y las Guyanas, existen formaciones de tepuyes parecidas y mucho más altas conocidas también como Pantepuis, alcanzando elevaciones desde los 400m hasta 2500 metros de altitud, albergando un gran número de especies endémicas (Costa *et al.* 2014).

La Serranía de Chiribiquete es considerada como una de las áreas protegidas más grande de Latinoamérica con cerca de un millón de hectáreas de bosques prístinos y paisajes portentosos. Asi, es de gran importancia nacional pero a su vez, es uno de los parques nacionales naturales más desconocidos en cuanto a su diversidad, debido a su gran extensión y complejidad geográfica. El aislamiento geográfico de estas montañas a otras cadenas calizas en el norte de la Amazonia resulta en que la región alberga varias especies endémicas (únicas de estos hábitats), amenazadas e incluso nuevas para la ciencia. Por ejemplo, el colibrí *Chlorostilbon olivaresi* (Stiles 1996) fue descubierto durante una expedición a las partes más altas de la Serranía, accesibles únicamente vía helicóptero. También han sido descubiertos un escarabajo bupréstido *Chrysobothris chiribiquitensis*

(Bellamy 1995), una especie de mariposa *Cartea chiribiquetensis* (Salazar & Constantino 2007), varias plantas (Cardiel Sanz 1993, Sastre 1995, Peters *et al.* 2008) y otros insectos como libélulas han sido descritos como únicos de la Serranía. Con certeza, hay muchas más especies endémicas aún sin describir en grupos megadiversos y poco estudiados como los invertebrados.

Desde 1992 y durante las últimas décadas, grupos de investigación de universidades o independientes y ONGs han realizado expediciones periódicas y de monitoreo en las zonas bajas de la serranía entre los años de 1992 al 2001 y 2011, enfocándose primariamente en aves (Álvarez *et al.* 2003), mamíferos (Montenegro & Romero-Ruiz 1999), herpetos y plantas (Fig. 2). La gran mayoría de estas exploraciones no han resultado en reportes técnicos publicados. Sin embargo, las aves han sido el grupo mejor estudiado, con registros publicados de más de 500 especies habitantes en la zona (Álvarez *et*

al. 2003). Los insectos y otros invertebrados, han sido estudiados en mucha menor escala, aunque existen estudios de hormigas (Ospina *et al.* 2001), mariposas (Fagua & Sánchez *sin publicar*) y escarabajos (Pulido *et al.* 2003) en las partes bajas en el sur de la Serranía, y se han descrito dos especies de mariposas nuevas para la ciencia (Constantino & Johnson 1997, Salazar & Constantino 2007). Castaño-Uribe (1999) reporta 40 especies de mariposas y 78 de escarabajos, mientras que estudios de la Fundación Puerto Rastrojo (von Hildebrand *sin publicar*) reportan 337 especies y morfoespecies de mariposas.

Figura 2. Mapa ilustrando algunos de los principales muestreos de fauna realizados en el PNN Serranía de Chiribiquete y referenciados por autor, en la bibliografía. El lugar de estudio, es el punto amarillo mas norte. Nota: sólo dos estudios se han realizado en la parte norte de la Serranía. © Google Earth.

Se desconocen estudios en otros grupos faunísticos diferentes a aves y plantas en las partes altas de la Serranía asequibles únicamente vía helicóptero. La Serranía de Chiribiquete, no sólo es megadiversa biológicamente, sino culturalmente, pues se han encontrado pictografías indígenas únicas en los abrigos rocosos de los cerros que podían tener hasta 20 mil años de antigüedad (Castaño-Uribe 1999) los cuales también fueron uno de los objetivos de observación y fotografía en esta expedición.

Objetivos de la expedición

La expedición fue organizada por la productora *Off the Fence* (www.offthefence.com), la Fundación Ecoplanet (www.ecoplanet-f.org), y el Natural History Museum London con el propósito de capturar tomas de la Serranía para la película *Colombia Magia Salvaje* (www.magiasalvaje.org) al igual que para el documental del canal National Geographic *Wild Colombia* parte 3 (http://natgeotv.com/uk/destination-wild-colombia/about). Este proyecto contó también con el respaldo de Parques Nacionales, quienes otorgaron permisos y permitieron la participación de uno de sus funcionarios en la expedición, al igual que la Fundación de Una Colombia.

Se seleccionaron grupos de estudio indicadores y con metodologías de muestreo conocidos. Este estudio también tuvo como propósito proporcionar información poco documentada para ser útil para futuros estudios del área y planes de manejo, suministrando herramientas para argumentar la conservación de esta zona. El tepui estudiado, no había sido explorado anteriormente en ningún grupo faunístico, constituyéndose en un aporte pequeño pero importante a la ampliación del rango geográfico de las especies acá documentadas.

Metodología y resultados preliminares

Localización geográfica del área de estudio

Este estudio se realizó en un tepui, comprendido dentro del perímetro del Parque Nacional Natural Serranía de Chiribiquete, en límites entre los departamentos de Guaviare y Caquetá, coordenadas 01°09.00N y 72°48.16W, elevación sobre el nivel del mar de 625 m (Figs. 1-3). Las coordenadas fueron tomadas con un sistema de posicionamiento global (Magellan GPS 301).

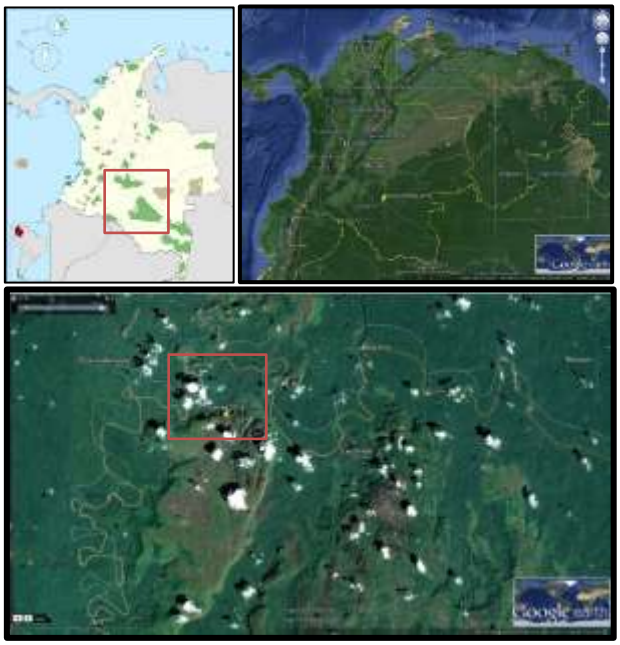
Figura 3. Izquierda arriba, mapa de los PNN en Colombia con detalle de Chiribiquete, cuadrado rojo (Wikipedia, Parques Nacionales). Derecha arriba, localización del sitio de muestro en la Serranía de Chiribiquete, Colombia. Abajo, detalle de la zona de muestreo, terrazas de los Tepuyes. © Google Earth.

Debido a la complejidad geográfica del área y el aislamiento de los Tepuyes, solo fue posible llegar al lugar de estudio en helicóptero después de un trayecto de más de una hora de vuelo desde San José del Guaviare. Los métodos para realizar acceso vía helicóptero con

propósitos de estudios biológicos rápidos utilizados, son detallados en Donegan *et al.* (2009). El trabajo de campo se realizó durante cuatro días durante el mes de Octubre de 2014, utilizando la un muestreo rápido de la fauna de insectos, en particular Lepidoptera, de la parte alta del tepuy estudiado. El estudio biológico, fue realizado por Blanca Huertas con ayuda ocasional del funcionario de parques acompañante Arturo Rodríguez y el guía de campo Thomas Doyer. Los demás miembros del equipo se ocuparon de la captura de imágenes de video, búsqueda de las pinturas precolombinas y fotografía de los hábitats de la Serranía.

Los métodos utilizados se resumen a continuación en particular a cada grupo faunístico y hacen parte de la metodología de evaluaciones rápidas (RAPs) (Donegan & Huertas 2005, Huertas & Donegan Eds. 2006, Huertas 2004). Un factor clave en la planeación, es maximizar los recursos y oportunidades disponibles, teniendo en cuenta las limitaciones con que se cuenta para cualquier estudio ecológico. Los RAPs, han sido de gran importancia en zonas de alta diversidad, pues son una buena fuente de datos en zonas remotas y difíciles de acceder como la Serranía de Chiribiquete.

Para cada uno de los diferentes grupos taxonómicos se utilizó la siguiente metodología:

(a) Lepidoptera:
Pese a que Colombia se encuentra entre los países con mayor diversidad de especies de mariposas del mundo (más de 3500 especies registradas para Colombia y más de 19,000 en el mundo), no se cuenta aún con una guía completa e ilustrada que comprenda toda la fauna de mariposas del país. Existen trabajos *ad hoc* de gran importancia para su estudio como la serie *Mariposas de Colombia Volúmenes 1 y 2* editados por LeCrom y colaboradores (2002 & 2004) aunque se han tratado dos de las seis familias actualmente reconocidas. Existen pocos inventarios faunísticos en este grupo hechos en Chiribiquete pero no publicados aún (ver introducción para referencias). Sin embargo, estos han sido realizados en las partes más bajas de la Serranía y hacia la parte sur del parque nacional. Este inventario rápido, fue realizado en la zona más norte del parque y en las partes más altas. Debido a la extensión del parque, este muestreo rápido no provee información suficiente para realizar un análisis ecológico, pero es el primero en proveer una lista de algunas de las especies de Lepidoptera registradas en la parte alta de uno de los tepuis de esta Serranía. Las identificaciones y guía ilustrada adjunta al informe técnico presentado, son útiles para asistir con la identificación de otros Lepidoptera de la zona en futuros estudios.
Las mariposas nocturnas o polillas (Heterocera), son un grupo de gran diversidad (*c*.140,000 especies en el mundo), por lo cual presentan un reto para su estudio y más en zonas de gran diversidad como la región Neotropical y Colombia en particular, donde no se tiene siquiera un estimativo de la diversidad de las especies de este grupo que allí existen. Como consecuencia, tampoco existen listas de chequeo, o guías ilustradas que asistan con la identificación en este grupo y hay mínimos estudios disponibles. De la misma manera, reciben menor atención del público que otros insectos por su apariencia y sus hábitos primariamente nocturnos. Esto también se refleja en una menor proporción de investigadores activos en este grupo en el país y una casi nula representación de especímenes en colecciones.

Para todos los ejemplares estudiados (sacrificados, observados o fotografiados), se tomaron datos básicos de colecta como fecha, localización, vegetación, elevación y coordenadas. Adicionalmente, otras observaciones de campo particulares fueron tomadas para cada especie registrada.

(i) Mariposas
Para la colecta de las mariposas diurnas (Papilionoidea) en particular, se utilizó la estrategia de "patrullamiento" sin establecer puntos fijos de colecta o recorridos hasta donde fue posible al borde del tepui, pero debido al corto muestreo, otros análisis de fauna diferentes al listado de especies y caracterización (por ejemplo curvas de acumulación de especies) no fueron posibles de realizar.
Las mariposas diurnas fueron colectadas entre las 0600 horas a las 1700 horas, utilizando una red estándar para la colecta. Con el propósito de cubrir otros gremios alimenticios y muestrear en el borde abismal del tepui, se instalaron 5 trampas tipo VSR cebadas (modificadas de DeVries, 1987) a un máximo de 2.5 metros posible debido al tamaño reducido de la vegetación y a un mínimo de 20 metros de distancia entre ellas, hasta donde la geografía del terreno lo permitiera (Fig. 4). Esto último con el propósito de reducir el solapamiento de diferentes cebos utilizados en las trampas, entre los cuales se utilizó primariamente banana fermentada y frutos de mar en descomposición.

Por ser la primera vez que se hace un muestreo de las mariposas en las partes altas del Tepui estudiado (Serranía de Chiribiquete), la mayoría de las mariposas fueron colectadas con el propósito de establecer una colección de referencia que facilite la identificación de especímenes y futuros estudios. Ya procesados e identificados completamente, los ejemplares son depositados en la colección nacional de referencia del Instituto Alexander von Humboldt en Villa de Leyva. Debido al corto periodo de muestreo, se realizó un inventario rápido con total de 72 horas de muestreo (no incluyendo las horas de transporte de llegada y salida), por ende no es posible realizar ningún tipo de análisis

ecológico pero el listado de especies es el primero conocidos para este tipo de hábitat de tepui en la Serranía.

Figura 4. Paisaje típico de las partes más alta de los Tepuyes a 600 msnm en la Serranía de Chiribiquete. © B. Huertas.

Se registraron un total de 21 especies de mariposas diurnas (Lepidoptera: Papilionoidea), distribuidas en 13 géneros (Tabla 1), en su mayoría conocidos de la región amazónica y escudo Guyanés. Dos ejemplares no han podido ser identificados a especie, debido a que hacen parte de complejos de especies que necesitan tratamientos taxonómicos más detallados y demandan estudios microscópicos que a la fecha no son posibles debido a las legislaciones existentes para el movimiento de ejemplares y el número limitado de ejemplares para estudio (*Celmia cf. mecrida* y *Hermeuptychia sp.*). Esta última especie, idealmente debería identificarse utilizando técnicas moleculares pues pertenece a un complejo de especies cripticas estudiado recientemente (Seraphim *et al.* 2014).

Uno de los resultados biológicos más importante en esta mini-expedición, es el primer registro publicado en Colombia de la especie *Marpesia tutelina* (Hewitson, 1852) (Fig. 5). Esta especie se describió en Brasil, pero recientemente se han registrado ejemplares en Ecuador y Perú. Su descubrimiento en la Serranía de Chiribiquete representa una ampliación en su rango de distribución conocido, confirmando su presencia en el amazonas colombiano. A la fecha, no se han encontrado otro ejemplar de esta especie colectada en Colombia en ninguna colección principal, además de un ejemplar sin datos en el ICN-UN en Bogotá (J.F. LeCrom *com. pers.*).

Se registró el vuelo conjunto de varias especies, en lo que parece un punto de confluencia de seis especies del género *Marpesia*: *M. crethon, M. tutelina, M. chiron, M. petreus, M. themistocles y M. berania*. Esto representa una tercera parte de las especies conocidas del género, con especies comunes localmente volando en tierras bajas. Adicionalmente, algunas especies son de muy amplia distribución como por ejemplo *M. berania*, *M. petreus* y *M. chiron*, esta última que vuela desde México por casi toda la región Neotropical. Este grupo de especies, se debe estudiar en detalle, pues existen varias subespecies particulares a la amazonia. Al parecer los tepuyes podían ser un hábitat importante para la evolución y diversificación de este grupo.

Figura 5. Arriba: *Marpesia berania* volando en la vegetación particular de los tepuyes de la Serranía de Chiribiquete Abajo: *Marpesia tutelina* espécimen colectado durante la expedición © B. Huertas.

Otro género con un número elevado de especies encontradas en la misma localidad de estudio es *Eunica*, con tres especies volando juntas *E. mygdonia, E. sydonia y E. anna*. Especies de este género se encuentran tanto en buenos bosques que en bordes de bosque, pero no son comunes de encontrar. *E. mygdonia* tiene un rango de distribución amplia, volando desde México hasta la parte tropical de Suramérica. Sin embargo, *E. anna* aparece rara y poco registrada en colecciones, aunque pueda ser resultado de no ser registrada adecuadamente en el país. También, este es un nuevo registro altitudinal, pues solo se conocen en la literatura registros de esta especie

volando a no más de 200 msnm y con los datos acá presentados, se amplía su rango elevacional a 600 msnm..

Tabla 1. Especies de mariposas (Lepidoptera: Papilionoidea) encontradas durante la expedición.

Familia	Subfamilia	Nombre científico
NYMPHALIDAE	Biblidinae	*Eunica mygdonia* (Godart, [1824])
		Eunica sydonia (Hewitson, [1857])
		Eunica anna (Cramer, 1780)
		Historis odius (Fabricius, 1775)
	Charaxinae	*Memphis glaucone* (C. Felder & R. Felder, 1862)
	Cyrestinae	*Marpesia themistocles* (Fabricius, 1793)
		Marpesia petreus (Cramer, 1776)
		Marpesia chiron (Fabricius, 1775)
		Marpesia tutelina (Hewitson, 1852)
		Marpesia crethon (Fabricius, 1776)
		Marpesia berania (Hewitson, 1852)
	Heliconiinae	*Dryas iulia* (Fabricius, 1775)
	Limenitidinae	*Adelpha capucinus* (Walch, 1775)
		Adelpha thesprotia (C. Felder & R. Felder, 1867)
	Nymphalinae	*Baeotus deucalion* (C. Felder & R. Felder, 1860)
	Satyrinae	*Hermeuptychia sp.*
LYCAENIDAE	Theclinae	*Ministrymon zilda* (Hewitson, 1873)
		Celmia cf. mecrida (Hewitson, 1867)
RIODINIDAE	Riodininae	*Emesis mandana* (Cramer, 1780)
PIERIDAE	Pierinae	*Phoebis argante* (Brown, 1929)
		Ascia monuste (Linnaeus, 1764)

(b) Escarabajos y otros insectos

Los escarabajos coprófagos (Coleoptera: Scarabaeinae) fueron colectados utilizando 5 trampas de caída (pitfall). Estas trampas fueron cebadas con excremento e instaladas a ras del suelo siguiendo la metodología descrita en Southwood (1966), el cebo en cada trampa fue reemplazado cada 48 horas y revisado en la mañana a primera hora y en el atardecer. Los especímenes fueron preservados en frascos plásticos con alcohol y La identificación preliminar en el campo no fue posible y dichas muestras aún necesitan ser montadas y procesadas.

Otros insectos de los órdenes Hymenoptera y Orthoptera fueron colectados de forma no sistemática y *ad hoc*, principalmente en las trampas VSR de cebo para las mariposas. Debido al limitado acceso al material de estudio, no todos los especimenes se han podido identificar a nivel de especie. Especialistas en cada grupo en el NHM Londres observaron grabaciones y fotos, suministrando el listado preliminar que aparece abajo.

(ii) Polillas o mariposas nocturnas (Heterocera)

Los Heterocera, fueron estudiados dos noches, utilizando una trampa de luz UV (*light sheet*) desde las 20.00 horas hasta las 23.00 horas, generalmente con intrusión de lluvias torrenciales. Pese a la brevedad de este estudio y las desfavorables condiciones climatológicas durante el estudio, este muestreo rápido se registra de polillas como el primero para la Serranía y probablemente la región. Otras especies de polillas fueron capturadas en las trampas de cebo de mariposas, y otras atraídas por la luz en el campamento. Todos los especímenes fueron sacrificados.

Tabla 2. Especies de polillas (Lepidoptera) identificadas hasta nivel de género encontradas durante la expedición.

Familia	Nombre científico
SATURNIIDAE	*Automeris cinctistriga (Felder, 1874)*
	Hylesia sp.
SPHINGIDAE	*Perigonia stulta* Herrich-Schaffer, 1854
EREBIDAE	*Coenipeta* sp.
	Xanthoarctia Pseudameoides Rothschild, 1909
	Psychophasma erosa ((Herrich-Schäffer, 1858)
	Syllectra erycata Stoll, 1780
	Heliura sp.
	Trichromia cf. onytes (Cramer, 1777)
	Coiffaitarctia cf. ockendeni (Rothschild, 1909)
	Eriostepta cf. bacchans (Schaus, 1905)
	Epidesma klagesi Rothschild, 1912
	Eulepidotis juncida Guenee, 1852
CTENUCHIDAE	*Belemnia ochriplaga* Hampson, 1901
NOCTUIDAE	*Zale* sp.
CRAMBIDAE	*Glyphodes cf. Sibillalis* Walker, 1859
	Diaphania sp.
GEOMETRIDAE	*Pyrinia* sp.
LASIOPCAMPIDAE	*Euplyphis* sp.
NOTODONTIDAE	*Nystalea* sp.
	Hemiceras sp.

Pese a contar con la ayuda de expertos mundiales en varios grupos en el NHM en Londres, no se ha podido completar la identificación de los ejemplares, debido a la complejidad y pobre conocimiento de estos organismos en los Neotrópicos. Sumado a ello, fotografías para la identificaron son insuficientes, pues la mayoría de los ejemplares deben ser disectados para su identificación.

Se registró un total de 65 especies de polillas en la parte alta del tepui. De estas, solo 20% se han podido identificar hasta especie o género (Tabla 2), incluyendo aquellas especies que tienen amplio rango de distribución amplio en la amazonia y son relativamente bien conocidas por expertos (ver agradecimientos). Sin embargo, la colección de referencia e identificada producida podrá facilitar la identificación de ejemplares en otros estudios. La lista se presenta a continuación. Una nueva especie de Erebidae para la ciencia se ha encontrado y está en proceso de descripción.

Un listado preliminar de otros ejemplares de Insecta colectados se presenta en la Tabla 3:

Tabla 3. Otros Insecta identificados hasta género encontrados durante la expedición.

Orden	Familia	Nombre cientifico
Coleoptera	Scarabaeidae	*Leucothyreus sp.*
	Lampyridae	*Photinus sp*
Orthoptera	Mantoidea	*Liturgusa sp*
	Tettigoniidae	*Copiphora sp*
Hymenoptera	Apidae	*Eufriesea cf. chrysopyga* (Mocsáry, 1898) *Centris cf. ferruginea* Lepeletier, 1841

(c) Aves

Debido a que no se obtuvo el permiso de estudio, no se instalaron redes de niebla, pero se realizaron algunas observaciones y grabaciones *ad libitum* durante el trabajo de campo con invertebrados, registrando las siguientes especies:

- *Cathartes aura*, Guala Cabecirroja, una especie común en todo el neotrópico. Registro fotográfico.
- *Hirundinea ferruginea*, Atrapamoscas Risquero, una especie de acantilados, con muy pocos registros en Colombia, pero conocido antes de estudios en otras partes del PNN Chiribiquete (Álvarez *et al.* 2003). Registro fotográfico.
- *Pygochelidon cyanoleuca*, Golondrina Blanquiazul, una especie insectívora generalmente encontrada en la zona andina de Colombia pero también con un registro anterior en PNN Chiribiquete (Stiles *et al.* 1995). Registro videográfico y de grabación. Las grabaciones de esta golondrina, han sido subidas al sitio web www.xeno-canto.org, con números de catálogo XC260140-1. Estos registros, corresponden a las únicas grabaciones de esta especie realizadas en la región amazónica de Colombia.

Evaluación preliminar y recomendaciones Conclusiones

Pese al limitado tiempo de colecta en una expedición de 72 horas y las ocupaciones propias de la producción de la filmación, se realizaron algunos muestreos como se plantearon originalmente y se pudo realizar el primer listado de algunos grupos de invertebrados que habitan los tepuis de la Serranía de Chiribiquete. El registro de 86 morfoespecies de mariposas y más de 20 en otros grupos de insectos con todas las limitaciones presentadas, deja entrever la extraordinaria riqueza de este lugar.

El resultado más ampliamente reconocido de esta expedición, sin duda, es el redescubrimiento y filmación de las pinturas indígenas (Fig. 6, Portada), las cuales han sido el enfoque del mensaje conservacionista utilizado en la terminación de la película *Colombia Magia Salvaje*. Esta película, que incluye tomas del paisaje de Chiribiquete (Figs. 1, 7) tomados durante la expedición, ha sido vista por casi 2 millones de personas en Colombia en cines, siendo la película más exitosa en la historia del país hasta la fecha.

Estos dibujos históricos son de varias especies de mamíferos como venados, el jaguar *Panthera onca* y chigüiro *Hydrochoerus hydrochaeris*, siendo de interés biológico e histórico. No obstante, los nuevos registros y posibles nuevos taxones encontrados en el presente estudio, tienen ya gran valor científico, y estos resultados han atraído la atención de investigadores, público, gobiernos, NGOs y otros hacia la Serranía y la importancia de su conservación. Se necesitan más investigaciones, inventarios y en general conocimiento sobre la fauna y los paisajes de esta Serranía. La cooperación con instituciones y profesionales en capacidad de suplementar las necesidades es fundamental, y se recomienda facilitar como hasta ahora el estudio serio de la Serranía de Chiribiquete.

Esta expedición demuestra que una iniciativa como una película sobre naturaleza puede beneficiar la ciencia, y *vice versa*, pues aunque el tiempo disponible para el estudio fue relativamente poco, se alcanzaron registrar registros de nuevas especies para el país y la región, los cuales son una pequeña pero significativa contribución a la ciencia, el conocimiento y el patrimonio nacional.

Se sugiere la posibilidad de una próxima expedición, con más tiempo disponible, para poder realizar los análisis de acumulación de especies y poder tener una mejor idea de la dinámica del ecosistema. La participación de expertos en diferentes grupos faunísticos, beneficiaría las identificaciones y evaluaciones *in situ* y mejoraría la calidad de colecciones en otros taxones que no se hayan

Figura 6. Pinturas rupestres filmadas por primera vez durante la expedición © Fundación Ecoplanet / F. Forero.

estudiado en detalle hasta el momento. Teniendo series más largas de organismos representando las comunidades de flora y fauna de la serranía, seremos más capaces de diferenciar y eventualmente nombrar, aquellas poblaciones aisladas geográficamente que aún no se conocen bien.

Agradecimientos

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Figura 7. La majestuosidad de la Serrania de Chiribiquete © Fundación Ecoplanet / F. Forero.

INSTRUCCIONES PARA AUTORES

Conservación Colombiana es publicada dos veces al año por la Fundación ProAves, una entidad sin ánimo de lucro registrada, que tiene como misión "proteger las aves silvestres y sus hábitat en Colombia a través de la investigación, las acciones de conservación puntuales y el acercamiento con las comunidades locales. El propósito de la revista es divulgar los resultados de las investigaciones y acciones de conservación de las especies colombianas amenazadas de extinción. El formato y tipo de los artículos que se publican es variado incluyendo reportes internos de las actividades en conservación desarrolladas por la Fundación, resultados de las investigaciones y el monitoreo de especies amenazadas, proyectos de grado de estudiantes universitarios, inventarios y conteos poblacionales, planes de acción o estrategias desarrolladas para especies particulares, sitios o regiones y avances en la expansión de la red de áreas protegidas en Colombia.

Conservación Colombiana está dirigida a un público amplio. Principalmente a científicos, conservacionistas y personas interesadas en general en la conservación de las especies amenazadas de Colombia y sus hábitats. Por esta razón es una publicación de carácter científico, aunque laxa en su formato y contenidos.

Las contribuciones deben ser en castellano o inglés y todo manuscrito debe incluir títulos y resúmenes en castellano y en inglés. Los artículos preferiblemente deberán tener una extensión aproximada entre 2,000 y 7,000 palabras, y se dará preferencia a los escritos más cortos. Aunque también se aceptan, a discreción del comité editorial, artículos o compendios largos, los cuales pueden constituir artículos en un mismo tema o monografías que abarquen un número completo de la revista. Las contribuciones serán evaluadas por el comité editorial y en cada caso se ofrecerá a los autores un concepto sobre su publicación tan pronto como sea posible.

Deben entregarse en formato digital, vía correo electrónico en formato RTF. El texto se debe ajustar a dos columnas y se debe usar interlineando sencillo, párrafos justificados, márgenes de 1.78 cm a cada lado, a excepción del inferior que debe ser de 1.52 cm. Titulos y subtitulos de los articulos en letra *Times New Roman* 12, texto en general y para nombrar graficas y Cuadros en *Times New Roman 10*.

Los nombres científicos deben estar escritos en letra cursiva y deben estar mencionados después del nombre en castellano la primera vez en el titulo, resumen y texto. En adelante solo debe usarse el nombre en castellano. Abreviaturas como sp. y spp. no son nombres y no van en cursiva.

Todo artículo científico debe contener las siguientes secciones a excepción de las pequeñas reviciones de especies.

- Titulo en castellano e inglés y autores
- Resumen en castellano e inglés
- Introducción
- Métodos
- Resultados
- Discusión
- Agradecimientos
- Bibliografía

Contribuciones como descripciones de nuevos taxa, revisiones de literatura, discusiones de manuscritos, o artículos en forma de ediciones completas, deben usar secciones apropiadas como es su usanza en la literatura científica. No obstante, su aceptación final queda a criterio del comité editorial.

El titulo debe ser en mayúsculas (sin punto final), Arial 16 y negrilla, el segundo titulo en ingles o español dependiendo del lenguaje del articulo debera ir en *Times New Roman* 12, seguido en reglón aparte por el nombre de los autores en negrilla, sus afiliaciones institucionales y la dirección electrónica del primer autor. Se recomienda a los autores usar solo su primer nombre y apellido. Sin embargo, en caso que quiera usar su segundo apellido deberá ligarlo con un guión corto (–) al primer apellido.

Es recomendable que los resúmenes no excedan las 300 palabras o el 5 % de la longitud total del texto y debe incluirse una lista de palabras clave en el idioma respectivo.

3. CONSERVACIÓN EN COLOMBIA

La conservación en Colombia ha sido históricamente…

7.1. Loros amenazados

Los loros amenazados de Colombia…

7.1.1. Loros en peligro (EN)

Los loros en peligro en Colombia se encuentran principalmente en la zona Andina…

Las Cuadros, figuras y anexos deben estar citados en el texto. Como figuras se entienden todo tipo de gráficos, dibujos, mapas, fotos e ilustraciones. Para las Cuadros, la leyenda debe ir arriba y las explicaciones de abreviaturas o simbología al pie en cursiva. Solamente se deben usar líneas horizontales en las Cuadros. Para las figuras, la leyenda debe ir al pie de la misma. Se recomienda que cada leyenda incluya información suficiente para ser entendida

por si misma sin necesidad de volver al texto y que incluya el nombre de la figura, un referente geográfico y temporal, y el nombre abreviado del manuscrito y el periodo del estudio.

Todas las citas en el texto deben estar en la bibliografía y viceversa. Las citas en el texto se deben ordenar cronológicamente. Cuando se cita en el texto no se debe usar coma entre el nombre del autor y la fecha, y se usan comas para separar dos referencias. En citas donde hay dos autores, estos se separan usando "&" no "y". Para citas donde hay más de dos autores se usa "*et al.*", escrito en cursiva. Se deben usar letras minúsculas seguidas al año para diferenciar varios trabajos del mismo autor y año, así: Moreno 1995a, Moreno 1995b. Se pueden citar trabajos publicados o aceptados para publicación, tesis universitarias e informes y reportes internos; que a su vez deberán ir en la Bibliografía. Artículos aceptados para publicación pero aún no publicados se citan como "*en imprenta*", ej: Salaman (*en imprenta*). Manuscritos inéditos o no aceptados y comunicaciones personales se citan únicamente en el texto, como datos no publicados y comunicación personal respectivamente, incluyendo la inicial del nombre del autor, ej: D. Caro (datos no publ.), C. Gómez (com. pers.).

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Autor, I.N.I. Año. *Título*. Editorial o institución que publica, Ciudad de publicación. Si se cita un libro colegiado, se cita el nombre del editor o editores con (ed.) o (eds.). Ej:

Hilty, S. & Brown W. 1986. *A Guide to the Birds of Colombia*. Princeton University Press, Princeton.

Chaves, M.E. & Arango, N. (eds.) (1998) *Informe nacional sobre el estado de la biodiversidad 1997*. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, PNUMA, Ministerio del Medio Ambiente, Bogotá.

Artículos

Autor, I.N.I. Año. Título. *Revista* volumen (o número): páginas del artículo. Ej:

Kattan, G., Alvarez, H. & Giraldo, M. 1994. Forest fragmentation and bird extinctions: San Antonio eighty years later. *Conservation Biology* 8: 138–146.

Pacheco, A. (en prensa). Biología reproductiva del Loro Orejiamarillo (*Ognorhynchus icterotis*) en el Municipio de Roncesvalles, Departamento del Tolima. *Conservación Colombiana* 0:00.

Capítulos o contribuciones dentro de un libro

Autor, I.N.I. Año. Título. Páginas en: Editor (ed.). *Título*. Editorial o institución que publica, Ciudad de publicación. Ej:

Rosselli, A. & Estela, F. 2002. *Vireo caribeus*. Pp. 367–370 en: Renjifo, L.M., Franco–Maya, A.M., Amaya–Espinel, J.D., Kattan, G.H. & Lopéz–Lanús, B. (eds.) *Libro rojo de aves de Colombia*. Instituto de investigación de Recursos Biológicos Alexander von Humboldt & Ministerio del Medio Ambiente, Bogotá.

Artículos publicados en el Internet o extractos de páginas electrónicas.

Autor, I.N.I. Año. *Titulo*. Institución que publica. Disponible en: URL [fecha de acceso]

FAO 2001. *Global forest resources assessment 2000: main report. Food and Agriculture Organization of the United Nations*. Forestry Paper No. 140. Disponible en: http://www.fao.org/forestry/index.jsp [descargado en febrero de 2006].

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Numeración en el texto. Cuando un número va acompañado de una unidad siempre se deberá escribir como un número arábigo. Los miles se deberán marcar con una coma (,) y las fracciones decimales con puntos. Cuando los números no van seguidos de unidades, los dígitos de cero a nueve se escriben con palabras y de 10 en adelante con números arábigos. Para separar un intervalo, al igual que en cualquier otra oportunidad que se quiera usar un guión en el texto, se deberá usar el guión corto (–) y no el guión de no separación (-). Es recomendable no usar en cifras decimales más de tres dígitos.

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Los trabajos que pasen la primera etapa serán enviados a por lo menos dos árbitros expertos en el área de conocimiento respectiva, cuyas identidades serán desconocidas para los autores a través de todo el proceso de evaluación. Para notas cortas (menos de dos páginas) el uso de un solo árbitro con comentarios del comité editorial es también posible. Para asegurar la imparcialidad en la evaluación, las identidades de los autores también resultan desconocidas para los árbitros (proceso de evaluación doblemente ciego). Los árbitros disponen de dos semanas para remitir un concepto detallado sobre los siguientes aspectos u otros: el título refleja el tema del escrito, el resumen es claro y permite conocer con claridad el contenido y los elementos básicos del escrito, las palabras clave son pertinentes, la organización y redacción del manuscrito, la originalidad y alcance del trabajo presentado, claridad y delimitación del problema, la justificación es coherente con el problema abordado, la descripción de la metodología utilizada es clara y pertinente, existe formalidad en la escritura, existe relación entre la temática abordada teóricamente y los objetivos y la metodología utilizada, es rigurosa la presentación y discusión de los resultados, la consistencia entre resultados y conclusiones y la pertinencia y precisión de las referencias bibliográficas citadas. Los árbitros pueden enviar sus comentarios o corecciones sobre el manuscrito mismo electrónicamente o en un documento o correo aparte.

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