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The edge of the subtropics: a preliminary list of the birds of San José de Sumaco, Ecuador

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Summary.—We present the results of an eight-year avifaunal survey and review historical collections assembled by the Olalla family at San José de Sumaco, a humid-forested locality lying at *c*.950 m elevation in the east Andean foothills of Orellana province, Ecuador. Notably high species richness is reported from a restricted area of upland *terra firme* forest, and our appendix lists 477 species considered documented, with conservation status according to IUCN, evidence and relative abundance. An additional 49 species have been reported from the site, but without documentation. Noteworthy records of 43 species are detailed, including poorly known, range-restricted taxa and those of conservation concern. Twenty-two species are regarded as either Near Threatened or Vulnerable by IUCN. Lowland (Amazonian) species dominate the avifauna, but it also includes a set of range-restricted, Andean species of which several are considered Near Threatened or Vulnerable at national or global scales (e.g., Napo Sabrewing *Campylopterus villaviscensio*, Fiery-throated Fruiteater *Pipreola chlorolepidota*, Ecuadorian Tyrannulet *Phylloscartes gualaquizae*). We report the presence of three obligate bamboo specialist species. We clarify the geographic position of the Olalla collecting locality San José de Sumaco using archival material and by reconstructing the collectors' itinerary. We list noteworthy elevational records for 89 species of which 80 are upper-elevation records of lowland (Amazonian species). While mainly Amazonian, the avifauna is discussed in relation to its biogeography indicating historical connections to both Andean and Amazonian centres of diversification. We conclude that the lower slopes of Volcan Sumaco host a distinctive, species-rich avian assemblage that is threatened immediately by deforestation and potentially by climate change, and we stress its importance for conservation and continued study.

Forests of the tropical Andes and adjacent western Amazonia harbour exceptionally high levels of biodiversity and the region also hosts concentrations of range-restricted and threatened taxa (Brooks *et al*. 2002, 2006, Orme *et al*. 2005, Rahbek *et al*. 2019). In this broad region, local species richness in birds is thought to be greatest in humid foothills at *c*.900–1,000 m (Stotz *et al*. 1996, Herzog *et al*. 2005, McCain 2009) where forested slopes of the east Andes transition between lowland and upland ('cloud') forests, an ecotone mediated by the local formation of ground-level cloud banks via adiabatic cooling. Chapman (1926) noted this transition from the Amazon to the Andes nearly a century ago in reviewing collections made by the professional firm Olalla & Hijos on the slopes of Volcán Sumaco in the east Andes of Ecuador together with temperature readings taken on his instruction. He observed that when 'they reached the old town of San José on the flanks of Sumaco, the birds sent to us indicated that they had reached the lower borders of the Subtropical Zone, and this supposition was supported by the temperature record'.

Both effective conservation planning and an improved understanding of the processes that have shaped the distribution of biodiversity require detailed inventories at all spatial

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scales, but few Andean foothill sites are well studied. Here, we describe the results of an eight-year bird survey at the historical collecting locality San José de Sumaco first described by Chapman (1926), a humid forested site at *c*.950 m elevation on the lower, eastern flank of Volcán Sumaco in Orellana province, east Ecuador, and at the intersection of the Andean and Amazonian biomes (Vivanco de la Torre *et al*. 1962). We present a preliminary list of 477 species recorded there through February 2023 (Appendix 1) and review historical collections made by the professional firm Olalla & Hijos a century ago. Together, these findings document a rich avifauna and highlight the conservation value of a threatened region.

Study area and Methods

Study area.—Field work was based at Bigal River Biological Reserve Research Station (Fig. 1). The Bigal River Biological Reserve (BRBR) is a private conservation area protecting *c*.1,000 ha of forested terrain in the east Andean foothills of Ecuador at 750–1,000 m (Fig. 1; see also Freile *et al*. 2015). The reserve lies near the western border of Orellana province on the lower, eastern slope of Volcán Sumaco (00°32′32″S, 77°25′40″W; Fig. 1) and lies south-east of, and adjacent to, the far larger Parque Nacional Sumaco-Napo-Galeras (PNSNG), a national protected area (IUCN category II) established in 1994 that covers 2,061 km² (IUCN 2023) of mostly forested terrain at 600–3,732 m.

The region receives prevailing winds from the east and the climate is extremely wet, with low seasonal variability, a relative max. rainfall in July, and the highest regional rainfall (>4 m per annum) expected at elevations of *c*.900–1,000 m (Laraque *et al*. 2007). While rainfall may be heavy, ground-level cloud cover (mist) is infrequent. A poorly defined period of less frequent precipitation lasts from January to February, corresponding to the Northern Hemisphere dry season, and dry periods may also occur in August, during the Southern Hemisphere dry season.

This hilly region is drained by the río Suno to the south and the río Bigal to the north (Fig. 1). The dominant vegetation type is tall, humid broadleaf evergreen (*terra firme*) forest ('Western Amazon Sub-Andean Forest' *sensu* Báez *et al*. 2010) with some canopy emergents >40 m tall. This forest is rich in tree species but dominated by *Iriartea deltoidea* and other palms (Brokaw & Ward 2023). Numerous small streams, swamps and damp ravines are features. Stands (some >5 ha) of *Guadua angustifolia* bamboo occur in some areas. Higher terrain on exposed ridges with poor soil or subject to desiccating winds hosts relatively drier forest with fewer epiphytes and more open understorey. Whereas most of the study area is clothed in tall (>30 m), closed-canopy, primary forest, some successional vegetation occurs in abandoned clearings and along a disused road. We also surveyed and include observations from nearby degraded areas, including cattle pastures, crop fields, second growth and forest fragments south of the BRBR Research Station (Fig. 1).

The area is the source of historical bird specimens collected during the early 20th century by the Olalla family (Olalla & Hijos; Fig. 2) at San José de Sumaco and synonymous or nearby localities including 'San José Abajo', 'San José Nuevo' and 'San José Viejo' during 1923–35, with labels bearing the names 'Olalla Y Hijos', 'Olalla Y Hermanos' and 'Carlos Olalla' (Chapman 1926, Paynter 1993, LeCroy & Sloss 2000, Wiley 2010; see below).

Methods.—We visited the San José de Sumaco area, usually for 11-day periods, during each August and January in the years 2015–23 for a total of 198 observer days. Birds were recorded via field observation, photography and sound-recording of vocalisations. To establish a baseline for future monitoring, formal survey methods were adopted in 2017 and followed during 18–29 August 2017, 3–14 January 2018, 13–24 August 2018, 5–16 August 2019, 6–17 January 2020 and 1–14 December 2020. FE conducted point counts along six (1.25 km) transects, all located within 2 km of the RBBR Research Station at elevations of

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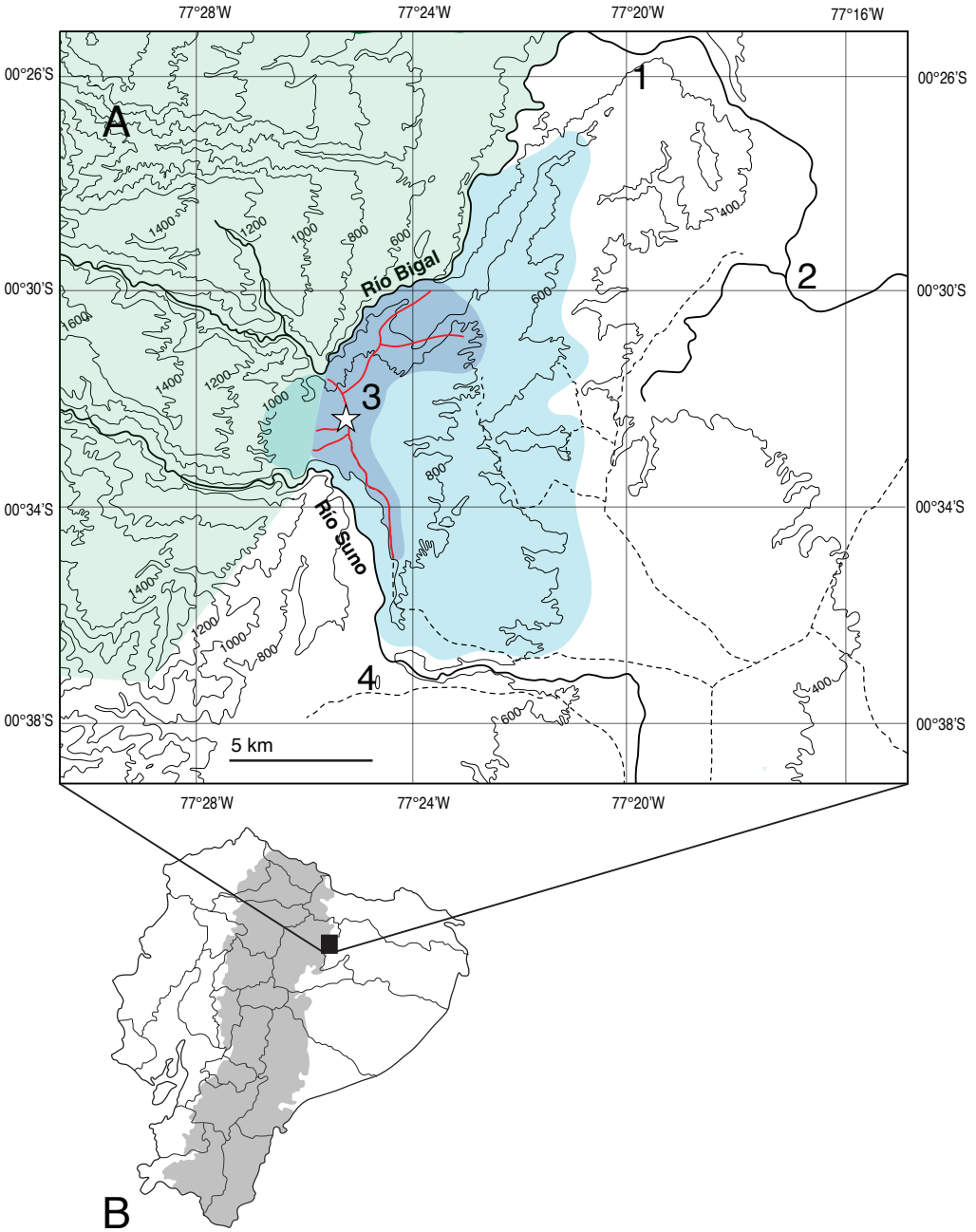

Figure 1. Map (A) showing the San José de Sumaco area and location of RBBR Research Station (star) in the Bigal-Suno interfluvial. Olive shading = eastern edge of Parque Nacional Sumaco-Galeras. Red lines = BRBR trails. Dark blue = approximate survey area. Light blue = hypothesised area collected by Olalla field parties. Dotted lines = roads. Numbered localities according to Paynter (1993) are (1) San José Nuevo (00°26′S, 77°20′W), now Pato Rumi, Comuna San José de Payamino (2) Payamino (00°30′S, 77°17′W), now Centro Poblado Parroquia, San José de Payamino (3) San José Viejo (00°32′S, 77°25′W) and (4) Avila (00°38′S, 77°25′W), now Avila Viejo. Map (B) shows position of the site in western Orellana province, Ecuador. Grey shading = areas above 800 m.

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Figure 2. An Olalla & Hijos field party in an undated photograph (archives of the Dept. of Ornithology, American Museum of Natural History, New York)

900–1,000 m (Fig. 1). Five transects followed pre-established footpaths in primary forest, and the other an unpaved road extending to the south and traversing disturbed habitats. On six mornings during each 11-day sampling period, FE conducted six counts on one of six transects at fixed points separated by 200–250 m. Point counts were conducted between sunrise (05.55–06.00 h) and two hours later. During a ten-minute period stationed at each point, FE recorded all species heard or seen. The daily order of point sampling was changed in successive visits so that each point was visited at least once closest to dawn. Not all species were equally well sampled by this method. Canopy species and species that vocalise infrequently may have been overlooked, while conspicuous or persistently vocalising species may be over-represented. To help overcome reporting bias, each point count was recorded using a Zoom 5 digital recorder equipped with omni-directional microphone and FE's written notes were later compared with the recordings, and any omissions and errors corrected. FE also compiled 280 20-species 'MacKinnon lists' (Bibby *et al*. 2000, MacLeod *et al*. 2011) and we collected additional observational data while making non-systematic visual and auditory observations along trails and roads. Relative abundance for species detected using standardised methods was determined based on encounter frequency (Appendix 1). Daily checklists including photographs and sound-recordings are available on eBird (https://ebird.org/home).

We reviewed 10,312 photographs of birds captured by an array of 13 motion-activated passive infrared detection cameras (camera-traps) used to monitor terrestrial mammals. Camera-traps were deployed in all months during 2013–20 and sited mainly along trails and streamsides inside tall broadleaf forest. One was positioned at a 'mineral-lick' visited by both mammals and birds. We sorted the photographs into 1,169 independent events (separated by >1 hour) and calculated frequencies for each species represented (Table 1). We also sought documented observations from other observers (see Acknowledgements) and reviewed records in the citizen science database eBird (2022).

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Finally, we searched the regional literature and queried natural history collection databases for records of bird specimens collected at 'San José de Sumaco' and synonymous localities including 'San José Nuevo' and 'San José Viejo' (Chapman 1926, Paynter 1993, LeCroy & Sloss 2000, Wiley 2010; see below).

Results

Species richness and evidence.—We compiled records of a combined total of 526 species representing 51 families at San José de Sumaco (Appendices 1–2). Of this total, 477 species are considered documented, including 452 with vouchers in the form of a specimen in a museum collection, photograph or sound-recording (Appendix 1). Thirty-five species were identified from camera-trap photographs (Table 1). Forty-nine species were reported from the site by other observers but lack a voucher and were not confirmed in our field work (Appendix 2). Minimum criteria for inclusion of undocumented reports from other observers in the main list (Appendix 1) include multiple reports of species considered reliably identified and biogeographically likely (i.e., there are documented records from similar elevations at sites near the study area). Of the 477 species considered documented, 456 are permanent breeding residents, 17 are seasonal residents or transients including 16 boreal migrants and one austral migrant.

We found natural history collection database registrations or published records for 1,652 bird specimens representing 306 species (Appendix 1) collected at San José de Sumaco and synonymous localities (see below) during 1923–35, and we examined 356 specimens representing 247 species in museum collections (principally the American Museum of Natural History, New York; AMNH) or via photographs (Appendix 1; see Acknowledgements). The continued presence of most species known from historical collections is confirmed by recent reports, but 22 species are known only from specimens. Appendix 1 presents a complete list of documented species with IUCN status (2023), relative abundance, and documentary evidence. Noteworthy records are detailed below.

Species accounts

GREY TINAMOU *Tinamus tao*

Rare across its circum-Amazonian distribution and considered Vulnerable at both global (IUCN 2023) and national levels (Freile *et al*. 2019). In Ecuador, known only from mid-elevations at 400–1,600 m (Ridgely & Greenfield 2001, Freile & Restall 2018). Chapman (1926) cited Salvadori & Festa (1900) who listed a specimen from 'San José' and Paynter (1993) incorrectly stated 'this probably San José Nuevo', but the itinerary for Enrico Festa in Chapman (1926) indicates that the specimen is correctly traced to Morona-Santiago province in south Ecuador. We regard the species as rare at San José de Sumaco, with presence documented by sound-recordings and camera-trap photographs.

NOCTURNAL CURASSOW *Nothocrax urumutum*

Thought to range mainly below 400 m, but recently documented at 1,481 m (Medrano-Vizcaíno & Rueda 2018). Considered rare and poorly known but recent camera-trap studies have contributed to our understanding of this enigmatic species (Solano-Ugalde & Real-Jibaja 2010, van der Hoek *et al*. 2018, Link *et al*. 2022). *N. urumutum* was among the most frequently recorded bird species in camera-trap photographs at *c*.950 m (Table 1), always during daylight hours (06.00–17.00 h). The images also document regular visits to a mineral lick, often in groups of up to four (Fig. 3), behaviour first reported recently for the species (Griffiths *et al*. 2020). We twice encountered family groups with dependent young (during

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TABLE 1

Thirty-five bird species recorded at 13 camera trap stations in 10,312 photographs (n = 1,669) events at San José de Sumaco. Independent events are defined as photo series separated by >1 hour.

English name	Scientific name	Event number
Grey Tinamou	*Tinamus tao*	2
Great Tinamou	*Tinamus major*	76
White-throated Tinamou	*Tinamus guttatus*	3
Tinamidae sp.		3
Spix's Guan	*Penelope jacquacu*	3
Wattled Guan	*Aburria aburri*	1
Nocturnal Currasow	*Nothocrax urumutum*	114
Salvin's Currasow	*Mitu salvini*	101
Cracidae sp.		2
Marbled Wood Quail	*Odontophorus gujanensis*	7
Rufous-breasted Wood Quail	*Odontophorus speciosus*	1
Sapphire Quail-Dove	*Geotrygon saphirina*	34
Ruddy Quail-Dove	*Geotrygon montana*	72
Grey-fronted Dove	*Leptotila rufaxilla*	5
White-throated Quail-Dove	*Zentrygon frenata*	1
Grey-winged Trumpeter	*Psophia crepitans*	1,085
Red-winged Wood Rail	*Aramides calopterus*	6
Fasciated Tiger Heron	*Tigrisoma fasciatum*	34
Greater Yellow-headed Vulture	*Cathartes melambrotus*	1
White Hawk	*Pseudastur albicollis*	6
Black-faced Hawk	*Pseudastur albicollis*	1
Band-bellied Owl	*Pulsatrix melanota*	1
Strigidae sp.		1
Rufous Motmot	*Baryphthengus martii*	47
Barred Forest Falcon	*Micrastur ruficollis*	8
Lined Forest Falcon	*Micrastur gilvicollis*	3
Dusky-throated Antshrike	*Thamnomanes ardesiacus*	1
Sooty Antbird	*Hafferia fortis*	1
Spot-backed Antbird	*Hylophylax naevius*	2
Scaled Antpitta	*Grallaria guatimalensis*	1
Short-tailed Antthrush	*Chamaeza campanisona*	2
Black-banded Woodcreeper	*Dendrocolaptes picumnus*	1
Grey-tailed Piha	*Snowornis subalaris*	2
Half-collared Gnatwren	*Microbates cinereiventris*	1
Speckled Nightingale-Thrush	*Catharus maculatus*	38
Swainson's Thrush	*Catharus ustulatus*	29
Black-billed Thrush	*Turdus ignobilis*	1
White-necked Thrush	*Turdus albicollis*	28

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daylight hours) and detected *N. urumutum* regularly by voice at night as birds called from midstorey perches.

SALVIN'S CURASSOW *Mitu salvini*
Considered Near Threatened (Freile *et al*. 2019) in Ecuador, where found mainly below 400 m (Freile & Restall 2018) although Ridgely & Greenfield (2001) noted historical records from 700–900 m and there are recent reports at 800 and 900 m in southern Ecuador (Ordóñez-Delgado *et al*. 2017, Pozo-Zamora *et al*. 2022). We encountered *M. salvini* regularly in the vicinity of the RBBR at *c*.950 m, and the species was among the most frequently recorded by camera-traps (Table 1).

RUFOUS-VENTED GROUND CUCKOO *Neomorphus geoffroyi*
Forest-dependent and rare across its vast range. Considered Vulnerable by IUCN (2023) and Near Threatened in Ecuador (Freile *et al*. 2019). Chapman (1926) listed three males in AMNH. These are AMNH 179093–094 taken at 'San José de Sumarco' [*sic*] on 20 and 21 March 1923, and AMNH 179095 taken 'below San José de Sumarco' [*sic*]' on 31 March 1923. One was heard calling at the RBBR Research Station at *c*.950 m on 8–10 December 2020. Another was reportedly seen nearby on 21 July 2022 (R. McKay *in litt*. 2022).

OILBIRD *Steatornis caripensis*
Locally distributed in the Ecuadorian Andes and adjacent eastern lowlands (Freile & Restall 2018). Undertakes local or seasonal movements away from nesting areas (Cárdenas *et al*. 2020) with a colony recently reported from lowlands on the río Pusuno in southern Napo province (Cisneros-Heredia *et al*. 2012). We have reports from December–April and the species is documented by a sound-recording made on 9 April 2022 at the RBBR Research Station at *c*.950 m.

LONG-TAILED POTOO *Nyctibius aethereus*
Rare and local in east Ecuador, where reported mainly in *terra firme* forest below 700 m (Ridgely & Greenfield 2001, Freile & Restall 2018). A female at AMNH (178975) was taken on 31 March 1923 'below San José' (Chapman 1926). We did not encounter the species during our survey.

SPOT-FRONTED SWIFT *Cypseloides cherriei*
Rare in Ecuador (Marín 1993, Ridgely & Greenfield 2001) and considered Data Deficient at both global (IUCN 2023) and national levels (Freile *et al*. 2019). We observed the species regularly in small numbers and obtained photographs, typically late in the day, as swifts made regular movements from the south-east to north-west, perhaps returning from the lowlands to nesting or roosting sites at higher elevations on Volcán Sumaco. *C. cherriei* was typically seen with other swifts including the more numerous White-collared *Streptoprocne zonaris* and Chestnut-collared Swifts *S. rutilus*.

WHITE-CHINNED SWIFT *Cypseloides cryptus*
Rare and poorly known in Ecuador (Marín 1993, Ridgely & Greenfield 2001). Review of several thousand photographs suggests that *C. cryptus* is the commonest of the three *Cypseloides* at San José de Sumaco. As with the previous species, *C. cryptus* was typically seen in mixed groups of swifts that included larger numbers of White-collared *Streptoprocne zonaris* and Chestnut-collared Swifts *S. rutilus*. *Cypseloides* were sometimes present overhead throughout the day but were most often seen in early evening while feeding or transiting over the RBBR Research Station clearing (Fig. 4).

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Figure 3. Camera-trap photograph of four Nocturnal Curassows *Nothocrax urumutum* emerging from a subterranean mineral lick (A), Red-winged Wood Rail *Aramides calopterus* (B; Frederick Ertl), Solitary Eagle *Buteogallus solitarius* (C; Frederick Ertl) and Orange-breasted Falcon *Falco deiroleucus* (D; Andrew C. Vallely)

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WHITE-CHESTED SWIFT *Cypseloides lemosi*
Rare and long known only from south-west Colombia but recently reported from east Ecuador, Peru and Bolivia (Ridgely & Greenfield 2001, Howell 2002, Roesler *et al*. 2009). *C. lemosi* was the least common *Cypseloides* at San José de Sumaco (Fig. 4) and was typically seen with larger numbers of White-collared Swift *Streptoprocne zonaris*.

ECUADORIAN PIEDTAIL *Phlogophilus hemileucurus*
Restricted to east Andean foothills. Formerly considered Vulnerable by IUCN (2016) and treated as Near Threatened in Ecuador (Freile *et al*. 2019). Specimens (presumably AMNH 179053, 185059, 185062–063) from 'below San José' were mentioned by Chapman (1926). Among the most frequently encountered hummingbirds of interior forest understorey at San José de Sumaco. We found *P. hemileucurus* at ten (32%) of 31 forest interior-transect points and regard it as fairly common.

LONG-TAILED SYLPH *Aglaiocercus kingii*
A mid-montane species (*sensu* Stotz *et al*. 1996) considered to range above 1,600 m in Ecuador (Ridgely & Greenfield 2001, Freile & Restall 2018). Chapman (1926) listed two females from 'below San José', presumably AMNH 179059–060 taken on 12–13 March 1923. These specimens might document a low-elevation occurrence but, because the precise elevation where they were taken is uncertain, we do not regard the record as documenting an elevational range extension. We did not encounter the species during our field work.

RUFOUS-VENTED WHITETIP *Urosticte ruficrissa*
A mid-montane species (*sensu* Stotz *et al*. 1996) thought to range above 900 m in Ecuador (Ridgely & Greenfield 2001, Freile & Restall 2018) where considered Near Threatened (Freile *et al*. 2019). Chapman (1926) listed five males and two females from 'below San José'. We located five of these in AMNH (179050–179052, 185064, 185066). We have several recent sight reports from *c.*950 m at RBBR.

PINK-THROATED BRILLIANT *Heliodoxa gularis*
Endemic to east Andean foothills. Considered Vulnerable in Ecuador and formerly globally by IUCN (2016). Rare, local, and poorly known in Ecuador with records from Sucumbíos, Orellana, Napo and Zamora-Chinchipe provinces (Ridgely & Greenfield 2001, Pitman *et al*. 2002, Freile *et al*. 2013). Described by Gould (1860) from 'Río Napo'. Zimmer (1951) suggested the type locality be restricted to 'San José, Ecuador' but his basis is unclear, and there is no indication that the holotype is from the locality San José de Sumaco worked by Olalla & Hijos. Specimens (one male, and five females) from 'below San José' are mentioned in Chapman (1926). We located four of these in AMNH (179040–041, 185112–113). We found *H. gularis* to be fairly common and among the most frequently encountered hummingbirds in the forest interior (see also Freile *et al*. 2015). *H. gularis* was detected at 13 (42%) of 31 forest transect points. An adult was photographed on a nest on 8 January 2020 (Fig. 4) and a nest with young was found on 8 November 2017 (G. M. Kirwan *et al*. pers. obs.).

LITTLE WOODSTAR *Chaetocercus bombus*
Rare and poorly known. Considered Near Threatened by IUCN (2023) and Vulnerable in Ecuador (Freile *et al*. 2019). Most Ecuadorian records are from the Pacific slope, but it is known also from the east slope foothills of Morona-Santiago and Zamora-Chinchipe provinces in southern Ecuador (Chapman 1926, Collar *et al*. 1992, Janni 2004). Chapman (1926) mentioned two female specimens in AMNH from 'below San José', documenting

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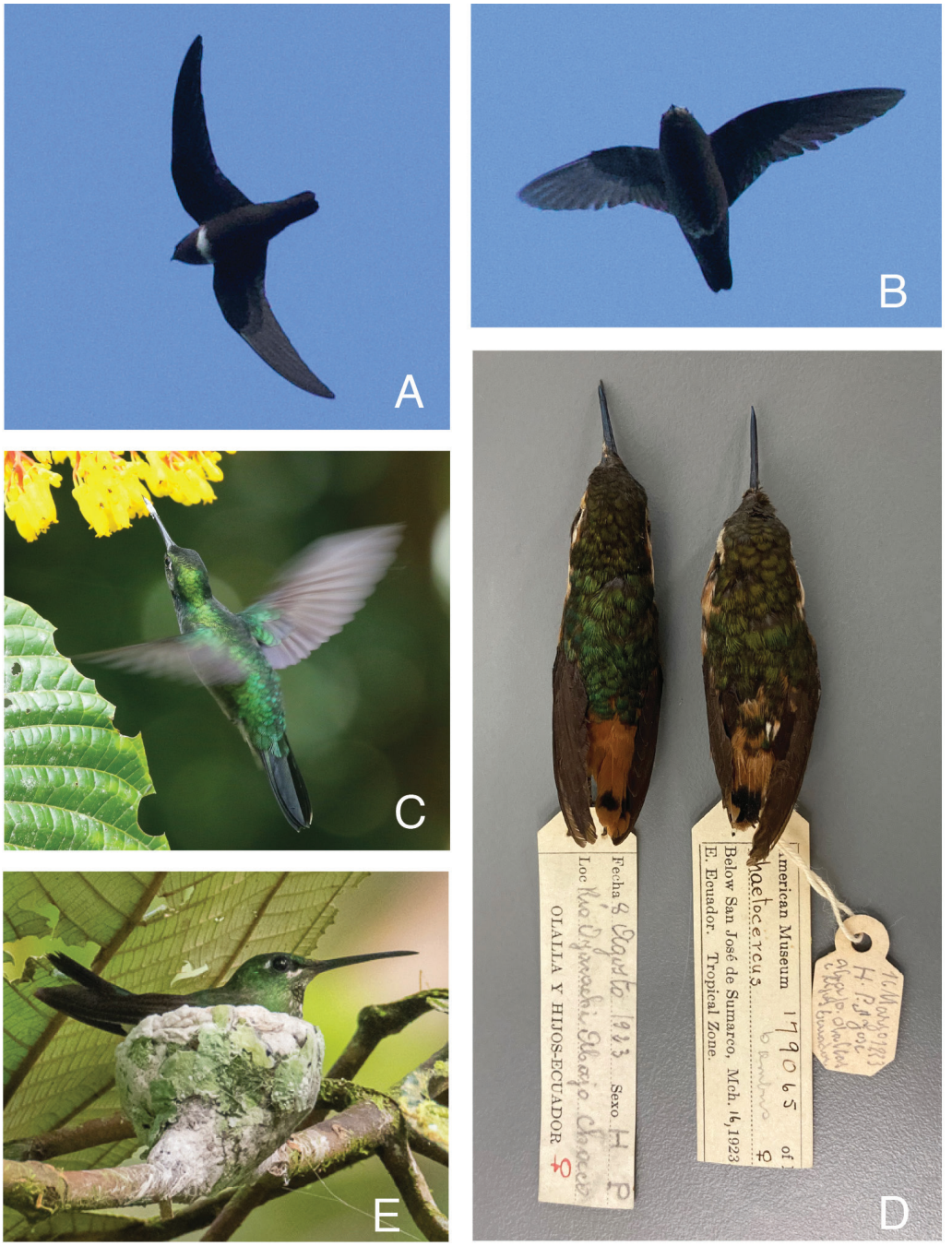

Figure 4. White-chested Swift *Cypseloides lemosi* (A; Andrew C. Vallely), White-chinned Swift *C. cryptus* (B; Andrew C. Vallely), Napo Sabrewing *Campylopterus villaviscensio* (C; Andrew C. Vallely), specimen of Little Woodstar *Chaetocercus bombus* (AMNH 179065) right, with specimen of Gorgeted Woodstar *C. heliodor cleavsi* (AMNH 180154), left, for comparison, at the American Museum of Natural History, New York (D), Pink-throated Brilliant *Heliodoxa gularis* on nest (E; Chris Fischer)

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occurrence on the east slope north to the Volcán Sumaco region (see Zimmer 1953, Ridgely & Greenfield 2001) but there have been no reports from the area since. We located just one female at AMNH (179065). The label reads 'below San José de Sumarco [*sic*]. E. Ecuador. Tropical Zone' Date: Mch. 16, 1923. On the reverse is 'Olalla & Sons'. The original collectors tag reads '16 Marzo 1923 H.P. [= hembra pequeño indicating a female with small ovaries] S. José abajo. Olalla y Hijos Ecuador'. Although this specimen shows a few rufous feathers on the rump, it agrees with other female specimens of *C. bombus* at AMNH (n = 11) and differs from those of Gorgeted Woodstar *C. heliodor cleavsi* (n = 6) in its narrower-based bill, straighter (less decurved) culmen, and more extensive black on the rectrices (Fig. 4).

NAPO SABREWING *Campylopterus villaviscensio*
Confined to east Andean foothills and considered Near Threatened (IUCN 2023, Freile *et al*. 2019). Five specimens from 'below San José' (AMNH 179015–016, 185132–133, 185135) were mentioned by Chapman (1926). We encountered the species regularly and obtained photographs (Fig. 4). *C. villaviscensio* was detected at three (10 %) of 31 forest-interior transect points and we consider it uncommon.

GREY-WINGED TRUMPETER *Psophia crepitans*
Considered Near Threatened in Ecuador (Freile *et al*. 2019) where known mainly from below 700 m (Freile & Restall 2018) but *P. crepitans* was the most frequently recorded species in camera-trap photographs (*c*.950 m), accounting for 1,085 (65%) of 1,669 independent events and typically was recorded in large groups. Together, a set of large-bodied terrestrial species comprising Great Tinamou *Tinamus major*, *P. crepitans*, Salvin's Curassow *Mitu salvini* and Nocturnal Curassow *Nothocrax urumutum*, accounted for 1,376 (82%) of the total 1,669 events (Table 1).

RED-WINGED WOOD RAIL *Aramides calopterus*
Rare, poorly known and considered Near Threatened in Ecuador (Freile *et al*. 2019), but with a concentration of historical specimens (Chapman 1926, Norton 1965) and recent records in the Volcán Sumaco region of Napo and Orellana provinces (Ridgely & Greenfield 2001, Vaca *et al*. 2006). Four specimens in AMNH 178884–885, 185353, 185255) are labelled 'San José Abajo' and 'San José de Sumarco' [*sic*]. We encountered the species sporadically at *c*.950 m and obtained sound-recordings, camera-trap photographs (Fig. 3) and video.

GREY-COWLED WOOD RAIL *Aramides cajaneus*
Widespread in South America's lowlands. In Ecuador, known mainly from below 400 m (Ridgely & Greenfield 2001, Freile & Restall 2018). FE observed one at close range on 12 January 2016 at *c*.950 m in tall forest near the BRBR Research Station. The all-grey neck and rufous breast were clearly visible. Another was reportedly heard in the same area on 28 November 2021 (H. Jacob).

CRESTED EAGLE *Morphnus gujanensis*
Rare. Considered Near Threatened by IUCN (2023) and Vulnerable in Ecuador (Freile *et al*. 2019). In eastern Ecuador, generally confined to lowlands below 300 m (Freile & Restall 2018). A female at AMNH (178949) was taken on 23 March 1923 by Olalla & Hijos and was listed by Chapman (1926) with locality 'below San José' (hence, the precise elevation is uncertain).

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HARPY EAGLE *Harpia harpyja*
Rare, considered Vulnerable (IUCN 2023), and generally confined to elevations below 400 m. An adult was videotaped at *c*.950 m near the BRBR on 25 August 2019 (L. Navarrete *in litt*. 2022).

SEMICOLLARED HAWK *Microspizias collaris*
Rare and poorly known (Bierregaard *et al*. 2022). Considered Near Threatened in Ecuador (Freile *et al*. 2019) where reported at 1,500–2,200 m (Ridgely & Greenfield 2001) but has been recorded as low as 600 m in Colombia (Hilty & Brown 1986). Included here based on a sight record: ACV studied a single bird through a telescope as it perched motionless in the open crown of an emergent tree at the BRBR Research Station on 12 January 2019 at *c*.950 m. Coarse barring on the underparts, dark ear-coverts, and a pale collar were clearly visible.

SOLITARY EAGLE *Buteogallus solitarius*
Rare and local throughout its vast range and considered Near Threatened (IUCN 2023). Reported from several sites in the east Andean foothills of adjacent Napo province (Ridgely & Greenfield 2001) but regarded as Critically Endangered in Ecuador (Freile *et al*. 2019). We photographed and obtained sound-recordings of an adult on 20 August 2018 on a steep ridge above the río Bigal *c*.5 km north of the BRBR Research Station (Fig. 3). One was heard calling at the same site on 9 January 2020.

RUFESCENT SCREECH OWL *Megascops ingens*
Widespread in the subtropical Andes, but poorly known (Freile & Castro 2013). In Ecuador thought to range from 1,200 to 2,400 m (Freile & Restall 2018). One was documented by a sound-recording near the BRBR at *c*.950 m on 18 September 2021 (P. Baruah; XC676460).

SUBTROPICAL PYGMY OWL *Glaucidium parkeri*
Endemic to the East Andes. Relatively recently described (Robbins & Howell 1995) and poorly known (Freile & Castro 2013, Acevedo-Charry *et al*. 2015). Most Ecuadorian records are from above 1,100 m (Ridgely & Greenfield 2001, Freile & Restall 2018). One was sound-recorded near the BRBR Research Station at *c*.950 m on 28 July 2021 (C. Fischer).

ORANGE-BREASTED FALCON *Falco deiroleucus*
Rare and local. Considered Near Threatened by IUCN (2023) and Endangered in Ecuador (Freile *et al*. 2019). There have been occasional reports from San José de Sumaco. One was photographed on 21 January 2023 (Fig. 3).

RED-AND-GREEN MACAW *Ara chloropterus*
Rare and local in east Ecuador (Ridgely & Greenfield 2001) where known mainly from the lowlands below 500 m (Freile & Restall 2018) and considered Vulnerable (Freile *et al*. 2019). A female specimen was mentioned by Chapman (1926), presumably AMNH 178951 taken on 31 March 1923 'below San José', but we could not locate the specimen. We photographed and obtained sound-recordings from a pair at *c*.950 m on 11 August 2019.

FIERY-THROATED FRUITEATER *Pipreola chlorolepidota*
Endemic to east Andean foothills where rare (Kirwan & Green 2011). Considered Vulnerable in Ecuador (Freile *et al*. 2019) and formerly considered Near Threatened by IUCN (2016). Five specimens from 'below San José' were mentioned by Chapman (1926). We located just one, a male (183718) at AMNH. In our field work, we encountered the species regularly in

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small numbers, often with mixed-species flocks that included various canopy-inhabiting tanagers. We consider it uncommon.

GREY-TAILED PIHA *Snowornis subalaris*
Endemic to east Andean foothills and outlying ridges (Kirwan & Greene 2011). Considered Near Threatened in Ecuador (Freile *et al*. 2019) and formerly globally by IUCN (2016). Chapman (1926) mentioned five specimens (AMNH 179616–617, 183735–736, 183835) from 'below San José'. Common and readily detected by its loud vocalisations. We found *S. subalaris* at 21 (68%) of 31 forest-interior transect points.

SHRIKE-LIKE COTINGA *Laniisoma elegans*
Rare and local in the east Andean foothills of Ecuador (Ridgely & Greenfield 2001, Kirwan & Green 2011). Considered Near Threatened by IUCN (2023) and Vulnerable in Ecuador (Freile *et al*. 2019). A female specimen in the Moore Laboratory of Zoology, Los Angeles (MLZ 33855) was taken 'below San José' by Carlos Olalla on 13 April 1927 (Fig. 5). We did not encounter the species and there seem to be no reports from San José de Sumaco.

RÍO SUNO ANTWREN *Myrmotherula sunensis*
Described by Chapman (1925) from nearby 'Río Suno below Avila' (LeCroy & Sloss 2000); considered rare in Ecuador (Ridgely & Greenfield 2001). The holotype is a female (AMNH 184582). A second female in AMNH (184583) taken 'below San José' was also mentioned by Chapman (1926). The widespread Slaty Antwren *M. schisticolor* has been considered an elevational replacement of this species (Whitney 1994) but the two are apparently syntopic at San José de Sumaco.

STRIATED ANTBIRD *Drymophila devillei*
Widespread and common in south-west Amazonia (Ridgely & Tudor 2009) but rare and local in Colombia, and in Ecuador (Ridgely & Greenfield 2001, Freile & Restall 2018), where considered Endangered (Freile *et al*. 2019). *D. devillei* is documented in Ecuador by a small number of specimens including five taken by Olalla & Hijos in present-day western Orellana province. Two of these are from 'Río Suno, above Avila' (AMNH 179319–320; Chapman 1926) with three from 'San José Abajo' (AMNH 184460–462) taken on 30–31 March and 1 April 1924. There are also recent reports from Avila (Fig. 1) and near Archidona in neighbouring Napo province (Ridgely & Greenfield 2001; eBird). An obligate bamboo specialist (Kratter 1997, Parker *et al*. 1997), we found small numbers of *D. devillei* in a large stand of *Guadua angustifolia* bamboo at *c*.950 m and obtained sound-recordings and photographs (Fig. 5). In Ecuador, previously known at 300–750 m (Freile & Restall 2018). Our records confirm the presence of the species at the site of the earliest Ecuadorian records (Chapman 1926) and extend the local elevational range to 950 m.

BLACKISH ANTBIRD *Cercomacroides nigrescens*
Chapman (1926) treated foothill populations of *C. nigrescens* as *C. n. approximans* and did not list San José de Sumaco (or any of its variant) for the species although he mentioned two males and two females taken by Olalla & Hijos at 'Lower Sumaco'. Shortly after, Zimmer (1931) described *C. n. aequatorialis*, designating a female from that series taken on 9 January 1926 as the holotype (AMNH 184517). The allied lowland form *C. fuscicauda* described by Zimmer (1931), now treated as a separate species, Riparian Antbird, following Mayer *et al*. (2014), is not known from San José de Sumaco. Identification difficulties and a paucity of comparative material in museums has impeded understanding of the distributions of

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Figure 5. Specimen (MLZ 33855) of Shrike-like Cotinga *Laniisoma elegans* at the Moore Laboratory of Ornithology, Los Angeles (A), Striated Antbird *Drymophila devillei* (B; Chris Fischer), Spectacled Redstart *Myioborus melanocephalus* (C; Michel Mifsud), Red-crested Finch *Coryphospingus cucullatus* (D; Chris Fischer), Slate-coloured Seedeater *Sporophila schistacea* (E; Chris Fischer)

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these forms. Two female specimens in MLZ (7639, 7688) were registered as Dusky Antbird *C. tyrannina*, later identified as *C. fuscicauda* (R. Terrill *in litt*. 2022), but from photographs they appear to be Black Antbird *C. serva*. A male (USNM 323078) taken by Olalla & Hijos on 20 April 1924, at 'Abajo, San José', was received by USNM in exchange from AMNH in 1930 and catalogued as '*Cercomacra serva*'. The USNM label bears the notation '*Cercomacra nigricans* A.W.' (= Alexander Wetmore) but this determination is puzzling in view of the bird's uniform dark tail and is perhaps best explained as a *lapsus* for *Cercomacra* (now *Cercomacroides*) *nigrescens*. We found *C. nigrescens* infrequently and regard it as rare at San José de Sumaco where it is presumably represented by Zimmer's *aequatorialis*.

SLENDER-BILLED XENOPS *Xenops tenuirostris*
Rare and poorly known in eastern Ecuador, where reported mainly below 600 m (Ridgely & Greenfield 2001, Freile & Restall 2018) but ranges at least locally to *c*.1,000 m (Freile *et al*. 2022). One was photographed at *c*.950 m as it foraged with a mixed-species flock on 28 July 2021 at RBBR. The similar Streaked Xenops *X. rutilans* is expected at this elevation, and has been reported from the area but without voucher.

RUFOUS-TAILED FOLIAGE-GLEANER *Anabacerthia ruficaudata*
Considered rare and local in Ecuador (Ridgely & Greenfield 2001, Freile & Restall 2018). Chapman (1926) mentioned five specimens from 'below San José', of which we located three in New York (AMNH 184267, 184269, 184270). We encountered the species regularly in small numbers at *c*.950 m and obtained photographs and sound-recordings. *A. ruficaudata* was typically found with canopy mixed-species flocks including various tanagers. We consider it an uncommon resident.

BROWN-RUMPED FOLIAGE-GLEANER *Automolus melanopezus*
Rare in east Ecuador, mainly in Napo and Sucumbíos provinces at elevations below 600 m (Ridgely & Greenfield 2001). Considered a bamboo specialist in Peru (Parker 1982). A specimen in the Carnegie Museum, Pittsburgh (CM 142784) was taken by Carlos Olalla on 10 April 1927 at 'San José Nuevo'. Chapman (1926) mentioned four males and a female from 'below San José'. We found three specimens in AMNH (184287–288, 184290). There are occasional sight reports and one was photographed on 11 February 2023 at *c*.950 m at San José de Sumaco.

ECUADORIAN TYRANNULET *Phylloscartes gualaquizae*
Endemic to the east Andean foothills and considered Near Threatened (Freile *et al*. 2019, IUCN 2023). Not listed for the site by Chapman (1926), but there is a specimen in AMNH (184000) annotated '*Pogonotriccus orbitalis*', taken on 19 April 1924 by Olalla & Hijos at 'San José abajo'. We encountered the species regularly with mixed-species flocks and consider it fairly common at San José de Sumaco.

CINNAMON MANAKIN-TYRANT *Neopipo cinnamomea*
Rare in western Amazonia (Ridgely & Tudor 2009). In Ecuador, known mainly from below 400 m, but recently reported at *c*.1,000 m in Morona-Santiago province (Pozo-Zamora *et al*. 2022). We encountered solitary individuals in forest understorey at *c*.950 m and regard the species as rare at San José de Sumaco. One was photographed by FE on 25 August 2017.

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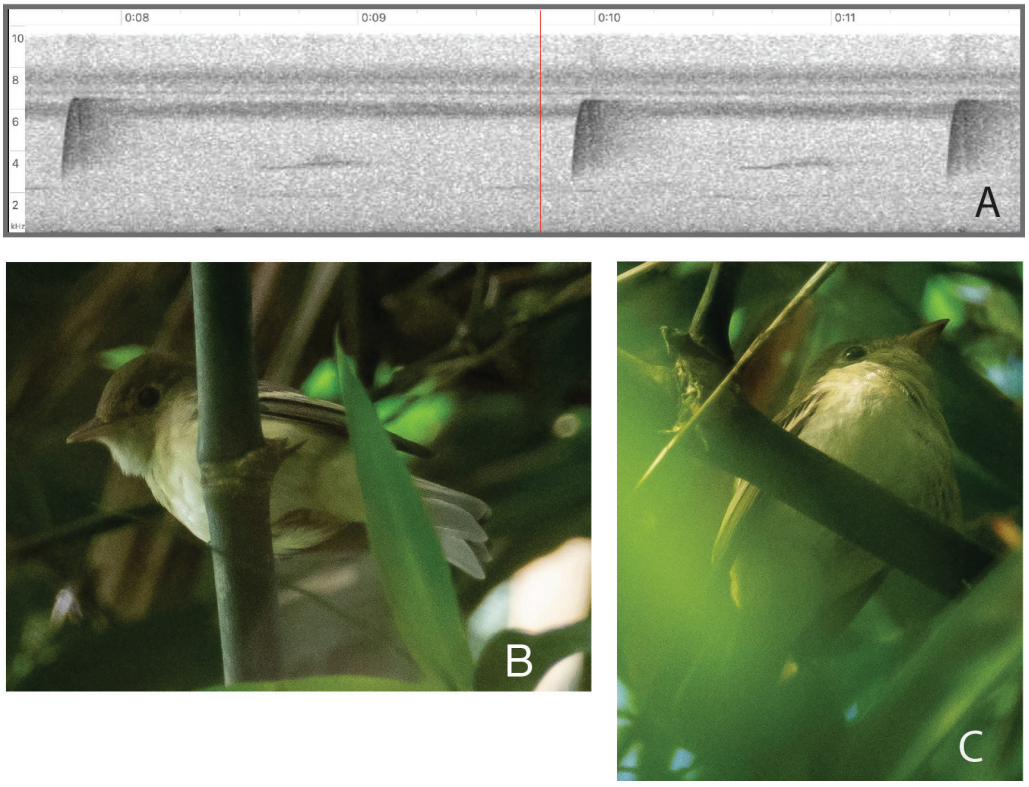

Figure 6. Sonogram of Acadian Flycatcher *Empidonax virescens* call notes (A), and photographs of the same bird (B–C; Chris Fischer)

ACADIAN FLYCATCHER *Empidonax virescens*
A boreal migrant (Ridgely & Tudor 2009). In Ecuador, known mainly from the Pacific slope (Ridgely & Greenfield 2001, Freile & Restall 2018). We found one in a large stand of *Guadua* bamboo on 13 January 2020 and obtained a sound-recording and photographs (Fig. 6).

RUFOUS-NAPED GREENLET *Pachysylvia semibrunnea*
Endemic to the north Andean foothills. In Ecuador, known mainly from the Volcán Sumaco region (Ridgely & Greenfield 2001) and considered Near Threatened (Freile *et al*. 2019). Now considered monotypic, but the type locality of *P. s. leucogastra* is 'below San José de Sumaco' (Chapman 1924). *P. semibrunnea* was detected at ten (32%) of 31 forest-interior transect points and we encountered the species regularly with mixed-species canopy flocks. We consider it fairly common.

RED-CRESTED FINCH *Coryphospingus cucullatus*
Formerly known in Ecuador only from Zamora-Chinchipe and Morona-Santiago provinces (Ridgely & Greenfield 2001, Freile *et al*. 2013, Freile & Restall 2018) and generally associated with arid scrub. Rapidly expanding north with deforestation, and recently reported in adjacent southern Colombia for the first time (Delgado & Rodríguez 2018). A male was photographed on 17 January 2020 in a cattle pasture at *c*.800 m (Fig. 5) and another was photographed there on 6 February 2023. We regard it as very rare.

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SLATE-COLOURED SEEDEATER *Sporophila schistacea*
A bamboo specialist that is perhaps nomadic (Willis & Eisenmann 1979). Rare in east Ecuador (Ridgely & Greenfield 2001). We obtained photographs and sound-recordings of several singing birds in the canopy of an extensive stand of *Guadua angustifolia* at *c*.950 m on 8, 11 and 15 January 2020, and on 8 December 2020, including yellow-billed, grey-plumaged, adult males (Fig. 5).

CERULEAN WARBLER *Setophaga cerulea*
A scarce boreal migrant. Considered Near Threatened by IUCN (2023) and Vulnerable in Ecuador (Freile *et al*. 2019). Chapman (1926) mentioned specimens from 'below San José' (AMNH 183542, 183544). We know of only a small number of sight records, all in December–January, and we suspect that our survey area at *c*.950 m is slightly below the main wintering elevational range (Colorado *et al*. 2012). We regard the species as a rare winter resident at San José de Sumaco.

CASQUED CACIQUE *Cacicus oseryi*
Endemic to western Amazonia (Ridgely & Tudor 2009). Rare in Ecuador, where known mainly from below 300 m (Ridgely & Greenfield 2001). A male (CM 102665) was taken on 30 March 1923 by Olalla & Hijos at 'San José abajo'. While this is from the period when these collectors were working for Chapman, and the specimen bears an AMNH label, Chapman (1926) did not list San José (or variants) in his monograph, but he listed five males taken in adjacent lowlands at 'Río Suno'. A second skin (MLZ 3802) was taken 2 April 1927 at 'San José Nuevo abajo' by Carlos Olalla. We did not encounter the species.

Discussion

Historical collections and the locality San José de Sumaco.—In 1923–24, the firm Olalla & Hijos (Fig. 2), professional collectors then under contract to Frank M. Chapman at AMNH, worked at a series of collecting stations along an elevational transect on the east slope of Volcán Sumaco. Their foothill station, San José de Sumaco, was worked principally during 2–31 March 1923 and 12 March–29 April 1924 (Chapman 1926, Paynter 1993, LeCroy & Sloss 2000, Wiley 2010). The resulting collections include at least 213 specimens taken in 1923 and 746 specimens in 1924. Much of this material is referenced, albeit without collection registration numbers, in Chapman (1926), and most is at AMNH. This material includes the holotypes of at least six taxa including *Leucopternis princeps zimmeri* Friedmann, 1935, *Megascops guatemalae napensis* (Chapman, 1928), *Dysithamnus mentalis napensis* Chapman 1925, *Myrmothera campanisona signata* J. T. Zimmer, 1934, *Pachysylvia semibrunnea leucogastra* Chapman, 1924, and *Microbates cinereiventris hormotus* Olson, 1980.

In the following years (1927–35), while Alfonso & Ramón Olalla worked in Peru and Brazil, Carlos Olalla remained in Ecuador (Wiley 2010) and returned to collect on the lower slopes of Volcán Sumaco during 1–18 April 1927, 1–27 January 1929, 13–25 August 1929, 9 July–28 August 1932, 18–25 September 1932, 10–20 March 1933 and 11–12 August 1935. This later material (1927–35), numbering >400 specimens, is held mainly at MLZ and appears never to have been published. Unlike the 1923–24 material, museum database registrations for specimens taken during 1927–35 appear to be incomplete and additional specimens taken in the area by Carlos Olalla are likely to be held elsewhere.

Chapman (1926) did not have coordinates or an elevation for San José de Sumaco and admitted some ambiguity by noting 'the site of the town is shifted in response to the need for fresh ground for crops, the present San José being apparently lower than the preceding one (San José Viejo)' but added that 'it should be understood that all American

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Museum specimens recorded from 'San José' or 'below San José' are from or near San José de Sumaco'. Because Chapman did not explicitly address the locality name 'San José Nuevo' vs. 'San José de Sumaco', the precise geographic origin of specimens bearing that locality is somewhat less certain. Some with the locality 'San José Nuevo' may have been taken at elevations below those areas that we surveyed most intensively. Paynter's (1993) coordinates locate San José Nuevo in the lowlands *c*.10 km north-east of San José Viejo (Fig. 1), whereas a hand-drawn map, prepared by W. T. Atyeo in the archives of the Dept. of Ornithology at AMNH, locates San José Nuevo in the foothills west of that position. See Fig. 1 for the present-day names of these communities and their geographic positions according to Paynter (1993). The collector's translated itinerary in the archives of the Dept. of Ornithology at AMNH (LeCroy & Sloss 2000) records the field parties, in both 1923 and 1924, collecting at Avila (Fig. 1) then moving north, paralleling the río Suno, following the east (left) bank to reach San José de Sumaco (= San José Viejo in Paynter 1993), before turning west to ascend the volcano. Review of the itinerary followed by Carlos Olalla using collection database records suggests he followed a similar route in later years, approaching the area from either Avila or Concepción in the south. We conclude that the Olalla & Hijos collecting station 'San José' (and variants) is best understood as the interfluvial of the ríos Suno and Bigal, from elevations of *c*.1,000 m (where the two rivers approach most closely) extending several km north-east and south across a fan-shaped area of *c*.200 km^2 on the eastern flank of Volcán Sumaco to at least 500 m, but possibly as low as 400 m (Fig. 1). The upper elevation portion of this area includes the present-day RBBR Research Station and our survey transects (Fig. 1).

The common place name 'San José' has invited some confusion in the literature and in museum database registrations involving Olalla collecting stations on Volcán Sumaco, certain localities on the upper Pacific slope in Pichincha province (e.g., 'Cerro San José'), and on the east slope in Morona-Santiago province ('San José' and 'Río San José'). Paynter (1993), for example, listed the locality 'San José, Ecuador' worked by Enrico Festa in 1896 (Salvadori & Festa 1899, 1900) as 'unlocated', and considered it to be 'presumably in the vicinity of Río Suno', and 'probably San José Nuevo', but the itinerary for Festa given by Chapman (1926) makes clear that it is correctly traced to Morona-Santiago province in southern Ecuador.

Noteworthy elevational records.—We report high-elevation records for 80 species, and low-elevation records for nine species (Appendix 1). We define noteworthy elevational records as recent observations at *c*.950 m at RBBR that are outside the elevational ranges given in standard references for Ecuadorian birds (Ridgely & Greenfield 2001, Freile & Restall 2018) although, in several cases, comparable records have recently been reported from foothill sites on outlying Andean ridges in southern Ecuador (e.g., Solano-Ugalde & Real-Jibaja 2010, Freile *et al*. 2014, 2022, Pozo-Zamora *et al*. 2022). We do not include 19 species documented only by specimens because the precise elevation at which they were taken is uncertain and some may have been taken as low as 500 m (e.g., Brown Nunlet *Nonnula brunnea*, Chestnut-belted Gnateater *Conopophaga aurita*, Banded Antbird *Dichrozona cincta*). In a few cases, we found temperate zone species (e.g., Blue-and-back Tanager *Tangara vassorii*, Black-capped Tanager *Stilpnia heinei*) at *c*.950 m during periods of cold, wet weather. Other cases of presumed elevational movement in species that are generally distributed at higher elevations include a Spectacled Whitestart *Myioborus melanocephalus* photographed near *c*.950 m (Fig. 5), sight records of White-tailed Hillstar *Urochroa bougueri*, and specimens of Long-tailed Sylph *Aglaiocercus kingii* and White-booted Racket-tail *Ocreatus underwoodii* (Appendix 1). These low-elevation records all refer to canopy or edge-inhabiting, frugivores or nectivores that may undertake facultative elevational movements in response to weather

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conditions (Levey & Stiles 1992, Boyle *et al*. 2010). Thirty-four records concern lowland species found 400 m or more above their published elevational ranges for Ecuador in standard references (Ridgely & Greenfield 2001, Freile & Restall 2018). In contrast to the low-elevation records (involving relatively vagile species) many of these high-elevation records (n = 80) involve sedentary, forest-interior species (e.g., Striated Antthrush *Chamaeza nobilis*, Black-tailed Leaftosser *Sclerurus caudacutus*, Cinereous Mourner *Laniocera hypopyrra*) that we detected regularly and that we assume are breeding residents. Of these 80 high-elevation records, all pertain to species not represented in the Olalla collections from a century ago and are consistent with a pattern of upward elevational range shifts in montane forest birds also reported at other re-surveyed sites in the East Andes and attributed to climate change (Freeman *et al*. 2018, Neate-Clegg *et al*. 2021).

Bamboo specialists.—Bamboo specialisation in Amazonian birds was first described and is best known from south-west Amazonia, especially southern Peru (Kratter 1997, Parker *et al*. 1997), but is also a feature of bird communities in north-west Amazonia, where stands of *Guadua* bamboo are less common and tend to be smaller. We regularly detected three obligate or near-obligate bamboo specialists (*sensu* Kratter 1997; Large-headed Flatbill *Ramphotrigon megacephalum*, Black-and-white Tody-Flycatcher *Poecilotriccus capitalis* and Striated Antbird *Drymophila devillei*). The first two species were present in most stands of bamboo, including smaller areas and those near or adjacent to forest edge, whilst *Drymophila devillei* was found only in the largest stand covering >20 ha. Most bamboo specialists recorded are insectivores, but two granivores, Slate-coloured Seedeater *Sporophila schistacea* and Slaty Finch *Haplospiza rustica*, were also documented. The occurrence of the former appeared to be unrelated to the availability of a *Guadua angustifolia* seed crop, and we did not witness seeding ('masting') bamboo, nor did we see evidence of mass die-off during our survey. A single specimen of Slaty Finch from San José de Sumaco (AMNH 179715) may represent an unusually low occurrence but the precise elevation where the specimen was taken is uncertain. In addition to these specialists, some globally widespread species such as Scale-crested Pygmy Tyrant *Lophotriccus pileatus* and Ornate Antwren *Epinecrophylla ornata* are locally associated with, or perhaps confined to, *Guadua angustifolia* bamboo stands at San José de Sumaco.

Historical change.—We describe a forest avifauna generally similar to that documented by the Olallas a century ago (Appendix 1) although we note that large-bodied species (e.g., *Mitu salvini*, *Nothocrax urumutum*), now recorded frequently by camera traps, are not represented in the Olalla collections. Non-forest bird communities have undergone more profound changes with the recent creation of large clearings planted with non-native grasses (pasture). In some cases, noteworthy elevational records (Appendix 1) involve non-forest species that are probably expanding upslope with deforestation (e.g., Ruddy Ground Dove *Columbina talpacoti*, Yellow-headed Caracara *Milvago chimachima*). Whilst the Olalla collections include some species typical of forest edge, small clearings and successional habitats (e.g., Great Antshrike *Taraba major*, Bluish-grey Saltator *Saltator coerulescens*, Orange-backed Troupial *Icterus croconotus*, Yellow-rumped Cacique *Cacicus cela*), none of the grassland species now common in non-forest areas at San José de Sumaco are represented (e.g., Yellow-browed Sparrow *Ammodramus aurifrons*, Blue-black Grassquit *Volatinia jacarina* and various *Sporophila*). Scant information is available to characterise ecological conditions during the time of the Olallas field work at San José de Sumaco, but a contemporaneous account by the adventurer G. M. Dyott (1929) suggests the area was then at least thinly populated. We assume that the area then consisted of a matrix of tall humid forest, secondary forest and some shifting cultivation as Chapman's remarks suggest (1926; see above). Twenty-two species represented in the Olalla collections were not confirmed

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during our field work, and we are not aware of any documented records from the area (Appendix 1). These species may no longer occur, may be locally rare, or may have been taken at (and are perhaps locally confined to) elevations below the areas we surveyed most intensively at *c*.950 m.

Species richness.—Freile *et al*. (2015) reported 460 species from BRBR but did not include a full list. White & Patiño (2018) reported 340 species at San José de Payamino in the nearby lowlands (Fig. 1). This study increases the number of species documented from San José de Sumaco by 202 over the total of 275 listed by Chapman (1926). The resulting total of 477 species includes 425 'core' tall-forest species (Appendix 1). Whilst variation in methods, spatial extent and period of study preclude rigorous comparison (Remsen 1994, Lees *et al*. 2014, Robinson *et al*. 2018) the apparent richness of the San José de Sumaco avifauna remains notable because the site is relatively restricted in area, is dominated by a single major natural vegetation type (upland *terra firme* forest) and lacks the major aquatic habitats and riparian forest types (e.g., *várzea*) that have 'inflated' estimates of diversity at Amazonian lowland sites (Stotz *et al*. 1996, Lees *et al*. 2013).

Local and global rarity.—Rarity presents a methodological impediment to survey effort but is also a general feature of tropical forest avian communities (Wallace 1878, Thiollay 1994, Jankowski & Rabenold 2007). A sample of 280 twenty-species 'MacKinnon lists' (Fig. 8; see Methods) captured just 73% (n = 347 species) of the total known species richness (n = 477 species, Appendix 1) and we consider more than half of the 477 documented species to be locally rare or very rare, with 110 species (22%) known from three or fewer reports. A generally positive relationship between abundance and geographic area suggests rare species are especially vulnerable to extirpation (Kattan 1992, Gaston & Blackburn 2000). Against this general pattern we note that several species recognised by Stattersfield *et al*. (1998) as East Andes of Ecuador endemics, and at least formerly considered Vulnerable or Near Threatened based on their restricted ranges (IUCN 2016, 2023), are among the more commonly detected species of forest interior at San José de Sumaco (e.g., Ecuadorian Piedtail *Phlogophilus hemileucurus*, Pink-throated Brilliant *Heliodoxa gularis* and *Phylloscartes gualaquizae*).

Endemism and biogeography.—Patterns of endemism are of interest to both conservationists and biogeographers and several general features of the San José de Sumaco assemblage are noteworthy in this respect. First, analyses of the distribution of restricted-range species reveal a global concentration at the Andean / Amazonian interface (Orme *et al*. 2005, Herzog & Kattan 2011, Fjeldså 2012), a pattern that invites explanation as the outcome of historical processes and identifies the region as a logical priority for conservation or a 'hotspot'.

Second, the site lies near the western margin of the North Amazon (Napo) area (Haffer 1974, Cracraft 1985), and among the range-restricted taxa present are both Napo endemic forms with sister species confined to the adjacent lowland Inambari area (e.g., Fulvous Antshrike *Frederickena fulva*, Dusky Spinetail *Synallaxis moesta*, Golden-winged Tody-Flycatcher *Poecilotriccus calopterus*), and East Andean endemic taxa with sister lineages in foothill and highland areas outside Amazonia including the Pacific slope (e.g., *Heliodoxa gularis*, Orange-eared Tanager *Chlorochrysa calliparaea*, *Pipreola chlorolepidota*; Stattersfield *et al*. 1998, Hazzi *et al*. 2018). Sympatry in taxa representative of distantly related Andean and Amazonian centres of endemism indicates a compound history (Haffer 1974, Cracraft 1985, Stattersfield *et al*. 1998, Hazzi *et al*. 2018) and this is consistent with studies elsewhere in the East Andean foothills that have reported low phylogenetic similarity between assemblages at 900 and 1,200 m (Dehling *et al*. 2014), a pattern marking the interface between older Amazonian and younger Andean biota (Weir 2006, Fjeldså & Irestedt 2009).

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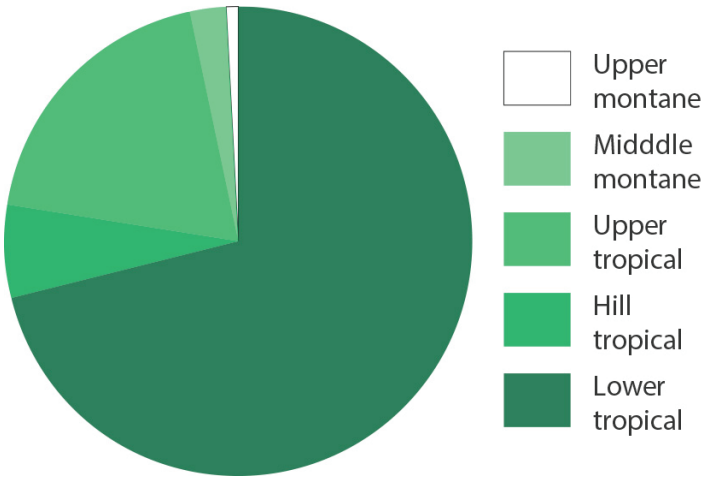

Figure 7. Proportional representation in the resident San José de Sumaco avifauna (n = 461 species; Appendix 1, excluding 16 long-distance migrant species) by 'centre of abundance' categories (median, continent-wide elevational range as given by Stotz *et al*. 1996). Lower tropical (n = 327, 71.1%), Hill tropical (n = 30, 6.6%), Upper tropical (n = 86, 18.9%), Middle montane (n = 12, 2.6%), Upper montane (n = 3, 0.7%).

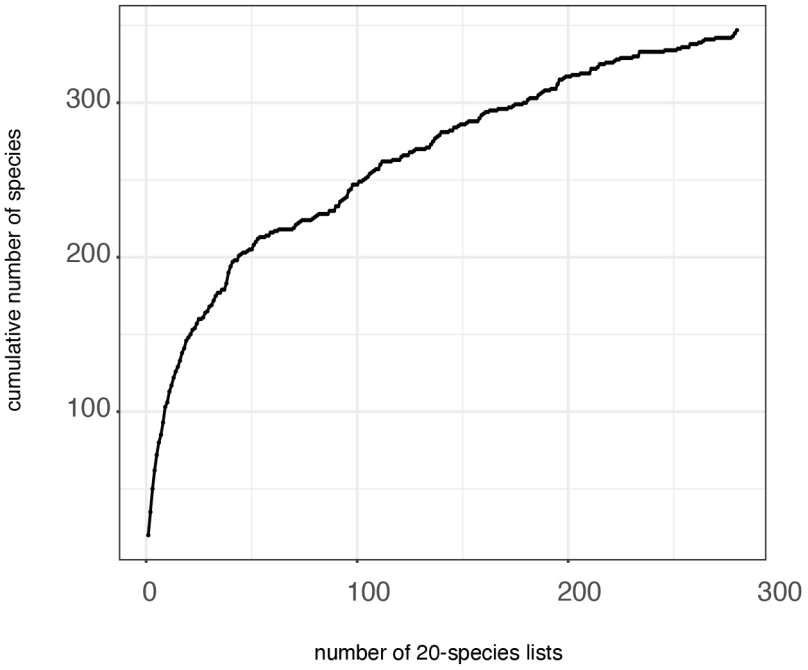

Figure 8. Species accumulation curve for the San José de Sumaco avifauna drawn from twenty-species MacKinnon lists (n = 280 lists, see Methods).

Third, whilst the San José de Sumaco avifauna is dominated by widespread Lower tropical species, it also includes a set of range-restricted Hill tropical or Upper tropical species (*sensu* Stotz *et al*. 1996; Fig. 7) that are confined to a narrow elevational band below the distribution of subtropical ('cloud') forests (e.g., *Heliodoxa gularis*, *Pipreola chlorolepidota*, *Phyllomyias gualaquizae*) and at least formerly considered Vulnerable or Near Threatened (IUCN 2016, 2023). The congruent foothill distributions of these taxa, each

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arisen from a widespread Andean clade, form a nested area within the greater East Andes area of endemism and suggest that while relationship patterns among the broad, disjunct Amazonian areas are relatively well studied, both discovery and relationships among areas in the tropical Andes remain poorly resolved and additional subcentres (nested areas) are likely to be recognised as more distributional data, taxonomic revisions and fine-scale regionalisation become available.

Finally, the San José de Sumaco avifauna includes taxa thought to have relatively extensive distributions in foothills, but considered rare (e.g., *Cypseloides lemosi*, *Snowornis subalaris* and Plain-backed Antpitta *Grallaria haplonota*), with some exhibiting circum-Amazonian distributions (e.g., *Tinamus tao*, *Laniisoma elegans* and *Synallaxis moesta*), as well as forest-dependent lowland species, in some cases with distributions reaching trans-Andean regions, but always at low densities (e.g., *Buteogallus solitarius*, *Neomorphus geoffroyi*, *Nyctibius aethereus*). While considered widespread, such taxa deserve attention from biogeographers and conservationists alike.

Conservation.—Long-term studies of tropical forest bird communities have demonstrated losses of functional and taxonomic diversity in both disturbed (Palacio *et al*. 2019, Gómez *et al*. 2021, Luther *et al*. 2022) and undisturbed landscapes (Blake & Loiselle 2015), but the forest avifauna we describe appears largely intact, suggesting the area still presents a valuable opportunity for conservation. For example, large-bodied, terrestrial species sensitive to local extirpation from hunting pressure (Peres 2001) including *Psophia crepitans*, *Mitu salvini* and *Nothocrax urumutum* are regularly recorded by camera-traps (Table 1). Neotropical forest understorey species often decline following disturbance (Laurance *et al*. 2011, Palacio *et al*. 2019), including ground insectivores and obligate ant-following species, but are regularly observed at San José de Sumaco. Large raptors typically confined to extensive undisturbed areas including *Buteogallus solitarius*, Ornate Hawk-Eagle *Spizaetus ornatus*, *Morphnus gujanensis* and *Harpia harpyja* are present, and the regular occurrence of 16 species of boreal migrants, notably including the Near Threatened *Contopus cooperi* and *Setophaga cerulea* (IUCN 2023) further underscore the area's value for conservation. Twenty-two species known only from historical specimens (Appendix 1) have diverse ecologies and do not appear likely to have declined locally because of anthropogenic change. Under current IUCN treatments (2023), the San José de Sumaco avifauna includes 15 species classified as Near Threatened and seven as Vulnerable (2023; Appendix 1). We regard five of the combined 22 Near Threatened and Vulnerable species as common, fairly common or uncommon at San José de Sumaco. At the national level, the Ecuadorian Red List (Freile *et al*. 2019) treats one species as Critical (*Buteogallus solitarius*), three as Endangered (*Falco deiroleucus*, Military Macaw *Ara militaris*, *Drymophila devillei*), 26 as Near Threatened and 11 as Vulnerable.

Following the construction of the Archidona to Loreto road the larger Sumaco region has undergone intensive deforestation and agricultural expansion (Sierra 2000). Pastures and other degraded anthropogenic landscapes now extend along a network of new roads stretching north from the paved highway connecting the cities of Loreto and Coca (Fig. 1). Whilst subtropical forests at higher elevations on Volcán Sumaco are protected in PNSNG and are thought to remain largely pristine, the lower eastern slopes have been approached from the south by an expanding agricultural frontier, and deforestation now threatens to sever the corridor that currently connects the subtropical forests of PNSNG and the lowland forests of San José de Payamino. Ecotonal areas (i.e., gradients of temperature or moisture) may be especially sensitive to synergistic effects of climate change and deforestation (Linck *et al*. 2021), but also offer valuable opportunities for conservation as even small additions to protected areas in regions with high beta diversity (i.e., mountain slopes) can

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be expected to incorporate many new species including range-restricted taxa and narrowly adapted local populations (Bush 2002, Jankowski *et al*. 2009). Irrespective of this, efforts to protect the remaining forests of San José de Sumaco from human disturbance and secure a biological corridor are already warranted because local extinctions and biodiversity erosion driven by the cascading effects of fragmentation are now well documented in Neotropical forests (Lees & Peres 2006, Laurance *et al*. 2011). While the East Andes and Amazonia have been found to rank below critically threatened regions of the Pacific slope in national-scale prioritisation schemes (Sierra *et al*. 2002, Cuesta *et al*. 2017), the Sumaco region still emerges as a priority for biodiversity conservation when feasibility is included as a criterion (Lessmann *et al*. 2014).

Conclusions

The collections assembled by the Olallas on the slopes of Volcán Sumaco a century ago helped to shape Chapman's (1926) understanding of elevational zonation and avian distributions (Kattan *et al*. 2016). Today, the lower East Andean slopes are known to harbour some of the world's richest local bird communities, an avifauna also characterised by high irreplaceability owing to the uniqueness of its evolutionary history (Haffer 1990, Herzog & Kattan 2011). Whilst these patterns are still under investigation, few undisturbed forested transects remain available for conservation or study (Stotz 1998, Kattan *et al*. 2016). San José de Sumaco hosts a rich avifauna including rare, threatened and poorly known taxa. The site's geographic position in an undisturbed foothill gradient, together with its history as the source of important collections underscore its value for conservation and continued study.

We hope that the results presented here will serve as a baseline for future monitoring efforts in the face of potential anthropogenic change including elevational range shifts and biodiversity degradation. Continued field work, ideally including a sustained programme of mist-netting, could add significantly to the list presented here by documenting species hitherto known only from sight records and uncovering the presence of additional rare resident species, invasive or expanding species, and migrants. We encourage visitors to document and publish their observations from San José de Sumaco.

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Appendix 1

List of 477 species recorded from San José de Sumaco, Orellana province, Ecuador. Systematic order and scientific nomenclature follow Remsen *et al*. (2023). Twenty-two species known only from historical (specimen) records are marked *. Fifty-two species found only in open areas (non-'core' species) are marked †. IUCN (2023) status categories: LC = Least Concern; NT = Near Threatened; VU = Vulnerable; DD = Data Deficient. Evidence categories: Sp = specimen published or registered in museum database; **Sp** = specimen examined in a museum collection or photograph; P = photograph or video image; R = sound-recording. Abundance categories: A = abundant (recorded daily in the field in appropriate habitat, often in large numbers); VC = very common (recorded almost daily, but usually not in such large numbers as the previous category); C = common (recorded on substantially more than 50% of all days in the field); FC = fairly common (recorded on *c*.50% of all days in the field); UC = uncommon (recorded on substantially fewer than 50% of all days in the field, but more common than species in the following category); R = rare (recorded on fewer than 10% of all days in the field); VR = very rare (very few records and never in large numbers). Under Elevation extension we give deviation from the elevational range found in standard references (Ridgely & Greenfield 2001, Freile & Restall 2018) for 89 species found at *c*.950 m.

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Family/English name	Scientific name	IUCN	Evidence	Abundance	Elevation extension
TINAMIDAE					
Grey Tinamou	*Tinamus tao*	VU	P,R	VR	
Great Tinamou	*Tinamus major*	LC	**Sp**,P,R	FC	
White-throated Tinamou	*Tinamus guttatus*	NT	**Sp**,P	VR	
Cinereous Tinamou	*Crypturellus cinereus*†	LC	R	VR	
Little Tinamou	*Crypturellus soui*	LC	**Sp**,R	U	
Undulated Tinamou	*Crypturellus undulatus*†	LC	R	R	+350
CRACIDAE					
Sickle-winged Guan	*Chamaepetes goudotii*	LC		VR	
Spix's Guan	*Penelope jacquacu*	LC	Sp,P,R	U	
Blue-throated Piping Guan	*Pipile cumanensis*	LC	**Sp**,P,R	U	+550
Wattled Guan	*Aburria aburri*	NT	P	R	–250
Speckled Chachalaca	*Ortalis guttata*†	LC	Sp,R	U	
Nocturnal Curassow	*Nothocrax urumutum*	LC	P,R	FC	
Salvin's Curassow	*Mitu salvini*	LC	P,R	U	+550
ODONTOPHORIDAE					
Marbled Wood Quail	*Odontophorus gujanensis*	LC	**Sp**,P,R	U	
Rufous-breasted Wood Quail	*Odontophorus speciosus*	LC	**Sp**,P	VR	
COLUMBIDAE					
Scaled Pigeon	*Patagioenas speciosa*	LC	Sp,P,R	U	
Pale-vented Pigeon	*Patagioenas cayennensis*†	LC	P	VR	
Plumbeous Pigeon	*Patagioenas plumbea*	LC	**Sp**,P,R	VC	
Ruddy Pigeon	*Patagioenas subvinacea*	LC	R	U	
Sapphire Quail-Dove	*Geotrygon saphirina*	LC	**Sp**,P,R	U	
Ruddy Quail-Dove	*Geotrygon montana*	LC	**Sp**,P,R	FC	
Grey-fronted Dove	*Leptotila rufaxilla*	LC	**Sp**,P,R	R	
Ruddy Ground Dove	*Columbina talpacoti*†	LC	P,R	U	+450
White-throated Quail-Dove	*Zentrygon frenata*	LC	P	VR	
CUCULIDAE					
Smooth-billed Ani	*Crotophaga ani*†	LC	**Sp**,P,R	FC	
Rufous-vented Ground Cuckoo	*Neomorphus geoffroyi*	VU	**Sp**	VR	+550
Squirrel Cuckoo	*Piaya cayana*	LC	Sp,P,R	U	
Black-bellied Cuckoo	*Piaya melanogaster*	LC	P,R	U	
STEATORNITHIDAE					
Oilbird	*Steatornis caripensis*	LC	R	VR	
NYCTIBIIDAE					
Great Potoo	*Nyctibius grandis*	LC	P	VR	
Long-tailed Potoo	*Nyctibius aethereus**	LC	**Sp**		
Common Potoo	*Nyctibius griseus*	LC	**Sp**,R	VR	

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CAPRIMULGIDAE					
Blackish Nightjar	*Nyctipolus nigrescens*	LC	P,R	U	
Common Pauraque	*Nyctidromus albicollis*	LC	R	R	
Ocellated Poorwill	*Nyctiphrynus ocellatus*	LC		VR	+450
APODIDAE					
Spot-fronted Swift	*Cypseloides cherriei*	DD	P	R	
White-chinned Swift	*Cypseloides cryptus*	LC	P	R	
White-chested Swift	*Cypseloides lemosi*	LC	P	R	
Chestnut-collared Swift	*Streptoprocne rutila*	LC	P	U	
White-collared Swift	*Streptoprocne zonaris*	LC	Sp,P	A	
Grey-rumped Swift	*Chaetura cinereiventris*	LC	P	FC	
Chimney Swift	*Chaetura pelagica*	VU	P	VR	
Short-tailed Swift	*Chaetura brachyura*	LC	P	FC	
Lesser Swallow-tailed Swift	*Panyptila cayennensis*	LC	P	VR	
TROCHILIDAE					
White-necked Jacobin	*Florisuga mellivora*	LC	**Sp**,P	R	
White-tipped Sicklebill	*Eutoxeres aquila*	LC	**Sp**,R	U	
Buff-tailed Sicklebill	*Eutoxeres condamini*	LC	P	R	
Rufous-breasted Hermit	*Glaucis hirsutus*	LC	**Sp**	VR	
Pale-tailed Barbthroat	*Threnetes leucurus*	LC	**Sp**,P	R	
Black-throated Hermit	*Phaethornis atrimentalis**	LC	**Sp**		
Grey-chinned Hermit	*Phaethornis griseogularis*	LC	**Sp**,P,R	U	
White-bearded Hermit	*Phaethornis hispidus*	LC	**Sp**,R	R	
Green Hermit	*Phaethornis guy*	LC	**Sp**,P	U	
Straight-billed Hermit	*Phaethornis bourcieri*	LC	**Sp**,P	VR	
Great-billed Hermit	*Phaethornis malaris*	LC	**Sp**,P,R	U	
Green-fronted Lancebill	*Doryfera ludovicae*	LC	**Sp**,P	VR	
Blue-fronted Lancebill	*Doryfera johannae*	LC	**Sp**,P,R	FC	
Brown Violetear	*Colibri delphinae*	LC	Sp	VR	
Lesser Violetear	*Colibri cyanotus*	LC	**Sp**,P	VR	
Sparkling Violetear	*Colibri coruscans*	LC	P	R	
Black-eared Fairy	*Heliothryx auritus*	LC	**Sp**,P	R	
Black-throated Mango	*Anthracothorax nigricollis*†	LC		VR	
Black-bellied Thorntail	*Discosura langsdorffi*	LC	Sp,P	R	
Ecuadorian Piedtail	*Phlogophilus hemileucurus*	LC	**Sp**,P,R	FC	
Long-tailed Sylph	*Aglaiocercus kingii**	LC	**Sp**		
Booted Racket-tail	*Ocreatus underwoodii**	LC	**Sp**		
Rufous-vented Whitetip	*Urosticte ruficrissa*	LC	**Sp**	VR	–200
Pink-throated Brilliant	*Heliodoxa gularis*	LC	**Sp**,P,R	C	
Black-throated Brilliant	*Heliodoxa schreibersii*	LC	**Sp**,P,R	U	
Gould's Jewelfront	*Heliodoxa aurescens*	LC	**Sp**,P	R	
White-bellied Woodstar	*Chaetocercus mulsant*	LC	P	VR	
Little Woodstar	*Chaetocercus bombus**	NT	**Sp**		
Gorgeted Woodstar	*Chaetocercus heliodor*	LC	**Sp**,P	VR	–200

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Amethyst Woodstar	*Calliphlox amethystina*	LC	P	R	
Blue-tailed Emerald	*Chlorostilbon mellisugus**	LC	**Sp**		
Violet-headed Hummingbird	*Klais guimeti*	LC	**Sp**	VR	
Grey-breasted Sabrewing	*Campylopterus largipennis*	LC	**Sp**,P	R	
Napo Sabrewing	*Campylopterus villaviscensio*	NT	**Sp**,P	U	
Fork-tailed Woodnymph	*Thalurania furcata*	LC	**Sp**,P	FC	
Many-spotted Hummingbird	*Taphrospilus hypostictus*	LC	**Sp**,P	VR	
Golden-tailed Sapphire	*Chrysuronia oenone*	LC	**Sp**,P,R	U	
Glittering-throated Emerald	*Chionomesa fimbriata*†	LC	P	R	
Rufous-throated Sapphire	*Hylocharis sapphirina*	LC	P	VR	+550
PSOPHIIDAE					
Grey-winged Trumpeter	*Psophia crepitans*	LC	**Sp**,P,R	R	+250
RALLIDAE					
Chestnut-headed Crake	*Anurolimnas castaneiceps*	LC	**Sp**,R	R	
Grey-breasted Crake	*Laterallus exilis*†	LC	R	R	+100
Grey-cowled Wood Rail	*Aramides cajaneus*	LC		VR	+550
Red-winged Wood Rail	*Aramides calopterus*	LC	**Sp**,P,R	R	
EURYPYGIDAE					
Sunbittern	*Eurypyga helias*	LC	Sp	VR	
ARDEIDAE					
Fasciated Tiger Heron	*Tigrisoma fasciatum*	LC	Sp,P	VR	
Cattle Egret	*Bubulcus ibis*†	LC	P	R	
CATHARTIDAE					
King Vulture	*Sarcoramphus papa*	LC	P	R	+450
Black Vulture	*Coragyps atratus*	LC	P	U	
Turkey Vulture	*Cathartes aura*	LC	P	U	
Greater Yellow-headed Vulture	*Cathartes melambrotus*	LC	P	R	
ACCIPITRIDAE					
Hook-billed Kite	*Chondrohierax uncinatus*†	LC		VR	
Swallow-tailed Kite	*Elanoides forficatus*	LC	**Sp**,P	FC	
Crested Eagle	*Morphnus gujanensis**	NT	**Sp**		
Harpy Eagle	*Harpia harpyja*	NT	P	VR	+650
Black Hawk-Eagle	*Spizaetus tyrannus*	LC	P,R	U	
Black-and-white Hawk-Eagle	*Spizaetus melanoleucus*	LC	P	VR	
Ornate Hawk-Eagle	*Spizaetus ornatus*	NT	P,R	U	+450
Double-toothed Kite	*Harpagus bidentatus*	LC	**Sp**,P	R	
Plumbeous Kite	*Ictinia plumbea*	LC	P	U	
Bicolored Hawk	*Accipiter bicolor*	LC	**Sp**,P	R	
Semicollared Hawk	*Microspizias collaris*	LC		VR	–550
Solitary Eagle	*Buteogallus solitarius*	NT	P,R	R	

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Barred Hawk	*Morphnarchus princeps*	LC	**Sp**	VR	
Roadside Hawk	*Rupornis magnirostris*†	LC	**Sp**,P,R	FC	
White Hawk	*Pseudastur albicollis*	LC	**Sp**,P,R	FC	
Black-faced Hawk	*Leucopternis melanops*	LC	P	VR	
Broad-winged Hawk	*Buteo platypterus*	LC	P	VR	
Short-tailed Hawk	*Buteo brachyurus*	LC	P	VR	
STRIGIDAE					
Tropical Screech Owl	*Megascops choliba*	LC	R	VR	+250
Rufescent Screech Owl	*Megascops ingens*	LC	R	VR	–300
Foothill Screech Owl	*Megascops roraimae*	LC	**Sp**,P,R	U	
Tawny-bellied Screech Owl	*Megascops watsonii*	LC	Sp	VR	
Crested Owl	*Lophostrix cristata*	LC	R	VR	
Spectacled Owl	*Pulsatrix perspicillata*	LC	P	VR	
Band-bellied Owl	*Pulsatrix melanota*	LC	**Sp**,P,R	FC	
Black-banded Owl	*Strix huhula*	LC	Sp,R	VR	
Subtropical Pygmy Owl	*Glaucidium parkeri*	LC	R	VR	–150
Ferruginous Pygmy Owl	*Glaucidium brasilianum*†	LC	R	R	
TROGONIDAE					
Pavonine Quetzal	*Pharomachrus pavoninus*	LC	Sp,P,R	U	+350
Golden-headed Quetzal	*Pharomachrus auriceps*	LC	**Sp**,R	VR	
Black-tailed Trogon	*Trogon melanurus*	LC	**Sp**,R	VR	+550
Green-backed Trogon	*Trogon viridis*	LC	**Sp**,P,R	VC	
Amazonian Trogon	*Trogon ramonianus*	LC	P,R	R	+450
Blue-crowned Trogon	*Trogon curucui*	LC	P,R	FC	
Black-throated Trogon	*Trogon rufus*	LC	R	R	+150
Collared Trogon	*Trogon collaris*	LC	**Sp**,P,R	C	
MOMOTIDAE					
Broad-billed Motmot	*Electron platyrhynchum*	LC	**Sp**,R	VR	
Rufous Motmot	*Baryphthengus martii*	LC	**Sp**,P,R	C	
ALCEDINIDAE					
Ringed Kingfisher	*Megaceryle torquata*	LC	Sp	VR	
GALBULIDAE					
Purplish Jacamar	*Galbula chalcothorax*	LC		VR	
Great Jacamar	*Jacamerops aureus*	LC	P,R	U	
BUCCONIDAE					
Collared Puffbird	*Bucco capensis*	LC	P,R	R	+450
Western Striolated Puffbird	*Nystalus obamai*	LC	P,R	R	
White-chested Puffbird	*Malacoptila fusca*	LC	**Sp**,P	R	
Brown Nunlet	*Nonnula brunnea**	LC	**Sp**		
Black-fronted Nunbird	*Monasa nigrifrons*	LC	P	VR	+400

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White-fronted Nunbird	*Monasa morphoeus*	LC	P,R	U	
Yellow-billed Nunbird	*Monasa flavirostris*	LC	R	R	+150
CAPITONIDAE					
Gilded Barbet	*Capito auratus*	LC	**Sp**,P,R	VC	
Lemon-throated Barbet	*Eubucco richardsoni*	LC	**Sp**,R	R	
Red-headed Barbet	*Eubucco bourcierii*	LC	**Sp**	U	
RAMPHASTIDAE					
Yellow-throated Toucan	*Ramphastos ambiguus*	NT	**Sp**,P,R	U	
White-throated Toucan	*Ramphastos tucanus*	LC	**Sp**,P,R	VC	
Channel-billed Toucan	*Ramphastos vitellinus*	LC	**Sp**,R	U	
Chestnut-tipped Toucanet	*Aulacorhynchus derbianus*	LC	**Sp**	VR	
Golden-collared Toucanet	*Selenidera reinwardtii*	LC	**Sp**,P,R	FC	
Lettered Aracari	*Pteroglossus inscriptus*	LC	P	VR	+450
Chestnut-eared Aracari	*Pteroglossus castanotis*	LC	P,R	U	
Many-banded Aracari	*Pteroglossus pluricinctus*	LC	**Sp**,P,R	U	+150
Ivory-billed Aracari	*Pteroglossus azara*	LC	**Sp**	R	
PICIDAE					
Lafresnaye's Piculet	*Picumnus lafresnayi*	LC	**Sp**,P	U	
Rufous-breasted Piculet	*Picumnus rufiventris*	LC	**Sp**,R	R	
Yellow-tufted Woodpecker	*Melanerpes cruentatus*	LC	**Sp**,P,R	C	
Little Woodpecker	*Dryobates passerinus*	LC		R	
Red-stained Woodpecker	*Dryobates affinis*	LC	P,R	R	+150
Red-necked Woodpecker	*Campephilus rubricollis*	LC	Sp,P,R	FC	+450
Crimson-crested Woodpecker	*Campephilus melanoleucos*	LC	Sp,P,R	FC	
Lineated Woodpecker	*Dryocopus lineatus*	LC	**Sp**,P	R	
Scale-breasted Woodpecker	*Celeus grammicus*	LC	R	VR	+450
Cream-coloured Woodpecker	*Celeus flavus*	LC	R	VR	+250
Chestnut Woodpecker	*Celeus elegans*	LC	P,R	VR	+250
White-throated Woodpecker	*Piculus leucolaemus*	LC	**Sp**,P,R	FC	
Spot-breasted Woodpecker	*Colaptes punctigula*†	LC	P	R	
FALCONIDAE					
Laughing Falcon	*Herpetotheres cachinnans*†	LC	P	R	
Barred Forest Falcon	*Micrastur ruficollis*	LC	**Sp**,P,R	U	
Lined Forest Falcon	*Micrastur gilvicollis*	LC	P,R	R	
Collared Forest Falcon	*Micrastur semitorquatus*	LC	**Sp**,R	R	
Buckley's Forest Falcon	*Micrastur buckleyi*	LC	**Sp**	VR	
Red-throated Caracara	*Ibycter americanus*	LC	**Sp**,P,R	FC	
Black Caracara	*Daptrius ater*	LC	P,R	R	
Yellow-headed Caracara	*Milvago chimachima*†	LC	P	R	+650
Bat Falcon	*Falco rufigularis*	LC	P	R	
Orange-breasted Falcon	*Falco deiroleucus*	NT	P	VR	

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PSITTACIDAE					
Scarlet-shouldered Parrotlet	*Touit huetii*	LC		VR	
Cobalt-winged Parakeet	*Brotogeris cyanoptera*	LC	P,R	C	
Red-billed Parrot	*Pionus sordidus*	LC		VR	
Blue-headed Parrot	*Pionus menstruus*	LC	P,R	VC	
Yellow-crowned Parrot	*Amazona ochrocephala*	LC	R	VR	
Mealy Parrot	*Amazona farinosa*	LC	**Sp**,P,R	FC	
Orange-winged Parrot	*Amazona amazonica*	LC	P,R	VR	+450
Dusky-billed Parrotlet	*Forpus modestus*	LC	Sp,P	VR	
Maroon-tailed Parakeet	*Pyrrhura melanura*	LC	Sp,R	FC	
Chestnut-fronted Macaw	*Ara severus*	LC	P,R	FC	
Military Macaw	*Ara militaris*	VU	P,R	FC	
Scarlet Macaw	*Ara macao*	LC		VR	+500
Red-and-green Macaw	*Ara chloropterus*	LC	Sp,P,R	VR	+450
White-eyed Parakeet	*Psittacara leucophthalmus*†	LC	Sp,P,R	U	
THAMNOPHILIDAE					
Fasciated Antshrike	*Cymbilaimus lineatus*	LC	**Sp**,P,R	FC	
Fulvous Antshrike	*Frederickena fulva*	LC	P,R	U	+250
Great Antshrike	*Taraba major*†	LC	**Sp**,R	R	
Lined Antshrike	*Thamnophilus tenuepunctatus*†	VU	**Sp**	VR	
Plain-winged Antshrike	*Thamnophilus schistaceus*	LC	**Sp**,P,R	FC	
White-shouldered Antshrike	*Thamnophilus aethiops*	LC	**Sp**,P,R	C	
Russet Antshrike	*Thamnistes anabatinus*	LC	**Sp**,P,R	U	
Plain Antvireo	*Dysithamnus mentalis*	LC	**Sp**,R	VC	
Yellow-breasted Antwren	*Herpsilochmus axillaris*	VU		R	
Rusty-winged Antwren	*Herpsilochmus frater*	LC	**Sp**,P,R	VC	
Dusky-throated Antshrike	*Thamnomanes ardesiacus*	LC	Sp,P,R	FC	+450
Cinerous Antshrike	*Thamnomanes caesius**	LC	**Sp**		
Plain-throated Antwren	*Isleria hauxwelli*	LC		R	+550
Spot-winged Antshrike	*Pygiptila stellaris**	LC	**Sp**		
Ornate Stipplethroat	*Epinecrophylla ornata*	LC	**Sp**	VR	
Rufous-tailed Stipplethroat	*Epinecrophylla erythrura*	LC	**Sp**	VR	
Foothill Stipplethroat	*Epinecrophylla spodionota*	LC	**Sp**,P,R	C	
Pygmy Antwren	*Myrmotherula brachyura*	LC	**Sp**,P	VR	+300
Moustached Antwren	*Myrmotherula ignota*	LC	**Sp**,P,R	FC	+350
White-flanked Antwren	*Myrmotherula axillaris*	LC	**Sp**,P,R	C	
Slaty Antwren	*Myrmotherula schisticolor*	LC	P	R	
Rio Suno Antwren	*Myrmotherula sunensis*	LC	**Sp**	VR	
Long-winged Antwren	*Myrmotherula longipennis*	LC	P,R	U	+450
Plain-winged Antwren	*Myrmotherula behni*	LC	R	R	
Grey Antwren	*Myrmotherula menetriesii*	LC	**Sp**,P,R	U	
Banded Antbird	*Dichrozona cincta**	LC	**Sp**		
Dot-winged Antwren	*Microrhopias quixensis**	LC	**Sp**		
Striated Antbird	*Drymophila devillei*	LC	**Sp**,P,R	R	+200
Peruvian Warbling Antbird	*Hypocnemis peruviana*†	LC	**Sp**,P,R	U	

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Family/English name	Scientific name	IUCN	Evidence	Abundance	Elevation extension
Black Antbird	*Cercomacroides serva*	LC	**Sp**,R	C	
Blackish Antbird	*Cercomacroides nigrescens*	LC	**Sp**	R	
Grey Antbird	*Cercomacra cinerascens*	LC	**Sp**,R	FC	
Western Fire-eye	*Pyriglena maura*	LC	R	R	
Black-faced Antbird	*Myrmoborus myotherinus*	LC	**Sp**,P,R	C	
Spot-winged Antbird	*Myrmelastes leucostigma*	LC	**Sp**,P,R	R	
Sooty Antbird	*Hafferia fortis*	LC	Sp,P,R	FC	+350
White-plumed Antbird	*Pithys albifrons*	LC	P,R	U	
White-cheeked Antbird	*Gymnopithys leucaspis*	LC	P,R	FC	+200
Hairy-crested Antbird	*Rhegmatorhina melanosticta*	LC	Sp,P,R	R	
Spot-backed Antbird	*Hylophylax naevius*	LC	**Sp**,P,R	C	
Common Scale-backed Antbird	*Willisornis poecilinotus*	LC	**Sp**,P,R	FC	
Reddish-winged Bare-eye	*Phlegopsis erythroptera*	LC		VR	+200
CONOPOPHAGIDAE					
Chestnut-belted Gnateater	*Conopophaga aurita**	LC	**Sp**		
GRALLARIIDAE					
Scaled Antpitta	*Grallaria guatimalensis*	LC	**Sp**,P,R	FC	
Plain-backed Antpitta	*Grallaria haplonota*	LC	P,R	U	–200
White-lored Antpitta	*Myrmothera fulviventris*†	LC	**Sp**,R	R	+200
Thrush-like Antpitta	*Myrmothera campanisona*	LC	**Sp**,R	C	
RHINOCRYPTIDAE					
White-crowned Tapaculo	*Scytalopus atratus*	LC	**Sp**	VR	
FORMICARIIDAE					
Rufous-capped Antthrush	*Formicarius colma*	LC	**Sp**	VR	+450
Black-faced Antthrush	*Formicarius analis*	LC	**Sp**	VR	
Short-tailed Antthrush	*Chamaeza campanisona*	LC	**Sp**,R	U	
Striated Antthrush	*Chamaeza nobilis*	LC	P,R	U	+450
FURNARIIDAE					
South American Leaftosser	*Sclerurus obscurior*	LC	**Sp**,R	FC	
Short-billed Leaftosser	*Sclerurus rufigularis*	LC	P	R	+650
Black-tailed Leaftosser	*Sclerurus caudacutus*	LC	**Sp**,P,R	R	+450
Olivaceous Woodcreeper	*Sittasomus griseicapillus*	LC	P,R	R	
Long-tailed Woodcreeper	*Deconychura longicauda*	NT	P,R	R	
Plain-brown Woodcreeper	*Dendrocincla fuliginosa*	LC	**Sp**,P,R	C	
Wedge-billed Woodcreeper	*Glyphorynchus spirurus*	LC	**Sp**,P,R	FC	
Cinnamon-throated Woodcreeper	*Dendrexetastes rufigula*	LC	R	VR	
Amazonian Barred Woodcreeper	*Dendrocolaptes certhia*	LC	**Sp**,P,R	VR	
Black-banded Woodcreeper	*Dendrocolaptes picumnus*	LC	P,R	VU	
Strong-billed Woodcreeper	*Xiphocolaptes promeropirhynchus*	LC	**Sp**,P,R	C	
Ocellated Woodcreeper	*Xiphorhynchus ocellatus*	LC	**Sp**,P,R	C	
Buff-throated Woodcreeper	*Xiphorhynchus guttatus*	LC	**Sp**,P,R	FC	

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Olive-backed Woodcreeper	*Xiphorhynchus triangularis*	LC	**Sp**,P,R	R	
Straight-billed Woodcreeper	*Dendroplex picus*	LC	R	VR	+550
Red-billed Scythebill	*Campylorhamphus trochilirostris*	LC	**Sp**,R	FC	
Duida Woodcreeper	*Lepidocolaptes duidae*	LC	P,R	FC	
Slender-billed Xenops	*Xenops tenuirostris*	LC	P	VR	+350
Plain Xenops	*Xenops minutus*	LC	**Sp**,P	U	
Rufous-tailed Xenops	*Microxenops milleri*	LC	P,R	VR	
Sharp-tailed Streamcreeper	*Lochmias nematura*	LC	**Sp**	R	
Dusky-cheeked Foliage-gleaner	*Anabazenops dorsalis*	LC	**Sp**,P	VR	
Rufous-rumped Foliage-gleaner	*Philydor erythrocercum*	LC	Sp,P,R	FC	
Cinnamon-rumped Foliage-gleaner	*Philydor pyrrhodes*	LC	P,R	FC	+150
Rufous-tailed Foliage-gleaner	*Anabacerthia ruficaudata*	LC	**Sp**,P,R	U	
Chestnut-winged Hookbill	*Ancistrops strigilatus*	LC		VR	+350
Buff-fronted Foliage-gleaner	*Dendroma rufa*	LC	P	VR	
Ruddy Foliage-gleaner	*Clibanornis rubiginosus*	LC	**Sp**,R	C	
Black-billed Treehunter	*Thripadectes melanorhynchus*	LC	**Sp**,R	U	
Brown-rumped Foliage-gleaner	*Automolus melanopezus*	LC	**Sp**,P	VR	+350
Buff-throated Foliage-gleaner	*Automolus ochrolaemus*	LC	**Sp**,R	R	+150
Striped Woodhaunter	*Automolus subulatus*	LC	**Sp**,P,R	C	
Olive-backed Foliage-gleaner	*Automolus infuscatus*	LC	Sp,R	R	+250
Spotted Barbtail	*Premnoplex brunnescens*	LC	**Sp**	R	
Plain Softtail	*Thripophaga fusciceps**	LC	**Sp**		
Ash-browed Spinetail	*Cranioleuca curtata*	LC	**Sp**,P,R	R	
Speckled Spinetail	*Cranioleuca gutturata*	LC	**Sp**,P,R	R	+350
Dusky Spinetail	*Synallaxis moesta*†	LC	**Sp**,R	R	
Dark-breasted Spinetail	*Synallaxis albigularis*†	LC	Sp	VR	
PIPRIDAE					
Dwarf Tyrant-Manakin	*Tyranneutes stolzmanni*	LC	**Sp**,P,R	C	
Blue-backed Manakin	*Chiroxiphia pareola**	LC	**Sp**		
Golden-winged Manakin	*Masius chrysopterus*	LC	**Sp**	VR	
Green Manakin	*Cryptopipo holochlora*	LC	**Sp**,P,R	FC	
Blue-capped Manakin	*Lepidothrix coronata*	LC	Sp,R	VR	
Blue-rumped Manakin	*Lepidothrix isidorei*	LC	**Sp**,P	R	
White-bearded Manakin	*Manacus manacus*	LC	**Sp**	VR	
Wire-tailed Manakin	*Pipra filicauda**	LC	**Sp**		
Striolated Manakin	*Machaeropterus striolatus*	LC	**Sp**,P,R	FC	
White-crowned Manakin	*Pseudopipra pipra*	LC	**Sp**,P,R	FC	
Golden-headed Manakin	*Ceratopipra erythrocephala*	LC	**Sp**,P,R	U	
COTINGIDAE					
Fiery-throated Fruiteater	*Pipreola chlorolepidota*	LC	**Sp**,R,P	R	
Andean Cock-of-the-rock	*Rupicola peruvianus*	LC	**Sp**	VR	
Grey-tailed Piha	*Snowornis subalaris*	LC	**Sp**,P,R	VC	
Amazonian Umbrellabird	*Cephalopterus ornatus*	LC	Sp,P,R	U	
Plum-throated Cotinga	*Cotinga maynana*	LC	**Sp**,P	R	+250

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Spangled Cotinga	*Cotinga cayana*	LC	P	R	+550
Screaming Piha	*Lipaugus vociferans*	LC	P,R	FC	
TITYRIDAE					
Black-crowned Tityra	*Tityra inquisitor*	LC	P	R	
Black-tailed Tityra	*Tityra cayana*	LC	P	R	
Masked Tityra	*Tityra semifasciata*	LC	P	U	
Foothill Schiffornis	*Schiffornis aenea*	LC	**Sp**	R	
Cinereous Mourner	*Laniocera hypopyrra*	LC	P,R	U	+550
White-browed Purpletuft	*Iodopleura isabellae*	LC	P	VR	
Shrike-like Cotinga	*Laniisoma elegans**	LC	**Sp**		
Green-backed Becard	*Pachyramphus viridis*†	LC	**Sp**	R	
White-winged Becard	*Pachyramphus polychopterus*	LC	P,R	R	
Black-and-white Becard	*Pachyramphus albogriseus*	LC	Sp	VR	
Pink-throated Becard	*Pachyramphus minor*	LC		R	+350
ONYCHORHYNCHIDAE					
Ruddy-tailed Flycatcher	*Terenotriccus erythrurus*	LC	**Sp**,P	VR	
Tawny-breasted Flycatcher	*Myiobius villosus*	LC	**Sp**,P	U	
TYRANNIDAE					
Wing-barred Piprites	*Piprites chloris*	LC	**Sp**,R	FC	
Cinnamon Manakin-Tyrant	*Neopipo cinnamomea*	LC	Sp,P,R	R	
White-throated Spadebill	*Platyrinchus mystaceus*	LC	Sp	VR	
Golden-crowned Spadebill	*Platyrinchus coronatus*	LC	Sp	VR	
Marble-faced Bristle Tyrant	*Phylloscartes ophthalmicus*	LC	P	VR	
Spectacled Bristle Tyrant	*Phylloscartes orbitalis*	LC	**Sp**,P	R	
Ecuadorian Tyrannulet	*Phyllomyias gualaquizae*	NT	**Sp**,P,R	FC	
Olive-striped Flycatcher	*Mionectes olivaceus*	LC	**Sp**,P,R	U	
Ochre-bellied Flycatcher	*Mionectes oleagineus*	LC	**Sp**,P,R	R	
Slaty-capped Flycatcher	*Leptopogon superciliaris*	LC	Sp,P,R	FC	
Olivaceous Flatbill	*Rhynchocyclus olivaceus*	LC	Sp,R	FC	+250
Grey-crowned Flycatcher	*Tolmomyias poliocephalus*	LC	R	U	+350
Yellow-margined Flycatcher	*Tolmomyias assimilis*	LC	**Sp**,P,R	FC	+250
Yellow-breasted Flycatcher	*Tolmomyias flaviventris*†	LC	**Sp**,P,R	U	+150
Scale-crested Pygmy Tyrant	*Lophotriccus pileatus*	LC	**Sp**,R	R	
Double-banded Pygmy Tyrant	*Lophotriccus vitiosus*	LC	**Sp**,P,R	C	+350
White-eyed Tody-Tyrant	*Hemitriccus zosterops*	LC	P,R	R	
Black-and-white Tody-Flycatcher	*Poecilotriccus capitalis*	LC	**Sp**,P,R	FC	
Golden-winged Tody-Flycatcher	*Poecilotriccus calopterus*†	LC	**Sp**,P,R	R	
Common Tody-Flycatcher	*Todirostrum cinereum*†	LC	**Sp**	VR	
Ornate Flycatcher	*Myiotriccus ornatus*	LC	**Sp**,P,R	VC	
Golden-faced Tyrannulet	*Zimmerius chrysops*	LC	P,R	C	
White-lored Tyrannulet	*Ornithion inerme*	LC	**Sp**,R	R	+350
Mottle-backed Elaenia	*Elaenia gigas*†	LC		VR	
Grey Elaenia	*Myiopagis caniceps*	LC	P,R	R	

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Yellow Tyrannulet	*Capsiempis flaveola*†	LC	**Sp**	VR	
Rough-legged Tyrannulet	*Phyllomyias burmeisteri*	LC	P,R	R	
Yellow-crowned Tyrannulet	*Tyrannulus elatus*	LC	P,R	R	+350
Bright-rumped Attila	*Attila spadiceus*	LC	R	U	
Piratic Flycatcher	*Legatus leucophaius*	LC	R	U	+150
Large-headed Flatbill	*Ramphotrigon megacephalum*	LC	P,R	U	
Great Kiskadee	*Pitangus sulphuratus*†	LC		R	
Boat-billed Flycatcher	*Megarynchus pitangua*†	LC	P,R	U	
Golden-crowned Flycatcher	*Myiodynastes chrysocephalus*	LC	P	VR	
Social Flycatcher	*Myiozetetes similis*†	LC	P	R	
Grey-capped Flycatcher	*Myiozetetes granadensis*†	LC	**Sp**,P,R	R	
Dusky-chested Flycatcher	*Myiozetetes luteiventris*	LC	R	R	+350
Lemon-browed Flycatcher	*Conopias cinchoneti*	VU	P	VR	
Tropical Kingbird	*Tyrannus melancholicus*†	LC	P	FC	
Fork-tailed Flycatcher	*Tyrannus savana*†	LC		VR	
Greyish Mourner	*Rhytipterna simplex*	LC	P,R	FC	
White-rumped Sirystes	*Sirystes albocinereus*	LC	P,R	VR	+450
Dusky-capped Flycatcher	*Myiarchus tuberculifer*	LC	Sp,P,R	C	
Short-crested Flycatcher	*Myiarchus ferox*	LC	P,R	U	
Long-tailed Tyrant	*Colonia colonus*	LC	**Sp**,P,R	U	
Olive-chested Flycatcher	*Myiophobus cryptoxanthus*†	LC	**Sp**,P,R	R	
Bran-coloured Flycatcher	*Myiophobus fasciatus**†	LC	**Sp**		
Euler's Flycatcher	*Lathrotriccus euleri*	LC	**Sp**,P,R	FC	
Acadian Flycatcher	*Empidonax virescens*	LC	P,R	VR	
Olive-sided Flycatcher	*Contopus cooperi*	NT	P,R	U	
Western Wood Pewee	*Contopus sordidulus*	LC	**Sp**,P,R	FC	
Eastern Wood Pewee	*Contopus virens*	LC	Sp,P,R	R	
Blackish Pewee	*Contopus nigrescens*	LC	P,R	FC	
VIREONIDAE					
Olivaceous Greenlet	*Hylophilus olivaceus*	LC	**Sp**,R	R	
Lemon-chested Greenlet	*Hylophilus thoracicus*	LC	R	VR	+550
Slaty-capped Shrike-Vireo	*Vireolanius leucotis*	LC	**Sp**,P,R	FC	
Tawny-crowned Greenlet	*Tunchiornis ochraceiceps*	LC	**Sp**,P,R	FC	+250
Rufous-naped Greenlet	*Pachysylvia semibrunnea*	LC	**Sp**,P,R	FC	
Red-eyed Vireo	*Vireo olivaceus*	LC	Sp,R	R	
Yellow-green Vireo	*Vireo flavoviridis*	LC	**Sp**,P	VR	
CORVIDAE					
Violaceous Jay	*Cyanocorax violaceus*	LC	**Sp**,P,R	FC	
Green Jay	*Cyanocorax yncas*	LC	**Sp**	VR	
HIRUNDINIDAE					
Blue-and-white Swallow	*Pygochelidon cyanoleuca*†	LC		R	
White-thighed Swallow	*Atticora tibialis*†	LC	P	U	
Southern Rough-winged Swallow	*Stelgidopteryx ruficollis*†	LC	P	U	

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Grey-breasted Martin	*Progne chalybea*†	LC		VR	
TROGLODYTIDAE					
Scaly-breasted Wren	*Microcerculus marginatus*	LC	Sp,R	FC	
Wing-banded Wren	*Microcerculus bambla*	LC	**Sp**,P,R	FC	
House Wren	*Troglodytes aedon*†	LC	P,R	FC	
Thrush-like Wren	*Campylorhynchus turdinus*	LC	Sp,P,R	FC	
Coraya Wren	*Pheugopedius coraya*	LC	**Sp**,R	R	
White-breasted Wood Wren	*Henicorhina leucosticta*	LC	**Sp**,P,R	VC	
Musician Wren	*Cyphorhinus arada*	LC	Sp,P,R	FC	
POLIOPTILIDAE					
Half-collared Gnatwren	*Microbates cinereiventris*	LC	**Sp**,P,R	U	
DONACOBIIDAE					
Black-capped Donacobius	*Donacobius atricapilla*†	LC	P,R	R	
TURDIDAE					
Andean Solitaire	*Myadestes ralloides*	LC	R	R	
Speckled Nightingale-Thrush	*Catharus maculatus*	LC	**Sp**,R	C	
Swainson's Thrush	*Catharus ustulatus*	LC	**Sp**,P,R	FC	
Pale-eyed Thrush	*Turdus leucops*	LC	**Sp**,R	U	
Lawrence's Thrush	*Turdus lawrencii*	LC	R	VR	+350
Black-billed Thrush	*Turdus ignobilis*	LC	P,R	R	
White-necked Thrush	*Turdus albicollis*	LC	**Sp**,P,R	VC	
FRINGILLIDAE					
Blue-naped Chlorophonia	*Chlorophonia cyanea*	LC	P	R	
Golden-bellied Euphonia	*Euphonia chrysopasta*	LC	P,R	R	
White-vented Euphonia	*Euphonia minuta*	LC	P,R	U	+200
Thick-billed Euphonia	*Euphonia laniirostris*	LC	P,R	R	
Orange-bellied Euphonia	*Euphonia xanthogaster*	LC	**Sp**,P,R	VC	
Bronze-green Euphonia	*Euphonia mesochrysa*	LC	P,R	U	
Rufous-bellied Euphonia	*Euphonia rufiventris*	LC	Sp,P	U	
PASSERELLIDAE					
Yellow-throated Chlorospingus	*Chlorospingus flavigularis*	LC	**Sp**,P,R	FC	
Yellow-browed Sparrow	*Ammodramus aurifrons*†	LC	P,R	U	
Orange-billed Sparrow	*Arremon aurantiirostris*	LC	**Sp**,P,R	FC	
Chestnut-capped Brushfinch	*Arremon brunneinucha*	LC	**Sp**	VR	
ICTERIDAE					
Russet-backed Oropendola	*Psarocolius angustifrons*	LC	P,R	VC	
Green Oropendola	*Psarocolius viridis*	LC	**Sp**,P,R	R	
Crested Oropendola	*Psarocolius decumanus*	LC	**Sp**,P	FC	
Olive Oropendola	*Psarocolius bifasciatus*	LC	**Sp**,P	R	+350

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Solitary Black Cacique	*Cacicus solitarius**	LC	**Sp**		
Ecuadorian Cacique	*Cacicus sclateri**	LC	**Sp**		
Yellow-rumped Cacique	*Cacicus cela*†	LC	**Sp**,P,R	FC	
Casqued Cacique	*Cacicus oseryi**	LC	**Sp**		
Orange-backed Troupial	*Icterus croconotus*†	LC	**Sp**,P,R	R	+200
Epaulet Oriole	*Icterus cayanensis*	LC	**Sp**,P,R	U	
Giant Cowbird	*Molothrus oryzivorus*	LC	**Sp**,P	R	
PARULIDAE					
Northern Waterthrush	*Parkesia noveboracensis*	LC		VR	
American Redstart	*Setophaga ruticilla*	LC	**Sp**,P	R	
Cerulean Warbler	*Setophaga cerulea*	NT	**Sp**,P	R	
Blackburnian Warbler	*Setophaga fusca*	LC	Sp	R	
Blackpoll Warbler	*Setophaga striata*	NT	**Sp**,P	R	
Buff-rumped Warbler	*Myiothlypis fulvicauda*	LC	**Sp**	VR	
Three-striped Warbler	*Basileuterus tristriatus*	LC	**Sp**	VR	
Canada Warbler	*Cardellina canadensis*	LC	**Sp**,P,R	FC	
Slate-throated Redstart	*Myioborus miniatus*	LC	**Sp**,P	FC	
Spectacled Redstart	*Myioborus melanocephalus*	LC	P	VR	–1,050
CARDINALIDAE					
Summer Tanager	*Piranga rubra*	LC	**Sp**,P,R	FC	
Scarlet Tanager	*Piranga olivacea*	LC	**Sp**,P	U	
Carmiol's Tanager	*Chlorothraupis carmioli*	LC	P,R	U	
Amazonian Grosbeak	*Cyanoloxia rothschildii*	LC	**Sp**,R	R	
THRAUPIDAE					
Yellow-shouldered Grosbeak	*Parkerthraustes humeralis*	LC	Sp,P	R	
Green Honeycreeper	*Chlorophanes spiza*	LC	**Sp**,P	FC	
Guira Tanager	*Hemithraupis guira*	LC	Sp,P	VR	
Yellow-backed Tanager	*Hemithraupis flavicollis*	LC	**Sp**,P	U	
Slaty Finch	*Haplospiza rustica**	LC	**Sp**		
Blue-black Grassquit	*Volatinia jacarina*†	LC	P,R	FC	
Flame-crested Tanager	*Loriotus cristatus*	LC	**Sp**,P	U	
White-shouldered Tanager	*Loriotus luctuosus*	LC	**Sp**	VR	
Fulvous-crested Tanager	*Tachyphonus surinamus*	LC	**Sp**,P	R	
White-lined Tanager	*Tachyphonus rufus*	LC		R	
Red-crested Finch	*Coryphospingus cucullatus*†	LC	P	R	
Silver-beaked Tanager	*Ramphocelus carbo*†	LC	**Sp**,P,R	FC	
Fulvous Shrike-Tanager	*Lanio fulvus*	LC	**Sp**,P,R	C	
Short-billed Honeycreeper	*Cyanerpes nitidus*	LC	P	VR	+550
Purple Honeycreeper	*Cyanerpes caeruleus*	LC	P	FC	
Swallow Tanager	*Tersina viridis*	LC	**Sp**,P	FC	
Black-faced Dacnis	*Dacnis lineata*	LC	**Sp**,P	FC	
Yellow-bellied Dacnis	*Dacnis flaviventer*	LC	Sp,P	R	
Blue Dacnis	*Dacnis cayana*	LC	Sp,P	FC	

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Chestnut-bellied Seedeater	*Sporophila castaneiventris*†	LC	P,R	U	
Chestnut-bellied Seed Finch	*Sporophila angolensis*†	LC	P,R	FC	
Black-billed Seed Finch	*Sporophila atrirostris*†	LC		VR	
Black-and-white Seedeater	*Sporophila luctuosa*†	LC	P	R	
Slate-coloured Seedeater	*Sporophila schistacea*	LC	P,R	R	+550
Buff-throated Saltator	*Saltator maximus*	LC	**Sp**,P,R	C	
Blue-grey Saltator	*Saltator coerulescens*†	LC	**Sp**,R	U	
Slate-coloured Grosbeak	*Saltator grossus*	LC	**Sp**,R	U	
Bananaquit	*Coereba flaveola*	LC	**Sp**	R	
Orange-eared Tanager	*Chlorochrysa calliparaea*	LC	**Sp**	R	
Magpie Tanager	*Cissopis leverianus*†	LC	**Sp**,P	FC	
Black-capped Tanager	*Stilpnia heinei*	LC		VR	–150
Masked Tanager	*Stilpnia nigrocincta*	LC	P	U	
Blue-necked Tanager	*Stilpnia cyanicollis*	LC	**Sp**,P	FC	
Blue-and-black Tanager	*Tangara vassorii*	LC		VR	–1,100
Turquoise Tanager	*Tangara mexicana*	LC	P	R	
Paradise Tanager	*Tangara chilensis*	LC	**Sp**,P	FC	
Opal-rumped Tanager	*Tangara velia*	LC	P	U	+350
Opal-crowned Tanager	*Tangara callophrys*	LC	P	U	+350
Bay-headed Tanager	*Tangara gyrola*	LC	**Sp**,P	FC	
Green-and-gold Tanager	*Tangara schrankii*	LC	**Sp**,P,R	C	
Golden Tanager	*Tangara arthus*	LC	**Sp**,P	FC	
Blue-grey Tanager	*Thraupis episcopus*	LC	P	FC	
Palm Tanager	*Thraupis palmarum*	LC	P	FC	
Yellow-bellied Tanager	*Ixothraupis xanthogastra*	LC	**Sp**,P	U	
Spotted Tanager	*Ixothraupis punctata*	LC	**Sp**,P	U	

Appendix 2

List of 49 species reported from San José de Sumaco, Orellana province, Ecuador, without voucher: Band-tailed Pigeon *Patagioenas fasciata*, Dark-billed Cuckoo *Coccyzus melacoryphus*, Pale-rumped Swift *Chaetura egregia*, Tawny-bellied Hermit *Phaethornis syrmatophorus*, Wire-crested Thorntail *Discosura popelairii*, White-tailed Hillstar *Urochroa bougueri*, Violet-fronted Brilliant *Heliodoxa leadbeateri*, Long-billed Starthroat *Heliomaster longirostris*, Black-banded Crake *Anurolimnas fasciatus*, Rufous-sided Crake *Laterallus melanophaius*, Grey-headed Kite *Leptodon cayanensis*, Tiny Hawk *Microspizias superciliosus*, Great Black Hawk *Buteogallus urubitinga*, Coppery-chested Jacamar *Galbula pastazae*, Black-streaked Puffbird *Malacoptila fulvogularis*, Smoky-brown Woodpecker *Dryobates fumigatus*, Crimson-bellied Woodpecker *Campephilus haematogaster*, Golden-olive Woodpecker *Colaptes rubiginosus*, Spot-winged Parrotlet *Touit stictopterus*, Blue-and-yellow Macaw *Ara ararauna*, Riparian Parrotlet *Forpus crassirostris*, White-streaked Antvireo *Dysithamnus leucostictus*, Mouse-coloured Antshrike *Thamnophilus murinus*, White-browed Antbird *Myrmoborus leucophrys*, White-chinned Woodcreeper *Dendrocincla merula*, Streaked Xenops *Xenops rutilans*, Rusty-winged Barbtail *Premnornis guttuliger*, Spectacled Prickletail *Siptornis striaticollis*, Montane Foliage-gleaner *Anabacerthia striaticollis*, Purple-throated Cotinga *Porphyrolaema porphyrolaema*, Black-tailed Flycatcher *Myiobius atricaudus*, Fulvous-breasted Flatbill *Rhynchocyclus fulvipectus*, Red-billed Tyrannulet *Zimmerius cinereicapilla*, Foothill Elaenia *Myiopagis olallai*, Variegated Bristle Tyrant *Phylloscartes poecilotis*, Yellow-olive Flycatcher *Tolmomyias sulphurescens*, Yellow-browed Tody-Flycatcher *Todirostrum chrysocrotaphum*, Yellow-throated Flycatcher *Conopias parvus*, Eastern Kingbird *Tyrannus tyrannus*, Chestnut-crowned Becard *Pachyramphus castaneus*, Chestnut-breasted Wren *Cyphorhinus thoracicus*, Grey-cheeked Thrush *Catharus minimus*, Olivaceous Siskin *Spinus olivaceus*, Ashy-throated Chlorospingus *Chlorospingus canigularis*, Tropical Parula *Setophaga pitiayumi*, White-winged Tanager *Piranga leucoptera*, Golden-collared Honeycreeper *Iridophanes pulcherrimus*, Golden-naped Tanager *Chalcothraupis ruficervix*, Beryl-spangled Tanager *Tangara nigroviridis*

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