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New distributional bird records from Serranía de San Lucas and adjacent Central Cordillera of Colombia

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Received 21 August 2001

Serranía de San Lucas in northern Colombia has been one of the greatest ornithological enigmas in the Americas. One brief 1947 bird collection in the foothills was our only knowledge of the birds of this isolated mountain range. Political instability for over 40 years deterred further investigation until expeditions conducted by the Colombian Evaluation of Biodiversity in the Andes (EBA) Project team (the

authors comprising the ornithologists in the Project) were conducted to develop rapid conservation assessments of the mountain range in 1999 and 2001. Additional surveys were also conducted in the adjacent Central Cordillera. Whilst the highlands of Serranía de San Lucas from 1,500-2,700 m continue to remain unknown, we report the first ornithological records from the premontane zone to 1,400 m. Of 199 species recorded in three weeks between 1,000-1,400 m in San Lucas, 70% of species were new to the highlands, 65 species represented significant range extensions (including perhaps three undescribed subspecies), and noteworthy altitude extensions were noted for 40 species. A further 13 species recorded on the adjacent Central Cordillera also represented range extensions.

The Northern Andes diverge into three main long mountain ranges in Colombia (Western, Central and Eastern Cordilleras), which are separated by deep interandean valleys of the Magdalena and Cauca rivers. The Central Cordillera is a 750 km-long mountain range extending northwards from approximately 1° 30'N and is the highest (average 3,000 m) of Colombia's three Andean ranges, as well as the oldest, having attained elevations of over 2,000 m by the Miocene period (Hernández-Camacho *et al.* 1992). At the northeastern extreme of the Central Cordillera, a wide foothill plateau (average *c.* 500 m asl) is dissected by the Río Nechí watershed, isolating the Serranía de San Lucas from the rest of the range. Serranía de San Lucas is a 200 km long mountain range, rising from sea level to 2,700 m asl, in Dptos Antioquia and Bolivar, Northern Colombia (Fig. 1). At the 1,000 m asl contour, the Serranía de San Lucas is isolated by over 75 km from the Central Cordillera and by 65 km from the Eastern Cordillera by the Río Magdalena valley. The massif is principally of igneous origins with metamorphic intrusions rich in gold deposits. It runs parallel to the Río Magdalena on its eastern flank and with Río Nechí and Río Cauca on its western and northern flanks respectively.

From the late nineteenth and twentieth centuries bird collectors began to explore the northern part of Central Cordillera of Colombia, especially around Medellín, Colombia's second largest city (summarised in Cuervo *et al.* 2001). Consequently, avifaunal knowledge of the Central Cordillera is relatively good compared to other regions of Colombia, e.g. the eastern slope of the Andes. However, remarkably it has revealed two new species for science in recent years (see Graves 1997, Cuervo *et al.* 2001). Several life-zones on this Cordillera and the Serranía de San Lucas, on the northeastern humid premontane slopes (1,200-2,000 m), remained remarkably little-known until surveys carried out by the Colombian EBA team.

Melbourne A. Carriker, Jr. briefly surveyed the tropical foothill elevations (300-1,000 m) near the town of Santa Rosa in Serranía de San Lucas and surrounding lowlands near Simití for a total of 17 days in April-May 1947 (Paynter 1997). No other ornithological surveys have been conducted above 1,000 m (up to 2,600 m) in Serranía de San Lucas. Only a small number of specimens were taken in the 1947 expedition but, even in this survey, four threatened bird species were found: Blue-knobbed Curassow *Crax alberti*, Chestnut-bellied Hummingbird *Amazilia castaneiventris*, White-mantled Barbet *Capito hypoleucus* and Recurve-billed

Bushbird *Clytoctantes alixii*. Hilty & Brown (1986) mapped 58 bird species above 1,000 m on Serranía de San Lucas. Of these, all bar 13 typically higher-elevation species recorded by Carriker are widespread throughout Colombia and assumed to occur (e.g. Black Vulture *Coragyps atratus*).

Exceptionally harsh physical relief and environmental conditions (dense swamps and high malaria prevalence) have deterred human access until the latter half of the 20th century. Until relatively recently, the isolated Serranía was a wilderness area of forest, known only as an important strategic area for the Ejercito de Liberación Nacional (ELN) guerrilla. However, massive gold deposit discoveries in the 1990s and an expansion of illicit coca production drastically changed the San Lucas landscape. Being biologically unknown and with mounting threats, the justification for fieldwork in the Serranía was compelling. Our principal aim was to conduct ornithological surveys across Serranía de San Lucas and adjacent slopes of the Central Cordillera, in order to compile bird inventories along the altitudinal gradient, where no ornithological information previously existed.

Abbreviations

† = specimen collected; CORANTIOQUIA = Corporación Autónoma Regional del Centro de Antioquia; Dpto = Departamento (sub-political region); EBA = Evaluation of Biodiversity in the Andes Project; ICN-MHN = Instituto de Ciencias Naturales, Museo de Historia Natural, Universidad Nacional de Colombia; Mpo = Municipio (Municipality); MNH = Mist-Net Hours per meterage (1 metre of net per hour = 1); Taxonomy and nomenclature largely follow Ridgely & Tudor (1989, 1994) and Salaman *et al.* (2001). Species sequence follows Hilty & Brown (1986).

Fieldwork and study sites

Research methods involved mist-netting, sound-recording and direct observation along transects at each site with the objectives of: (a) rapidly collecting standardised and replicable data; (b) documenting species compositions and biological variation; and (c) evaluating conservation priorities across the region. A summary of the location, fieldwork effort and summarised results for each study site is presented in Table 1.

Serranía de San Lucas: further details of study sites are described in Salaman & Donegan (2001). Sites were studied by all the authors unless otherwise stated.

San Pablo (5 6, 9–12 March 2001), Mpo San Pablo, Dpto Bolivar (100–250 m). Aquatic habitats, open country and secondary growth were surveyed largely by observations and with a small number of mist-nets, within several km of the town in the following areas: Cañabraval, San Pablo, Bajo Taracue (all secondary growth near San Pablo town), the Río Magdalena between Puerto Wilches and San Pablo and Cienaga Canaletal (a large natural lake *c.* 1.5 km diameter with secondary growth and adjacent woodland dominated by bamboo). Studied by TMD and Javier Bustos.

La Punta (15–20 March 2001), southeast slope of the Río San Pedro Frío valley, Mpo Santa Rosa del Sur, Dpto Bolivar (1,000–1,400 m). The valley slope is transected

by a road (from Santa Rosa) descending 3 km from El Retén at 1,400 m to the small hamlet of La Punta (*c.* 10 houses at 1,300 m), from where a mule trail descends 2 km to the Quebrada La Romera and Río San Pedro Frío (1,000 m). The steep valley slope has extensive patches of secondary growth and some heavily disturbed remnant forest patches. Owing to anti-personnel land-mined forest trails, observations were restricted to forest borders, the road and mule trail both below (15–17 March) and above (17-20 March) La Punta.

La Teta Resort (22 March–3 April 2001), northwest slope of the San Pedro Frío valley, Mpo Santa Rosa del Sur, Dpto Bolivar (1,300 m). Following the river crossing, the mule trail from La Punta at La Punta ascends to San Pedro Frío, a miners' commune on the lower slopes of La Teta peak. La Teta is the highest mountain in the Serranía de San Lucas (*c.* 2,700 m). Above the stream, *c.* 2 km northwest of La Punta, the trail passes a small (*c.* 20 ha) fragment of forest and secondary growth in a stream valley, bordered by pasture and overgrown scrub.

Apollo 13 (3–8 August 1999), Finca La Esperanza, Vereda Malena-Río Bagre, Mpo Segovia, Dpto Antioquia (300 m). Lowland humid forest (*c.* 2,500 mm rainfall/year) located c. 8 km southeast of the gold-mining commune of Puerto Lopez. A lowland forest patch (*c.* 1,500 m x 500 m), straddling three ridges about a low peak (base camp), formed the basis of our transect. The forest core was slightly disturbed with several trees with large diameter at breast height (>10 m), canopy height *c.* 35 m, high subcanopy and understorey to *c.* 5 m. The understorey was sparsely vegetated, although characterised by dense *Heliconia* spp. thickets and spiny palm clusters, whilst there was a low abundance and diversity of epiphytes.

Northeastern Cordillera Central: the 750 km-long main Central Cordillera terminates at 7°N with foothill ridges descending northwards to 7°30'N into the tropical lowlands of the Nechí and lower Cauca valleys. Two sites on the western flank of the Río Porce were studied: one in the most northerly highland area of the northeastern slope (La Forzosa) and another 35 km north on the edge of the lowlands (Alto de los Tarros).

Alto de los Tarros (20–24 August 1999), Reserva Regional Bajo Cauca-Nechí, Vereda La Tirana, Mpo Anorí, Dpto Antioquia (800–850 m). This site lay within an extensive fragment of foothill humid forest (*c.* 45,000 ha). A little-used trail along a high ridge through primary forest in the Río Anorí watershed was used as a transect. The forest physionomy is similar to Apollo 13, but virtually undisturbed, with lower vegetation strata (canopy *c.* 30 m), more broken canopy by treefalls on steep slopes, higher epiphyte abundance and notably more woody stem plants in the understorey. Studied by the authors, José Manuel Ochoa and Juan Lázaro Toro.

La Forzosa (26–29 August 1999), Reserva Natural La Forzosa (*c.* 450 ha), the Quebrada Chaquiral and La Soledad watershed *c.* 6 km south of Anorí, Vereda Roble Arriba, Mpo Anorí, Dpto Antioquia (1,550 m). Primary premontane humid forest (*c.* 3,000 mm rainfall/year). A 300 m transect ascended a ridge through dense understorey, while observations were also conducted along the Quebrada La Soledad. Upper slope and ridgetop forest was stunted and gnarled with a canopy height from

5–8 m, and epiphytes abundant, especially mosses, lichens and bromeliads. Vegetation on the lower slopes and valleys were typical of forest at 1,500 m, with a canopy to 15–20 m and a moderately dense understorey composed of woody stem bushes and sparse herbaceous cover, with a moderate abundance of arboreal epiphytes. The La Forzosa reserve has been subject to fairly intensive surveys since 1999 led by AMC and also with the Bird Study Group Universidad de Antioquia (M. Castaño, C. Delgado, J. C. Luna, S. Galeano, A. Palacio, P. Lopera, A. Patiño, José Manuel Ochoa, A. Vasco and others) up to 1,820 m asl (Cuervo *et al.* 1999).

Species accounts

Species accounts; we provide a brief description of each species' distribution and status in Colombia from Hilty & Brown (1986), with additional recent information. Specific localities not mentioned above are given latitude and longitude co-ordinates when first mentioned. We follow this with our own information at each site and then summarise the significance of our records. The number of birds captured for each species is given in parentheses, e.g. La Punta (16) means that 16 birds were caught at Study Site 2 (La Punta). Sound recordings by PS and AMC have been deposited at the National Sound Archive (Wildlife Section, British Library). All mist-netted birds were weighed and measured and were photographed from various angles. Photographs have been catalogued with VIREO (Philadelphia) and all specimens (†) have been deposited and catalogued at ICN-MHN. Noteworthy distributional records, based on Hilty & Brown (1986) unless otherwise stated, are presented in four categories: (i) 37 significant range extensions (>100 km or first records for the region); (ii) 31 100 km northwards range extensions from the Central Cordillera to Serranía de San Lucas of species typically distributed above 1,000 m; (iii) six range extensions northwards to the north of the Central Cordillera; (iv) a brief list of 17 other important records of species with poorly-known distributions in the region; (v) 40 noteworthy altitude extensions.

(i) Thirty-seven significant range extensions

The following species present noteworthy range extensions (> *c.* 100 km) or biogeographical records, based on distribution information in Hilty & Brown (1986) and recent publications. Less significant range extensions are not published here but a checklist of all species recorded in Serranía de San Lucas (virtually all of which present range extensions of tens of km with many new departmental records) is presented in Salaman & Donegan (2001).

LEAST GREBE *Podiceps dominicus*

Previously known from the Cauca valley and the Caribbean coast of Colombia. Two individuals were observed near La Forzosa in small lakes created from gold mining excavations at Madreseca *c.* 6 km north of Anorí on 19 August 1999. This record represents the first record for the Central Cordillera.

Figure 1. Map of the central-northern Colombia, showing Serranía de San Lucas and the Study Sites throughout the region (San Pablo; La Punta; La Teta Resort; Apollo 13; Alto los Tarros; La Forzosa).

Figure 2. Sharpbill *Oxyruncus cristatus* at La Teta Resort; new for Colombia.

Figure 3. Three-striped Warbler *Basileuterus tristriatus*; individuals from Serranía de San Lucas represent an undescribed subspecies.

GREAT BLUE HERON *Ardea herodias*
An immature observed at San Pablo on 5, 7 & 9 March 2001 on an island in the Río Magdalena off Puerto Wilches (*cf.* 800–1,000 observations of Cocoi Heron *A. cocoi* at this site). Winters throughout the Cauca valley and Caribbean lowlands, but previously unknown from the mid-Magdalena valley. This record probably relates to a straggler.

LESSER YELLOW-HEADED VULTURE *Cathartes burrovianus*
Several observations made at San Pablo and Apollo 13. Also one individual recorded on Cienaga Sahaya, southern Dpto Cesar (8°42'N, 73°47') by TMD on 14 January 2002. Known from one locality in the interior Caribbean lowlands along the Río Magdalena (160 km range extension to Apollo 13) and reported by Stiles & Bohórquez (2000) in Puerto Boyacá and Puerto Romero. Probably widely distributed across the humid forest lowlands west of Serranía de San Lucas.

WHITE-TAILED KITE *Elanus leucurus*
Observed several times along the Río Nechí near El Bagre (7°36'N, 74°47'W), 30 km northwest of Apollo 13. Previously unknown from the Caribbean lowland interior. Suspected to have increased its range 170 km northwest from the mid-Magdalena valley or Caribbean coastal fringe with forest clearance.

PLUMBEOUS HAWK *Leucopternis plumbea*
An adult captured at Apollo 13 (1) had a distinctive olive crown - a previously undescribed feature, but it is unclear if this represents an aberrant plumage or perhaps a geographical characteristic. This little-known and Near-Threatened species presents a 90 km easterly range extension from the northern foothills of the Western Cordillera.

WHITE HAWK *Leucopternis albicollis*
Observed flying over Apollo 13 and La Forzosa. These records present a 90 km easterly range extension from the northern foothills of the Western Cordillera and link with recent records 150 km SE on the western slope of the Eastern Cordillera at La Grilla in Serranía de Quinchas, Dpto Boyacá (Stiles *et al.* 1999).

GREAT BLACK HAWK *Buteogallus urubitinga*
One observed at San Pablo soaring low over the northern edge of Cienaga Canaletal and several observed at Cienaga Sahaya, Dpto Cesar by TMD *et al.* in January 2002. Previously known from the Caribbean coastal region and previously unknown from the Magdalena valley.

BLACK-AND-WHITE HAWK-EAGLE *Spizastur melanoleucus*
One observed in flight and perched in a small forest patch at La Teta Resort. This little known raptor is patchily distributed across Colombia with only a handful of records. The closest geographical records are 250 km distant on the western slope of Serranía de Perijá, Eastern Cordillera.

BARRED FOREST-FALCON *Micrastur ruficollis*
The song and call were heard frequently and tape-recorded at dawn at La Teta Resort, Apollo 13 and La Forzosa. Previously known from the northern foothills of the Western Cordillera (140 km SW of La Teta Resort) and from the western slope of the Eastern Cordillera at La Grilla, Serranía de Quinchas, Dpto Boyacá (Stiles *et al.* 1999) and Dpto Santander (Hilty & Brown 1986).

WATTLED GUAN *Aburria aburri*
Up to seven males heard calling at night and twilight periods in a variety of forest patches, including disturbed secondary growth in La Punta and La Teta Resort (see Donegan *et al.* 2001 for detailed observations of this species in Serranía de San Lucas). Also frequently heard at La Forzosa. The intense period of vocalizing activity in San Lucas probably corresponds to the commencement of the breeding season during the wet season of April-June. Previously known in the Central Cordillera to 90 km south of La Forzosa. These records present a northerly range extension of 220 km to Serranía de San Lucas. The species is regarded as a Very High Conservation Priority by the Cracid Specialist Group (Brooks & Strahl 2000), thus new sites of such healthy populations are potentially of great importance for conservation.

LIMPKIN *Aramus guarauna*
One observed on the south side of Cienaga Canaletal (San Pablo) on 12 March 2001, and several observed by TMD, Elkin Briceño and Blanca Huertas at Cienaga Sahaya, Dpto Cesar during January 2002. Known from scattered records across Colombia, although with only two mid-Magdalena valley localities, *c.* 320 km to the south of San Pablo (including recent records in Puerto Romero (Stiles & Bohórquez 2000)).

COMMON GROUND-DOVE *Columbina passerina*
A small number of individuals were observed in open country near Apollo 13. Geographically close records are known from throughout the Magdalena valley, but the closest records in the Cauca valley are *c.* 450 km to the south at its headwaters. A 50 km NW range extension into the Río Nechí and lower Río Cauca valley is probably due to expansion in range with deforestation from the Magdalena valley.

GROOVE-BILLED ANI *Crotophaga sulcirostris*
Observed in secondary growth near Apollo 13. Previously known north and east of Serranía de San Lucas but unrecorded west of the range.

RIDGEWAY'S PYGMY-OWL *Glaucidium (brasilianum) ridgwayi*
An individual considered to be of this taxon was observed and tape-recorded in the subcanopy at Alto de los Tarros on 23 August 1999, but not collected. This species was previously known from 250 km northwards in northern Colombia.

RED-WINGED PARROTLET *Touit dilectissima*
Small flocks were heard and observed occasionally at La Forzosa, where they fed on *Clusia* spp. fruits. Also recorded on the eastern slope of the Central Cordillera at

Quebrada El Viao, Cocorná, Dpto Antioquia (6°3'N, 75°10'W). Previously thought to be restricted to the Chocó region west of the Andes with a disjunct population in Serranía de Perijá and northern Eastern Cordillera. The seemingly resident population at La Forzosa represents a significant link between the two populations within a gap of 500 km and first record for the Central Cordillera.

GREY-RUMPED SWIFT *Chaetura cinereiventris*
Flocks, usually consisting of *c.* 20 individuals, were observed in the lowlands on both flanks of Serranía de San Lucas at San Pablo and Apollo 13. Patchily distributed in the western lowlands of Colombia. Records at San Pablo represent the first records for the Magdalena valley, although considered possibly to be present in the region by Hilty & Brown (1986).

ASHY-TAILED SWIFT *Chaetura andrei*
Six individuals were observed at very close quarters at dusk on 28-30 March 2001 above La Teta Resort (1,400 m) flocking with Band-rumped Swift *Chaetura spinicauda* and Chapman's Swift *Chaetura chapmani*, permitting excellent views of the diagnostic all-grey tail, notably longer than that of *C. brachyura*. Previously known west of the Andes in Colombia from only three localities near Sierra Nevada de Santa Marta (230 km north of La Teta Resort). This represents the first record for the Colombian Andes.

LESSER SWALLOW-TAILED SWIFT *Panyptila cayennensis*
A pair observed at La Punta on 15 March 2001. Little known in Colombia with only one previous Central Cordillera record in Caldas (Hilty & Brown 1986) and recently (250 km south of La Punta) in the mid-Magdalena Valley (Stiles *et al.* 1999).

WHITE-TIPPED SICKLEBILL *Eutoxeres aquila*
Captured at Alto de los Tarros (4) and La Forzosa (1). Previously known from the northern slope of the Western Cordillera and the upper Magdalena valley north to Dpto Caldas and Cundinamarca. These records provide a link in the 250 km gap between the Pacific and Magdalena populations.

RUFOUS-CRESTED COQUETTE *Lophornis delattrei*
Pairs and individuals observed on various occasions feeding in the canopy of flowering trees in secondary growth at La Punta and La Teta Resort. A rare and inconspicuous species previously recorded in the Central Cordillera on both slopes of the Magdalena valley in Tolima. These records represent a 330 km northwards range extension.

GREEN THORNTAIL *Popelairia conversii*
Individuals observed at La Punta were often associated with *L. delattrei* feeding high in flowering trees. Previously known only from the Pacific slope of the Western Cordillera and recently for the first time in the Magdalena valley at La Victoria, Dpto Caldas (Stiles *et al.* 1999) and La Grilla in Serranía de las Quinchas, Dpto Boyacá (5°49'N 74°19'W; 1,500 m) (Stiles & Bohórquez 2000). Sightings at La

Punta represent the most northerly records and suggest a link between the Pacific population (380 km WSW) and Magdalena valley (260 km S).

WESTERN EMERALD *Chlorostilbon melanorhynchus*
Common on both lowland flanks of Serranía de San Lucas at San Pablo and Apollo 13 and in the highlands with captures at La Punta (2, female†), La Teta Resort (6), and La Forzosa (1†). Previously known from the western slope of the Western Cordillera, one locality on the east slope of the Central Andes in Dpto Tolima, and several localities on the western slope of the Central Andes (Stiles 1996), but unrecorded in Serranía de San Lucas or elsewhere in the northern Central Andes.

WESTERN [STRIPED] WOODHAUNTER *Hyloctistes* (*subulatus*) *virgatus*
Caught at Alto de los Tarros (1), and La Forzosa (3, 2†) where it was recorded to 1,700 m in June 2000 (AMC). Additional records from the northern end of Central Cordillera at Salazar *c.* 10 km northeast of Amalfi, Mpo Amalfi, Dpto Antioquia (*c.* 6°58'N, 75°02'W, 1,600 m) in July 2001 (2, 1†; AMC). Known from the Pacific slope and the *cordobae* subspecies from the northern slope of the Western Cordillera. These records represent the first for the Central Cordillera.

RUDDY FOLIAGE-GLEANER *Automolus rubiginosus*
Caught at La Punta (1). Extends the species' range eastwards from the western slope of Serranía de San Lucas and probably relates to the *sasaimae* subspecies.

PARKER'S ANTBIRD *Cercomacra parkeri*
Commonly seen and captured at La Forzosa (10, 3†) and tape-recorded recently at Salazar (2†) in September 2000 and July 2001 (AMC). Individuals were heard, but not seen or captured, at La Teta Resort and Apollo 13. This recently-described species (Graves 1997) is little-known in life. Although it is fairly common in areas we have surveyed in the Central Andes, it is known from just a few localities. It is notable that vocalizations are distinct from *C. tyrannina*, the most closely related species, as will be detailed in future publications.

IMMACULATE ANTBIRD *Myrmeciza immaculata*
Common at La Teta Resort and La Punta (5, female†). The nominate ssp. was previously known east of the Río Magdalena to Dpto Caldas and western Colombia (Pacific slope and upper río Cauca valley; ssp. *macrorhyncha*). The female collected differs very slightly in colouration from skins consulted at ICN, being duller brown than skins labelled *berlepschii* (*macrorhyncha*) but lighter brown than nominate ssp. *immaculata*. However, it is not yet possible to tell whether this is due to clinal variation, foxing, or represents an undescribed subspecies.

CHESTNUT-CROWNED GNATEATER *Conopophaga castaneiceps*
One female captured at La Punta (1). Also caught at La Forzosa (3; 2†), and a female observed at Salazar in September 2000 (AMC). Small disjunct populations are scattered across the Andes, with populations on the northern foothills of the Western

and Central Cordillera. These represent first records for Serranía de San Lucas and northeast Central Cordillera.

SHARPBILL *Oxyruncus cristatus*
One individual was captured and photographed (Fig. 2) at La Teta Resort (1) on 25 March 2001. This is the first confirmation of the monotypic family Oxyruncidae for Colombia, and represents a 340 km range extension from Cerro Tacarcuna (*tacarunae* ssp.) on the Panamanian border and >250 km from western Venezuela (*phelpsi* ssp.).

RUFOUS-BROWED TYRANNULET *Phylloscartes superciliaris*
This species has infrequently been observed at La Forzosa since March 1999 (Cuervo *et al.* 1999), often in association with a mixed species foraging flock. Previously known 235 km SE of La Forzosa at Virolín (6°7'N, 73°12'W), Dpto Santander, Eastern Cordillera (recent sighting in March 1997 [PS]), and a specimen suspected from the Panamanian border at Cerro Tacarcuna, 270 km NW of La Forzosa. This sighting represents the first record for the Central Cordillera.

MARBLE-FACED BRISTLE-TYRANT *Phylloscartes ophthalmicus*
Captured and seen at La Punta (1), La Forzosa (2) and at Salazar (AMC). Previously known in the Central Cordillera only north to *c.* 5°N, 350 km south of La Punta.

TROPICAL PEWEE *Contopus cinereus*
Common at La Punta and La Teta Resort (4). Previously known from the Eastern Cordillera, but unrecorded in the Central Cordillera until recently, with recent observations from Río Claro refuge, Dpto Antioquia (6°11'N, 74°58'W, 300 m), on the eastern slope of the Central Cordillera (PS & AMC). A specimen was collected at Chaparral, El Limon, Dpto Tolima (3°40'N, 75°30'W) (F. Gary Stiles *in litt.*). These sightings represent the first records for the Central Cordillera and Serranía de San Lucas.

CATTLE TYRANT *Machetornis rixosus*
Common with livestock and on dirt tracks near Apollo 13, extending the species, wide lowland range to the west of Serranía de San Lucas. Additionally, a pair was observed with cattle at Roncesvalles (4°3'N, 75°36'W), western Dpto Tolima in the Central Cordillera at 2,600 m by PS *et al.*, representing the first record for the highlands of Central Cordillera, a 400 km southerly range extension from Apollo 13, and a 1,800 m altitude extension. The species' range has undoubtedly expanded with deforestation as evidenced by recent records in the Eastern Cordillera (Stiles *et al.* 1999), where the species is also reported to 2,600 m (Stiles *et al.* 2000).

SPOTTED NIGHTINGALE-THRUSH *Catharus dryas*
One captured and collected at La Punta (1†) on 18 March 2001 at 1,350 m. Previously known only from the Andean East slope and one recent specimen on the western slope of the Eastern Cordillera in Dpto. Boyacá (Stiles *et al.* 1999). Our specimen is the first record for the Central Cordillera.

PALE-VENTED THRUSH *Turdus obsoletus*
Captured at La Teta Resort (1) and at Salazar (1†) in July 2001 (AMC). Previously known from arid areas in the upper Cauca and Magdalena valleys and recently from the western slope of the Eastern Cordillera in Dpto Boyacá although subspecies was not determined (Stiles *et al.* 1998). These records represent a 350 km northwards range extension to Serranía de San Lucas and first records for the Central Cordillera.

RUFOUS-NAPED GREENLET *Hylophilus semibrunneus*
Fairly common at La Punta (1†), La Teta Resort, La Forzosa, and at Salazar (AMC) mostly in the midstorey to subcanopy in association with mixed species foraging flocks. Known from three localities in the Central Cordillera, the northernmost in Dpto Caldas, 250 km south of La Punta-3.

TAWNY-CROWNED GREENLET *Hylophilus ochraceiceps*
Captured at Alto de los Tarros (3, 1†). Previously known from the Pacific lowlands to the northern slope of the Western Cordillera. This record is an 80 km eastwards extension and first record for the Central Cordillera.

THREE-STRIPED WARBLER *Basileuterus tristriatus*
Commonly observed in the understorey to subcanopy in association with multi-species foraging flocks at La Punta (4, 2†) and La Teta Resort, representing a 140 km range extension from the Central Cordillera. Individuals in Serranía de San Lucas differ from *auricularis* subspecies of the three Colombian Cordilleras, with brighter and more extensive yellow underparts reminiscent of Santa Marta Warbler *B. basilicus*, and representing an undescribed subspecies (Fig. 3).

(ii) Thirty-one range extensions from the Central Cordillera to Serranía de San Lucas

The following species, predominantly distributed above 1,000 m asl, present range extensions of 140 km from the northern slope of the Central Cordillera to Serranía de San Lucas, based on distribution data in Hilty & Brown (1986). All of the following species were recorded for the first time in Serranía de San Lucas, having bridged the 70 km gap between the two ranges and extending a further 70 km across the Serranía to La Punta and La Teta Resort.

EARED DOVE *Zenaida auriculata* (San Pablo, La Teta Resort, and Apollo 13)

WHITE-COLLARED SWIFT *Streptoprocne zonaris* (*c.* 50 individuals, recorded at La Punta (2†) and La Teta Resort, roosted each evening underneath an enormous rock above a waterfall at La Punta).

ANDEAN EMERALD *Amazilia franciae* (La Punta (2), La Teta Resort (1†); also a range extension to the north of the Central Cordillera at Alto de los Tarros (1), and La Forzosa (1†))

GREEN-CROWNED BRILLIANT *Heliodoxa jacula* (La Punta (1†), La Teta Resort (4), also new records at La Forzosa (5, 1†), and at Salazar in July 2001 (AMC)).

COLLARED TROGON *Trogon collaris* (La Teta Resort (1); also at La Forzosa (1))

RED-HEADED BARBET *Eubucco bourcierrii* (La Punta; also La Forzosa)

CRIMSON-RUMPED TOUCANET *Aulacorhynchus haematopygus* (La Punta, La Teta Resort (1); also La Forzosa (1))

GOLDEN-OLIVE WOODPECKER *Piculus rubiginosus* (La Punta)

LINEATED FOLIAGE-GLEANER *Syndactila subalaris* (La Punta (1†) and also at La Forzosa (juvenile†))

BUFF-FRONTED FOLIAGE-GLEANER *Philydor rufus* (La Punta (1) and La Teta Resort (1))

STREAKED XENOPS *Xenops rutilans* (one observed at La Teta Resort)

BAR-CRESTED ANTSHRIKE *Thamnophilus multistriatus* (observed at San Pablo)

TAPACULO SP. *Scytalopus (femoralis) sp.* (suspected to be a species of this group heard singing at La Teta Resort)

WHITE-CROWNED MANAKIN *Pipra pipra* (San Pablo, La Punta (4), La Teta Resort; also La Forzosa (14))

GOLDEN-FACED TYRANNULET *Zimmerius viridiflavus* (La Punta, La Teta Resort (5); also Alto de los Tarros)

LESSER ELAENIA *Elaenia chiriquensis* (La Punta and La Teta Resort (1))

YELLOW-MARGINED FLYCATCHER *Tolmomyias assimilis* (La Teta Resort (1))

SCALE-CRESTED PYGMY-TYRANT *Lophotriccus pileatus* (La Punta (4), La Teta Resort; also La Forzosa)

BRAN-COLOURED FLYCATCHER *Myiophobus fasciatus* (La Punta and La Teta Resort (1))

BLACK PHOEBE *Sayornis nigricans* (La Punta)

GOLDEN-CROWNED FLYCATCHER *Myiodynastes chrysocephalus* (La Punta)

SLATE-THROATED GNATCATCHER *Polioptila schistaceigula* (La Teta Resort; also Alto de los Tarros)

SLATE-THROATED WHITESTART *Myioborus miniatus* (La Teta Resort (1) and Apollo 13 (5, 1†))

TROPICAL PARULA *Parula pitiayumi* (La Punta)

BLUE-HOODED EUPHONIA *Euphonia musica* (La Teta Resort)

ORANGE-BELLIED EUPHONIA *Euphonia xanthogaster* (La Teta Resort (1), also Alto de los Tarros and La Forzosa (3))

BLUE-NECKED TANAGER *Tangara cyanicollis* (La Punta and La Teta Resort (2))

CHESTNUT-CAPPED BRUSH-FINCH *Buarremon brunneinucha* (La Punta (5, 1†) and La Teta Resort)

BLACK-HEADED BRUSH-FINCH *Buarremon atricapillus* (La Punta at 1,000 m)

DULL-COLOURED GRASSQUIT *Tiaris obscura* (very common at La Punta and La Teta Resort (16)).

(iii) Six range extensions to the northeastern slope of the Central Cordillera; six species present small range extensions of 50 to 100 km to the northeastern slope of the Central Cordillera:

CHESTNUT WOOD-QUAIL *Odontophorus hyperythrus* (Observed and tape-recorded at La Forzosa, although unrecorded in Serranía de San Lucas where Marbled Wood-Quail *O. gujanensis* and Rufous-fronted Wood-Quail *O. erythrops* were both present between 1,000 and 1,400 m elevation at La Punta and La Teta Resort).

CHESTNUT-COLLARED SWIFT *Streptoprocne rutilla* (La Forzosa)

BROWN-BILLED SCYTHEBILL *Campylorhamphus pusillus* (La Forzosa (1))

GOLDEN-WINGED MANAKIN *Masius chrysopterus* (La Forzosa (2))

BARRED BECARD *Pachyramphus versicolor* (a pair observed at Alto de los Tarros)

YELLOW-THROATED BUSH-TANAGER *Chlorospingus flavigularis* (frequently seen and captured at La Forzosa (5, 1†))

(iv) Seventeen new locations for species with poorly-known distributions in northern Colombia; the following species are of particular interest as although known from records fairly close to our study sites (i.e. <100 km), they are known from only a handful of scattered records in northern Colombia:

FASCIATED TIGER-HERON *Tigrisoma fasciatum* (seen once in aquatic habitat at Apollo 13)

BLUE-KNOBBED CURASSOW *Crax alberti* (seen in captivity at Apollo 13; reported from local people at San Pablo and Alto de los Tarros)

LARGE-BILLED TERN *Phaetusa simplex* (common on Río Magdalena at San Pablo south to Barrancabermeja at least)

PLAIN-BREASTED GROUND-DOVE *Columbina minuta* (in secondary growth at Apollo 13)

VIOLACEOUS QUAIL-DOVE *Geotrygon violacea* (in forest at Apollo 13)

CHAPMAN'S SWIFT *Chaetura chapmani* (flocks in evening at La Punta and La Teta Resort)

SHORT-TAILED SWIFT *Chaetura brachyura* (common at La Punta and La Teta Resort)

LONG-TAILED WOODCREEPER *Deconychura longicauda* (several observed and heard calling at La Punta)

VERMILION FLYCATCHER (Apollo 13) *Pyrocephalus rubinus* and **PIRATIC FLYCATCHER** *Legatus leucophaius* (San Pablo, La Punta, Apollo 13) have presumably fairly recently colonised the region with deforestation.

BLUE COTINGA *Cotinga natterrerii* (Small flocks of 2-10 birds observed feeding on canopy fruits at La Punta, La Teta Resort and Alto de los Tarros.)

YELLOW-BROWED SHRIKE-VIREO *Vireolanius eximus* (individuals observed in the canopy at La Punta)

SLATE-COLOURED SEEDEATER *Sporophila schistacea* (fairly common at San Pablo, also common as a cage bird in region and a female collected at Apollo 13(1†)).

Additionally, **BARN OWL** *Tyto alba* was reliably reported as present by several local people around San Pablo, and would represent an important new record, if confirmed.

(v) **Forty noteworthy altitude extensions**; the maximum or minimum elevation for each species, based on data in Hilty & Brown (1986), is followed by the new altitude extension and the study site in parentheses. Elevations in parentheses after the Hilty & Brown elevation are from Ridgely & Greenfield (2001) which, although not specific to Colombia, contains the most recently published synopsis of species' elevational limits in the northern Andean region. Such values are not quoted where equal or where the species is not present in Ecuador.

WHITE HAWK *Leucopternis albicollis* from 1,400 [1,100] m to 1,550 m (La Forzosa).

BLACK HAWK-EAGLE *Spizaetus tyrannus* from 500 [1,000] m to 1,800 m (La Punta-1,400 m, La Teta Resort-1,200 m, La Forzosa-1,800 m).

RED-THROATED CARACARA *Daptrius americanus* from 1,400 [800] m to 1,800 m (La Forzosa).

MARBLED WOOD-QUAIL *Odontophorus gujanensis* from 1,200 [900] m to 1,400 m (La Punta).

RUFOUS-FRONTED WOOD-QUAIL *Odontophorus erythrops* from 1,100 [1,600] m to 1,400 m (La Punta and La Teta Resort).

SHORT-TAILED SWIFT *Chaetura brachyura* from 800 [700] m to 1,300 m (La Teta Resort).

WESTERN EMERALD *Chlorostilbon melanorhynchus* from 1,000 m to 1,400 m (La Punta).

BLACK-THROATED TROGON *Trogon rufus* from 1,100 [700] m to 1,400 m (La Punta).

BARRED PUFFBIRD *Nystalus radiatus* from 900 [1,000] m to 1,200 m (La Punta and La Teta Resort).

WHITE-NECKED PUFFBIRD *Notharchus macrorhynchus* from 500 [400] m to 700 m (Alto de los Tarros).

COLLARED ARAÇARI *Pteroglossus torquatus* from 800 m to 1,400 m (La Punta and La Teta Resort).

OLIVACEOUS WOODCREEPER *Sittasomus griseicapillus* from 1,000 [mostly below 1,100, although known from 1,700 – 2,000 m in south Ecuador] to 1,800 m by AMC (La Punta (3), La Teta Resort (1), La Forzosa 1,800 m (4)).

NORTHERN BARRED WOODCREEPER *Dendrocolaptes sanctithomae* from 900 [800] m to 1,200 m (La Punta and La Teta Resort).

WESTERN WOODHAUNTER *Hyloctistes virgatus* from 900 [1,100] m to 1,700 m (La Forzosa (2, 1†).

SLATY-WINGED FOLIAGE-GLEANER *Philydor fuscipennis* from 1,200 [600] m to 1,400 m (La Punta (3) and La Teta Resort (1).

BUFF-FRONTED FOLIAGE-GLEANER *Philydor rufus* from 900 [600] m down to 700 m (Alto de los Tarros (1†)).

BUFF-THROATED FOLIAGE-GLEANER *Automolus ochrolaemus* from 1,200 [800] m to 1,400 m (Alto de los Tarros (3, 1†)).

STREAKED XENOPS *Xenops rutilans* from 1,500 m down to 1,200 m (La Teta Resort) (although note this is a lowland species (to sea level) in western Ecuador).

FASCIATED ANTSHRIKE *Cymbilaimus lineatus* from 900 [1,000] m to 1,400 m (La Punta).

BAR-CRESTED ANTSHRIKE *Thamnophilus multistriatus* from 900 m (250 m on Pacific slope) down to 250 m (San Pablo).

WESTERN SLATY ANTSHRIKE *Thamnophilus atrinucha* from 500 [1,100] m to 1,500 m (Apollo 13, Alto de los Tarros (1), and La Forzosa).

GOLDEN-HEADED MANAKIN *Pipra erythrocephala* from 500 [600] m to 1,200 m (La Teta Resort (1), Apollo 13 (82, 5†), Alto de los Tarros (58)) (note this species was recently captured at 1,400 m in the eastern Cordillera (Salaman *et al.* in press) and 1,300 m at Serranía de las Quinchas in the Magdalena valley (F.G. Stiles *in litt.*).

WHITE-CROWNED MANAKIN *Pipra pipra* from 600 [500] m down to 100 m (San Pablo).

BLUE COTINGA *Cotinga nattererii* from 1,000 [300] m to 1,400 m (La Punta).

YELLOW-MARGINED FLYCATCHER *Tolmomyias assimilis* from 800 [500] m to 1,200 m (La Teta Resort (1)).

TROPICAL PEWEE *Contopus cinereus* from 1,000 m [wanders higher] to 1,400 m (La Punta and La Teta Resort (4)).

RUFOUS MOURNER *Rhytipterna holerythra* from 1,000 [700] m to 1,400 m (La Teta Resort (1), Apollo 13 (1†), and Serranía de las Quinchas in the Magdalena valley (F.G. Stiles *in litt.*)).

PALE-EDGED FLYCATCHER *Myiarchus cephalotes* from 1,500 [1,000] m down to 700 m (Alto de los Tarros).

SOCIAL FLYCATCHER *Myiozetetes similis* from 900 m (1,200 m on Andean East slope) to 1,400 m (La Punta).

WHITE-BREASTED WOOD-WREN *Henicorhina leucosticta* from 1,000 m to 1,400 m (La Punta (1†)).

SOUTHERN NIGHTINGALE WREN *Microcerculus marginatus* from 1,200 [700] m to 1,400 m (La Punta (1)).

SLATE-THROATED GNATCATCHER *Polioptila schistaceigula* from 1,000 [750] m to 1,200 m (La Teta Resort).

CHESTNUT-HEADED OROPENDOLA *Psarocolius wagleri* from 1,000 [700] m to 1,300 m (La Teta Resort).

ORANGE-CROWNED ORIOLE *Icterus auricapillus* from 800 m to 1,200 m (La Teta Resort (1)).

BLUE-HOODED EUPHONIA *Euphonia musica* from 1,400 m down to 1,200 m (La Teta Resort).

SOOTY ANT-TANAGER *Habia gutturalis* from 1,100 m to 1,400 m (La Punta (4)).

LARGE-BILLED SEEDFINCH *Oryzoborus crassirostris* from 1,000 [700] m to 1,400 m (La Punta (1) and La Teta Resort (21)).

Discussion

A total of 449 bird species were recorded in 37 days at the six study sites, including 374 species recorded across Serranía de San Lucas. Of 199 species recorded at the two subtropical study sites (La Punta & La Teta Resort) in Serranía de San Lucas, 70% represent range extensions above 1,000 m (based on Hilty & Brown 1986), of which 65 species are significant new records detailed in this article. Full details of the birds recorded during fieldwork, including a checklist for study sites and accounts of 11 threatened and near-threatened species recorded (e.g. White-mantled Barbet *Capito hypoleucus*), is being published elsewhere.

The premontane avifauna properties of San Lucas (La Punta & La Teta Resort) are influenced by two principal ecoregions:

i) approximately one third of the avifauna are highland species that originate from the Central Cordillera, of which the majority reported here are significant range extensions,
ii) the highest proportion of avifauna in the premontane zone of the eastern slope is influenced by foothill and lowland species from the northern Colombian plain, and account for the extraordinary number (34 of 40) of altitude extensions, also suggesting that many higher elevation species remain to be recorded or may be missing,
iii) several notable easterly range extensions crossing the Río Cauca from the humid Pacific and northern slopes of the Western Cordillera (Apollo 13 & Alto de los Tarros).

Range extensions in the Central Cordillera are largely influenced by northwards extension of lower montane species up the Cordillera to previously little known and isolated highland areas (La Forzosa).

We will continue surveys at higher elevations of Serranía de San Lucas where the avifauna undoubtedly will be more "unique", with anticipated high levels of endemism at the subspecies and species level and stronger biological affiliations to the High Andes. However, as security problems continue to mount in the region, additional fieldwork remains extremely complicated, so we feel that it is important to place our observations to date on record at this time. We also hope that these new data will help draw attention to the importance of Serranía de San Lucas and direct conservation efforts to this critically important and enigmatic region of Colombia.

Acknowledgements

The EBA Project team is grateful to CORANTIOQUIA and ICN-MHN for assisting and providing scientific permission for collecting. We are very grateful for advice and assistance from the following: Walter H. Weber, Juan Lázaro Toro, José Manuel Ochoa, F. Gary Stiles, Carlos Gonzales, Javier Bustos, M. Gonzalo Andrade, Luis Ángel Ramírez, and the Mayors and UMATAMs (Farmers' and Miners' Municipal Unions) of Anorí, Amalfi, San Pablo, Puerto Lopéz, El Bagre and Santa Rosa del Sur. Most of all many thanks to the people of Serranía de San Lucas, in particular the people of El Bagre, Puerto López, Puerto Wilches, San Pablo, Bajo Taracue, Cañabraval, Canaletal, Vallecito, Patio Bonito, Santa Rosa and La Punta for their interest and assistance with the project. The EBA expeditions were only made possible by generous financial support by British Ornithologists' Union, Royal Geographic Society, Cambridge Expeditions Fund, Percy Sladen Memorial Fund, Kilverstone Wildlife Trust, World Pheasant

Association and many others, accredited in the EBA website (www.proaxis.com/~salaman). The manuscript has been greatly improved from discussions and comments by F. Gary Stiles and Chris Feare.

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