

The avifauna of El Angolo Hunting Reserve, north-west Peru: natural history notes

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SUMMARY.—The Tumbesian Endemic Bird Area (EBA) extends from north-west Ecuador to western Peru and supports many restricted-range bird species. The most important protected area in the region is the Northwest Biosphere Reserve in Peru, which includes El Angolo Hunting Reserve (AHR). We visited AHR many times between 1990 and 2012. Among bird species recorded were 41 endemic to the Tumbesian EBA and six endemic subspecies that may merit species status, while 11 are threatened and eight are Near Threatened. We present ecological or distributional data for 29 species.

The Tumbesian region Endemic Bird Area (EBA) extends from Esmeraldas province, in north-west Ecuador, south to northern Lima, on the central Peruvian coast (Stattersfield *et al.* 1998). It covers *c.*130,000 km² and supports one of the highest totals of restricted-range bird species: 55 according to Stattersfield *et al.* (1998), or 56 following Best & Kessler (1995), the third largest number of endemic birds at any EBA globally.

Within the EBA, in extreme north-west Peru, the Northwest Biosphere Reserve (NWBR) covers more than *c.*200,000 ha, with at least 96% forest cover (*cf.* Fig 38 in Best & Kessler 1995: 113, where all solid black on the left forms part of the NWBR). This statement is still valid today (Google Earth). The NWBR covers the Cerros de Amotape massif, a 130 km-long cordillera, 25–30 km wide at elevations of 250–1,600 m, running parallel to the main Andean chain (Palacios 1994). It includes from north to south, Tumbes National Reserve (19,267 ha), Cerros de Amotape National Park (151,561 ha) and El Angolo Hunting Reserve (65,000 ha). Within NWBR, most ornithological research has been conducted in humid forest of the former 'Tumbes Reserved Zone' (now part of Cerros de Amotape National Park), e.g. Schulenberg & Parker (1981), Wiedenfeld *et al.* (1985) and Parker *et al.* (1995). However, more attention has been devoted to Tumbesian Ecuador (Best & Kessler 1995). El Angolo Hunting Reserve (AHR) comprises the southern part of NWBR.

Methods

AHR (Fig. 1) was visited as follows by the authors. (1) South-east, the main area studied, centred at the Sauce Grande lodge, at *c.*04°22'S, 80°44'W, at an elevation of 670 m. Most observations were within 10 km of the lodge, at 500–800 m, including Barbacobas, El Angolo, Sauce Grande and Barranco Colorado creeks; (2) South Cordillera, including the area known as Cerro El Viento, at *c.*04°22'S, 80°48'W, at 800–1,300 m; (3) East, centred on 04°17'S, 80°40'W, including El Venado, and Las Taloneras and Overal creeks, at 500–1,100 m; (4) Central, centred on Los Antiguos (04°18'S, 80°46'W), at 700–1,000 m; (5) North-west, centred on 04°13'S, 80°51'W, at 130–600 m, including Fernandez and Caña Dulce creeks, Pilares de Fernandez and Cabuyal; and (6) North Cordillera, the highest part of AHR, at *c.*04°14'S, 80°41'W, including Cherrelisque, La Falda and Cerro Carrizal, at 900–1,600 m.

JB undertook week-long bird surveys in the Southeast and South Cordillera sectors in August 1990, August 1992, August 1994, December 1999, August 2001 and February 2004 (the last survey with F. Angulo). Additionally, JB spent >200 days in the same sectors in



Figure 1. Location of El Angolo and our study areas (see also main text). (1) South-east, the main area studied, includes Barbacobas, El Angolo, Sauce Grande and Barranco Colorado creeks, 500–800 m; (2) South Cordillera, including Cerro El Viento, 800–1,300 m; (3) East, includes El Venado, and Las Taloneras and Overall creeks, 500–1,100 m; (4) Central, centred on Los Antiguos, 700–1,000 m; (5) North-west, includes Fernandez and Caña Dulce creeks, Pilares de Fernandez and Cabuyal, 130–600 m; and (6) North Cordillera, includes Cherrelisque, La Falda and Cerro Carrizal, 900–1,600 m.

October 1994–October 1995, including the wet season, on 11 February–4 March 1995 and 19 March–4 April 1995. Although bird recording was a secondary activity, wherever possible JB documented records with photographs and sound-recordings. JB conducted mist-netting in the South-east sector in August 1992, August 1994 and April 1995, and in the South Cordillera in April 1995 and December 1999. DG-O intensively surveyed La Falda in the North Cordillera, El Venado in the East sector and Los Antiguos in the Central sector in June–July 2006, October–November 2006 and June 2007, for *c.*15 days each time, including mist-netting and playback. JB spent three days at Fernandez and Caña Dulce creeks in the North-west sector in February 2009. AM visited both Pilares de Fernandez and Cabuyal in the North-west sector and Cherrelisque in the North Cordillera for two days each in June 2009. AM surveyed Cerro Carrizal in the North Cordillera during three-day visits in August 2009 and December 2011, including mist-netting. AM also visited Overall creek, in the East Sector in November–December 2010, October 2011 and May 2012. Furthermore, in the South-east and South Cordillera, T. Valqui made observations, mist-netting and sound-recording in the wet season of March 1993, as well as annual observations since 2000 under the auspices of the Conservation Data Center (CDC – La Molina). F. Angulo helped identify vocalisations from sound-recordings and raptors from photographs. M. Castagnola recorded raptors and collected a pair of siskins *Sporagra* in 1997.

Habitat.—The altitudinal range of AHR is 130–1,600 m, from low hills to steep-sided mountains. Precipitation varies markedly between years. Considering data from 1995 to 2006, annual precipitation at Sauce Grande, in the south-east sector, fluctuated from *c.*100 mm in very dry years to considerably more than 3,000 mm in El Niño years (Vásquez *et al.* 2007). The dry season typically occupies May–December, and the wet season January–April. With rare exceptions, all rainfall occurs during the latter. Consequently, Tumbesian dry forest exhibits strong seasonality. The wet season promotes the growth of annual herbaceous plants, and a different floral composition to the dry season. Considering only permanent trees and shrubs, the dominant species are as follows. At *c.*130–600 m trees

include *Prosopis pallida*, *Loxopterigium huasango*, *Capparis scabrida* and *Caesalpinia paipai*, the first of which is dominant below 400 m, with some shrubs, e.g. *Ipomoea carnea* and *Cordia lutea*, and cacti, e.g. *Cereus difusus* and *Neoraimondia arequipensis* var. *gigantea*. (Sabogal & Zerbe 2005, Vásquez *et al.* 2007). At c.600 m, dominant trees are *Cochlospermum vitifolium*, *Bursera graveolens* and *Erythrina smithiana*. Scrub composition includes *Mimosa myriadena*, *M. acantholoba* and *Byttneria glabrescens*. Above 700–750 m, on the lower slopes of mountains, the most conspicuous trees are *Eriotheca ruizii*, *Ceiba trichistranda*, *Geoffroea striata* and *Terminalia valverdae*. Both *E. ruizii* and *C. trichistranda* are usually covered by *Tillandsia usneoides* or other *Tillandsia* spp. epiphytes. Riparian areas (600–900 m) also host *Ficus padifolia*, *Styrax tarapotensis*, *Celtis iguanea*, *Cestrum auriculatum*, *Acnistus arborescens*, *Muntingia calabura* and *Acacia macracantha* (Angulo & Barrio 2004). In higher and more humid areas, usually above 800 m, dominant trees are *Myrcianthes discolor*, *Styrax tarapotensis*, *Psidium guajaba*, *Capparis prisca* and *Fulcaldea laurifolia*. Trees and shrubs above 1,400 m are usually covered in lichens and mosses. Although no people live within AHR, the area is seasonally used for cattle grazing (especially in the dry season).

Results

The surveys produced 196 species (Table 1). Of these, 41 are Tumbesian endemics, following Remsen *et al.* (2015), or 47, based on Ridgely & Greenfield (2001). In either case, we used Best & Kessler (1995) to determine if the taxon is endemic to the Tumbesian EBA. Following IUCN (2014), the list includes five Endangered (EN), six Vulnerable (VU) and eight Near Threatened species (NT). The following accounts report interesting distributional or ecological data collected during the study.

PALE-BROWED TINAMOU *Crypturellus transfasciatus* NT

Endemic to the Tumbesian EBA. Uncommon in 1994–95, February 2004 and in the 2006 surveys; however, in December 1999 and August 2001 it was common, being seen and heard daily. The population might fluctuate following rain cycles, but confirmation is required. Usually found along creeks and slopes of montane areas—where it is more numerous than Andean Tinamou *Nothoprocta pentlandii*—but it is not rare lower down. All observations were made above 600 m and within, or close to, dense undergrowth. A male was seen by JB with three small chicks on 23 March 1995. Chicks mostly brown with few markings; crown also brown, but paler, with four stripes on crown-sides, black/dark, brown, black/dark and a creamy/whitish supercilium that extended to the forehead. The black/dark lores extended as an eyestripe, with a black/dark spot on each wing. Marchant (1960) reported eggs in early May in Ecuador.

ANDEAN TINAMOU *Nothoprocta pentlandii*

Juveniles observed with single adults in April–May 1995, in which year the species had a moderate density in the area (Barrio 2004). However, it was hard to find in August 2001, during a week-long survey when Pale-browed Tinamou was recorded daily, and in February 2004, when Pale-browed Tinamou was also uncommon.

RUFOUS-HEADED CHACHALACA *Ortalis erythroptera* VU

Endemic to the Tumbesian EBA. First recorded in October 1994 (Barrio & Begazo 1998). It is apparently very local in higher areas, usually above 1,000 m, where it is uncommon. We have observed it in groups of 1–5. There appears to be several subpopulations in AHR. In the South Cordillera, it occurs at 900–1,150 m, near some permanent small springs. In the North Cordillera, DG-O heard several groups daily at higher altitudes. In the East sector,

TABLE 1

List of bird species recorded in El Angolo Hunting Reserve, Tumbes, north-west Peru. Nomenclature largely follows Remsen *et al.* (2015). IUCN threat status: NT = Near Threatened; VU = Vulnerable; EN = Endangered. Endemic / migrant: E = species endemic to Tumbesian EBA; e = subspecies endemic to Tumbesian EBA; Mn = migrant from North America; Mloc = migrant from nearby areas. Abundance: C = common; F = fairly common; U = uncommon; O = occasional; R = rare; m = boreal migrant; sm = austral migrant; r = most conspicuous in wet season; d = most conspicuous in dry season; l = local, otherwise less abundant. Strata: A = air; G = ground; S = shrubs; T = trees. Habitat: O = open lowlands; H = hills; C = creeks; M = mountains (including creeks); E = throughout; O-C = broad creeks in lowlands. Photo: AM = Alexander More; CDC = Conservation Data Center / Pedro Vásquez; DG = Diego García; JB = Javier Barrio; # = others. Sound-recorded: JB = Javier Barrio; W/M = Whiffin & More (2003) expedition; # = recordings mentioned in other publications.

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
TINAMIDAE								
<i>Crypturellus transfasciatus</i>	Pale-browed Tinamou	NT	E	F	G	MH	JB	JB
<i>Nothoprocta pentlandii ambigua</i>	Andean Tinamou			F	G	E	JB, AM	
ANATIDAE								
<i>Sarkidiornis melanotos</i>	Comb Duck			R	G	O	AM	
CRACIDAE								
<i>Ortalis erythroptera</i>	Rufous-headed Chachalaca	VU	E	U	ST	M	JB	
CICONIIDAE								
<i>Jabiru mycteria</i>	Jabiru			O	GS	O	CDC	
<i>Mycteria americana</i>	Wood Stork			R	S	O-C	AM	
FREGATIDAE								
<i>Fregata magnificens</i>	Magnificent Frigatebird			O	A	O		
PHALACROCORACIDAE								
<i>Phalacrocorax brasilianus</i>	Neotropic Cormorant			U	TA	C		
ARDEIDAE								
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron			Or	GS	CO	CDC	
<i>Butorides striata</i>	Striated Heron			U	S	O-C		
<i>Bubulcus ibis</i>	Cattle Egret			R	G	CO	JB	
<i>Ardea cocoi</i>	Cocoi Heron			O	TG	CO	JB	
<i>Ardea alba</i>	Great Egret			O	G	CO	#	
<i>Egretta thula</i>	Snowy Egret			U	G	CO	CDC	
CATHARTIDAE								
<i>Cathartes aura</i>	Turkey Vulture			C	AT	E	JB, AM	
<i>Coragyps atratus</i>	Black Vulture			C	AT	E	CDC, AM	
<i>Sarcoramphus papa</i>	King Vulture			F	A	MH	JB, AM	
<i>Vultur gryphus</i>	Andean Condor	NT		R	A	M		
PANDIONIDAE								
<i>Pandion haliaetus</i>	Osprey			O	A	O	JB	
ACCIPITRIDAE								
<i>Gampsonyx swainsonii</i>	Pearl Kite			U	T	O	JB, AM	
<i>Accipiter bicolor</i>	Bicoloured Hawk			U	T	C	JB, AM	
<i>Geranospiza caerulescens</i>	Crane Hawk			R	T	HC	JB, AM	
<i>Buteogallus urubitinga</i>	Great Black Hawk			R	TA	HC		

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
<i>Buteogallus solitarius</i>	Solitary Eagle	NT		U	TA	HC	JB	
<i>Geranoaetus polyosoma</i>	Red-backed Hawk			R	AT	M	AM	
<i>Geranoaetus melanoleucus</i>	Black-chested Buzzard-Eagle			R	A	M		
<i>Parabuteo unicinctus</i>	Harris's Hawk			UF	A	MH	JB, AM	
<i>Buteo brachyurus</i>	Short-tailed Hawk			R	A	H		
<i>Buteo albonotatus</i>	Zone-tailed Hawk			R	A	M	CDC	
CHARADRIIDAE								
<i>Oreopholus ruficollis</i>	Tawny-throated Dotterel			R	G	O		
<i>Charadrius vociferus</i>	Killdeer			Cl	G	O	CDC, AM	
RECURVIROSTRIDAE								
<i>Himantopus mexicanus</i>	Black-necked Stilt			U	G	O-C	CDC	
BURHINIDAE								
<i>Burhinus superciliaris</i>	Peruvian Thick-knee			U-Fr	G	O	CDC	
SCOLOPACIDAE								
<i>Calidris minutilla</i>	Least Sandpiper		Mn	Urm	G	O-C		
<i>Calidris bairdii</i>	Baird's Sandpiper		Mn	Urm	G	O-C		
<i>Actitis macularius</i>	Spotted Sandpiper			Fr	G	C		
<i>Tringa melanoleuca</i>	Greater Yellowlegs			Fr	G	C		
<i>Tringa flavipes</i>	Lesser Yellowlegs			Fr	G	C		
COLUMBIDAE								
<i>Leptotila verreauxi</i>	White-tipped Dove			C	G	E	JB	JB
<i>Leptotila ochraceiventris</i>	Ochre-bellied Dove	VU	E	R	S	C		
<i>Zenaida meloda</i>	West Peruvian Dove			U	T	O	CDC	
<i>Columbina buckleyi</i>	Ecuadorian Ground Dove		E	U-Cr	SG	H	CDC	
<i>Zenaida auriculata</i>	Eared Dove			C	T	E	CDC	
<i>Columbina cruziana</i>	Croaking Ground Dove			C	G	E	JB, AM	
<i>Claravis pretiosa</i>	Blue Ground Dove			Rr	G	H		
CUCULIDAE								
<i>Piaya cayana</i>	Squirrel Cuckoo		Mn	Rrm	S	M		
<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo		Mn	Urm	S	HM		
<i>Coccyzus lansbergi</i>	Grey-capped Cuckoo		Mloc	Rr	S	H		
<i>Crotophaga sulcirostris</i>	Groove-billed Ani			F	S	H	CDC	#
<i>Tapera naevia</i>	Striped Cuckoo			U	GS	M		
TYTONIDAE								
<i>Tyto alba</i>	Barn Owl			R	T	HM		
STRIGIDAE								
<i>Megascops roboratus</i>	Peruvian Screech Owl			U	T	HM	JB	JB
<i>Pulsatrix perspicillata</i>	Spectacled Owl			U	T	H		
<i>Bubo virginianus</i>	Great Horned Owl			R	T	E		
<i>Glaucidium peruanum</i>	Peruvian Pygmy Owl			F	T	C	JB, AM	JB
<i>Athene cucularia</i>	Burrowing Owl			U	G	OH		
<i>Pseudoscops clamator</i>	Striped Owl			O	T	OH	CDC	
NYCTIBIIDAE								
<i>Nyctibius griseus</i>	Common Potoo			U	T	E	CDC	#

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
CAPRIMULGIDAE								
<i>Chordeiles acutipennis</i>	Lesser Nighthawk			U	ST	HM		
<i>Nyctidromus albicollis</i>	Common Pauraque			C	G	E		
<i>Nyctidromus anthonyi</i>	Scrub Nightjar		E	U	G	HC	CDC	JB
APODIDAE								
<i>Streptoprocne zonaris</i>	White-collared Swift		Mloc	R	A	MH		
<i>Chaetura pelagica</i>	Chimney Swift			Rm	A	MH		
<i>Chaetura brachyura ocybetes</i>	Short-tailed (Tumbes) Swift		e	C	A	H		JB
<i>Panyptila cayennensis</i>	Lesser Swallow-tailed Swift			R	A	M		
TROCHILIDAE								
<i>Phaetornis griseogularis porcellae</i>	Grey-chinned Hermit			Ul	S	H	#	
<i>Phaetornis longirostris baroni</i>	Long-billed (Baron's) Hermit		e	Rl	S	H		
<i>Heliomaster longirostris</i>	Long-billed Starthroat			U	TS	CH	JB	
<i>Myrtis fanny</i>	Purple-collared Woodstar			R	S	C	JB	
<i>Thaumastura cora</i>	Peruvian Sheartail			R	S	OC		
<i>Myrmia micrura</i>	Short-tailed Woodstar		E	F	S	E	JB	#
<i>Leucippus baeri</i>	Tumbes Hummingbird		E	C	ST	E	JB, AM	#
<i>Amazilia amazilia leucophaea</i>	Amazilia Hummingbird			C	ST	E	JB	JB
TROGONIDAE								
<i>Trogon mesurus</i>	Ecuadorian Trogon		E	R	S	C	AM	
ALCEDINIDAE								
<i>Megaceryle torquata</i>	Ringed Kingfisher			U	T	C	AM	
<i>Chloroceryle americana</i>	Green Kingfisher			U	S	C	JB, AM	
MOMOTIDAE								
<i>Momotus subrufescens argenticinctus</i>	Whooping Motmot			U	S	C	JB, AM	#
PICIDAE								
<i>Picumnus sclateri</i>	Ecuadorian Piculet		E	C	S	E	JB, AM	#
<i>Veniliornis callonotus</i>	Scarlet-backed Woodpecker			C	T	E	JB, AM	JB
<i>Colaptes rubiginosus rubripileus</i>	Golden-olive Woodpecker			U	T	E	JB, AM	#
<i>Dryocopus lineatus fuscipennis</i>	Lineated Woodpecker			R	T	E	CDC, AM	
<i>Campephilus gayaquilensis</i>	Guayaquil Woodpecker	NT		U	T	E	JB	#
FALCONIDAE								
<i>Herpetotheres cachinnans</i>	Laughing Falcon			C	T	MH	JB, AM	JB
<i>Micrastur semitorquatus</i>	Collared Forest Falcon			R	T	C		
<i>Caracara cheriway</i>	Crested Caracara			U	GA	HO	JB, AM	
<i>Falco sparverius</i>	American Kestrel			U	AT	OH	CDC, AM	JB
<i>Falco columbarius</i>	Merlin			R	AT	HO		
<i>Falco rufigularis</i>	Bat Falcon			R	S	C	#	
<i>Falco femoralis</i>	Aplomado Falcon			R	A	HM	CDC	
<i>Falco peregrinus</i>	Peregrine Falcon		Mn?	Um	A	E		
PSITTACIDAE								
<i>Brotogeris pyrrhoptera</i>	Grey-cheeked Parakeet	EN	E	Rr	T	M		
<i>Forpus coelestis</i>	Pacific Parrotlet		E	C	SA	E	JB, AM	JB

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
<i>Psittacara erythrogenys</i>	Red-masked Parakeet	NT	E	C	TA	E	JB, AM	JB
THAMNOPHILIDAE								
<i>Thamnophilus bernardi</i>	Collared Antshrike		E	C	S	E	JB, AM	JB
MELANOPAREIIDAE								
<i>Melanopareia elegans</i>	Elegant Crescentchest		E	C	G	MH	JB, AM	JB
GRALLARIDAE								
<i>Grallaria watkinsi</i>	Scrub Antpitta		E	F	G	M		JB
FURNARIIDAE								
<i>Sittasomus griseicapillus</i>	Olivaceous Woodcreeper			UR	T	C	#	
<i>Campylorhamphus trochilrostris</i>	Red-billed Scythebill			R	T	C	JB	
<i>Lepidocolaptes souleyetii</i>	Streak-headed Woodcreeper			C	T	E	JB, AM	JB
<i>Furnarius leucopus cinnamomeus</i>	Pale-legged (Pacific) Hornero		e	C	G	C	JB, AM	JB
<i>Syndactyla ruficollis</i>	Rufous-necked Foliage-gleaner	VU	E	Cr	S	C		
<i>Clibanornis erythrocephalus</i>	Henna-hooded Foliage-gleaner	VU	E	U	S	C	DG, AM	
<i>Cranioleuca antisiensis</i>	Line-cheeked Spinetail			U	S	M	JB	
<i>Synallaxis stictothorax</i>	Necklaced Spinetail		E	U	S	O		
<i>Synallaxis tithys</i>	Blackish-headed Spinetail	EN	E	R	S	M	DG, AM	
TYRANNIDAE								
<i>Myiopagis subplacens</i>	Pacific Elaenia		E	F	T	M	JB	JB
<i>Elaenia flavogaster</i>	Yellow-bellied Elaenia			C	S	MH		
<i>Campostoma obsoletum</i>	Southern Beardless Tyrannulet			C	ST	E	JB	JB
<i>Mecocerculus calopterus</i>	Rufous-winged Tyrannulet			F	TS	M	#	
<i>Phaeomyias murina tumbesana</i>	Mouse-coloured (Tumbesian) Tyrannulet		e	F	S	MH		
<i>Euscarthmus meloryphus</i>	Tawny-crowned Pygmy Tyrant			C	S	E	JB	JB
<i>Pseudelaenia leucospodia</i>	Grey-and-white Tyrannulet			C	S	OH	JB, AM	JB
<i>Todirostrum cinereum sclateri</i>	Common Tody-Flycatcher			C	T	C	JB	JB
<i>Tolmomyias sulphurescens</i>	Yellow-olive Flycatcher			U	T	C	JB	
<i>Myiophobus fasciatus crypterythrus</i>	Bran-coloured Flycatcher			F	TS	MH	JB	JB
<i>Lathrotriccus griseipectus</i>	Grey-breasted Flycatcher	VU	E	R	TS	C	JB, AM	
<i>Contopus cooperi</i>	Olive-sided Flycatcher	NT	Mn	Rm	T	H	JB	
<i>Contopus fumigatus</i>	Greater Pewee			U	T	C	JB	
<i>Contopus sordidulus</i>	Western Wood Pewee		Mn	Cr	S	CH		
<i>Contopus cinereus punensis</i>	Tropical (Tumbes) Pewee		e	C	S	E	JB	#
<i>Sayornis nigricans</i>	Black Phoebe			R/U	G	C		
<i>Pyrocephalus rubinus</i>	Vermilion Flycatcher			C	S	E	JB, AM	#
<i>Tumbezia salvini</i>	Tumbes Tyrant	NT	E	U	S	MH	JB, AM	JB
<i>Muscigralla brevicauda</i>	Short-tailed Field Tyrant			U	G	OH	JB	
<i>Myiodynastes bairdii</i>	Baird's Flycatcher		E	C	T	E	JB	JB
<i>Myiodynastes maculatus</i>	Streaked Flycatcher			Ur	T	C	AM	#
<i>Megarynchus pitangua</i>	Boat-billed Flycatcher			U	T	C		
<i>Tyrannus niveigularis</i>	Snowy-throated Kingbird			Cr	T	MH	#	
<i>Tyrannus melancholicus</i>	Tropical Kingbird			R	T	C		
<i>Myiarchus semirufus</i>	Rufous Flycatcher	EN	E	U	ST	OC		

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
<i>Myiarchus tuberculifer</i>	Dusky-capped Flycatcher			U	ST	M		
<i>Myiarchus phaeocephalus</i>	Sooty-crowned Flycatcher		E	C	T	MH		JB
COTINGIDAE								
<i>Phytotoma raimondii</i>	Peruvian Plantcutter	EN	E	R	S	O		#
TITYRIDAE								
<i>Pachyramphus spodiurus</i>	Slaty Becard	EN	E	R	S	C	#	
<i>Pachyramphus albogriseus</i>	Black-and-white Becard			F	S	C		
<i>Pachyramphus homochrous</i>	One-coloured Becard			R	S	C	AM	
VIREONIDAE								
<i>Cyclarhis gujanensis</i>	Rufous-browed Peppershrike			U	TS	C	#	JB
<i>Vireo leucophrys</i>	Brown-capped Vireo			?	ST	M		W/M
<i>Vireo olivaceus</i>	Red-eyed Vireo			Ur	T	CM	JB	JB
CORVIDAE								
<i>Cyanocorax mystacalis</i>	White-tailed Jay		E	C	ST	E	JB, AM	JB
HIRUNDINIDAE								
<i>Pygochelidon cyanoleuca</i>	Blue-and-white Swallow			U	A	OH		
<i>Stelgidopteryx ruficollis</i>	Southern Rough-winged Swallow			U	A	OH		
<i>Progne tapera</i>	Brown-chested Martin			C	A	H	JB	
<i>Progne chalybea</i>	Grey-breasted Martin			U	A	?		
<i>Tachycineta stolzmanni</i>	Tumbes Swallow		E	Cl	A	O		
<i>Petrochelidon rufocollaris</i>	Chestnut-collared Swallow			U	A	H		
TROGLODYTIDAE								
<i>Troglodytes aedon</i>	House Wren			C	G	HM	JB	JB
<i>Campylorhynchus fasciatus</i>	Fasciated Wren			C	T	E	JB	JB
<i>Pheugopedius sclateri paucimaculatus</i>	Speckle-breasted Wren		e	U	S	M	#	W/M
<i>Cantorchilus superciliosus</i>	Superciliated Wren		E	C	SG	MH	JB, AM	JB
POLIOPTILIDAE								
<i>Polioptila plumbea bilineata</i>	Tropical Gnatcatcher			C	ST	E	JB	JB
TURDIDAE								
<i>Catharus ustulatus</i>	Swainson's Thrush		M	Um	ST	M	#	
<i>Turdus reevei</i>	Plumbeous-backed Thrush		E	C	T	C	JB, AM	#
MIMIDAE								
<i>Mimus longicaudatus</i>	Long-tailed Mockingbird			C	S	E	JB, AM	JB
THRAUPIDAE								
<i>Conothraupis speculigera</i>	Black-and-white Tanager	NT	Mloc	Cr	S	MH	JB, AM	JB
<i>Thraupis episcopus</i>	Blue-grey Tanager			F	T	C	JB	
<i>Phrygilus plebejus</i>	Ash-breasted Sierra Finch			C	G	E		
<i>Phrygilus alaudinus</i>	Band-tailed Sierra Finch			R	SG	H		
<i>Poospiza hispaniolensis</i>	Collared Warbling Finch			C	GS	C	#	
<i>Sicalis flaveola</i>	Saffron Finch			C	T	O	AM	
<i>Sicalis taczanowskii</i>	Sulphur-throated Finch		E	U	GS	OH	AM	
<i>Volatinia jacarina</i>	Blue-black Grassquit			F	S	CH	JB	
<i>Sporophila peruviana</i>	Parrot-billed Seed-eater			C	SG	OH	CDC	

Scientific name	English name	IUCN threat status	Endemic / migrant	Abundance	Strata	Habitat	Photo	Sound-recorded
<i>Sporophila telasco</i>	Chestnut-throated Seedeater			Ur	S	C		
<i>Sporophila simplex</i>	Drab Seedeater			U	S	CH		
<i>Sporophila corvina</i>	Variable Seedeater			R	S	C		
<i>Sporophila luctuosa</i>	Black-and-white Seedeater			Rr	S	C	#	
<i>Rhodospingus cruentus</i>	Crimson-breasted Finch		E	R	T	C	JB	
<i>Coereba flaveola</i>	Bananaquit			C	T	C	JB	
INCERTAE SEDIS								
<i>Saltator striatipectus flavidicollis</i>	Streaked Saltator			U	ST	C	JB, AM	
EMBERIZIDAE								
<i>Zonotrichia capensis</i>	Rufous-collared Sparrow			R	SG	H		
<i>Rynchospiza stolzmanni</i>	Tumbes Sparrow		E	C	GS	E	JB, AM	JB
<i>Arremon aurantirostris</i>	Orange-billed Sparrow			R	ST	M		W/M
<i>Arremon abeillei</i>	Black-capped Sparrow		E	C	G	C	JB	
<i>Atlapetes leucopterus</i>	White-winged Brush Finch			C	S	MH	JB	#
<i>Atlapetes albiceps</i>	White-headed Brush Finch		E	C	GS	MH	JB, AM	#
<i>Atlapetes seebohmi</i>	Bay-crowned Brush Finch		E	F	S	M	DG	
CARDINALIDAE								
<i>Piranga flava lutea</i>	(Highland) Hepatic Tanager			C	T	C	JB, AM	
<i>Piranga rubra</i>	Summer Tanager			Fm	T	M	#	W/M
<i>Piranga olivacea</i>	Scarlet Tanager			Rm	T	M		W/M
<i>Phœucticus chrysogaster</i>	Golden-bellied Grosbeak			F	ST	C	AM	JB
PARULIDAE								
<i>Geothlypis aequinoctialis auricularis</i>	Masked (Black-lored) Yellowthroat			U	ST	C	JB	
<i>Setophaga pitiayumi</i>	Tropical Parula			C	T	M	JB	JB
<i>Myiothlypis fraseri</i>	Grey-and-gold Warbler		E	R	ST	C	#	
<i>Basileuterus trifasciatus</i>	Three-banded Warbler		E	R	ST	C		
ICTERIDAE								
<i>Cacicus cela</i>	Yellow-rumped Cacique			U	T	C	CDC, AM	JB
<i>Icterus graceannae</i>	White-edged Oriole		E	C	ST	E	JB	JB
<i>Icterus mesomelas</i>	Yellow-tailed Oriole			R	ST	C		
<i>Dives warszewiczi</i>	Scrub Blackbird			U	S	HC		
<i>Molothrus bonariensis</i>	Shiny Cowbird			Cr	ST	E		
<i>Sturnella bellicosa</i>	Peruvian Meadowlark			Cr-Ud	F	O	JB, AM	JB
FRINGILLIDAE								
<i>Sporagra magellanica</i>	Hooded Siskin			C	SG	O	AM	
<i>Sporagra siemiradzki</i>	Saffron Siskin	VU	E	U	S	C	?JB	
<i>Astragalinus psaltria</i>	Lesser Goldfinch			R	ST	M		W/M
<i>Euphonia saturata</i>	Orange-crowned Euphonia			R	T	C		
<i>Euphonia lanirostris</i>	Thick-billed Euphonia			C	T	M	JB	JB

AM saw five at El Golpe and one at El Polo in October 2011, above 1,000 m. All were in shrubs 1.5–3 m above ground. Two were photographed, one in 1995 by JB, another in 2004 by F. Angulo.

ANDEAN CONDOR *Vultur gryphus* NT

Regularly observed in the higher mountains, but only two sightings during seven visits to the South Cordillera in 1994, 1995 and 1999: JB observed an adult on 6 June 1995 and an immature on 13 September 1995. On July 2006, DG-O observed a pair of adults, together with a pair of King Vultures *Sarcoramphus papa*. Formerly more common, based on comments by local people living near the area. However, up to ten were seen in November 2011 at the base of Cerro El Viento (South Cordillera) by students from the Universidad Nacional Agraria La Molina. It is possible that the species still breeds on remote rocky outcrops.

BICOLOURED HAWK *Accipiter bicolor*

Observed at most sites at higher elevations. M. Castagnola mist-netted and released an adult female in August 1997 in the South-east sector. In December 1994, an immature was observed pursuing a group of White-tailed Jays *Cyanocorax mystacalis*, and two hours later what appeared to be the same bird chased some Croaking Ground Doves *Columbina cruziana*, Long-tailed Mockingbirds *Mimus longicaudatus* and a White-edged Oriole *Icterus graceannae*. In August 1995 another immature was observed pursuing a Scrub Antpitta *Grallaria watkinsi*. In November 2006, an immature pursued a Pale-browed Tinamou. All observed hunting attempts failed. In separate sightings during 1995, an adult and an immature were seen with White-tipped Doves *Leptotila verreauxi* in their talons. Also, in November 2006 an immature was photographed carrying a Croaking Ground Dove.

SHORT-TAILED WOODSTAR *Myrmia micrura*

Endemic to the Tumbesian EBA. Less common than Tumbes *Leucippus baeri* and Amazilia Hummingbirds *Amazilia amazilia*, but commoner than other hummingbirds in the area. Both sexes were observed feeding on *Capparis scabrida* and *Cordia lutea* flowers, piercing them from the side; however, it also feeds from the top of *C. lutea* and smaller flowers. DG-O photographed a nest with two chicks in July 2006; it was 1 m above ground on a dry shrub. A female was observed by JB gleaning insects from thin twigs in June 1995, possibly associated with nesting activity and / or feeding young. In contrast, Marchant (1960) found nests mostly in March–May.

ECUADORIAN PICULET *Picumnus sclateri*

Endemic to the Tumbesian EBA. Commonest along creeks and lower montane slopes, but is also present in *Prosopis* / *Caesalpinia*-dominated forest and on ridgetops. JB observed a male excavating a nest in a *Caryocar* sp., almost 8 m above ground, on 22 May 1995. When found, the hole could accommodate over half the bird's body and by the first week of June the nest had two holes. In July 1995, another nest was 2.3 m above ground in a dead branch of a *Schrebera americana* tree. Five individuals were seen entering to roost (one male and four females / juveniles). The entrance was an oval measuring 2.4 × 2.8 cm and the cavity 16.5 cm deep. Nests have not been described previously, but dates accord with Winkler *et al.* (1995).

SCARLET-BACKED WOODPECKER *Veniliornis callonotus*

A dry forest and scrub specialist common throughout AHR and frequently joins mixed-species flocks. Family groups of up to five birds also common. JB found an active nest in a live *Geoffroea striata* tree along a permanent creek, which was observed for 11 days in early June 1995. It was sited 8 m above ground in part of the tree stripped of bark. In eight hours of observation, the two nestlings were fed 5–9 times per hour, and three times in the hour prior to roosting. Fifty-one feeding events were observed, 30 by the male and 21 by the female. Only the male was observed cleaning the nest, three times in eight hours. Food

largely comprised insect larvae, but some adult insects were noted. Young fledged in the last week of June. Another hole found in July 1995 was used only for roosting. It was 2.8 m above ground in an *Acacia macracantha*, had a round entrance 3 cm in diameter, and was 27 cm deep. At dusk, five birds were observed entering the hole, but only two the following afternoon. Winkler *et al.* (1995) knew of no breeding data, but Mischler (2012) mentioned a male with a brood patch and nest with fledged young in July, and juveniles or immatures in July–October in south-west Ecuador.

PACIFIC PARROTLET *Forpus coelestis*

Endemic to the Tumbesian and Marañón Valley EBAs. Common year-round throughout AHR, which is perhaps one of the species' strongholds, being protected from the pet trade. Mostly seen in pairs or monospecific flocks of up to *c.*100 birds, while small groups even join mixed flocks led by Fasciated Wrens *Campylorhynchus fasciatus*. In March–April 1995 the species nested throughout the reserve, with no apparent preference for cavity type, agreeing with Marchant (1960), including holes in trees and earth banks along creeks, and below the roof of the lodge in the South-east sector. Surprisingly, nesting activity was not recorded by Best *et al.* (1996).

RED-MASKED PARAKEET *Psittacara erythrogenys* NT

Endemic to the Tumbesian EBA. Common year-round. Uses abandoned large woodpecker holes for nesting, along creeks with permanent water, during the wet season, until April or early May. In March 1995, several nests were found in the South-east sector, some with eggs and one with four unfeathered chicks weighing 16–64 g. Nesting suspected as late as July 2006 in La Falda, North Cordillera, when a pair was seen daily at a hole in a *Ceiba trichistranda*. In the South-east sector, groups up to 40 performed daily movements south-east to north-west in the morning, returning in the afternoon, probably commuting to agricultural areas outside the reserve. Apparently roosts in the lowlands, outside AHR, when not breeding. During February 2009, JB observed a group of five taking reddish mud on the ground, on a road outside AHR, much like parrots at an Amazonian clay lick. During the dry season, it regularly feeds on *Erythrina smithiana* flowers throughout AHR. At the south-eastern limit of the reserve, one with an entirely red head and neck was photographed by F. Angulo in August 2009 and by AM in December 2010. The bird was part of a large flock and interacted normally with others. Many are caught in the eastern AHR in July–September for the illegal pet trade.

PALE-LEGGED HORNERO *Furnarius leucopus cinnamomeus*

Endemic subspecies to the Tumbesian and Marañón Valley EBAs (Best & Kessler 1995). Sometimes (e.g. Ridgely & Greenfield 2001) treated as a species (Pacific Hornero), given differences from allopatric Amazonian *F. l. tricolor*. *F. l. cinnamomeus* has whitish underparts, yellowish irides, body size 19–20 cm and mean weight *c.*50 g, versus pale brown underparts, brown irides, 17–18 cm, and *c.*42 g in the Amazonian subspecies (based on specimens in the CORBIDI collection, Lima). Very common in the area. Several seen catching fish in a shallow river, often by walking on stones (Barrio & Valqui 2005). Observed building nests in December 1994, feeding nestlings in February–April 1995, and feeding juveniles in April 1995.

HENNA-HOODED FOLIAGE-GLEANER *Clibanornis erythrocephalus* VU

Endemic to the Tumbesian EBA. Locally rare, JB saw one in the South Cordillera in December 1999, which flushed from the leaf litter in a dry creek, returning briefly to the

ground before flying off, at c.850 m. A second record in November 2006 involved a pair foraging on the ground at La Falda, North Cordillera. In the East and North Cordillera daily vocalisations from at least two were heard in June and August 2009. In the North Cordillera one was mist-netted twice near a creek.

LINE-CHEEKED SPINETAIL *Cranioleuca antisiensis*

Recorded several times at 750–1,100 m in the South-east, South, East and North Cordillera sectors. Although not mapped for the area by Schulenberg *et al.* (2007), it is not rare at AHR. We have observed it several times since December 1994, usually foraging in undergrowth. DG-O encountered pairs and one was photographed in August 1995.

GREY-BREASTED FLYCATCHER *Lathrotriccus griseipectus* VU

Endemic to the Tumbesian and Marañón Valley EBAs. Rare throughout AHR. In our few sightings in the South-east sector, JB encountered the species alone at mid heights, never low down. Twice seen making short upward sallies from branches to leaves. One was photographed in August 1995. One photographed and another mist-netted in the North Cordillera in August 2009.

PEWEES *Contopus* spp.

Several *Contopus* spp. occur at AHR. Commonest throughout is Tropical Pewee *C. cinereus punensis*—an endemic Tumbesian and Marañón Valley subspecies, treated by some (e.g., Ridgely & Greenfield 2001) as a species (Tumbes Pewee). We observed display-flights in July 1995, in which the birds flew up high and returned to the same branch singing, then opened and closed the tail, and an adult feeding a young in May 1995. During the wet season, migrant Western Wood Pewees *C. sordidulus* from North America are present. Olive-sided Flycatcher *C. cooperi* (NT) is a rare boreal migrant, which JB photographed in October 1994. Smoke-coloured Pewee *C. fumigatus* is a fairly common resident in well-vegetated creeks in the mountains; usually quiet, in August 1995 one sang continuously at dawn on three consecutive days.

BOAT-BILLED FLYCATCHER *Megarynchus pitangua*

Rare; pairs recorded in July and November 2006 in the lower part of the North Cordillera. One was seen in August 2009, also in the North Cordillera. A record of Great Kiskadee *Pitangus sulphuratus* from the South-east sector in the late 1980s probably involved the present species.

RUFOUS FLYCATCHER *Myiarchus semirufus* EN

Endemic to the Tumbesian EBA. DG-O observed a single individual twice in November 2006, at the north-east border of AHR, at c.400 m, as well as once by AM in August 2009 at the southern boundary of AHR, while two were recorded by AM in October 2011 in the East sector, at Overall creek. F. Angulo (*in litt.* 2012) photographed the species in the East sector, around Sauce Grande.

SLATY BECARD *Pachyramphus spodiurus* EN

Endemic to the Tumbesian EBA. Occasionally seen in the South-east and South Cordillera, at 700–900 m. Additionally, one record in the North Cordillera in June 2007, a mist-netted bird at 900 m. Throughout AHR it is rarer than One-coloured Becard *P. homochrous*.

WHITE-TAILED JAY *Cyanocorax mystacalis*

Endemic to the Tumbesian EBA. Very common and very vocal throughout AHR. Two were observed perched on, and removing parasites from, the head of a White-tailed Deer *Odocoileus virginianus*.

SPECKLE-BREASTED WREN *Pheugopedius sclateri paucimaculatus*

Subspecies endemic to the Tumbesian EBA (Ridgely & Greenfield 2001, Schulenberg *et al.* 2007) and is uncommon in AHR. Observed several times in the North Cordillera and East sectors in November 2006, June 2007 and August 2009, the last as part of a mixed flock. We mist-netted several in the Central, North Cordillera and East sectors in November 2006–June 2007.

SUPERCILIATED WREN *Cantorchilus superciliaris*

Endemic to the Tumbesian EBA. Common throughout AHR. We found a completed nest in early September 1995. An individual entered the empty nest twice, but egg laying was not observed. The nest was a woven dome, constructed of an unidentified straw, *Eriotheca discolor* cotton and feathers, suspended on a dry 'tangle weed'. It was 20 cm high and 9 cm wide. The entrance was an oval 5 × 6 cm, its lower border 10 cm from the base of the nest.

BLACK-AND-WHITE TANAGER *Conothraupis speculigera* NT

Winters in Amazonia and breeds in the Tumbesian region during the wet season, when it can be extremely common. Males sing loudly and appear to defend territories. Unlike Witt (2005) in western Cajamarca, Black-and-white Tanager was much commoner than Black-and-white Seedeater *Sporophila luctuosa*—which shares the same plumage pattern, coloration and habitat—in February 1995, and was recorded in most parts of AHR. Nests are mostly sited 1–2 m above ground. In early April, post-breeding, the species largely disappears from AHR. However, we have recorded lingering individuals in the dry season. In August 1992, we saw and mist-netted several in the South-east sector, following heavy rains earlier in the year. Common in the lower North Cordillera and East sectors during the dry season of 2006—although rains were average that year—where we mist-netted two females and a male in July 2006. In November 2006, one male was in the East sector.

WHITE-WINGED BRUSH FINCH *Atlapetes leucopterus*

Endemic to the Tumbesian EBA and common throughout AHR. Above 900 m some individuals have blacker head-sides, similar to Bay-crowned Brush Finch *A. seebohmi*, but with a white wing speculum. One such individual was mist-netted and photographed in December 1999.

BAY-CROWNED BRUSH FINCH *Atlapetes seebohmi*

Endemic to the Tumbesian EBA. Fairly common throughout the mountains. A group of three was observed with White-winged Brush Finches at c.950 m in the South Cordillera in February 2004. *A. seebohmi* was common in the North Cordillera, at c.900 m, in November 2006 and June 2007, and at 1,200 m in August 2009. A group of 12 was seen in Central Angolo in July 2006. Often associates with *A. leucopterus* and Black-capped Sparrows *Arremon abeillei*.

SAFFRON SISKIN *Sporagra siemiradzkii* VU / **HOODED SISKIN** *S. magellanica*

S. siemiradzkii is endemic to the Tumbesian EBA. All *Sporagra* sp. in the extreme west of the area are Hooded Siskins. The status of the two species in the central and eastern AHR is

unclear, where all individuals may belong to one or other species, or both might be present. There, the birds usually occupy watered creeks and ravines, always in small groups, usually of 4–8 individuals. Two Saffron Siskins were mist-netted and collected in August 1997 by M. Castagnola, and besides the orange tone of the yellow plumage, both had a total length under 10 cm (measured by JB). The pair was deposited in the Museo de Historia Natural de la Universidad de San Marcos, Lima, in alcohol; however, the specimens now appear to be lost, so the record must be regarded as unconfirmed.

THICK-BILLED EUPHONIA *Euphonia laniirostris*

Frequently feeds on Loranthaceae mistletoes and *Geoffroea striata* fruits. Nesting and fledging observations in 1994–95 lead us to infer that, at least in some years, the species is double-brooded.

Mixed flocks.—Mixed-species foraging flocks are common, usually led by a group of *Campylorhynchus fasciatus* and comprise 5–7 species. Some flocks are led by a group of *Icterus graceannae*, and only comprise 3–4 species. In groups led by *C. fasciatus* any combination of the following species can occur: *Forpus coelestis*, *Picumnus sclateri*, *Veniliornis callonotus*, Golden-olive Woodpecker *Piculus rubiginosus*, Streak-headed Woodcreeper *Lepidocolaptes souleyetii*, Cranioleuca Antsiensis, Rufous-necked Foliage-gleaner *Syndactyla ruficollis*, Collared Antshrike *Thamnophilus bernardi*, Red-browed Peppershrike *Cyclarhis gujanensis*, *Mimus longicaudatus*, Blue-grey Tanager *Thraupis episcopus*, Hepatic Tanager *Piranga flava*, *Arremon abeillei* and *Atlapetes albiceps*. Some of these join mixed flocks only temporarily.

Discussion

Earlier bird lists of AHR included some errors from visits to the area in the 1980s by CDC expeditions. For example, Grey-backed Hawk *Pseudastur occidentalis* is listed for the reserve, but verified records do not exist. Furthermore, a tape-recording of *Thamnophilus bernardi* by the CDC was misidentified as Chapman's Antshrike *T. zarumae* and included as that species in their list.

The bird community at AHR changes during the year, as several species arrive in the area to breed during the wet season, e.g. Yellow-rumped Cacique *Cacicus cela*, *Conothraupis speculigera* and Snowy-throated Kingbird *Tyrannus niveigularis*. Other species that arrive in the area or increase in numbers at this season, like Blue Ground Dove *Claravis pretiosa*, Scrub Nightjar *Nyctidromus anthonyi* or Ochre-bellied Dove *Leptotila ochraceiventris*, might also breed, but there is no clear evidence for this. During the long dry season, species associated with drier forest are common throughout the area, except along wetter creeks, where species associated with wetter habitats concentrate. Additional species will be recorded with further surveys and additional research, as some parts of the reserve have still been hardly visited. Even in well-surveyed areas, some species still require study and possibly specimen collection (e.g. siskins and White-winged Brush Finch). According to the list presented here, El Angolo Hunting Reserve is an important locality for Tumbesian endemics, as it supports 41 endemic species and six endemic subspecies that may deserve species status (Ridgely & Greenfield 2001).

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References:

- Angulo, F. & Barrio, J. 2004. Evaluation of a potential reintroduction site for the white-winged guan *Penelope albipennis* (Aves, Cracidae) in northern Peru. *Oryx* 38: 448–451.
- Barrio, J. 2004. Efectos de la fisiografía y la vegetación en la distribución de la perdiz serrana (*Nothoprocta pentlandii*) en el bosque seco Tumbesiano Perú. *Orn. Neotrop.* 15: 111–119.
- Barrio, J. & Begazo, A. 1998. Notes on the Rufous-headed Chachalaca (*Ortalis erythroptera*) in northern Peru. *Bull. Cracid Specialist Group* 7: 19–23.
- Barrio, J. & Valqui, J. 2005. Fishing by two Furnariidae: Pacific Hornero *Furnarius [leucopus] cinnamomeus* and Surf Cinclodes *Cinclodes taczanowskii*. *Cotinga* 23: 42–44.
- Best, B. J. & Kessler, M. 1995. *Biodiversity and conservation in Tumbesian Ecuador and Peru*. BirdLife International, Cambridge, UK.
- Best, B. J., Checker, M., Thewlis, R. M., Best, A. L. & Duckworth, W. 1996. New bird breeding data from southwestern Ecuador. *Orn. Neotrop.* 7: 69–73.
- IUCN. 2014. The IUCN Red List of threatened species. Version 2014.3. www.iucnredlist.org (accessed 16 January 2015).
- Marchant, S. 1960. The breeding of some S.W. Ecuadorian birds. *Ibis* 102: 349–382, 584–599.
- Mischler, T. 2012. Status, abundance, seasonality, breeding evidence and an updated list of the birds of Cerro Blanco, Guayaquil, Ecuador. *Cotinga* 34: 60–72.
- Palacios, O. 1994. Geología de los cuadrángulos de Paita, Piura, Talara, Sullana, Lobitos, Qda. Seca, Zorritos, Tumbes y Zarumilla. *Bol. INGEMMET, Ser. A* 54: 1–168.
- Parker, T. A., Schulenberg, T. S., Kessler, M. & Wust, W. 1995. Species limits, natural history and conservation of some endemic birds from north-west Peru. *Bird Conserv. Intern.* 5: 201–231.
- Remsen, J. V., Areta, J. I., Cadena, C. D., Jaramillo, A., Nores, M., Pacheco, J. F., Pérez-Emán, J., Robbins, M. B., Stiles, F. G., Stotz, D. F. & Zimmer, K. J. 2015. A classification of the bird species of South America. Version 16 January 2015. www.museum.lsu.edu/~Remsen/SACCBaseline.htm (accessed 16 January 2015).
- Ridgely, R. S. & Greenfield, P. J. 2001. *The birds of Ecuador*. Cornell Univ. Press, Ithaca, NY.
- Sabogal, A. & Zerbe, S. 2005. Asociación de cactáceas en el bosque seco del norte del Perú, estudios de caso, Las Lomas, Jaguar Negro y Coto de Caza El Angolo. *Zonas Áridas* 9: 143–149.
- Schulenberg, T. S. & Parker, T. A. 1981. Status and distribution of some north-west Peruvian birds. *Condor* 83: 209–216.
- Schulenberg, T. S., Stotz, D. F., Lane, D. F., O'Neill, J. P. & Parker, T. A. 2007. *Birds of Peru*. Princeton Univ. Press.
- Stattersfield, A. J., Crosby, M. J., Long, A. J. & Wege, D. C. 1998. *Endemic Bird Areas of the world: priorities for biodiversity conservation*. BirdLife International, Cambridge, UK.
- Vásquez, P., Burneo, F., Canziani, E. & Ríos, J. 2007. *Las plantas silvestres en la alimentación del venado cola blanca. Coto de Caza El Angolo. Guía para su reconocimiento en campo*. Centro de Datos para la Conservación & UNALM, Lima.
- Wiedenfeld, D. A., Schulenberg, T. S. & Robbins, M. B. 1985. Birds of a tropical deciduous forest in extreme northwestern Peru. Pp. 305–315 in Buckley, P. A., Foster, M. S., Morton, E. S., Ridgely, R. S. & Buckley, F. G. (eds.) *Neotropical ornithology*. *Orn. Monogr.* 36.
- Winkler, H., Christie, D. A. & Nurney, D. 1995. *Woodpeckers: an identification guide to the woodpeckers of the world*. Houghton Mifflin, New York.
- Witt, C. C. 2005. Syntopic breeding suggests mimicry of the Black-and-white Seedeater (*Sporophila luctuosa*) by the Black-and-white Tanager (*Conothraupis speculigera*). *Orn. Neotrop.* 16: 387–396.
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