Status, abundance, seasonality, breeding evidence and an updated list of the birds of Cerro Blanco, Guayaquil, Ecuador

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Se recopiló datos de abundancia, estacionalidad y nidificación en un transecto lineal recorrido mensualmente entre 2003 y 2009 en el Bosque Protector Cerro Blanco, un bosque seco de la amenazada región Tumbesina, en el suroeste de Ecuador. La lista completa de la reserva incluye 218 especies, incluyendo un número alto de aves endémicas (36 especies) y casi endémicas (16). Se elaboró categorías de abundancia durante todo el año para todas las especies. Estas fueron comparadas con dos evaluaciones similares anteriores. La estacionalidad fue evaluada por primera vez, encontrando cuatro estrategias: (i) nidificación durante época de lluvias (enero–abril), con números decreciendo bastante en época seca (junio–diciembre); (ii) nidificación de aves residentes durante enero–abril, pero con números ligeramente creciendo en época seca; (iii) nidificación durante la época seca (junio–octubre) y (iv) visitantes que no nidifican durante la época seca, provenientes de dos fuentes: exceso de poblaciones de bosques más húmedos y lejanos, y aves de matorral seco de las cercanías que buscan refugio ante pérdida de hábitat. Para cada especie se da los meses con presencia aumentada en el apéndice. Se prueba la nidificación de 51 especies, la cifra más alta detectada en un bosque Tumbesino. El conjunto de especies y su porcentaje de endemismo están comparados con cuatro bosques similares de la región Tumbesina. El valor alto de conservación de Cerro Blanco está enfatizado frente a la diminución galopante de los bosques secos Tumbesinos.

The rich avian diversity of Cerro Blanco, a private forest reserve 15 km west of Guayaquil (02º10'S 80º02'W), was first outlined by Berg[4]. With recent purchases, the protected area, which is managed by Fundación Pro-Bosque, is now 6,078 ha. The owner, Holcim Ecuador S.A., operates a cement mine at its southern border, preventing illegal intrusion. Cerro Blanco has become increasingly important since 1989, when it was declared a reserve, being the only significant area of hill forest in an otherwise heavily modified environment, at the east end of the low-lying Cordillera de Colonche; it was declared an Important Bird Area (IBA EC026) in 1998[6]. Recently, the area has been visited regularly by birdwatchers due to the presence of a rich array of Tumbesian endemics, and its easy access. The Tumbesian Endemic Bird Area (EBA 045[19]), wherein Cerro Blanco lies, extends from central western Esmeraldas to Lambayeque, in north-west Peru, and is second in the world in numbers of endemic bird species after the Chocó EBA, north-west Ecuador.

The reserve represents a moisture trap as it rises to 350–500 m (rain, or fog in the dry months). Relatively little rainfall occurs during the year (Fig. 1), just 8–30 showers can be expected, starting in late December and continuing intermittently into April, with a prolonged dry season in June–early December. No El Niño year occurred during my study. Lush vegetation growth, especially of lianas, starts in January. At the end of that month the trees and ground layer are green, but major leaf fall commences in July. Temperatures are hot year-round, 31ºC by day and 28ºC at night, with a mean decline of c.3ºC in June–December.

Cerro Blanco is well explored ornithologically, but as most researchers stayed only c.1 month, data are either sporadic or seasonal. Parker & Carr's[14] field work was in January–February and July 1992, and produced 143 bird species; Berg[4] compiled a second, more complete list of 200 species. Pople *et al*.[15] spent 38 days there in July–August 1996, and their field work yielded 150 species, extending the overall list to 207. In 2005, D. Sheets published the first 'Diagnostic checklist of Cerro Blanco' (210 species, with a further 32 species, mainly waterbirds, at nearby Puerto Hondo mangrove and Lake Chongón). In 2007 a second edition, with 216 species, was published[18].

This paper covers six consecutive years of monthly observations at a single reserve in the Tumbesian region. I re-evaluate the high degree of endemism under species limits in Ridgely & Greenfield[16], present an updated checklist, provide a year-round assessment of presence and abundance of all bird species, grouping them into four seasonal categories. Breeding status is given for those species with sufficient data.

Methods

Birds were surveyed via a 5-km line transect, over 4–5 hours, starting at 06h00, on a monthly basis in July 2003–July 2009. Seventy surveys were conducted; February and July 2006, and February 2008 were missed. Dry deciduous forest on this transect can be subdivided into dry plains forest,

moist ravine forest, dry forest on rocky slopes and sub-humid ridge forest[7]. The last two are more extensive, but relative areas were not assessed. All birds heard and seen were counted, irrespective of their distance from the observer, although the closed canopy and undergrowth mostly prohibited detection >40 m away. Abundance of nightbirds was taken from the literature[15,18]. Raptors and swifts are under-represented because they were recorded only from three lookouts. Abundance was assessed using the five categories defined in the Appendix, comparing species numbers for each month and the sum of individuals per species throughout the study period. For other species, not usually encountered on line transects, abundance categories and breeding data were obtained from visits to other parts of the reserve.

Species-level taxonomy follows Ridgely & Greenfield[16], with species splits in that work clearly denoted using parentheses in the Appendix. Endemic species are defined as those restricted to the Tumbesian EBA, near-endemics as those that reach the Marañón EBA[19] or slightly exceed the northern or southern boundaries of the Tumbesian EBA.

Seasonality data were gathered in forest habitat via transects, while species only found in open habitats, e.g. *Sporophila* seedeaters and some tyrant flycatchers, are therefore afforded only presence data, although they occur year-round in grasslands close to the reserve (pers. obs.). Seasonality was evaluated by assessing increase and decrease in individual numbers during a given year and by comparing fluctuations in numbers for a given month during the six years. If a rare species was recorded on the transect at least once in a given month during the six years, this is noted in the seasonality column (Appendix). For the complete checklist, additional data on rarity was taken from Pople *et al*.[15], but only for July–August and if my data were incomplete. If a species was present almost year-round, only months when large numbers were present are marked in bold.

Breeding status is mainly based on pairs or groups with recently fledged young, juveniles, etc. Six confirmed breeding records were taken from the literature[4,7,15].

Results

Endemism.—Berg[4] listed 29 Tumbesian endemic species for Cerro Blanco. The Appendix lists more endemics despite the similar overall total number of species—36 endemics (17%) and 16 near-endemics—mainly as a result of taxonomic changes proposed by Ridgely & Greenfield[16], who elevated several subspecies in western Ecuador to species rank. To permit comparisons with older literature and Schulenberg *et al*.[17], I also list previous taxonomy. Ten of the 12 globally threatened[5] and all four Near Threatened species at Cerro Blanco are Tumbesian endemics.

Current list.—In this list, compared to Berg's[4], 11 species have been removed and 27 added for the following reasons. Three species were deleted due to possible confusion and the improbability of their occurrence: Plumbeous Hawk *Leucopternis plumbea*, White-ringed Flycatcher *Conopias albovittata* and Cinnamon Becard *Pachyramphus cinnamomeus*. Two more were reported 100 km from Cerro Blanco, but it is unclear if they were recorded with certainty—Rufous-fronted Wood Quail *Odontophorus erythrops* and Russet-backed Oropendola *Psarocolius angustifrons*. Neither was reported within the last 18 years. Five species occur in nearby mangroves and freshwater habitats, but outside the boundaries of Cerro Blanco: Least *Tachybaptus dominicus* and Pied-billed Grebes *Podilymbus podiceps*, Sungrebe *Heliornis fulica*, Common Gallinule *Gallinula chloropus* and Greater Yellowlegs *Tringa melanoleuca*. In general, species recorded at Puerto Hondo and Lago Chongón were not clearly differentiated from Cerro Blanco birds in previous lists. Rock Dove *Columba livia* was removed, as no feral populations exist in the region. There are no records in the last 18 years for eight species marked 'b' in the Appendix. White-necked Puffbird *Notharchus macrorhynchos* and Fork-tailed Flycatcher *Tyrannus savana* are now considered 'stragglers' as they have occurred just once. Crested Guan *Penelope purpurascens* is probably extinct. Pople *et al*.[15] added seven species to Berg's[4] list (two of them owls). Prior to 2008, another 15 were added by Sheets & Mischler[18], plus two species each by F. Campos and P. Coopmans. Half (50%) of these are 'stragglers' and are not expected to occur again. Others, however, were probably overlooked by previous authors, as they were encountered in the highest parts of the reserve, which are not regularly visited. The total checklist as of December 2009 stands at 218 species.

Abundance.—(I) Alpha-diversity: during transects I encountered 47–59 species (monthly means over the six years, Fig. 1), which is relatively high, given that 98% of the route is under closed forest canopy. No large fluctuations were registered during a given year (Fig. 1), though October–January produced marginally higher totals due to increased detectability. Reduced detectability in the breeding season is not compensated by greater vocal activity, as some species are secretive and the percentage of songbirds is low. (II) Overall abundance: 177 of the 218 species (81%) were recorded during transects. Abundance categories (see Appendix) for the remaining species were estimated during 50 additional visits to other parts of the reserve. (III) Common species: the most abundant species based on single-day

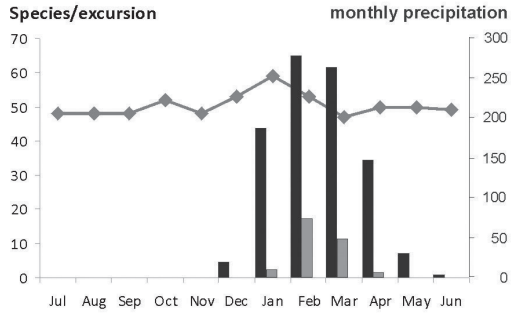

Figure 1. Graph showing (on left) mean no. of species per five-hour transect at Cerro Blanco, based on six-year means (2003–09), and (right) amount of rainfall in mm at Guayaquil (means 1959–2001) and, in second row of smaller columns, at the Santa Elena Peninsula (means 1955–59[10]).

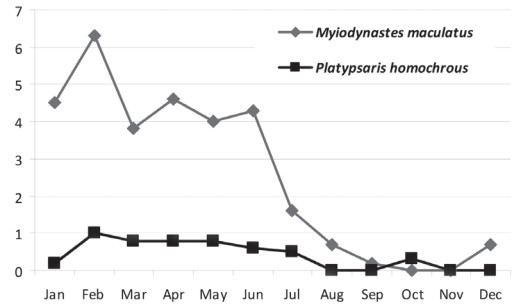

Figure 2. No. of individuals per month of two wet-season breeding visitors, Streaked Flycatcher *Myiodynastes maculatus* and One-coloured Becard *Pachyramphus homochrous*, based on six-year means, 2003–09, at Cerro Blanco.

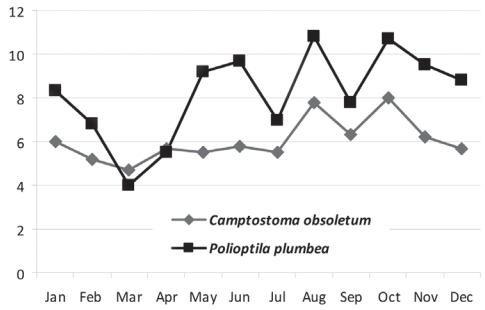

Figure 3. No. of individuals per month of Southern Beardless Tyrannulet *Camptostoma obsoletum* and Tropical Gnatcatcher *Polioptila plumbea*, based on six-year means, 2003–09, at Cerro Blanco.

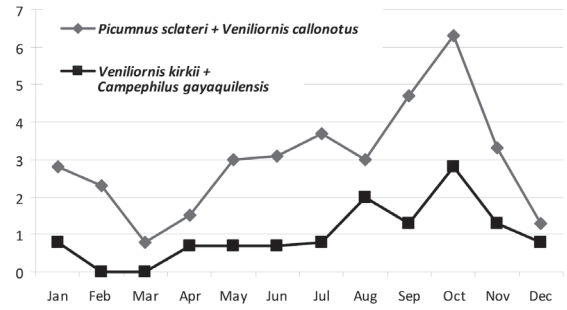

Figure 4. No. of individuals per month of Ecuadorian Piculet *Picumnus sclateri* and Scarlet-backed Woodpecker *Veniliornis callonotus* combined, vs. Red-rumped *V. kirkii* and Guayaquil Woodpeckers *Campephilus gayaquilensis* combined (same trends), based on six-year means, 2003–09, at Cerro Blanco.

counts are White-collared Swift *Streptoprocne zonaris*, Black Vulture *Coragyps atratus* and Shiny Cowbird *Molothrus bonariensis*. Permanently common species can be evaluated by summing transect counts over the years. The ranking of the second-commonest bird, Red-lored Amazon *Amazona autumnalis*, is based on near-complete early-morning counts of birds departing their mangrove roosts to the hills of Cerro Blanco. (IV) Abundance categories: 22 species were ranked as common, 31 fairly common, 66 uncommon, 85 rare and 13 stragglers. Of those categorised as rare, c.25 are occasional visitors to the reserve, e.g. waterbirds, which are sometimes common nearby, whereas the other 60 species are genuinely rare and usually only encountered for brief periods each year. Trends in abundance over the last 15 years, based on comparisons with previous assessments[14,15], can be inferred only with care, due to differences in methods between surveys (see Discussion). In general, it appears that bird abundance has remained rather constant.

Seasonality.—Year-round presence was noted for 50 species and assumed for 37 for which monthly data are incomplete or which were recorded in a few months in one year and in other months in consecutive years (rare species). Ten boreal migrants are sporadically present October–April, whereas Plumbeous-backed Thrush *Turdus reevei* and Black-and-white Tanager *Conothraupis speculigera* (a possible breeder) spread across the Tumbesian region post-breeding, the latter to the Marañón Valley.

(I) Wet season (January–April): numbers of many species fluctuate dramatically during the year. Some increase in numbers during the breeding period, immediately after the onset of rains. Many are breeding visitors and disappear entirely or almost so after the wet season, e.g. Streaked Flycatcher *Myiodynastes maculatus* and

Table 1. Comparison of montane forests covered by the Tumbesian protected areas network. Column 1: [1] north-east corner of Cerros de Amotape National Park, the former Zona Reservada de Tumbes. Column 2: only forested sectors calculated except for Machalilla. Column 3: degree, to which moister forest above 400 m is present. Column 4: no. of Tumbesian endemic species. Columns 5–6: total species except waterbirds. Column 5: [2] many more antbirds at high elevation than in other areas mentioned; [3] lower value: data processed for column 6; higher value: possible estimate of Williams *et al.*[20]. Column 6, nos. in parentheses indicate species that occur only above 400 m in moister habitat. Column 7: A, Andean; Ch, Chocó; E, east; N, north; NW, moister low-lying north-west Ecuador. Column 8: literature sources.

Protected areas (south to north)	Extent (km^2)	Forest >400 m	Endemism	No. of species	Species not in Cerro Blanco	Geographic influence	Source
Cerros de Amotape[1]	<751	++	54	217	66 (32)	A, (Ch), N	Mischler[13]
Manglares-Churute	55	(+)	32	230[2]	51 (32)	A, E	Pople *et al.*[15]
Cerro Blanco	60	-	43	206		NW	Sheets & Mischler[18]
Loma Alta	60	+(+)	49	323	120 (79)	A, Ch, NW	Becker *et al.*[1–3]
Machalilla National Park	<400	+(+)	40	195–250[3]	53 (30)	A, Ch, NW	Williams *et al.*[20]

One-coloured Becard *Pachyramphus homochrous* (Fig. 2). This same trend of increased numbers during the wet season was witnessed for at least 16 other species: Pale-browed Tinamou *Crypturellus transfasciatus*, Pale-vented Pigeon *Patagioenas cayennensis*, Pallid *Leptotila pallida* and Ochre-bellied Doves *L. ochraceiventris*, Grey-capped Cuckoo *Coccyzus lansbergi*, Pauraque *Nyctidromus albicollis*, Greenish Elaenia *Myiopagis viridicata*, Scale-crested Pygmy Tyrant *Lophotriccus pileatus*, Bran-coloured *Myiophobus fasciatus* and Grey-breasted Flycatchers *Lathrotriccus griseipectus*, Black-and-white Becard *Pachyramphus albogriseus*, Red-eyed Vireo *Vireo olivaceus* (with North American migrants present January–March), Ecuadorian Thrush *Turdus maculirostris*, House Wren *Troglodytes aedon*, Tropical Parula *Parula pitiayumi* and Black-lored Yellowthroat *Geothlypis auricularis*.

(II) Transition period (May–mid June): following the rains only a few raptors increase in numbers, e.g. Swallow-tailed Kite *Elanoides forficatus* (non-breeder), Hook-billed Kite *Chondrohierax uncinatus* and Short-tailed Hawk *Buteo brachyurus* (breeders).

(III) Dry season (June–December): most interesting was that, the number of species whose numbers increase was unexpectedly high; many species visit Cerro Blanco as non-breeding visitors; and some species breed in this period. Some common year-round residents were present in inexplicably high numbers during the dry season. Although breeding occurs in the wet season when detection rates should be similar, Southern Beardless Tyrannulet *Camptostoma obsoletum* and Tropical Gnatcatcher *Polioptila plumbea* increase in the late dry season (Fig. 3). As the latter species is not singing in August–September, the higher numbers presumably do not reflect second broods. A similar pattern is observed for Black-throated Mango *Anthracothorax nigricollis*, Long-billed Starthroat *Heliomaster longirostris*, Golden-olive *Piculus rubiginosus* and Guayaquil Woodpeckers *Campephilus gayaquilensis*, Tawny-crowned Pygmy Tyrant *Euscarthmus meloryphus*, Tumbes Pewee *Contopus punensis*, Superciliated Wren *Cantorchilus superciliaris* and Crimson-breasted Finch *Rhodospingus cruentus*.

Another set of species appears to follow the same pattern, but the underlying reasons are quite different. These species originate from moister habitats either in the nearby coastal cordillera (to Machalilla National Park) or on the lower west Andean slope. Among them are Violet-bellied Hummingbird *Damophila julie*, Northern Violaceous Trogon *Trogon caligatus*, Plain-brown Woodcreeper *Dendrocincla fuliginosa*, White-backed Fire-eye *Pyriglena leuconota*, Ochre-bellied *Mionectes oleagineus* and Black-tailed Flycatchers *Myiobius atricaudus*, Lesser Greenlet *Hylophilus decurtatus*, Plumbeous-backed Thrush, Guira Tanager *Hemithraupis guira*, Orange-crowned Euphonia *Euphonia saturata* and White-shouldered Tanager *Tachyphonus luctuosus*.

Dry-season breeding is assumed for parrots and was detected for all woodpeckers, Streaked Xenops *Xenops rutilans*, Blackish-headed Spinetail *Synallaxis tithys* and Henna-hooded Foliage-gleaner *Hylocryptus erythrocephalus*.

Breeding.—Additional evidence of breeding was provided by increased numbers of individuals in certain months. For the two common vultures, the opposite, namely reduced visibility in the breeding period appears true, as numbers are evenly distributed year-round except February–March. Twenty-three species could not be assigned a breeding status due to their rarity or lack of data. Seventy-four species are non-breeders. Unconfirmed or assumed breeders are clearly denoted in the Appendix. It is a reasonably accurate

guess for 25 wet-season breeders and for 14 other species suspected to breed in the transition period. For at least 50 species direct evidence of breeding is still lacking. Direct breeding evidence is available for 72 species, omitting juvenile raptors (three species), which might have visited from elsewhere. Among common species, nine breed more than once per year (see Appendix), revising totals for wet- and dry-season breeders to 42 and 39, respectively. The latter value is unexpectedly high.

Breeding evidence from line transects and from July 1996[15], for comparison, is presented for 51 species below, as this is the first such comprehensive effort for a forested site in the Tumbesian region. Crane Hawk *Geranospiza caerulescens*: nest building March 2006. Grey-backed Hawk *Leucopternis occidentalis*: active nest January 1993[4]. Grey Hawk *Buteo nitidus*: juvenile July 1996[15] and September 2006; immature September / October 2008. Ecuadorian Ground Dove *Columbina buckleyi*: carrying nest material May 2006. Croaking Ground Dove *C. cruziana*: many juveniles July 1996[15] and May 2007. White-tipped Dove *Leptotila verreauxi*: unfledged juvenile April 2004. Amazilia Hummingbird *Amazilia amazilia*: juvenile June 2004 and December 2006.

All resident woodpeckers nest in the dry season. Almost no previous breeding data were available for the endemic species[21], so some of the following augment our knowledge. In September / October, three individuals were often seen together, one of them immature, resulting in higher individual counts (Fig. 4). Ecuadorian Piculet *Picumnus sclateri*: singing April–August; family parties July 1996[15], 2003 and 2007. Golden-olive Woodpecker: adult feeding juvenile July 1996[15]. Scarlet-backed Woodpecker *Veniliornis callonotus*: male with brood patch and nest with fledged young July 1996[15]; immature August 2006, juvenile July 2007, immature October 2008. Red-rumped Woodpecker *V. kirkii*: pair with immature October 2006. Guayaquil Woodpecker *Campephilus gayaquilensis*: excavating nest July 1996[15]; pair with immature October 2008. Lineated Woodpecker *Dryocopus lineatus*: excavating nest July 1996[15].

Pacific Hornero *Furnarius cinnamomeus*: juvenile March 2005, still begging May; immature, based on dark iris, July 1996[15]. Blackish-headed Spinetail: juvenile with orange gape begging July 2008. Henna-hooded Foliage-gleaner: adult inspecting nest (?) hole January 1993[4]; adult carrying frog for five minutes October 2008. Streaked Xenops: pair feeding juvenile in cavity July 1996[15]; 'tail-less' juvenile August 2006. Olivaceous Woodcreeper *Sittasomus griseicapillus*: adult feeding juvenile April 2004; immature begging July 2005. Streak-headed Woodcreeper *Lepidocolaptes souleyetii*: family of four July 2005; immature July 2009. Collared Antshrike *Sakesphorus bernardi*: many immatures July 1996[15]; juvenile May 2004; immatures October 2007 and September 2008. Plain Antvireo *Dysithamnus mentalis*: juveniles March 2008 and June 2009. Southern Beardless Tyrannulet: tail-less juvenile April 2004. Slaty-capped Flycatcher *Leptopogon superciliaris*: occupied nest March 2006. Yellow-olive Flycatcher *Tolmomyias sulphurescens*: two fledged juveniles July 2004; juvenile being fed May 2005. Sooty-crowned Flycatcher *Myiarchus phaeocephalus*: fresh nest March 2004. Social Flycatcher *Myiozetetes similis*: juvenile July 1996[15]. One-coloured Becard: three individuals together May 2006. White-tailed Jay *Cyanocorax mystacalis*: immatures (lacking white spot behind eyes) begging July 1996[15], May 2004, July 2005 and July 2009. Red-eyed Vireo: juveniles in all years in April–May; drab-coloured juvenile April 2004; tail-less juvenile March 2009. Plumbeous-backed Thrush: immature July 2005 might have come from elsewhere, as this month witnesses most dispersal. Ecuadorian Thrush: adults carrying food April 2004 and 2006; tail-less juvenile April 2007; juveniles May 2007 and April 2008. Fasciated Wren *Campylorhynchus fasciatus*: nesting July 1996[15]; evidence for multiple broods earlier (entering nest). Superciliated Wren: carrying nest material July 1996[15] and April 2004. Speckle-breasted Wren *Pheugopedius sclateri*: tail-less juvenile April 2004; adult carrying food May 2005; immatures July 2005 and May 2007; adult feeding juvenile September

Table 2. Commonest species at Cerro Blanco. Column 1: sum of all individuals recorded in six years. Column 2: mean no. of individuals per transect visit. Column 3: remarks: F = flocking behaviour, i = in closed forest, a = absent three months at end of dry season.

	sum of individuals	mean per excursion	remarks
Yellow-rumped Cacique *Cacicus cela*	1086	15.5	F,a
Red-lored Amazon *Amazona autumnalis*	597	14.2	F,a
Tropical Gnatcatcher *Polioptila plumbea*	584	8.3	i
Grey-cheeked Parakeet *Brotogeris pyrrhoptera*	573	8.2	F
Ecuadorian Thrush *Turdus maculirostris*	498	7.1	i
Southern Beardless Tyrannulet *Camptostoma obsoletum*	424	6.1	i
Black Vulture *Cathartes aura*	420	6.0	F
Grey-and-gold Warbler *Basileuterus fraseri*	415	5.9	i
Red-eyed Vireo *Vireo olivaceus*	386	5.5	i,a
Speckle-breasted Wren *Pheugopedius sclateri*	384	5.5	i
White-tipped Dove *Leptotila verreauxi*	348	5.0	i
Tropical Parula *Parula pitiayumi*	334	4.8	i
Amazilia Hummingbird *Amazilia amazilia*	317	4.5	

Table 3. Frequency of abundance categories (C, common; F, fairly common; U, uncommon; R, rare) over three different assessments of the birds of Cerro Blanco (Parker & Carr[14] Pople *et al.*[15], this paper).

category	Parker		Pople *et al.*		Mischler	
	no.	%	no.	%	no.	%
C	29	20.7	8.5	5.3	22	13.1
F	44	31.4	21	14.3	33	19.7
U	52	37.2	53	36.1	58	34.5
R	15	10.7	65	44.3	55	32.7
sum	140	100	147	100	168	100

Table 4. Differences in assessment of abundance categories revealed by direct comparison between sources used to prepare Table 3.

category	Parker vs. Pople	Parker vs. Mischler	Pople vs. Mischler
higher	68	57	12
lesser	5	14	63
equal	43	69	72
R	15	10.7	65
sum	140	100	147

2008. House Wren: fledged juvenile March 2007. Tropical Gnatcatcher: begging juvenile May 2005; family May 2006; immature June 2008. Tropical Parula *Parula pitiayumi*: adult constructing nest January 2004; juvenile April 2008; family party April 2009. Bananaquit *Coereba flaveola*: begging juveniles May 2004 and July 2007; building nest August 2005. Guira Tanager: begging juvenile November 2008. Thick-billed Euphonia *Euphonia laniirostris*: female nest building December 2003; subadult March 2007. Blue-grey Tanager *Thraupis episcopus*: pale immature June 2006. White-shouldered Tanager *Tachyphonus luctuosus*: male feeding female May 2007; begging juvenile July 2007. Crimson-breasted Finch: juvenile (?) September 2007. Variable Seedeater *Sporophila corvina*: juvenile May 2007. Saffron Finch *Sicalis flaveola*: juvenile January 2004; carrying nest material May 2005; immature June 2008. Black-capped Sparrow *Arremon abeillei*: juveniles May 2004 and 2005. Yellow-rumped Cacique *Cacicus cela*: colonies occupied each February; fledged juvenile April 2004. Giant Cowbird *Molothrus oryzivorus*: juvenile begging from cacique May 2005. Scrub Blackbird *Dives warszewiczi*: nest building February 2004. Yellow-tailed Oriole *Icterus mesomelas*: moulting juvenile July 1996[15]; juvenile May 2008. Peruvian Meadowlark *Sturnella bellicosa*: juvenile May 2007 in ridgetop grassland.

Saffron Siskin *Carduelis siemiradzkii*.—Reports of this Vulnerable species are scarce but at Cerro Blanco comparatively large flocks have been seen, including 30 in July 1996[15] and 40 in December 2003. In May 2005 and 2007, I glimpsed breeding activity in forest at Canoa gorge, when a female was seen carrying kapok 'wool' accompanied by the male. In September 2003, I saw a flock of 20 with juveniles at nearby Puerto Hondo, feeding on berries in the adjacent mangroves. The diet of Saffron Siskin is less orthodox than expected; in addition to grass seeds, berries are taken during the post-breeding season.

Discussion

Endemism.—The presence of 52 endemic and near-endemic species at Cerro Blanco highlights the forest's importance. Another endemic, Necklaced Spinetail *Synallaxis stictothorax*, perhaps breeds in newly purchased areas to the west. The large number of near-endemics (7%) has been underestimated in previous assessments of the reserve's avifauna. Some (e.g., Black-and-white Tanager) breed only in the Tumbesian region and most are only slightly more widely distributed. Seven near-endemics are additionally present only in the Marañón Valley (EBA 048[19]).

Biodiversity.—Since Berg's[4] list, the avifauna has increased c.12% in species numbers, the newcomers often being stragglers, although Blue-headed Parrot *Pionus menstruus* may be resident virtually year-round. The new species were all recorded within the former limits of the reserve.

It is interesting to compare Cerro Blanco with similar reserves for species richness and biogeographical influence (Table 1). Comparing complete lists is inconclusive, but removing all waterbirds enables some conclusions. Irrespective of area size, species numbers are quite even, with large reserves supporting only slightly greater species richness (Table 1). As the Machalilla National Park checklist is rather old and incomplete, true species richness might closely match that of Loma Alta Communal Reserve, just 24 km to the south and much better studied[1–3]. Endemic species richness is slightly greater in reserves with ample dry forest. The many species present in these reserves but absent from Cerro Blanco is explained by the fact that these reserves support moist forest at higher elevations (Table 1). Although Cerro Blanco is closer to the Andes than Loma Alta and Machalilla, the absence of moist habitats atop cordilleras precludes the presence of Andean species found on coastal ridges further west and north. There is some evidence that a handful of Andean species visit the coastal cordillera in their non-breeding seasons (e.g., Fawn-breasted Tanager *Pipraeidea melanonota* has been recorded in Machalilla National Park, on 23 August 2006, and at Loma Alta, on 20 December 2008; pers. obs.). However, recent discoveries[18] reveal that, despite the absence of a 'moist' high zone at Cerro Blanco,

some species will use the highest parts of the ridge, e.g., Grey-headed Kite *Leptodon cayanensis*, Pale-mandibled Araçari *Pteroglossus erythropygius*, Sooty-headed *Phyllomyias griseiceps* and Rufous-winged Tyrannulets *Mecocerculus calopterus*, and Masked Tityra *Tityra semifasciata*.

Abundance.—To some extent, the two previous abundance assessments can be compared with my data (Table 3). Whereas Parker & Carr[14] concentrated on the wet season and the larger Pople *et al*.[15] team assessed the dry season of 1996, I attempted to assess year-round abundance. From Pople *et al*.[15], I could assign an abundance category for each species and, for comparison, I omitted my assessments for species unrecorded by Parker & Carr or Pople *et al*. (four uncommon, 28 rare, ten stragglers). Therefore, in the complete list the percentage of rare species is much higher than in Table 3 (see Results). Category frequencies are given in Table 3. Based on Tables 3–4, it is clear that Parker & Carr[14] estimated higher abundances, while rare species clearly were under-represented due to the brief nature of their field work. In contrast, Pople *et al*.[15] were apparently more cautious in estimating abundance (Table 4), although they surveyed nocturnal birds more rigorously. Differences between authors (Table 4) in assigning categories might equally reflect arbitrary factors as differences in approach. Furthermore, by season, bird numbers can fluctuate considerably, meaning that previous data are better taken to assess the relevant month rather than a wider period. Six years of evenly spaced surveys are more informative of general abundance than detailed observations over a very limited period.

Seasonality.—Note that (a) some species are secretive when breeding and therefore not easily detected, (b) surveys of other, open habitats at Cerro Blanco might yield different data, and (c) occurrence in other months is possible. However, it is worthwhile to document monthly presence, as virtually nothing is known of local movements or migration of landbirds in the region. From the line transects some fluctuation patterns at Cerro Blanco emerge. Wet-season breeders require lush vegetation to breed, and most of these species decrease considerably in numbers in the dry season due to dispersal. Following the wet season, raptors appear in greater numbers. In the dry season, I hypothesise that birds from the surrounding dry scrub, which becomes very inhospitable, augment the local population. The presence at this time of typical dry-scrub breeders (which nest in January–April) support this hypothesis, as they are almost completely absent in the wet season. Floaters and dispersers reach Cerro Blanco for a short period, e.g., Plumbeous-backed Thrush and Snowy-throated Kingbird *Tyrannus niveigularis*. Total numbers of individuals and species do not decline in the dry season, as there is high species turnover. Not unexpectedly, the largest number of species was recorded in October–November and, exceptionally, in a dry January (pre-breeding influx, max. 70 species).

Breeding.—Months in bold in the Appendix often indicate the post-breeding period. For thrushes, euphonias and hummingbirds, increased presence may reflect the heightened availability of fruit or nectar. For small Tyrannidae, their greater presence post-breeding lacks explanation, but in most cases the increase in numbers is explained by the presence of young birds that have moulted to adult plumage. Comparing main breeding periods with nearby areas, it is clear that on the more arid Santa Elena Peninsula breeding strictly depends on rains[9–11]. In a recent two-year study at Machalilla National Park[8], birds bred only in February–March, with two species, Collared Antshrike and Speckle-breasted Wren, extending to April. My data for these two are similar, but I found many more species (c.50%) to be dry-season breeders. Reasons might include: (1) Cerro Blanco has much denser and taller forest with some evergreen trees, providing greater shelter for breeding, whereas the arid coastal lowlands become more barren after the wet season; (2) woodpeckers breed well after the wet season, probably because wood-boring grubs are still maturing; (3) other studies might have overlooked multiple breeding seasons due to brief surveys[8]; and (4) there appears to be a bias towards later breeding in aerial hunters and insectivores. In all, much needs to be learnt concerning the precise breeding period/s of Tumbesian species.

Conservation.—Cerro Blanco harbours ten threatened Tumbesian endemics as apparent breeders, making the reserve of key importance for bird conservation in the entire region. For two of these species, there is no recent breeding evidence: Little Woodstar *Chaetocercus bombus* and Slaty Becard *Pachyramphus spodiurus*. The Near Threatened Black-and-white Tanager was not recorded during the study period, but might occur in El Niño years. Most data for conservation action have now been assembled, with a field guide[18], annotated checklist and a programme to protect the highly threatened Great Green Macaw *Ara ambiguus guayaquilensis*[7].

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Appendix. Complete checklist of the birds of Cerro Blanco

Column 1: Tumbesian endemics (= EBA 045[19]). E: Tumbesian endemic = confined to south-west Ecuador and north-west Peru; NE: Near-endemic = restricted to lowland Pacific slope of Ecuador and north-west Peru, with eight also recorded in Marañón EBA, and two to south-west Colombia.

Column 2: English name. [a] = recent (2003–08) additions to the checklist; [b] = unrecorded for >19 years.

Column 3: scientific name with threat category[5]. NT = Near-threatened, **VU** = Vulnerable, **EN** = Endangered.

Column 4: Abundance category (where two given, the first has greater probability). A: abundant = seen daily in large numbers (not used if only seasonal); C: common = seen daily in numbers in a variety of habitats; F: fairly common = seen regularly, but not always daily, < 10 / day; U: uncommon = occasionally seen, present regularly in area; R: rare = very rarely seen and always in singles; S: straggler = accidental, only once or twice.

Column 5: breeding status. **B** = breeds in wet season (I–IV); B = breeds at other times (mainly post wet season); (B) = presumed breeding, no proof; (blank) = breeding status unknown; **-** = does not breed.

Column 6: seasonality. I = January, XII = December; I–IV = present in breeding season; y = year-round; (y) = year-round, but was sometimes absent in some months of an individual year; M = Nearctic migrant, occasionally present during boreal winter; **bold** indicates presence in larger numbers at a given period or (rarely) presence more obvious due to vocalisations.

Column 7: max. nos. Figures in **bold** represent max. no. of individuals seen together, whilst figures in roman mark the sum of individuals recorded during transects.

Ende-mism	English name	Scientific name	Abun-dance	Breed-ing	Seasonality	Max. no.
E	Pale-browed Tinamou	*Crypturellus transfasciatus*[NT]	F	**B**	y; I–IV	9
	Magnificent Frigatebird	*Fregata magnificens*	R/U	-	IV,VII,IX	
	Neotropic Cormorant	*Phalacrocorax brasilianus*	R	-	II,IV,V,VII,IX	**38**
	Brown Pelican	*Pelecanus thagus*	R	-		**8**
	Fulvous Whistling Duck[b]	*Dendrocygna bicolor*	R	-		
	Black-bellied Whistling Duck	*Dendrocygna autumnalis*	R	-	II,VII–IX	**92**
	Great Egret	*Casmerodius albus*	R	-		
	Cattle Egret	*Bubulcus ibis*	R	-		
	Snowy Egret	*Egretta thula*	R	-		
	Striated Heron	*Butorides striatus*	R	-		
	Rufescent Tiger Heron[a]	*Tigrisoma lineatum*	S	-	III	
	King Vulture	*Sarcoramphus papa*	U		(y); **VII**	**6**
	Black Vulture	*Coragyps atratus*	C	(**B**)	y	**187**
	Turkey Vulture	*Cathartes aura*	C/A	(**B**)	y	**64**
	Osprey	*Pandion haliaetus*	R	-	X	**2**
	Grey-headed Kite[a]	*Leptodon cayanensis*	R	-	VII	
	Hook-billed Kite	*Chondrohierax uncinatus*	R/U	**B**	(y); III–V	
	Swallow-tailed Kite	*Elanoides forficatus*	U	-	XI–V–VII	**10**
	Pearl Kite	*Elanus leucurus*	R	-	V,VII,XII	
	White-tailed Kite[a]	*Gampsonyx swainsoni*	R		VIII,XII	
	Snail Kite	*Rostramus sociabilis*	R	-		
	Double-toothed Kite	*Harpagus bidentatus*	R	-	VII/VIII	
	Plumbeous Kite	*Ictinia plumbea*	R/U	(**B**/B)	I–VI,XI	
	Bicoloured Hawk	*Accipiter bicolor*	R	(**B**)	VII,VIII,X,XII	**3**
	Crane Hawk	*Geranospiza caerulescens*	U	**B**	y	3
E	**Grey-backed Hawk**	***Leucopternis occidentalis***[EN]	U	**B**	y; X–XII	4
	Savanna Hawk	*Buteogallus meridionalis*	R/U		(y)	
	Common Black Hawk	*Buteogallus anthracinus*	R	-		
	Great Black Hawk	*Buteogallus urubitinga*	R			
	Harris's Hawk	*Parabuteo unicinctus*	U		(y)	
	Grey Hawk	*Buteo nitidus*	F/U	**B**	y	**6**
	Roadside Hawk	*Buteo magnirostris*	U/R		VII,IX,XI	
	Short-tailed Hawk	*Buteo brachyurus*	R/U	-	(y); I,IV–VI	**4**

Ende-mism	English name	Scientific name	Abun-dance	Breed-ing	Seasonality	Max. no.
	Zone-tailed Hawk	*Buteo albonotatus*	R		V,VII,IX–XI	
	Variable Hawk	*Buteo polyosoma*	R	-	V	
	Black Hawk-Eagle	*Spizaetus tyrannus*	R		VIII	
	Red-throated Caracara	*Daptrius americanus*	U	**B**	(y)	**7**
	Northern Crested Caracara	*Caracara cheriway*	U	(B)	(y)	
	Barred Forest Falcon	*Micrastur ruficollis*	R	(**B**)	III,V,VII,XII	
	Collared Forest Falcon	*Micrastur semitorquatus*	F/U	**B**	(y); **IV**,**VIII**	**6**
	Laughing Falcon	*Herpetotheres cachinnans*	U/F	(B)	(y); IV–VIII	
	American Kestrel	*Falco sparverius*	R	-		
	Bat Falcon	*Falco rufigularis*	U	(B)	(y)	
	Peregrine Falcon	*Falco peregrinus*	R	-	M;II	
E	**Rufous-headed Chachalaca**	***Ortalis erythroptera***[VU]	U/F	(**B**/B)	(y)	12
	Crested Guan[b]	*Penelope purpurascens*	R	-		
	Colombian Crake[a]	*Neocrex colombianus*	S	-	III	
	Rufous-necked Wood Rail	*Aramides axillaris*	R	-		
	Spotted Sandpiper	*Actitis macularius*	R	-	M	
	Killdeer	*Charadrius vociferus*	R	-		
	Scaled Pigeon[a]	*Patagioenas speciosa*	R	-		
	Pale-vented Pigeon	*Patagioenas cayennensis*	F	**B**	y; XI–V	16
	West Peruvian Dove[b]	*Zenaida meloda*	R	-		
E	Ecuadorian Ground Dove	*Columbina buckleyi*	C	**B**/B	y	**120**
	Croaking Ground Dove	*Columbina cruziana*	F/U	**B**/B	(y)	
	Blue Ground Dove	*Claravis pretiosa*	U	(**B**/B)		4
	White-tipped Dove	*Leptotila verreauxi*	C	**B**	y	14
NE	Pallid Dove	*Leptotila pallida*	U	(**B**)	XI–I–IV,VII	
E	**Ochre-bellied Dove**	***Leptotila ochraceiventris***[VU]	R	(**B**)	XI–I–IV–VIII	**5**
	Great Green Macaw	***Ara ambiguus***[EN]	R	B	I,II,IV,VII–X	**12**
E	Red-masked Parakeet	*Aratinga erythrogenys*[NT]	U	(B)	V–XII	**40**
E	Pacific Parrotlet	*Forpus coelestis*	C	B	y, **VI,VIII,XI**	**12**
E	**Grey-cheeked Parakeet**	***Brotogeris pyrrhoptera***[EN]	C	B	y	**50**
	Bronze-winged Parrot	*Pionus chalcopterus*	U		(y); VII–VIII	**16**
	Blue-headed Parrot[a]	*Pionus menstruus*	R/U		X	5
	Red-lored Amazon	*Amazona autumnalis*	C	(B)	y; VI–VIII	**97**
	Black-billed Cuckoo[a]	*Coccyzus erythrophthalmus*	S	-	M	
	Grey-capped Cuckoo	*Coccyzus lansbergi*	R	(B)	III–V	3
	Squirrel Cuckoo	*Piaya cayana*	U/F	(B)	(y)	5
	Smooth-billed Ani	*Crotophaga ani*	U	(B)		
	Groove-billed Ani	*Crotophaga sulcirostris*	C	**B**	y	10
	Striped Cuckoo	*Tapera naevia*	R/U	-	VII,VIII,XI	
	Barn Owl	*Tyto alba*	U	(B)		**5**
NE	West Peruvian Screech Owl	*Otus roboratus*	U	(B)		**15**
	Pacific Pygmy Owl	*Glaucidium peruanum*	F	(B)	(y); VII–III	3
	Crested Owl	*Lophostrix cristata*	U/R			
	Spectacled Owl	*Pulsatrix perspicillata*	F/U	**B**	(y)	**10**
	Black-and-white Owl	*Strix nigrolineata*	U			**5**
	Mottled Owl	*Strix virgata*	U/R		V	
	Striped Owl[a]	*Asio clamator*	R		I,XI	
	Common Potoo	*Nyctibius griseus*	U/R	(B)	IV–VIII	
	Lesser Nighthawk	*Chordeiles acutipennis*	R	-		
	Pauraque	*Nyctidromus albicollis*	U	**B**	y; XI–IV–IX	**7**

Ende-mism	English name	Scientific name	Abun-dance	Breed-ing	Seasonality	Max. no.
NE	Anthony's Nightjar	*Caprimulgus anthonyi*	R			
	White-collared Swift	*Streptoprocne zonaris*	U/R	-	VII,X,XII	**749**
E	Tumbes Swift	*Chaetura (brachyura) ocypetes*	F	(B)	(y)	**65**
	Grey-rumped Swift	*Chaetura cinereiventris*	S	-		
	Lesser Swallow-tailed Swift	*Panyptila cayennensis*	R	-	III,VII,X–XII	**28**
E	Baron's Hermit	*Phaethornis (superciliosus) baroni*	F	**B**	(y)	
	Stripe-throated Hermit	*Phaethornis striigularis*	R			
	Black-throated Mango	*Anthracothorax (prevostii) nigricollis*	R/U	-	**VI**,X	
	Western Emerald	*Chlorostilbon melanorhynchus*	R	-	VII,IX	
	Violet-bellied Hummingbird	*Damophila julie*	U/R	-		
NE	Amazilia Hummingbird	*Amazilia amazilia*	C	**(B)**/B	y; VI–IX	14
	Rufous-tailed Hummingbird[b]	*Amazilia tzacatl*	R	-		
	Long-billed Starthroat	*Heliomaster longirostris*	U	-	IV–XI	3
E	Short-tailed Woodstar	*Myrmia micrura*	U/R	(B)	VI,IX–XI	3
NE	**Little Woodstar[b]**	***Acestrura bombus***[VU]	R			
E	Ecuadorian Trogon	*Trogon (melanurus) mesurus*	U/F	(**B**)/B	y; XI–III	7
	Northern Violaceous Trogon	*Trogon (violaceus) caligatus*	R	-	VII,VIII,X,XI	**4**
	Ringed Kingfisher	*Megaceryle torquata*	R	-	X	
	Green Kingfisher	*Chloroceryle americana*	R	-		
	American Pygmy Kingfisher[b]	*Chloroceryle aenea*	S	-		
	Blue-crowned Motmot	*Momotus momota*	U	**B**	(y)	
	White-necked Puffbird[b]	*Notharchus megarhynchus*	S	-		
E	Pale-mandibled Araçari[a]	*Pteroglossus erythropygius*	R	-	III,VII,IX	4
E	Ecuadorian Piculet	*Picumnus sclateri*	F	B	y; VII–X,I	7
	Golden-olive Woodpecker	*Piculus rubiginosus*	U/F	B	VI,VII,IX–I	3
	Lineated Woodpecker	*Dryocopus lineatus*	U	B	I,VI,VII,X	
	Black-cheeked Woodpecker	*Melanerpes pucherani*	R	-		
	Red-rumped Woodpecker	*Veniliornis kirkii*	U	B	VI–VIII–XI	4
E	Scarlet-backed Woodpecker	*Veniliornis callonotus*	F/C	B	y; VIII–XII	**12**
E	Guayaquil Woodpecker	*Campephilus gayaquilensis*[NT]	U	B	(y); VII–X	8
E	Pacific Hornero	*Furnarius (leucopus) cinnamomeus*	F	**B**	y	4
E	**Blackish-headed Spinetail**	***Synallaxis tithys***[EN]	R	(**B**)/B	V,VII,IX–XII–II	3
E	**Henna-hooded Foliage-gleaner**	***Hylocryptus erythrocephalus***[VU]	U/R	(B)	**VII,VIII–X,XI–II**	**5**
	Streaked Xenops	*Xenops rutilans*	U	B	y; VII–XI	5
	Tawny-throated Leaftosser[a]	*Sclerurus mexicanus*	S	-	II,III	
	Plain-brown Woodcreeper	*Dendrocincla fuliginosa*	U	-	I,III,V–VIII–XI	
	Wedge-billed Woodcreeper[a]	*Glyphorhynchus spirurus*	S	-	VIII	
	Olivaceous Woodcreeper	*Sittasomus griseicapillus*	F	**B**/B	y	6
	Streak-headed Woodcreeper	*Lepidocolaptes souleyetii*	C/F	B	y; VI–X	14
	Red-billed Scythebill	*Campylorhamphus trochilirostris*	U/R	(B)	(y)	3
	Great Antshrike	*Taraba major*	U	(**B**/B)	(y)	4
NE	Collared Antshrike	*Sakesphorus bernardi*	F	(**B**)/B	y; I–III,X	10
	Plain Antvireo	*Dysithamnus mentalis*	C/F	**B**	y; V–XI	14
	White-backed Fire-eye	*Pyriglena leuconota*	U	(**B**)	(y); **VI**	
E	Elegant Crescentchest	*Melanopareia elegans*	U	(B)	(y)	3
	Sooty-headed Tyrannulet[a]	*Phyllomyias griseiceps*	S	-	IX,X	
	Southern Beardless Tyrannulet	*Camptostoma obsoletum*	C	**B**	y	11
E	Tumbesian Tyrannulet	*Phaeomyias (murina) tumbezana*	R	-	VII,VIII,X,XI	
E	Pacific Elaenia	*Myiopagis subplacens*	F/U	(**B**/B)	y; **I,VII,X**	7
	Greenish Elaenia[a]	*Myiopagis viridicata*	R		I,II,V,VII,IX	

Ende-mism	English name	Scientific name	Abun-dance	Breed-ing	Seasonality	Max. no.
	Yellow-bellied Elaenia	*Elaenia flavogaster*	U/R	(B)	(y)	4
NE	Rufous-winged Tyrannulet[a]	*Mecocerculus calopterus*	S	-	VII	
	Tawny-crowned Pygmy Tyrant	*Euscarthmus melorhyphus*	F/C	(B)	y; VIII–I	9
	Ochre-bellied Flycatcher	*Mionectes oleagineus*	U/R		V–I	
	Slaty-capped Flycatcher	*Leptopogon superciliaris*	F/U	**B**	y; **VIII,X**	5
	Scale-crested Pygmy Tyrant	*Lophotriccus pileatus*	F	**B**/B	y; II–V,VIII	10
	Common Tody-Flycatcher	*Todirostrum cinereum*	U		(y)	4
	Yellow-olive Flycatcher	*Tolmomyias sulphurescens*	U	B	(y); **VII**	4
E	**Pacific Royal Flycatcher**	***Onychorhynchus occidentalis***[VU]	R	**B**	IV–VIII,XI	2
	Black-tailed Flycatcher	*Myiobius atricaudus*	R/U	-	I,V–XI	
	Bran-coloured Flycatcher	*Myiophobus fasciatus*	R	(**B**/B)	I,II,VI,VII,X	
E	Tumbes Pewee	*Contopus* (*cinereus*) *punensis*	U	(B)	(y);IV,VI–I	4
	Olive-sided Flycatcher[a]	*Contopus cooperi*	R	-	M;I	
NE	**Grey-breasted Flycatcher**	***Lathrotriccus griseipectus***[VU]	R	(**B**)	**I**,II,V,VII,VIII	
	Vermilion Flycatcher	*Pyrocephalus rubinus*	U	B	I,VI,VIII,XI	
	Short-tailed Field Tyrant	*Muscigralla brevicauda*	U/R	(B)		
	Masked Water Tyrant	*Fluvicola nengeta*	R	-		
	Dusky-capped Flycatcher	*Myiarchus tuberculifer*	R	-	I,II,VII–X	
NE	Sooty-crowned Flycatcher	*Myiarchus phaeocephalus*	F/U	**B**	y; I,VI–IX	8
	Boat-billed Flycatcher	*Megarynchus pitangua*	F	B	y; VII–X	5
	Social Flycatcher	*Myiozetetes similis*	F/U	B	**VII–IX–XI**	4
	Rusty-margined Flycatcher	*Myiozetetes cayanensis*	R	-		3
	Streaked Flycatcher	*Myiodynastes maculatus*	F/U	(**B**)	y; I–VI	9
E	Baird's Flycatcher	*Myiodynastes bairdii*	R	(B)	VII–IX	
	Tropical Kingbird	*Tyrannus melancholicus*	U	B	(y)	
E	Snowy-throated Kingbird	*Tyrannus niveigularis*	R	(B)	I,IV–VII,IX–XI	
	Fork-tailed Flycatcher[b]	*Tyrannus savana*	S	-	M	
E	**Slaty Becard**	***Pachyramphus spodiurus***[EN]	R		III,VI	
	Black-and-white Becard	*Pachyramphus albogriseus*	U/R	**(B)**	III–VII,X	
	One-coloured Becard	*Pachyramphus homochrous*	U	**B**	(y); I–III–V–X	3
	Masked Tityra[a]	*Tityra semifasciata*	S	-	VIII	
E	White-tailed Jay	*Cyanocorax mystacalis*	U/F	B	y; VI–VIII,XII	6
	Rufous-browed Peppershrike	*Cyclarhis gujanensis*	F	B	y; VII–XII	8
	Red-eyed Vireo	*Vireo olivaceus*	C	**B**	(M)(y); I–VII	25
	Lesser Greenlet	*Hylophilus* (*decurtatus*) *minor*	U/R	-	I,IV–VI,IX–XI	4
	Swainson's Thrush	*Catharus ustulatus*	U/R	-	M	
E	Plumbeous-backed Thrush	*Turdus reevei*	U	-	I,VI,VII,VIII–XII	3
E	Ecuadorian Thrush	*Turdus maculirostris*	C	**B**	y	26
NE	Long-tailed Mockingbird	*Mimus longicaudatus*	R	-		
	Grey-breasted Martin	*Progne chalybea*	C/F	-	y; **IX,X**	30
	Blue-and-white Swallow	*Notiochelidon cyanoleuca*	R	-		
	Southern Rough-winged Swallow	*Stelgidopteryx ruficollis*	U	-	X,XI	
E	Fasciated Wren	*Campylorhynchus fasciatus*	C/F	B	y; **IX,X,I**	15
E	Superciliated Wren	*Cantorchilus superciliaris*	U/F	B	y; **VI**	5
NE	Speckle-breasted Wren	*Pheugopedius sclateri*	C	**B**/B	y; V–X	14
	House Wren	*Troglodytes aedon*	F	**B**/(B)	y	6
	Long-billed Gnatwren	*Ramphocaenus melanurus*	U	(**B**/B)	y; I,IV–VII,XI	5
	Tropical Gnatcatcher	*Polioptila plumbea*	C	**B**/(B)	y; V–I	15
	Tropical Parula	*Parula pitiayumi*	C/F	**B**	y; I–VIII	13
	American Redstart	*Setophaga ruticilla*	R	-	M	

Ende-mism	English name	Scientific name	Abun-dance	Breed-ing	Seasonality	Max. no.
	Northern Waterthrush	*Seiurus noveboracensis*	R	-	M	
	Black-lored Yellowthroat	*Geothlypis (aequinoctialis) auricularis*	R	(B)	I,III,**IV**,VII,X	
E	Grey-and-gold Warbler	*Basileuterus fraseri*	C	**B**	y	17
	Bananaquit	*Coereba flaveola*	F/U	B	y; **I,VIII**	16
	Guira Tanager	*Hemithraupis guira*	R	(B)	I,V–IX	4
	Thick-billed Euphonia	*Euphonia laniirostris*	C	**B**/B	y; VI,VIII,X–I	17
NE	Orange-crowned Euphonia	*Euphonia saturata*	R	-	VI,VIII,X	
	Blue-grey Tanager	*Thraupis episcopus*	F/C	**B**/B	y	8
	Palm Tanager[a]	*Thraupis palmarum*	R	-	I,X–XII	
	Lemon-rumped Tanager	*Ramphocelus icteronotus*	R	-		
	Highland Hepatic Tanager	*Piranga flava*	R	-	M	
	Summer Tanager	*Piranga rubra*	R	-	M	
	White-shouldered Tanager	*Tachyphonus luctuosus*	U	B	(y); VI–VIII	6
NE	Black-and-white Tanager	*Conothraupis speculigera*[NT]	R	**(B)**	(M)	
	Buff-throated Saltator	*Saltator maximus*	F/U	(B)	(y); **I,IX,X**	4
	Streaked Saltator	*Saltator striatipectus*	U	B	y	8
	Southern Yellow Grosbeak	*Pheucticus chrysogaster*	U/F	**B**	(y)	3
E	Crimson-breasted Finch	*Rhodospingus cruentus*	F	B	y; VIII–I	24
	Blue-black Grassquit	*Volatinia jacarina*	U	B	(y)	
	Lesser Seed Finch[a]	*Oryzoborus angolensis*	S	-	VII	
	Variable Seedeater	*Sporophila corvina*	F	(**B**)/B	(y)	**90**
NE	Parrot-billed Seedeater	*Sporophila peruviana*	U	(B)	I,VI,X	30
	Chestnut-throated Seedeater	*Sporophila telasco*	U/R			
	Saffron Finch	*Sicalis flaveola*	R/U	**B**	I,IV–VII,X	10
NE	Black-capped Sparrow	*Arremon abeillei*	F	**B**	y; **X**	8
	Black-striped Sparrow[a]	*Arremonops conirostris*	R			
	Yellow-rumped Cacique	*Cacicus cela*	C-U	**B**	y; I–VI	**160**
	Yellow-billed Cacique	*Amblycercus holosericeus*	R		VI–I	
	Shiny Cowbird	*Molothrus bonariensis*	U	(**B**/B)	(y); **III**	**180**
	Giant Cowbird	*Molothrus oryzivorus*	R	**B**	IV	
NE	Scrub Blackbird	*Dives warszewiczi*	C	**B**/B	y	**33**
E	White-edged Oriole	*Icterus graceannae*	R			
	Yellow-tailed Oriole	*Icterus mesomelas*	F/U	**B**/B	y	6
	Peruvian Meadowlark	*Sturnella bellicosa*	R/U	**B**	(y)	25
E	**Saffron Siskin**	***Carduelis siemiradzkii***[VU]	U	(B)	(y); V,VII–XII	**40**