Conservation value of a *Garua* forest in the dry season: a bird survey in Reserva Ecologica de Loma Alta, Ecuador

C. Dustin Becker and Bernabé López Lanús

La recientemente creada Reserva Loma Alta de 750 has de superficie protege un relicto bosque húmedo premontano. La misma contituye un pilar fundamental para el sostenimiento de este tipo de ambiente cada vez más alterado y en peligro de desaparición, en especial al encontrarse a 25 km al sur del Parque Nacional Machalilla constituyendo un eslabón más en el corredor biológico que sigue de norte a sur la cordillera Chongón-Colonche con este tipo de ambiente. La reserva se encuentra amenazada de un eminente aislamiento ecológico debido a la continua actividad antrópica desconcientizada y destructiva en sus periferias como consecuencia de las invasiones de tierra para cultivo, la intromisión de cazadores y/o la presencia de madereros. Recientes relevamientos ornitológicos demuestran la necesidad de su estricta conservación especialmente dado a la existencia de especies de aves consideradas en peligro de extinción que no han sido registradas anteriormente y al considerable número de especies existentes. Este artículo trata sobre la presencia de esas aves amenazadas, aquellas nuevas en su distribución representando habitats de la nuboselva andina o del Chocó y una lista completa del inventario ornitológico efectuado.

Introduction

On 24 August 1996, the rural community of Loma Alta, Guayas, Ecuador established an ecological reserve in the Colonche Mountains[13]. For the local campesinos, the impetus for protecting nearly 1000 ha of moist premontane forest was twofold: to defend their land and to conserve water[1,3]. In 1937, the Law of the Comunas gave the villagers of Loma Alta legislation which has eventually led to the establishment and guarding of the new Reserva Ecológica de Loma Alta.

With the reserve established, the community and People Allied for Nature (PAN) began exploring the biological diversity of the remaining forest. For several reasons, birds were selected to monitor ecosystem health in the Loma Alta reserve. Birds are highly sensitive and responsive to changes in resource availability and habitat quality, and so useful for long-term monitoring of environmental impact from land-use decisions in and around a protected forest[8]. Additionally, birds are relatively easy to identify, in comparison with other taxa, well documented in the literature[16] and good museum collections of species occuring in the region exist. Lists of bird species of conservation concern in the Tumbesian region have been prepared[4,5] and other forest remnants in the Cordillera de la Costa and adjacent areas of south-west Ecuador (e.g. Colonche Mts.) have been surveyed by Conservation International's RAP team[14] and other workers, providing a base for comparison.

The lower reaches of the moist forests of Cerro La Torre and the riparian forests of the Rio California, two distinctive ecological zones in Loma Alta's hills, were surveyed for birds during July–August of the early 1990s[9]. Visibility during these months is generally poor because of coastal fog. While rapid surveys of birds have been made in the Colonche hills[14], no bird surveys have been made in Loma Alta during the winter months (November–January) when visibility is ideal and drought may cause local movement of birds to the highlands. To fill this gap in the conservation knowledge of the area, ornithologists and Earthwatch volunteers surveyed birds in the new reserve.

Methods

Study site

The Reserva Ecológica de Loma Alta (RELA) is in the northern third of the Comuna of Loma Alta, 17 km inland from the Pacific Ocean, due west of Manglaralto. In sharp contrast to the semi-desert conditions of the lowlands, the Colonche Hills contain relict patches of forest classified as premontane moist[9]. At altitudes above 400 m this premontane moist forest contains more than 70 tree species and a great diversity of epiphytic orchids and bromeliads. Becker & Elao[2] call this low elevation cloud forest a garúa forest to denote the positive feedback loop between the forest vegetation and the formation of tropical mists (garúa). Protection of such garúa forests are important for water supply in the lowlands[1].

Mist-netting and surveys

Two teams of Earthwatch volunteers from Europe and North America assisted ornithologists from Argentina, USA and Ecuador with mist-netting and surveying of birds in the new garúa forest reserve. We mist-netted on 14 days during December 1996. Effort to sample the understory bird community was rotated among four locations in the forest by moving a set of ten 12 m x 2.6 m, 36 mm mesh mist-nets from site-to-site. Nets were spaced 25–50 m apart along little-used foot- and wildlife trails. With the exception of the fourth site, nets were

operated for three consecutive mornings, closed for one week, and then operated again for three mornings. Mist-nets were operated from 06h30–12h00 and checked every 30 minutes. Birds were removed from the nets, placed in cloth bags and brought to a banding station where they were identified, photographed, banded and measured using standard methods[15].

Each afternoon and on 10 mornings, small teams hiked trails within a 5 km radius of the research cabin (01°49'S 80°36'W) recording birds by species, location in the canopy and activity at time of observation. Birds observed during hikes between the field site and the village of El Suspiro were also recorded. All identifications were made by the authors with the exception of three made by experienced volunteers.

Analysis

An abundance category was given to each species recorded in the study area (above 400 m a.s.l) based on the frequency of capture in nets and sight records. Using lists of species of concern for the Tumbesian region[4,5], a preliminary assessment of the avifaunal conservation value of Loma Alta's new reserve during the driest month of the year is made. Taxonomic order in Appendix 1 follows Stotz *et al.*[17].

Results

During 204 person-hours of birdwatching and 29,040 mist-net m^2 hours between 10 December 1996 and 2 January 1997, 198 different species were recorded. Of these, 161 were in the premontane moist forest of the Reserva Ecológica de Loma Alta above 400 m, while the remaining 37 were observed in lowlands and transitional forests during mule treks to and from the reserve (Appendix 1). Mist-netting in the reserve resulted in 536 captures of birds: 465 new individuals of 54 different species and 71 recaptures (Appendix 1).

Seven species found in the reserve are currently listed by IUCN as threatened and five are listed as near-threatened[5] as follows:

Fasciated Tiger Heron *Tigrisoma fasciatum*
(near-threatened)
One bird was seen at a small freshwater pool along southern riparian boundary of the new reserve (250 m)

Grey-backed Hawk *Leucopternis occidentalis*
(endangered)
Pairs were seen daily soaring over ravines or resting in trees, usually adjacent to ravines.
All sightings were above 400 m and were associated with moist forest areas. Vocalizations, especially a high-pitched *KEEEoooowww* cry with the first half louder than the second, were typical during soaring.

Rufous-headed Chachalaca *Ortalis erythroptera* **(vulnerable)**
While heard frequently from the research cabin, they were not seen. Calls came from ravine bottoms above 300 m in transitional and premontane moist forest.

Ochre-bellied Dove *Leptotila ochraceiventris*
(vulnerable)
A single bird heard repeatedly while hiking through dry tropical forest at c. 250 m.

Red-masked Parakeet *Aratinga erythrogenys* **(near-threatened)**
Flocks of up to 30 were seen on six occasions during the study. They were found roosting in trees (Lauraceae) currently being cut by ranchers invading the highlands. All sightings were above 500 m.

Grey-cheeked Parakeet *Brotogeris pyrrhopterus* **(near-threatened)**
A single flock of approximately ten birds was heard and seen distantly flying over degraded pasture at 600 m.

Little Woodstar *Acestrura bombus* **and Esmeraldas Woodstar** *Acestrura berlepschi* **(endangered)**
Woodstars were observed in large numbers (100s of birds) taking advantage of abundant nectar resources provided by flowering *Psychotria* shrubs. Identification was difficult as few birds were males in breeding plumage. Two female *Acestrura* were netted, but standard measurements (Table 1) and field marks did not lead to conclusive identification of the second bird, possibly *Acestrura berlepschi*. While the first, *Acestrura bombus* had a cinnamon-coloured superciliary and was completely tawny-cinnamon on chest and belly, the second had a white superciliary and belly with pale buffy feathers on its flanks and throat. All sightings were above 500 m on the windward (moist) side of the hills.

Grey-breasted Flycatcher *Latrhotriccus griseipectus* **(vulnerable)**
All sightings and netted birds were above 400 m in premontane moist forest. Fairly common, especially by voice once the song was known. Observed in the understory to mid-canopy often sitting stationary, once for over 10 minutes.

Slaty Becard *Pachyramphus spodiurus*
(near-threatened)

Seen several times in the mid-canopy (c.10 m.) of premontane forest above 400 m.

Ochraceous Attila *Attila torridus* **(vulnerable)**
A pair observed in a vine tangle in premontane moist forest at 625 m. When foraging or perching separately, they called to each other like trogons.

Scaled Fruiteater *Ampelioides tschudii*
(near-threatened)
Four sightings involved at least two individuals, a male and a female. The birds were observed feeding on fruits near the research cabin (575m). One was mist-netted on the ridge top (750 m).

During the December survey, 18 Tumbesian endemic species were found in the Reserva Ecológica de Loma Alta (Appendix 1). Eight were species of concern. Of the others, Grey-and-gold Warbler *Basileutrus fraseri* and Pacific Parrotlet *Forpus coelestis* were the most common, while the other eight species were seen only once or twice.

Thirteen bird species found in December were new to the comprehensive list of birds for the Chongon-Colonche Hills[10]. As indicated in Appendix 1, these were Fasciated Tiger-Heron, Andean Emerald *Amazilia franciae*, Brown Violet-ear *Colibri delphinae*, White-necked Jacobin *Florisuga mellivora*, Tawny-throated Leaftosser *Sclerulus mexicanus*, Russet Antshrike *Thamisthes anabatinus*, Scaled Fruiteater, Streak-necked Flycatcher *Mionectes striatacolis*, Song Wren *Cyphorhinus phaeocephalus*, White-throated Thrush *Turdis assimilis*, Pale-vented Thrush *Turdus obsoletus*, White-lined Tanager *Tachyphonus rufus*, and Yellow-throated Bush Tanager *Chlorospingus flavigularis*. Many of these new species are more typically associated with the Choco and South Central Andean Endemic Bird Areas (EBAs)[4].

Psychotria sp. flowers attracted nectar-feeding birds to the ridges and western slopes of La Torre mountain. Hundreds of hummingbirds of 17 different species displayed various foraging and nectar defense strategies. Sub-adult Green-crowned Brilliants *Heliodoxa jacula* called from perches in the forest. They had buffy-orange malar and chin patches and were dark grey below heavily spotted with green, not a precise match with descriptions in field guides, evoking the temporary hypothesis that we had found a new species. Upon viewing photos, experts on hummingbirds assured us that they were immature *H. jacula*.

Northern Waterthrush *Seiurus noveboracensis* and Swainson's Thrush *Catharus ustulatus* also use the garúa forest.

Discussion

The forests of western Ecuador are important for conservation[12] because they contain many endemic species[7] and are rapidly being cleared for farming and ranching[6]. Loma Alta's garúa forest reserve provides refuge for 12 birds of critical concern[5] (seven threatened and five near-threatened) giving it international conservation value, in addition to its local importance as a water resource for villages in the lowlands[1]. In Birdlife International's recent analysis[8], only seven sites in Ecuador (most much larger than RELA) and 30 in Central and South America were found to protect seven or more threatened bird species.

Populations in small reserves are vulnerable to extinction when isolated[11]. Loma Alta's reserve is small, but it is relatively close to other patches of moist forest in the Colonche Hills. When adjacent to larger reserves, small reserves may help maintain populations of mobile species. Machalilla National Park is only 25 km north of Loma Alta, and is currently one of two internationally recognized protected areas for birds endemic to the Tumbesian region of southern Ecuador and north-west Peru[15]. While small forest patches and reserves have been found to be sinks rather than sources for less mobile animals[11], they appear, in this case, to play a role in sustaining regional diversity by providing seasonal food resources to mobile guilds of pollinators such as hummingbirds.

Regional and local migrations of birds are poorly described in the Neotropics[17]. Birds are responsive to changes in resource availability and habitat quality[8] so local migrations to moist forest would be expected during dry seasons. There were significant numbers of restricted-range dry forest species in RELA's moist forest suggesting that some of the dry forest endemics may move up to the highland moist forests during droughts and dry seasons. Further mist-netting and surveys in May and August (after the rains and during the mist season) should reveal which species use the garúa forest during the dry season.

The Chocó and Andean species found in the reserve may either migrate to the moist highland forests or represent resident populations. Since many of these species are absent from lists made during July and August[10], and CDB did not record them during ecological studies conducted in July and August of 1995 and 1996 they are probably migrants. Cold conditions in the Andean highlands during December–January, with abundant rain and hail, and in consequent relatively low quantities of flowers,could encourage departures of birds from the highlands. Further study is needed to verify this theory. Flowering *Psychotria* in the garúa forest ecosystem attracts many hummingbirds, a species guild known to be relatively nomadic and capable of regional migration[17].

Rural communities could augment the security of birds and other species in the Tumbesian region by establishing forest preserves within the nationally declared Bosque Protector Chongon-Colonche (protective forest), a strategy that would protect both their local water resources and fauna and flora[1]. Currently the Colonche hill forests are severely threatened by clearing for agriculture and ranching. We encourage other communities to follow the example set by the Comuna of Loma Alta and hope that international conservation organizations and government agencies will actively support forest preservation by villagers and local conservation groups. We expect that the endemic and threatened species at RELA will attract birdwatchers and naturalists to the eco-tourism program recently established by PAN and several families in Loma Alta.

Acknowledgements

We thank the Center for Field Research and Earthwatch for supporting and funding the project. INEFAN, and the Comuna of Loma Alta provided permission to conduct the research. Ben Haase, Javier Avalos, and Felix Man Ging provided local expertise in the field, while Claude Nathan and John Walker attended to project logistics. The project depended greatly on the diligent fieldwork of Earthwatch volunteers Stephanie Andelman, Ken Crouse, Frank Warwick, Andrea Richter, Tom Davis, Rob Bonem, Penny Austin, Pic Bailey, Martin Vallis, Molly Nixon, Joe Cascone, and local guides Mauricio Torres and Pascual Torres. Thanks to Gary Graves, Paul Greenfield, Robert Ridgely and Niels Krabbe for helping with species identifications, and to Robert Ridgely and Mark Hollingsworth for editorial comments.

References

1. Becker, C. D. (1996) The people's choice. *Earthwatch* 15: 20–28.
2. Becker, C. D. & Elao, C. B. (1995) Conservación Comunitaria del Bosque en la Comuna de Loma Alta, Guayas, Ecuador. Informe para el INEFAN. New York: People Allied for Nature.
3. Becker, C. D. & Gibson, C. (1995) *Lack of institutional supply: why a strong local community in western Ecuador fails to protect its forest*. Forest, Trees and People Programme Phase 2. Working Paper 3. Rome: FAO.
4. Best, B. J. & Kessler, M. (1995) *Biodiversity and conservation in Tumbesian Ecuador and Peru*. Cambridge, UK: BirdLife International.
5. Collar, N. J., Crosby, M. J. & Stattersfield, A. J. (1994) *Birds to watch 2: the world list of threatened birds*. Cambridge, UK: Birdlife International (Conservation Series 4).
6. Dodson, C. H. & Gentry, A. H. (1991) Biological extinction in western Ecuador. *Annals Missouri Botanical Gardens* 78: 273–295.
7. Gentry, A. H. (1977) Endangered plant species and habitats of Ecuador and Amazonian Peru. In Prance, G. T. & Elaias, T. S. (eds.) *Extinction is forever*. New York Botanic Garden.
8. Greenberg, R. (1996) Managed forest patches and the diversity of birds in southern Mexico. In Schelhas, J. & Greenberg, R. (eds.) *Forest patches in tropical landscapes*. Washington: Island Press.
9. Hilgert, N. & Andrade, V. B. (1995) *Proyecto actualización del inventario y diagnótsico biológico, con énfasis en plantas, aves y mamíferos del Bosque Protector Cordillera Chongón-Colonche*. Guayaquil: Fundación Natura.
10. Krabbe, N. (1995) Birds of the Chongon-Colonche range and Santa Elena Penninsula (not including marine birds). Unpublished compilation of observations made by Ted Parker, Paul Greenfield, Paul Scharf, Paul Coopmans, Peter Kaestner and Niels Krabbe.
11. Meffe, G. K. & Carroll, C. R. (1994) *Principles of conservation biology*. Sunderland: Sinauer Associates, Inc.
12. Myers, N. (1988) Threatened biotas: hot spots in tropical forests. *Environmentalist* 8: 187–208.
13. Nathan, C. (1996) Press Release, 5 September 1996. New York: People Allied for Nature.
14. Parker, T. A. & Carr, J. L. (1992) *Status of forest remnants in the Cordillera de la Costa and adjacent areas of southwestern Ecuador*. Washington, DC: Conservation International, RAP Working Papers 2.
15. Ralph, J. C., Geupel, G. R., Pyle, P., Martin, T. E. & DeSante, D. F. (1993) *Handbook of field methods for monitoring landbirds*. USDA General Technical Report PSW-GTR-144.
16. Ridgely, R. S. & Tudor, G. (1994) *The birds of South America*, 2. Austin: University of Texas Press.
17. Stotz, D. F., Fitzpatrick, J. W., Parker T. A. & Moskovits, D. K. (1996) *Neotropical birds: ecology and conservation*. Chicago: University of Chicago Press.

Table 1. Measurements of two *Acestrura* individuals netted at Loma Alta. It is suspected that the second female was *Acetrura berlepschi*.

	Female *Acestrura bombus*	Female *Acestrura* sp.
Weight (g)	1.8	2.5
Wing (mm)	29.5	30.0
Tail (mm)	15.0	14.0

Culmen (mm)	12.8	13.6

Appendix 1. Birds seen, heard or mist-netted (n) in Reserva Ecológica de Loma Alta, Guayas, Ecuador in December 1996.
Codes beside the common name refer to conservation status[5], range, and migratory status of the species:
Ec = Tumbesian endemic (restricted-range[4]),
E = endangered, V = vulnerable,
NT = near-threatened, C = Chocó species,
A = Andean montane species,
Nm = Neararctic migrant.

Conservation Priority[17] is given beside the scientific name (1 = urgent, 2 = high, 3 = medium, 4 = low).
Habitats include “Lowlands” (degraded dry forest, pastures and scrub areas below 250 m); “Riparian”(stream or riverside forest, 200–300 m); “Transitional” (250–400 m, dry forest intergrading with premontane moist); “Uplands”(premontane moist forest above 400 m).

Abundance: Common species were seen or heard every day. Fairly common species were seen at least 10 times during the one month study or several times in large flocks. Uncommon species had encounter rates of less than five and rare species were seen no more than twice during the survey. Additions to N. Krabbe’s regional list[10] are indicated by (new).

English name (code) **Scientific name (CP)**	**Habitat**	**Abundance**	
Little Tinamou *Crypturellus soui* (4)	uplands	common	
Fasciated Tiger-heron (NT) *Tigrisoma fasciatum*	riparian	rare	
Turkey Vulture *Cathartes aura* (4)	all altitudes	common	
Black Vulture *Coragyps atratus* (4)	all altitudes	common	
King Vulture *Sarcoramphus papa* (4)	uplands	rare	
Swallow-tailed Kite *Elanoides forficatus* (4)	uplands	fairly common	
Plumbeous Kite *Ictinia plumbea* (4)	uplands	fairly common	
Crane Hawk *Geranospiza caerulescens* (4)	uplands	uncommon	
Bicolored Hawk *Accipiter bicolor* (4)	uplands	rare	
Grey-backed Hawk (Ec, E) *Leucopternis occidentalis* (2)	uplands	common	
Great black Hawk *Buteogallus urubitinga* (4)	uplands	uncommon	
Grey Hawk *Buteo nitidus* (4)	uplands	uncommon	
Ornate Hawk-eagle *Spizaetus ornatus* (4)	transitional	uncommon	
Black Hawk-eagle *Spizaetus tyrannus* (4)	uplands	uncommon	
Crested Caracara *Caracara plancus* (4)	all altitudes	fairly common	
Laughing Falcon *Herpetotheres cachinnans* (4)	uplands/transitional	common	Barred Forest-falcon
Micrastur ruficollis (4)	uplands	fairly common	
Collared Forest-falcon *Micrastur semitorquatus* (4)	uplands	farily common	
American Kestrel *Falco sparverius* (4)	uplands	uncommon	
Rufous-headed Chachalaca (Ec, V) *Ortalis erythroptera* (2)	uplands	fairly common	Crested Guan
Penelope purpurascens (3)	uplands	uncommon	
Rufous-fronted Wood-quail *Odontophorus erythrops* (2)	uplands	fairly common	
Pale-vented Pigeon *Columba cayennensis* (4)	uplands	uncommon	
Rock Pigeon *Columba livia* (4)	lowlands	common	
Ruddy Pigeon *Columba subvinacea* (4)	lowlands to upland	common	
West Peruvian Dove *Zenaida (asiatica) meloda* (4)	uplands	uncommon	
Croaking Ground-dove *Columbina cruziana* (4)	lowlands	common	
Ecuadorian Ground-dove (Ec) *Columbina buckleyi* (4)	lowlands	common	
Ochre-bellied Dove (Ec, V)			

Leptotila ochraceiventris (2)	transitional	rare (heard once)	
Pallid Dove			
Leptotila (rufaxilla) pallida (4)	uplands	uncommon	
White-tipped Dove			
Leptotila verreauxi (4)	uplands	uncommon	
Ruddy Quail-dove			
Geotrygon montana (4)	uplands	common	
Red-masked Parakeet (Ec, NT)			
Aratinga erythrogenys (3)	uplands	fairly common	
Pacific Parrotlet (Ec)			
Forpus coelestis (4)	lowlands	common	
Grey-cheeked Parakeet (Ec, NT)			
Brotogeris pyrrhopterus (2)	uplands	rare	
Bronze-winged Parrot			
Pionus chalcopterus (3)	transitional-uplands	common	
Squirrel Cuckoo			
Piaya cayana (4)	transitional	uncommon	
Smooth-billed Ani			
Crotophaga ani (4)	lowlands (scrub)	fairly common	
Groove-billed Ani			
Crotophaga sulcirostris (4)	lowlands (scrub)	fairly common	
Striped Cuckoo			
Tapera naevia (4)	uplands	rare (heard)	
Western Peruvian Screech-owl			
Otus roboratus (4)	uplands	fairly common	
Crested Owl			
Lophostrix cristata (4)	uplands	uncommon	
Spectacled Owl			
Pulsatrix perspicillata (4)	uplands	uncommon	
Pacific (Ferruginous) Pygmy-owl			
Glaucidium peruanum (4)	uplands	common	
Mottled Owl			
Ciccaba virgata (4)	uplands	fairly common	
Lesser Nighthawk			
Chordeiles acutipennis (4)	uplands	uncommon	
Pauraque			
Nyctidromus albicollis (4)	uplands	common	
White-collared Swift			
Streptoprocne zonaris (4)	uplands	fairly common	
Short-tailed Swift			
Chaetura brachyura (4)	uplands	common	
Grey-rumped Swift			
Chaetura cinereiventris (4)	uplands	uncommon (n)	
Little Hermit			
Phaethornis longuemareus (4)	uplands	rare (n)	
Long-tailed Hermit			
Phaethornis superciliosus (4)	transitional-uplands	common (n)	
White-necked Jacobin			
Florisuga mellivora (4)	uplands	rare (n) (new)	
Brown Violetear (A)			
Colibri delphinae (4)	uplands	rare (n) (new)	
Green-breasted Mango			
Anthracothorax prevostii (4)	uplands	uncommon	
Blue-tailed Emerald			
Chlorostilbon mellisugus melanorhynchus (4)	uplands	fairly common (n)	Green-crowned Woodnymph
Thalurania (furcata) fannyi (4)	uplands	fairly common (n)	Violet-bellied Hummingbird
Damophila julie (4)	uplands	common (n)	
Amazila Hummingbird			
Amazilia amazilia (4)	uplands	common (n)	
Andean Emerald (A)			
Amazilia franciae (4)	uplands	fairly common (n) (new)	
Rufous-tailed Hummingbird			
Amazilia tzacatl (4)	uplands	common (n)	
Speckled Hummingbird (A)			
Adelomyia melanogenys (4)	uplands	common (n)	
Green-crowned Brilliant (A)			
Heliodoxa jacula (4)	uplands	common (n)	
Purple-crowned Fairy			
Heliothryx barroti (4)	uplands	rare	
Long-billed Starthroat			
Heliomaster longirostris (4)	uplands	rare	
Short-tailed Woodstar (Ec)			
Myrmia micrura (4)	uplands	rare	
Little Woodstar (Ec, En)			
Acestrura bombus (3)	uplands	common (n)	
Esmeraldas Woodstar (Ec, En)			
Acestrura berlepschi (2)	uplands	fairly common	
Collared Trogon			
Trogon collaris (4)	uplands	common (n)	
Black-tailed Trogon			

Trogon melanurus (4)	uplands	uncommon	
Violaceous Trogon			
Trogon violacous (4)	transitional	fairly common	
Blue-crowned Motmot			
Momotus momota (4)	lowlands	uncommon	White-necked Puffbird
Notharchus macrorhynchos (4)	uplands	rare	
Barred Puffbird			
Nystalus radiatus (4)	uplands	rare	
White-whiskered Puffbird			
Malacoptila panamensis (4)	uplands	rare	
Red-headed Barbet			
Eubucco bourcierii (4)	uplands	uncommon	
Crimson-rumped Toucanet(A)	uplands	common	*Aulacorhynchus haematopygus* (4)
Pale-mandibled Araçari			
Pteroglossus erythropygius (4)	uplands	fairly common	
Chocó Toucan			
Ramphastos brevis (3)	uplands	common	
Chestnut-mandibled Toucan			
Ramphastos swainsonii (3)	uplands	common	
Olivaceous Piculet			
Picumnus olivaceus (4)	uplands	uncommon	
Ecuadorian Piculet (Ec)			
Picumnus sclateri (4)	uplands	rare	
Black-cheeked Woodpecker			
Melanerpes pucherani (4)	uplands	fairly common	
Scarlet-backed Woodpecker			
Veniliornis callonotus (4)	uplands	fairly common	
Red-rumped Woodpecker			
Veniliornis kirkii (4)	uplands	uncommon	
Golden-olive Woodpecker			
Piculus rubiginosus (4)	transitional-uplands	fairly common	
Lineated Woodpecker			
Dryocopus lineatus (4)	uplands	common	
Guayaquil Woodpecker			
Campephilus guayaquilensis (3)	uplands	fairly common	
Plain-brown Woodcreeper			
Dendrocincla fuliginosa (4)	uplands	fairly common (n)	Olivaceous Woodcreeper
Sittasomus griseicapillus (4)	uplands	fairly common (n)	Wedge-billed Woodcreeper
Glyphorhynchus spirurus (4)	uplands	common (n)	
Spotted Woodcreeper			
Xiphorhynchus erythropygius (4)	uplands	fairly common (n)	Red-billed Scythebill
Campylorhamphus trochilirostris (4)	uplands	uncommon	
Pale-legged Hornero			
Furnarius leucopus cinnamomeus (4)	lowlands	common	
Slaty Spinetail			
Synallaxis brachyura (4)	uplands	uncommon	
Red-faced Spinetail (A)			
Cranioleuca erythrops (3)	uplands	uncommon	
Pacific Tuftedcheek (A)			
Pseudocolaptes lawrencii johnsoni (3)	uplands	rare	
Scaly-throated Foliage-gleaner (A)			
Anabacerthia variegaticeps (3)	uplands	fairly common	
Buff-throated Foliage-gleaner			
Automolus ochrolaemus (4)	uplands	uncommon	
Plain Xenops			
Xenops minutus (4)	uplands	fairly common (n)	
Streaked Xenops			
Xenops rutilans (3)	uplands	uncommon	
Scaly-throated Leaftosser			
Sclerurus guatemalensis (3)	uplands	fairly common (n)	
Tawny-throated Leaftosser (C)			
Sclerulus mexicanus (4)	uplands	fairly common (new)	
Great Antshrike			
Taraba major transaneanus (4)	lowlands	insufficient data	
Collared Antshrike (Ec)			
Sakephorus bernardi (3)	lowlands	insufficient data	
Western Slaty Antshrike			
Thamnophilus punctatus atrinucha (4)	lowlands	insufficient data	
Russet Antshrike (C)			
Thamnistes anabatinus (4)	uplands	rare (new)	
Plain Antvireo			
Dysithamnus mentalis (4)	uplands	fairly common (n)	
Slaty Antwren			
Myrmotherula schisticolor (4)	uplands	common (n)	
Dot-winged Antwren			
Microrhopias quixensis (4)	uplands	rare	
White-backed Fire-eye			
Pyriglena leuconota pacifica (3)	uplands	fairly common (n)	
Immaculate Antbird			
Myrmeciza immaculata (3)	uplands	rare	

Black-headed Antthrush		
Formicarius nigricapillus (3)	uplands	uncommon
Golden-faced Tyrannulet		
Zimmerius viridiflavus (4)	uplands	rare (n)
Southern beardless-Tyrannulet		
Camptostoma obsoletum (4)	uplands	uncommon
Yellow-crowned Tyrannulet		
Tyrannulus elatus (3)	uplands	rare
Pacific Elaenia (Ec)		
Myiopagis subplacens (3)	uplands	uncommon
Greenish Elaenia		
Myiopagis viridicata (4)	uplands	uncommon (n)
Yellow-bellied Elaenia		
Elaenia flavogaster (4)	lowlands	insufficient data
Rufous-winged Tyrannulet (A)		
Mecocerculus calopterus (3)	uplands	rare
Tawny-crowned Pygmy-tyrant		
Euscarthmus meloryphus (4)	uplands	uncommon
Ochre-bellied Flycatcher		
Mionectes oleagineus (4)	uplands	common (n)
Olive-striped Flycatcher (A)		
Mionectes olivaceus (4)	uplands	fairly common
Streak-necked Flycatcher (A)		
Mionectes striaticollis (4)	uplands	fairly common(n) (new)
Scale-crested Pygmy-tyrant		
Lophotriccus pileatus (4)	uplands	fairly common (n)
White-throated Spadebill (A)		
Platyrinchus mystaceus (4)	uplands	fairly common (n)
Sulphur-rumped Flycatcher		
Myiobius sulphureipygius (4)	uplands	fairly common (n)
Tropical Pewee		
Contopus cinereus (4)	uplands	fairly common
Smoke-colored Pewee (A)		
Contopus fumigatus (4)	uplands	uncommon
Grey-breasted Flycatcher (Ec, V)		
Empidonax griseipectus (2)	uplands	fairly common (n)
Acadian Flycatcher (Nm)		
Empidonax virescens	uplands	rare
Vermilion Flycatcher		
Pyrocephalus rubinus (4)	lowlands	common
Masked Water-tyrant		
Fluvicola nengeta (4)	lowlands	insufficient data
Ochraceous Attila (Ec, V)		
Attila torridus (2)	uplands	rare
Sooty-crowned Flycatcher (Ec)		
Myiarchus phaeocephalus (4)	uplands	uncommon
Dusky-capped Flycatcher		
Myiarchus tuberculifer (4)	uplands	rare (n)
Boat-billed Flycatcher		
Megarhynchus pitangua (4)	uplands	uncommon
Social Flycatcher		
Myiozetetes similis (4)	lowlands	fairly common
Baird's Flycatcher (Ec)		
Myiodynastes bairdii (4)	uplands	rare
Streaked Flycatcher		
Myiodynastes maculatus (4)	transitional	insufficient data
Tropical Kingbird		
Tyrannus melancholicus (4)	lowlands	common
Snowy-throated Kingbird		
Tyrannus niveigularis (4)	lowlands	common
One-colored Becard		
Pachyramphus homochrous (4)	uplands	uncommon
Slaty Becard (Ec, NT)		
Pachyramphus spodiurus (3)	uplands	rare
Masked Tityra		
Tityra semifasciata (4)	transitional	uncommon
Thrush-like Schiffornis		
Schiffornis turdinus (4)	uplands	fairly common (n)
White-bearded Manakin		
Manacus manacus (4)	uplands	fairly common (n)
Scaled Fruiteater (A, NT)		
Ampelioides tschudii (3)	uplands	uncommon (n) (new)
Grey-breasted Martin		
Progne chalybea (4)	lowlands to uplands	fairly common
Blue-and-white Swallow		
Notiochelidon cyanoleuca (4)	lowlands	insufficient data
Fasciated Wren		
Campylorhynchus fasciatus (4)	lowlands	insufficient data
House Wren		
Troglodytes aedon (4)	lowlands	insufficient data

Mountain Wren (A)		
Troglodytes solstitialis (4)	uplands	rare (n)
Grey-breasted Wood-wren (A)		
Henicorhina leucophrys (4)	uplands	common (n)
Southern Nightingale-wren		
Microcerculus marginatus (4)	uplands	fairly common (n)
Song Wren		
Cyphorhinus phaeocephalus (4)	uplands	rare (new)
Long-tailed Mockingbird		
Mimus longicaudatus (4)	lowlands	common
Spotted Nightingale-thrush (A)		
Catharus dryas (4)	uplands	common (n)
Swainson's Thrush (Nm)		
Catharus ustulatus (4)	uplands	uncommon (n)
White-throated Thrush		
Turdus assimilis (4)	uplands	common (n) (new)
Ecuadorian Thrush (Ec)		
Turdus nudigenis maculirostris (3)	uplands	uncommon
Pale-vented Thrush (A)		
Turdus obsoletus (4)	uplands	rare (new)
Tropical Gnatcatcher		
Polioptila plumbea (4)	lowlands	common
Variable Seedeater		
Sporophila americana aurita (4)	lowlands	fairly common (n)
Dull-colored Seedeater		
Sporophila obscura (4)	uplands	rare (n)
Orange-billed Sparrow		
Arremon aurantiirostris (4)	uplands	uncommon
Chestnut-capped Brush-finch		
Atlapetes brunneinucha (4)	uplands	fairly common (n)
Southern Yellow-Grosbeak		
Pheucticus chrysogaster (4)	lowlands	insufficient data
Buff-throated Saltator		
Saltator maximus (4)	uplands	uncommon
Ash-throated Bush-tanager (A)		
Chlorospingus canigularis (4)	uplands	fairly common (n)
Yellow-throated Bush- tanager (A)		
Chlorospingus flavigularis (4)	uplands	fairly common (n) (new)
White-shouldered Tanager		
Tachyphonus luctuosus (4)	uplands	rare
White-lined Tanager		
Tachyphonus rufus (4)	uplands	rare (new)
Hepatic Tanager		
Piranga flava (4)	uplands	uncommon (n)
Summer Tanager		
Piranga rubra (4)	uplands	rare
Flame-rumped Tanager		
Ramphocelus flammigerus (4)	uplands	fairly common
Blue-grey Tanager		
Thraupis episcopus (4)	lowlands	common
Palm Tanager		
Thraupis palmarum (4)	uplands	uncommon
Thick-billed Euphonia		
Euphonia laniirostris (4)	uplands	uncommon
Orange-bellied Euphonia		
Euphonia xanthogaster (4)	uplands	common (n)
Bay-headed Tanager		
Tangara gyrola (4)	uplands	uncommon (n)
Silver-throated Tanager		
Tangara icterocephala (4)	uplands	fairly common (n)
Yellow-tufted Dacnis		
Dacnis (lineata) egregia (4)	uplands	uncommon
Tropical Parula		
Parula pitiayumi (4)	uplands	fairly common
Northern Waterthrush (Nm)		
Seiurus noveboracensis (4)	uplands	uncommon (n)
Black-lored Yellowthroat		
Geothlypis aequinoctialis auricularis (4)	lowlands	insufficient data
Slate-throated Whitestart (A)		
Myioborus miniatus (4)	uplands	common (n)
Grey-and-gold Warbler (Ec)		
Basileuterus fraseri (4)	uplands	common (n)
Bananaquit		
Coereba flaveola (4)	uplands	common (n)
Rufous-browed Peppershrike		
Cyclarhis gujanensis (4)	uplands	rare
Red-eyed Vireo		
Vireo olivaceus (4)	uplands	uncommon
Lesser Greenlet		
Hylophilus decurtatus (4)	uplands	uncommon (n)

Yellow-tailed Oriole		
Icterus mesomelas (4)	lowlands	insufficient data
Yellow-rumped Cacique		
Cacicus cela (4)	uplands	uncommon
Peruvian Meadowlark		
Sturnella bellicosa (4)	lowlands	insufficient data
Scrub Blackbird		
Dives warszewiczi (4)	lowlands	common
Great-tailed Grackle		
Quiscalus mexicanus (4)	lowlands	common
Shiny Cowbird		
Molothrus bonariensis (4)	lowlands	insufficient data

[1] tenure to a 6,842 ha watershed that included 1650 ha in the Colonche Hills. Beginning in the late 1970s, cattle ranchers began to deforest these upper reaches of Loma Alta's watershed. Hoping to stop the theft and destruction of their forest, Loma Alta's leaders requested that the national government designate their highlands as Bosque Protector (protective forest). In 1987, the government complied and upheld the community's tenure rights. The Ecuadorian military briefly defended the community's new Bosque Protector, but when soldiers were called to Peru the cattle ranchers resumed their advance. By December 1996, they had cleared more than 200 ha of moist forest belonging legally to the Comuna of Loma Alta.