Colombian EBA Project:

Threatened Species of Serranía de los Yariguíes Expedition

Preliminary Report

November 2004

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www.proaves.org

Royal Geographical Society (with the Institute of British Geographers)
Rio Tinto plc
Percy Sladen Memorial Foundation
Duke of Edinburgh

Published by Fundación ProAves.

ISSN 1811-1246

Suggested citation:
Donegan TM, Huertas BC, Briceño ER, Arias JJ, Camargo I & Donegan MD (2004) Threatened Species of Serranía de los Yariguíes: Project Report. *Colombian EBA Project Report Series* No. 5. Published online by Fundación ProAves, Colombia at www.proaves.org. 46 pp.

This project took place with the kind support of:

Royal Geographical Society (with the Institute of British Geographers),
Rio Tinto plc
Percy Sladen Memorial Foundation
Duke of Edinburgh

Contents

Acknowledgements

Fundación ProAves is an institution which supports bird fieldwork and conservation projects in Colombia, and supported this project at all stages. Fundación ProAves provided us with web space for material relating to the project (www.proaves.org).

The **Royal Geographical Society** is a learned society based in London which supports research, education and training, together with the wider public understanding and enjoyment of Geography. They with **Rio Tinto plc** generously approved and supported the project.

We were given generous financial sponsorship by the **Programa de Becas Jorge Ignacio Hernández Camacho—Iniciativa de Especies Amenazadas—Colombia** administered by **Fondo para Acción Ambiental**, **Fundación Omacha** and **Conservation International**.

The **Duke of Edinburgh**, **ProAves Foundation** and the **Percy Sladen Memorial Fund** also supported the project financially. Much of the fieldwork equipment was inherited from previous Colombian EBA Project fieldwork.

Corporación Autónoma Regional para la Defensa de la Meseta de Bucaramanga (CDMB) (with thanks to Hernando Guevara Pineda) and **Corporación Autónoma Regional de Santander (CAS)** (with thanks to Hector Lamo) are environmental agencies with jurisdiction over fieldwork permissions who kindly granted us permits for fieldwork. We are particularly indebted to the staff of the **Municipal Mayoralty of San Vicente de Chucurí** and **UMATA of San Vicente de Chucurí** (Municipal Unit for Technical Assistance in the Field), for their support of the project, assistance with maps, contacts and other help to the project. The Mayoralty of San Vicente de Chucurí provided us with permission to work in the municipality.

Special thanks are also due to Dr. Mark Mulligan (**Department of Geography, Kings College, London**) who was of great assistance at the planning stage of the expedition and to Prof. Julian Salazar at the **Museo de Historia Natural, Universidad de Manizales** who received and helped identify the entomological collection. Prof. F. Gary Stiles of **Instituto de Ciencias Naturales, Universidad Nacional, Colombia** received the bird collection. Dr. Keith Willmott of **Natural History Museum**, London helped identify some of the butterfly collection.

Finally, our thanks to the many people we met in the study areas for their welcoming spirit, friendship and assistance, particularly our guides Hernando Figueroa, Jose Pinto and Joaquin Montaño.

Our study region and study sites: the Colombian Andes and Serranía de los Yariguíes

In Colombia, the main Andean range splits into three more or less parallel, north-south oriented mountain ranges: the Western, Central and Eastern Andes (or Cordilleras). These three Andean ranges are isolated by two long and low valleys, the Cauca Valley between the Western and Central Cordilleras, and the Magdalena Valley between the Central and Eastern Cordilleras. To the west of the Colombian Andes lies the Chocó, one of the world's most biologically diverse regions (Hilty & Brown, 1986; Rangel & Aguilar, 1995; Galeano *et al*., 1998) and to their east, the Amazon basin. The Eastern Cordillera or East Andes extends from just north of the equator to the Caribbean coast in Colombia. It peaks at 5500 m, has an average ridgeline of 2500 m and is the longest and widest of Colombia's three cordilleras (IGAC, 2003). Between 6°N and 7°N, the Eastern Cordillera reaches its widest point. Here, the Serranía de los Yariguíes (or Serranía de los Cobardes) forms an isolated northwest spur of the main Eastern Cordillera, rising to approximately 3,300 m above sea level (Figure 1).

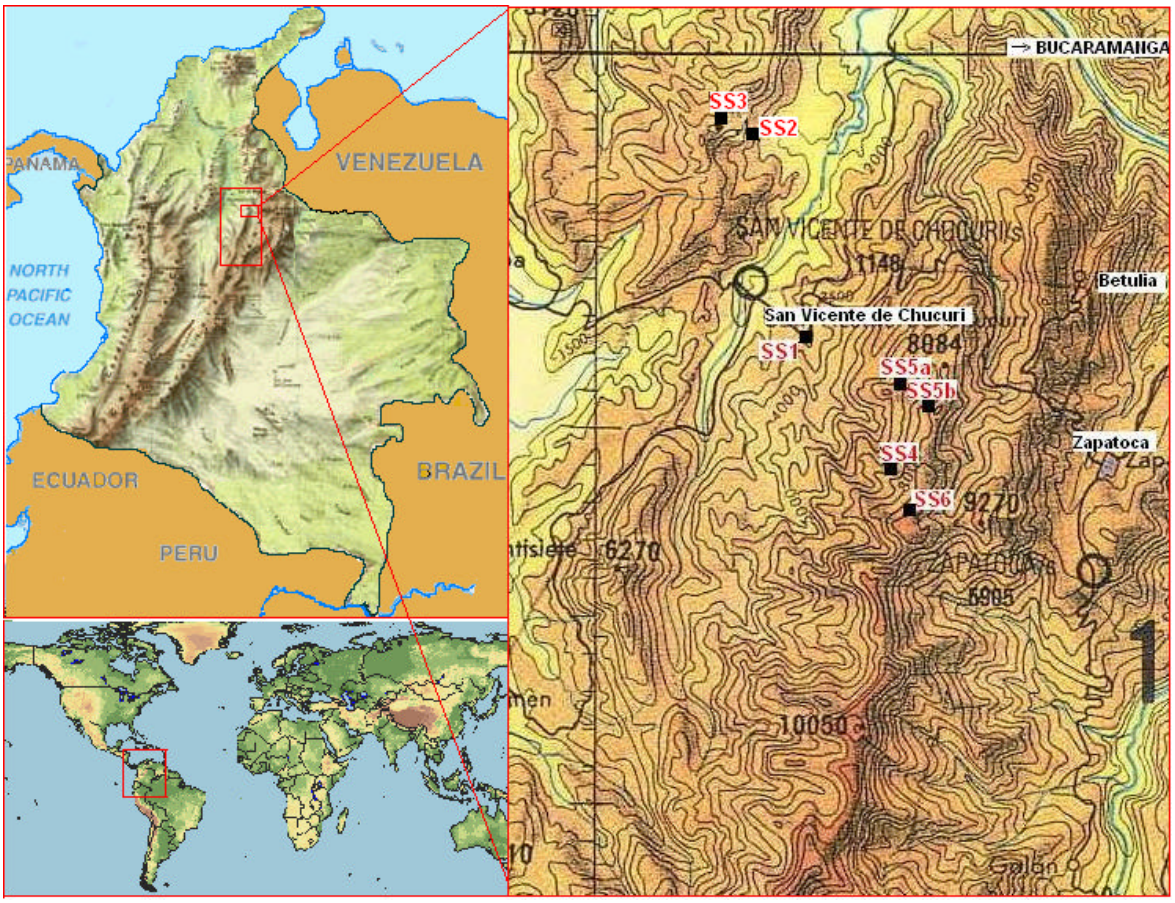


Figure 1. Location of Serranía de los Yariguíes, Santander department, Colombia. Right map shows location of study sites (SS). Contours and elevation points are expressed in feet.

The Serranía de los Yariguíes is located entirely within Colombia's Santander department, and spans various municipalities (Simacota, Contratación, Guacamayo, Hato, Palmar, Galán, Zapatota, Betulia, San Vicente de Chucurí, el Carmen de Chucurí, Santa Helena del Opón, Landázuri, Vélez, Cimitarra, la Paz and Aguada). It extends to 500,000 ha in area, of which 39% remains intact with forest, 26% is farmed for crops (mostly coffee and cocoa) and 35% is pasture. The Yariguíes mountains are characterised by some of the steepest slopes in the Colombian Andes, with stream valleys having produced deep gullies and gradients greater than 50% in many places. The Yariguíes mountains are characterised geologically by a sedimentary base with soils of acid pH (4 to 5). Lower elevations are characterised by sandy soils and higher elevations and steeper slopes by more clayey soils, with a combination of loams in intermediate zones (Moncayo, 1987; IGAC, 1995).

The temperate climate and flat, high elevation savannas of the Eastern Cordillera have long attracted colonisation and human development. Colombia's capital, Bogotá, and other major urban centres such as Bucaramanga are situated there. The forests of the East Andes have thus been subject to extensive degradation (Collar *et al*., 1992), with progressive deforestation of the lower slopes (Wege & Long, 1995). Remaining primary forest has been largely converted to agriculture or narcotics cultivation, although some forested fragments still remain. The Colombia East Andes Endemic Bird Area has suffered major habitat loss and is of the highest biological importance, being assigned "critical" level for conservation priority (Stattersfield *et al*., 1998).

As recently as 1998, the relatively small Guanentá-Alto Río Fonce reserve was considered to comprise the only remaining humid temperate oak forest tract in the northern Eastern Cordillera (Stattersfield *et al*., 1998). However, in surveys in 2002, the Anglo-Colombian research initiative EBA (Evaluation of Biodiversity in the Andes) Project discovered a significant forest wilderness in Serranía de los Yariguíes, which had gone unstudied for decades due to political instability and occupation by revolutionary armed forces (Donegan *et al*., 2003). The only known significant biological study of the massif was a brief lowland study of vertebrates in which a few tens of specimens were collected (Borrero & Hernandez, 1957), with various further sporadic vertebrate records occurring in the literature (see e.g. Romero, 1983). The foothill or higher elevations of the Yariguíes mountains have barely before been subject to previous study in any biological group.

High quality land-use satellite maps (IGAC, 1995) and maps showing land communication routes and human populations showed Serranía de los Yariguíes possibly to constitute a rare remaining forest wilderness. Aerial surveys in July 2004 revealed its humid western slope to constitute primary forest almost throughout. However, the massif's drier eastern slope has been over 90% deforested (see Figure 2).

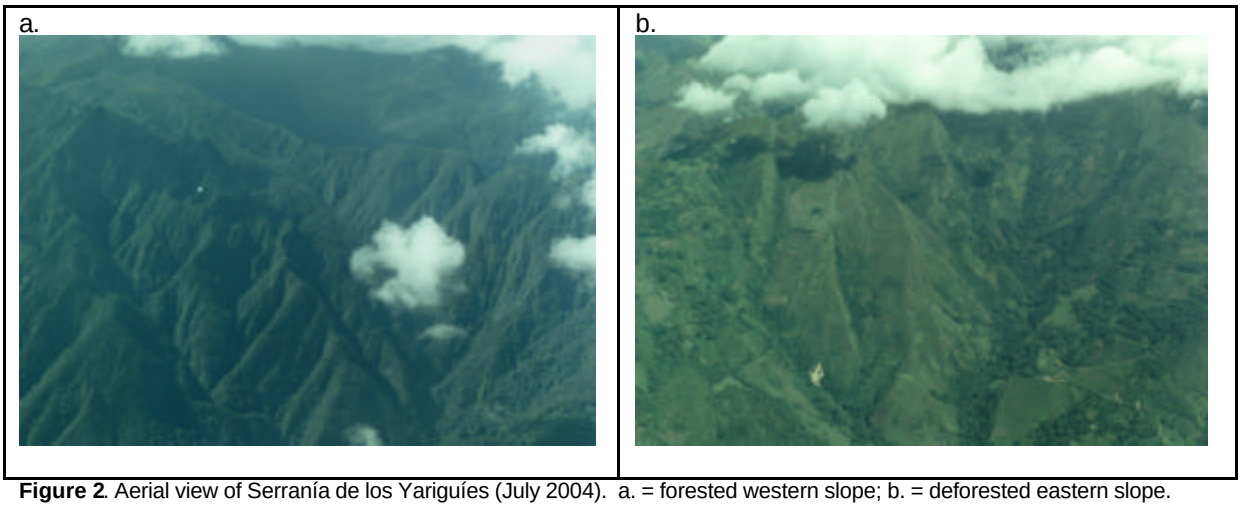


Figure 2. Aerial view of Serranía de los Yariguíes (July 2004). a. = forested western slope; b. = deforested eastern slope.

Serranía de los Yariguíes was selected as a study area due to its well-conserved forests at different elevations, its isolation from the main Andean cordillera and potential endemism, mounting anthropological threats and unprotected status.

Study Sites

Seven study sites was selected based upon a consideration of various factors: (i) encompassing as broad a range of elevation as possible; (ii) in primary or less disturbed forest; (iii) considering logistical concerns such as topography and access routes (within 2 days maximum hard hike from vehicle access routes); and (iv) security of fieldworkers (working in largely government controlled areas). Study sites were located in San Vicente de Chucurí and Zapatoca Municipalities. Details of each study site are presented in **Table 1** and described below. Photographs showing forest composition are set out in **Figure 3.**

It has been proposed that in studies such as this along elevational gradients, study sites should be reasonably evenly distributed across the gradient, and a number of study sites sufficient to include all

major habitats along the gradient, but these two requirements are rarely fulfilled (Rahbek, 1995). Like many other Andean mountains, Serranía de los Yariguíes presents an example of extreme topography, meaning that it is not possible to locate study sites along a continuous linear transect as has been undertaken in other studies (e.g. Fleishman *et al.,* 1997; Brehm *et al*., 2003).

We studied the following sites in Serranía de los Yariguíes. We studied a total of 7 sites in Serranía de los Yariguíes during the expedition, located on an elevational gradient between 1000 and 2500 m above sea level. Each site was subject to 4-5 days intensive fieldwork in birds, butterflies, beetles, mammals and plants. We are planning to return to the field in January 2005 to study at least two further sites to complement our results. Further data is presented in Table 1 and photographs showing the habitat of each site are set out in Figure 3.

SS1. Parque Miraflores (600-750m) To the east of San Vicente de Chucurí's town centre is a municipal park. The small woodland in Parque Miraflores is largely dominated by exotic vegetation and secondary growth. Non-qualitative observations and collections were made here and in other nearby lowland secondary areas.

SS2. Altoviento, Cuchilla La Paz (800-1100m). A trail was followed ascending from Montebello into the Cuchilla La Paz, and a camp site and transect established at 1000 m elevation. The site was dominated by lowland tree species, with many trees over 2.5m diameter at breast height, and rising to over 25-30m height and a thin understorey. Huge lianas were prevalent, with some over 0.3m diameter. The site was located on steep dry eastward-facing slopes of the Río Chucurí valley within primary forest. Deforestation of fine woods and coca farming were observed here.

SS3. Barro Amarillo, Cuchilla La Paz (1230-1340m). This site was located on the western slope and ridge of the Cuchilla La Paz. The site was accessed from mule trails leading from the road from San Vicente de Chucurí to Barro Amarillo. The historic Camino de Lenguerke and ridgeline of the Serranía were used as a basis for the transect. Forest was characterized a canopy of c. 16-18m, moderate epiphytism and moss presence, and greater humidity than on the eastern slope (SS2). The understorey was moderately sparse. This forest appears to be ancient, but has been subject to historic selective deforestation. A mist-netting transect was established along the ridgeline of the Cuchilla de la Paz, with observations and collections along the trail down to 1200 m.

Table 1. Summary of main characteristics of each study site (SS) in Serranía de los Yariguíes.

Study Site (SS)	***Site Name***	***Elevations range***	***Latitude-longitude***	***Life Zone****	***Annual Mean Temp.***	***Days with rain** (mm rain)***
SS1	Parque Mun. de Miraflores, San Vicente de Chucurí	600-750	06 52'53" N 73 24' 1" W	Secondary Dry Forest	24° C	1 (8 mm)
SS2	Vda. Montebello, Altoviento E slope Cuchilla La Paz.	800-1100	06 58'30" N 73 25' 40" W	Tropical Dry Forest	24° C	1 (3)
SS3	Vda. Barro Amarillo, Cuchilla La Paz. W slope	1230-1340	06 58'40" N 73 25' 37"W	Premontane Humid Forest	24° C	3 (11, 6, 7)
SS4	Quebrada de las Cruces, Vda. Cantagallos	1150-1550	06 48' 82"N 73 21' 89"W	Premontane Humid Forest	18-24° C	1 (1)
SS5a	Camino del Lenguerke, La Siberia	1400-1750	06 50' 57"N 73 21'51"W	Premontane Humid (Cloud) Forest	18-24° C	0
SS5b	Camino del Lenguerke, El Talisman	1800-2050	06 50' 57"N 73 21'51"W	Premontane Humid (Cloud) Forest	18-24° C	0
SS6	Vereda Cantagallos alto, mountain ridge	2200-2500	06 48' 82"N 73 21' 89"W	Very Humid Lower Montane Forest	12-18° C	0

Study sites are assigned a number according to elevation. (*) Life zones follow Holdridge (1967). (**) Days with rain is expressed in number of days' rain during the collection period and rain per day in millimetres (IDEAM, 2004).

Figure 3. Study sites in Serranía de los Yariguíes.

SS4. Quebrada de las Cruces, Cantagallos (1150-1550m). This study site is a trail used by a small number of local farmers to travel from settlements below Cantagallos Alto (SS6), following a mountain stream. The trail is characterised by forest edge, stream and secondary habitats and is very humid, with frequent ground-level cloud. No study site was established here, but collections and observations down the trail on route to and from SS6 were undertaken. Results complement data from lower elevations of SS5a (1400 – 1600 m) which involved less forested habitat of similar elevation.

SS5a and SS5b. La Siberia and El Talisman. (1400-1750 and 1800-2050m). An historic stone trail traverses the Serranía de los Yariguíes from Montebello, through San Vicente de Chucurí to Zapatoca town. The trail was laid in the 1840s, but subsequently fell into disuse and became overgrown. It was recently re-opened by the Colombian tourist board, and is now used for recreational purposes by walkers and hunters. Above 1600m, the trail starts to enter forest. A campsite was located at 2000 m elevation along a ridgetop below a reforestation area called El Talisman. The forest was temperate and humid with frequent ground-level cloud. The average canopy height was c. 12m, with emergent trees rising to 15m, and dense epiphytism and moss cover. This site is treated in two parts (a and b) due to its larger elevational range.

SS6. Cantagallos Alto (2200-2500m). This remote site is located in high mountains on the western slope of the Serranía. It was accessed through the trail at SS4, following Quebrada las Cruces for a c. 10 hours uphill trek to the last human settlement at 2250m elevation. From there, a long-abandoned hunters' trail was re-opened into an expanse of primary montane forest, climbing to a ridge at almost 2500 m elevation, on which and below which a study transect was established. Forest was supersaturated, characterised by perpetual ground-level fog with a low canopy (up to c. 12m on slopes; only 3m along ridgetops), with high levels of vegetation succession and treefall and a homogenous understorey and mid-storey.

Methods

Introduction

Colombian EBA (Evaluation of Biodiversity in the Andes) Project is an ongoing research and conservation initiative which conducts rapid biodiversity assessment studies during expeditions to remote and unstudied sites in the Colombian Andes.

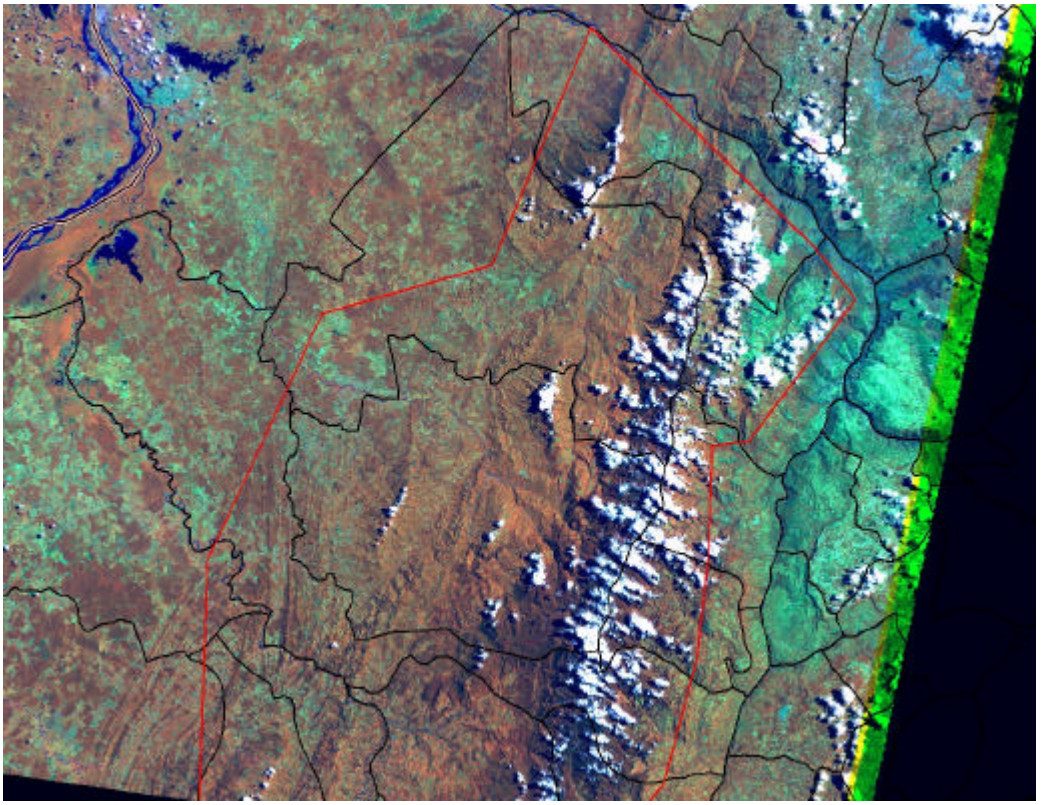
Methods were be based on rapid assessment protocols developed by Colombian EBA Project to collect a large amount of ecological data and as complete an inventory as possible in specified groups within a rapid timeframe (see further Donegan & Salaman 1999).

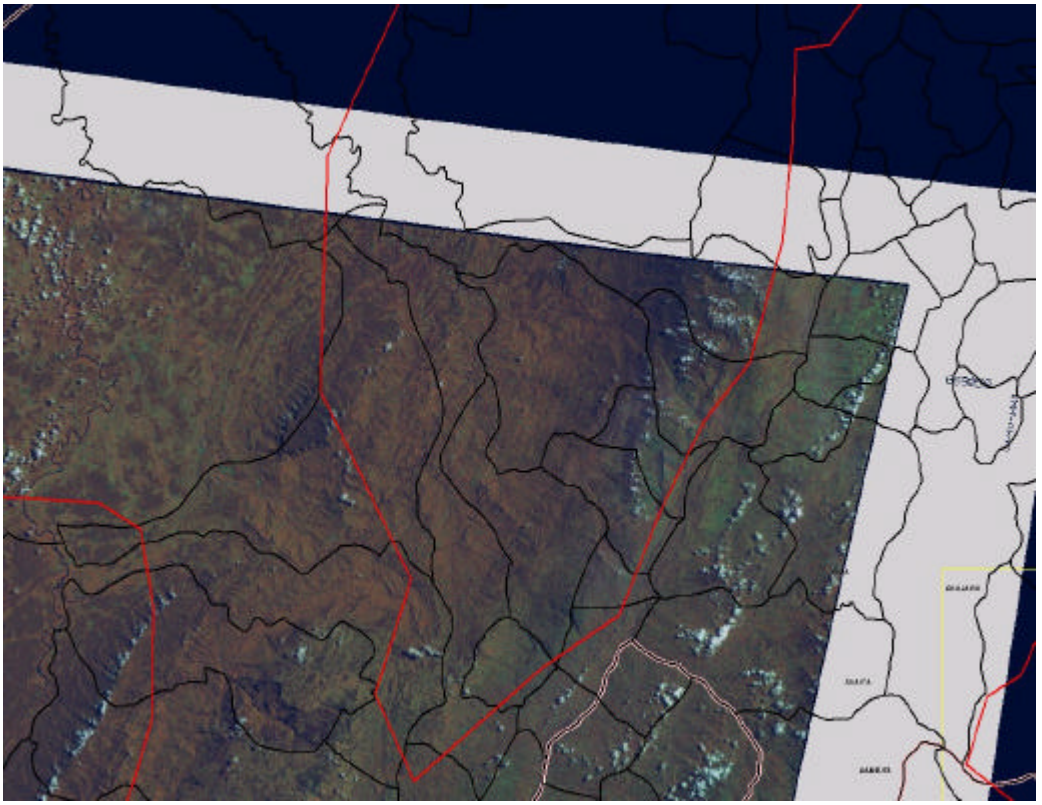
Figure 4: Threatened Birds of Yariguíes Poster

GIS work using satellite maps of the region.

High quality land-use satellite maps have been produced by Instituto Gographico Agustin Codazzi (IGAC), and have proved immensely useful in EBA Project work in the past. Such maps were used to pinpoint accessible sites within continuous forest patches at suitable elevations. We have also commissioned a study to use satellite maps to produce a 3-dimensional land use map of the entire Serranía.

Figure 5: Satellite images of Serranía de los Yariguíes used to assess forest cover and select study sites. Red line indicates extent of proposed National Park. Forested regions produce a reddish/orange colour; deforested regions are shown in light blue / turquoise and rivers in blue.





Flight over Serranía de los Yariguíes

We chartered a light aircraft to fly from Bogotá, Colombia's capital and pass over both flanks of Serranía de los Yariguíes for the purposes of assessing the extent of remaining forested habitat in the mountain range. We took a series of photographs and video footage, which will be of enormous assistance when it comes to delimiting protected areas in the region. Two photographs of habitat from this flight are set out in Figure 2.

Right: fieldworkers with light aircraft used for aerial survey.

Community work

The support of local government leaders including the mayoralty of San Vicente de Chucurí and agricultural collectives to our project was obtained whilst in towns preparing for fieldwork.

We talked to local people and schoolchildren at all opportunities about our project and conservation issues.

We printed over 200 small posters (see Figure 4) before leaving for the field, depicting threatened species to raise awareness, and encouraging people to protect such species and the forests they inhabit (e.g. the critically endangered Blue-billed Curassow *Crax alberti* and Gorgeted Wood-Quail *Odontophorus strophium*). We also distributed over 30 large glossy posters in our study area depicting Colombia's endangered parrots. These posters were kindly donated to the project by Conservation International.

Left: talking with local schoolchildren.

Biological Fieldwork

Details of our study sites are set out above. At each site, we employed the following scientific techniques:

Below : working in the field.

(a) Birds

i. Intensive diurnal mist-netting

Consistently, mist-netting has proved reliable and beneficial in the tropics, reducing variability in data and providing considerable insights into the dynamics of avian populations and communities in a relatively short period of time (Karr 1981). Mist-netting is vital in maximising species encounter rates (to collect the largest community sample), producing standardised data to allow comparisons between sites and a source of photographic records. The following protocol has been developed by the EBA Project for rapid assessments of birds in Colombia.

A combination of fifteen 12-metre mist-nets were operated at each site. Nets remained open over 5 continuous days at each site, opened before dawn (0530hrs) and closed immediately before dusk (1745hrs) each day.

Left: Crimson-rumped Toucanet *Aulacorhynchus haematopygus*, mist-netted in Serranía de los Yariguíes.

Nets were checked on a continuous basis (every 30 minutes in the early morning until 11 am, and thereafter hourly, or half-hourly in drizzle). The processing of trapped birds was standardised to increase reliability, accuracy and efficiency of data collection, with birds processed in the following order:

i) identified to species (largely based on Hilty & Brown, 1986),

ii) metal ring placed on tarsus with unique serial number (or tail feather snipped for hummingbirds where tarsus is short),

iii) age and sex determination (based on plumage; brood patch or cloacal protuberance noted if present),

iv) moult examination (body, wing and tail),

v) biometrics: weight, wing, body, tail, tarsus and culmen length taken,

vi) time the bird is caught to nearest 60 minutes.

For re-captured birds, the time and ring number only were noted. In order to confirm identifications, photographs of each plumage type (adult male, adult female, immature) of each species were taken from various angles.

A small number of specimens from mist-net mortality were deposited in the collection of the Museo de Historia Natural, Instituto de Ciencias Naturales, Universidad Nacional (MHN-ICN) in Bogotá with a small number of duplicates in the Museo de Historia Natural of Universidad Industrial de Santander (MHN-UIS), a local collection.

Above: mist-nets

ii. non-systematic observations:

- Transects walked at each site when fieldworkers not engaged in mist-netting work.
- Close attention was paid to multi-species foraging flocks.
- Fruiting and flowering trees regularly visited, as they attract large concentrations of frugivores and nectarivores.
- Observations were made at viewpoints over the forest canopy where possible to provide opportunities to see large supra-canopy species, e.g. Acciptridae (Hawks and Eagles).
- Night surveys were conducted at each site to survey crepuscular and nocturnal species, e.g. Caprimulgiformes (Nightjars and allies), Strigidae (Owls).
- During observation periods, details of selected species were noted, such as species, age and sex; number of individuals; other species present in association; vocalisations; habitat preferences; canopy stratum occupied; foraging strategies and food.

Above: Colombian Chachalaca *Ortalis columbiana* in Serranía de los Yariguíes

- Counts per transect and population estimates for threatened species.
- Sound-recording equipment in the form of a Mini-Disc recorder and active microphone and speakers were used for playback. Identification by call is essential in tropical forests, where many species are difficult both to see and to identify visually. Recordings were used for voice-playback, to lure species from thick vegetation or to distances closer to the observer, for positive identification or mist-netting.

iii. Local knowledge

Further information on bird species present in the region was collated during unstructured talks over drinks or snacks with local people in which notes were taken, following techniques described in Donegan *et al*. 2003

(b) Butterflies

A "patrolling" strategy was employed at each study site to cover a wide a range of elevations and habitats as possible from each base camp without the establishment of multiple fixed collecting points. The use of a technique employing several person-days' effort at different elevational belts using lower elevational intervals may improve collections (e.g. Pyrcz & Wojtusiak, 1999; 2002). However, the technique employed here allows a wider range of elevations to be studied and is likely to increase the effectiveness in recording fauna within a shorter period of time.

Butterflies were collected by two people working full-time at each study site between daylight hours (0600-1800 hrs) each day. Standard butterfly nets (collecting bags 50-60 cm diameter; handles 1.5m) were used. In order to collect in a wider range of habitats, 15-20 butterfly bait traps (DeVries, 1987 model) were set as high as possible in the vegetation at each site, 5-15m above ground level (Figure 4). Traps were baited with rotting banana, sardines and rotting fish, to attract different butterflies groups and were installed randomly in a combination of sun and shade. Additionally, human urine and excrement baits were placed at ground level.

Above**:** Sampling tools: Canopy nets (left) and manual collection (right)

Basic data such as location, elevation, coordinates and date were noted for each specimen taken or observation made. Coordinates were taken with a global positioning system (Magellan GPS 301) and elevation with a Casio altimeter watch. In addition, field observations (described in detail below) were noted for each butterfly collected or observed in the field. Not all butterflies encountered were collected; those easily recognisable and identifiable based on previous experience of the taxa concerned and multiple duplicates were released with notes taken (see further Neild, 1996).

Specimens were collected by administering a sharp pinch to the thorax and were then placed immediately in glassine envelopes (DeVries, 1987; Neild, 1996). In the laboratory, specimens were mounted on pins, spread, labelled, and placed in a local collection. Digital photos were taken of dorsal and ventral views of male and female examples of each taxon collected. Identifications were conducted in the field using key reference works, comparisons in museums and consulting some specialists on difficult groups.

Table 2. Specialists and museum collections consulted.

Specialist	**Specialist area**	**Institution**
Zsolt Balint	Lycaenidae	Hungarian Natural History Museum, Budapest.
Jason Hall	Riodininae	National Museum of Natural History, Smithsonian Institution, Washington
Thomas Pyrcz	Satyrinae	Muzeum Zoologiczne Uniwersytet Jagiellonski, Kraków, Poland.
Julián Salazar	Colombian Butterflies	Museo Universidad de Caldas, Manizales, Colombia.
Keith Willmott	Ithomiinae	The Natural History Museum, London, UK.
Abbreviation	***Collection***	
NHM	The Natural History Museum, London, UK.	
IAvH	Instituto de Investigaciones Científicas, Alexander von Humboldt, Villa de Leyva, Colombia	
MLS	Museo La Salle, Bogotá, Colombia.	
JFL	Personal Collection Jean Francois Le Crom, Bogotá, Colombia	
MUC	Museo Universidad de Caldas, Manizales, Colombia	

(c) Dung Beetles

Above: Dung beetle *Deltochilum sp.* in Serranía de los Yariguíes.

Dung beetles (Coleoptera: Scarabaeinae) were collected using 15 pitfall traps baited with human excrement installed at ground level at 25 m intervals at each of the study sites. Following the methodology described in Southwood (1966), these traps were baited with human excrement every 48 hours and checked every 12 hours. Specimens were kept in marked plastic flasks with 95% alcohol. Preliminary identification of specimens in field has been made to genus level. However, specimens have not yet been identified to species level.

(d) Plants

We used a fast and flexible method of variable transects designed by Foster *et al*. (1995) for rapid assessments that is practical for comparing composition and diversity for many distinct habitats and classes of plants. Preliminary observations were made to undertake a general forest characterisation: records of epiphyte density; trees, shrubs and herbaceous plants, forest strata, dominant family groups, canopy height etc. Selected collections of inflorescences of well-known groups (particularly Meliaceae, Moraceae, Asteraceae) were made. Samples were photographed, collected, pressed, preserved by spraying pure ethanol and stored in the field in newspaper. Specimens were deposited in the Herbarium of the Botanical Gardens of Bucaramanga.

Above: Passifloraceae (passion-vine) species in Serranía de los Yariguíes.

(e) Mammals

We undertook informal interviews with farmers and hunters in most communities visited and in farms close to our study sites. Fieldworkers and inhabitants of San Vicente de Chucurí provided additional information about the mammals of the region. During interviews, people were asked about the species of the region, which kind of habitat those species prefer, how people use or hunt species, the state of populations and about hunting and community perceptions of their treatment and conservation. Species were identified and discussed with local people using Emmons & Feer (1997)'s field guide.

Above: squirrel tails in a hunter's home in Serranía de los Yariguíes.

Some animal skins and skeletons were donated by hunters and deposited in the Centro de Rescate de Fauna Silvestre (Wild Fauna Rescue Centre) of Corporacion Autonoma Regional para la Defensa de la Meseta de Bucaramanga (CDMB). We also took photographs of such material. After fieldwork, skins and other body parts donated by local people from hunted animals were compared with material in museums. Information was supplemented with data from direct observations in the field and fingerprints, track marks and dung (excrement) records following methods described further in Navarro & Muñoz (2000).

Results

Birds

To date, we have encountered a total of 301 bird species in Serranía de los Yariguíes. Mist-netting resulted in captures of 771 individuals of 134 species for all of which we have obtained biometrical data and photographic confirmation. The 167 other species were identified through field observations, by voice, sound-recordings or during interviews with local communities. The preliminary inventory, including details of abundance of each species and numbers of mist-net captures is presented in Appendix 1.

Given that the Serranía de los Yariguíes was essentially unexplored ornithologically before our expedition, a large quantity of new information about the ecology and distribution of the avifauna of the region was collected. For example, in almost every premontane and montane forest-specialist species, significant range extensions of 100 km or more were found. We found many birds formerly not recorded in Santander department, four lowland species not formerly recorded in Colombia's Magdalena Valley region and many new departmental records. Key findings include:

- The discovery of previously unknown populations of two Critically Endangered species: Gorgeted Wood-Quail *Odontophorus strophium* and Mountain Grackle *Macroagelaius subalaris.*
- The discovery of populations of other species threatened with global extinction, including Saffron-headed Parrot *Pionopsitta pyrilia* (Vulnerable) and Black Inca *Coeligena prunellei* (Endangered).
- First photographic confirmation of the swift *Aeronautes montivagus* in Colombia.
- Undescribed subspecies for science in various groups including Rufous-naped Brush-Finch *Atlapetes latinuchus* and Three-striped Warbler *Basileuterus tristriatus.*
- Significant range extensions in over 60 other species.

New ecological information and articles describing new taxa are already in preparation and will be published in the future. For many species, undescribed vocalisations were recorded. Our data taken as a whole presents a significant contribution to our knowledge of Colombian bird distribution in the region, filling one of the world's largest gaps in bird distributional information. We have already begun producing scientific literature from expedition results. Papers already in preparation or accepted include:

- Discovery of a population stronghold of Gorgeted Wood-Quail, with notes on the species vocalisations (accepted for Cotinga)
- Bird range extensions from the Magdalena Medio region of Colombia (intended for Bulletin of the British Ornithologists Club)
- A new Brush-Finch in the *Atlapetes latinuchus* complex (intended for Bulletin of the British Ornithologists Club, right)

Above: Rufous-naped Brush-Finch *Atlapetes latinuchus ssp. nov.* in Serranía de los Yariguíes.

We also intend to produce a number of scientific articles about elevational distribution and the avifauna of the region and popular and scientific articles over coming months drawing attention to the Serranía de los Yariguíes as an important region for conservation of species threatened with extinction.

Threatened species of Serranía de los Yariguíes

The bird species detailed below are classified as Threatened or Near-Threatened by BirdLife International (2000) or Renjifo *et al*. (2002). As these species are in danger of global or national extinction, it is of the utmost importance that where such species are found, information on ecology should be collected and distributed, and that suitable habitats are protected. The protection of Threatened species also helps protect the forests in which they live, their biological communities and other non-threatened species. A total of 12 endangered bird species (3 Critical, 2 Endangered, 2 Vulnerable, 1 nationally Vulnerable and 4 Near-Threatened species) were recorded in the study region.

Northern Screamer *Chauna chavaria* **Status: Near-Threatened** (Nationally Vulnerable)

This enormous bird is endemic to aquatic regions of the northern lowlands of Colombia and Venezuela. Although more common further north where wetlands are more extensive (see further Salaman *et al*., 2002), this species was reliably reported to be present by local people in lowland marshland areas adjacent to the Río Chucurí adjacent to the northern section of the massif. Such records, if confirmed, would represent a small range extension from known populations.

Wattled Guan *Aburria aburri* **Status: Near-Threatened**

Wattled Guan is regarded as a Very High Conservation Priority by the *Cracid Specialist Group* (Brooks & Strahl, 2000) and as Near-Threatened (BirdLife International, 2000), due to high levels of hunting and deforestation in its range. It is described by hunters as extremely rare in most areas (Brooks & Strahl, 2000). We made sound-recordings of this species at El Talisman, where at least 3 males were audible from our campsite at dawn.

Wattled Guan was also present in the Cerro de la Paz at both sites, at 1,000 m and 1,300 m. Our records at 1,000m elevation are unusually low for the species, though only one male was heard calling along our transect there. We were surprised to find Wattled Guan so common in the region, given that it appears to be widely persecuted by recreational hunting. However, it was notably not as common here as in the Serranía de San Lucas where hunting bans are more rigorously enforced (see Donegan *et al.,* 2001).

Northern Helmeted Curassow *Pauxi pauxi* **Status: Vulnerable**

Pauxi pauxi was reported as present by many local people in San Vicente from the Cerro de la Paz region. We did not confirm these reports, but the number of independent reports in interviews (over 30 different people) and the strength of the descriptions were noteworthy. This species has previously been reported from the San Vicente region (Franco-Maya & Alvarez, 2002).

Left: Northern Helmeted Curassow. Photo: © Cracid Specialist Group.

Blue-billed Curassow *Crax alberti* **Status: Critical**

This is another of Colombia's rarest endemic species, now known only from a handful of sites in Colombia's northern lowlands. Its global population stronghold is considered to be the lowlands south and west of the Serranía de San Lucas (Cuervo, 2002a) and in lowland forests of Serranía de las Quinchas (Quevedo *et al*., in press) to the South of Serranía de los Yariguíes in the Magdalena Valley. We made no observations of the species. However, Blue-billed Curassow was reported as present in the extensive lowland and foothill forests in the southern end of the Serranía de los Yariguíes, which our aerial survey showed to include large tracts of potentially suitable primary forest habitat.

Right: Blue-billed Curassow. Painting not by authors.

Gorgeted Wood-Quail *Odontophorus strophium* **Status: Critical**

Gorgeted Wood-quail *Odontophorus strophium* is one of the world's rarest and most poorly known birds, being restricted to the western slope of Colombia's Eastern Andean Cordillera (Hilty & Brown, 1986) between c. 04°30 and 06°50'N. It is considered Critically Endangered, both globally and nationally (BirdLife International, 2000; Sarria & Alvarez, 2002), and of high priority for conservation action (Fuller *et al*. 2000). Small populations have been observed around just two localities in the past 20 years: Reserva Biológica Cachalú and alto río Fonce, both in dpto. Santander. Almost all (92%) of the species' historical range has been deforested. A principal conservation priority for the species was considered field work in Serranía de los Yariguíes to determine its status there (Cadena *et al*., 2002; Sarria & Alvarez, 2002).

Although Serranía de los Yariguíes has never been the subject of a comprehensive ornithological study, a male Gorgeted Wood-quail was taken near Zapatoca (06°48'N 73°16'W) in 1970 (Romero, 1983), and another specimen, taken in oak forest near Betulia in the Cuchilla del Ramo north of Serranía de los Yariguíes in 1972 (King, 1979), was considered possibly to be a Gorgeted Wood-quail (Hilty & Brown, 1986).

We found Gorgeted Wood-quail at our El Talisman site (SS5a - b) in premontane cloud forest, characterised by frequent but not constant ground-level cloud, very steep slopes, a mean canopy height of c.12 m, with emergents rising to c.15 m, and fairly high levels of epiphytism. We heard at least two calling males at lower elevations (mostly at 1,800–1,950 m), below our transects, and none was heard calling above 1,950 m. During observations along the Camino de Lenguerke, we heard at least two further males above c.1,700 m in habitats including mature secondary forest. At the two lower elevation study sites in Cuchillla de la Paz, Gorgeted Wood-quail was replaced by Marbled Wood-quail *O. gujanensis*. At Alto Cantagallos, no *Odontophorus* were encountered. Further south in its range, Gorgeted Wood-quail has been recorded at 1,800–2,050 m (Sarria & Alvarez, 2002).

Above: Gorgeted Wood-Quail. Painting © BirdLife International (2000), *Threatened Birds of the World.*

Gorgeted Wood-quail doubtless occurs further south in the Serranía de los Yariguíes to Cerro de las Armas. It may well be present in mountains above the nature reserve recently created by Fundación ProAves in the Serranía de las Quinchas, within the río Minero watershed, which have not yet been investigated ornithologically, although only Marbled Wood-quail and perhaps Rufous-fronted Wood-quail *O. erythrops* have been recorded in adjacent lower elevation sites to date (Stiles et al. 1999). Based on its density and the extent of forest cover at suitable elevations, we hypothesise that this population of Gorgeted Wood-quail in Serranía de los Yariguíes may comprise >250 individuals, making the Yariguíes range the species' global population stronghold.

We heard Gorgeted Wood-quail daily at El Talisman (most frequently around 0630–0730hrs) and made sound-recordings. A recording is available for free download from Fundación ProAves' website at *www.proaves.org/ostrophium.wav* and is being described elsewhere (Donegan *et al*. in press).

Rusty-faced Parrot *Hapalopsittaca amazonina*

Status: Endangered

At least one flock of this species was heard and seen on various occasions at Alto Cantagallos. This species is rare throughout its range in Colombiba, with a very localised distribution (Hilty & Brown, 1986) and has disappeared from various sites, apparently due to deforestation and human intervention (Rodriguez & Hernandez, 2001). The presence of this species in Alto Cantagallos shows the quality of the forest here and may also be reflective of the isolation of this primary forest site from nearby human settlements.

Right: Rusty-faced Parrot in Central Cordillera of Colombia. Photo: © J. Velasquez / Fundación ProAves.

Saffron-headed Parrot *Pionopsitta pyrilia*

Status: Endangered

This distinctive yellow-headed parrot is known from lowland and foothill humid forest in Panama, Colombia and Venezuela. Due to deforestation, it now occupies a much-reduced range. Saffron-headed Parrot was common in our lower elevation site in Cerro de la Paz, where several groups were observed feeding in the canopy and sound recordings were made. A solitary individual was also observed at our higher elevation site in Cerro de la Paz inspecting a large hole c. 5 m above ground level in a tree trunk. As the species generally forages in the canopy, it was considered likely that this individual was searching for a potential nesting site. Although the nesting of Saffron-headed Parrot is undescribed, Fundación ProAves fieldworkers in nearby Serranía de las Quinchas have observed this species nesting in a hollow tree trunk (P. Salaman in litt.).

Left: Saffron-crowned Parrot in Serranía de las Quinchas, Boyacá, Colombia inspecting a nesting site in a tree trunk of very similar nature to that observed in Cerro de la Paz (Photo © Fundación ProAves).

This parrot is known only from a handful of sites, thus a new locality is of great importance. Its high abundance at Cerro de la Paz in good quality lowland forest is interesting when considered alongside data by Salaman *et al*. (2002) who note a possible correlation between habitat quality (maturity and level of disturbance of forest) and abundance for this species.

Black Inca *Coeligena prunellei* **Status: Endangered**

Above: Black Inca in Serranía de los Yariguíes.

This hummingbird is endemic to the western slope of Colombia's eastern Cordillera, known currently from only a handful of localities (BirdLife International 2000; Renjifo *et al*. 2002). This was one of the most common species at El Talisman (2,000 m, observations down to 1,900 m) - we caught 16 individuals with one retrapped, and photographed several individuals. We also observed a single individual feeding on flowers in scrub in secondary farmland habitat some 500 m from forest at SS4. At Alto Cantagallos (2,450 m), this species was replaced with the widespread Collared Inca *Coeligena torquata*.

These records present an important c. 60 km northwards range extension for the species, as well as an important formerly unknown but apparently large population. BirdLife International (2000) suggest that the species' global population is just 1,000-2,400. We consider that, were the abundance of the species to be similar in forested regions of suitable elevation across the western slope of the Serranía de los Yariguíes, that its population in Serranía alone would exceed the higher of these figures. Black Inca was frequently observed feeding on the plants of the genera *Cavendishia* (Ericaceae) and *Psitacanthus* (Loranthaceae). Habitat protection in the Serranía de los Yariguíes is of importance for the protection of this species.

Beautiful Woodpecker *Melanerpes chrysauchen pulcher* **Status: Nationally Vulnerable**

This Woodpecker is endemic to Colombia's northern lowlands. In the Magdalena Valley, its range extends south to San Vicente de Chucurí (Cuervo, 2002b). A pair of this species was observed in the Cerro de la Paz (1,000 m). They were observed feeding on the trunk of a large dead tree in a small forest clearing. During observations here and elsewhere in the Magdalena Medio, this species has always been present on dead trees. It seems to prefer forest border habitat, dryer forest and mature secondary growth where such trees are more prevalent.

Mountain Grackle *Macroagelaius subalaris* **Status: Critical**

A vocal individual seen briefly and tentatively identified to this species was observed close to our campsite at Alto Cantagallos (2,400 m). Its song was a loud "caaaaaa ca-ca-ca-ca-ca". The species was identified by its large sternum, call, size and entirely black plumage. This species, like Gorgeted Wood-Quail, is among the least known and most threatened birds in the world, known only from montane forest sites in Colombia's Eastern Cordillera. There have been very few records since the 1960s, although two old specimens apparently from 2,750 m elevation in San Vicente de Chucurí municipality are reported (Amaya & Renjifo, 2002). We hope to obtain further information as to the presence or otherwise of this species when we return to study the highest elevations of the massif in Jarnuary.

Scarlet-rumped Cacique *Cacicus uropygialis* **Status: Nationally Near-Threatened**

The montane and lowland forms of this icterid have recently been split (see Jaramillo & Burke, 1999). The montane form, *C. uropygialis*, is poorly-known in Colombia and has been assigned threatened status nationally. We heard and observed flocks of up to 15 individuals of this species at El Talisman. The most common vocalisation was a disyllabic whistle. This species was previously unknown north of Cundinamarca department on the western slope of the East Andes. New records represent a c. 200 km northwards range extension, suggesting that the species may be more widely distributed than is currently thought.

Sooty Ant-Tanager *Habia gutturalis*

Status: Near-Threatened

H. gutturalis is an endemic of the Nechí Endemic Bird Area of northern Colombia. It was common by voice and seen frequently in the understorey at both in Cerro de la Paz, where 7 were captured (with one retrap) at 1,000 m and 2 were captured (with two retraps) at 1,300m.

Left: Sooty Ant-Tanager in Serranía de los Yariguíes.

Butterflies

We recorded a total of 226 species and 1142 individuals of butterflies in Serranía de los Yariguíes. A preliminary inventory of the butterfly species of Serranía de los Yariguíes is set out in **Appendix 2**.

Right: Butterfly caterpillar in Serranía de los Yariguíes.

A total of 6 species and 1 subspecies were identified with doubts, indicated as "*aff*." in Appendix 2. Nineteen putative species, mainly in Satyrinae (Brown butterflies) and Lycaenidae (Blues), shown as "*sp.*" could not be identified. Following consultation with specialists and visits to collections, at least two of these are considered to represent undescribed species, *Euptychia sp. nov.* and *Tegosa sp. nov*. Likewise, seven subspecies in the collection are considered undescribed and are already being subject to collaborative work together with specialists, in *Oxeochistus submaculatus, Oleria makrena, Parides eurimedes, Ithomeis eulema, Eretris calixto* and *Pedaliodes plotina*. Of the 226 species recorded, two are reported as being migratory species and one introduced species *Cupido comyntas* represents the first record of the species for Colombia. The majority of the remainder of species are likely to be resident.

Above: *Ithomeis eulema ssp. nov.*

In Serranía de los Yariguíes, the pristine tropical dry forest at 1,000-1,200m was the most diverse habitat observed for butterflies. Butterflies' species richness in Serranía de los Yariguíes showed an increase towards 800-1,000m elevation and a corresponding decrease towards higher elevations (2,000-2,600m). The relationship between species richness and elevation fits well with the generally accepted proposition that lowland tropical forest supports the richest biota on earth (Erwin, 1988; MacArthur, 1972).

Nymphalidae (Brush-footed butterflies) was observed as the most elevationally widespread family (present in all elevational ranges), whereas Papilionidae (Swallowtails) species were restricted to lowlands only. Riodinidae (Metalmarks), Pieridae (Yellows) and Lycaenidae (Blues) show a similar elevational distribution to that of the general pattern observed for butterflies.

Data analysis (see further Huertas, 2004) shows a break between lower montane butterflies faunas and upper montane butterflies faunas. This trend has been observed in other studies and groups (e.g. Willmott, 2003; Kattan & Franco, 2004). A high rate of species turnover with elevation and low similarity between butterfly populations across the elevational gradient in Serranía de los Yariguíes is characteristic of a "hot spot" of butterfly diversity, indicating that the Yariguíes mountains may be a priority for conservation measures. Furthermore, both primary lowland and highland forest in the Magdalena Valley are reported to be very scarce (Stiles *et al*., 1999; Stattersfield *et al*., 1998).

Above: *Heliconius clysonimus,* passion vine butterfly (Heliconiinae: Nymphalidae).

Butterfly taxa considered to be endemic to the Magdalena medio region were found fairly uniformly across all elevations studied in Serranía de los Yariguíes in both lowland and premontane areas, although not in the very highest elevations. This more uniform relationship between certain range restricted species and elevation illustrates the need to conserve habitats at a variety of elevations.

Although butterfly species richness observed in Serranía de los Yariguíes was lower at higher elevations, more species restricted to the northern Andean region were recorded at higher elevations. It has been argued that human pressure is highest in lower elevations. However, highland forest habitat in the Andes is endangered by the extraction of fine woody plant species such as oak and caoba, many of which may be larval host plants. These factors and others discussed during this analysis may help assess how to implement future conservation strategies in the Serranía de los Yariguíes.

We have already begun producing scientific literature from expedition results. Papers already in preparation or accepted include:

- The elevational distribution of butterflies (Lepidoptera: Papilionoidea and Hesperoidea) in the Serranía de los Yariguíes, Colombia.
- Butterflies of Serranía de los Yariguíes, Santander (annotated list intended for Biota Colombiana).
- Three new subspecies of pronophiline butterflies (Lepidoptera, Nymphalidae, Satyrinae) in the Colombian Andes.

Mammals

Above: White Bat *Mesophylla (maconelli?)* in Serranía de los Yariguíes.

A total of 49 species have been recorded or reported from Serranía de los Yariguíes and the surrounding Magdalena Medio region from interviews and fieldwork (when data is complemented with information from local museums (NHM - UIS)), from 8 orders and 19 families. A list of species recorded is set out in **Appendix 3**. Of these, 24 species were confirmed in the field, 23 reported from local people and 2 in museums.

Six mammal species in Serranía de los Yariguíes and surrounding area are categorized as endangered with extinction: Giant Anteater *Myrmecophaga tridactyla* (Vulnerable); Colombian Night-Monkey *Aotus cf. lemurinus* (Vulnerable); Silvery-brown bare-faced Tamarin *Saguinus leucopus* (Vulnerable); Spectacled Bear *Tremarctos ornatus* (Vulnerable); Neotropial Otter *Lontra longicaudis* (Vulnerable nationally; Data Defficient globally); and American Manatee *Trichechus manatus* (Vulnerable). Two species are categorized as data deficient: Little Coatí *Nasuella olivacea* and Northern naked-tailed Armadillo *Cabassous centralis*. Three of the species recorded are endemic to Colombia: Colombian Night-Monkey, Silvery-brown Bare-faced Tamarin and the squirrel *Microscirius santanderensis*, the latter being endemic to Santander department.

Due to the presence of so many mammals threatened with extinction, Serranía de los Yariguíes emerges as an important region for the conservation of threatened mammal species.

Conservation Assessment and Conclusions

Although we are still very much at a data analysis stage, it was evident to all team members that Serranía de los Yariguíes is a very special place worthy of immediate conservation attention. Our results suggest that any conservation strategy should take into account the following factors:

1. Status and extent of forest wilderness

Our aerial surveys and GIS work reveal Serranía de los Yariguíes to constitute one of the largest remaining forest fragments, not just in the Eastern Cordillera but in northwest South America (see Figures 2, 3 and 5). This forest comprises a broad range of continuous habitats from lowland through premontane to montane forest and páramo and includes habitats influenced by endemic regions given the highest category of threat and biological importance by conservation NGOs.

Our aerial surveys and GIS work reveal the humid western slope of Serranía de los Yariguíes to harbour primary forest almost throughout. However, the massif's drier eastern slope has been over 90% deforested. The western slope of Serranía de los Yariguíes, adjacent lowlands (particularly those to the south-west of the massif) and ridgeline constitute an ideal candidate for a forest wilderness National Park. No government protected area currently exists protecting Colombia's unique and endangered Eastern Cordillera oak forests nor the equally endangered humid forest of the Magdalena Valley.

2. Increasing human threats

For many years, Serranía de los Yariguíes has gone unstudied and ignored. Since the 1970s, commercial development in the region has been restricted by political instability, the San Vicente region being infamous as the birthplace of one of the leaders of one of Colombia's rebel insurgent groups. With stability in the form of government control returning to the region just a small number of years ago, there is a risk that human populations will expand into remaining pristine forest areas, bringing the all too familiar results of deforestation and biodiversity loss.

In lowland areas, deforestation is most frequently for coca farming and for subsistence farming. Coca farms are usually small plots located within forest to avoid detection by the authorities, which means that the most pristine forests are targeted (see further Alvarez, 2002). In highland areas, deforestation for agriculture, primarily farming for raspberry and other temperate climate fruits is among the greatest threats.

Above: deforestation in Serranía de los Yariguíes. Left: farming of precious woods for timber linked with clearance of forest small coca plantations in Cerro de la Paz. Right: deforestation of montane forests for raspberry and other fruit farms near Alto Cantagallos.

3. Lowland and highland regions of Serranía de los Yariguíes are of immense importance to biodiversity conservation

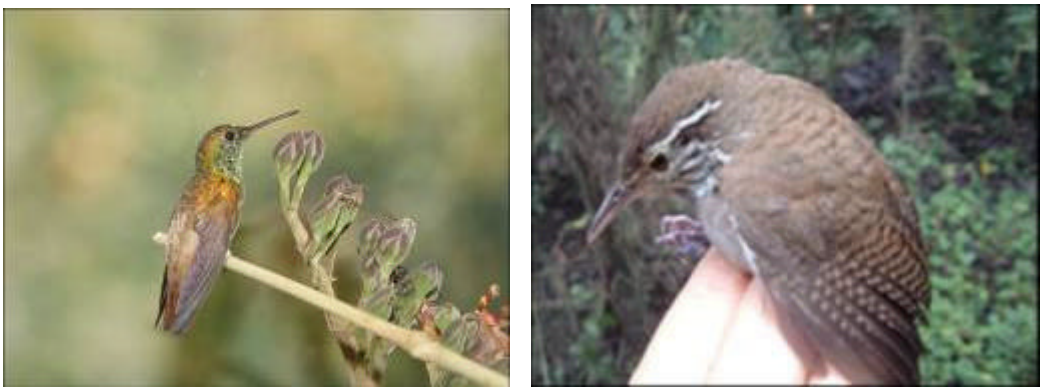
Lowland regions, particularly those adjacent to the southwest flank of the massif are characterised by the Nechí Endemic Bird Area, rated critical by BirdLife International. Work with local communities suggest that lowland forests are likely to support populations of species considered to be on the verge of extinction such as Blue-billed Curassow *Crax alberti*. Lowland and foothill forests of Serranía de

los Yariguíes comprise some of the most extensive tracts of one of the most threatened lowland forest habitats in South America.

The premontane forests of Serranía de los Yariguíes support the world's largest remaining population of the critically endangered Gorgeted Wood-Quail *Odontophorus strophium*, a species whose population comprises perhaps just a few tens of individuals outside of the massif. Mountain regions also contain unique elements, including several undescribed butterfly taxa and two undescribed bird taxa which are likely to be endemic to the massif.

5. Conservation of the dryer east slope of the Serranía

Our surveys have focused on the humid forested western slope of the massif. Recent work by other Fundación ProAves fieldworkers in foothills of the eastern slope of the Yariguíes has revealed the presence of two further critically endangered bird species, Chestnut-bellied Hummingbird *Amazilia castaneiventris* and Niceforo's Wren *Thryotorus nicefori*. This part of the massif does not appear to be a viable candidate for national park status given the patchy nature of remaining forested habitats here. The creation of private reserves and projects involving cooperation with the community should be considered here.



Above: Left: Chestnut-bellied Hummingbird *Amazilia castaneiventris*. Right: Niceforo's Wren *Thryotorus nicefori*. Both in Chicamocha, Serranía de los Yariguíes. © Fundación ProAves with thanks to Proyecto Chicamocha team.

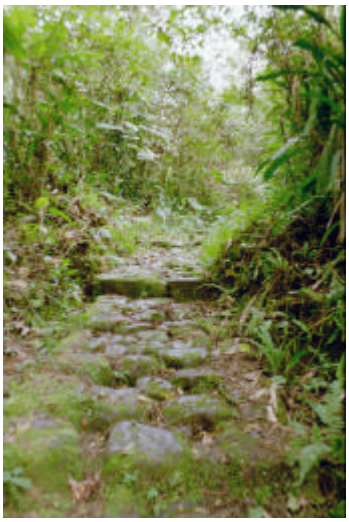
6. Increasing local awareness

We found local people in communities surrounding Serranía de los Yariguíes generally to be supportive of conservation issues. However many people are not aware of the true global importance of this mountain range and the species it contains to conservation. Through the distribution of posters depicting threatened species and talks with local people, including hunters, we sought to increase awareness in the region about conservation issues. There is a great deal of pride among local people for endemic species (particularly a fish species named *"chucurensis"* of which many people are aware), the Yariguíes mountains, their history and ancestors. This regional pride and general interest in conservation should be built upon and harnessed in future conservation action.

7. Potential for ecotourism

Long-term conservation measures could focus on San Vicente de Chucurí and Zapatoca as a zone for ecotourism.

The San Vicente region is rich in artefacts of the Yariguíes people who formerly inhabited these lands. Until recently, the Serranía de los Yariguíes massif was known as "Serranía de los Cobardes" (Mountain Range of the Cowards). This former name derives from the Spanish colonial period. The Yariguíes indigenous people who used to inhabit these mountains resisted Spanish colonisation, waging war against their invaders. However, their resistance was doomed to be unsuccessful in the face of a technologically superior military power. Rather than submit to the Spanish, the Yariguíes people committed mass suicide, and history lost forever a people, their customs, language and art. The Spanish viewed this not as an act of dignity, but as an act of cowardice, hence the mountain range's former name.




Above: Left: the Camino de Lenguerke; Centre: Sign marking path along 40 km Camino de Lenguerke; Right: large stone with indigenous markings, San Vicente de Chucurí.

San Vicente de Chucurí and Zapatoca region have five important draws for ecotourism:

- The spectacular forests and mountains of Serranía de los Yariguíes and their threatened inhabitants.

- The Camino de Lenguerke, an historic stone trail built in the 1800s which leads from San Vicente (750 m elevation) to El Talisman and above (2,300 m) through primary montane forest to the old colonial town of Zapatoca is a day-long historic and hard trek that would be attractive to ecotourists from both Colombia and elsewhere.

- The indigenous history and artefacts of the region, some of which are within San Vicente town, such as the carved stone depicted above.

- Zapatoca and San Vicente have interesting colonial and more recent architecture including San Vicente's beautiful domed church and Montebello residence.

- The products of the region, which include "*Chocolate Chucureño*" (Chucurí chocolate and hot chocolate) and "*Café Chucureño*" (Chucurí coffee)

Above: Chocolate Chucureño and Café Chucureño.

Below : Left: Montebello, an historic colonial residence; Centre: San Vicente Church; Right: the Río Chucurí.



Work done to date and Conclusions

On 9 September 2004, Elkin Briceño of our expedition team attended a meeting at which our preliminary results were presented to Colombia's Environment Ministry, CAS (the regional environmental authority) and other NGOs such as Conservation International and Fundación Natura. Soon after, on 15 October 2004, the Environment Ministry, CAS and the 17 municipalities comprising the Serranía de los Yariguíes signed an agreement initiating concrete measures towards the establishment of a National Park in Serranía de los Yariguíes. The limits of the proposed National Park are delimited in red in the GIS Map above (see Figure 5).

We will be participating as fully as possible in the process towards implementing conservation measures in the Serranía de los Yariguíes. Importantly, we are seeking funds for a more comprehensive study which would include surveys of the middle and southern section of the Yariguíes mountains which remain unstudied, as well as of the dryer eastern slope which remains little known. Fundación ProAves has started work in two migratory species monitoring sites, one in Cerro de la Paz near our study sites, and is investigating the possibility of establishing nature reserves in buffer zones to the proposed new national park.

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Appendix 1: List of Bird Species.

Family	Species	Parque Miraflores SS1 760 m	Secondary Habitats SS5a / SS4 500-2200m	Cerro de La Paz SS2 1000m	Cerro de La Paz SS3 1350 m	El Talisman SS5b 2000m	Alto Cantagallos SS6 2450 m
TINAMOUS							
Tinamidae	Little Tinamou Crypturellus soui			C	U		
HERONS, EGRETS etc.,							
Ardeidae	Great Egret Ardea alba		U				
	Snowy Egret Egretta thula		U				
	Striated Heron Butorides s triatus	F					
	Cattle Egret Bubulcus ibis		F				
SCREAMERS	Northern Screamer Chauna						
Anhimidae	chavaria		R				
VULTURES							
Cathartidae	Turkey Vulture Cathartes aura			F	F	F	
	Black Vulture Coragyps atratus	A	A	U	U		
	King Vulture Sarcoramphus papa			R			
HAWKS etc	Sharp-shinned Hawk Accipiter						
Accipitridae	striatus						F 1
	Barred Hawk Leucopternis princeps					C	
	Roadside Hawk Buteo magnirostris		U	U		F	
	Black Hawk-Eagle Spizaetus tyrannus				F		
FALCONS, CARACARAS							
Falconidae	Crested Caracara Caracara plancus		U	U			
	Yellow-headed Caracara Milvago chimachima		F				
	Laughing Falcon Herpetotheres cachinnans			U			
	Barred Forest-Falcon Micrastur ruficollis interstes			F	1	C	
	Bat Falcon Falco rufigularis		U				
	Peregrine Falcon Falco peregrinus						F
CURASSOWS etc	Colombian Chachalaca Ortalis						
Cracidae	columbiana		RC	U			
	Andean Guan Penelope montagnii						F
	Wattled Guan Aburria aburri			F	C	C	
	Sickle-winged Guan Chamaepetes goudotii					U	
	Northern Helmeted Curassow Pauxi pauxi			R			
	Blue-billed Curassow Crax alberti			R			
WOOD-QUAILS							
etc Odontophidae	Crested Bobwhite Colinus cristatus		R				
	Marbled Wood-Quail Odontophorus gujanensis			U	C		
	Gorgeted Wood-Quail Odontophorus strophium					F	
PIGEONS, DOVES	Band-tailed Pigeon Columba						
Columbidae	fasciata		U			A	C
	Feral Pigeon Columba livia	A	F				
	Pale-vented Pigeon Columba cayennensis			C			
	Plumbeous Pigeon Columba plumbea			F	F	U	
	Barbary Dove Streptopelia risoria		U				
	Ruddy Ground-Dove Columbina talpacoti	C	C				
	White-tipped Dove Leptotila verreauxi	F	F				

Family	Species	Parque Miraflores SS1 760 m	Secondary Habitats SS5a / SS4 500-2200m	Cerro de La Paz SS2 1000m		Cerro de La Paz SS3 1350 m		El Talisman SS5b 2000m		Alto Cantagallos SS6 2450 m	
	Ruddy Quail-Dove Geotrygon montana			F	3						
	Lined Quail-Dove Geotrygon linearis			U	1			U	1		
PARROTS Psittacidae	Blue-and-yellow Macaw Ara ararauna			R							
	Scarlet Macaw Ara macao			R							
	Spectacled Parakeet Forpus conspicillatus	F	F			U					
	Orange-chinned Parakeet Brotogeris jugularis	F	F								
	Saffron-headed Parrot Pionopsitta pyrilia			C		F					
	Rusty-faced Parrot Haplopsittaca amazonina									F	
	Blue-headed Parrot Pionus menstruus			U							
	Speckle-faced Parrot Pionus tumultuosus									F	
CUCKOOS Cuculidae	Squirrel Cuckoo Piaya cayana					C				U	
	Smooth-billed Ani Crotophaga ani	C	C								
	Striped Cuckoo Tapera naevia		F								
OWLS Strigidae	Tropical Screech-Owl Otus choliba			U							
	Mottled Owl Otus choliba			F							
	White-throated Screech-Owl Otus albogularis									C	
	Great Horned Owl Bubo virginianus							C			
	Ferruginous Pygmy-Owl Glaucidium brasilianum			C							
	Black-and-white Owl Strix nigrolineata			U							
NIGHTJARS etc Caprimulgidae	Pauraque Nyctidromus albicollis			U							
	Band-winged Nightjar Caprimulgus longirostris									U	
	Lyre-tailed Nightjar Uropsalis lyra							F			
SWIFTS Apodidae	White-tipped Swift Aeronautes montivagus	F	C					C			
HUMMINGBIRDS Trochilidae	Hairy Hermit Glaucis hirsuta			U	1	U	2				
	Band-tailed Barbthroat Threnetes ruckeri			F	3+1	U	2				
	Green Hermit Phaethornis guy			A	52+13	A	39+20				
	Tawny-bellied Hermit Phaethornis syrmatophorus							U	1	U	1
	Western Long-tailed Hermit Phaethornis longirostris			F	6+1	U	2				
	Stripe-throated Hermit Phaethornis (longuemareus) striigularis		U	U		U	1				
	White-tipped Sicklebill Eutoxeres aquila			F	6	F	11+1	U	1		
	Green-fronted Lancebill Doryfera ludoviciae					U	2				
	White-necked Jacobin Florisuga mellivora			U	1	U	1				
	Brown Violetear Colibri delphinae					U	2				
	Green Violetear Colibri thalassinus									U	
	Violet-headed Hummingbird Klais guimeti					U	3				
	Black-throated Mango Authracothorax nigricollis	F									
	Red-billed Emerald Chlorostilbon			U							

		Parque Miraflores	Secondary Habitats	Cerro de La Paz		Cerro de La Paz		El Talisman		Alto Cantagallos	
		SS1	SS5a / SS4	SS2		SS3		SS5b		SS6	
Family	**Species**	**760 m**	**500-2200m**	**1000m**		**1350 m**		**2000m**		**2450 m**	
	gibsoni										
	Coppery Emerald Chlorostilbon russatus							U	1		
	Purple-crowned Woodnymph Thalurania fannyi			U	1	C	21+3	F	1		
	Blue-chested Hummingbird Polyerata amabilis			U	2	U					
	Andean Emerald Agyrtria franciae					C	9+2				
	Rufous-tailed Hummingbird Amazilia tzactl	F	F								
	White-vented Plumeteer Chalybura buffonii			F	6+4	U	1				
	Speckled Hummingbird Adelomyia melanogenys							A	19+5	C	9+1
	Green-fronted Brilliant Heliodoxa jacula			F	11+5	C	19+5				
	Black Inca Coeligena prunellei							C	16+1		
	Collared Inca Coeligena torquata									C	9
	Buff-tailed Coronet Boissoneaua flavescens									U	1
	Amethyst-throated Sunangel Heliangelus (amethysticollis) clarisse									C	7
	Booted Racket-tail Ocreatus underwoodii							U	1	U	1
	Tyrian Metaltail Metallura tyrianthina									U	1
	Long-tailed Sylph Aglaiocercus kingi							U		U	1
TROGONS	Crested Quetzal Pharomachrus										
Trogonidae	antisianus							U		F	
	Collared Trogon Trogon collaris					F	1+1	U			
	Masked Trogon Trogon personatus							F		F	
JACAMARS	Rufous-tailed Jacamar Galbula										
Galbulidae	ruficauda		R								
PUFFBIRDS	Moustached Puffbird Malacoptila										
Bucconidae	mysticalis							U	1		
	White-necked Puffbird Notharchus macrorhynchus					U					
TOUCANS	Emerald Toucanet Aulacorhynchus										
Ramphastidae	prasinus							F	2	F	
	Crimson-rumped Toucanet Aulacorhynchus haematopygus					F	2	U	1		
	Collared Aracari Pteroglossus torquatus			C							
	Chestnut-mandibled Toucan Ramphastos swainsonii			C		C					
	Black-mandibled Toucan Ramphastos ambiguus							U			
WOODPECKERS	Olivaceous Piculet Picumnus										
Picidae	olivaceus	U									
	Spot-breasted Woodpecker Colaptes punctigula		U			U					
	Crimson-mantled Woodpecker Piculus rivolii							U			
	White-throated Woodpecker Piculus leucolaemus			F							
	Red-crowned Woodpecker Melanerpes rubricapillus	C	C								
	Beautiful Woodpecker Melanerpes pulcher			U							
	Crimson-crested Woodpecker Campephilus melanoleucos		U			F					
WOODCREEPERS	Plain-brown Woodcreeper										
Dendrocolaptidae	Dendrocincla fuliginosa			F	2	F	3				

		Parque Miraflores	Secondary Habitats	Cerro de La Paz		Cerro de La Paz		El Talisman		Alto Cantagallos	
		SS1	SS5a / SS4	SS2		SS3		SS5b		SS6	
Family	**Species**	**760 m**	**500-2200m**	**1000m**		**1350 m**		**2000m**		**2450 m**	
	Olivaceous Woodcreeper										
	Sittasomus griseicaplillus					U		F	1		
	Wedge-billed Woodcreeper										
	Glyphorhynchus spirurus			C	5+1	F	5				
	Northern Barred Woodcreeper										
	Dendrocolaptes sanctithomae			U	1						
	Black-banded Woodcreeper										
	Dendrocolaptes picumnus							U	1		
	Straight-billed Woodcreeper										
	Xiphorhynchus picus	C	U								
	Black-striped Woodcreeper										
	Xiphorhynchus lachrymosus					F	2				
	Olive-backed Woodcreeper										
	Xiphorhynchus triangularis									F	1
	Streak-headed Woodcreeper										
	Lepidocolaptes souleyetii			U							
	Spot-crowned Woodcreeper										
	Lepidocolaptes affinis							U	1		
	Brown-billed Scythebill										
	Campylorhynchus pusillus							U	1		
	Azara'a Spinetail Synallaxis										
FURNARIIDAE	azarae		F					C	2	U	
	Rufous Spinetail Synallaxis unirufa									C	3
	Pearled Treerunner Margarornis squamiger									F	3
	Rusty-winged Barbtail Premnornis guttuligera							U	2	U	1
	Spotted Barbtail Premnoplex brunescens							U	1	U	
	Streaked Tuftedcheek Pseudocolaptes biossonneautii									U	
	Lineated Foliage-Gleaner Syndactila subularis							F	4+2	U	1
	Montane Foliage-Gleaner Anabacerthia striaticollis							C	3	U	
	Slaty-winged Foliage-Gleaner Phyliador fuscipennis			F		F					
	Flammulated Treehunter Thripadectes flammulatus									U	1
	Plain Xenops Xenops minutus			F	3	F	3				
	Tawny-throated Leafscraper Sclerurus mexicanus			F	1						
ANTBIRDS	Bar-crested Antshrike										
Thamnophilidae	Thamnophilus multistriatus	F									
	Uniform Antshrike Thamnophilus unicolor							F			
	Western Slaty Antshrike Thamnophilus punctatus			F							
	Plain Antvireo Dysithamnus mentalis semicinereus			F	6	C	6				
	Pacific Antwren Myrmotherula pacifica	F									
	Checker-throated Antwren Myrmotherula fulviventris			U	1	U	2				
	White-flanked Antwren Myrmotherula axillaris			U	2						
	Slaty Antwren Myrmotherula schisticolor							F	3		
	Dot-winged Antwren Microrhopias quixensis					F					
	Rufous-rumped Antwren Terenura callinota							F	2		
	Parker's Antbird Cercomacera parkeri							U			
	Dull-mantled Antbird Myrmeciza laemosticta			U							
	Boicoloured Antbird Gymnopithys			U	1						

		Parque Miraflores	Secondary Habitats	Cerro de La Paz		Cerro de La Paz		El Talisman		Alto Cantagallos	
		SS1	SS5a / SS4	SS2		SS3		SS5b		SS6	
Family	**Species**	**760 m**	**500-2200m**	**1000m**		**1350 m**		**2000m**		**2450 m**	
	bicolor										
ANTPITTAS	White-bellied Antpitta Grallaria										
Formicariidae	hypoleuca							C		C	
	Spectacled Antpitta Hylopezus perspicillatus			C	1						
TAPACULOS	Ash-coloured Tapaculo Myornis										
Rhinocryptidae	senilis									C	
	Tapaculo Scytalopus sp							A			
	Unicoloured Tapaculo sp. Scytalopus unicolor sp									F	
MANAKINS	Golden-headed Manakin Pipra										
Pipridae	erythrocephala			U	1						
	Golden-winged Manakin Masius chrysopterus							F	3		
	White-bibbed Manakin Corapipo leucorrhoa			C	9+4	C	7+5				
	White-bearded Manakin Manacus manacus			U	1						
	Striped Manakin Machaeopterus regulus					F	9				
COTINGAS	Green-and-black Fruiteater										
Cotingidae	Pipreola riefferii									F	2
	Dusky Piha Lipaugus fuscocinereus									C	
	Barred Becard Pachyramphus versicolor									U	
	Cinereous Becard Pachramphus rufus		F								
	Cinnamon Becard Pachyramphus cinnamoneus					F					
	Masked Tityra Tityra semifasciata			F							
TYRANT-											
FLYCACTHERS	Ashy-headed Tyrannulet										
Tyrannidae	Phylomyias cinereiceps									F	1
	Golden-faced Tyrannulet Zimmerius viridiflavus							U		U	1
	Southern Beardless Tyrannulet Camptostoma obsoletum	U									
	Streak-necked Flycatcher Mionectes striaticollis							F	4	U	1
	Olive-striped Flycatcher Mionectes olivaceus					F	12+2				
	Ochre-bellied Flycatcher Mionectes oleagineus			A	24+6	U					
	Slaty-capped Flycatcher Leptopogon superciliaris			F	2	U		U	1		
	Rufous-breasted Flycatcher Leptopogon rufipectus							F	1		
	Marble-faced Bristle-Tyrant Phylloscartes ophthalmicus			F	1	F	2				
	Rufous-headed Pygmy-Tyrant Pseudotriccus ruficeps									U	2
	Scale-crested Pygmy-Tyrant Lophotriccus pileatus					C	3	U		U	
	Southern Bentbill Oncostoma olivaceum			F	2	U					
	Black-throated Tody-Tyrant Hemitriccus granadensis									C	3+1
	Common Tody-Flyacthcer Todirostrum cinereum	C	F								
	Brownish Twistwing Cnipodectes subbrunneus			F							
	Golden-crowned Spadebill Platyrinchus coronatus			F	4+1						
	Ornate Flycatcher Myiotriccus ornatus					F	4+1	F	1		1

Family	Species	Parque Miraflores SS1 760 m	Secondary Habitats SS5a / SS4 500-2200m	Cerro de La Paz SS2 1000m	Cerro de La Paz SS3 1350 m	El Talisman SS5b 2000m	Alto Cantagallos SS6 2450 m
	Black-tailed Flycatcher Myiobius atricaudus				U 1		
	Ruddy-tailed Flycatcher Myiobius erythrurus			U 3			
	Flavescent Flycatcher Myiophobus flavicans						F 1
	Handsome Flycatcher Myiophobus pulcher bellus						F 1
	Bran-coloured Flycatcher Myiophobus fasciatus		U				
	Cinnamon Flycatcher Pyrrhomyias cinnamonea					C	C
	Tropical Pewee Contopus cinereus			F			
	Greater Pewee Contopus fumigatus		U				
	Acadian Flycatcher Empidonax virescens	F		F 3	F 2		
	Black Phoebe Sayornis nigricans	F	F				
	Vermillion Flycatcher Pyrocephalus rubinus	C	C				
	Slaty-backed Chat-Tyrant Ochthoeca cinnamomeiventris						U
	Yellow-bellied Chat-Tyrant Ochthoeca diadema						C 5
	Cattle Tyrant Macheternus rixosus		U				
	Speckled Mourner Laniocera rufescens			U 1			
	Dusky-capped Flycatcher Myiachus tuberculifer			F		C?	
	Great Kiskadee Pitangus sulphuratus	C	C				
	Boat-billed Flycatcher Megarhynchus pitangua	U					
	Rusty-margined Flycatcher Myiozetetes cayennensis	F					
	Social Flycatcher Myiozetetes similis		F				
	Streaked Flycatcher Myiodynastes maculatus	U					
	Golden-crowned Flycatcher Myiodynastes chrysocephalus				F	U	
	Tropical Kingbird Tyrannus melancholicus	A	A			U	U
SWALLOWS, MARTINS Hirundinidae	Brown-chested Martin Progne tapera	F					
	Grey-breasted Martin Progne chalybea	F					
	Blue-and-white Swallow Notiochelidon cyanoleuca	F	C			C	U
	Southern Rough-winged Swallow Stelgidopteryx ruficollis	C	F				
JAYS Corvidae	Green Jay Cyanocorax yncas					C	U
WRENS Troglodytidae	Bicoloured Wren Campylorhynchus griseus	C	C				
	Sharpe's Wren Cinnycerthia olivascens						C 5
	Sooty-headed Wren Thryotorus spadix			C	F 3		
	Whiskered Wren Thryotorus mysticallis					C 4	
	Stripe-throated Wren Thryotorus leucopogon		U	F			
	House Wren Troglodytes aedon	C				U	
	White-breasted Wood-Wren Henicorhina leucosticta		U	F 5+1	U		

		Parque Miraflores	Secondary Habitats	Cerro de La Paz		Cerro de La Paz		El Talisman		Alto Cantagallos	
		SS1	SS5a / SS4	SS2		SS3		SS5b		SS6	
Family	**Species**	**760 m**	**500-2200m**	**1000m**		**1350 m**		**2000m**		**2450 m**	
	Grey-breasted Wood-wren Henicorhina leucophrys							C	2	F	1
	Song Wren Cyphorhinus phaeocephalus			U	3						
MOCKINGBIRDS											
Mimidae	Tropical Mockingbird Mimus gilvus		U	U							
THRUSHES, SOLITAIRES											
Turdidae	Andean Solitaire Myadestes ralloides							F		U	1
	Grey-cheeked Thrush Catharus minimus			F	8+4	U	1				
	Swainson's Thrush Catharus ustulatus			U	3	F	6+1	U	1		
	Great Thrush Turdus fuscater							F		F	
	Glossy-black Thrush Turdus serranus									U	1
	Black-billed Thrush Turdus ignobilis	F						U			
	Pale-vented Thrush Turdus obsoletus					U	3				
GNATWRENS etc	Tawny-faced Gnatwren Microbates										
Silviidae	cinereiventris			U	1	F					
VIREOS	Rufous-browed Peppershrike										
Vireonidae	Cyclarhis gujanensis	F		F		U					
	Black-billed Peppershrike Cyclarhis nigrirostris							U			
	Yellow-throated Vireo Vireo flavifrons					U					
	Rufous-naped Greenlet Hylophilus semibrunneus			U		U		U			
	Yellow-browed Shrike-Vireo Vireolanius eximius			F							
ICTERIDS	Shiny Cowbird Molothrus										
Icteridae	bonariensis	A	C								
	Crested Oropendola Psarocolius decumanus			F							
	Russet-backed Oropendola Psarocolius angustifrons					U		C			
	Scarlet-rumped Cacique Cacicus uropygialis							F			
	Northern Mountain Cacique Cacicus lecoramphus									C	
	Mountain Grackle Macroagelaius subalaris									U	
	Yellow-backed Oriole Icterus chrysater		F								
	Yellow-tailed Oriole Icterus nigrogularis		U								
	Eastern Meadowlark Sturnella magna		F								
AMERICAN WARBLERS											
Parulidae	Black-and-white Warbler Mniotilta varia			F		U	1	F			
	Golden-winged Warbler Vermivora chrysoptera					U					
	Northern Yellow Warbler Dendroica aestiva	C									
	Chestnut-sided Warbler Dendroica pensylvanica	F									
	Cerulean Warbler Dendroica cerulea					U					
	Blackburnian Warbler Denroica fusca	F				F		F		F	
	Bay-breasted Warbler Dendroica castanea					F					
	American Redstart Setophaga ruticilla					F	1				

Family	Species	Parque Miraflores SS1 760 m	Secondary Habitats SS5a / SS4 500-2200m	Cerro de La Paz SS2 1000m	Cerro de La Paz SS3 1350 m	El Talisman SS5b 2000m	Alto Cantagallos SS6 2450 m
	Northern Waterthrush Seiurus motacilla	F	F				
	Canada Warbler Wilsonia canadensis			F 2	C 5+2	C 6	
	Slate-throated Whitestart Myioborus miniatus					A 6+1	F
	Golden-fronted Whitestart Myioborus ornatus					U 1	C 2
	Russet-crowned Warbler Basileuterus coronatus					F 3	F 2
	Three-striped Warbler Basileuterus tristriatus subsp nov					C 9	
HONEYCREEPERS Coerebidae	Capped Conebill Conirostrum albifrons						U
	Bananaquit Coereba flaveola	C		F			
	Bluish Flower-peircer Diglossa caerulescens						U 1
	Masked Flower-Piercer Diglossa cyanea					F 2	F 5
	White-sided Flower-Piercer Diglossa albilatera					F 3+1	C 6+1
	Purple Honeycreeper Cyanerpes caeuleus			U	F 4+1		
	Green Honeycreeper Chlorophanes spiza			F	F 7		
TANAGERS Thraupidae	Blue-hooded Euphonia Euphonia musica		F				
	Orange-bellied Euphonia Euphonia xanthogaster			U	F 3	F	
	Thick-billed Euphonia Euphonia laniirostris	C		U			
	Speckled Tanager Tangara guttata				F 2	F	
	Golden Tanager Tangara arthus				F 4	F	U
	Saffron-crowned Tanager Tangara xanthocephala					F	
	Flame-faced Tanager Tangara parzidakii					F	
	Blue-necked Tanager Tangara cyanicollis	C		F	F		
	Bay-headed Tanager Tangara gyrola			A	C 10		
	Beryl-spangled Tanager Tangara nigroviridis					F 1	
	Black-capped Tanager Tangara heinei					F	
	Scarlet-bellied Mountain-Tanager Anisognathus igniventris						U
	Blue-winged Mountain-Tanager Anisognathus somptuosus					C	U
	Hooded Mountain-Tanager Buthraupis montana					U	U
	Blue-grey Tanager Thraupis episcopus	A	C			U	
	Palm Tanager Thraupis palmarum	F	U				
	Crimson-backed Tanager Ramphocelus dimidiatus	C	C	U		F	
	Yellow-rumped Tanager Ramphocelus icteronotus	U	U				
	Summer Tanager Piranga rubra	F	F	F	C 3+1	U	
	Sooty Ant-Tanager Habia gutturalis			C 7+1	F 2+2		
	White-lined Tanager Tachyphonus rufus		U				
	Grey-headed Tanager Eucometis penicillata			F 2			
	Common Bush-Tanager					C 6	A 9+1

		Parque Miraflores	Secondary Habitats	Cerro de La Paz	Cerro de La Paz	El Talisman	Alto Cantagallos
		SS1	SS5a / SS4	SS2	SS3	SS5b	SS6
Family	**Species**	**760 m**	**500-2200m**	**1000m**	**1350 m**	**2000m**	**2450 m**
	Chlorospingus ophthalmicus Ashy-throated Bush-Tanager						
	Chlorospingus canigularis Oleaginous Hemispingus					F	
	Hemispingus frontalis Black-eared Hemispingus					F 3	
	Hemispingus melanotis Grass-green Tanager Chlorornis						F 2
	riefferii						C 1
FINCHES	Ultramarine Grosbeak						
Fringillidae	Cyanocompsa cyanoides			F 2+1	U 1		
	Slate-coloured Grosbeak Saltator grossus				U 1		
	Buff-throated Saltator Saltator maximus	F	F				
	Black-winged Saltator Saltator atripennis					F	
	Rose-breasted Grosbeak Pheucticus ludovicianus				F 1		
	Yellow-throated Brush-Finch Atlapetes gutturalis					C 2	
	Northern Rufous-naped Brush-Finch Atlapetes latinuchus subsp nov						U 1
	Stripe-headed Brush-Finch Buarremnon torquatus		U				
	Chestnut-capped Brush-Finch Buarremnon brunneinucha					C 8	
	Orange-billed Sparrow Arremnon aurantiirostris			U 1			
	Sooty Grassquit Tiaris fuliginosa				U 1		
	Yellow-faced Grassquit Tiaris olivacea		U			U 1	
	Dull-coloured Grassquit Tiaris obscura		F				
	Black-and-white Seedeater Sporophila luctuosa		U				
	Yellow-bellied Seedeater Sporophila nigricollis	U	U				
	Ruddy-breated Seedeater Sporophila minuta	U					
	Blue-black Grassquit Volatina jacarina		C				
	Saffron Finch Sicalis flaveola	F	C				
	Rufous-collared Sparrow Zonotrichia capensis		A			F	
	Yellow-bellied Goldfinch Spinus xanthogaster		U			F	
	Lesser Goldfinch Spinus psaltria	U					
SPECIES TOTALS	**302**	**52**	**64**	**93**	**83**	**97**	**74**

Appendix 2: List of Butterfly Species

Appendix 3: List of Mammal Species of Magdalena Medio region

No.	Scientific Name	Common name	Locality	Population	IUCN	CITES	Use	Observations
	MARSUPIALIA							
	Didelphidae							
1	*Caluromys lanatus*	Ratón Fara	SC-LP	A				Observed in field
2	*Didelphis marsupialis*	Fara	SC-LP	A			C-A	Observed in field
3	*Chironectes minimus*	Fara de Agua	LP				C	Reported by locals
	XENARTHRA							
	Myrmecophagidae							
4	*Myrmecophaga tridactyla*	Hormiguero Palmero*	SC-LP	PC	VU	II	D	Reported by locals
5	*Tamandua tetradactyla*	Oso Hormiguero	SC-LP	C		III		Observed in field
6	*Cyclopes didactylus*	La Gran Bestia*	SC-LP	PC				Observed in field
	Bradypodidae							
7	*Bradypus variegatus*	Perezoso Tres Dedos	SC-LP	C	LR	II	A	Reported by locals
	Megalonychidae							
8	*Choloepus hoffmani*	Perezoso Dos Dedos	S	PC	LR	III	A	Reported by locals
	Dasypodidae							
9	*Dasypus novemcinctus*	Armadillo Nueve Bandas	Todas					Specimen
10	*Cabassous centralis*	Armadillo Rabo e Trapo*	LP		DD	III	A	Reported by locals
	CHIROPTERA							
	Phyllostomidae							
11	*Carollia sp.*	Murciélago frutero	LP	A				Capturada en campo
12	*Mesophylla cf. macconnelli*	Murciélago Blanquecino	LP	D				Capturada en campo
13	*Artibeus sp.*	Murciélago Frutero	LP	A				Capturada en campo
14	*Desmodus rotundus*	Murciélago Vampiro*	SC-LP-CG	C			C	Reported by locals
	PRIMATES							
	Cebidae							
15	*Cebus albifrons*	Mico Cariblanco*	LP	D	LR	II	M	Reported by locals
16	*Aotus cf. lemurinus*	Marteja*	CG - LP	A	VU	II	M	Observed in field
17	*Aotus griseimembra*	Marteja*	MHN-UIS		EN			In museum
18	*Ateles hybridus*	Marimonda del Magdalena	MHN-UIS		CR			In museum
19	*Alouatta seniculus*	Mono Aullador o Cotudo*	SC-LP-S	A	LR	II	A	Recorded by voice
	CARNIVORA							
	Canidae							
20	*Cerdocyon thous*	Zorro Perruno*	SC-LP	A			C	Specimen
	Ursidae							
21	*Tremarctos ornatus*	Oso Andino	CG	D	EN	I	C-A	Reported by locals
No.	**NOMBRE CIENTÍFICO**	**NOMBRE COMÚN**	**LOCALIDAD**	**POBLACIÓN**	**UICN**	**CITES**	**USO**	**OBSERVACIONES**
	Procyonidae							
22	*Procyon cancrivorus*	Mapache	SC	PC			C	Reported by locals
23	*Nasua nasua*	Guache Tejón*	SC-LP	C		III	A	Reported by locals
24	*Nasuella olivacea*	Guache de Montaña*	S-CG	D	DD		A	Reported by locals
25	*Potos flavus*	Maco*	Todas	C		III	A-P	Observed in field
	Mustelidae							
26	*Mustela frenata*	Comadreja	SC-LP	C			C	Reported by locals
27	*Galictis vittata*	Hurón*	SC	C		III	C-M	In captivity
28	*Eira barbara*	Umba* ó Zorro Gato*	SC-LP	C		II	C	Specimen
29	*Lontra longicaudis*	Nutria*	SC	E	VU	I	P	Reported by locals
	Felidae							

30	*Leopardus pardalis*	Tigrillo	SC-LP	R	VU	I	C-P	Specimen
31	*Leopardus sp.*	Tigrillo	CG	R			C-P	Reported by locals
32	*Herpailurus yaguarondi*	Yaguarundi						In museum
33	*Puma concolor*	León de Montaña*	SC-CG	R	VU	I	C-P	Reported by locals
34	*Panthera onca*	Tigre* - Jaguar		E	VU	I	C-P	Reported by locals
	ARTIODACTYLA							
	Tayassuidae							
35	*Tayassu pecari*	Baquiro* ó Zaíno	SC-LP		VU		A	Specimen
36	*Tayassu tajacu*	Baquiro* ó Zaíno						In museum
	Cervidae							
37	*Mazama americana*	Venado	SC-LP		LR		A	Reported by locals
38	*Mazama rufina*	Venado Locho	S-CG	R	VU			Reported by locals
	SIRENIA							
	Trichechidae							
39	*Trichechus manatus*	Manatí	SC	E	CR	I		Reported by locals
	RODENTIA							
	Sciuridae							
40	*Sciurus granatensis*	Ardita*	SC-LP	A			C	Specimen
41	*Microsciurus mimulus*	Ardita Piojita*	LP	PC				Field capture
42	*Microsciurus santanderensis*	Ardilla Pioja o Rabicana*	MHN-UIS					In museum
	Erethizontidae							
43	*Coendou cf. prehensiles*	Puerco Espin	SC-LP	PC			A	Reported by locals
44	*Coendou cf. quichua*	Puerco Espin Andino	S	E			A	Reported by locals
	Hydrocheridae							
45	*Hydrochaeris hydrochaerys*	Ponche*	SC	C			A	In captivity
	Agoutidae							
46	*Agouti paca*	Tinajo*	SC-LP	C	LR	III	A	Specimens
47	*Agouti taczanowskii*	Tinajo de Lanas*	S-CG	R	LR		A	Reported by locals
	Dasyproctidae							
48	*Dasyprocta punctata*	Picure* ó Ñeque*	SC-LP	C	LR	III	A-C	Reported by locals
	LAGOMORPHA							
	Leporidae							
49	*Silvilagus brasiliensis*	Conejo	SC-LP	C				Observed in field

Key:

Locality:

SC: Sur del Cesar (100-300m)
LP: Cerro de La Paz (1000-1350m)
S: Talismán y Siberia (1300-2000m)
CG: Canta Gallos Alto (2000-2500m)
MHN-UIS: Museo Historia Natural UIS

IUCN:

EX: Extinct
CR: Critical
EN: Endangered
VU: Vulnerable
NT: Near-Threatened
DD: Data Deficient
LR: Low risk

State of population

A: Abundant
C: Common
PC: Fairly Common
R: Rare
E: Very rare

Local use:

A: Food
C: Hunting for control
P: Skins
M: Pets

CITES:

I: Appendix 1
II: Appendix 2
III: Appendix 3

*Local name

Classification follows Emmons & Feer 1997.

Appendix 4: Budget