

# Conservation assesment for Serranía de los Churumbelos

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Para un resumen de esta sección en español, por favor ver la sección “*Sumario de recomendaciones de conservación para la Serranía de los Churumbelos.*”

## Biological Importance

The multi-taxa flora and fauna surveys conducted throughout the Serranía provide much direct biological justification for the implementation of conservation measures.

The flora of the Churumbelos is extremely diverse. This is exemplified in highly specialised families such as Orchidaceae that included 12 species considered Very Important for conservation. More importantly, two new species for science in the family Gesneriaceae were discovered during the study and have been described: *Columnea reticulata* sp. nov. (Amaya *et al.* 2000) and *Columnea coronocripta* sp. nov. (Amaya and González 2000). Also in the family Piparaceae, a new species for science was discovered. This is a small indication of the uniqueness and taxonomic value of Serranía de los Churumbelos.

Of the 461 bird species recorded, 77% are forest dependant, including 13 threatened species and 9 restricted-range species. Four species are known in Colombia only from Serranía de los Churumbelos, and furthermore, at least 15 bird species were previously known from only one other location in the country. Over 100 bird species represent major range and/or altitude extensions, illustrating how poorly known the region is. It is estimated that at least 550 species of birds are resident in the Serranía: an exceptional diversity, making the Serranía a global avian "hotspot" and meriting conservation action for the region.

Four frog species represent the first record for Colombia, with two species representing second localities for Colombia. Several unidentified herptiles potentially relate to undescribed taxa. Reports and evidence of substantial populations of several key threatened mammals, such as Spectacled Bear *Tremarctos ornatus* and Mountain Tapir *Tapirus pinchaque*, highlights the global importance of the Serranía.

Good representation of several insect groups indicates a high diversity, especially with many poorly known and good indicator species. Butterflies were particularly well represented with 150 species of 5 families and 12 subfamilies recorded and two new species for Colombia. The high diversity of Lepidoptero-fauna, especially forest specialists, indicates that the Serranía de los Churumbelos is an important enclave to conserve.

General biological findings reveal two major zoogeographic regions, the *Northern Andean* (NAN) and *Amazonia North* (AMN), which strongly influence the biodiversity of Serranía de los Churumbelos. A large number of species were recorded in birds and plants, resulting in the conclusion that two distinct biodiversity groups are defined:

SS1 & SS2 (**below 1,000 m**) = great biological affinities to **AMN zoogeographic region**.

SS3 - SS7 (**above 1,000 m**) = close biological affinities to the **NAN zoogeographic region**.

Using avian taxa, greater definition can be assigned to the biological compositions, with a large proportion of species restricted to the *Eastern Slope Andes* (within NAN) or *Río Negro West* (within AMN) zoogeographic subregions. The northernmost part of the Serranía, at **SS5-7** is also influenced by the upper premontane and montane fauna and flora of the Magdalena Valley.

Whilst the entire Eastern slope of the Andes is influenced by these two zoogeographic regions, it is interesting to encounter such a high species diversity in Serranía de los Churumbelos. The Serranía encompasses an immense variety of ecosystems and micro-habitats, reflected its extraordinarily high biodiversity, and encouraged by its complex topography, made up of steep east-facing and gentle west-facing slopes and meseta landforms. This unique geography, as well as being located at a unique crossroads of zoogeographical systems, with influences from the Central Andes, the Eastern Andes, Amazonia, the Magdalena Valley and, most of all, the east slope of the Andes, makes the Serranía de los Churumbelos of strategic conservation importance. It is an important corridor for gene flow between different the cordilleras of the Andes, Amazonia and inter-Andean valleys as well as across the altitudinal gradient from Amazonia to High Andean forests.

## Conservation justifications

**(a) Lowland forest (SS1-SS2; 350-700 m):** Although fewer threatened species were recorded at these elevations, it is important that any protected area also encompasses forest in these zones. **SS1**, at the fringe of the Amazon basin, was the most diverse of all sites in birds, bats and herpetofauna, with 262 bird species recorded: almost half the total for the entire Serranía. It also had the highest uniqueness, with 187 species not recorded at other sites. **SS2** produced some of the most interesting bird records, with many range extensions and species recorded for the first or second time in Colombia, as well as two Near-Threatened species. It is also the most important site for butterflies, with the highest diversity and most rare species recorded at this site. Conservation of the lowland areas is also important as it produces a corridor connecting Andean biological communities and their Amazonian counterparts. Additionally, many species (especially birds) undertake seasonal altitudinal movements, making it important that protected areas encompass the widest variety of elevations possible. Furthermore, Military Macaw *Ara militaris*, one of the most endangered bird species recorded, was observed foraging from 1500 m down to c. 600 m elevation, meaning that a wide elevational range of forest is important for the protection of this species.

**(b) Premontane elevations (SS3-4; 1100-1400 m):** The premontane elevations were the most important sites for threatened and range-restricted species, containing 1 Threatened, 4 Near-Threatened and 5 endemic bird species. A conservation priority -weighted evaluation of bird species at each site highlighted these two sites as of the highest value for conservation. A large number of range extensions and new or second records for Colombia were found here, making the conservation of the Churumbelos premontane forests of immense national and international importance. The endangered species encountered include charismatic species which are potentially excellent figureheads for conservation: Military Macaw and two charismatic fruiteater species. **SS3 – 4** also contained a large diversity of frog species, including two species new for Colombia and several potentially new species for science. Perhaps most importantly of all, it is at these elevations where the mystical meseta landforms are found – a stunning sight, potentially of future ecotourism value, should Colombia become a more attractive travelling destination.

**(c) Montane elevations (SS5-7; 1900-2500 m):** As in the premontane elevations, a number of species of conservation concern were recorded here: 1 Threatened, 4 Near-Threatened and 4 range-restricted species. However, more of these species conformed to the Colombian Inter-Andean Slopes EBA, not the Ecuador-Peru East Andes EBA which characterised the premontane forests. The Inter-Andean Slopes EBA and the species found in it are regarded as a “Critical Priority” for conservation (Stattersfield et al 1997), making the conservation of the Churumbelos’ montane elevations an international conservation priority. These elevations are particularly important for the conservation of Cracids and other Galliformes, with three species of international conservation concern in these groups recorded in the montane elevations. Important new locations for many poorly-known and threatened species were found here. As set out in the botanical assessment, excellent quality continuous forest was encountered at all sites from Amazonia up to montane cloud forest, including many poorly-known plants, among them new species for science. The forests of the Churumbelos, and their endangered animal communities, are of international and national conservation importance. Efforts should be made to conserve them as a matter of immediate priority.

## Vulnerability assessment

The eastern slope of the Andes in Colombia was, until recent human activities, an unbroken continuum of moist to humid primary forest ranging from páramo down into the Orinoquian and Amazonian lowlands, and characterised by high precipitation from convectional cloud formations. However, since the 1970s, the Colombian government has supported infrastructural development including road construction projects with the aim of opening up communications links to the vast and undeveloped Amazonian region that comprises a third of Colombia's surface area. Presently, five main arterial routes penetrate the lowlands from Colombia's High Andean interior, with a further major highway currently being constructed along the entire eastern Andean foothills of Colombia that will connect Ecuador to Venezuela. This infrastructure development on the eastern slope of the Andes in Colombia, as well as adjacent Ecuador, has stimulated unprecedented population pressures and has led to much habitat degradation in recent years.

Increased and improved access routes have stimulated the destruction of mature tropical forests for pasturelands, petroleum exploitation and coca plantations. Deforestation rates in lowland moist forest on the foothills of the eastern Andes of Colombia are rapidly accelerating, from 1.4% (1961-1979) to 4.4% (1979-1988) correlated to increasing human population density (Viña & Cavelier 1999). Despite mounting human pressures on the eastern slope of the Andes, a large expanse of virgin tropical lowland to montane forests in the Serranía is extremely important. Andean forests in Colombia have been considerably reduced in the last 50 years (Hamilton 1997). The foothills of the East Andes have recently undergone a massive transformation to

agriculture. Whilst premontane and montane forests contain a greater concentration of endemic, range-restricted and threatened species, protection of a full altitudinal span of forest types would be an efficient use of resources, given that the diversity of the Churumbelos is contained within such a small geographical area. Furthermore, destruction of foothill Amazonian forest will have serious effects for many mobile species and altitudinal migrants which depend on the entire Serranía for seasonal food resources.

What is most disturbing is the lack of protected areas on the eastern slope of the Andes in Colombia. Parque Natural Nacional Cueva de los Guácharos provides some protection to the forests of the region although is a small Park (*ca.*5,000 ha) and suffers from illegal colonisation. Fortunately, whilst much of the Andean Cordilleras and Eastern Andean slopes have undergone irreversible changes, Serranía de los Churumbelos has largely avoided the catastrophic human impact that other regions have suffered. However, this is changing rapidly as Serranía de los Churumbelos is increasingly viewed as a treasure box of mineral (petroleum and precious metals) and natural resources (timber and rich organic soils for agriculture).

Mocoa has historically been a poor and lawless frontier town owing to a treacherous and often impassable single road access from Pasto, Nariño. However, within the last 10 years, development in the region has increased with the completion of the Bogotá-Mocoa highway. The final road section from Mocoa to Pitalito was a major breakthrough for the regional economy, allowing the fast and reliable transportation of goods from Mocoa to the heart of Colombia. A ten-year sustained economic boom has attracted many immigrants to rural areas, including marginal lands on the fringe of Serranía de los Churumbelos. The most significant recent development is the development and ongoing paving of the Mocoa to Pitalito road, running parallel to the Serranía. This will enhance transportation links between Mocoa and the rest of the country, thus further stimulating economic growth and demand, particularly in the region of SS5-7. In addition, further road infrastructure projects are planned in the region, including a new major highway from the Ecuadorian border near Puerto Asís to Villavicencio. This proposed road would pass along the edge of the eastern base of the Serranía from Villagarzón to San José de Fragua and Florencia in Caquetá.

**Proposed infrastructure projects make it clear that the Serranía de los Churumbelos could shortly become the focus for large-scale deforestation and colonisation. Thus, there is a very real sense of urgency for conservation action to be implemented now, if it is to be effective in the region.**

### **Conservation recommendations**

Colombia '98 and Colombian EBA Project demonstrate the great conservation importance and potential vast threats that are looming for the Serranía de los Churumbelos. Considering the mounting threats and unique biological properties of the Serranía, we unhesitatingly propose that legal protection in the form of establishing a protected area is the only option available to ensure the future protection of the forests in the Churumbelos.

**We advocate immediate protection** on the following grounds:

- i) Presently the Serranía's forest is almost entirely intact and land is property of the state (uncolonised).
- ii) Limited human encroachment reduces land ownership conflicts and success of protection.
- iii) The potential mineral and natural resource wealth in the Serranía could otherwise cause potential future conflicts of interest.
- iv) The lack of protected areas on the eastern slope of the Andes makes protection of pristine forest habitats such as Serranía de los Churumbelos a clear priority.
- v) The need to establish an altitudinal protected corridor from Amazonia to the Andes is recognised by governmental institutions.

**We propose the following strategy for the conservation of Serranía de los Churumbelos:**

- i) **Protected Area:** Serranía de los Churumbelos should be subject to legal protection in the form of a National Park. The park should encompass Pico Fragua (southern extreme of the Cueva de los Guácharos NP) down the central spine of los Churumbelos to the Río Caquetá at the frontier of Putumayo department. This would compliment the Department of Cauca's existing protected areas network, which currently includes PNN Munchique and Tambito Nature Reserve in the Western Cordillera and PNN Puracé in the Central Cordillera, as well as the recently-declared PNN Indi-Wasi. Linking all three protected areas would minimise the costs of infrastructure or administration. Furthermore, linking the protected areas would be of little or no conflict to populations surrounding the Serranía that are still predominantly in the lowlands and along the main river courses.

**iii) Oriental-Central Cordillera Corridor (OCCC):** would aim to protect the heavily forested upper catchment areas of four of Colombia's greatest rivers: the Ríos Caquetá, Magdalena, Cauca and Patía, with a large protected area corridor from Cueva de los Guácharos National Park in the east- across the Serranía de los Churumbelos and westwards across the Macizo Colombiano to link up with Puracé National Park. This continuous protected area would encompass the largest remaining Andean wilderness north of the Equator. Whilst the OCCC is an ambitious conservation goal, it is both realistic and highly recommended as being the most advantageous strategy presently. Such a protected area would contain almost all of the humid forest Andean ecosystems found in the northern Andes, and would protect their associated remarkably diverse flora and faunas.

Completion of the first step paves the way forward for the subsequent two steps. Already, actions are being undertaken towards seeking central government approval of the Serranía de los Churumbelos protected area, based on our conservation recommendations. Furthermore, implementation of these plans are being assisted by Instituto Alexander von Humboldt (IAVH), the Environment Ministry's investigation arm, that have conducted a lengthy investigation into latitudinal diversity along the eastern slope of the Andes (e.g. Salaman *et al.* 2002). Following our work in the Churumbelos, IAVH investigators, together with EBA researcher Carlos Gonzales, conducted a similar biological study of forests adjacent to Serranía de los Churumbelos in Dpto. Caquetá in late 2000, with a view to extending protective measures northeast from the Churumbelos. Subsequently, PNN Indí-Wasi has already been established to the northeast of Serranía de los Churumbelos.

**Defining the boundaries** of any protected area is a difficult decision. We consider it important to incorporate the entire altitudinal gradient from lowland humid forest to cloud forest, maximising the biodiversity protected. Colonists dominate the peripheral zone of the Serranía and, once informed of the threats and value of the Serranía, tentatively appear supportive of protection of a core area.

Drawing a line on a map is clearly not enough to ensure that these special forests are protected, as many other National Parks in Colombia, and throughout the world, suffer from inadequate enforcement and illegal colonisation. The support of local peoples surrounding the massif, and of *de facto* political groups is critical in ensuring that the protected area is practically enforced. A sustained education programme is needed to ensure that any protected area is not only tolerated, but actively supported by local people. Local people's needs must be taken into account and included in conservation plans. They must be given the support, infrastructure, knowledge and tools to improve farming efficiency and sustainability such that they do not have to resort to the 'slash and erode' agriculture that has already destroyed much of Colombia's natural biological heritage.

