

Rainforest Concern: Neblina Reserve facts for Nature Travels

1. THE NEBLINA RESERVE

Facts and figures

- *Rainforest Concern's* Neblina Reserve is a cloud forest in North West Ecuador, and forms part of the Southern phase of the Chocó Andean corridor project
- The Neblina Reserve is currently around 2,200 hectares
- The region is predominantly tropical montane cloud forest, and has exceptional biodiversity
- Before project intervention the forest was depleting at a rate of 1.5% per year
- Rainforest Concern has been working on this project since 1993.

The ultimate goal of the Chocó Andean corridor project is to form a corridor of continuous protected forest from Mindo Reserve, close to the capital Quito in the south, to the Awa Reserve on the Colombian border in the north. The southern phase of this project is located between two of the *Global Biodiversity hotspots*: the Chocó-Darién and *Tropical Andes*, and will link the last vulnerable forests between the Cotacachi-Cayapas Reserve to the North, and the Maquipucuna, Mindo and Pulumahua reserves to the South.

Species

Among the endemic species found in the area are the Andean (spectacled) bear, puma and Cock of the Rock. A recent discovery, in forest close to Neblina, is the Olinguito. This small, nocturnal mammal was only discovered in 2013.

According to DECOIN, no less than 28 species of mammals and birds are seriously threatened - including spectacled bears, pumas, ocelots, northern tiger cat and two other species of cats, two species of monkeys, a very rare species of wild dog, mountain tapirs, and a river otter.

The highly threatened bird species include: plate-billed mountain toucans, the Esmeraldas Woodstar hummingbird, and the umbrella bird. In addition, a significant portion of forests are adjacent to, and are part of the buffer area of the Cotacachi-Cayapas Ecological Reserve. This reserve has among the highest level of biodiversity of any of the world's officially protected areas.

Topography and climate

- The Neblina Reserve is characterised by rugged terrain
- Altitudes vary from 1850 to 3225 metres above sea level

- Soils are well drained and fertile
- Annual rainfall ranges from 1500 to 2800 millimetres (average for Southern England is around 800mm)
- Average annual temperatures are 16°C

Threats

Internal threats

- Unsustainable agriculture (cattle ranching, mono-culture crops, subsistence farming). Fires are often used to clear large areas of land for agriculture, resulting in not only loss of cloud forest, but also soil erosion.
- Logging

External threats

- Extractive industries, particularly copper mining concessions
- Hydro-electric
- Road building
- Climate change

References:

Rainforest Concern
DECOIN

Helgen K, Pinto C, Kays R, Helgen L, Tsuchiya M, Quinn A, Wilson D, Maldonado J (2013). "Taxonomic revision of the olingos (*Bassaricyon*), with description of a new species, the Olinguito". *ZooKeys* 324: p1--83.

2. ABOUT THE CHOCÓ ANDEAN CORRIDOR

The Chocó Andean corridor is around 500 miles long by 50 miles wide and covers an area of 6.5 million hectares.

The Chocó bioregion in North West Ecuador is one of the highest global conservation priorities, and is recognised as 'of exceptional importance as a repository for a disproportionate part of the world's biodiversity' Gentry (1992). Western Ecuador, biologically quite different from the forests of the Amazon, has already suffered 90% deforestation. From a species conservation perspective, this means that each acre saved is extremely important.

The creation of the Chocó Andean corridor is intended to establish a link between highland cloud forest and Pacific lowland rainforests, allowing the annual

migrations of many species, and the long term protection of the forests and their biodiversity.

Contributing to serious environment degradation and loss of biodiversity of the area are unsustainable farming practices, road building, mining concessions, logging, poverty and lack of education.

References:

Rainforest Concern

Ecometrica, 2009,

UNEP, 2004 <http://www.ourplanet.com/wcmc/pdfs/cloudforests.pdf>

3. SPECIES FOUND IN THE REGION

Andean Bear

The Andean (or spectacled) bear is the only surviving bear species in South America. In the UK its most famous exemplar is Paddington Bear – who travelled from Peru and ended up lost at a London train station!

The bears mostly live in high elevation forests and humid montane forests and humid grasslands. The IUCN report that they remain at the same altitude, but seasonally migrate to follow food sources.

Spectacled bears are omnivores, eating fruits and succulent plants, and occasionally meat. At Neblina bears have been seen and photographed, and also identified from the plants they have eaten.

Studies show that the bears' home ranges can vary from at least 10 to 160km². Loss and defragmentation of habitat means that the bears' ranges become restricted, and small or isolated habitats are not viable to support bear populations.

The IUCN have classed the Spectacled Bear as vulnerable, estimating that it is likely that populations will decline by more than 30% within 30 years. Threats to the species persist as habitats continue to be lost. Road building and encroaching agriculture further defragment habitats. Poaching is a direct threat, though large scale developments like open cast mining and hydro-electric installations offer substantially greater threats. The IUCN forecasts that Spectacled Bears could move

from Vulnerable to Endangered, and some studies predict that the species is moving towards extinction.

One solution is to try to develop corridors to link protected habitats allowing the bears to range between them.

The Andean Cock of the Rock

The Andean Cock of the Rock is found in the cloud forests of the Andes usually at altitudes of 1,500-8,900 feet. The birds eat mainly fruit, but occasionally insects.

The female is an orange-brown colour with a small crest, but it is the male that is most striking. He has a black body with grey wing, and a bright orange head, neck and upper body. A bright orange crest extends down to his bill.

In courtship the males gather together on a branch, or lek, and then attract the female by loud crowing and beak clapping. The males display in pairs and within each pair, they direct most of their displays at each other, rather than the female. They flap their wings, bob their heads, jump on the branch and bow to each other. The IUCN state that this species is described as 'uncommon and patchily distributed'.

References

IUCN, 2015 - <http://www.iucnredlist.org/details/22066/0>

'Tweet of the day', Oct 2013, *BBC Radio 4*

Rodriguez-Ferrar, A., Azpiroz, A.B., 2005. 'Notes on the natural history of the Andean Cock-of-the-rock (*Rupicola Peruviana*) in Western Venezuela', *Ornitologia Neotropical* 16, p105-108.

3. ABOUT CLOUD FORESTS

What are cloud forests?

Tropical montane cloud forests occur on humid mountain slopes where topography generates conditions for ground level clouds. At higher altitudes the warm, humid air, begins to cool and therefore condense.

These forests are defined by persistent cloud and mist, resulting in dense vegetation in a humid atmosphere.

Cloud forests play an important role in conserving watersheds, and maintaining the natural flow of rivers. They act like sponges, absorbing water and then gradually releasing that water into the watersheds. The extra water they can trap can be up to 60% of rainfall.

The cloud forests of Ecuador augment the water supplies to the country's capital, Quito.

Cloud forests are rare – making up less than less than 2.5% of the total area of the world's tropical forest. Cloud forests are under threat by human pressures and by climate change impacting on temperature, rainfall and the formation of clouds in mountain areas.

These fragile ecosystems are centres of endemism and biodiversity, with 85% of cloud forest sites being identified with Global 200 Priority Forest Ecoregions, and have been found to host even greater proportions of the world's bird species. A huge ten per cent of the world's 2,609 restricted-range bird species (those with a range of less than 50 000 km²) are confined to or mainly found in cloud forests.

Threats to cloud forests

Cloud forests face many threats, including climate change, logging, unsustainable agriculture, mining, road building, all causing habitat loss and defragmentation.

Habitat defragmentation means that cloud forests can no longer maintain their water retaining properties. Endemic flora and fauna become susceptible to extinction, partly through loss of habitat, and desertification of the ecosystem. Fragmented forest is more easily accessible, for hunting, logging and other activities, further damaging biodiversity.

References: UNEP, 2004, Garcia et al. 1998

IUCN red list - <http://www.iucnredlist.org/details/summary/22700974/0>

4. ABOUT RAINFOREST CONCERN

- Rainforest Concern was established in 1993 to protect threatened natural habitats, the biodiversity they contain and the indigenous people who still depend on them for their survival.
- Fundamental to Rainforest Concern's philosophy is the formation of strong partnerships with conservation NGOs in the countries in which we operate.
- In its 25 years, Rainforest Concern has been instrumental in protecting over 2 million hectares of formerly threatened native forests and the vast biodiversity

they contain from degradation and deforestation.

- It has worked with 21 partner organisations and 8 indigenous tribes
- Rainforest Concern has worked in 13 countries; Ecuador, Peru, Chile, Colombia, Belize, Brazil, Romania, Costa Rica, Panama, India, Sri Lanka, Uganda and Suriname
- The charity has over 10,000 members
- Rainforest Concern is a member of the *IUCN* (The International Union for Conservation of Nature)

Methods of conservation

Methods of conservation include the creation of private reserves through land purchase, registration of ancestral indigenous territories, land titling for local communities.

With the creation of private reserves, once an area of forest is secured, Rainforest Concern puts in place the legal framework for permanent protection of that forest. People from nearby communities are trained and employed as forest wardens, patrolling the forest to deter illegal activities and monitoring flora and fauna.

In order to address some of the local drivers of deforestation and forest degradation the charity sets up programmes of alternative income generation, environmental education for local communities living near the projects. These are designed to reduce the negative human impact on forests arising through, for example, cattle ranching and subsistence farming. Examples of alternative sustainable income sources include shade grown coffee, organic agroforestry, the production of handicrafts and responsible ecotourism.

Rainforest Concern's work to date has not only prevented the destruction of these native forests, and the consequent release of GHG emissions, it has protected endangered habitats and biodiversity, reversed and/or prevented soil erosion, preserved watersheds and secured land for the indigenous peoples.

5. ABOUT THE TROPICAL ANDES

The Tropical Andes is one of the top five global biodiversity hotspots.

As one of the most diverse regions on Earth, it has nearly 7% of the global total of all endemic vascular plants, and almost 6% of the global total of all endemic vertebrates.

This region contains an astounding 16% of the world's plant species (45-50,000) in only 0.8% of the earth's land surface. The Tropical Andes are also estimated to be home to 1,666 bird species, 677 (41%) of which are endemic, a level of diversity

and endemism that is unequalled in the world (Intag* was also declared by Birdlife International an Important Bird Area). The only other taxa that could beat this endemism are the amphibians, with 73% of its species being endemic to this region. This region has the largest diversity of amphibians in the world, with 664 distinct species, of which over 400 are listed as threatened on the 2004 IUCN Red List.

Only a quarter of the habitat of the Tropical Andes still remains, as the region faces threats from illegal timber, mining, cattle grazing and other unsustainable agricultural practices, hydroelectric dams.

*Intag is the region bordering the Cotacachi Cayapas Ecological Reserve, and named after the Intag river that runs through it. This region is currently under threat from copper mining concessions.

References:

Rainforest Concern (Planet 2007)

MYERS, N. ,MITTERMEIER, R.A., MITTERMEIER, C.G., DA FONSECA, G.A.B., KENT, J. (2000) Biodiversity hotspots for conservation priorities.' *Nature* 403, p 853-858.

6. ABOUT GLOBAL BIODIVERSITY HOTSPOTS

What is a global biodiversity hotspot?

'Biodiversity hotspot' is a term used to describe the planet's most biologically rich regions. These regions contain high levels of species diversity but are threatened with extinction.

The concept was introduced by the British ecologist, Norman Myers to address the question: how to prioritise which areas of the planet are most important to conserve.

'Conservationists are far from able to assist all species under threat, if only for lack of funding. This places a premium on priorities: how can we support the most species at the least cost? One way is to identify 'biodiversity hotspots' where exceptional concentrations of endemic species are undergoing exceptional loss of habitat. As many as 44% of all species of vascular plants and 35% of all species in four vertebrate groups are confined to 25 hotspots comprising only 1.4% of the land surface of the Earth. This opens the way for a 'silver bullet' strategy on the

part of conservation planners, focusing on these hotspots in proportion to their share of the world's species at risk.' Myers et al, 1999.

How is a biodiversity hotspot identified?

Hotspots are identified by species endemism and the degree of threat.

To qualify as a hotspot, a region must meet two criteria:

1. an area must contain at least 0.5% or 1,500 of the world's 300,000 plant species²⁰ as endemics
2. the area should have lost 70% or more of its primary vegetation, this being the form of habitat that usually contains the most species, especially endemics.

Global biodiversity hotspots at a glance

- 35 biodiversity hotspots have been identified
- In total, these hotspots have already lost 88% of their expanse
- Eleven hotspots have already lost at least 90% and three have lost 95%
- The intact remnants of the hotspots now cover only 2.3%% of the Earth's land surface.
- 150,000 plant species as endemics, more than half of the world's total are found in these hotspots.
- The global biodiversity hotspots are home to 11980 vertebrates as endemics; 42% of all terrestrial vertebrate species.

Reference: MYERS, N. ,MITTERMEIER, R.A., MITTERMEIER, C.G., DA FONSECA, G.A.B., KENT, J. (2000) 'Biodiversity hotspots for conservation priorities.' *Nature* 403, p 853-858.

7. ABOUT THE IUCN

The International Union for Conservation of Nature is the world's oldest and largest environmental organisation, with 1200 government and NGO members, of which Rainforest Concern is one.

It exists to conserve biodiversity through science and research projects, conservation projects and through influencing international environmental policies. It has Official Observer Status at the United Nations General Assembly.

The IUCN Red List is the most comprehensive database on the conservation status of wild species globally. It classifies species that have a high probability of extinction in the medium-term future as Critically Endangered, Endangered, or Vulnerable. The Red List measures the threat to individual species, assessing

distribution and conservation status and is used to guide conservation action and national and international policy decisions.