

## AGENDA 21

the United Nations Conference on the Environment and Development UNCED Rio 92

### Protecting Mountain Ecosystems

Chapter 13, section II, abridged version

Mountains are an important source of water, energy, food products, agricultural products and minerals. They are storehouses of biological diversity and many rare species, constituting an essential ecological ecosystem.

Mountain ecosystems are extremely vulnerable and susceptible to soil erosion, landslides and habitat loss and genetic diversity. Widening and the expansion of the populations in mountainous areas result in deforestation, the loss of marginal lands, intensive cattle-raising, loss of forest cover and other forms of environmental degradation.

Proposals focus on strengthening knowledge and the sustainable development of mountain systems; promoting the development of alternative areas and alternative employment for mountain living is linked to practices that degrade the environment.

Should create incentives for local population to limit themselves to conservationist practices, the economy of the mountain areas, natural reserves in regions rich in species, the mountain areas most vulnerable to floods, erosion, earthquakes, avalanches and other disasters, as well as air pollution in industrial and

tourism, environmentally sound mining, beekeeping, the cultivation and processing of medicinal aromatic plants and other activities. Local inhabitants must be encouraged in order to meet the means of subsistence of the communities in mountain regions and of the native populations.

Disasters and floods in the mountains require hazard prevention measures, zoning of mountainous areas, early warning systems, programs for relief of inhabitants and emergency supplies.

The annual cost (1993-2000) of the mountainous area is of 13 million dollars, including the use of international resources in terms of land concessions."



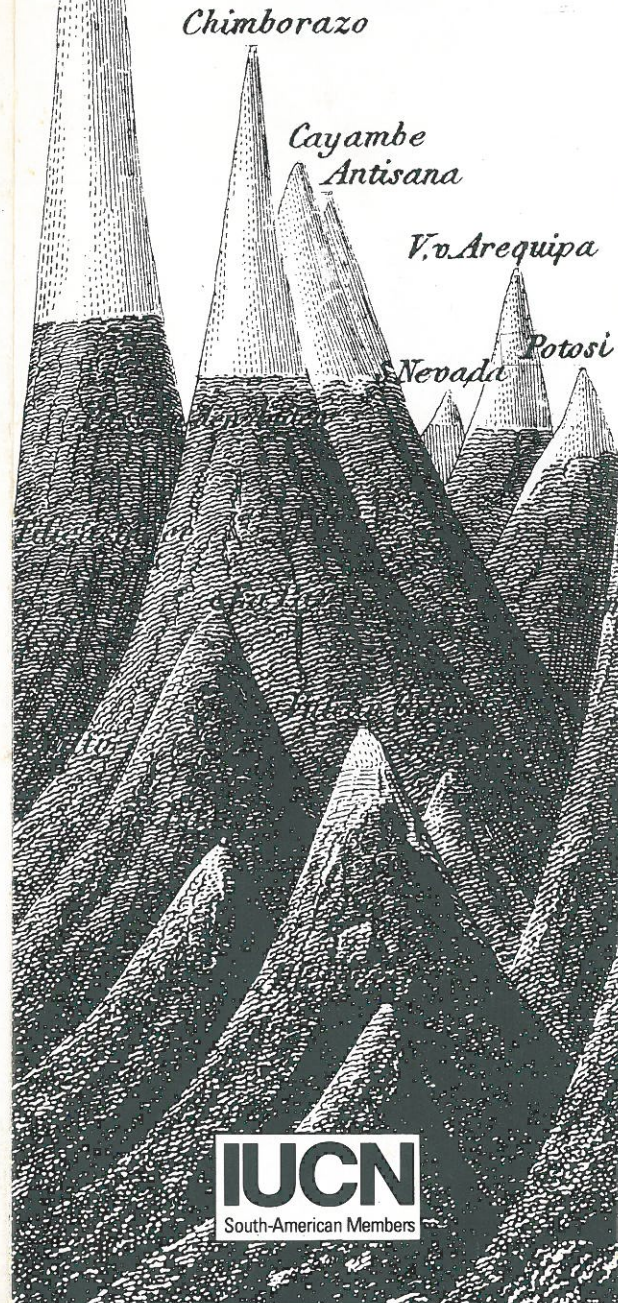
Andean Condor - from the book "Journey of Humboldt and Bonpland"

The Incas knew the cordillera south of Peru as ANTA the Quetchua name for copper; this metal was plentiful in that region. Later, the name in its Spanish version designated the entire mountain range.

Hispanic Encyclopaedia



# Sorata THE ANDES Illimani CORDILLERA



## THE ANDES CORDILLERA

The Andes Cordillera is the largest continuous mountain range in the world, and the second in altitude. Of recent geological formation and still in constant evolution, the Cordillera is characterized by steep slopes and fragile areas.

The human presence in the Cordillera is one of the most ancient, in addition to being among the most developed, in the Americas. Pre-Colombian inhabitants domesticated more than 300 species of plants which are cultivated all over the world, as well as employ another thousand species. To improve their methods of cultivation, the Andean populations built one of the most sophisticated irrigation, drainage and soil conservation systems known so far.

In spite of the significant human presence in the Andes and of its destructive impact on Nature during colonial and in modern times, the region maintained an important quantity of endemisms and natural resources, which play a key role in the future of the entire continent. Emphasizing this concept, the tropical area of the Cordillera has been called the epicenter of our planet's biological diversity.

When the South-American IUCN members first met in 1990 concerning continental issues they decided to put together a work group that would be responsible for the "Integrated Program of Environmental Conservation and Sustainable Development for the Andes Cordillera".

- The main objectives of this program are:
- to protect the biodiversity of the natural ecosystems,
  - to protect the free development of autochthonous cultures,
  - to intensify experiences in sustainable development

To bring this about we intend to employ planning and zoning as tools for sustainable development, as well as the creation of biological corridors among the protected areas. It is, therefore, very important to strengthen these areas within the Cordillera. Other integrated zoning measures, such as the adoption of buffer zones, should complement this process. One of the basic rules for this work is total openness and the search for the greater integration of every possible effort.

A series of meetings have been held by the work group, which has decided to meet at least once every six months. What we seek with this is to have a complete view of the Cordillera, a summary of all the activities involved and the search for the best methodology which will allow the greatest possible efficacy of the programmed actions.

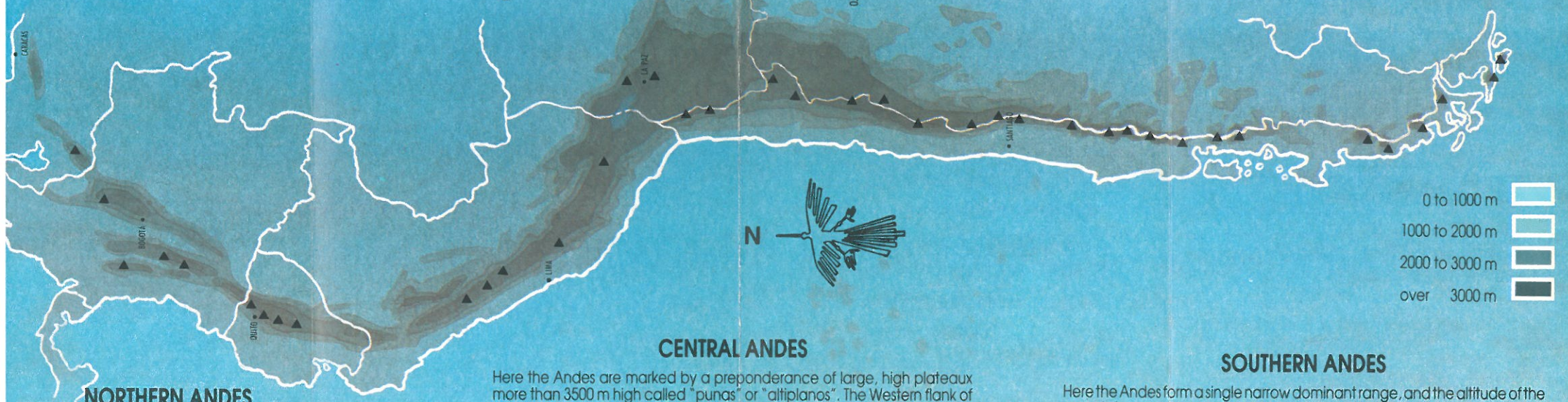




# ANDES CORDILLERA - VIEW FROM THE PACIFIC



- BOLIVAR 5002
- EL COCUI 5493
- RUZE 6399
- HUBLA 5750
- HURACE 4646
- PICHINCHA 4791
- COTOPAXI 5897
- CHIMBORAZO 6267
- SANGAY 5930
- HUASCARAN 6768
- YERUPAJA 6632
- HUAGABANCA 5748
- PUJASICO 6246
- COROPUNA 6613
- ANCOHUMA 6550
- ILLIMANI 6882
- SAJAMA 6320
- ISLUCA 5530
- TOKOPURI 6755
- LULLALLAGO 6723
- OJOS DEL SALADO 6863
- BONETE 6872
- TORTOLAS 5910
- ANCOGAGA 6959
- TURUNGATO 6800
- SAN JOSE 5830
- CERRO AZUL 3810
- COPAHUES 2980
- LONQUIMAY 2889
- VILLARRICA 2840
- OSORNO 2660
- HUEQUI 2417
- CONCOMINGO 2300
- FITZ ROY 3375
- MURALLON 3600
- BERTRAND 3270
- PAINE 2670
- SARMIENTO 2300
- DARWIN 2469



## CENTRAL ANDES

Here the Andes are marked by a preponderance of large, high plateaux more than 3500 m high called "punas" or "altiplanos". The Western flank of the Andes is dry, whereas the humid Eastern flank is distinguished by a succession of vertical ecozones down to the Amazon and Paraná basins. The Eastern escarpment shows the following relationship:

Frost Land	6800 to 4800 m
Puna	4800 to 3500 m
Cloudy Forest	3500 to 2000 m
Humid Mountain Forest	2000 to 1000 m
Jungle	1000 to 0 m

The high plateaux, with over than 3500 m, are the most densely populated areas of the Andes. The Central Cordillera, which was the heartland of the pre-Colombian indigenous empires, currently represents the only area where the indigenous population exceeds 80% of the area's total population.

## SOUTHERN ANDES

Here the Andes form a single narrow dominant range, and the altitude of the mountain summits decreases from North to South. The northern section is characterized by a dry sub-tropical climate. The vegetation corresponds to the climate and to the different altitude levels. Xerophilic forests cover parts of the Eastern escarpments. In the southern section the climate and the vegetation change. The west side is humid, and the east side, arid. The southernmost section is characterized by glaciers that go down to the tide water in spectacular fjords. In that region, tourism brings a distinct set of problems.

Those interested in working with this project should get in touch with the Brazilian Committee of IUCN:  
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...a great diversity and a mosaic of ecosystems. There is a higher humidity and a climatic symmetry between the Western and Eastern flanks of the range, which has the following ecozones:

Humid Mountain Forest	4500 to 3200 m
Cloudy Forest	3200 to 2200 m
Frost Land	2200 to 1000 m
Jungle	1000 to 0 m

...mountainous part of the cool land are cultivated. Temperate land with high humidity are excellent for coffee, maize and fruit. The Chocó and the Nevadas de Santa Marta are within the region's influence and so shelter important endemisms.