



The Northern Andes ecoregion

THE NORTHERN ANDES ecoregion, extending from Venezuela to northern Peru, contains an exceptionally diverse set of landscapes. Its rugged topography, extreme climatic variation, geologic and biogeographic history have created a unique collection of habitats found nowhere else on Earth.

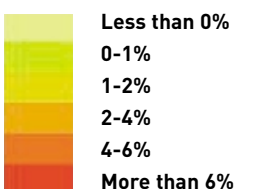
The montane forests and meadows of the region nurture a rich complex of species, including many that are endemic. Some of the more well-known representatives of local fauna are the spectacled bear, the puma and the Andean tapir. The biota of the Northern Andean paramos is equally outstanding. These unique high altitude grasslands developed in altitudinal isolation, leading to an exceptional degree of biological diversity. It has been estimated that up to 60 percent of this ecosystem's approximately 3 000 to 4 000 species of vascular plants may be endemic.

Intense pressures from urbanization, logging, grazing and land conversion threaten the Northern Andes ecosystem. As habitats are destroyed, animal and plant populations decrease, and many species eventually become extinct. Since habitat loss is highly correlated with the intensity of human population and activities, a map showing the location of people and their economic activities provides a close approximation to a map of threats to biodiversity. By mapping demographic


and related variables, WWF can strategize conservation action across an ecoregion. These maps help target operations in regions where threats co-occur with important biological phenomena. Areas with relatively little threat are prime candidates for new reserves or wildlife corridors between reserves.

Population growth is a useful indicator of current and future threat to biodiversity as high growth rates are indicative of an increase in consumption and the exploitation of natural resources. Consequently, habitat and species are adversely affected. Conversely, depopulation of an area (negative growth) can support biodiversity if previously exploited lands are left to grow back to a natural state. Examining these patterns of growth can help WWF detect where threats to biodiversity will continue to rise in the near term. Current statistics for the Northern Andean countries show positive growth rates throughout yet growth is significantly lower in the Andean mountains than in adjacent forest lowlands. In large part, this is because landless peasants have been moving to the coast or are attracted to oil or mining developments in the

POPULATION GROWTH RATES IN THE NORTHERN ANDES ECOREGION, 1990s



 Northern Andean montane forest

 Northern Andean paramos

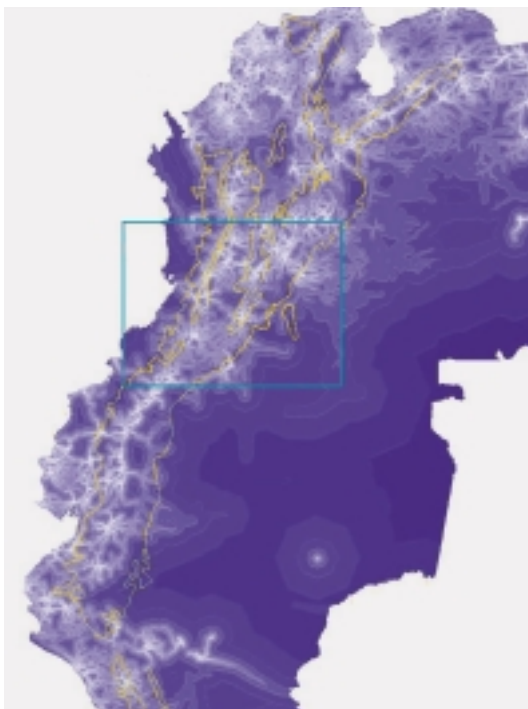


Source: WWF-Colombia; CIAT.

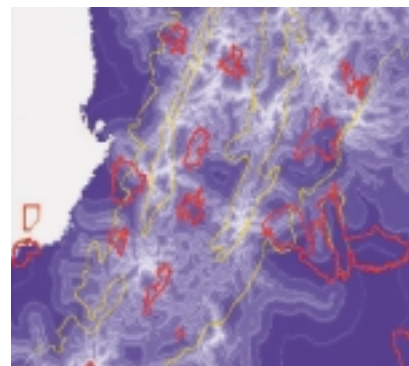
Amazon. The Ecuadorean canton of Pichincha is the only Andean political unit with a growth rate over 2 percent. This canton could be losing habitat at an alarming rate.

Population statistics are often only available for large administrative units such as counties or *municipios*. Such coarse resolution makes it difficult to associate population patterns with particular sites of interest. Human populations tend to concentrate in cities or towns or locate near roads or other transportation routes. Future human populations are more likely to settle in these relatively accessible areas as well. Therefore, mapped layers of roads and towns can indicate probable population densities at finer scales than entire counties. The maps on this page, the result of a market accessibility model based on town and road locations, approximate the distribution of human populations and their activities in the Northern Andes. The model uses time value as a surrogate for accessibility to each location throughout the ecoregion. Topography and the networks of roads, rivers and streams were all used to calculate the results. On the maps, higher values indicate low accessibility (high travel time requirement), while lower values indicate high accessibility (low travel time requirement).

In spite of the threat that they present to the natural environment, roads and other transportation corridors often provide a positive social function. Better access to urban centers and markets leads to diversification of rural economies by opening up markets to villagers who want to sell labor, artisan products or agricultural produce. In some cases, increased access to towns allows rural people to participate in a wage economy, potentially reducing the need to exploit local resources. It is more likely, however, that increased access to urban centers combined with close proximity to those centers can lead to higher levels of habitat degradation as a result of cash cropping, logging and other economic opportunities introduced by market integration. Therefore, priority areas for conservation will have a better chance of remaining intact if they are located in relatively inaccessible sites. The accessibility model provides a useful viability indicator for locating these sites, which have the potential to function as buffer zones, wildlife corridors and protected areas. Meanwhile, taking areas of high biological diversity into account when planning for additional infrastructure will help minimize the impact of social infrastructure on existing parks and wilderness areas while supporting human development needs.



ACCESSIBILITY IN THE NORTHERN ANDES, 2000



Accessibility measure



 Northern Andes ecoregion

 Protected area

Source: WWF-Colombia; CIAT.