

# The Quijos River Valley: A Protected Landscape as Best Management Practice for Conservation and Development in Tropandean Ecuador

## Resumen

Tres importantes áreas protegidas en las montañas de Ecuador nororiental han dejado una franja de terreno sin clasificación de conservación. Curiosamente, estas áreas y el valle del río Quijos en la mitad, siempre han sido utilizadas por los humanos; incluso desde antes de la Conquista, las rutas comerciales de montaña hacia la Amazonia entrecruzaban el área. El conocimiento de estas rutas fue usado por Francisco de Orellana y su famosa expedición que descubrió el río Amazonas. Con la construcción de caminos de penetración y la sucesiva explotación de la base de recursos del área, la ciudad de Baeza y su zona agrícola asociada experimentaron ciclos de abundancia y escasez que reflejaban la explotación de madera, de naranjilla, de caña de azúcar, de árboles frutales y de la ganadería. Por último, luego del influjo petrolero de los años 1980s, Baeza y el valle del Río Quijos soportan el influjo de bienes transeúntes y de servicios esporádicos asociados al trabajo del petróleo. Más recientemente, una industria incipiente de ecoturismo esta emergiendo, de tal suerte que se espera un nuevo ciclo dependiendo de la explotación de truchas y destinos turísticos. Sin embargo, para que este vaivén sea sustentable, se debe desarrollar una planificación integral a nivel de paisaje. Se propone considerar al valle del río Quijos como un Paisaje Protegido, consolidando un corredor de conservación andino en las cabeceras amazónicas, de gran trascendencia para la conservación de la ecodiversidad de la región.

## Introduction

The Quijos River drains the tertiary watersheds of the Cayambe and Antisana mountain complexes, flowing east to form the Coca river, which in turn drains to the Napo river and then to the Amazon. The mountain pass of Guamaní, with its characteristic *Polylepis* woodlands, is located straight east from the capital, Quito. Ancient mountain routes facilitated trade between the Amazonian lowlands with the interandean plateaus. A famous one, for instance, is the mountain trail or "culunco" connecting the towns of Pifo and Oyacachi on each side of the continental divide. Other well-known routes connect Saraurco in the cisandean domain to Cayambe; yet other runs towards Puruhanta Lake and Pimampiro in the interandean domain.

The strategic importance of this natural corridor was always understood by the local inhabitants, people of mountain jungles who developed a strong cultural presence at the sites of Cosanga and Baeza. Indeed, the Quijos Indians were famous for their hunting abilities and artistic productions, including pottery and ornaments of gold and silver. The Quijos salt trade was legendary, and the chiefdom of Quijos was a very important component of the Yumbos (a name used by the Spaniards to refer to mountain people) of the Eastern Quito kingdom. The importance of the cultural center in Cosanga, for instance, rivals that of other settlements in montane environments, having had numbers even greater than today's population, much like a case reported for the Tairona Indians in the Sierra Nevada de Santa Marta, Colombia (Kendall 1997). Archaeologists have estimated that about 25,000 people lived in the Quijos river valley during the Cosanga phase (Porras 1961).

The Quijos Indians were brave warriors who were not subdued by the Incas during their brief presence of 80 years in Ecuadorian territory. Also, chroniclers wrote about fierce resistance put up by the Quijos Indians towards the Spaniards, and tales of the leader Jumandi, who commanded a bloody rebellion, are told even today (Sarmiento 1955). It is said that after expelling the Spaniards from the montane site of Cosanga and Baeza, Jumandi went to seek refuge in caves nearby, part of a network of

limestone formations that extend southward into the Tayos cave complex, the largest in the country.

### **The Door to the Amazon**

The potential richness of the mythical "El Dorado" envisioned by the Spaniards was seemingly closer in the Quijos territory. By means of the Orellana entrance through the Quijos valley, the "door to the Amazon" was open in such a way that its large Indian settlement and strategic location motivated the Spanish rulers to bestow a title of nobility on the newly created city of Baeza. Only two other cities in the country, Quito and Cuenca, held such an honorary title, signifying nobility and loyalty to the crown of Spain. The foundation of the "Muy Noble y Muy Leal Ciudad Baeza de los Quijos" was a landmark in the expansion of western culture into mountain jungles and, later, into the Amazon territory. From many accounts, all through the Colonial era penetration to the "Oriente" was done through this mountain pass (Sarmiento 1958).

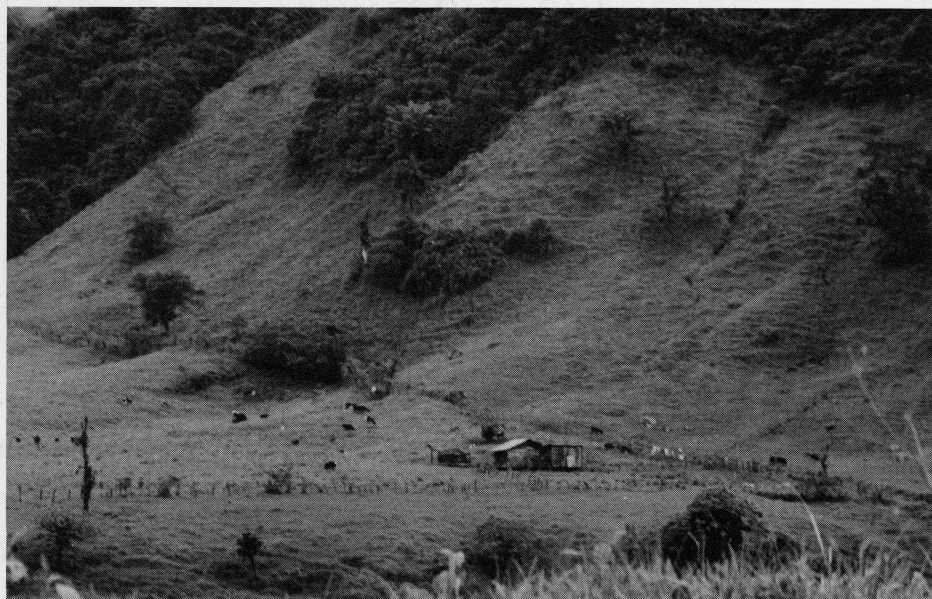
The city of Baeza de los Quijos, now known simply as Baeza, is the administrative center of Quijos county. (The other county with jurisdiction in the valley is El Chaco.) In 1994, Baeza was formally named as an Ecuadorian Cultural Heritage Site, in recognition of its historical significance. Several towns—as old as the attempts to colonize the Amazonian piedmont—exist along this mountain pass. They tell a story of forest frontier expansion based in re-

ligious creed (San Francisco de Borja, Santa Rosa, San Rafael del Reventador, San José de Dahuano, San Vicente de Huaticocha, etc.). This epistemographic effect also has been described for the mountain forests of northwestern Ecuador (Sarmiento 1995). The rich flora and fauna associated with the nearby protected areas is now rare amidst the surrounding open pasture land (Figure 1); they are to be managed in a private protected forest of the Cumanda Reserve (Vivanco 1996) and the Ecological Corridor Borja-Sumaco.

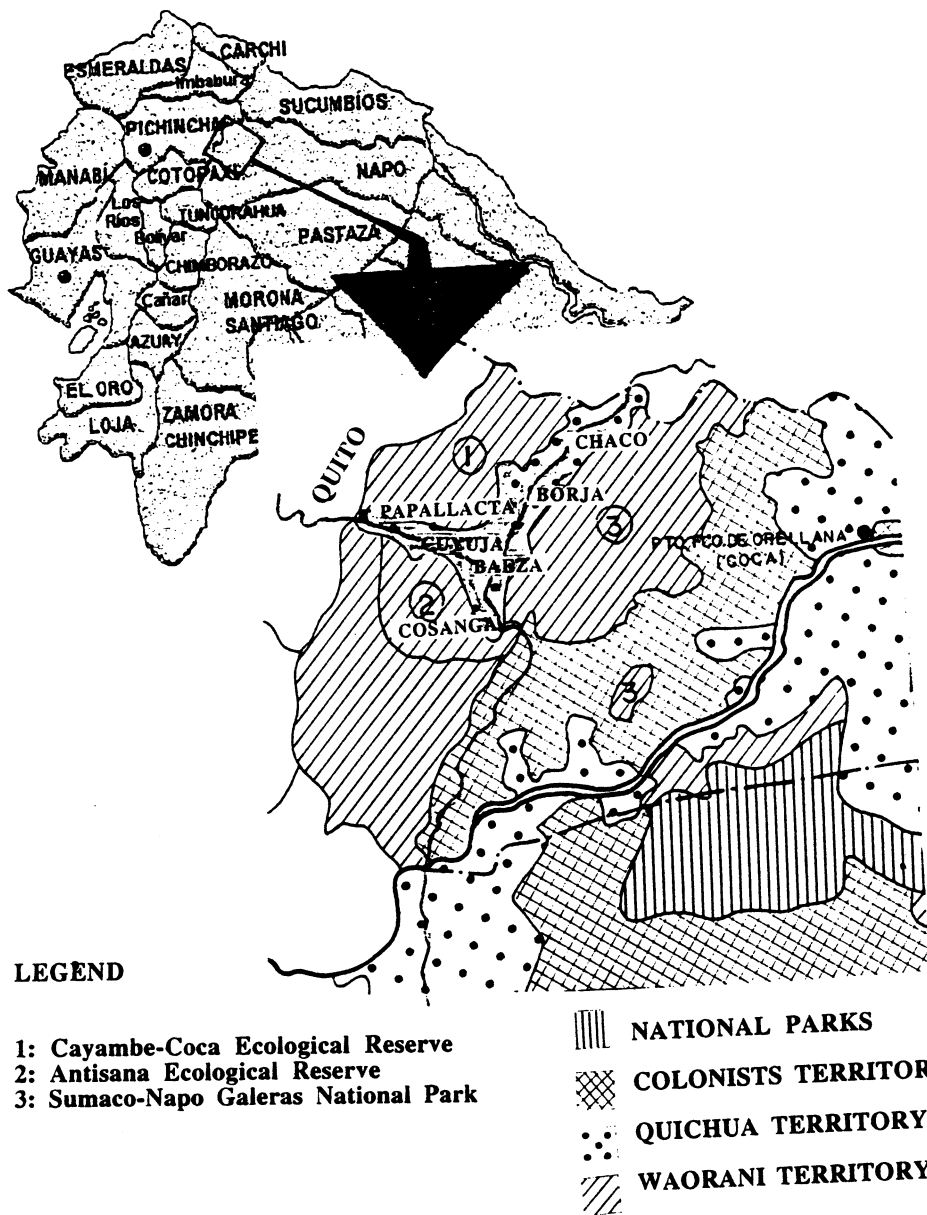
### Three Surrounding Protected Areas

The Quijos River valley is located between three important national conservation areas (Figure 2):

- The oldest, to the north and west, is the Cayambe-Coca Ecological Reserve (CCER), protecting ecosystems from the snow-capped mountain of Cayambe, right on the Equator, down to the piedmont of the Coca river.
- The Sumaco-Galeras National Park (SGNP), towards the east, which encompasses mountain forests and isolated montane formations of tepui-like antiquity on the eastern Andean cordillera, protecting headwaters of important tributaries of the upper Napo River, such as the Cosanga, Machacuyacu, Payamino, Misahuallí, and Hollín rivers.
- The newest conservation unit is the Antisana Ecological Reserve (AER), towards the south, which



**Figure 1. Pasture land typical of the Quijos River valley**



**Figure 2. Protected areas in the vicinity of the Quijos River valley**



actually touches the limits of the previous reserve at the Osayacu ridge, contouring the 2,500 m altitude mark towards the perpetual glaciers of the Antisana volcano, over 5,000 m in elevation (Sarmiento 1992; Ulloa et al. 1997).

Table 1 shows a synopsis of the protected areas conveying the obvious connection through a conservation corridor.

The juxtaposition of the boundaries of the SGNP and AER, and their proximity to the CCER, provides for the connectivity of dispersed wildlife populations and the main-

tenance of local biota. From the Las Antenas summit, near Baeza, you can see the three areas in a single glimpse. The space in between the reserves is threatened by expanding agricultural practices and cattle ranching on sloped terrain. As in many other governmental protected areas, the limits are not established on the ground and people do not respect the conservation status. A common sight in the valley is a brand-new cut ("desmonte"), followed by more pasture, a problem of habitat conversion reported elsewhere (Aide and Cavalier 1994; Churchill et al. 1995; Sarmiento 1997a, 1997b) for montane environments.

**Table 1. A comparison of the protected areas around the Quijos River valley.** It shows the convenience of developing a conservation corridor among them. A proposed protected landscape management category is set forth in this paper.

Protected Area	Management Category	Area (ha)	Date Created	Altitude Range (m)	Forest Type
Cayambe-Coca	Ecological reserve	120,000	1970	600-5,790	montane cloud
Antisana	Ecological reserve	403,103	1993	300-5,076	montane cloud
Sumaco-Galeras	National park	205,249	1994	300-3,732	montane cloud
Borja-Sumaco	Conservation corridor	50	In progress	1,650-3,200	montane cloud
Cumanda	Protected Forest	330	1994	1,800-2,500	montane cloud

**Note:** Although the forest type is the same throughout, the montane cloud forest formation may be considered as encompassing the following life zones: montane tropical humid forest, montane tropical rain forest, subalpine rain forest, subalpine and nival forest, premontane tropical rain forest, lower montane humid forest, and upper montane humid forest (Cañadas 1983).

## Population Pressure in the Area

Along the valley of the Quijos river very old settlements can be listed: Papallacta, Cuyuja, Baeza, Borja and El Chaco are towns located in the valley's plateaus along the penetration road towards the cisandean foothills to the north. From Baeza, other small towns are located following the road towards the sugar cane and tea fields of the central eastern Andean foothills. Along the road, several small "caceríos" have been established; these small urban nuclei are affecting the likelihood of conservation of the reserves. Poaching of animals from inside the protected areas and mature forest conversion to pasture is rampant (Wesche 1995).

After an earthquake that affected the area in 1987, infrastructure development received attention, with a view towards constructing better roads and safer buildings. The city of Baeza was relocated to a peneplain nearby, where residences, schools, hotels and open markets are laid out in a grid. However, waste is directly dumped to the Machángara river nearby. It is possible to find traces of solid waste down the river into the Quijos.

The classical steep-slope erosion process of "pie-du-vache" is noticeable all around Baeza, where a milk-collecting and dairy-processing facility of Nestlé, Inc., is located. The current vogue is to import a variety of foxtail grass developed to resist tropical weathering in sloped terrain, because of the low maintenance cost of *Setaria sphacelata* pastures, due to

the effect of expanded tillers and massive root-mass production. The tussock of the grass is very competitive and reduces the chances for natural regeneration of abandoned pastures. Recalcitrant seeds of nurse trees in nearby patches are not able to establish conventional successional pathways (Sarmiento 1997b).

## A Protected Landscape Candidate

The status of "protected landscape" is unknown in Ecuador. Integrating the people's needs and biodiversity conservation is the approach for this, the fifth category in IUCN's protected area classification. However, in the most recent survey of Ecuadorian protected areas (Ulloa et al. 1997), those areas which could correspond to an IUCN Category V protected landscape are instead forced to fit under the local appellation "national recreational area." This designation lacks the protected landscape's emphasis on understanding and involving local communities as a priority, and instead targets ephemeral tourists or other recreational users.

A protected landscape designation would fit perfectly for the Quijos river valley, where a great deal of concern exists within several nongovernmental organizations, including the Fundación FunRAE, the Fundación Rumicocha, the Fundación Antisana, and the Fundación San Rafael Lodge, among others. Local governments are also in favor of the adoption of new approaches for development. For example, the municipality

and the provincial council favor ideas for an ethnobotanical garden as well as for an on-site ecomuseum. Since the Ecuadorian government declared the city of Baeza a national cultural heritage site for its historical importance, restorations of local architecture and historical landmarks of the conquest of the Amazon may be easily found in the town. The designation of Baeza as a national heritage site is a strong indicator of the need for a management category that considers a cultural landscape–lifecycle approach. Also, the Quijos River valley has been the site for international development programs, such as SUBIR. Several failed attempts from SUBIR to link economic development and nature conservation are present in the area; despite this, the people of the region are hungry for alternative, environmentally friendly options, now that a rapport between conservation and development has been established in the communities (Chaverri et al. 1997).

Forest-cover maintenance is a priority for the upper reaches of the valley, where the Rumicocha lake is lo-

cated near the town of Papallacta. This area serves as a reservoir for the potable water supply to Quito. Other attempts to alter the drainage of the basins to provide water to the ever-growing needs of the capital are underway, threatening the integrity of the ecosystems of the Quijos valley. A comprehensive plan for environmental assessment is needed to review the fee schedule of the conservation corridor and complex, considering that it provides such an enormous environmental service to Quito. Moreover, considering the Quijos valley as a protected landscape will foster conservation in an ecoregional context, promoting the biggest consolidated protected area in the country. The natural corridor that the complex would create should be a pioneer for the new approach of conservation biology, and for the restoration of degraded landscapes, providing longer-term economic and cultural incentives to local people. Declaring the first Ecuadorian protected landscape in the Quijos River valley would be the best management practice to allow for restoration projects and sustainable enterprises.

### References

- Aide, M., and J. Cavalier. 1994. Barriers to lowland tropical forest restoration in the Sierra Nevada de Santa Marta. *Restoration Ecology* 2(4):219-229.
- Cañadas, L. 1983. *El Mapa Ecológico y Bioclimático del Ecuador*. Quito: Ed. MAG.
- Chaverri, M. L., T. Telles, Y. Leis, L. Ochoa, P. Silva, R. Ulloa, and L. Veloz. 1997. Lineamientos estratégicos para la reactivación económica del cantón Quijos, a través de un panorama turístico. *Geografía Aplicada y Desarrolla*, 16(34):7-56.

- Churchill, S., H. Balslev, E. Forero, and J. Luteyn. 1995. *Biodiversity and Conservation of Neotropical Montane Forests*. The Bronx, N.Y.: The New York Botanical Garden.
- Kendall, S. 1997. Protecting the 'earth of the world.' *People and the Planet* 5(1):20-21.
- Porras, P. 1961. *Arqueología e Historia de los valles de Quijos y Misahaualli*. Quito: Editorial Fénix.
- Sarmiento, A. 1955. *Biografía del Río Napo*. Quito: Editorial Fray Jodoco Ricke.
- . 1958. *Monografía Científica del Oriente Ecuatoriano*. Quito: Editorial La Unión.
- Sarmiento, F. O. 1992. Research in tropandean protected areas of Ecuadorian landscapes. *The George Wright Forum* 9(3-4): 148-160.
- . 1995. Naming and knowing an Ecuadorian landscape: A case study of the Maquipucuna Reserve. *The George Wright Forum* 12(1):15-22.
- . 1997a. Landscape regeneration by seeds and successional pathways to restore fragile Tropandean slopes. *Mountain Research and Development* 17(3):239-252.
- . 1997b. Arrested succession in pastures hinders regeneration of Tropandean forests and shreds mountain landscapes. *Environmental Conservation* 20(1):14-23.
- Ulloa, R., E. Ruiz, J. Enríquez, L. Suarez, J. Rivas, R. Andrade, and E. Rivera. 1997. *La Situación de las Areas Naturales Protegidas en el Ecuador*. Quito: INEFAN/GEF/IICA.
- Vázquez, M., and R. Ulloa. 1997. *Estrategia para la Conservación de la Diversidad Biológica en el Sector Forestal del Ecuador*. Quito: INEFAN/ECOCIENCIA.
- Vivanco, O. 1996. *Plan de Manejo del Bosque Protector "Cumanda"*. Technical report to the Ministry of Agriculture.
- Wesche, R. 1995. *The Ecotourist's Guide to the Ecuadorian Amazon. Napo Province*. Quito: University of Ottawa, Tropical Research and Development, and CETUR.
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