ECOREGIONAL ASSESSMENT EQUATORIAL PACIFIC: FRESHWATER COMPONENT

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EXECUTIVE SUMMARY

The Freshwater component of the Equatorial Pacific Ecoregional Evaluation identifies priority conservation sites, including watersheds and other hydrological systems, for an adequate management of the freshwater resources in the region. A hydrological system network was identified as a conservation portfolio.

The developed by The Nature Conservancy and successfully applied in other regions, was used as the main basis for the development of the study. Ecoregional assessments are the first step in The Nature Conservancy`s framework for mission success – Conservation by Design – in tat they set the biodiversity priorities for which strategies are developed, action is taken and success is measured in every ecoregion in the world where the Conservancy and it´s partners work.

The executing organizations of the study where: Fundación AGUA and EcoCiencia. Activities were coordinated with the main Governmental Organizations responsible for the freshwater resources. Also, the main museums, herbariums, universities and NGOs dedicated to these topics provided support to the project.

The protection of about 66 hydrological systems within the region, including watersheds is proposed upon the basis of the studies carried out by the above mentioned organizations. Those freshwater systems are rich in economically important species for the region, as is the case for 68 fresh water fish endangered species in the study area.

The Equatorial Pacific hydrological network (central-south coastal Ecuador and northern Peru) is one of the most important of the continent's Pacific edge. The Guayas watershed is among the biggest in the western Americas. The Equatorial Pacific region is composed of hundreds of mid-size or small watersheds going to the ocean, to the Guayas River or to other important rivers in Ecuador and Peru.

This should be enough arguments to protect the Guayas watershed and other rivers in the region. The constant water supply and the rich soils of this watersheds, could feed more than 15 million people (more than Ecuador's current population) according to international organizations such as IDB, World Bank and United Nations. The watershed starts in Ecuadorian Andes, from paramos (Andean grasslands), and cloud forests, and from the upper parts of the Chongon-Colonche coastal range, where mist and fog provides humidity to forests and soils, creating streams and rivers going to the Guayas.

Rivers starting in Ecuadorian southern Andes and northern Peru, supply water to the arid regions of coastal Peru, and are a high conservation priority for their ecological importance. Management of the region's watersheds should have a holistic approach, taking into account water, soils, forests, human populations and agricultural activities.

With the main purpose of providing the necessary elements for the conservation of the Equatorial Pacific, The Nature Conservancy and local partners developed this study, with the participation of national organizations, community-based organizations, and different social, economic and scientific sectors from Ecuador and Peru.

The Ecorregional Evaluation Methodology was applied, including 4 main steps:

(1) Selection of conservation objects. These are species, group of interacting species or ecological systems presenting an outstanding importance for the ecorregion. Selection is based on the main threats, rarity, endemism and/or the human importance of the objects (useful species, flag-species, others). Geographical distribution of the objects is represented on maps, using Geographic Information Systems.

(2) Viability evaluation. This step evaluates the conservation object's capacity of maintaining their populations or their ecological functionality over the time. The main species or ecosystems' threats are analyzed ("condition" criteria), as well as the population density and/or the area occupied by the conservation objects ("size" criteria). Also the "landscape context" of the objects is evaluated, which is a criteria integrating several aspects, such as "connectivity" within populations and the "integrity" of the main surrounding ecological processes. Among other techniques, advanced Geographic Information Systems and mathematical applications are used for the viability evaluation.

(3) Definition of conservation goals. In this phase, the minimum percentage is evaluated by means an ecological system or a population would be able to survive and to stay in the time. This way, the minimum areas to be protected for a population or an ecosystem to be viable are identified.

(4) Portfolio design. The main purpose of the portfolio of sites is to ensure that most or all viable conservation objects are properly represented within one or more sites of the network. This portfolio is scientifically supported by the previous steps and results, and is also represented in maps for an easy interpretation by conservation decision makers.

The scientific team obtained several kinds of freshwater data, included chemical, physical, ecological and biological data. This data was integrated in different tables and formats in order to determine the watersheds' relative importance and conservation priorities. Using this technology no less than 66 hydrological systems and surrounding areas were identified as conservation priorities. Sizes of the areas vary from 3,000 to more than 100,000 hectares.

Also, 68 freshwater and estuarine fish species were selected as conservation objects, due to their low populations (as a result from several human impacts) and due to their biological and ecological importance at a regional and global levels; this includes endemic species and species used for local food.

In another hand, this science-based portfolio shows that the Protected Areas Systems of Ecuador and Peru are not properly including the protection of watersheds. Usually the hydrological systems have been forgotten by protected areas planners.

The constant threats faced by watersheds make conservation of hydrological systems one of the hardest tasks in conservation biology sciences. Among other human impacts, the list of threats include: pollution, silting (as a result of deforestation and soil erosion), dams, water intake for towns and agriculture, and over-fishing.

Considering that most of the Equatorial Pacific watersheds are located in dry or semi-humid areas, the risk of depleting the water reserves used for agriculture and other human activities is always high. For these and other reasons the study provides important recommendations for the management and conservation of our prime natural resource, the water.