

BI-NATIONAL WATER MANAGEMENT FOR ECONOMIC DEVELOPMENT IN NICARAGUA AND HONDURAS

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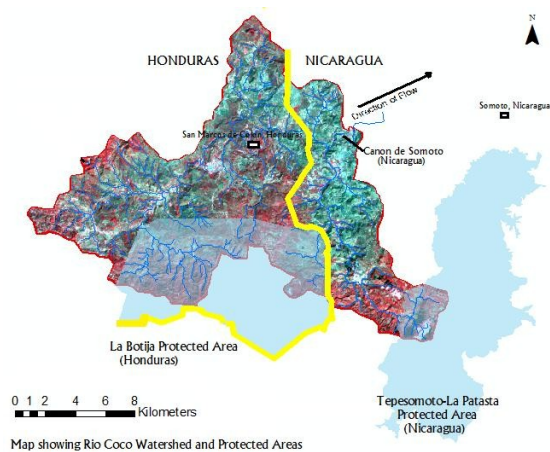
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The adjacent Departments of Madriz in Nicaragua and Choluteca in Honduras contain the headwaters of two important international rivers in Central America: the Río Coco and the Río Negro. The Río Coco forms the geopolitical border between Nicaragua and Honduras for nearly 480 kilometers before emptying into the Caribbean Sea. The major Honduran and Nicaraguan tributaries for this river originate in this region and join in the north of Madriz. The Río Negro also has tributaries originating from the mountains in these Departments, but the Río Negro flows south toward the Gulf of Fonseca in the Pacific Ocean. The Gulf of Fonseca is a tri-national economic zone for Nicaragua, Honduras, and El Salvador. The governments of Nicaragua and Honduras have recognized the economic and cultural importance of these rivers and have established two protected areas to protect the headwaters: La Botija National Park and Multiple-Use Area Cerro Guanacaure in Honduras and Tepesomoto-La Patasta Reserve and National Monument Cañon de Somoto in Nicaragua.



However, the presence of these parks has been deemed inadequate by local government officials and residents. Nearly 85% of the land in the parks in both countries is privately-owned, and at least 50% of the land within the parks has been deforested.¹² Furthermore, both departments have experienced severe water problems in the past decade: rivers running dry, water tables dropping, and contaminated surface and groundwater sources. Some of these problems have been attributed to Hurricane Mitch, which devastated the area's infrastructure and natural resources in 1998, while other problems are directly attributed to improper management of land and water resources. Agriculture and cattle-grazing are the primary sources of income for most people that live within or near the protected areas, and the effect of these land-uses on water resources has not gone unnoticed. Furthermore, illegal

logging is rampant, with many attributing this to corruption and actions from people of the other country. Some officials think the parks are not large enough, and that their size along with enforcement needs to be increased. Others agree that protecting natural resources is important, but disagree with enlarging the parks to prohibit activity, as that would subsequently worsen the already dire economic situation. The primary sources of income in this area derive from intensive use of water and forests; removing those sources could wreak economic disaster.³ Additionally, this transboundary watershed is affected by actions in both Nicaragua and Honduras; conservation efforts in one country could be offset by actions in the other.

¹ HONDURAN FOREST SERVICE. 2002. Plan de Manejo de La Montaña de La Botija (Borrador). [Management Plan for La Botija]. Rough Draft composed by the Honduran Forest Service.

² NICARAGUAN FORESTRY SERVICE. 2006. Plan de Manejo de Tepesomoto Borrador. [Management Plan for Tepesomoto]. Rough Draft composed by the Nicaraguan Forestry Service.

³ CASTELLÓN, N. 2004. Análisis Socioambiental del Uso y Manejo del Agua en la Subcuenca Aguas Calientes, Somoto, Nicaragua. Tesis de maestría CATIE, Turrialba, Costa Rica.

To address these complicated environmental, health, economic, and political issues, representatives from both countries of the Ministries of the Environment, local mayors, and local conservation organizations, along with scientists at the Universidad Rey Juan Carlos and Yale School of Forestry and Environmental Studies, have devised a plan for a transboundary Peace Park that promotes rural economic development.⁴ The Peace Park would connect the existing yet fragmented protected areas in both countries. The IUCN World Commission on Protected Areas (WCPA) has established a Parks for Peace Initiative that supports transboundary protected areas involving international cooperation to achieve a clear biodiversity and peace objective. Studies conducted by Pace University School of Law, UN University for Peace, and the Nature Conservancy have shown that social and ecological conditions in this region reflect WCPA criteria.

Previous studies have demonstrated ecotourism potential, showing how integrated rural development projects based on natural resources could be achieved in a sustainable manner.⁵ In reducing the economic primacy of water resources and logging from the livelihoods of local residents, it is hoped that the ecological and social services that the rivers provide will be maintained, allowing economic development in other sectors.

Inter-municipality and international discussions regarding shared natural resources have already begun. The six Nicaraguan municipalities within the protected areas have created an association for coordinating conservation actions. Internationally, a series of official meetings between local interested parties has taken place in both Madriz and Choluteca. Such discussions have included revising current forest management laws in addition to creating new roads and ecotourism routes. These meetings indicate the willingness to cooperate on the part of local officials; their international agreement is expected to be signed by presidents of both countries at the end of July 2008.

An additional goal of negotiations has been the management of shared water resources without damaging the already troubled economic situation. A contentious issue between the two countries is the treatment of wastewater from the Honduran tributary of the Río Coco as it enters Nicaragua. The Honduran treatment plant has not been functioning properly, resulting in health problems for certain neighborhoods.⁶ This untreated water flows directly into Nicaragua's tourist destination, the Cañon de Somoto. There is concern from Nicaragua that this wastewater has made swimming in the Cañon de Somoto unsafe. A transboundary park offers an opportunity to manage water resources on a watershed level; such a management plan could contain payments by Nicaragua to improve the wastewater treatment in Honduras.

⁴ HSIAO, E., MARTINEZ DE ANGUIA, P., y VELASQUEZ, P., eds. 2008. "La Conservacion en Las Fronteras: El Ciclo De Proyectos Aplicado A La Creación Del Parque Binacional 'Padre Fabretto.'" Madrid: Fundación Fabretto. 360 pp.

⁵ MARTÍNEZ DE ANGUIA, P., PANIAGUA, M. y MARINACCI K. 2006b. Desarrollo rural basado en la gestión de recursos forestal y el ecoturismo: la experiencia de San José de Cusmapa, Nicaragua. *Bois et Forêts de Tropiques*, 290 (4): 31-43 pp.

⁶ MAMBOCAURE, 2008. (**Man**comunidad de **Mun**icipios del Cerro la **Bot**tija y **Guanacaure**). Perfil Basico Amiental y Propuesta Economicas Enfocadas a Problemas de Contaminacion del Casco Urbano.

An impediment to developing watershed-level policies, however, has been the lack of hydrologic data. To address this deficiency, a team of scientists from the Yale University School of Forestry and Environmental Studies and the Universidad del Norte de Nicaragua in Estelí has been conducting research in the summer of 2008 (see Enders et al results in this Conference). Working closely with government officials and non-governmental organizations in January 2008, the research team determined what information is necessary and lacking to devise a watershed-level management plan for the area. The team has built upon previous segmented and incomplete studies in the region, and will produce a complete watershed-level body of data for the Río Coco. The research consists of delineating watersheds and sub-watersheds, mapping land-uses throughout the watersheds, and collecting water data related to the effects these land-uses have on the quality and quantity of water resources. In addition to hydrologic data, economic and social data has been collected through surveys to determine the socio-economic support and expected consequences of a transnational management regime.

Initial results indicate that in both countries land-uses in the lower basins stress the water resources to a greater degree than in the upper basins. This is primarily due to the type of agriculture practiced, with the upper basins consisting of primarily basic grains and organic coffee production, while the lower basins are heavily irrigated and produce vegetables for export. Future results will provide a basis for predicting water quality based on land-uses; such data will provide guidance to park and government officials determining allowable land-uses, in both the Río Coco and the Río Negro watersheds.

While data is being collected, local and national government officials are working with researchers and supporting institutions to determine the proper management and economic structure for the transboundary Peace Park. As a program of payments for ecological services is currently being considered, the implication of international payments and monitoring must be considered. A transboundary Peace Park has the potential to greatly improve water management practices, improve forest management practices, and increase rural economic development in the Departments of Madriz in Nicaragua and Choluteca in Honduras. Given that these Departments contain the headwaters of two socially, politically, environmentally, and economically important rivers, it is in the vital interest of not only these Departments, but also the national governments of Honduras, Nicaragua, and El Salvador that the transboundary water resources are managed sustainably. This case study provides a snapshot of the current ecological, social, political, legal, and economic barriers facing this region, which is attempting to manage its natural resources on a watershed and international level. Lessons learned from overcoming or succumbing to these barriers will provide contemporary insights to other countries with similar projects, and will also inform the WCPA Task Force of the obstacles that such countries face in attempting to manage transboundary natural resources.