

**THE TALAMANCA-SIXAOLA WATERSHED:  
Tightening the Ties of Cooperation  
A Contribution to the Interamerican Water Management Dialog**

**Oswaldo Jordan  
Daniel Sagastizabal  
Thomas Ankersen  
Mesoamerican Environmental Law Program  
Conservation Clinic**

**April 24, 1999  
Center for Governmental Responsibility  
University of Florida Levin College of Law  
230 Bruton-Geer  
Gainesville, FL 32611  
(352) 392-2237  
[Ojordan@ufl.edu](mailto:Ojordan@ufl.edu)  
[Gasti@ufl.edu](mailto:Gasti@ufl.edu)  
[Ankersen@law.ufl.edu](mailto:Ankersen@law.ufl.edu)**

Table of Contents

I.	Introduction . . . . .	2
II.	The Talamanca-Sixaola Watershed . . . . .	3
	A. The River . . . . .	3
	B. Ecological Significance . . . . .	3
	C. Cultural Significance . . . . .	3
	D. Socio-Economic Context . . . . .	4
III.	Significant Issues . . . . .	5
	A. Agriculture . . . . .	5
	B. Migration . . . . .	5
	C. Roads . . . . .	6
	D. Tourism . . . . .	7
	E. Pollution . . . . .	7
	F. Mining . . . . .	8
	G. Hydropower . . . . .	8
IV.	Short History of the Costa Rica-Panama Border . . . . .	9
V.	The Legal and Institutional Context . . . . .	10
	A. Central American Regional Management Efforts . . . . .	10
	B. Binational Action Plans and Programs . . . . .	11

C. Convenio de Cooperacion Fronteriza .....	12
VI. International Legal Framework for Shared Water Resource Management	
A. The Law of International Rivers .....	13
B. Emerging Developments in Water Resource Policy .....	14
VII. The Roundtable .....	15
A. Background .....	15
B. Summary of the Roundtable Discussion .....	16
C. Action Plans .....	16
VIII. Conclusions and Recommendations .....	16

## **I. Introduction**

The Talamanca-Sixaola River Watershed is shared by Costa Rica and Panama. The watershed contains highly diverse ecological and cultural resources. It is inhabited by several indigenous populations. Furthermore, the Sixaola River flows through some of the most economically and politically marginalized regions of Costa Rica and Panama. The ecological, cultural, and hydrological integrity of the watershed faces many significant issues, including agriculture, migration, roads, tourism, pollution, mining, and hydropower.

On March 23, 1999 an informal roundtable meeting of representatives of governmental, non-governmental, and academic institutions from Costa Rica, Panama, the United States, and other countries gathered in Panama City, Panama to discuss the management of the Talamanca-Sixaola watershed. This roundtable was sponsored by the Mesoamerican Environmental Law Program and the Conservation Clinic of the University of Florida College of Law, as part of the Third Inter-American Water Management Dialog. The Dialog is a continuing effort of the Organization of American States to stimulate discussion of water policy and administration in the Americas. The Mesoamerican Environmental Law Program previously sponsored roundtables on the Rio San Juan between Nicaragua and Costa Rica (Dialog I) and the Rio Usumacinta between Guatemala and Mexico (Dialog II). During this Third Dialog, the roundtable participants signed a declaration to cooperate in a program to address binational management of the Talamanca-Sixaola River Watershed.

This report provides background information on the ecological, cultural and legal and institutional context for watershed management, and discusses some significant issues concerning the watershed. Furthermore, it presents the conclusions and recommendations reached by the roundtable participants.

## II. The Talamanca-Sixaola Watershed

### A. The River

The Talamanca-Sixaola River Watershed can be divided into two sections: The Talamanca Basin and the Sixaola Basin. The former consists of an alluvial valley, formed by several different streams, namely the Coen, Uren, Lari, and Telire. These streams merge with one another until they all reach the Sixaola River. They originate in the Talamanca mountain range, whose highest peaks reach over 3,000 m. The Sixaola basin is comprised of a narrow river valley, opening up into a broad coastal plain. This paper will consider the confluence between the Yorquin River and the Sixaola River as the borderline between the two sections of the watershed.<sup>1</sup> While most of the Talamanca Basin is contained within the Province of Limon in Costa Rica, the Sixaola Basin is equally shared by the province of Bocas del Toro in Panama and the province of Limon in Costa Rica.

### B. Ecological Significance.

The Talamanca-Sixaola Watershed comprises one of the most biologically diverse regions in Central America. According to Barge (1994), there are several Holdridge Life Zones in the Talamanca Basin, including Tropical Moist Forest, Tropical Wet Forest, Premontane Rain Forest, and Lower Mountain Rain Forest.<sup>2</sup> The watershed is a critical link in the Mesoamerican Biological Corridor, an international program supported by the governments of all the Central American countries and Mexico. The region is also the focus of the Talamanca Biological Corridor in Costa Rica.

### C. Cultural Significance.

Historically, the Bribri and the Cabecar have inhabited the Talamanca Basin. Today, these two closely related ethnic groups are the most numerous indigenous populations in the Republic of Costa Rica. In the late 1980s, estimates ranged between 2,372-3,700 for the Bribri in the Caribbean, and 2,500-7,800 for the Cabecar in the Caribbean.<sup>3</sup>

The Talamanca culture (as the Bribri and the Cabecar are collectively called) evolved in relation with the biophysical environment. Although significant cultural changes have occurred in the

---

<sup>1</sup>Holdridge, L. R. 1964. *Informe sobre Colonizacion y Uso de la Tierra en la Republica de Costa Rica con especial referencia a las cuatro areas que siguen: 1. Canas Gordas-Coto Brus, 2. Fortuna-Adrenal, 3. Cubujuqui-Carvajal, 4. Valle de Talamanca.* San Jose, Costa Rica. Science Library 282.1226 H727i.

<sup>2</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada.* Universidad Estatal a Distancia.

<sup>3</sup>Barrantes, Ramiro. 1993. *Evolucion en el Tropico: Los Amerindios de Costa Rica y Panama.* Editorial de la Universidad de Costa Rica.

last fifty years, especially among those living in closer contact with the outside, they still conserve their traditional knowledge and institutions.<sup>4</sup>

Currently, there are also many Ngobe-Bugle working in banana plantations in the Sixaola Basin. Several authors have documented the population growth and geographical expansion of the Ngobe-Bugle in the last fifty years.<sup>5</sup> Formerly restricted to Western Veraguas, and Central and Eastern Chiriqui and Bocas del Toro provinces, they have moved westward, even establishing some settlements in Pacific Costa Rica (Coto Brus, Abrojos, Conte-Burica, and Osa). Since many are currently working in the Sixaola Basin, including on the Costa Rican side of the border, they may establish permanent settlements in the region.

#### **D. Socio-Economic Context**

Although the Bribri and the Cabecar engaged in trade with the outside, their traditional economy was based on subsistence activities, including agriculture, hunting, fishing and gathering. However, in 1909, the United Fruit Company (UFCO) established banana plantations in the Sixaola Basin. After fungal diseases had affected plantations in the Chiriqui Lagoon, and the Changuinola River, UFCO settled new lands in the Talamanca Basin. Although the Company had conflicts with the Bribri and the Cabecar, UFCO transformed the economy of the region, linking the Talamanca-Sixaola Watershed with the international capitalist system.<sup>6</sup>

In 1930, UFCO abandoned banana cultivation in the Talamanca Basin after floods, shifting watercourses, and fungal diseases had affected the production of this commodity. Instead, the Company started growing cacao. This activity peaked in the 1920s. Later on, during World War II, hemp also became an important cash crop, as the American government subsidized the cultivation of this fiber-producing plant.<sup>7</sup>

When the Company pulled out in the 1930s, the Bribri and the Cabecar resettled the Lower Talamanca Basin. Since the region was already linked to the international economy, they also started

---

<sup>4</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>5</sup>Torres de Arauz, Reina. 1980. *Panama Indigena*. Direccion Nacional de Patrimonio Historico. Instituto Nacional de Cultural Gjording, Chris N. 1991. *Conditions not of their Choosing: The Guaymi Indians and Mining Multinationals in Panama*. Smithsonian Institution Press. Gordon, Burton L. 1982. *A Panama Forest and Shore: Natural History and Amerindian Culture in Bocas del Toro*. The Boxwood Press. Barrantes, Ramiro. 1993. *Evolucion en el Tropico: Los Amerindios de Costa Rica y Panama*. Editorial de la Universidad de Costa Rica.

<sup>6</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>7</sup>Stephens, Clyde. 1987. *Bosquejo Historico del Cultivo del Banano en la Provincia de Bocas del Toro (1880-1980)*. Revista Panamena de Antropologia. Publicaciones Especiales No. 1.

growing cacao for exchange. Cacao remained the most important cash crop in the Talamanca Basin until the late 1970s, when the fungal disease *Monilia* swept across the region.<sup>8</sup>

In the last twenty years, plantain cultivation has become the main agricultural activity in the Talamanca Lowlands. However, in the Sixaola Basin, with new varieties resistant to fungal disease, banana is still the most important commodity. In contrast with the Talamanca Basin, where crops are grown by the Bribri and the Cabecar, most banana production in the Sixaola Basin is controlled by foreign multinationals, and nonindigenous agricultural cooperatives.

### **III. Significant Issues**

#### **A. Agriculture**

As noted before, agriculture has always been the most important economic activity in the Talamanca-Sixaola watershed. Although the Talamanca and the Sixaola Lowlands are utilized for market production, most hilly and mountainous terrains are not economically exploited. Besides cacao production, agriculture in these areas is restricted to traditional subsistence activities.

In the last two decades, several organizations have worked to promote sustainable cacao production in the Watershed. For more than a decade, Centro Agrícola Tropical de Investigación y Enseñanza (CATIE) has studied agroforestry systems in the Talamanca Basin. ANAI has partnered with APPTA for the production and commercialization of organic cacao in the United States. Since 1997, The Nature Conservancy (TNC) and ANAI have studied shaded cacao agrosystems as sustainable production alternatives for the Talamanca Biological Corridor.<sup>9</sup>

#### **B. Migration**

Carvajal (1994) analyzed internal migration in Costa Rica between 1968-1973 and 1979-1984. In both periods, the Atlantic Region attracted migrants from other parts of the country. In the Talamanca-Sixaola Watershed, many sought for wage labor in the banana plantations. Many non-indigenous migrants from the North Pacific Region (Guanacaste) and the Central Valley bought properties at relatively low prices. This intensified deforestation in the region.<sup>10</sup>

More recently, the plantation economy has crossed international boundaries. Currently, many Ngobe-Bugle, originally located further east in Panamanian territory, are working in the banana

---

<sup>8</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia; Somarriba, Eduardo and John Beer. *Cocoa-Based Agroforestry Production Systems in Costa Rica and Panama*. Smithsonian Migratory Bird Center. [www.si.edu/smbc/somarrib.htm](http://www.si.edu/smbc/somarrib.htm)

<sup>9</sup>Parrish, Jeffrey; Reitsma, Robert, and Russell Greenberg. *Cacao as Crop and Conservation Tool: Lessons from the Talamanca Region of Costa Rica*. Smithsonian Migratory Bird Center. [www.si.edu/smbc/parrish.htm](http://www.si.edu/smbc/parrish.htm)

<sup>10</sup>Carvajal, Guillermo. 1994. *Costa Rica: Analisis Demografico de su Poblacion (1522-1988)*. Editorial Guayacan, S. A.

plantations in the Sixaola Basin. According to a local informant, they are receiving temporary permits to work on the Costa Rican side of the border. Besides the social effects of these migratory movements, some Ngobe-Bugle could establish permanent settlements in the Talamanca-Sixaola Watershed. According to Gjording, the population of this ethnic group (numbering above 100,000) has exceeded the carrying capacity of its traditional lands.<sup>11</sup> This might explain the westward movement of the Ngobe-Bugle in the Province of Bocas del Toro.<sup>12</sup> This could lead to the permanent occupation of lands located in Costa Rican territory, as already happened in the Pacific side, where about 3,000 Ngobe-Bugle from Panama are now living in the Coto Brus, Abrojos de Montezuma, Conte Burica and Osa Indigenous Reserves.<sup>13</sup>

### C. Roads

Migration may increase with the construction of new roads, particularly in the Panamanian side of the border. Historically, the Province of Bocas del Toro had remained isolated from the rest of Panama. Between 1982-1984, the construction of the Trans-Isthmian Road, associated with the Trans-Isthmian Oil Pipeline, improved communications between the province and the rest of the country.<sup>14</sup> However, transportation between the oil terminal in Chiriqui Grande, and the banana country in Westernmost Bocas del Toro, where the towns of Almirante, Changuinola, and Guabito were located, was limited to aquatic and aerial means.

Currently, the Government of Panama is constructing a new road between Punta Pena (near Chiriqui Grande) and Almirante. As communications and transportation between these regional centers improve, land use will probably change. According to members of several NGO's working in the province of Bocas del Toro, land speculation is already happening. This may affect the economy of the Ngobe-Bugle resulting in population displacement.

As the new road will probably attract immigrants from other parts of Panama, the situation may be further complicated. In this scenario, forest areas in the Talamanca-Sixaola Watershed would be a prime target for colonization of new lands by cattle ranchers. Past experiences, including the construction of the Banano River Dam and the extension of the Interamerican Highway into Darien, have resulted in uncontrolled immigration from the central provinces of Panama, particularly from the Azuero Peninsula. Besides clear-cutting the forest, colonization has brought about conflict

---

<sup>11</sup>Gjording, Chris N. 1991. *Conditions not of their Choosing: The Guaymi Indians and Mining Multinationals in Panama*. Smithsonian Institution Press

<sup>12</sup>Torres de Arauz, Reina. 1980. *Panama Indigena*. Direccion Nacional de Patrimonio Historico. Instituto Nacional de Cultural Gordon, Burton L. 1982. *A Panama Forest and Shore*. University of California Press.

<sup>13</sup>Barrantes, Ramiro. 1993. *Evolucion en el Tropico: Los Amerindios de Costa Rica y Panama*. Editorial de la Universidad de Costa Rica. FUNCOOPA-IETSAY. 1997.

<sup>14</sup>Suman, Daniel. 1987. *Socioenvironmental Impacts of Panama's Trans-Isthmian Oil Pipeline*. Environmental Impact Assessment Review 7:227-246; Septimo, Roger. 1986. *Efectos Agro-Ecologicos de la Carretera Chiriqui-Bocas del Toro en la Poblacion Guymi del Area*. Tesis de Licenciatura. Universidad de Panama.

between these mixed-blood peasants and the indigenous groups living in these regions.<sup>15</sup>

#### **D. Tourism**

Although tourism is not economically significant in the Talamanca-Sixaola Watershed, there are several important tourism centers around the region. In the last decade, tourism has become the most important economic activity adjacent to the watershed in the Southern coast of Limon, particularly in the towns of Cahuita, Puerto Nliejo, and Manzanillo. On the other side of the border, the number of visitors to the Archipelago of Bocas del Toro is rapidly increasing, and infrastructure (hotels, restaurants, and tourist agencies) is being developed.

Since the Talamanca-Sixaola Watershed is located between these two centers of tourist activity, the number of people traveling across the region will probably increase, particularly with the construction of the new road on the Panamanian side. As the watershed has its own natural and cultural attractions, tourism might increase in Talamanca-Sixaola.<sup>16</sup> However, this industry might also conflict with the traditional values of the Bribri and the Cabecar. For instance, according to Barge and Villalobos, there are five sacred mountains in the Talamanca Range, and not even the Bribri and the Cabecar are allowed to visit these places.<sup>17</sup>

#### **E. Pollution**

As noted before, commercial agricultural has been the most important economic activity in the Sixaola-Talamanca Watershed since the beginning of this century. Although most banana production was abandoned in the 1930s, this activity came back to life in the 1970s.<sup>18</sup> Agrochemicals were successfully introduced to fight disease affecting agricultural production. These chemical contaminants have been transported to the estuary and eventually to the coast, thus threatening wildlife, wetlands, coral reefs, and human populations. As they were applied by aerial spraying, agrochemicals have also affected inland biological communities and human populations. Other pollutants associated with banana production include solid wastes, such as plastic bags, containers and ropes, and organic wastes (i.e. banana refuse). Furthermore, any increase in colonization and tourism would also increase pollution in the watershed (sediments, garbage, detergents, and organic wastes).

---

<sup>15</sup>Wali, Alaka. 1984. *Kilowatts and Crisis among the Kuna, Choco, and Colonos: National and Regional Consequences of the Bayanao Hydroelectric Complex in Eastern Panama*. Ph. D. Dissertation. Columbia University; Candanedo, Indra. 1997. *Closing the Darien Gap: Actors and Issues in the Panamerican Highway Project*. Master's Thesis. University of Maryland.

<sup>16</sup>In *Cacao as Crop and Conservation Tool: Lessons from the Talamanca Region of Costa Rica*, Jeffrey Parrish et al. discussed the potential of the region for ecotourism, especially for bird watching. Smithsonian Migratory Bird Center. [www.si.edu/smbc/parrish.htm](http://www.si.edu/smbc/parrish.htm).

<sup>17</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>18</sup>Carvajal, Guillermo. 1995. *Geografía, Espacio y Regiones en Costa Rica*. Editorial Guayacan, S.A.

## **F. Mining**

In 1923, the Sinclair Oil Company was not successful in finding fossil fuels in the Talamanca Basin. However, between 1955-1963, explorations by the Union Oil Co. and the Gulf Oil Co. located an oil deposit in the Cocolos 2 site. As a result, Refinadora Costarricense de Petroleo (RECOPE) developed oil explorations in the Talamanca Basin between 1980-1985. However, no oil deposits have been found as of yet.<sup>19</sup>

Although oil exploration failed in the 1980s, the Costa Rican government studied the possibility of exploiting coal reserves in the Talamanca Watershed.<sup>20</sup> In addition, there are mining concessions for exploration in most of the Talamanca Indigenous Reserve. In case of accidents, the hazards are particularly high, since the estuary of the Sixaola is part of an extensive system of wetlands. On the other hand, the Panamanian government has been interested for many years in exploiting peat moss deposits in these same wetlands.<sup>21</sup>

## **G. Hydropower**

The Instituto Costarricense de Energia (ICE) has studied the construction of a major hydroelectric complex in the Talamanca Basin.<sup>22</sup> This would include a 15,000 Ha reservoir in the Talamanca Valley and 16 small reservoirs in the upper watersheds of the main tributaries. Although this project would not probably start until the 2010s, the effects on the natural and social dynamics of the watershed would require comprehensive and scientific planning. If the Costa Rican government is truly considering the construction of this complex, both governments should discuss the future of the shared watershed.

At the same time, the Panamanian government has scheduled the construction of the Teribe-Changuinola hydroelectric complex in the first two decades of the next century.<sup>23</sup> Taking into account the considerations already presented with regards to land use and subsistence agriculture in the Ngobe-Bugle territory, this project would also have major impacts on the natural resource and population dynamics of the region.

## **IV. Short History of the Costa Rica-Panama Border**

Although Panama and Costa Rica enjoy good relations based on a stable border, this was not always

---

<sup>19</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>20</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>21</sup>William Adsett personal communication.

<sup>22</sup>Barge, Carlos y Victoria Villalobos. 1994. *Talamanca en La Encrucijada*. Universidad Estatal a Distancia.

<sup>23</sup>Milciades Concepcion personal communication. The Teribe-Changuinola Watershed is located adjacent to the Talamanca-Sixaola Watershed.

the case. A past border conflict between Panama and Costa Rica had its roots in colonial struggles. Costa Rica and Colombia struggled for decades over their rights in the Caribbean. Both governments claimed Chiriqui Lagoon and Almirante Bay. After the Molina-Gual Treaty (1825), negotiations continued during the XIX century. In 1900, the President of France, Emilio Loubet, who had been previously chosen as an arbitro of the border conflict, issued his decision. The Laudo Loubet seemed to confirm not only the sovereignty of Colombia over the Chiriqui Lagoon, the Almirante Bay, and the Burica Peninsula, but also the Valle de Talamanca. Costa Rica never accepted this Laudo, but Colombia could never pursue its claims.

In 1903, Panama separated from Colombia and created the province of Bocas del Toro.<sup>24</sup> The new government of Panama promptly started negotiations with Costa Rica in 1904. After failure of the Guardia-Pacheco Treaty in 1907, both states agreed to name Chief Justice of the U.S. Supreme Court, Edward Douglas White, to interpret the border between the two republics. Panama, however, did not accept White's 1914 interpretational decision that favored Costa Rican sovereignty over the Talamanca Valley.<sup>25</sup> As tensions rose, the unsettled conflict escalated into violent confrontation in 1921. Formal relations between Costa Rica and Panama were not reestablished until 1928. In 1941, the two states finally reached a final border agreement, the Tratado Arias-Calderon Guardia. The conflict came to an end with the final exchange of documents in 1944.<sup>26</sup>

## V. Legal and Institutional Context

### A. Central American Regional Management Efforts

With the signing of the Contadora Accord by the Central American presidents in 1987, the opportunity for regional solutions to environmental problems has recently emerged.<sup>27</sup> Current trends in Central America such as the lessening of regional turmoil, increased communication capabilities and transportation, diminishing ideological confrontations and the international interest in the harmonization of environmental law have facilitated this opportunity for regional cooperation.<sup>28</sup> The Central American countries have established the Central American Interparliamentary Commission for Environment and Development (CICAD) to coordinate national environmental legislation and the Central American Commission for Environment and Development to coordinate executive brand policy.<sup>29</sup> These entities have helped provide the Central American states with the institutional

---

<sup>24</sup>Stephens, Clyde. 1987. *Bosquejo Historico del Cultivo del Banano en la Provincia de Bocas del Toro* (1880-1980).

<sup>25</sup>Castillero Reyes, Ernesto J. 1982. *Historia de Panama*. Primera Edicion 1948. Buenos Aires, Argentina.

<sup>26</sup>Castillero Reyes, Ernesto J. 1982. *Historia de Panama*. Primera Edicion 1948. Buenos Aires, Argentina.

<sup>27</sup>Text of Agreements by the Presidents of Central America, 26 I.L.M. 1167 (Sept. 1987).

<sup>28</sup>Ankersen, Thomas T. 1994. *The Mesoamerican Biological Corridor: The Legal Framework for an Integrated Regional System of Protected Areas*. 9 J. Envtl. Law and Litigation 1994.

<sup>29</sup>Constituent Covenant of the Central American Interparliamentary Commission for Environment and Development (Mar. 15-16, 1991). See *Convenio Centroamericano Para la protection Del Ambiente* (June 14, 1990).

framework to develop regional environmental initiatives. For example, just prior to the United Nations conference on Environment and Development (UNCED) in Rio de Janeiro, the presidents of Central America signed regional agreements concerning biodiversity, climate change and forestry. Similarly, a proposed regional system of protected areas was given institutional legitimacy by the Convention for the Conservation of Biodiversity and Protection of Priority Wild Areas in Central America signed in 1992 and ratified and entered into force by four nations in 1994.<sup>30</sup>

The potential for regional environmental management in Central America has been increased further by the growing trend towards the establishment of multi-national protected areas and corridors, as well as protected statuses under existing international agreements.<sup>31</sup> Central America has become a leader in the movement to establish "peace parks" that straddle international borders. These bilateral protected areas can be used as a means to relax border tensions. For instance, Costa Rica and Panama have established the La Amistad International Park. Furthermore, significant portions of the Central American region enjoy some sort of protected status that have been declared international biosphere reserves under the United Nations Educational Scientific and Cultural Organization (UNESCO) Man and Biosphere Program' or World Heritage Sites under the World Heritage Convention.

There has also been a more recent interest in sustainable river basin development and transboundary watershed management. This can be seen in Part II.4 of the Plan of Action for the Sustainable Development of the Americas developed at the Summit of Americas in Bolivia.<sup>32</sup> This section recognizes that sustainable development depends upon the assurance and improvement of the conservation, sustainable management and utilization of water resources. These include the development of integrated programs and institutional capacity and the cooperation among countries at bilateral, regional and hemispheric levels. So far, Central American countries have continued to participate in the implementation of these initiatives of water resource management.

## **B. Binational Action Plans and Programs**

Costa Rica and Panama have been reinforcing their social and political development since the 1970's through policies focusing on the sustainable use of water resources as well as goals of biodiversity protection, land use regulation, and conservation management. Specific programs that are directly involved in potential management of the Talamanca-Sixaola watershed include the agricultural settlement program of the Agrarian Development Institute of Costa Rica (IDA), the Regional Strategy for the Sustainable Development of Bocas del Toro, and the Mesoamerican Biological Corridor. Furthermore, the government of Panama, along with its commitment expressed

---

<sup>30</sup>Ankersen, Thomas T. 1994. *The Mesoamerican Biological Corridor: The Legal Framework for an Integrated, Regional System of Protected Areas*. 9 J. Envtl. Law and Litigation 1994.

<sup>31</sup>Ankersen, Thomas T. 1994. *The Mesoamerican Biological Corridor: The Legal Framework for an Integrated, Regional System of Protected Areas*. 9 J. Envtl. Law and Litigation 1994.

<sup>32</sup>Plan of Action from the Summit of Americas on Sustainable Development, Santa Cruz, Bolivia, December 1996.

in different international agreements, is giving priority to the consolidation of protected areas adjacent to or within the watershed through the National System of Protected Areas (SINAP).<sup>33</sup>

On a national level, both countries have made efforts to establish protected areas in the border region. In the Talamanca-Sixaola Watershed, there are the La Amistad International Park, the Hitoy-Cerere Biological Reserve in Costa Rica, the Gandoca Manzanillo Wildlife Refuge in Costa Rica, and the San San-Pondsock Protected Wetland in Panama. The La Amistad International Park was declared World Heritage Site in both countries. Furthermore, both Gandoca-Manzanillo and San San-Pondsock are Internationally Important Wetlands under the Ramsar Convention. The Costa Rican government has also created several indigenous reserves in the watershed. These include the Talamanca, Telire, and Kekoldi indigenous reserves. In Costa Rica, the La Amistad Biosphere Reserve includes the La Amistad International Park, Hitoy-Cerere Wildlife Refuge, and the Telire and Talamanca indigenous reserves.

Additionally, Costa Rica and Panama are currently seeking support for the implementation of the Sixaola Watershed Sustainable Management Project under the auspices of the Global Environmental Facility (GEF) - World Bank. This is the principal funding mechanism established under the Rio Convention. Signatories may access to this mechanism to pursue the objectives of the Convention. This diagnostic study of the Sixaola watershed will focus on biodiversity protection and management of forest ecosystems for the protection of international waters and marine ecosystems. The project is being implemented under the Convenio de Cooperacion Fronteriza Costa Rica - Panama, described below, and a project profile was published in December 1998.<sup>34</sup>

### **C. Convenio de Cooperacion Fronteriza Costa Rica-Panama**

In 1995 the governments of Panama and Costa Rica ratified a convention concerning the protection of the border environment. A successor to the Tratado de Cooperacion Fronteriza established between the two countries in 1979, the Convenio de Cooperacion Fronteriza Costa Rica-Panama is a general bilateral cooperation agreement. A major objective under the Convenio is to amplify cooperative relations in the entire border region in order to significantly contribute to the social, political, economic, commercial and environmental welfare of the border region and fortify an integrated process of communication between these areas. In order to achieve this and other objectives, a Comision Binacional Permanente was established. The Commission consists of Panama and Costa Rica's Ministries of Planning, representatives of institutions involved in Convenio projects, and the governors or delegates of the border region provinces. Decisions of the Commission must be made by consensus and the presidents of the Commission serve as representatives of the Commission in their respective countries. The principal functions of the Commission are to establish

---

<sup>33</sup>Ministry of Planning and Economic Policy, Costa Rica. 1998. *Project Profile for the Diagnostic Study of the Sixaola Watershed*. This proposal was conducted under the Convenio de Cooperacion Fronteriza Costa Rica-Panama and seeks support from the GEF funding mechanism.

<sup>34</sup>Ministry of Planning and Economic Policy. 1998. *Project Profile for the Diagnostic Study of the Sixaola Watershed*. Convenio de Cooperacion Fronteriza Costa Rica-Panama.

appropriate plans of execution relative to the Convenio's objectives, to decide on the number of government programs and activities necessary to execute the purposes of the Convenio, organize and coordinate the participation of each country's institutions, assign binational technical sector commissions in order to execute these activities, and supervise implementation.

Under the Convenio, Costa Rica and Panama are sponsoring an integrated series of initiatives for the sustainable development of the border region. Similarly, since Convenio is part of a continued attempt of both countries to protect the watershed, it stands to play a central role in the development of the Mesoamerican Biological Corridor, the Panamanian-Atlantic Corridor, and the Talamanca-Caribe Corridor.<sup>35</sup>

Both countries have also signed a number of other agreements and accords that signify a commitment to sustainable objectives. These include the Convention on Biodiversity, the Convention on Climate Change, and Agenda 21 among others. Furthermore, both countries have modernized their system of environmental laws. Costa Rica has strengthened its commitments by approving new laws on the environment and biodiversity such as the *Ley Nacional de Biodiversidad* (1998), *Ley Organica del Ambiente* (1995), and *Ley Nacional Forestal* (1996). On the other side of the border, Panama has adopted the *Ley Forestal* (1994), *Ley Nacional de Vida Silvestre* (1995), and *Ley General del Ambiente* (1998). Moreover, since 1997 the use of indigenous reservation land in Costa Rica has been regulated according to the Law of Indigenous People.

## **VI. International Legal Framework for Shared Water Resource Management**

### **A. The Law of International Rivers**

International rivers are defined as "those which flow either through, or between, more states than one."<sup>36</sup> Since the Sixaola River appears to be an international river, the special rules of international law concerning shared waters will be discussed analyzing the concept of international, shared or transboundary waters, recent doctrine, and the latest trends and guiding principles. Early doctrinal basis for the use of shared waters I included the legal theories of "absolute territorial sovereignty" and "absolute territorial integrity."<sup>37</sup> Under the legal theory of absolute territorial integrity, a State had an absolute right to do as it pleased with its territorial water. This theory was also known as the "Harmon doctrine." According to the theory of absolute territorial integrity a State had an absolute right to the natural flow of water, unimpaired in quantity and quality. However, due to their impracticality of tending to protect only one state, they are no longer recognized.

---

<sup>35</sup>Ministry of Planning and Economic Policy. 1998. *Project Profile for the Diagnostic Study of the Sixnola Watershed*. Convenio de Cooperacion Fronteriza Costa Rica-Panama.

<sup>36</sup>Utton, Albert E., Ch. 49, *International Streams and Lakes Generally*, in Robert E. Beck, V Water and Water Rights.

<sup>37</sup>Caponera, Dante A. 1995. *Shared Waters and International Law*, in The Peaceful Management of Transboundary Resources. International Environmental Law and Policy Series.

Today, theories of "limited territorial sovereignty" over shared water resources and a "community of interest" among riparian states are generally recognized in order to ensure that each state has an equitable and reasonable share in the use of shared waters.<sup>38</sup> These theories are used in order to ensure each State has a reasonable and equitable share in the use of waters. Under these theories, a State may use the waters flowing through its territory provided that the State does not interfere with a co-basin State's reasonable use of the water. More Specifically, the former theory has emerged as a general rule of international law and has become known as the "equitable utilization" doctrine.<sup>39</sup> However, due to the increasingly multi-faceted nature of water resource management, this doctrine has come under some scrutiny because of its emphasis on the independent development of shared basins based primarily on allocations of water for consumptive uses.<sup>40</sup> Instead, the preferred view of many contemporary water managers is to emphasize comprehensive river basin planning from the perspective of the watershed as a whole. Therefore, a principle of equitable participation, as suggested by the Draft Articles on the Law of Non-Navigational Uses of International Law has recently emerged to ensure that the equitable utilization doctrine contemplates cooperation in integrated water resource management.<sup>41</sup> Specifically, Article 6 of the Draft Articles states that "States shall participate in the use, development and protection of an international watercourse in an equitable and reasonable manner. Such participation includes both the right to utilize the watercourse and the duty to cooperate in the protection and development thereof." This general obligation to cooperate is furthered articulated in Article 8.

---

<sup>38</sup>Caponera, Dante A. 1995. *Shared Waters and International Law*, in *The Peaceful Management of Transboundary Resources*. International Environmental Law and Policy Series.

<sup>39</sup>Hamann, Richard and Ankersen, Thomas. 1996. *The Usamacinta River: Building a Framework for Cooperation between Mexico and Guatemala*. Mesoamerican Environmental Law Program, Center for Governmental Responsibility, University of Florida College of Law..

<sup>40</sup>Hamann, Richard and Ankersen, Thomas. 1996. *The Usamacinta River: Building a Framework for Cooperation between Mexico and Guatemala*. Mesoamerican Environmental Law Program.

<sup>41</sup>Codified in U.N. GAOR, 43rd Session. 1991. *Draft Articles on the Law of Non-Navigational Uses of International Watercourses*. U.N. Doc. A/CN.4/L.463/Add.4.

## B. Emerging Developments in Water Resource Policy

In sum, emerging developments in water resource policy are a logical outgrowth of the UN Water Conference of 1977's recommendation that member states fully participate and carry out the integrated planning of their water resources. This Conference also emphasized the need for states to encourage a genuine coordination among all institutions and to use the drainage basin as the unit for management of water resources and their utilization.<sup>42</sup> These recommendations have been supported by the Conference on Water and Environment at Dublin 1992, the Rio Declaration on Environment and Development of UNCED 1992, Agenda 21 (chapter 18) of UNCED 1992, and the International Law Commission's (ILC) Draft Articles on the law of nonnavigational uses of international watercourses. Moreover, the Presidents of the Central American states including Costa Rica and Panama, by signing the Convention on Biological Diversity and Priority Wild Areas in Central America and the Summit of Americas Bolivia Declaration, have signified their commitment to the peaceful and cooperative management of transboundary resources.<sup>43</sup>

At the Bolivia Summit, the governments of the Americas adopted 12 initiatives numbers 47 to 58 - related to water resources in the Plan of Action for Sustainable Development of the Americas.<sup>44</sup> The Summit was the first effort to develop a regional blueprint on sustainable development within the framework of agreements reached at UNCED and Agenda 21. The Bolivia declaration built on the Rio declaration consolidating a political understanding of the concept of sustainable development that relates to specific conditions in the Americas and setting priorities within the range of issues addressed in Agenda 21. From this basis, the General Secretariat of the Organization of American States (OAS) was given the mandate to follow-up and encourage the development of an Inter-American plan of action on water resources management. In order to fulfill its responsibilities under the mandate, OAS organized regional workshops to discuss the progress made in implementation of the Summit's water resource initiatives. A Mesoamerica water workshop was held in Panama in October 1997.

Next, in order to assess the reports of the regional workshops and to further advance initiatives at the Inter-American level, an Inter-American Technical Meeting on Water was held in Washington, D.C. in 1998. Since then, the Third Inter-American Dialogue on Water Management held in Panama City, Panama in March 1999 was undertaken in order to continue to develop an Inter-American Plan of Action on Water Resources Management. It was a further attempt to analyze and to give inputs to the Bolivia Summit's water resource initiatives' process of implementation.

---

<sup>42</sup>Caponera, Dante A. 1995. *Shared Waters and International Law*, in *The Peaceful Management of Transboundary Resources*. International Environmental Law and Policy Series.

<sup>43</sup>Convenio para la Conservacion de la Biodiversidad y Proteccion de Areas Silvestres Prioritarias en America Central, Art. 29, June 1992. Summit of Americas on Sustainable Development, Santa Cruz, Bolivia, December 1996.

<sup>44</sup>Water Resources Report of the Inter-American Technical Meeting on Water, Washington D.C., December 8 and 9, 1998. Unit of Sustainable Development and Environment. General Secretariat of the Organization of American States.

## **VII. The Roundtable**

### **A. Background**

There are 58 shared river basins in Latin America.<sup>45</sup> Every country in Mesoamerica shares a boundary river or other significant water resource with neighbors. Like the Talamanca-Sixaola watershed, these basins have often been politically and economically marginalized. The development of effective institutions for management of shared water resources is a critical need in the Americas. Without cooperation in managing these shared waters, ecological degradation will continue, sustainable development will be impossible to achieve, and conflict could result.<sup>46</sup>

### **B. Summary of the Roundtable Discussion**

Aware of this need to foster cooperation and effective management of the Talamanca-Sixaola Watershed, a group of governmental and non-governmental representatives from Panama, Costa Rica, and the United States met to discuss the status of cooperative management of the Talamanca-Sixaola watershed in Panama City on March 23, 1999. This meeting provided an opportunity to evaluate ongoing efforts and develop new ideas and approaches for binational management of the Talamanca-Sixaola River Basin. Emphasis was placed on discussing current and future watershed issues, and evaluating the institutional basis for cooperation. Development of a cooperative basin management scheme included assessing established management processes as well as the possibility of new institutional structures.

During the meeting, there was an introductory presentation about the physical, biological, and social characteristics of the Talamanca-Sixaola River Watershed. Current issues and the existing institutional framework were also discussed. After the presentation, the roundtable participants engaged in a facilitated group discussion.

### **C. Action Plan**

During the discussion, the participants commented on topics raised during the presentation, as well as expanded upon issues affecting the watershed. In addition, they agreed that the most pressing need is for better coordination between the governmental and non-governmental agencies working on both sides of the border. They recognized that there had been significant advances in binational cooperation, particularly the Binational Cooperation Agreement and several sustainable development projects. However, the different institutions working in the region had to improve communications and pull together efforts for sustainable management of the watershed. The proposal for a Diagnostic Study of the Sixaola Watershed, a potential GEF project, was identified as a major opportunity for transboundary coordination, and a potential model for the rest of Central America.

---

<sup>45</sup>Lee, Terence R. 1995. *The Management of Shared Water Resources in Latin America*. 35 Nat. Res. J.

<sup>46</sup>Hamann, Richard and Ankersen, Thomas. 1996. *The Usamacinta River: Building a Framework for Cooperation between Mexico and Guatemala*. Mesoamerican Environmental Law Program

Although there were no formal arrangements for a follow-up meeting to discuss implementation of the roundtable recommendations, the participants agreed to sign a declaration calling for strengthening existing initiatives, and improving coordination among the different organizations working on the region. Furthermore, *integrated management of transboundary water resources* was recognized as a major theme in the Declaration of the third Inter-American Dialogue on Water Management.<sup>47</sup>

## VIII. Conclusions and Recommendations

The roundtable discussions have resulted in several conclusions. First, the 1995 *Convenio* provides an appropriate mechanism in which to establish a watershed-based coordinated planning unit. This is further assisted by the recent establishment of the twin biological corridor initiatives. Second, there is the need for more coordination and exchange of information among the different government and non-governmental organizations working towards sustainable development of the watershed. Third, parties should cooperate to secure the financial and technical resources necessary for joint management of the watershed. Finally, considering that the current institutional mechanism is not rooted in traditional shared basin disputes, such as hydroelectric development and navigation, the watershed is relatively small, and there are cordial border relations between Panama and Costa Rica, the Talamanca-Sixaola River provides an excellent opportunity to act as a pilot project for integrated management of an international river watershed.

## ACKNOWLEDGMENTS

We appreciate the support of Edward Ellis from the School of Forestry, and Lenin Riquelme from the Tropical Conservation and Development Program. Mr. Ellis analyzed the digital images of the watershed, producing the physical and forest cover maps, and obtained the digital information about protected areas and indigenous reserves. Mr. Riquelme provided valuable information for the preparation of this work, and key contacts for the organization of the meeting. The Organization of American States partially funded our trip to Panama, and CATHALAC was supportive for our logistical needs. So were Lucinda Taft and Roxana Silman of Caribbean Conservation, Corp, who helped us contact and arrange travel for the participants from Costa Rica. We are very grateful with Jeanne Ojeda, who offered key support for the organization of the meeting. Finally, we thank the Conservation Clinic and the University of Florida School of Law for supporting this work.

---

<sup>47</sup>Declaration of the Third Inter-American Dialogue on Water Management, Panama City, Panama, March 25, 1999.