

**THE USUMACINTA RIVER:
Building a Framework for Cooperation between Mexico and Guatemala**

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I. Introduction

The Usumacinta River of Guatemala and Mexico is the largest river in Mesoamerica and among the most significant shared water resources in the Western Hemisphere. The river basin drains one of the largest areas of contiguous tropical forest in the region and is extremely rich in natural and cultural resources. The river also flows through the most economically and politically marginalized regions of both Guatemala and Mexico. The ecological and hydrological integrity of the Usumacinta watershed faces numerous threats from deforestation, hydroelectric development and mineral exploitation on both sides of the border.

On July 25 and 26, 1996 a roundtable meeting of representatives of governmental, non-governmental and academic institutions from Guatemala, Mexico and the United States convened in San Cristobal de las Casas, Chiapas, Mexico to discuss the management of the Usumacinta River. The roundtable was sponsored by the Mesoamerican Environmental Law Program as part of its continuing boundary water series, and ECOSUR, a research institute within El Colegio de la Frontera Sur in Chiapas. This report provides background information concerning the ecological, social and legal/institutional context for river management, discusses some of the key threats the basin faces, and provides some initial conclusions reached by roundtable participants for future watershed management. A more comprehensive report and GIS base map is in preparation.

II. The Usumacinta

A. The River

The Usumacinta is the longest river in Mesoamerica. With a basin of 106,000 sq km., shared by Guatemala and Mexico, it is also the region's largest river. The river rises in the Peten of Guatemala and flows along its common border with the Mexican state of Chiapas before entering Mexico and flowing to the sea through Chiapas, Campeche and Tabasco. 42% of Guatemala is drained by the Usumacinta.² The annual average discharge to the Gulf of Mexico is 105,200 million sq. meters³, making it the 6th largest river in Latin America.⁴ This quantity

S. Jeffrey Wilkerson, *Damming the Usumacinta: The Archeological Impact*, 1986 Mesa Redonda Palenque, University of Oklahoma Press.

This is the combined discharge of the Usumacinta and the Grijalva Rivers, which join together just before entering the Gulf of Mexico. Robert Rush Miller, *Mesoamerican fishes of the Rio Usumacinta basin: composition, derivation, and conservation*, 10 in *Proceedings, Wildlife in the Everglades and Latin American Wetlands* (Florida International University) (undated copy on file with the authors).

With an average annual discharge of 58,200 cfs, the Usumacinta is considerably smaller than several South American rivers, the Amazon (6,200,000 cfs), Orinoco (812,000 cfs), La Plata

represents 30% of Mexico's freshwater.⁵

B. Ecological significance

The region drained by the Usumacinta is one of the most biologically diverse in the world, and represents the northern limits of tropical forest ecosystems in the Western Hemisphere. The river itself has an especially rich ichthyofauna, with 112 known fish species.⁶ The estuarine delta of the Usumacinta is one of the most important wetlands on Mexico's Gulf coast for migratory

(779,000 cfs), Tocatins (388,000 cfs) and Sao Francisco (99,200 cfs). Luna B. Leopold, *View of the River* (1994). Harvard University Press.

Memorias, Ecología y Conservación del Delta de los Rios Usumacinta y Grijalva, Presentación. Instituto Nacional de Investigación sobre Recursos Bióticos- División Tabasco (1988).

Letter from Dr. Robert Rush Miller, Curator Emeritus of Fishes, The University of Michigan to Dr Russell Mittermeier, President, Conservation International (undated copy on file with authors). According to Dr. Miller, of the 112 known species, at least 50% are endemic and the Usumacinta is "the likely basin of origin for most of the fishes on the Atlantic slope of Northern Middle America".

waterfowl, wading birds and crocodiles.⁷ The Laguna de Términos, part of the Usumacinta delta, is the home to Mexico's largest fishing fleet.⁸

INIREB, Division Regional, Tabasco, Gobierno del Estado de Tabasco, Ecolgía del Delta de los ríos Usumacinta y Grijalva (Memorias) (1988) 720p.

William H. Conner, John W. Day Jr., Victor Hugo Rivera, Francisco X. Flores-Verdugo & Francisco R. Vera-Herrera, Structure and Productivity of Mangrove Forests on the Pacific and Gulf Coasts of México, in INIREB, Division Regional, Tabasco, Gobierno del Estado de Tabasco, Ecolgía del Delta de los ríos Usumacinta y Grijalva (Memorias) (1988) 720p., 459-472, 460.

The watershed of the Usumacinta drains what many believe is the largest remaining contiguous tropical forest north of the Amazon, often referred to as the Selva Maya, or Maya Forest.⁹ Much of the river originates in the Peten of Guatemala, a vast comparatively pristine region of lowland tropical forest. The other major area of tropical forest within the River's watershed is Mexico's Lacandon Forest, recognized as an important storehouse of biological diversity.¹⁰ Two internationally recognized RAMSAR wetlands lie within the Usumacinta watershed -- Laguna del Tigre National Park in Guatemala and Pantanos de Centla Biosphere Reserve in Mexico.

C. Cultural significance

The Usumacinta River was a center of ancient Maya culture, which used the river and its network of tributaries for trade and travel.¹¹ Some estimate the region may have been inhabited by as many as five million Maya at its peak in 700 A.D.¹² Several major archaeological sites are located on the banks of the river, including Yaxchilán and Planchón de las Figuras in Mexico, and

See Thomas T. Ankersen & Hugo A. Guillen-Trujillo, Confronting the Crisis: Conservation Law and Policy in the Maya Forest, *Vida Silvestre Neotropical* 4(2)(1995.)

See generally, Miguel Angel Vásquez Sánchez y Mario A. Ramos Olmos (eds.), *Reserva de la Biosfera Montes Azules, Selva Lacandona: Investigación para su Conservación*. Centro de Estudios para la Conservación de los Recursos Naturales, A.C. San Cristóbal de las Casas, Chiapas, México. Publ. Esp. Ecosfera 1. 436pp.

See generally, S. Jeffrey K. Wilkerson, *The Usumacinta River: Troubles on a Wild Frontier*, *National Geographic*, Vol 168, No. 4 (Oct 1985), pp 514-543.

Evaluation of the Conservation of the Selva Maya, San Cristobol Chiapas (August, 1995)(a map with narrative text prepared with the assistance of and available from Conservation International).

Guatemala's Piedras Negras. Other significant sites in the basin are Palenque, Bonampak, Altar of Sacrifices and Tikal. There are literally thousands of smaller sites.

In addition to its archaeological significance the Usumacinta River basin supports a regional way of life that is distinct from contemporary societal models. The Lacandones of Chiapas, a Maya people, provide a contemporary link to the region's precolombian history. As a reservoir of indigenous knowledge that has largely been lost by other Mayans, the Lacandons have much to teach the world about living sustainably in tropical forests.¹³ In Guatemala, Peteneros represent a fiercely independent forest dwelling society that continues to harvest chicle ("oro blanco") and other non-timber forest products using methods that also provide an alternative to the traditional pattern of tropical rainforest destruction for timber and agriculture.¹⁴

III. Summary of Threats

A. Dams

The Usumacinta has never been dammed, although it has great potential for hydropower development. Five feasible dam sites have been identified on the main stem of the river.¹⁵ These

James D. Nations & Ronald B. Nigh, Cattle, Cash, Food and Forest: The Destruction of the American Tropics and the Lacondon Maya Alternative, Culture & Agriculture No. 6, August, 1978, Bulletin of the Anthropological Study Group on Agrarian Systems, Dept of Anthropology, University of California-Davis.

See generally, Norman Schwartz, Forest Society, a Social History of Peten, Guatemala, 1990.

S. Jeffrey K. Wilkerson, Damming the Usumacinta: The Archeological Impact. Mesa Redonda Palenque. University of Oklahoma Press. 1986. pp118-133, 119.

projects would have the potential to generate between 2 and 3.7 megawatts of electricity, while flooding over 1,315 sq. km. of land along 525 km. of the Usumacinta River. The potential impacts of dam projects have been an historic focus of conflict between Mexico and Guatemala, which would suffer two thirds of the flooding.¹⁶ Guerrilla warfare, political tensions, and deteriorating economies, as well as concern for ecological effects and inundation of archeological sites, have thus far stymied hydropower development. Instead, Mexico constructed a major system of dams on the neighboring Grijalva river system and Guatemala focused on hydropower development of the Chixoy River, a tributary of the Usumacinta.¹⁷

S. Jeffrey K. Wilkerson, *Damming the Usumacinta: The Archeological Impact*. Mesa Redonda Palenque. University of Oklahoma Press. 1986. pp118-133, 119.

The Chixoy dam was built in the early 1980's for \$1.5 billion and has had many problems. Perera, Victor. 1992. *Damming Ecology*. *The Nation*, April 20.

Many observers believe that the time has come for Mexico and Guatemala to revive plans for development of the Usumacinta.¹⁸ Guatemala is developing plans for hydropower development of several major tributaries.¹⁹ The effects of tributary hydropower development on the basin as a whole have not been assessed.

B. Deforestation

The region's rich timber resources, especially mahogany and red cedar, were a target for exploitation beginning in the late 1800's, when logs were floated down the Usumacinta to Tenosique. During the 1980's, a mill was in operation in Chancala, Chiapas, with the capacity to produce 17 million board feet per year. Satellite imagery reveals substantial deforestation on Mexico's side of the border in the area served by this mill. The Guatemala government is now proposing to subdivide the Peten Forest into commercial and community concessions for timber extraction.²⁰

Much of the region, especially in Mexico, has been deforested. Over 60% of the 5,000

Golden, Tim. 1992. Mexico Moves Ahead With Embattled Dam Project in Mayan Area. The New York Times International, Sunday, March 15.

Presentation of Manuel Basterrechea, Mesa Redonda: Situación y perspectivas de desarrollo sostenible en la gran cuenca del Río Usumacinta, July 25, 1996, San Cristóbal de las Casas, Chiapas, México.

See Tropical Forest Management Trust, Inc., Concesiones de Manejo Forestal para la Reserva de la Biosfera Maya, Peten, Guatemala, Informe de Consutoria (March, 1994)(Submitted to USAID-Guatemala under Contract # P.O 520-0395-0-00-4005-00).

square mile Lacondon forest has been cleared since 1970, with 1,500 square miles lost in the last 10 years.²¹ The only significant area of the Lacondon forest remaining is the 1,278 square mile Montes Azules Biosphere Reserve, which has recently experienced major incursions by settlers. The 1.3 million hectare Maya Biosphere Reserve in the Peten of Guatemala represents the region's largest "protected area," yet colonization and refugee resettlement continue to swell the Peten's once sparse population and threatens all but the most remote forests of the Reserve. Forest clearing rates in the strictly protected areas and multiple use zone of the Reserve were less than 0.5 percent per year in the early to mid 1990s, but over 2 percent in the Reserve's southern perimeter buffer zone (comparable to Chiapas).²²

Larry Rohter, Tropical Rain Forest in Mexico is Facing Destruction in Decade, New York Times, July 10, 1990, citing a World Bank study. In the Lacandon, state forestry department officials have estimated that 24,000 acres (10 hectares) are converted to pasture annually.

Steven A. Sader, Thomas Sever, James C. Smoot, Time-Series Tropical Forest Change Detection: A Visual and Quantitative Approach (Unpublished paper on file with the authors).

Forest exploitation does not necessarily result in deforestation, but in the basin of the Usumacinta, that is often what happens. Typically, an area will be timbered and then settled by colonists who plant corn and other subsistence crops. After a few years of cultivation for corn, the productivity of the soil is usually depleted and the area is converted to grasslands for cattle grazing, while additional areas of forest are cleared for corn. This process, plus the influx of new settlers, leads to rapid deforestation.²³ Deforestation results in major loss of biological diversity in the basin. Deforestation also significantly affects water resources, by accelerating runoff, causing erosion and sedimentation and transporting nutrients.²⁴

C. Roads

Deforestation is often initiated by the construction of roads, creating easier access for timber extraction and colonists. Wherever roads have been constructed in the basin, settlement has followed. Proposals to build major roads linking archeological sites to facilitate tourism,²⁵ thus have enormous potential to facilitate inappropriate patterns of settlement and accelerate loss of the forests in the watershed. The construction of roads to Bonampak and Yaxchilán, or even from Palenque to Tikal, have been criticized as posing a considerable threat to environmental resources in the basin.

D. Oil

See John F. Klein-Robbenhaar, Environmental Implications of Amendments to Mexico's Federal Constitution, 10 *Transboundary Resources Report* 10 (Summer 1996)(discussing implications of constitutional reforms for Mexican agriculture). Raymond Rowe, Narendra Sharma & John Browder, "Deforestation: Problems, Causes, and Concerns,"(33-45) in Narendra Sharma, Ed. Managing the World's Forests (1992).

See Kenneth N. Brooks, Hans M. Gregersen, Peter F. Ffolliott & K.G. Tejwani, "Watershed Management: A Key to Sustainability," 455-487 in Narendra P. Sharma, Managing the World's Forests (1992).

Wilbur E. Garrett, La Ruta Maya, 176 *National Geographic* 429-79 (October, 1989).

Oil has been exploited in the area since the 1930's. The Mexican state of Tabasco has over 7,000 oil wells, three petrochemical plants and 175 primary processing facilities, which have resulted in extensive pollution.²⁶ Oil exploration and development is continuing in more remote parts of the basin. The Peten of Guatemala is the focus of much current activity.²⁷ Laguna del Tigre National Park in the Usumacinta headwaters is Central America's largest wetland and an internationally recognized RAMSAR site. The protected wetland also overlies an oil production field that is under consideration for international development bank financing for expanded production.²⁸

The exploitation of petroleum has the potential to cause significant direct environmental impact through construction activities, spills and the discharge of pollutants. This concern is especially significant around the River's mouth in Tabasco, which is currently experiencing an oil boom. Some of the greatest concerns, however, are for the indirect effects of building roads and bringing workers into forested areas.²⁹ Change detection data from satellite imagery between 1993-1995 has graphically demonstrated the deforestation resulting from the construction of the oil road in Laguna del Tigre National Park in Guatemala.³⁰

E. The Social Context: Poverty, Population Growth, Political Instability, Land Tenure and Enforcement

The areas drained by the Usumacinta are among the poorest in Guatemala and Mexico. Until recently, the Peten was a center for armed conflict between guerrilla and government troops. Many Guatemalans were driven by the violence to cross into Mexico, forming refugee settlements. Social and economic conditions in Chiapas led to the Zapatista uprising in 1994, whose forces continue to hold part of the Lacandon forest.

Raúl A. López Panheco & Joel Zavala Cruz, Impacto de la industria petrolera en zonas inundables del Estado de Tabasco, 637-643, in INIREB, Division Regional, Tabasco, Gobierno del Estado de Tabasco, Ecolgía del Delta de los ríos Usumacinta y Grijalva (Memorias) (1988) 720p.

Liza Grandia, Crude Destruction: The Threat of Oil to Sustainable Development in the Maya Biosphere Reserve (December 14, 1994)(unpublished manuscript on file with the authors).

See Environmental Assessment of the Expansion of the Xan Oil Field (Contract 2-85), Basic Resource International (Bahamas) Ltd. (1996)(on file with the authors).

IUCN-The World Conservation Union, Oil Exploration in the Tropics: Guidelines for Environmental Protection, 10 (1991)

Personal communication with Conrad Reining, Director, Guatemala Program, Conservation International (on file with Conservation International, Washington D.C.).

To alleviate these social pressures and secure contested border areas, both governments have encouraged immigration to frontier parts of the basin. Land tenure, however, is commonly uncertain or contested, and there is ineffective enforcement against incursions into parks or other protected areas. Immigration has often resulted in deforestation of ostensibly protected areas or other inappropriate lands. As the population increases, and the resource base is degraded by unsustainable development, the potential for continued social strife seems likely to rise.

IV. The Legal and Institutional Context

A. A Short History of the Guatemala Mexico Border

In 1823, Guatemala and the other Central American states declared their independence from Mexico and established the shortlived Central American Federation.³¹ Chiapas, however, joined Mexico, establishing the basis for the current political geography of the region.³² The precise location of the remote border remained uncertain, however, prompting the two nations to agree to develop a more precise boundary determination. After years of negotiations, agreement was reached on the common border, which included the Usumacinta River. This agreement was ratified by treaty in 1882, in which Guatemala also renounced any further claims to Chiapas.³³ The river border is represented by the deepest point in the river along its common boundary.³⁴

H. Perez-Brignoli, *A Brief History of Central America* 66-67 (1989).

Id.

Tratado de Limites entre los Estados Unidos Mexicanos y la República de Guatemala, firmado en Mexico, D.F., el 27 de septiembre de 1882, Publicado en el diario oficial el 3 de Mayo de 1883.

Id. at Art. 3o. Personal communication with Lic. Alejandro Reyes Huerta, Director de Asunto Jurídica y Políticas de la Sección Mexicana, Comisión Internacional de Límites y Aguas entre México y Guatemala, San Cristobal de las Casas, Chiapas, Mexico (July 27, 1996).

B. CILA - The International Commission on Limits and Waters Between Mexico and Guatemala

The International Commission on Limits and Waters between Mexico and Guatemala was formally established by an exchange of diplomatic notes between the two countries in 1961.³⁵ The Commission has jurisdiction over the border between the two countries and hence over much of the Usumacinta River basin. The Commission has authority to advise the governments of the two countries concerning border issues, to conduct investigations, and to develop works that have been previously approved by the two governments. The Commission also has the authority to develop projects concerning the equitable use of international waters for the benefit of both countries. The Commission is composed of two sections, corresponding to each country, and each section is headed by a commissioned engineer with diplomatic status and technical, legal and administrative staff as warranted. Decisions taken by the Commission must be referred to the Secretary of Foreign Relations of each country for approval by the respective governments.

In 1979, the respective governments agreed to establish working groups to begin basin development planning. In 1980 a development planning process was approved that authorized studies concerning the hydroelectric and agricultural potential of the international watershed.³⁶ While many of these engineering and planning studies were undertaken, no agreement was reached to finance joint development projects.

Agreement between the United States of Mexico and the Republic of Guatemala creating the International Commission on Limits and Waters. Celebrated by exchange of notes in Guatemala, November 2 and December 21 1961. (On file with the authors).

Acta No. 5 y Anexo del Grupo Asesor del CILA, 19 de mayo de 1980 y Aprobación (on file with the authors).

In 1990, an agreement was signed by each country that would provide CILA with treaty status and obligate each country to provide the resources necessary for the Commission to discharge its duties.³⁷ The agreement was apparently ratified by Mexico, but has not been acted upon by Guatemala.³⁸ In addition to reaffirming the Commission's jurisdiction and authority set forth in the prior exchange of notes, the agreement requires the Commission to provide technical recommendations that could serve as the basis for a treaty governing the use, development and conservation of the international rivers.³⁹ The agreement also would obligate the commission to investigate projects to develop the hydroelectric capacity of the Usumacinta, Suchiate and Chixoy Rivers.⁴⁰ It further requires the Commission to recommend solutions to problems that affect the quality of the international waters under its jurisdiction, including the establishment of water quality standards.⁴¹ Finally, it authorizes the Commission to assist in investigations and studies related to the improvement of the environment and the conservation of natural resources and cultural patrimony.⁴²

C. The Border Environment Agreement

In 1988 the governments of Guatemala and Mexico ratified a convention concerning the protection of the border environment.⁴³ The agreement obligates the governments to cooperate in matters related to environmental contamination and the protection of natural resources. The agreement charges CILA with incorporating environmental considerations into its planning studies and establishing a working group to provide recommendations to the respective governments on this subject.⁴⁴ The agreement also requires the parties to evaluate the effect of activities proposed

Tratado para Fortalecer la Comisión Internacional de Límites y Aguas Internacionales, Ciudad de México el 16 de julio de 1990 (on file with the authors).

Personal communication with Alejandro Reyes Huerta, Director de Asuntos Jurídicos y Políticos de la Sección Mexicana, Comisión Internacional de Límites y Aguas entre México y Guatemala, San Cristobal de las Casas, Mexico (July 28, 1996).

Id. at Art. XIII(a).

Id. at Art. XIII(d).

Id. at Art. X(h).

Id. at Art. XVI.

Convenio entre la República de Guatemala y los Estados Unidos Mexicanos sobre la Protección y Mejoramiento del Ambiente en la Zona Fronteriza, ratificada el 26 de marzo de 1988. 97 Diario de Centro America 2610, Junio 15, 1988.

Id. at Art. 4.

within the frontier zone consistent with their own national law.⁴⁵

V. The Law of International Rivers

The Usumacinta is an international river. International rivers are defined as "those which flow either through, or between, more states than one."⁴⁶ Such shared waters are characterized by special rules in international law. Most states adhere to the theory of "limited territorial sovereignty" when considering shared basins.⁴⁷ This theory holds that a state may use the waters flowing through its territory as long as it does not interfere with its reasonable use by a co-basin state. This theory has emerged as a general rule of international law and has evolved into the doctrine of "equitable utilization." Professor Utton has summarized the rules governing the use of international waters in the following fashion:

1. ... a co-basin state can develop and utilize water resources within its jurisdiction if no appreciable harm is caused to other co-basin states....
2. However, a co-basin state has an obligation not to use the waters of an international watercourse system in a way that would cause substantial or appreciable harm to a co-basin state.
3. If existing uses or a proposed use could or would cause appreciable harm, then there is an obligation to notify, consult and settle the question by mutual agreement through negotiation.

Id. at Art. 5.

J. Brierly, *The Law of Nations* 226 (Waldock ed. 6th ed. 1963). The Usumacinta is both "successive" (flowing from one nation to another) and "contiguous" (providing a common boundary between nations). The legal considerations are apparently similar. Albert E. Utton, Ch. 49, "International Streams and Lakes Generally" 3, in Robert E. Beck, *V Waters and Water Rights* (1991 ed.).

Albert E. Utton, s 49.02, "International Streams and Lakes Generally" 6, in Robert E. Beck, *V Waters and Water Rights* (1991 ed.).

4. If negotiation fails, then the question would be referred to an appropriate tribunal or other decision maker to decide, based on the "equities" by balancing the relevant factors under the principle of equitable utilization or apportionment.⁴⁸

As water resource management has become increasingly multi-faceted the doctrine of equitable utilization has been criticized for its emphasis on independent development of shared basins based primarily on allocations of water for consumptive uses.⁴⁹ Contemporary water managers tend to view shared waters from the perspective of the entire watershed and emphasize comprehensive river basin planning. As a result, the principle of equitable participation has recently emerged to modify the doctrine of equitable utilization and ensure that it contemplates cooperation in integrated water resource management.⁵⁰

VI. The Roundtable: Background and Results

A. Background

Id. at s 49.94, 25-26.

Id. at s 49.09, 38.

The equitable utilization doctrine and its recent modifications are codified in the Draft Articles on the Law of Non-Navigational Uses of International Watercourses. Draft Report of the International Law Commission, U.N. GAOR, 43rd Sess., at 1, U.N. Doc. A/CN.4/L.463/Add.4(1991), reprinted in 3 *Colo. J. Int'l Env'tl. L. & Pol'y* 1 (Winter 1992).

Shared basins are common in the Americas. The United States and Canada share such major systems as the Great Lakes and the Columbia River. Mexico and the United States jointly manage the Colorado River, the Rio Grande and several smaller rivers. There are 58 shared basins in Latin America.⁵¹ Every country in Mesoamerica shares a boundary river or other significant water resource.⁵² Like the Usumacinta, these basins are often areas that have been economically and politically marginalized. Unless there is effective cooperation in the management of these resources, ecological degradation will continue, sustainable development cannot be achieved and international conflict can result. The development of effective institutions for managing shared water resources is an urgent priority in the Americas.

The Usumacinta is thus a microcosm for issues that must be addressed elsewhere in the region. Although Mexico has devoted considerable resources to the management of rivers along its northern border with the United States⁵³, the southern border and the Gulf of Mexico have received much less attention. Similarly, from the perspective of Guatemala, while there has been some recognition of its role as manager of part of a larger basin, few resources have been allocated.

B. Summary of the Roundtable

Recognizing the need to stimulate improved cooperation in management of the Usumacinta basin, a group of environmental and water management experts, officials and academics from Guatemala, Mexico and the United States convened a roundtable discussion in San Cristóbal de las Casas, Chiapas, July 25-26, 1996⁵⁴. The roundtable was hosted by El Colegio

Terence R. Lee, *The Management of Shared Water Resources in Latin America*, 35 Nat. Res. J. 541-553 (1995).

Some of the other major border waters in the region are: the Coco (Honduras and Nicaragua), the San Juan (Nicaragua and Costa Rica), the Sixaola (Costa Rica and Panama), the Sarstoon (Belize and Guatemala) and the Hondo (Mexico, Guatemala and Belize).

See generally, Helen Ingram, Nancy K. Laney and David M. Gillilan, *Divided Waters: Bridging the U.S.-Mexico Border* (1995) University of Arizona Press, Tucson, 261 pp; Stephen Mumme, *Innovation and Reform in Transboundary Resource Management: A Critical Look at the International Boundary and Water Commission, United States and Mexico*, 33 Nat. Res.J. 93-120 (1993).

The roundtable was entitled "Situación y Perspectivas de Desarrollo Sostenible en la Gran Cuenca del Río Usumacinta". It was held at El Colegio de la Frontera Sur (ECOSUR), San Cristóbal de las Casas, Chiapas. The other organizing institutions were the Instituto de Derecho Ambiental y Desarrollo Sostenible (IDEADS), a Guatemalan NGO, and the Mesoamerican Environmental Law Program (MELP) at the University of Florida College of Law's Center for Governmental Responsibility (CGR). Additional funding support was provided by the Florida Environmental Studies Center (State University System of Florida). Travel for

de la Frontera Sur (ECOSUR).

The purpose of the roundtable was to review development and conservation issues from a basin perspective. To facilitate the process, the staff of ECOSUR mapped available information for the basin using a geographic information system (GIS). Participants were asked to bring relevant documents and make short presentations regarding the hydrologic, ecological, archeological, cultural and socio-economic status of the basin. The laws of Guatemala and Mexico affecting the basin were reviewed. In addition, other multijurisdictional water management efforts were described.

many of the participants was supported by their own institutions.

The degree of knowledge regarding parts of the basin is impressive. Studies have focused on the estuary⁵⁵, the Lacondon forest⁵⁶ and significant areas in the Peten. What the roundtable identified as lacking, however, is any integration of those studies, or a coordinated plan for implementation.

C. Action Plan

The participants in the workshop agreed that the most pressing immediate need is for a rapid assessment of existing information in order to identify research gaps and management priorities. Given the pace of deforestation and other development in the region, it was felt that action could not be delayed pending the completion of long-term studies. Accordingly, the roundtable supported the idea of conducting a "Rapid Watershed Assessment," which would be designed to synthesize existing information as the basis for relatively short-term management recommendations.⁵⁷ The participants agreed to work on completing such an assessment over the next year, and to meet again either in Guatemala or in Tabasco, close to the estuary, to consider recommendations for improving basin management.

D. Potential Legal Framework

Memorias, Ecología y Conservación del Delta de los Ríos Usumacinta y Grijalva, Presentación. Instituto Nacional de Investigación sobre Recursos Bióticos- División Tabasco (1988).

e.g., Miguel Angel Vásquez Sánchez y Mario A. Ramos Olmos (eds.), Reserva de la Biosfera Montes Azules, Selva Lacandona: Investigación para su Conservación. Centro de Estudios para la Conservación de los Recursos Naturales, A.C. San Cristóbal de las Casas, Chiapas, México. Publ. Esp. Ecosfera 1. 436pp.

The concept of a "rapid watershed assessment" was based on methodologies developed from "rapid ecological assessments" and "rapid rural appraisals" in conservation and development science. At present no methodology exists for such a rapid watershed assessment.

The Roundtable participants also agreed that the legal and institutional framework for basinwide management must be given further consideration. Guatemala and Mexico have established an institution with significant authority over the basin, the Comisión Internacional de Límites y Aguas Entre México y Guatemala (CILA). CILA has clear authority to mark the boundary between the two countries. In addition, it has authority to conduct planning studies related to managing shared water resources. The 1987 border agreement also appears to give CILA an environmental mandate. CILA thus appears to provide an opportunity for the institutional expression of the principle of equitable participation in the law of international waters. As such roundtable participants believed it has the potential to serve as the binational coordinator of basin management initiatives.

The structure of such binational management should be further explored, however. A range of institutional models exist for multijurisdictional basin management. Those factors that have led to the success or failure of other institutions should be understood and used as the basis for developing recommendations for improving management of the Usumacinta.

VII. Conclusions

The Rio Usumacinta roundtable was the third in a series that the Mesoamerican Environmental Law Program has been conducting to discuss issues related to the management of shared water resources in Mesoamerica. Two previous roundtables have been conducted to discuss issues related to the Rio San Juan, the boundary water between Nicaragua and Costa Rica.⁵⁸ The roundtable series has been conducted as a contribution to the Organization of American States' Inter-American Dialogue on Water Management, convened for the second time in Buenos Aires, Argentina in September.

In both instances, the roundtable discussions have resulted in several conclusions. First is the urgent need to consider the management of water and related resources on a basin level across political boundaries. Second, even in the absence of well developed institutions for multijurisdictional management, progress can be made on the technical level through establishing mechanisms for the exchange of information and points of view, and building a foundation of trust. Third, the institutional capacity for multijurisdictional management should be further developed through financial support, technical assistance, and diplomacy.

R. Hamann, T. Ankersen, J. Bloom, M. Gonzalez, "Binational Management of the Rio San Juan Basin: From War to Cooperation," in Proceedings of the Interamerican Dialogue on Water Management, 393 (October 27-30).