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Mesoamerican Biological Corridor: The Legal Framework for an Integrated, Regional System of Protected Areas

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ARTICLES

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"The maintenance and protection of biodiversity must be a primary objective of interAmerican cooperation."

- Gabriel Garcia Marquez and Homero Aridjis, proposal for a "Latin American Ecological Alliance" delivered to the First Ibero-American Summit, Mexico, July 19, 1991. (New York Times International, July 22, 1991).

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Recent attention has been focused on the need to examine the feasibility of establishing a regional institutional framework within which to protect and restore a contiguous remnant of the "Mesoamerican Biological Corridor" as an integrated regional system of protected areas. This entails the daunting task of achieving political consensus among the eight nations that occupy this paleohistoric route for species migration, the genetic link between two continents. The fractious geopolitical history of the region and its precarious socioeconomic status will greatly compound any such effort. Moreover, there is no existing model of multilateral cooperation in natural resource management on the scale required to achieve the creation of a multinational biological corridor.

Existing international conventions and agreements, including recently signed biodiversity agreements, offer unique opportunities to create a framework for regional wildlands management in Mesoamerica. To have the greatest chance of succeeding, however, the rationale for establishing this framework must be grounded in objectives that are biologically, economically and culturally sound. The region's rich biological diversity, attributable to its historic role as the land bridge between two continents, has been offered as a biological basis for a regional approach to the protection of biodiversity in Mesoamerica. From an economic standpoint, the conservation of natural resources, couched in the catch-phrase "sustainable development," has long been viewed as essential to the long-term economic sustainability of Central America. Finally, any multilateral regional approach to wildlands protection must address the rights and responsibilities of the principal inhabitants of Mesoamerica's remaining wildlands, its indigenous peoples.

This article first briefly examines the historical basis for the recent movement toward regional environmental integration in Central America. Part II discusses the biological, economic and cultural rationales for a regional, protected-areas system. With this background, Part III reviews the current international law framework for biodiversity conservation. Part IV examines the

extent to which existing models of international and regional cooperation incorporate modern scientific principles of conservation biology, such as island biogeography, into their legal framework. Finally, Part V surveys alternative international law approaches for an integrated, regional, protected-areas system to achieve the region's stated goal of preserving an "effective Mesoamerican biological corridor."[1]

I

BACKGROUND

A. The Political History of Central America—The Reemergence of Regionalism

The Mesoamerican Biological Corridor has been offered as a unifying force among the nations that lie in its path, a biological alternative to the fractious political history of the isthmus.[2] Binational border parks, for example, have been touted as a means to ease tensions along frontier borders,[3] a historic source of concern in Central America.[4] Ironically, at the very time the nations of the isthmus appear ready to join their political, economic and natural resources, the region's biological resources are being fragmented at an alarming rate.[5]

For brief spans in its history Central America has flirted with regional unity. Many of the same historical and geographic forces which have inhibited unity in this century, conspired to defeat unification in the past. The Spanish Crown united rival colonial and indigenous factions as the Kingdom of Guatemala in the late 1550s, only to watch it immediately disintegrate into rela-

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[1] *See infra* notes 211-254 and accompanying text.

[2] Letter from Archie Carr III to Regional Office of Central American Programs (May 4, 1990), *in* 1 PASEO PANTERA (transmitting proposal for PASEO PANTERA: A STRATEGY FOR REGIONAL WILDLANDS MANAGEMENT).

[3] *See* Oscar Arias & James Nations, *A Call for Central American Peace Parks*, *in* OVERSEAS DEVELOPMENT COUNCIL, U.S.-THIRD WORLD POLICY PERSPECTIVES NO. 17, POVERTY, NATURAL RESOURCES AND PUBLIC POLICY IN CENTRAL AMERICA 43-57 (1992); *Basis for Selection of Sites for Protected Areas*, *in* MANAGING PROTECTED AREAS IN THE TROPICS 48-51 (John MacKinnon et al. eds., 1986).

[4] *See* HECTOR PEREZ-BRIGNOLI, A BRIEF HISTORY OF CENTRAL AMERICA 69, map 10 (Ricardo B. Sawrey A. and Susana Stettri de Sawrey trans., University of California Press, 1987) (illustrating territorial disputes of the region during the nineteenth and twentieth centuries).

[5] Gary S. Hartshorn, *Forest Loss and Future Options in Central America*, *in* PROCEEDINGS OF THE MANONET SYMPOSIUM 13-19 (1989).

tively autonomous administrative units.[6] As the Spanish empire began to crumble in the early nineteenth century, the Kingdom of Guatemala managed to peaceably eschew annexation by the Kingdom of Mexico. For a decade and a half the "Federation of Central America" enjoyed an independent, sovereign existence.[7]

Unity soon gave way to provincial autonomy, however, as the Kingdom splintered into five tiny nation-states. Foremost among the forces of disunity that divided Central America was the historical and geographic isolation in which the provincial capitals developed under the Spanish Crown. This isolationism was compounded by forbidding geography, poor routes of transportation, inadequate communication, and foreign adventurism, and led to political and economic autonomy.[8]

In the twentieth century a litany of political and economic treaties have renewed hopes of solidarity, if not unity. While each of these efforts has met the similar fate of unrealized promise,[9] apparently hope springs eternal. The contemporary opportunity for regional solutions to environmental problems in Central America only recently emerged, with the signing of the *Contadora Accord* by the Central American presidents in 1987.[10] Unquestionably, the cessation of regional hostilities and the increased interest in Central American regionalism as an economic counterweight to developing trading blocks in other world regions has made a regional network of protected areas politically realistic. Moreover, communication capabilities and modes of transportation, previously barriers to progress within Central America, have improved dramatically in the modern era. Together with the relative lull in ideological confrontation, and the recent international interest in the harmonization of environmental law, these improvements offer a window of opportunity for regional environmental cooperation on an unprecedented scale.

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[6] *See* RALPH LEE WOODWARD, JR., CENTRAL AMERICA: A NATION DIVIDED 25-60 (2d ed. 1985).

[7] *See id.* at 88-119.

[8] *See id.* at 3-24.

[9] *See* PEREZ-BRIGNOLI, *supra* note 4, at 186-91. *See generally*, JOAQUIN TASCAN, INTEGRATION AND SUSTAINABLE DEVELOPMENT IN CENTRAL AMERICA: AN OVERVIEW (1994).

[10] Text of Agreements by the Presidents of Central America, 26 I.L.M. 1167 (Sept. 1987).

Seizing upon this opportunity, both the legislative and executive branches of the Central American republics recently undertook regional initiatives aimed at developing a coordinated environmental policy. At the legislative level, the countries have established the Central American Interparliamentary Commission for Environment and Development (CICAD), to coordinate national environmental legislation.[11] In the executive branch, cabinet-level ministers from each Central American country with responsibility for natural resource management, formed the Central American Commission for Environment and Development (CCAD).[12] The CCAD and CICAD share a secretariat, housed in Guatemala City, Guatemala.

These entities provide the Central American nations with the institutional machinery necessary to develop regional environmental programs and strategy. In one of the first tests of its ability to coordinate a regional consensus, CCAD recently orchestrated an agreement for a region-wide ban on the importation of hazardous waste for cogeneration.[13] More recently, in anticipation of the United Nations Conference on Environment and Development (UNCED) in Rio de Janiero, the Presidents of Central America signed regional agreements concerning biodiversity, climate change and forestry.[14] In addition, CCAD presented Central America's own *Agenda for Environment and*

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[11] Constituent Covenant of the Central American Interparlimentary Commission for Environment and Development (Mar. 15-16, 1991).

[12] *See* Convenio Centroamericano Para La Protection Del Ambiente [Central American Agreement for the Protection of the Environment] June 14, 1990. A representative from Mexico also sits ex officio as an observer on CCAD. Mexico and Guatemala share a significant forested frontier and have entered into a bilateral agreement to cooperate on environmental protection at the border. Convention Between the United States of Mexico and the Republic of Guatemala Concerning the Protection and the Improvement of the Environment Within the Frontier Zone (Guatemala City, Apr. 10, 1987); Les Pollutions Transfrontiers en Droit Compare et International, REVUE JURIDIQUE DE L'ENVIRONNEMENT, Soceite Francaise Pour Le Droit de L'Environnement.

[13] Stephen E. Cornelius, *Wildlife Conservation in Central America: Will it Survive the 90s?*, *in* TRANSCRIPT OF 56TH N.A. WILDLIFE & NAT. RESOURCES CONF. 40, 45 (1991). Ratification of the agreement has stalled in the Costa Rican Congress, however, amid concerns over its breadth.

[14] While CCAD has demonstrated its ability to forge a regional consensus at the executive level, the legislative ratification of these instruments has lagged behind. To date none of the regional environmental agreements signed by the Presidents of the Central American nations have entered into force. Statement of Jorge Cabrera, Executive Secretary, CCAD, Central American Biodiversity Legal Project, First Regional Policy Conference, Herredia, Costa Rica (June 24, 1993).

Development at the Rio Conference. Both the regional biodiversity convention and the Central America agenda contain explicit references to the importance of protecting the Mesoamerican Biological Corridor.[15]

In addition, the Central American Parliament, which focuses on regional political integration issues, has recently expressed an interest in the regional harmonization of environmental law.[16] Toward this end, a model framework environmental law has been prepared for the nations of Central America under the auspices of the United Nations Environmental Program.[17]

B. The Biologic, Economic and Cultural Rationale for an Integrated System of Protected Areas in Mesoamerica

Several premises support the development of a multinational biological corridor through Mesoamerica. These include justifications based in biology, sustainable economic development, and the cultural survival of the indigenous groups that inhabit a significant portion of the proposed corridor. The biological premise is rooted in island biogeography, a branch of the relatively new discipline of conservation biology.[18] An often articulated economic premise for corridor protection lies with "ecotourism," a relatively new branch of the tourist industry.[19] While both corridor theory, an outgrowth of island biogeography, and ecotourism have become established precepts of the world conservation movement, neither is without its detractors. Moreover, the role and responsibility of the indigenous groups with respect to the management of natural resources within protected areas remains uncertain in Mesoamerica.

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[15] *See supra* notes 12-14.

[16] Electronic Correspondence with Alejandra Sobenes, President, Instituto Derecho Ambiental y Desarrollo Sostenible (Aug. 20, 1993).

[17] *See* Ley Basica de Proteccion Ambiental y Promocion del Desarrollo Sostenible, Program de las Naciones Unidas para el Medio Ambiente Oficina Regional Para America Latina y el Caribe (Mexico, D.F., Jan. 25-26, 1993).

[18] The theory of Island biogeography postulates that when a habitat loses 90% of areal extent, there will be a concurrent 50% loss of species diversity. Norman Myers, *Tropical Forests and their Species: Going, Going...?*, *in* BIODIVERSITY 30 (E.O. Wilson ed., 1988). The "intellectual cornerstone" of modern conservation biology has been attributed to a 1963 paper by R.H. MacArthur and E.O. Wilson entitled *The Theory of Island Biogeography*. *See* J. Terborgh, *Preservation of Natural Diversity: the Problem of Extinction-Prone Species*, 12 BIOSCIENCE 715, 722 (1974).

[19] *See* KREG LINDBERG, WORLD RESOURCES INSTITUTE, POLICIES FOR MAXIMIZING NATURE TOURISM'S ECOLOGICAL AND ECONOMIC BENEFITS (1991).

1. The Biological Premise for Protecting the Mesoamerican Biological Corridor

Within the last three million years, scientists theorize that tectonic activity in the Earth's crust finally closed the last oceanic gap that lay south of present day Nicaragua and created the land bridge between North and South America, now known as the Isthmus of Central America.[20] The creation of this narrow land formation between two previously distinct land masses facilitated the migration of species, and the genetic material they represent, between two of the earth's major continents. Paleontologists refer to this phenomenon as the "Great American Biotic Interchange."[21] The Great American Biotic Interchange is described as "an episode involving reciprocal passage of numerous land and freshwater taxa between the Americas via the Isthmian Corridor about 3 million years ago."[22]

When the land connection between North and South America occurred, the Mesoamerican Isthmus and the contiguous regions of North and South America were dominated by dry savannahs.[23] Transcontinental biotic interchange, particularly for free-ranging fauna is believed to have been pronounced.[24] However, global climate change resulted in the northward encroachment of the humid tropical rain forests from South America, and the rate of faunal interchange with North America decreased dramatically, limited to highly tolerant and adaptive species.[25] This radical shift from savannah to rain forest greatly diminished the Isthmus' role as a transcontinental migratory corridor. Some paleobiologists now refer to this more limited role as a "filter bridge."[26]

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[20] *See* P.V. Rich & T.H. Rich, *The Central American Dispersal Route: Biotic History and Paleogeography*, *in* COSTA RICAN NATURAL HISTORY 12, 12-16 (D. Jantzen ed., 1983).

[21] F.G. Stehli & S.D. Webb, *A Kaleidoscope of Plates, Faunal and Floral Dispersals, and Sea Level Changes*, *in* THE GREAT AMERICAN BIOTIC INTERCHANGE 11 (Stehli & Webb eds., 1985). This fascinating and highly technical treatise does not discuss the biogeographical implications of the ongoing human-induced fragmentation of the interchange.

[22] *Id.*

[23] *See* Rich & Rich, *supra* note 20, at 27-30.

[24] *See id.* at 27.

[25] *See id.* at 30.

[26] *See id.* at 12 (citing G.G. SIMPSON, THE GEOGRAPHY OF EVOLUTION (1965); L.G. Marshall et al., *Mammalian Evolution and the Great American Interchange*, 251 SCIENCE 1351-57).

Regardless of its present day role in transcontinental biotic interchange, an equally compelling biological justification for linking the wildlands of Mesoamerica also exists at the regional level. Mesomerica's high biological diversity relative to other regions has been attributed to the intermingling of species from the two continents provided by the land bridge.[27] This extraordinary biological diversity may be jeopardized.[28] There is growing concern throughout the world that present day parks and protected areas, including many of those in the tiny countries of Central America, are simply too small to serve as ecologically functional units. The scientific basis for this concern is framed within the relatively new discipline of island biogeography.[29] Absent landscape level linkages, many biogeographers contend that the biological diversity that remaining forested areas provide will be jeopardized.[30] Moreover, some scientists believe that corridors are also necessary to permit species to move altitudinally in order to adapt to global climate change.[31] The *Global Biodiversity Strategy* published by three leading conservation organizations contends that, "[u]sed strategically, corridors and buffer zones can fundamentally change the ecological role of protected areas. Instead of merely maintaining representative samples of ecosystems, protected areas linked by corridors become means of maintaining functioning natural or near-natural ecosystems over large regions."[32]

In modern Mesoamerica, the regional biotic interchange once provided throughout the Isthmus by a complex matrix of biogeographic provinces has been threatened by the man-induced phenomenon of habitat fragmentation. Several factors have reduced the once contiguous corridor between North and South America

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[27] Cornelius, *supra* note 13; *see also* Barborak, *History of Protected Areas and their Management in Central America*, *in* CHANGING TROPICAL FORESTS: HISTORICAL PERSPECTIVES ON TODAY'S CHALLENGES IN CENTRAL & SOUTH AMERICA 93 (Harold K. Steen & Richard P. Tucker eds., 1992) (proceedings of a conference sponsored by the Forest History Society and the IUFRO Forest History Group).

[28] *See, e.g.*, William D. Newmark, *Legal and Biotic Boundaries of Western North American National Parks: A Problem of Congruence*, 33 BIOLOGICAL CONSERVATION 197 (1985).

[29] *See supra* note 18.

[30] *See generally* LARRY D. HARRIS, THE FRAGMENTED FOREST: ISLAND BIOGEOGRAPHY THEORY AND THE PRESERVATION OF BIOTIC DIVERSITY (1984).

[31] Reed F. Noss, *The Wildlands Project: Land Conservation Strategy*, WILD EARTH, Wildlands Project Special Issue, 1992, at 10, 13.

[32] WORLD RESOURCES INSTITUTE ET AL., GLOBAL BIODIVERSITY STRATEGY 130 (1992).

to a series of disjunct habitat islands: population growth; a migrating colonization front; large-scale, intensive agriculture; and small-scale, subsistence agriculture supported by slash and burn forestry practices.[33] Principles of island biogeography suggest that many of these isolated remnants of the corridor may become dysfunctional, too small to perpetuate themselves, let alone fulfill any larger role in biotic interchange.[34] A recent study found 68% of the protected areas in Central America were "small"—that is, under 10,000 Lectures.[35] Moreover, according to one commentator, the existing "system" of parks and protected areas in Central America developed as an ad hoc response to development and colonization, without regard to their ecological representativeness, either individually or as units in a larger reserve network.[36]

The biological premise for an integrated system of protected areas rests on the assumption that enough of the Mesoamerican Biological Corridor remains that it is presently practical to protect and restore it, and that this should be a principle goal of conservation biology in this region of the world. Although a scientific model for corridor design to maximize biotic interchange has been postulated,[37] it has received criticism both in terms of its scientific validity and as a conservation strategy. Critics contend that corridors do not offer the best value for the conservation dollar since scarce financial resources may be diverted to protect marginal lands as corridors based on speculative science, while high quality or highly endangered ecosystems go unprotected.[38] Others have noted that corridors may serve as conduits for fire, disease or the introduction of exotics, and when inade-

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[33] H. JEFFREY LEONARD, NATURAL RESOURCES AND ECONOMIC DEVELOPMENT IN CENTRAL AMERICA: A REGIONAL ENVIRONMENTAL PROFILE, 14-16 (1987).

[34] *See Basis for Selection of Sites for Protected Areas*, *supra* note 3, at 38-43.

[35] J.C. GODOY, COMPLETING THE SYSTEM OF PROTECTED WILDLANDS IN CENTRAL AMERICA, PARKS AND PROGRESS 102 (IUCN, IDB, 1993).

[36] Cornelius, *supra* note 13, at 43-44. Other commentators contend that planning for a regional wildlands system began as early as 1974. SISTEMA REGIONAL DE AREAS PROTEGIDAS DE AMERICA CENTRAL: PLAN DE ACCION 1989-2000 (Roger Morales & Miguel Cifuentes eds., 1989).

[37] *See* HARRIS, *supra* note 30; *see also* Robert L. Harrison, *Toward a Theory of Inter-Refuge Corridor Design*, 6 CONSERVATION BIOLOGY 293-94 (1992).

[38] Daniel Simberloff et al., *Movement Corridors: Conservation Bargains or Poor Investments?*, 6 CONSERVATION BIOLOGY 493 (1992); Charles C. Mann & Mark L. Plummer, *The High Cost of Biodiversity*, 260 SCIENCE 1868 (1993).

quately designed, may prove to be gauntlets for the species they are supposed to protect.[39]

Despite lingering criticisms, the corridor concept appears to be gaining legitimacy within the conservation community.[40] In 1989, several noted conservation biologists published an *Agenda for Conservation Action* which calls for "corrective management" of protected areas and identifies the need for detailed research on boundary adjustments for "connecting corridors, habitat stepping stones, and so forth . . . to pinpoint the missing elements critical to the survival of sanctuaries."[41] The 1992 *Global Biodiversity Strategy* recommends the establishment of corridors as a specific "action item" within its strategic plan for biodiversity conservation.[42] The 1992 World Parks Congress legitimized the concept in its *Caracas Declaration* and urged all nations to "take urgent action to consolidate and enlarge national systems of . . . protected areas with buffer zones and corridors."[43] An early draft of the in situ conservation provision of *United Nations Framework Convention on Biological Diversity* called for the establishment of a system of protected areas and "associated wildlife corridors," and even provided a definition of the term.[44] The draft convention proposed that wildlife corridors be defined as "routes or avenues to ensure completion of life cycles and unimpeded migrations and gene flows."

Corridor theory has even been litigated in the United States Courts. A United States appellate court recently recognized the role of corridors in the maintenance of biological diversity on public lands, and required that the United States Forest Service consider them in an environmental impact analysis.[45] The concept of connectivity represented by corridor theory also lies at the heart of a grandiose proposal for a "North American Wilder-

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[39] Mann & Plummer, *supra* note 38, at 1870.

[40] *See* PARKS AND PROGRESS: PROTECTED AREAS AND ECONOMIC DEVELOPMENT IN LATIN AMERICA AND THE CARIBBEAN 60-62 (V. Barcetti ed., 1993).

[41] *An Agenda for Conservation Action*, *in* CONSERVATION FOR THE TWENTY FIRST CENTURY 313 (David Western & Mary Pearl eds., 1989).

[42] WORLD RESOURCES INSTITUTE ET AL., *supra* note 32, at 129-130.

[43] PARKS AND PROGRESS, *supra* note 40, at 219.

[44] *Fifth Revised Draft Convention on Biological Diversity*, U.N.E.P. Intergovernmental Negotiating Committee, 5th Sess., art. 7(a), at 38, U.N. Doc. UNEP/Bio.Div/N7-INC. 5/2 (1992). In a footnote a subworking group within the negotiating committee felt that finalization of this language should await finalization of Article 7, dealing with in situ conservation. *Id.* at 38 n.3.

[45] *See* Marble Mountain Audubon Soc'y v. Rice, 914 F.2d 179 (9th Cir. 1990).

ness Recovery Strategy" known as the *Wildlands Project*.[46] The Project's recent publication even includes a practical "recipe" for the development of regional reserve design that seeks to incorporate the principles of island biogeography, including specific design criteria for the establishment of corridors.[47]

2. *The Economic Premise for Protecting the Mesoamerican Biological Corridor*

As a region, Central America relies heavily on its natural resources as the basis of its economy.[48] In most Central American countries, agriculture still provides the principle source of foreign exchange, primarily through the export of bananas, beef, and coffee.[49] Until recently, however, coffee prices had been plummeting on the world markets, and bananas have become the focal point of an international trade dispute as Europe seeks to favor former colonies in its tariff structure. Subsistence agriculture and natural resource based livelihoods such as fishing and forestry also remain highly significant to domestic economies in the region.[50] In addition, non-traditional tropical fruits and floraculture have gained increased importance in recent years. Central America's still relatively undiversified export agricultural base requires extensive tracts of land for production. The continued expansion of both monoculture crops in the coastal region, primarily bananas, and a subsistence-based "colonization front" migrating easterly from the Central Highlands are fragmenting and isolating the region's remaining wildlands.[51]

The creation of a relatively contiguous network of protected areas on the Mesoamerican Isthmus may exclude or reduce the amount of presently available land from additional agricultural production, human colonization and other forms of develop-

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[46] *See* WILD EARTH, Wildlands Project Special Issue, 1992.

[47] *See* Noss, *supra* note 31.

[48] *See* LEONARD, *supra* note 33. Industrial development remains both relatively insignificant and relatively stagnant.

[49] *Id.* at 5. In both Costa Rica and Belize tourism has emerged to challenge the traditional banana economies. *Id.* at 25. According to one source, tourism may outstrip bananas as Costa Rica's leading income producer. Peter Brennan, *Tourism Took Off Amid Deep Doubts, Debate*, THE TICO TIMES 1992 YEAR IN REVIEW, December 1992, at 2.

[50] LEONARD, *supra* note 33, at 12.

[51] Stanley Heckadon, Lecture at the Paseo Pantera Symposium (Mar. 11-14, 1992); *see* LEONARD, *supra* note 33, at 12; *see also* J. JONES, COLONIZATION AND ENVIRONMENT: LAND SETTLEMENT PROJECTS IN CENTRAL AMERICA 8-22 (1990).

ment. According to one source, roughly one-third of the lands still available for a corridor presently enjoy some sort of "protected area" status.[52] The remaining lands necessary to consolidate an isthmian corridor remain unprotected, and hence subject to incompatible development pressure. Moreover, even property presently identified as "protected" is subject to continuing colonization and development pressure due to inadequate boundary enforcement and uncertain land tenure.[53] For example, a recently released draft U.S. Agency for International Development (USAID) report claims that the amount of land officially titled in Guatemala is twice the area of Guatemala, yet half of Guatemala remains untitled.[54]

Undoubtedly, much of the land within any proposed corridor alignment, and in some instances land within existing protected areas, remains privately owned and subject to compensation for expropriation.[55] As a result, the consolidation of the proposed corridor may have significant short-term economic consequences. For example, in Costa Rica there are numerous long-pending expropriation claims by American citizens, including two involving the alleged seizure of private property for National Park and Indigenous Reserve purposes.[56] Also in Costa Rica, tremendous pressure has been exerted by the international environmental community to halt a natural forest management private enterprise, because it lies in the path of a proposed corridor linkage between two existing protected areas.[57] A coalition of local development groups, including indigenous groups, blacks, and campesinos from the Talamança region along Costa Rica's Caribbean Coast recently issued a joint statement condemning efforts on the part of the government and allied environmental groups to consolidate protected areas in the region into a contiguous bi-

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[52] Interview with Jim Barborak, Regional Coordinator, Paseo Pantera Project (Mar. 7, 1992).

[53] U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT, THE GREEN BOOK, PART 1: A POLICY TAXONOMY AND ANALYSIS OF POLICIES AFFECTING NATURAL RESOURCES AND THE ENVIRONMENT 55, 67 (1992) [hereinafter THE GREEN BOOK].

[54] REGIONAL OFFICE OF CENTRAL AMERICAN PROGRAMS, U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT, THE GREEN BOOK, GUATEMALA COUNTRY ANALYSIS, 3-3-16 (May 1992) (draft document).

[55] THE GREEN BOOK, *supra* note 53, at 69.

[56] Maria E. Carvajal & John McPhaul, *U.S. Delays IDB Aid to Costa Rica*, THE TICO TIMES, Dec. 21, 1992, at 1.

[57] *See Sustainable Forestry Firm Charged*, THE TICO TIMES, July 2, 1993, at 16.

ological corridor.[58] The groups objected to being squeezed between government expropriation of land for protected areas and the consolidation of landholdings by foreign banana and tourist interests.[59]

Many policymakers within the region continue to view the forested frontier as a safety valve to channel population growth away from the urban centers.[60] In the absence of an adequate economic counterweight, further consolidation of protected areas may encounter significant resistance from policymakers and community leaders reluctant to "lock-up" land viewed as important to the region's economic development and government tax rolls, simply to preserve biological diversity.[61] The United States witnessed this phenomenon during the so-called Sagebrush Rebellion of the Reagan Era, and it continues to beleaguer ambitious land acquisition schemes.[62] Indeed, in a broader context, this charge became a prominent underlying theme in the North-South debate leading to the agreements signed at the United Nations Conference on Environment and Development in Rio de Janiero in 1992. Developing nations bristled at what they perceived as efforts to constrain their own development for the sake of global environmental solutions to deforestation and climate change.

Only a strong economic rationale, coupled with leadership from within the region and investment from external sources can convince governments that the preservation of biological diversity is the best long-term investment in sustainable development. As noted in the *Global Biodiversity Strategy*, "[b]uffer zones or corridors are most likely to work where . . . the benefits of the protected areas to surrounding areas is clear, and restrictions im-

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58 Interview with Rodrigo Barahona, President, CEDARENA, in San Jose, Costa Rica (June 1993).

59 *Id.*

60 LEONARD, *supra* note 33, at 11; THE GREEN BOOK, *supra* note 53, at 61.

61 *See* JOHN A. DIXON & PAUL B. SHERMAN, ECONOMICS OF PROTECTED AREAS: A NEW LOOK AT BENEFITS AND COSTS, 50-55 (1990).

62 *See* Bruce Babbit, *Federalism and the Environment: An Intergovernmental Perspective of the Sagebrush Rebellion*, 12 ENVTL. L. 847 (1982). In the State of Florida, for example, remaining large forested tracts are typically found in poor rural areas, where property taxes provide the primary source of local government revenues. Increasingly, targeted acquisitions in such areas for environmental protection meet stern resistance from local politicians reluctant to diminish the tax base. On federal lands, the United States Government subsidizes local governments for property tax income foregone due to public lands withdrawals through a program of payments in lieu of taxes.

posed on resource use are outweighed by the local benefits of such limits."[63]

Ecotourism has been identified as one of the primary economic justifications undergirding the establishment of an integrated system of parks and protected areas in Central America.[64] For example, the USAID-supported *Paseo Pantera Project* envisions a regional ecotourism strategy that would link the nations and parks along the isthmus with a "Central American touring circuit" which explains the natural history of the isthmus in terms of the land bridge phenomenon.[65] Moreover, Central America's regional biodiversity convention expressly recognizes ecotourism as an appropriate means by which to recover at least part of the financial resources necessary to maintain protected areas.[66] However, the extent to which ecotourism can provide an adequate economic substitute to traditional development strategies within the Mesoamerican corridor has not been established. Current studies suggest that ecotourism is highly undervalued in the marketplace, and that the tourism industry and consumers benefit disproportionately from the low entrance fees typically charged for nature tourism.[67] If benefit-cost analysis of the ecotourism market does not by itself justify the exclusion of additional land, or limitations on the resource development base, an integrated, regional, protected-area system will require additional economic justifications.[68]

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[63] WORLD RESOURCES INSTITUTE ET AL., *supra* note 32, at 130.

[64] *Paseo Pantera: The Path of the Mountain Lion*, WCI BULLETIN [Wildlife Conservation International], Jan.-Feb. 1991, at W1.

[65] *Id.*

[66] Convenio para la Conservacion de la Biodiversidad y Protection de Areas Silverties Prioritarias en America Central [Convention for the Conservation of Biological Diversity and Protection of Priority Wild Areas], art. 29, June, 1992 [hereinafter Convenio para la Conservacion].

[67] *See* KREG LINDBERG, WORLD RESOURCES INSTITUTE, POLICIES FOR MAXIMIZING NATURE TOURISM'S ECOLOGICAL AND ECONOMIC BENEFITS (February 1991). The study suggests that increasing entrance fees will help put nature tourism on a "level playing field" with other development options. *Id.* at 31.

[68] For example, in 1981 a Benefit-Cost analysis was performed on Virgin Islands National Park (VIN) in the American Virgin Islands. This study considered direct and indirect costs related to operation and maintenance, interest on federal land acquisitions and losses from the local government tax rolls. As benefits, it addressed both real visitation dollars, federal outlays in the local economy and imputed benefits resulting from economic magnification. The benefit-cost ratio developed from both direct and indirect costs was 11.1 to 1. Because VINP already existed, the study did not consider lost development opportunity costs. *See Integrating Protected*

Additional persuasive rationales have been posited for the economic value in maintaining Central America's remaining wildlands. Referred to as "environmental services," the protection of watershed values for potable water, irrigation, hydropower production, flood control, soil stabilization for adjacent agricultural lands and downstream fisheries may all yield positive economic benefits.[69] The economic value of these environmental services is difficult to quantify, however, and often overlooked in the market economy.[70]

The value of wildlands as "extractive reserves," and other low-intensity uses has also been promoted in recent years,[71] particularly in areas inhabited by indigenous peoples with a strong tradition of low-intensity resource extraction and a predilection to preservation of cultural values that are compatible with the sustainable use of wildlands.[72] Moreover, international attention has recently been focused on the potential value of tropical rain forests as repositories for pharmaceutical derivatives and industrial raw materials.[73] Indeed, one American pharmaceutical company recently signed an agreement with a Costa Rican research facility to gain exclusive rights to potential pharmaceutical products it identifies in specified locations in Costa Rica in exchange for royalties.[74] The economic consequences of this agreement remain highly speculative, however, and intellectual

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Areas in Regional Land-Use Programmes, *in* MANAGING PROTECTED AREAS IN THE TROPICS, *supra* note 3, at 86.

69 The Tropical Science Center and the Washington-based World Resources Institute reported that between 1970 and 1989 Costa Rica had lost natural resources worth more than one year's gross domestic product due to deforestation, soil erosion and overfishing. *See* RAÚL SOLORZANO ET AL., ACCOUNTS OVERDUE: NATURAL RESOURCE DEPRECIATION IN COSTA RICA 1-9 (1991).

70 *See* GEORGE LEDEC & ROBERT GOODLAND, WILDLANDS: THEIR PROTECTION AND MANAGEMENT IN ECONOMIC DEVELOPMENT 19-33 & 87-93 (1988).

71 The idea of "extractive reserves" first came from the National Council of Rubber Tappers in Brazil at a meeting in 1985. This group described an extractive reserve as "an area of public domain, occupied by social groups whose means of livelihood is the sustainable extraction of native forest products in accord with a preestablished management plan." ANDREW GRAY, BETWEEN THE SPICE OF LIFE AND THE MELTING POT: BIODIVERSITY CONSERVATION AND ITS IMPACT ON INDIGENOUS PEOPLES 30 (1991) (quoting T. Schwartz, *The Brazilian Rain Forest People's Movement*, 19 ECOLOGIST 245, 246 (1989)).

72 *See, e.g.*, TAKING CARE OF SIBO'S GIFTS: AN ENVIRONMENTAL TREATISE FROM COSTA RICA'S KEKOLAI INDIGENOUS RESERVE (Paula Palmer et al. trans., 1991).

73 *See generally*, BIODIVERSITY PROSPECTING: USING GENETIC RESOURCES FOR SUSTAINABLE DEVELOPMENT (1993).

74 *Id.* at ch. 1.

property and technology transfer issues associated with the commercial exploitation of tropical biodiversity were a sticking point in the *Biodiversity Treaty* negotiations in Rio.[75]

Given these sometimes speculative and difficult to quantify economic justifications for wildlands protection in Central America, short-term supplementation from external sources, such as bilateral or multilateral aid agencies, may ultimately be required as a bridge on the road to sustainability. An early draft of the *Rio Framework Convention on Biological Diversity* expressly recognized the need to consider "loss of opportunities for alternative uses of biological resources foregone because of measures taken pursuant to this Convention."[76] This short-term supplementation may take the form of direct subsidies through foreign aid such as the USAID Regional Natural Resources Management Project (RENARM) for Central America or through more precise efforts to quantify and compensate for development opportunities foregone.

For example, economic models for calculating the value of environmental services produced by protected areas have been postulated that offer a means to substitute numbers for rhetoric.[77] In addition, considerable international attention is now being devoted to the role of the remaining tropical forests in preventing global warming through carbon sequestration.[78] Various economic models for "carbon banking" and "carbon trading" have been suggested, at least on a theoretical level. In one test case, an American utility company is endeavoring to quantify potential carbon emissions credits to be gained from improved forestry

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[75] Apparently this was a sticking point only for the United States, which initially refused to sign the treaty, in part because of the dispute over intellectual property issues. *See* Note, *Protecting Biodiversity: Recognizing International Intellectual Property Rights in Plant Genetic Resources*, 14 MICH. J. INT'L L. 322, 335-39 (1993).

[76] *Fifth Revised Draft Convention on Biological Diversity*, *supra* note 44, at art. 4, §2(e). The text of the final convention ommitted this language. However, Article 20 of the signed document does include a provision that obligates the developed country Parties to "provide new and additional financial resources to enable developing country Parties to meet the agreed full incremental costs to them of implementing measures which fulfil the obligations of this Convention . . . ." *United Nations Framework Convention on Biological Diversity*, art. 20, §2 (1992).

[77] *See* JOHN A. DIXON & PAUL B. SHERMAN, ECONOMICS OF PROTECTED AREAS: A NEW LOOK AT BENEFITS AND COSTS 24-49 (1990).

[78] *Introduction* to U.N. Framework Convention on Climate Change (BNA, July, 1992).

management on a test site in Borneo.[79] Also, "debt for nature" swaps, where foreign debt is forgiven in exchange for land preservation, offers another form of economic justification for wildlands protection in Central America. Already there has been discussion of a regional "debt for nature" swap in Central America in conjunction with the United States' Enterprise for the Americas Initiative.[80]

The extra-regional financing required to implement, or at least "jump-start" an integrated, regional system of parks and protected areas in Mesoamerica places added importance on developing a strong, defensible biological and economic rationale for the project. However, an additional and equally important rationale may exist independent of these considerations. Most of the forested remnants of the Mesoamerican Biological Corridor are the homeland to the indigenous peoples of the region. Their cultural and economic aspirations, and the sensitivity of the national governments to these aspirations, may ultimately dictate the fate of the Corridor.

3. *The Cultural Premise for the Protecting the Mesoamerican Biological Corridor*

Roughly four to five and a half million indigenous persons, comprising more than forty-three distinct indigenous/linguistic groups, call Central America their homeland.[81] Guatemala, with its rich Mayan culture, is home to the vast majority of the region's indigenous population, roughly three to four million people.[82] The remaining concentrations of indigenous groups are spread throughout the isthmus, largely within the Caribbean tropical rain forest belt.[83] Not coincidentally, these are also the forested remnants of the isthmian corridor, and the nucleus of

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[79] Francis E. Putz & Michelle A. Pinard, Reducing the Impacts of Logging as a Carbon-Offset Method (unpublished manuscript, on file with the University of Florida, Department of Botany, Gainesville, Fl.; submitted to CONSERVATION BIOLOGY).

[80] *See* DIXON & SHERMAN, *supra* note 77.

[81] *See* MAC CHAPIN ET AL., THE NATIONAL GEOGRAPHIC SOCIETY, RESEARCH AND EXPLORATION (1992); *see also* William V. Davidson & Melanie A. Corince, *Mapping the Distribution of Indians in Central America*, 13 CULTURAL SURVIVAL QUARTERLY 37-40 (1989); Jose Mendoza Acosta, Indigenas y Arcas Protegidas en Centroamerica (unpublished report of the Mesoamerican Biodiversity Legal Project (1993)).

[82] CHAPIN, *supra* note 81.

[83] CHAPIN, *supra* note 81.

any efforts to truly integrate a regional system of protected areas. Indeed, a Tawahta Sumu Indigenous Forest Reserve has been proposed as a major corridor between the Rio Platano Biosphere Reserve in Southern Honduras and the proposed Bosawas Biosphere Reserve in Southern Nicaragua.[84] As the author of a map graphically depicting the relationship of the indigenous groups of Central America to the remaining forested corridor noted, "It is now clear that most of the natural areas that have been singled out for conservation efforts in Central America are the ancient home of indigenous groups."[85]

The indigenous groups in Latin America have historically maintained a practice of sustainable use of natural resources that is highly compatible with the preservation of biological diversity.[86] This tradition of sustainability has been set forth by an indigenous group in a small book entitled *Taking Care of Sibo's Gifts: An Environmental Treatise from Costa Rica's Kekoldi Reserve*.[87] The dissipation of indigenous people's homelands, and the destruction of the forest resources upon which they depend, threatens this tradition of sustainability. Thus, the cultural survival of Central America's indigenous groups and the biological survival of its forests have become inextricably intertwined.

The marriage of biological conservation and cultural survival has added a significant and powerful human rights dimension to the consolidation of protected areas in the neotropics, including Central America.[88] For example, environmentalists joined indigenous groups and human rights activists in a successful complaint

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[84] Peter H. Herlihy, *"Wildlands" Conservation in Central America During the 1980's: A Geographical Perspective*, 17/18 CONFERENCE OF LATIN AMERICAN GEOGRAPHERS 31, 39 (1992).

[85] CHAPIN, *supra* note 81.

[86] *See* J. CLAY, CULTURAL SURVIVIAL REPORT, INDIGENOUS PEOPLES AND TROPICAL FORESTS: MODELS OF LAND USE AND MANAGEMENT FROM LATIN AMERICA 27 (1988); B. NEITSCHMANN, BETWEEN LAND AND WATER: THE SUBSISTENCE ECOLOGY OF THE MISKITO INDIANS, EASTERN NICARAGUA (Seminar Press, 1973); J.D. Nations & R.B. Nigh, *Cash, Cattle, Food and Forest: The Destruction of the American Tropics and the Lacandon Maya Alternative*, 6 CULTURE AND AGRICULTURE 15 (1978).

[87] TAKING CARE OF SIBO'S GIFTS: AN ENVIRONMENTAL TREATISE FROM COSTA RICA'S KEKOLDI INDIGENOUS RESERVE (Paula Palmer et al. trans., 1991).

[88] *See, e.g.*, Lee P. Breckenridge, *Protection of Biological Diversity: Emerging Recognition of Local Community Rights in Ecosystems Under International Environmental Law*, 59 TENN. L. REV. 735 (1992); R. Hitchcock, *International Human Rights, The Environment, and Indigenous Peoples*, 4 COLO. J. INT'L ENVTL. L. & POL'Y 1 (1994); William A. Shurtkin, *Human Rights Law and the Earth: The Protection of Indiginous Peoples and the Environment*, 28 STAN. J. INT'L L. 103 (1991).

filed with the Inter-American Commission on Human Rights to demarcate the territory of the Yanomami in Brazil and expel non-indigenous colonists.[89] In Panama the Kuna recently established the first internationally recognized forest park, now heralded as a model for integrating tropical conservation and indigenous rights.[90] A similar effort is now underway in Nicaragua to establish a marine coastal protected area in a region recently declared an "autonomous zone" for the Moskita.[91]

In addition, the special relationship of indigenous groups to their natural environment has gained increased international institutional recognition. For example, the *United Nations Draft Universal Declaration on the Rights of Indigenous Peoples* provides that "Indigenous peoples have the right to recognition of their distinctive and profound relationship with the total environment of the lands, territories and resources which they have traditionally occupied or otherwise used."[92] The role of indigenous groups in the maintenance of biological diversity also received specific recognition in the *United Nations Framework Convention on Biological Diversity*[93] and regional recognition through the regional convention recently signed by the nations of Central America.[94]

For remaining forested areas, indigenous peoples' patterns of land use in Central America may offer a preferable alternative to the Latin American frontier model of colonization and exploitation.[95] However, there are concerns that indigenous peoples' patterns of land use may face long-term problems. While population densities currently remain low, some of the highest rates of

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[89] Armstrong Wiggins, *Indian Rights and the Environment,* 18 YALE J. INT'L L. 345, 350-51 (1993).

[90] CLAY, *supra* note 86, at 66-67. The author points to several circumstances, including the unique relationship of the Kuna to the forested areas and their political savvy, that may militate against wider application of this model. *Id.*

[91] Wiggins, *supra* note 89, at 351.

[92] U.N. ECON. & SOC. COUNCIL, COMM'N ON HUMAN RIGHTS, DISCRIMINATION AGAINST INDIGENOUS PEOPLES at 48, U.N. Doc. E/CN.4/Sub.2/1992/33 (1992).

[93] For example, the Convention recognizes the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, Preamble, *United Nation Framework Convention on Biological Diversity* (June 1992), and obligates each of the Parties, "[s]ubject to its national legislation," to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity. . ." *Id.* at art. 8 s. (j).

[94] Convenio para la Conservacion, *supra* note 66, at Art. 7.

[95] *See* Herlihy, *supra* note 84, at 38, 40. *See generally* CLAY, *supra* note 86.

population growth in the region are attributable to indigenous groups.[96] These rates may affect the sustainable use of increasingly confined forested areas over time. Moreover, the introduction of modern medicine and technology has increased the indigenous person's longevity, range and productive capacity, further affecting sustainable resource extraction.[97] Finally, there are no guarantees that present and future generations will be able to maintain the traditions that made their forbears the best example of human stewardship of biological diversity.[98]

The institutional dimensions of indigenous peoples' role and responsibility in the maintenance of a regional system of protected areas that includes their homelands remain uncertain. Not all lands presently occupied by indigenous groups enjoy formal reserve or protected area status. The nature of land tenure and usufructuary rights for indigenous groups within established reserves and protected areas remains problematic.[99] Colonization, even in demarcated reserves, continues.

Moreover, indigenous groups in Central America enjoy varying degrees of institutional autonomy over management of natural resources within legally recognized homelands. The application of national law within established reserves varies accordingly.[100] This institutional relationship must be carefully addressed if the marriage of cultural survival and biological conservation is to offer a sound justification for any regional system of protected areas.[101]

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[96] Interview with Tony Stocks, anthropologist for the Nature Conservancy, in Heredia, Costa Rica (June 25, 1993).

[97] THE GREEN BOOK, *supra* note 53, at 94.

[98] *See* Herlihy, *supra* note 84, at 40; *see also* Kent H. Redford and Allyn M. Stearman, *Forest-Dwelling Native Amazonians and the Conservation of Biodiversity: Interests in Common or Collision?*, 7 CONSERVATION BIOLOGY 248 (1993).

[99] THE GREEN BOOK, *supra* note 53, at 89-99.

[100] For example, in Costa Rica, which has an established reserve system, subsurface rights within indigenous reserves remain under government control. Codiga de Mineria ley, no. 6797, articulo 8 (Oct. 4, 1892).

[101] Moreover, this "marriage" is often a tenuous one. The International Work Group for Indigenous Affairs, an independent international group that defends the rights of indigenous peoples, lambasted the international conservation movement's approach to protected areas management as "integrationist," which it views as a form of assimilation, and contrary to the notion of self-determination. GRAY, *supra* note 71, at 18-20.

II

THE INTERNATIONAL LAW DIMENSION OF AN INTEGRATED REGIONAL PROTECTED AREA SYSTEM

The objective of establishing a regional biological corridor fits squarely within the developing international law framework for biological conservation. Indeed, the modern impetus for regionalism in protected area design may have emerged from the Second World Conference on National Parks, convened in Grand Teton National Park in the United States in 1972.[102] Recommendation number 7 of this conference called for the states to look toward the establishment of "adequate mechanisms" for the development of regional systems of national parks and other protected areas and for international agencies to give "greater cooperation to this initiative."[103]

In 1978, the Governing Council of the United Nations Environment Programme adopted *Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of the Natural Resources Shared by Two or More States*.[104] These principles encourage nations to enter into bilateral or multilateral agreements to facilitate conservation of global natural resources and suggest that establishment of multinational institutional structures may best achieve this objective.[105] They broadly outline a recommended procedural framework to govern the relations between states sharing natural resources. The draft principles recommend that states institute impact assessment, advance notification, informational exchange, and arbitration procedures to ensure that the extraterritorial consequences of in-state activities receive adequate consideration.[106]

A number of international and regional conventions and other instruments have emerged which recognize the importance of the

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[102] *See* SISTEMA REGIONAL DE AREAS SILVESTRES PROTEGIDAS DE AMERICA CENTRAL: PLAN DE ACCION 1989-2000, 9 (Roger Morales y Miguel Cifuentes eds., 1989) [hereinafter PLAN DE ACCION].

[103] *Id.*

[104] *Co-operation in the Field of the Environment Concerning Natural Resources Shared by Two or More States: Draft Decision Submitted by the President*, U.N. Env. Programme, Governing Council, 6th Sess. 87th Mtg., U.N. Doc. GC.6/CRP.2 (May 19, 1978).

[105] *Id.* at Principle 2.

[106] *Id.* at Principle 4-14.

preservation of biological diversity, and call for the establishment of protected areas.[107] Among those international agreements that are particularly relevant are the recently concluded *United Nations Framework Convention on Biological Diversity*, one of the crowning achievements of the 1992 United Nations Conference on Environment and Development,[108] the 1972 *World Heritage Convention*,[109] and Project 8 of UNESCO's Man and Biosphere Program, which calls for the establishment of biosphere reserves.[110] In addition, the 1971 *Ramsar Convention on Wetlands of International Importance* calls for special protection of wetlands,[111] and the 1982 *United Nations Convention on the Law of the Sea*[112] calls for the protection of "rare or fragile ecosystems."

At the regional level, a plethora of wildlife related multilateral treaties and other agreements have been adopted throughout the world, with varying degrees of success in implementation.[113] Included among these are: the 1940 *Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere*,[114] the *African Convention on the Conservation of Nature and Natural Resources*,[115] the *Convention on the Conservation of European Wildlife and Natural Habitats*,[116] *Agreed Measures for the Conservation of Antarctic Flora and Fauna*,[117] the *Convention on the Conservation of Natural Resources and Environment of the South*

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[107] *See generally* CYRILLE DE KLEMM, AREA-BASED CONSERVATION AND THE LAW (1992) (examining area-based conservation law).

[108] 1992 United Nations Conference on Environment and Development, July 1992, 31 I.L.M. 814.

[109] Convention: Protection of World Cultural and Natural Heritage, Nov. 16, 1972, UNESCO Document 17 C/106, *reprinted in* 11 I.L.M. 1358.

[110] The Man and Biosphere Program is not an international agreement, but a project of the United Nations.

[111] Ramsar Convention on Wetlands of International Importance, Feb. 2, 1971, 996 U.N.T.S. 245, T.I.A.S. No. 11,084.

[112] Third United Nations Convention on the Law of the Sea, Nov. 1982, 21 I.L.M. 1245.

[113] *Id.* at 3-5.

[114] Nature Protection and Wildlife Preservation: Pan American Union, Oct. 12, 1940, 161 U.N.T.S. 193.

[115] African Convention on the Conservation of Nature and Natural Resources, Sept. 15, 1968, 1001 U.N.T.S. 3.

[116] Convention on European Wildlife and Natural Habitats, Sept. 19, 1979, E.T.S. No. 104, 1982 Gr. Brit. T.S. No. 56 (cmd. 8738).

[117] Agreed Measures of the Conservation of Antarctic Flora and Fauna, Dec. 1, 1959, 12 U.S.T. 794, T.I.A.S. No. 4780, 402 U.N.T.S. 71.

Pacific Region,[118] the *Member States of the Association of South East Asian Nations Agreement on the Conservation of Nature and Natural Resources*,[119] and the protected areas protocols to conventions adopted under the United State's Regional Seas Programme. In addition, in 1979 the Council of Europe established the European Network of Biogenetic Reserves. More recently, the European Community adopted *Council Directive 92-43 on the Conservation of Natural Habitats and of Wild Fauna and Flora*.

While all of these accords represent worldwide and regional efforts to recognize the importance of the preservation of biological resources, none, with the possible exception of the most recent European Community directive, contemplates the level of regionally integrated land management and cooperation suggested by a multi-national, protected-area system. Indeed, most antedate the development of modern conservation biology and corridor theory. Moreover, these and other efforts at international environmental agreements have been criticized for inadequate funding and institutional machinery, and weak or nonexistent mutually binding obligations.[120]

According to a recent United States Government Accounting Office report, the principle mechanism for enforcement of international environmental agreements is peer or public pressure generated from information required to be reported under those agreements.[121] The report found that inadequate reporting hampered the ability of secretariats to monitor compliance and hindered public access to information as a basis for compliance pressure. Another report prepared for the UNCED Secretary General examined one hundred environmental agreements and instruments and found that many of the agreements contained no reporting requirements at all, or the reporting requirements did

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[118] Convention for the Protection of Natural Resources and Environment of the South Pacific Region, Nov. 15, 1986, 26 I.L.M. 38.

[119] Member States of the Association of South East Asian Nations: Agreement on the Conservation of Nature and Natural Resources, Sept. 15, 1968, 1001 U.N.T.S. 3.

[120] Cyrille de Klemm, *Protecting Wild Genetic Resources for the Future: The Need for a World Treaty*, *in* PROCEEDINGS OF THE WORLD CONGRESS ON NAT'L PARKS, 663-64 (1982).

[121] U.S. GEN. ACCOUNTING OFFICE, INTERNATIONAL ENVIRONMENT: STRENGTHENING THE IMPLEMENTATION OF ENVIRONMENTAL AGREEMENTS 5-8 (1992) (report to Congressional requesters).

not provide an adequate basis to monitor compliance.[122] Compliance was found to be most problematic in developing countries, which often lack the financial and technical wherewithal to adequately implement legislation, establish effective administration, and retain sufficient enforcement personnel.[123] A working group of legal experts on environmental law for the Interamerican Development Bank recently attributed the region's "glaring failure to implement international treaties and agreements on the environment" to a lack of funding.[124]

A. International Law Sanction for the Conservation of Biodiversity—The 1992 United Nations Framework Convention on Biological Diversity

The importance of conservation biology in the international conservation movement gained institutional legitimacy through the 1980 *World Conservation Strategy*, which is generally regarded as the blueprint for modern international conservation.[125] In 1992 principles of conservation biology were elevated to the status of international law. The *Framework Convention on Biological Diversity*, signed in Rio de Janeiro, signaled that the nations of the world were becoming ready to commit to the conservation of biological diversity.[126] The convention requires each signatory nation to develop national strategies, plans and programs to conserve and sustainably use biological diversity.[127] As previously noted, the concept of wildlife corridors as a conservation tool was initially recognized as an in situ conservation measure by the treaty, but was dropped from the text of the final

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122 REPORT OF THE SECRETARY GENERAL OF THE CONFERENCE, SURVEY OF EXISTING AGREEMENTS AND INSTRUMENTS AND ITS FOLLOW-UP, U.N. Doc. A/Conf.151/PC/103 (1992).

123 *Id.* at 6.

124 Working Group no. 2, *Development of Environment Law and Means of Enforcing It in the Countries of Latin America and the Caribbean*, *in* PROCEEDINGS OF THE THIRD CONSULTATIVE MEETING WITH PUB. AGENCIES AND NONGOVERNMENTAL ORGANIZATIONS CONCERNED WITH ENVIRONMENTAL PROTECTION AND THE CONSERVATION OF NATURAL RESOURCES 180 (1993).

125 For an excellent critique of the development of international conservation policy since 1980, *see* John g. Robinson, *The Limits to Caring: Sustainable Living and the Loss of Biodiversity*, 7 CONSERVATION BIOLOGY 20-28 (1993). *See generally*, WORLD CONSERVATION STRATEGY (IUCN, 1980).

126 United Nations Conference on Environment and Development: Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992).

127 *Id.* at art. 6, 31 I.L.M. at 825.

document.[128] Other provisions for in situ conservation call for the establishment of a "system of protected areas," regulation (private) and management (public) of biological resources important for biodiversity conservation, restoration of degraded ecosystems, legislation for the protection of threatened species, and encouragement and maintainence of biologically benign practices of indigenous and local communities.[129]

In addition, the *Rio Framework Convention* also provides for transboundary cooperation in the preservation of biodiversity, requires that activities within the sovereign jurisdiction of one state not adversely affect the biological resources of another, and requires the adoption of environmental impact assessment legislation by each signatory.[130] The convention also authorizes the development of a "Global List of Biogeographic Areas of Particular Importance for the Conservation of Biodiversity,"[131] and includes, as an annex, a framework for dispute resolution.[132] The convention establishes an interim funding mechanism through the World Bank Global Environmental Facility, which signatories to the Convention may access to pursue the objectives of the convention.[133]

Properly implemented, the proposed regional system of protected areas given institutional legitimacy by the *Central American Biodiversity Treaty* could serve to discharge many of the obligations of the signatory nations under the *Framework Convention*. There has been considerable interest in regional approaches to implementation of the *Framework Convention*, and the convention itself lends substance to these approaches. For example, the convention enables "regional *economic* integration

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128 *Fifth Revised Draft Convention on Biological Diversity*, *supra* note 44, at art. 7, § (a).

129 United Nations Framework Convention on Biological Diversity, Rio de Janeiro, Brazil, June 1992, art. 8, 31 I.L.M. at 825 (1992). *See also* Cyrille de Klemm, The Implementation of the Convention on Biological Diversity in National Law (paper presented at the International Environmental Law Symposium Santiago, Chile, May 24-27, 1997).

130 United Nations Conference on Environment and Development: Convention on Biodiversity, June 5, 1992, art. 14, 31 I.L.M. 827-28.

131 Conceivably, the Mesoamerican Biological Corridor may be a strong candidate for this list, which may, in turn, enhance its international recognition and access to sources of funding.

132 *Id.* at art. 27, 31 I.L.M. at 824; *id.* at annex 2, 31 I.L.M. at 834.

133 *Id.* at art. 39, 31 I.L.M. at 837-38.

organizations" to participate as full parties,[134] apparently a means to provide party status to the European Community. However, the term "regional economic integration organization" is defined in a manner that more correctly describes regional *environmental* integration organizations. Regional economic integration organization is defined as "an organization constituted by sovereign States of a given region, to which its member States have transferred competence in respect to matters governed by this Convention . . . ."[135] Notwithstanding the use of the adjective "economic," in defining regional integration organizations, it would seem that regional treaty organizations like the Central American Commission on Environment and Development and similarly constituted bodies otherwise conform to the definition.

Some commentators have speculated that another approach might be to bring regional treaty organizations under the *Framework Convention*'s umbrella through protocols.[136] There is no precedent for this approach under international law, however. Notwithstanding these novel interpretations of the *Framework Convention* and international environmental law, the convention itself requires its secretariat to coordinate with other international bodies, and enter into appropriate administrative and contractual relationships.[137] This language would appear to offer significant opportunities for the development of regional treaty organizations under the convention.

B. Central American Sanction for the Protection of Biodiversity and Regionalism in Wildlands Management

1. Antecedents

Even before regionalism gained currency as a means of implementing environmental law internationally, efforts were under-

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134 Framework Convention at Article 31(2) (emphasis added). Article 31 provides that "regional economic integration organizations, in matters within their competence, shall exercise their right to vote with a number of votes equal to the number of their member States which are Contracting Parties to this Convention . . . ."

135 Biodiversity Convention at Article 2.

136 Personal communication with David Downes, attorney, Center for International Environmental Law, Washington D.C. (Dec., 1994).

137 Biodiversity Convention at Articles 24(d) & 23(4)(h). *See also* E. Fernandez-Galiano, *The Role of Regional Conventions in the Implementation of the Convention on Biological Diversity in* WIDENING PERSPECTIVES ON BIODIVERSITY 397-99 (IUCN 1994).

way among biologists and planners in Central America to regionalize wildlands planning and protected areas management. As early as 1974, representatives of the NGO and scientific community began discussing the possibilities for developing regional approaches to wildlands management in Central America. Drawing from the recommendations of the 1972 World Parks Conference, delegates from the Central American countries convened in San Jose, Costa Rica in 1974, and offered a series of recommendations to the nations of the region that called for the establishment of a regional system of national parks and equivalent reserves, the designation of national pilot parks, the establishment of border or binational parks, and the development of institutions with a regional perspective on wildlands management.[138]

The theme of regionalism as an approach to wildlands management apparently languished in the wake of the 1974 meetings.[139] In 1987, however, a second regional conference convened in Guatemala City to revive the notion of regionalism.[140] The participants in this second conference resolved to formulate a strategy to "consolidate a regional system of wild protected areas and promoted conservation for development, and established a committee to develop a concrete plan."[141] Significantly, the 1987 conference recommended that a Commission for the Conservation of Natural and Cultural Patrimony be established under the aegis of the Central American Parliament.[142] The committee established by the 1987 conference finally completed its report, the *Plan de Accion 1989-2000*, in 1989. The proposed regional commission never got off the ground. However, it did foreshadow the eventual creation of the Central American Interparliamentary Commission on Environment and Development (CICAD).[143]

The *Plan de Accion* contains a series of regional and national goals, objectives and actions designed to consolidate a regional system of protected areas in Central America. From the standpoint of conservation biology, the primary regional goal of the plan appears to be aimed toward insuring the representativeness

138 PLAN DE ACCION, *supra* note 102, at 9.
139 PLAN DE ACCION, *supra* note 102, at 10.
140 PLAN DE ACCION, *supra* note 102, at 10.
141 PLAN DE ACCION, *supra* note 102, at 10.
142 PLAN DE ACCION, *supra* note 102, at 17.
143 *See supra* note 11.

of biogeographic regions within the system.[144] The plan does not, however, specifically address those principles of island biogeography that recognize the need to link protected areas through buffer zones and corridors. On a national basis, the plan is much more detailed, with specific recommendations for implementation of national strategies on a country-by-country basis.

2. *Legal Sanction for the Protection of Biodiversity in Mesoamerica*

Both the protection of biodiversity and the Mesoamerican biological corridor recently received formal regional recognition by the governments of Central America.[145] The establishment of CCAD by the Central American Presidents, and of CICAD by the region's legislative bodies, signifies the region's growing interest in multilateral cooperation. The governing documents for each of these entities reflect a strong emphasis on biodiversity conservation generally. This emphasis was also highlighted in 1990 by the *Puntarenas Declaration of the Central American Presidents*. The declaration charged CCAD with preparing a regional inventory and census "of those zones and species requiring a special regimen of protection, as well as the identification of priority protected areas along border zones."[146] Perhaps most importantly, the declaration called for CCAD to prepare a "regional accord which will determine the commitment of the governments of Central America to protection of those zones and species identified."[147]

In response, a regional *Convention for the Conservation of Biodiversity and Protection of Priority Wild Areas in Central America* was signed by the Presidents of Central America in June of 1992. To take effect the convention requires the approval of the legislative branches of three member states,[148] but, to date, it has not been ratified by any of the nations in the region. The convention links the economic and biotic integration of Central America, and identifies CCAD as the institution charged with

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144 PLAN DE ACCION, *supra* note 102, at 22.

145 Nonetheless, even in Costa Rica, where the concept of a biological corridor has become a de facto guiding principle for the establishment of a protected area network, there is no official legislative sanction for the concept.

146 Letter from Jack H. Vaughn to Ronald L. Nicholson (Dec. 28, 1990) (transmitting exerpts of Puntarenas Declaration of the Central American Presidents).

147 *Id.*

148 Convenio para la Conservacion, *supra* note 66, at art. 43.

developing plans and strategies relating to regional environmental protection.[149] The convention also identifies twelve transboundary protected area complexes within the region for priority attention.[150] The convention charges CCAD with implementing the *Plan of Action 1989-2000: Regional System of Protected Areas of Central America*, and the *Tropical Forest Action Plan* for the Central American region,[151] a widely criticized initiative of the United Nations and the World Bank.[152]

Article 21 of the regional convention provides formal institutional recognition to the Mesoamerican Biological Corridor within the context of the regional system envisioned by the *Plan de Accion*. This provision also creates a "Central American Council of Protected Areas" within CCAD, financed by a "Regional Fund for Environment and Development." The agreement places the council "in charge of coordinating regional efforts to unify political ties with the development of the 'Sistema Regional de Areas Protegidas' as an effective Mesoamerican Biological Corridor." Arguably, therefore, the convention shifts the emphasis from insuring ecological representativeness of biogeographic provinces, a specific objective of the *Plan de Accion*, to the maintenance of a functioning biological corridor.

III

EXISTING MODELS OF REGIONAL COOPERATION IN PROTECTED AREA MANAGEMENT

Numerous models of cooperation in transboundary wildlife and habitat protection may be found in international law.[153] It is only very recently, however, that international environmental law instruments have begun to explicitly recognize and apply the principles of conservation biology embodied in island biogeography and corridor theory in their organic documents. Moreover, with the possible exception of the recent efforts of the European Community, no existing model suggests the type of transboundary, land use cooperation required to institute an inte-

149 Convenio para la Conservacion, *supra* note 66, at art. 21.

150 Convenio para la Conservacion, *supra* note 66, at art. 21.

151 Convenio para la Conservacion, *supra* note 66, at art. 21.

152 *See* Eugene Linden, *Good Intentions, Woeful Results: How Our Ambitious Environmental Program Ended Up Damaging the Tropical Rain Forests*, TIME, Apr. 1, 1991, at 48.

153 *See* CYRILLE DE KLEMM, AREA-BASED CONSERVATION AND THE LAW 2-7 (1992).

grated regional system of protected areas as a functioning biological corridor. This section discusses several international agreements which may have special relevance to the Mesoamerican Biological Corridor because of their regional approach to conservation.

A. The Western Hemisphere Convention

Among the earliest wildlife treaties, the *Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere* was adopted in 1940 under the aegis of the Pan American Union, the precursor to the modern day Organization of American States (OAS).[154] This treaty has been described as a "visionary instrument," the first to recognize the protection of habitat as a key to preventing species extinction.[155] Indeed, key principles of conservation biology are presaged by the convention's text. In its preamble, it expresses the desire of the signatories "to protect and preserve in their natural habitat representatives of all species and genera of their native flora and fauna, including migratory birds, in sufficient numbers and over areas extensive enough to assure them from becoming extinct through any agency within man's control . . . ."[156]

The basic conservation framework for the *Western Hemisphere Convention* is the establishment of protected areas. The convention identifies four principle categories of protected areas—national parks, national reserves, nature monuments, and strict wilderness reserves—and requires the parties to explore the possibility of establishing protected areas based on these categories.[157] In addition, the convention obligates the parties to adopt, or propose for adoption, laws for the protection of flora and fauna outside the system of protected areas it establishes.[158] The convention also presages modern endangered species legislation by requiring the parties to regulate and protect "as completely as

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[154] SIMON LYSTER, INTERNATIONAL WILDLIFE LAW 97 (1985). Among Mesoamerican countries, Costa Rica, El Salvador, Guatemala, Mexico, Nicaragua and Panama have signed and ratified the Convention. *Id.* at 97, n.5.

[155] *Id.* at 97-98.

[156] Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, Oct. 12, 1940, preamble, 56 *Stat.* 1374, *reprinted in* LYSTER, *supra* note 154, at app.

[157] *Id.* at art. II(1).

[158] *Id.* at art. V.

possible" species of special importance listed in an annex to the agreement.[159]

The *Western Hemisphere Convention* has also been referred to as a "sleeping treaty" because it lacks a secretariat or other means to monitor compliance with treaty obligations.[160] Indeed, according to one commentator, the parties have never submitted reports to the OAS on their progress toward implementation.[161] Although recommendations have been made to reform the convention by establishing a permanent secretariat for the convention within the OAS, and by including provisions for monitoring and compliance, these recommendations were never acted upon.[162]

Even so, the broad habitat protection language of this convention, coupled with its recognition of modern principles of conservation biology, make it an important precedent in the development of modern international biodiversity conservation law. In Central America in particular, the convention has served as the justification for early efforts in regional cooperation in conservation.[163] Under the aegis of the convention, the "First Regional Central American Meeting on Wildlife" was convened in Nicaragua in 1978.[164] Moreover, according to one source, an "InterAmerican System of Protected Areas" had been proposed at one time under the convention's umbrella.[165]

B. The Treaty for Amazonian Cooperation

In the globally important Amazon Basin, eight nations have entered into the *Treaty for Amazonian Cooperation*, a wide-ranging agreement for the "harmonious development" of the Amazon. One commentator has contended that this treaty "in-

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159 *Id.* at art. VIII.

160 LYSTER, *supra* note 154, at 111.

161 LYSTER, *supra* note 154, at 102.

162 LYSTER, *supra* note 154, at 111.

163 Six Mesoamerican nations, Costa Rica, El Salvador, Guatemala, Nicaragua, Panama, and Mexico have ratified the Convention. LYSTER, *supra* note 154, at 97, n.1.

164 LYSTER, *supra* note 154, at 109 (citing C. Freese and G. Wetterberg, Cooperative Action Under the Aegis of the Western Hemisphere Convention Final Report of Technical Meeting on Legal Aspects Related to the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (March, 1980) (OAS Doc. OEA/Ser.J/XI,CICYT/Doc. 199, p. 76)).

165 Interview with Pedro Tarak, Executive Director, Fundacion Ambiente y Recursos Naturales, in Buenos Aires, Argentina (May 25, 1993).

stitutionalizes the concept of internationally enforceable environmental protection for . . . one of the most frail ecosystems on this planet."[166] At most, however, the terms of the treaty call for information exchange, an annual review of existing and proposed national environmental legislation, and provide a framework within which to conclude more ambitious future agreements.[167] Rather than establishing a centralized secretariat to implement its provisions, the treaty calls for establishment of "Permanent National Commissions," periodic meetings of the foreign ministers, and annual meetings of the Amazonian Cooperation Council (consisting of the diplomatic representatives of each signatory).[168]

Whatever its shortcomings, the *Treaty for Amazonian Cooperation* has served as an important catalyst for international environmental development assistance. The World Bank, through its Global Environmental Facility, recently committed 4.5 million dollars "to strengthen selected regional institutions in the eight member countries of the Treaty for Amazonian Cooperation to conserve and preserve biodiversity in an articulated and integrated way."[169] In addition, the "G-7," the world's leading seven industrialized nations, recently committed 250 million dollars to regional conservation efforts by the signatories to this treaty. In 1989, the signatories to the agreement established two regional commissions to deal with environmental and indigenous affairs in Amazonia.[170]

C. The Convention for the Protection of the Marine Environment of the Wider Caribbean Region and its Protocol Concerning Specially Protected Areas and Wildlife

In 1983, in Kingston, Jamaica, the nations of the Caribbean Basin signed the *Convention for the Protection and Development of*

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166 George D. Landau, *The Treaty for Amazonian Cooperation: A Bold New Instrument for Development*, 10 GA. J. INT'L & COMP. L. 463, 471 (1980).

167 Treaty for Amazonian Cooperation, art. 8m, 17 I.L.M. 1045, July 3, 1978. Whatever its shortcomings, the Treaty for Amazonian Cooperation has served as an important depository for international environmental assistance, and as a springboard for subsequent multilateral and binational initiatives.

168 Landau, *supra* note 166, at 472.

169 *UNDP/World Bank/UNEP Global Environmental Facility* 35, Work Program Fiscal Year 1992, First Tranche (Apr. 1991).

170 The Amazonian Declaration, May 6, 1989, 28 I.L.M. 1303 (1989).

the Marine Environment of the Wider Caribbean Region.[171] This convention is patterned after similar treaties adopted pursuant the United Nations Regional Seas Programme.[172] It is addressed primarily to oceanic pollution. The *Carribbean Convention* does, however, contain a "specially protected areas provision" that mandates its signatories to "take all appropriate measures to protect and preserve rare or fragile ecosystems" and "endeavor to establish protected areas."[173]

A recently concluded protocol to the *Carribbean Convention* contains some of the most well-developed language concerning transboundary, protected-area cooperation in international environmental law. The enabling language of the 1990 *Protocol Concerning Specially Protected Areas and Wildlife* ("SPAW") recognizes that "the Wider Caribbean Region constitutes an interconnected group of ecosystems in which an environmental threat in one part represents a potential threat in other parts."[174] The SPAW protocol is also one of the few international agreements that calls for the parties to establish a regional network of protected areas,[175] pursuant to common guidelines and criteria.[176]

Article 9 of the protocol governs "Protected Areas and Buffer Zones Contiguous to International Boundaries." This provision mandates advance consultation to achieve agreement on the measures to be taken within the protected area, to explore the possibility of establishing a contiguous buffer zone or protected area, and to adopt, where possible, cooperative management programs.[177] The protocol also mandates environmental impact assessment, including cumulative impact assessment, for projects that may affect specially protected areas.[178]

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171 The "Wider Caribbean" includes the Caribbean coast of Central America. Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, art. 2, 1983 (including Honduras, Panama, and Nicaragua as signatories).

172 *See* KLEMM, *supra* note 153, at 4-5.

173 Carribbean Convention, *supra* note 171, at art. 10.

174 Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (1990) [hereinafter SPAW]. The SPAW protocol is one of four similar agreements adopted pursuant to conventions ratified within the United Nations Regional Seas Programme. KLEMM, *supra* note 153, at 4-5.

175 SPAW, *supra* note 174, at art. 1(c).

176 SPAW, *supra* note 174, at art. 21.

177 SPAW, *supra* note 174, at art. 9(1).

178 SPAW, *supra* note 174, at art. 13(1).

D. European Community Council Directive 92/43/EEC of 21 May 1992 on the Conservation Natural Habitats and of Wild Fauna and Flora

Perhaps the boldest approach to transboundary habitat protection, and the closest an international legal agreement has come toward explicitly recognizing the theory of wildlife corridors, has recently emerged from the European Community. *European Community Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Flora and Fauna* obligates the member States to establish a "coherent European ecological network of special areas of conservation" based upon the identification, protection and restoration of specified habitat types.[179] The complex directive requires states to propose a list of sites that include previously determined habitat types.[180] On the basis of predetermined criteria set forth in annexes to the directive, and in consultation with the member states, the Commission of the European Communities is charged with preparing a draft list of "sites of community importance." Those states whose proposed sites represent more than 5% of their national territory may request that the criteria for site selection of all sites be applied more flexibly.[181] Once sites of community importance have been formally adopted, member states must, within six years, designate the site as a "special area of conservation." Member states must establish priorities among selected sites based upon a number of factors: the importance of the site for the maintenance and restoration of listed habitat types; the importance of the site to the coherence of the ecological network; and the degree of threat to the site.[182]

Significantly, the directive also includes procedures for community listing when a state fails to list a site determined by the commission to be of community importance.[183] These procedures include an initial six month period for bilateral consultation between the member state and the commission, followed by referral to the full European Council if the dispute remains un-

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179 Council Directive 92/43, art. 3(1), 1992 O.J. (L 206) 5.

180 *Id.* at art. 4(1). Importantly, "[f]or animal species ranging over wide areas these sites shall correspond to the places within the natural range of such species which present the physical or biological factors essential to their life and reproduction."

181 *Id.* at art. 4(2).

182 *Id.* at art. 4(4).

183 *Id.* at art. 5(1).

resolved.[184] The directive also requires the development of management plans, procedures for impact assessment, and mechanisms for community co-financing of the implementation of management plans.[185]

Article 10 of the directive explicitly refers to the principles of conservation biology reflected in corridor theory. It provides that member states shall endeavor to improve the ecological coherence of the Natura 2000 Network by encouraging management of landscape features which, "by virtue of their linear and continuous structure . . . or their function as stepping stones . . . are essential for the migration, dispersal and genetic exchange of wild species."[186] This provision may represent the first direct reference to wildlife corridor theory in international environmental law.[187]

E. Member States of the Association of South East Asian Nations: Agreement on the Conservation of Nature and Natural Resources

In 1985, the five member states of the South East Asian Nations adopted a progressive, ecosystem-oriented, regional accord that incorporates many fundamental principles of modern conservation biology. The agreement asserts, as its fundamental principle, the need to take individual action, or where necessary, concerted action to adopt "measures necessary to maintain essential ecological processes and life support systems, to preserve genetic diversity, and to ensure the sustainable utilization of harvested natural resources . . . in accordance with scientific principles."[188] The agreement also obligates each party to develop a national conservation strategy and to integrate the strategy into the framework of the regional conservation strategy.[189] However, no mechanism is established to develop a regional conservation strategy.

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[184] *Id.* at art. 5(2).

[185] *Id.* at art. 6, 8.

[186] *Id.* at art. 10.

[187] As previously noted, the concept of wildlife corridors as an in situ conservation tool was initially included in an early draft of the United Nations Framework Convention on Biological Diversity, but did not survive. *Fifth Revised Draft Convention on Biological Diversity*, *supra* note 44, at art. 7(a).

[188] Agreement on the Conservation of Nature and Natural Resources, Sept. 7, 1985, member states of the Association of South East Asian Nations, art. 1, § 1 [hereinafter Conservation Agreement].

[189] *Id.* at art. 1, § 2.

The *South East Asian Nations Agreement* also devotes substantial attention to the establishment of protected areas.[190] The agreement obligates each nation to create national parks and reserves[191] in a manner that reflects regional concerns. For example, the signatories are required to set aside areas to safeguard "the ecological and biological processes essential to the functioning of the ecosystems of the Region," and to ensure "representative samples of all types of ecosystems of the Region."[192] In addition, the agreement calls for the signatories to preserve those areas that are "peculiar to . . . the Region" as well as those areas that constitute the critical habitats of endangered, rare or endemic species that migrate among countries of the contracting parties.[193] Perhaps most importantly, the agreement requires cooperation "in the development of principles, objectives, criteria and guidelines for the selection, establishment and management of protected areas in the Region with a view to establishing a coordinated network of protected areas throughout the Region" through a subsequently agreed upon appendix.[194]

Article 18 of the agreement provides the basis for international and intraregional cooperation, including collaborative monitoring, coordinated research, and supplying information to the secretariat on implementation of the agreement.[195] Articles 19 and 20 deal with shared resources and transfrontier environmental effects, respectively, and contain language that appears to be drawn directly from existing international agreements dealing with these issues.[196] In particular, the provisions on shared resources require cooperation in the conservation and management of border or contiguous protected areas, of shared habitats of listed species or species of special concern, and of species

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[190] *Id.* at art. 13.

[191] *Id.* at art. 13, §§ 1, 3. National parks are defined as "natural areas that are sufficiently large to allow for ecological self-regulation of one or several ecosystems, and which have not been substantially altered by human occupation or exploitation." *Id.* at art. 13, § 3(a). Reserves are described as areas set aside for particular conservation purposes which contemplate human exploitation in a manner that is not inconsistent with the purpose of the reserve. *Id.* at art. 13, § 3(b).

[192] *Id.* at art. 13, § 1.

[193] *Id.* at art. 13, § 1.

[194] *Id.* at art. 13, § 6.

[195] *Id.* at art. 18.

[196] *See Co-operation in the Field of the Environment Concerning Natural Resources Shared by Two or More States: Draft Decision Submitted by the President*, *supra* note 104; Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, 30 I.L.M. 800.

which constitute shared resources by virtue of their migratory character.[197] Both provisions also require environmental impact assessments for impacts to shared resources or transfrontier environmental effects.[198]

Despite relatively progressive efforts toward the incorporation of principles of conservation biology, the *South East Asian Nations Agreement* continues the international environmental law of monitoring and enforcement provisions. The provision on dispute resolution provides only that disputes "shall be settled amicably by consultation or negotiation."[199] No provision is made for third party access to information. The agreement does, however, provide for the completion of protocols, amendments, and appendices to ensure implementation of the treaty.[200]

F. Binational "Peace" Parks and Protected Areas

A significant opportunity for transnational, protected areas management may also be found in the growing trend toward the establishment of binational protected areas, or "peace parks" as they are sometimes called.[201] Since 1930 the United States and Canada have shared the Glacier-Waterton International Peace Park along their common border,[202] and the United States and Russia have recently proposed an international peace park across the Bering Strait.[203] More recently, Central America has become a leader in the movement to establish binational and trinational protected areas that straddle international borders.[204]

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197 Conservation Agreement, *supra* note 188, at art. 19, § 3(a)(b).

198 Conservation Agreement, *supra* note 188, at art. 19, § 2(c); art. 20, § 3(a).

199 Conservation Agreement, *supra* note 188, at art. 30.

200 Conservation Agreement, *supra* note 188, at arts. 24-26.

201 *See* Oscar Arias & James Nations, *A Call for Central American Peace Parks*, *in* POVERTY, NATURAL RESOURCES AND PUBLIC POLICY IN CENTRAL AMERICA 43, 43-58 (U.S. Third World Policy Perspectives No. 17, Overseas Development Council, Inc., 1992).

202 *See*, *e.g.*, J. Thorsell, *Parks on the Borderline: Experience in Transfrontier Conservation*, *in* INTERNATIONAL PARKS FOR PEACE (1990); N. Schrijver, *Transfrontier Reserves for Peace and Nature: A Contribution to Human Security*, *in* SOVEREIGNTY AND THE SHARING OF NATURAL RESOURCES 21-33 (1993); A. Westling, *Expanded Concept of Environmental Security*, *in* CULTURAL NORMS, WAR AND THE ENVIRONMENT 187 (1986).

203 Arias & Nations, *supra* note 201, at 51.

204 Marnie Pauline Bookbinder, Border Parks of Central America: New Frontiers in Conservation (1993) (Masters Project, School of Forestry and Environmental Studies, Yale University).

Viewed as a means to ease border tensions in this politically troubled region, bilateral protected areas have been established or proposed throughout the Mesoamerican Isthmus. For example, Costa Rica and Nicaragua have taken steps to establish a SIAPAZ ("Yes to Peace") international park on the forested eastern frontier.[205] Costa Rica and Panama recently extended the La Amistad Biosphere Reserve into Panama as well.[206] In addition, trinational protected areas have been proposed between Mexico, Guatemala and Belize (the Maya trinational area), and Honduras, Guatemala and El Salvador (El Trifinio).[207] Panama's Darien National Park and Columbia's Los Katios National Park share a common frontier as well.[208] Together, these efforts form the nucleus for what has been described as "an international system of peace parks in Central America."[209] For the most part, these protected complexes have also been identified as "priority protected areas" by the *Central American Biodiversity Convention*, and hence form the nucleus for consolidating the regional protected area system envisioned by the convention.[210]

IV

ALTERNATIVES FOR AN INTEGRATED MESOAMERICAN PROTECTED AREA SYSTEM

Designing the proper framework to carry forward the regional objectives of an integrated system of parks and protected areas requires a detailed examination of the various multilateral institutional mechanisms available under national and international law within the geopolitical and socioeconomic constraints of the region. It also will require unparalleled cooperation among the nations in the region and a resounding commitment on the part of those countries to the concept of a multinational, protected areas system. Assuming such a commitment exists, several possibilities for supranational cooperation toward regional, protected area integration exist, or have been recently proposed,

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205 *Id.* at 13-14.

206 *Id.* at 11-13.

207 *Id.*

208 *Id.*; *See also* E. Olson, *Biosphere Reserves of Central America: A Critique*, *in* PROCEEDINGS OF THE SYMPOSIUM ON BIOSPHERE RESERVES, at 242-53 (1987).

209 Arias & Nations, *supra* note 201, at 43.

210 Convenio Para la Conservacion, *supra* note 66, at art. 18.

that can facilitate the region's biodiversity goal of protecting and restoring an "effective Mesoamerican biological corridor."[211]

A. Protected Area Status Under Existing International Conventions or Arrangements

As previously noted, a significant portion of the region already enjoys some sort of formal protected area status. For example, a number of these protected areas have already been declared international biosphere reserves under the United Nations Educational Scientific and Cultural Organization Man and Biosphere Program, or World Heritage Sites under the *World Heritage Convention*.[212] Although procedurally both of these programs are oriented toward single nation submissions, the language of each does not appear to preclude formal designation of the proposed system as a biosphere reserve network or a world heritage site.[213]

1. A Regional Biosphere Reserve Network

The Man and Biosphere Program (MAB) is not an international convention, but a program of the United Nations. The program establishes biosphere reserves "to conserve for present and future use the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends."[214] This objective meshes readily with the biological premise underlying the development of wildlife corridors. Moreover, the identified characteristics required for biosphere reserve candidacy suggest the corridors' requirements for some absolute protection, some human accommodation (buffer zones) and some biological restoration.[215]

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211 Convenio Para la Conservacion, *supra* note 66, at art. 18.

212 LYSTER, *supra* note 154.

213 The size of the corridor should not itself pose a particular problem. In 1981 the World Heritage Committee listed the entire Australian Great Barrier Reef, some 300,000 square miles. LYSTER, *supra* note 154, at 216.

214 *Report for the Programme on Man and the Biosphere: Criteria and Guidelines for the Choice and Establishment of Biosphere Reserves*, UNEP & UNESCO, MAB report series No. 22 at 11 (1974).

215 These characteristics include: "(i) representative examples of natural biomes . . . (ii) [u]nique communities or areas with unusual features of exceptional interest . . . (iii) [e]xamples of harmonious landscapes resulting from traditional patterns of land use . . . [and] (iv) examples of modified or degraded ecosystems capable of being restored to more natural conditions." *Id.* at 15-16.

Like most existing conventions that predate the emergence of corridor theory in the popular scientific literature, the MAB Program does not directly address itself to species migration and genetic interchange. Nonetheless, the biosphere reserve concept does appear to be readily amenable to corridor theory.[216] At least one commentator has called for the "evolution" of the biosphere reserve system into a linked landscape ecology based network, and postulated a regional reserve design linked by "ecotonal corridors."[217] Moreover, a network of coastal barrier island biosphere reserves has apparently already been proposed along the mid-Atlantic coast of the United States.[218]

Within the MAB Program, provisions have been made for "international pilot projects."[219] Criteria for pilot project selection include national problems with a wider regional or international significance, concern with human and biological systems interface, and availability of financial resources.[220] Pilot projects are selected by MAB National Committees.[221] Despite its apparent intranational bias, the MAB Pilot Project appears well suited to the objectives of a regional system of protected areas, particularly in light of the call for regionalizing the biosphere reserve philosophy, the presence of numerous declared biosphere reserves in a relatively confined geographic area, and the theory of "cluster biosphere reserves" which was also articulated by MAB.[222] In addition, representatives of Central America, Mexico and Cuba recently proposed a regional network of biosphere reserves with the assistance of UNESCO's Regional Office of Science and Technology.[223] Also, the Nature Conservancy, an international NGO with a strong Central American presence, has

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216 Reed F. Noss & Larry D. Harris, *Nodes, Networks, and MUM's: Preserving Diversity at all Scales*, 10 ENVTL. MGMT. 299 (1986).

217 *See* M.I. Dyer & M.M. Holland, *The Biosphere Reserve Concept: Needs for a Network Design*, 41 BIOSCIENCE 319 (1991).

218 *Id.* at 322 (citing G.C. Ray & W.P. Gregg, Jr., *Establishing Biosphere Reserves for Coastal Barrier Ecosystems*, 41 BIOSCIENCE 301 (1991)).

219 UNESCO, A PRACTICAL GUIDE TO MAB, at 14 (1987).

220 *Id.* at 14-15.

221 *Id.*

222 Dyer & Holland, *supra* note 217.

223 Declaracion De La Red Regional De Reservas De La Biosfera Mexico-Centroamerica-Cuba [Declaration of the Regional Network of Biosphere Reserves for Mexico, Central America and Cuba], Dec. 8-12, 1991.

identified biosphere reserves as the management strategy for "large landscape conservation in Central America."[224]

While the Mesoamerican Biological Corridor may warrant review under the umbrella of the MAB program, the practical effect of such review is more problematic. The Biosphere Reserve Program has been criticized for lacking substance, internal coherence and funding capabilities, which creates, in essence, an international category of "paper parks."[225] Each of Central America's five existing biosphere reserves is currently experiencing substantial threats from colonization, deforestation and cultural exploitation.[226]

Even so, existing biosphere reserves in Mesoamerica appear to have gained a measure of legitimacy as an independent, protected area category with legal standing and active management plans that are distinct from those of pure parks because they contemplate some degree of human activity in the reserves.[227] In Guatemala, for example, biosphere reserves have been decreed a specific category of protected area under the country's protected areas legislation.[228] Decreed biosphere reserves such as these may serve as a useful model in the development and administration of a regional, protected area system with mixed land uses that are compatible with corridor theory.

2. *A Regional World Heritage Site*

The *World Heritage Convention* offers some intriguing possibilities when applied to the Mesoamerican Biological Corridor. Unlike most conservation treaties, the World Heritage Convention contains both a funding mechanism and modest enforcement

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[224] *See* Brian Housel, *Biosphere Reserves As the Basis for Large Landscape Conservation in Central America*, *in* PROCEEDINGS OF THE HUMID TROPICAL LOWLANDS CONFERENCE: DEVELOPMENT STRATEGIES AND NATURAL RESOURCE MANAGEMENT 31 (1991).

[225] *See, e.g.*, M. Batisse, *Developing and Focusing the Biosphere Reserve Concept*, 22 NATURE AND RESOURCES 1-10 (1986); M. LYNNE CORN, CONGRESSIONAL RESEARCH SERVICE, BIOSPHERE RESERVES: OVERVIEW (1993).

[226] Peter H. Herlihy, *"Wildlands" Conservation in Central America During the 1980's: A Geographical Perspective*, 17/18 CONFERENCE OF LATIN AMERICANIST GEOGRAPHERS 38 (1992).

[227] E. Olson, *Biosphere Reserves of Central America: A Critique*, *in* PROCEEDINGS OF THE SYMPOSIUM ON BIOSPHERE RESERVES 252 (1987).

[228] Articulo 8, Capitulo I, Titulo II, Reglamento de la Ley de Areas Protegidas, Acuerdo Gubernativo No. 759-90 (Aug. 22, 1990).

capabilities. The multistate dimension of the corridor may, however, hamper this convention's utility in this regard.

At first blush, the geological, paleontological, and biological phenomenon of the isthmus, the "land bridge" between two continents, appears particularly appropriate to world heritage status. To receive consideration for World Heritage status a site must constitute a physical area of outstanding universal value.[229] This definition has been refined by a number of operational guidelines by which the World Heritage Committee evaluates candidates, many of which appear particularly well suited to the theory of the "Great American Biotic Interchange." For example, the committee can consider the extent to which the site represents an outstanding example of a major stage in the earth's evolutionary history, or is an outstanding example representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment.[230]

The convention's operational guidelines also require that a proposed site demonstrate "integrity." This has been interpreted to mean that the site must be large enough to include key components of the process it represents and must be "self-perpetuating."[231] This condition is particularly relevant to the Mesoamerican Biological Corridor since it would provide a litmus test for the biological premise underlying linking parks and protected areas. The guidelines also require an adequate "buffer zone" around the property to be protected.[232]

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[229] Convention for the Protection of World Cultural and Natural Heritage, Nov. 16, 1972, art. 2, UNESCO Doc. no. 17 c/106 (1972). Article 2 of the Convention defines the "natural heritage" as:

> a) natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;
>
> b) geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;
>
> c) natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

[230] UNESCO, INTERGOVERNMENTAL COMMITTEE FOR THE PROTECTION OF THE WORD CULTURAL AND NATURAL HERITAGE, OPERATIONAL GUIDELINES FOR THE IMPLEMENTATION OF THE WORLD HERITAGE CONVENTION at ¶ 24-35, U.N. Doc. WHC/2 (1984).

[231] LYSTER, *supra* note 154, at 214-15 (citing UNESCO, *supra* note 230, at ¶ 25).

[232] LYSTER, *supra* note 154, at 215 (citing UNESCO, *supra* note 230, at ¶ 14).

Importantly, nothing in the convention or its guidelines require that the nominated site be under any formal, national protected area status prior to nomination. An interesting additional aspect of World Heritage Site designation is the corollary list of "World Heritage Sites in Danger" that the convention authorizes. Though seldom used (through 1985), sites faced with a "specific and proven imminent danger" or "major threats which could have deleterious effects on its inherent characteristics" are eligible for listing and access to funding.[233]

While the *World Heritage Convention* does not preclude regional submissions, it does require that each party identify the sites "situated on its territory," [234] and precludes the listing of sites without "the consent of the State concerned."[235] Thus, to qualify, every nation within the proposed corridor would be required to submit the segment within its territory on its own behalf. Moreover, the failure of any one state to nominate its segment would probably defeat the entire submission since it would destroy the ability of the others to insure the "operational integrity" of the whole corridor system.

Articles 5 and 6 impose mutually binding protective obligations on parties to the *World Heritage Convention*. Article 5 imposes a duty on states with listed sites "to ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage situated on its territory."[236] Article 6(2) imposes a general obligation on member states to assist other member states in their efforts to protect designated sites.[237] This sweeping requirement has particular relevance in the case of a multistate submission.

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[233] LYSTER, *supra* note 154, at 221-22 (1985).

[234] Convention for the Protection of the World Cultural and Natural Heritage, *supra* note 229, at art. 3.

[235] Convention for the Protection of the World Cultural and Natural Heritage, *supra* note 229, at art. 11(3).

[236] Convention for the Protection of the World Cultural and Natural Heritage, *supra* note 229, at art. 5. In the only judicial opinion construing the scope of Article 5, the High Court of Australia enjoined construction of a dam by the State of Tasmania because it would affect a World Heritage Site nominated by the Commonwealth of Australia. LYSTER, *supra* note 154, at 223 (quoting No. C6 of 1983. The Commonwealth of Australia v. The State of Tasmania, 46 A.L.R. 625, 68 I.L.R. 266). The Court found that Article 5 imposes a legal duty upon all signatories to protect designated sites. *Id.* at 224.

[237] Convention for the Protection of the World Cultural and Natural Heritage, *supra* note 229, at art. 6(2).

Article 6(3) imposes a duty on member states not to "take any deliberate measures which might damage directly or indirectly" a listed site outside its territory.[238] The convention provides no specific remedies or dispute resolution mechanisms. As with all international accords, the *World Heritage Convention* is subordinate to national sovereignty and any state may repudiate the convention at any time.[239]

3. *A Regional Network of Border Parks*

Central America's impressive list of transfrontier protected areas have been described as "international peace parks."[240] Despite the name, however, none of the nations currently administering border parks appear to share any formal, integrated, bilateral management capabilities.[241] A recent report of the United Nations Food and Health Organization on the management of frontier protected areas in Latin America concluded that while progress had been made in planning and management of frontier protected areas in the region, it has thus far been largely unilateral.[242] Indeed, the perceived threat to sovereignty implied by binational park management has been viewed as hindering efforts to develop border parks in Central America.[243] According to one source, however, tentative steps are now being taken by Panama and Costa Rica to develop a joint management plan and to utilize joint park guard patrols.[244]

While the developing peace parks and binational protected areas in Central America are undoubtedly the cornerstone of any

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238 Convention for the Protection of the World Cultural and Natural Heritage, *supra* note 229, at art. 6(3).

239 Convention for the Protection of the World Cultural and natural Heritage, *supra* note 229, at art. 35. All treaty signatories have access to international arbitration and to the International Court of Justice at the Hague, a recourse seldom exercised. LYSTER, *supra* note 154, at 11.

240 Arias & Nations, *supra* note 201, at 44.

241 Even Glacier-Waterton International Peace Park, which shares the United States-Canada border, falls considerably short in this regard. Telephone Interview with Rob Milne of the United States Park Service, International Division (Apr. 30, 1992).

242 BEATRIZ MARCHETTI, ET AL., MANEJO DE AREAS SILVESTRES PROTEGIDAS FRONTERIZAS EN AMERICA LATINA [MANAGEMENT OF WILD PROTECTED FRONTIERS IN LATIN AMERICA] at 57 (Proyecto FAO/PNUMA sobre Manejo de Areas Silvestres, Areas Protegidas y Vida Silvestre en America Latina y el Caribe, Oficina Regional De La FAO Para America Latina y El Caribe, 1992).

243 Arias & Nations, *supra* note 201, at 58.

244 Arias & Nations, *supra* note 201, at 58.

transboundary biotic corridor, they remain an ad hoc decentralized series of bilateral or trilateral agreements, rather than any truly "international system" of protected areas. Management standards, and the economic capacity and political will to implement them, may vary dramatically. The degree of transboundary integration permitted will also differ dramatically according to the nature of the organic documents that formed the bilateral parks. Moreover, the present "system" still represents an archipelago of protected areas formed along political borders, rather than an integrated biological corridor.

B. Implementation of the Central American Biodiversity Treaty Through a Comprehensive Protected Areas Protocol

Protected areas networks based on existing conventions or models of protected area management such as MAB, the *World Heritage Convention*, and border parks all offer opportunities for some degree of regional oversight of protected areas management in Central America. However, none provide the level of biological integration required for an effective multinational corridor because they don't include all the categories of protected areas that may be necessary to ensure that the system functions as a whole. It is also possible that true integration will require some form of mutually agreed upon land use regulation and management beyond protected area boundaries. Moreover, none of these mechanisms currently possesses centralized management or funding capabilities at the regional level, a seeming prerequisite to integration.

For these reasons, a regional agreement, tailored to the needs and desires of the participating states, may provide the most promising mechanism to secure the objectives of regional protected areas integration. Indeed, as discussed above, a regional biodiversity treaty for Central America has already been signed, and already possesses the capacity for centralized management and funding through the CCAD. However, unlike the EC *Directive on the Conservation of Natural Habitats*, or even the South East Asian Nations' *Agreement on the Conservation of Nature*, the *Central American Biodiversity Treaty* offers few specifics—except, of course, for the very important formal recognition of the Mesoamerican Biological Corridor. In this respect, the treaty appears to take on the character of a framework agreement, and

in many respects is quite similar to the *United Nations Framework Convention on Biological Diversity*. Like the *Framework Convention*, the *Regional Convention* also suggests the need for corollary agreements and understandings to fully implement its aspirations.[245]

The *Regional Convention* defines the "Corredor Biologico Mesoamericano" in terms of implementation of the "Sistema Regional de Areas Protegidas." The convention also establishes a council within CCAD to administer the protected area system, but the duties and responsibilities of the "Consejo Centroamericano de Areas Protegidas" are not spelled out. Regional, protected areas integration would be best served by a specific protocol to the agreement that obligates the parties to move forward in a concrete fashion to establish this system, particularly if the goal is to establish a truly "effective" biological corridor. While many of the activities required to move toward regional, protected areas integration can be accomplished with the existing agreement, it is quite possible that additional ratified agreements will be required to achieve the goal of "effectiveness." For example, agreement will need to be reached on corridor alignments, minimum management guidelines, harmonization of legislation, procedures for transboundary impact assessment,[246] financing mechanisms, enforcement and dispute resolution,[247] and the role of non-governmental organizations, all within the current constraints of national sovereignty. Most of these themes are not addressed in the current convention.[248]

A detailed agreement affording substantive multilateral protection to the Mesoamerican Biological Corridor as a regional,

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245 United Nations Framework Convention on Biological Diversity, art. 28, Rio de Janiero, Brazil, (June, 1992), 31 I.L.M. at 834; *See also* LANDAU, *supra* note 166.

246 Under the aegis of the United Nations, a number of states recently entered into the Convention on Environmental Impact Assessment in a Transboundary Context, Feb. 25, 1991, 30 I.L.M. 800 (1991). The convention requires states to prepare assessments of the transboundary impacts of "large-scale" activities authorized by the state of origin. *Id.* at 803. "Deforestation of large areas" is a specifically listed example of an activity subject to the convention. *Id.* at 812. None of the Central America republics have signed the convention as yet. *Id.* at 800.

247 Neither the Central American Biodiversity Treaty or the Central American Agreement for the Protection of the Environment which creates CCAD currently provide a formal mechanism for the resolution of disputes.

248 In addition, Mexico is not presently a party to the Regional Biodiversity Convention, yet the Maya Trinational Area, which includes Southern Mexico, represents an important component of a functioning Mesoamerican biological corridor. Mexico does, however, sit as an observer to the deliberations of the CCAD.

protected area system would enhance its international stature. Formal regional recognition coupled with the commitment demonstrated by substantive legal protection should also enhance access to donor funds and sustainable economic potential. In addition, formal recognition of the corridor would require consideration in the development policies of multilateral and bilateral aid institutions and development banks.[249] Moreover, properly drafted, such an agreement may serve as the basis for regional implementation of the in situ provisions of the *United Nations Framework Convention on Biological Diversity*.[250]

C. A Regional Non-Governmental Organization

The creation of a regional non-governmental entity is one suggested means of promoting the objectives of an integrated regional system of protected areas, which recently received the endorsement of one of the region's vice ministers.[251] Regional environmental NGOs are not unprecedented in Central America.[252] Moreover, some local NGOs in Central America have been delegated substantial, protected area management authority by their national governments. Perhaps the most impressive example is the Belize Audubon Society, which enjoys considerable management and enforcement authority, as well as financial support, to administer protected areas within the Belize Barrier Reef. In addition, the Guatemalan environmental NGO Defensores De La Natureza has been delegated substantial re-

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249 For example, In 1986 the World Bank formulated its biodiversity policy for loans to developing nations. The First Policy states that the Bank normally declines to finance conversion of wildlands of specific concern, including officially designated areas, areas slated for official designation, as well as those of specific geographic concern. *See* Robert Goodland, *Environmental Sustainability in Economic Development-With Emphasis on Amazonia*, *in* THE RACE TO SAVE THE TROPICS 184-86 (Robert Goodland ed., 1990).

250 As previously noted, the United Nations Framework Convention on Biological Diversity authorizes implementation of national obligations by regional integration organizations. Nations Framework Convention on Biological Diversity, June 5, 1992, art. II, 31 I.L.M. 818, 823. *See also* E. Fernandez-Galiano, *The Role of Regional Conventions in the Implementation of the Convention on Biological Diversity*, *in* WIDENING PERSPECTIVES ON BIODIVERSITY (1994).

251 Paseo Pantera Symposium, M.S. Polaris (Mar. 11-14, 1992).

252 For example, an umbrella NGO known as the Regional Association of Non-Governmental Environmentalists for the Sustainable Development of Central America ("REDES") has been created. REDES recently entered into an "Agreement of Cooperation" with CCAD charging one another with mutual assistance, but nothing more. Convenio de Cooperacion, CCAD y la REDES-CA [Convention of Cooperation] Nov. 18, 1991.

sponsibilities for the management of the Sierra de las Minas Biosphere Reserve.[253] The Costa Rican National Parks Foundation has been touted by some commentators as a model of private sector initiative in decentralizing and privatizing management and financing of protected areas.[254]

Even so, it is unlikely that a regional NGO could independently accomplish the institutional objectives of an integrated regional system of protected areas. Full-scale, meaningful implementation of an integrated regional system of protected areas will require substantial regional administration and oversight, national legislation, enforcement, and large-scale financing. In addition, the absence of governmental participation may reduce access to funding sources such as multilateral development banks with government-only portfolios, and listing opportunities under existing and future international conventions. A regional NGO may, however, serve beneficial purposes in promotion, fundraising and oversight. In addition, it is conceivable that such an organization could be delegated substantial implementation responsibilities from the regional or national governmental entities charged with administration.

CONCLUSION

The growing interest in regionalizing wildlands management in Central America represents a significant step toward recognition of an international biological resource—the Mesoamerican Biological Corridor. Opportunities for regional cooperation, as well as international financing, to secure the objectives of the regional protected areas integration currently exist under international law. In fact, agreements at both the international and regional level have been adopted which explicitly and implicitly recognize regional, protected areas integration as an appropriate conservation strategy. While the regional approaches to the protection of biodiversity through protected areas management is growing both in number and sophistication, none of these achieves the level of integrated land management entailed by a multinational biological corridor. Of those currently extant, only the recently

253 Paseo Pantera Symposium, M.S. Polaris (Mar. 11-14, 1992). *See also* Umaña & Brandon, *Inventing Institutions for Conservation: Lessons from Costa Rica*, POVERTY NATURAL RESOURCES AND PUBLIC POLICY IN CENTRAL AMERICA 103 (U.S. Third World Policy Perspectives No. 17, Overseas Development Council, 1992).

254 Umaña & Brandon, *supra* note 253, at 97.

adopted *Habitat Directive* of the European Community recognizes the underlying principles of island biogeography, and a truly bioregional approach to protected areas management that transcends national borders.

Although several options for a legal framework for an integrated, protected area system exist, the adoption of a protocol to the existing regional biodiversity convention appears best suited to the objective of establishing an effective Mesoamerican Biological Corridor. It is also possible, however, that significant aspects of this regional system can be enhanced through informal mechanisms such as the proposed regional biosphere reserve and border park networks, or simply as an administrative function of the Central American Council of Protected Areas, which was created under the regional biodiversity treaty. In addition, the development of an NGO to promote the aspirations of the Mesoamerican Biological Corridor, similar to what the Wildlands Project has done for North America, can serve important objectives, such as obtaining the ratification of the *Central American Biodiversity Treaty*, and the continuing development of the scientific and economic basis for a regional system of protected areas that can function as a truly effective Mesoamerican Biological Corridor.

POST SCRIPT

Since this article was written, a number of significant milestones have been achieved that advance the prospects for regional protected area integration in Central America. Most importantly, the *Convention for the Conservation of Biodiversity and Protection of Priority Wild Areas*, the focus of this article, was ratified by four nations,[255] and entered into force in 1994.[256] Also in 1994, the presidents of the region, as the Alliance for the Sustainable Development of Central America, convened an "ecological summit" in Nicaragua and reaffirmed their commitment to the concept of a Central American corridor.[257] The

[255] The four nations are Guatemala, Honduras, El Salvador and Costa Rica. Telephone Interview with Jorge Cabrera, Executive Secretary, Central American Commission on Environment and Development (Jan. 11, 1995).

[256] The convention requires the signature of three parties to enter into force. *See* Convenion para la Conservacion, *supra* note 66, at art. 43.

[257] Alianza Para el Desarrollo Sostenible de Centro America, Conpromisos en Materia de Medio Ambiente y Recursos Naturales 2, Volcan Masaya, Nicaragua, Oct. 12 & 13, 1994 (on file with the author).

presidents directed the appropriate ministers in each country to prepare national corridor plans to consolidate the regional corridor.[258] The corridor approach to biodiversity conservation also became a focal point in the cooperative agreement between the United States and the Central American countries known as CONCAUSA, signed at the recent Summit of the Americas in Miami.

These significant developments have lent added impetus to non-governmental efforts to support the implementation of the *Central American Biodiversity Convention*. A regional non-governmental organization, the Mesoamerican Biodiversity Foundation, was recently formed to pursue implementation of the convention.[259] Under the auspices of this foundation, and the USAID-funded Paseo Pantera Project (administered by the Wildlife Conservation Society and the Caribbean Conservation Corporation), efforts are under way to develop a regional strategy to implement Article 21 of the convention, which calls for consolidation of the corridor as a regional system of protected areas.[260] Only time will tell if these efforts, and use of the corridor concept as a conservation strategy will prove successful in integrating protected areas management in this difficult part of the world.

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[258] *Id.*

[259] Personal Communication with Dr. Mario A. Boza, Special Biodiversity Advisor to the Central American Commission on Environment and Development (Dec. 1994).

[260] *Id.*