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Transnational Networks and the Promotion of Conservationist Norms in Developing Countries

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TRANSNATIONAL NETWORKS AND THE PROMOTION OF
CONSERVATIONIST NORMS IN DEVELOPING COUNTRIES

A Dissertation Presented

by

KEMI GEORGE

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2011

Political Science

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TRANSNATIONAL NETWORKS AND THE PROMOTION OF
CONSERVATIONIST NORMS IN DEVELOPING COUNTRIES

A Dissertation Presented

By

KEMI GEORGE

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DEDICATION

For my patient and loving wife, Lindsey, and for my parents

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ABSTRACT

TRANSNATIONAL NETWORKS AND THE PROMOTION OF CONSERVATIONIST NORMS IN DEVELOPING COUNTRIES

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The political economic pressures of development contribute to unsustainable environmental practices in developing countries, and marginalize civil society participation. This dissertation looks at the following countries where policymakers are faced with strong incentives to foster rapid economic growth. In Jamaica, the bauxite industry demands mining rights in sensitive mountainous ecosystems. In Mexico, the tourist industry demands access to construct in vulnerable coastal environments in the southeast. In inland Mexico, unregulated agriculture threatens ecosystems in the Yucatán Peninsula. Finally, tourist and energy industries in Egypt demand access for infrastructure in sensitive ecosystems in the Red Sea region. In all of the cases, the preferences of these sectors threaten to displace local communities, while creating unsustainable pressures on the environment. At the same time, the projected revenues from these sectors justify continued environmental exploitation.

In response, transnational networks of environmental advocates and epistemic communities mobilized throughout the 1990s, lobbying the Global Environment Facility

for conservationist projects in each country, and then lobbying governments to effectively implement the projects.

This research finds that three conditions were necessary for transnational networks to influence policies associated with project implementation. First, networks must generate an internal scientific agreement on the dimensions of the environmental problem. By doing so, they can delegitimize competing arguments, strengthening their own claims. Second, networks must build social ties with policymakers in powerful agencies. Social ties increase the likelihood that policymakers will adopt the norms of the network. Third, networks must reframe the discourse on environmental management. At present, policymakers and industry argue that environmental management should be assessed by its contribution to economic development, validating only those policies that lead to sustained revenue generation. By reframing environmental management as an issue impacting the wellbeing of domestic populations, networks can argue for the greater participation of actors marginalized by the dominance of privileged productive sectors in resource management. Moreover, by linking sustainable resource use to the interests of domestic populations, networks can generate political capital to oppose the most unsustainable environmental practices. This research thus builds on the epistemic communities approach by highlighting the importance of democracy in knowledge-building and environmental governance.

CONTENTS

ACKNOWLEDGMENTS	v
ABSTRACT.....	vi
LIST OF TABLES	xxiii
LIST OF FIGURES	xxiv
LIST OF ABBREVIATIONS.....	xxvi
CHAPTER	
1. INTRODUCTION: ECONOMY, BIODIVERSITY AND EPISTEMIC COMMUNITIES.....	1
Introduction.....	1
Less Developed Countries, the Environment, and Development	4
The Role of Ideas in International Relations	7
Constructivism, Networks, and Global Environmental Governance.....	9
Epistemic Communities	11
Issue-framing and the Socio-Political Context of Knowledge	16
Economics, Politics, and Management in Developing Countries.....	18
Influence, Knowledge and Power	19
A Heuristic Approach to Hypothesis Testing	21
The Interplay Between Comparative Politics and IR	24

Biodiversity Management in Developing Countries.....	24
Case Selection.....	26
Jamaica.....	29
Mexico	30
Egypt.....	31
Operationalizing Concepts.....	32
TANs and Epistemic Communities	32
Issue Framing.....	34
Socialization.....	35
The Dependent Variable: Network Influence	35
Outline of the Dissertation	38
2. JAMAICA AND BIODIVERSITY MANAGEMENT IN THE COCKPIT COUNTRY	46
Introduction.....	46
Overview of Threats to the Cockpit Country.....	48
Subsistence and Small-Scale Agriculture	49
Bauxite Mining in the Cockpit Country.....	52
Tensions in National Economic Development	53
Identifying the Social Actors Involved in Biodiversity Management	54
NRCA/NEPA and the Ministry of Environment	55

The Ministry of Agriculture.....	56
The Forestry Department	56
The Department of Mining, the JBI and the Ministry of Agriculture.....	57
The Prime Minister’s Cabinet.....	57
Transnational Mobilization around the Cockpit Country	58
The Emergence of the Cockpit Country Epistemic Community	58
The Emergence of a Core Pool of Knowledge	60
Creation of the Project and Constitution of the Network	63
Maintaining the Network	66
The Cockpit Country Epistemic Community Develops a Managerial Approach.....	68
The Impact of Biodiversity Loss.....	68
Identifying the Primary Ecological Threats	70
Creating a Managerial Framework	71
Transnational Advocacy Network (TAN): A Wider Network of Policy Advocacy	73
Framing Alignment.....	75
Measuring the Epistemic Community’s Knowledge Consensus	78
Measuring Consensus on Bauxite Mining	79
Bauxite Mining: Agreement on the Causes	79

Bauxite Mining: Agreement on the Consequences.....	80
Bauxite Mining: Agreement on the Extent	81
Measuring Scientific Consensus on Agriculture and Logging	82
Agriculture and Logging: Agreement on the Causes.....	83
Agriculture and Logging: Agreement on the Consequences	84
Agriculture and Logging: Agreement on the Extent.....	85
Measuring Network Socialization with Managers.....	87
High Socialization with the Forestry Department	87
Very Low Socialization between the Network and NEPA.....	88
Low Socialization between the Network and Other Agencies	90
Measuring the Framing Strategies Used by the Network	91
Strategic Economic Frames: Persuading Managers.....	91
Using Economics to Frame Environmental Impacts	92
Environmental Policy Advocacy	95
Ministry of Agriculture: Establish a Moratorium on Bauxite Mining.....	95
Ministry of Environment: Establish a National Park under IUCN Guidelines	98
Ministry of Environment and NEPA: Implement Ecotourism as a Management Strategy.....	100

Forestry Department: Implement Sustainable Agriculture	102
Evaluating Epistemic Community Influence	103
Laggardly Behavior from NEPA and the Ministry of Environment.....	103
Implementing Sustainable Agricultural Reforms by the Forestry Department.....	104
Governmental Retrenchment in Mining Exploration	106
Conclusion	110
3. MEXICO AND BIODIVERSITY MANGEMENT IN THE MESOAMERICAN BARRIER REEF SYSTEM.....	121
Introduction.....	121
Overview of Threats to the Mesoamerican Barrier Reef	123
Coastal Tourism and Hotel Development.....	125
Inland and Riparian Pollution	126
Port and Docking Practices	126
Overfishing	127
Tensions in National Economic Development	128
Identifying the Social Actors Involved in Biodiversity Management	129
Federal Policy Makers	130
SEMARNAP/SEMARNAT and CONANP	130
SAGARPA and CONAPESCA	132

State Governmental Agencies.....	133
SEDUMA, SEDETUR and the State Government.....	133
Managers from the Civil Society and the Private Sector.....	135
Fishing Cooperatives	135
The Hotel Industry: An Oligopoly of Tourism.....	136
Transnational Mobilization around the Mesoamerican Barrier Reef	137
The Emergence of the SAM Epistemic Community	137
The Germination of Transnational Links.....	139
The Emergence of a Core Pool of Knowledge: ICZM as a Unifying Concept.....	142
Creation of the SAM Project.....	143
Maintaining the Network	149
The Emergence of a Transnational Advocacy Network (TAN)	151
The SAM Epistemic Community Develops an Ecological Managerial Approach.....	153
The Impact of Biodiversity Loss.....	154
Identifying the Primary Ecological Threats	156
Creating a Managerial Framework	158
Framing Alignment.....	159
Measuring the Epistemic Community's Knowledge Consensus	160

Knowledge Consensus on Tourism Development.....	160
Tourism Development: Agreement on the Causes	160
Tourism Development: Agreement on the Consequences	162
Knowledge Consensus on Fishing	163
Fishing: Agreement on the Causes	163
Fishing: Agreement on the Consequences	164
Measuring Consensus on Inland Industry and Agriculture	164
Inland Industry and Agriculture: A Lack of Agreement on the Causes	164
A Consensus on the Aggregated Extent of Environmental Degradation.....	165
Measuring Network Socialization with Managers.....	166
High Levels of Socialization with SEMARNAT and CONANP	166
Low Socialization with State Managers in Quintana Roo	167
Socialization with SAGARPA and CONAPESCA	168
Socialization with Fishing Cooperatives	168
Socialization with Private Sector Actors in Hotel Management	169
Measuring the Framing Choices of the Community.....	170
Using Economic Frames with Hotel Managers	171
Using Economic Frames with Fishing Managers	172

Environmental Policy Advocacy	174
Bounding the Cartographic Limits of the Ecoregion.....	174
SEMARNAT and the Federal Branch: Expand the ZFMT	177
SEMARNAT and CONANP: Reforming AMPs.....	178
Fishing Cooperatives: Reform Existing Practices	179
SAGARPA and CONAPESCA: Reform Fishing Regulations.....	180
Hoteliers: Change Hotel Management and Land Use Practices	181
Evaluating Epistemic Community Influence	182
Managing AMPs under CONANP and SEMARNAT.....	182
Multisectoral Governance of Fisheries	185
Multisectoral Resistance to Hotel Management and Coastal Land Use Reform in Quintana Roo.....	186
A Brief Look at Local Activism in Coastal Regulation.....	189
Conclusion	193
 4. MEXICO AND BIODIVERSITY MANGEMENT IN THE MESOAMERICAN BIOLOGICAL CORRIDOR.....	 206
Introduction.....	206
Overview of Threats to the Mesoamerican Corridor	208
Agriculture and Land Conversion.....	210
Logging	211

Industrial Development.....	212
Tensions in National Economic Development	213
Identifying the Social Actors Involved in Biodiversity Management	214
Federal Policymakers.....	214
CONABIO: Implementing Agency of the CBMMx.....	215
SEMARNAT, CONAFOR, SAGARPA.....	216
CDI.....	217
State Governments in the CBMMx.....	218
Mobilization around the Mesoamerican Biological Corridor.....	219
Emergence of the Network and the Corridor Concept.....	219
Organizing around Biological Corridors	222
Maintaining the Network	227
Measuring Consensus	228
Agreeing to Disagree: Dissensus with the Network	228
Measuring Network Socialization with Managers.....	230
High Levels of Socialization with Federal Policymakers.....	230
Socialization with CONABIO, Federal, and State Agencies.....	230
Measuring the Framing Choices of the Community.....	233
The Strategic Choice of Frames: Persuading Natural Resource Policymakers.....	233

Policy Preferences of the CBMMx Transnational Network	238
Focus on Community-Based Agriculture	238
SAGARPA, SEMARNAT, State Governments: Create Local Projects.....	239
Federal Government: Define Corridor Zones	240
Evaluating TAN Influence.....	241
Lack of Success in Defining Corridor Zones.....	241
Mixed Success in the Promotion of Sustainable Projects.....	242
The Loss of Legitimacy and Local Support for CBMMx Initiatives.....	245
Conclusion	249
Monitoring Under Low Consensus.....	252
5. EGYPT AND THE MIGRATORY SOARING BIRDS PROJECT.....	265
Introduction.....	265
Overview of Threats to the Rift Valley/Red Sea Flyway	266
Tensions in National Economic Development	270
Identifying the Social Actors Involved in Biodiversity Management	271
Environmental Management: The MSEA/EEAA and Subordinate Agencies.....	271
The Governorates and Municipal Management.....	273
The Tourist Development Authority and the Military	274

Political Centralization and Institutional Distortion	276
Transnational Mobilization around the Red Sea/Rift Valley Flyway	277
The Emergence of the MSB TAN and Policy Advocacy through the Development of the Project	278
The Emergence of a Network Concerned about MSB Management.....	278
Creation of the MSB Project.....	282
Centralization of Authority and the Management of the Project	284
The Creation of the NCE as the Site of Transnational Activism.....	285
Maintaining the Network	286
Measuring Consensus Within the Network	288
Lack of Consensus within the MSB TAN	288
Measuring Network Socialization with Managers.....	290
Barriers to Communication in Egypt	290
Measuring the Framing Choices of the Community.....	293
The Strategic Choice of Frames: Persuading Natural Resource Policymakers.....	293
Policy Preferences of the CBMMx Transnational Network	295
Shifting from Site-Specific Management to Sectoral Approaches	295
Improving Protected Areas Management	296
Reforming Tourism and Promoting Ecotourism.....	297

Energy Management	299
Evaluating TAN Influence.....	300
Lack of Success in Influencing Protected Areas Management.....	300
Minimal Success in Promoting Tourist Reform	303
Integrate Biodiversity with Energy Management	304
Conclusion	305
Implications for Effective Environmental Governance	307
6. INSTITUTIONAL DESIGN ANALYSIS.....	317
Introduction.....	317
The Explanatory Power of International Institutions.....	319
Constraining State Behavior	319
Designing Effective Institutions	320
Concern	322
Capacity Building	323
Contractual Environment	324
The Role of the Global Civil Society.....	325
Comparing Regimes: Variation in Project Embeddedness	326
Regime Design: the CBD and the GEF	328
Concern	328

Capacity	331
Contractual Environment	334
Jamaica and Cockpit Country Management	336
Concern	337
Capacity	340
Contractual Environment	341
Mexico and the Mesoamerican Reef System	341
Concern	342
Capacity	344
Contractual Environment	346
Mexico and the Corredor Biológico Mesoamericano	347
Concern	348
Capacity	349
Contractual Environment	349
Egypt and the Management of Migratory Soaring Birds	350
Concern	351
Capacity Building	354
Contractual Environment	356
Comparing the Embeddedness of Projects in International Institutions	359

The Implications of International Institutions.....	359
Ranking Observed Variation.....	361
Assessing the Institutional Explanation.....	363
Conclusion	366
7. CONCLUSION.....	376
Non-State Actors, Transnational Networks, and Governance	376
Hypotheses: TANs and Domestic Politics in LDCs	377
The Results.....	379
An Overview of the Conclusions.....	379
Comparing the Cases: The Jamaican Cockpit Country	380
Mexico and the Mesoamerican Barrier Reef	381
Mexico and the Mesoamerican Biological Corridor.....	383
Influential Causal Variables: Consensus and Socialization.....	383
Consensus, TANs and Epistemic Communities	384
Consensus Is Not Enough: the Importance of Socialization.....	387
The Role of Democracy in Fostering Socialization.....	389
Egypt and the Red Sea/Rift Valley Flyway	389
Theoretical and Practical Implications.....	390
Implications for Theory: Disaggregating Influence.....	390

Implications for Policy: Rethinking the Link between Biodiversity and Economics.....	393
Specific Recommendations for Policy and Practice	396
Restrict the Focus of Transnational Research.....	396
Institutional Empowerment of Transnational Knowledge.....	399
Improving the Level of Socialization	400
Technocracy versus Democracy?	402
BIBLIOGRAPHY.....	405

LIST OF TABLES

Table	Page
1.1 Multiple Levels of Knowledge.....	41
2.1 List of Policymakers in Jamaica.....	114
2.2 List of Jamaican Epistemic Community Members.....	115
2.3 Summary of Observed and Predicted Outcomes in Cockpit Country Advocacy.....	116
3.1 List of Reef Policy Makers.....	199
3.2 Partial List of Epistemic Community Members.....	200
3.3 Summary of Observed and Predicted Outcomes in Mesoamerican Reef Advocacy.....	201
4.1 List of CBMMx Policy Makers.....	256
4.2 Partial List of TAN Organizations.....	257
4.3 Summary of Observed and Predicted Outcomes in the CBMMx.....	258
5.1 List of MSB Policy Makers.....	310
5.2 List of TAN Members in the MSB Project.....	311
5.3 Summary of Observed and Predicted Outcomes in MSB Advocacy.....	312
6.1 Summary Impact of Institutions on Cockpit Country Management.....	371
6.2 Summary Impact of Institutions on SAM Management.....	372
6.3 Summary Impact of Institutions on CBMMx Management.....	373
6.4 Summary Impact of Institutions on MSB Management.....	374

LIST OF FIGURES

Figure	Page
1.1 Map of the Jamaican Cockpit Country.....	42
1.2 Map of the Mesoamerican Reef Region.....	43
1.3 Map of the Mesoamerican Biological Corridor – Mexico.....	44
1.4 Map of the Red Sea Valley/Rift Flyway.....	45
2.1 Map of Bauxite Deposits in the Cockpit Country.....	117
2.2 Map of Forest Reserves in the Cockpit Country.....	118
2.3 Revised Epistemic Community Cockpit Country Map.....	119
2.4 Diagram of Epistemic Community Links in Jamaica.....	120
3.1 Map of WWF Defined Ecoregion.....	202
3.2 Graph of Declining Populations.....	203
3.3 Effect of Erosion on Hotel Construction.....	204
3.4 Diagram of Mesoamerican Reef Epistemic Community Links.....	205
4.1 Diagram of CBMMx Agencies.....	259
4.2 1995 Map of Relevant Protected Areas to CBMMx According to Los Amigos, Including Areas in Tabasco.....	260
4.3 1996 Proposal from WCS Including Zones on the West Coast of Campeche, Tabasco, Northern Third of Quintana Roo.....	261
4.4 2000 CONABIO Final Selection, Having Removed Zones in West Campeche, Northern Third of Q. Roo, and Tabasco.....	262
4.5 2006 Proposed Elements of Mesoamerican Biological Corridor from the World Resources Institute, Based on 1996 WCS Proposal.....	263
4.6 Diagram of TAN Links.....	264

5.1 Map of Governorates of Egypt.....	313
5.2 Protectorates in Egypt, est. 1997 Land Utilization Map.....	314
5.3 Map of BLI Registered IBAs.....	315
5.4 Diagram of MSB TAN Links.....	316
6.1 Map of Neovolcanic Zone in Mexico.....	375

LIST OF ABBREVIATIONS

AEWA	African Eurasian Waterbird Agreement
AGRRA	Atlantic Gulf Reef Rapid Assessment
AMP	<i>Área Marina Protegida</i>
ANP	<i>Área Natural Protegida</i>
BLI	Birdlife International
CBD	Convention on Biological Diversity
CBMMx	<i>Corredor Biológico Mesoamericano - México</i>
CMS	Convention on Migratory Species
CONABIO	<i>Comisión Nacional para el Conocimiento y Uso de la Biodiversidad</i>
CONAFOR	<i>Comisión Nacional Forestal</i>
CONANP	<i>Comisión Nacional de Áreas Naturales Protegidas</i>
CONAPESCA	<i>Comisión Nacional de la Pesca</i>
COP	Conference of the Parties
ECOSUR	<i>El Colegio de la Frontera Sur</i>
GEF	Global Environment Facility
IBA	Important Bird Area
ICRAN	International Coral Reef Action Network
ICRI	International Coral Reef Initiative
ICZM	Integrated Coastal Zone Management
IUCN	World Conservation Union

JB I	Jamaica Bauxite Industry
LDC	Less Developed Country
MSB	Migratory Soaring Bird
MSEA/EEAA	Ministry of State for Environmental Affairs/Egyptian Environmental Affairs Agency
NCE	Nature Conservation Egypt
NCS	Nature Conservation Sectors
NEPA	National Environment Protection Agency
PMS	<i>Programa de Monitoreo Sinóptico</i>
SEDUMA	Secretaría de Desarrollo Urbano y Medio Ambiente
SEDETUR	<i>Secretaría de Turismo</i>
SEMARNAT	Secretaría de Manejo Ambiental y Recursos Naturales
SAGARPA	<i>Secretaría de Ganadería, Agricultura, Desarrollo Rural, y Pesquería</i>
SAM	<i>Sistema Arrecifal Mesoamericano</i>
TAN	Transnational Advocacy Network
TNC	The Nature Conservancy
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UQROO	<i>Universidad de Quintana Roo</i>
UWI	University of the West Indies
WWF	World Wildlife Fund for Nature
ZFMT	<i>Zona Federal Marítimo Terrestre</i>

CHAPTER 1
INTRODUCTION: ECONOMY, BIODIVERSITY AND EPISTEMIC
COMMUNITIES

Introduction

Global environmental governance is a product not only of representatives of governments acting in what they perceive of as their national interest, but also of non-state actors acting in the interest of what they consider to be globally applicable norms. Scholars such as Khagram,¹ Wapner,² Keck and Sikkink,³ and Haas⁴ point out that non-state actors can influence the conduct of international environmental treaties and global management frameworks when they persuade policymakers and governmental representatives that a particular course of action is appropriate in a given context. Further, these scholars note that this persuasive capacity does not only depend on marshaling material resources. Transnational corporations (TNCs) may have profit margins that exceed the GDP of small states, but environmental non-governmental organizations (ENGOS) have to rely on carefully chosen arguments to convince

¹ Sanjeev Khagram, 2004, *Dams and Development: Transnational Struggles for Water and Power* (New York: Cornell University Press)

² See Paul Wapner, 1996, *Environmental Activism and World Civic Politics* (New York: SUNY Press)

³ Margaret Keck and Kathryn Sikkink, 1998 *Activists Beyond Borders* (Ithaca, New York: Cornell University Press)

⁴ Peter Haas 1992. Introduction: epistemic communities and international policy coordination. *International Organization* 46: 1-35

policymakers to act in a certain manner.

Recognizing the potential impact of non-state actors on environmental governance, institutions in the UN constellation have reiterated calls made in Agenda 21 that civil society actors be included in global governance efforts. For example, UNESCO has called for the inclusion of the civil society in the management of Biosphere Reserves, both on functional grounds, as civil society actors may serve as potential sources of expertise, and normative grounds, to improve the democratic nature of policymaking.⁵ The Global Environment Facility (GEF),⁶ created to foster environmental capacity and will in LDCs, likewise asserts that non-state actors should play a role in managing biodiversity at the grassroots level.

Of course, that non-state actors advocate for their internally held ideas about appropriate management does not mean that they will be successful. Formal inclusion in stakeholder processes may obscure the fact that authority over environmental policymaking remains concentrated in state hands. Government agencies are under no obligation to listen to the recommendations of the civil society, and may jealously guard their authority over policymaking. If non-state actors matter in global environmental governance, under what conditions and when are they most likely to do so?

⁵ See, e.g., UNESCO, 2006, *Biosphere Reserves: Biodiversity and Stakeholders*.

Available online at <http://unesdoc.unesco.org/images/0014/001465/146566e.pdf>

⁶ The GEF was created between 1990 – 1992 as a funding mechanism to LDCs, to foster compliance with several internationally important environmental goals, including biodiversity conservation, ozone depletion, and land degradation. As a result, it was made the official funding mechanism for several multilateral environmental agreement (MEAs), including the CBD.

This research is particularly interested in the impact of non-state actors on environmental policymaking and governance in less developed countries (LDCs) for two related reasons. First, certain global environmental problems, such as deforestation, biodiversity loss, water access issues and desertification are manifested almost exclusively within the developing world.⁷ Moreover, these problem areas can generally be managed unilaterally, distinguishing them from transboundary and global environmental issues such as acid rain, ozone depletion and transnational waste movement, which require that regulatory policies be coordinated internationally. As a result, effective management of these problems will depend strongly on persuading LDC governments to implement meaningful environmental reforms.

Second, it is suggested that the environmental problems faced by developing countries, in conjunction with their position in the global production of capital, has led to a situation in which LDC governments are only going to respond to very specific arguments for environmental management. In particular, arguments that highlight the potential for national economic development are likely to be more persuasive to LDC policymakers. This research investigates the efforts of transnational activists in developing countries to determine whether non-state actors are constrained by the need to

⁷ See *inter alia*, Marc Williams, 2005, The Third World and Global Environmental Negotiations: Interests, Institutions and Ideas (*Global Environmental Politics*, 5: 48 – 69); Adil Najam, 2004, Dynamics of the Southern Collective: Developing Countries in Desertification Negotiations (*Global Environmental Politics*, 4: 128 – 154); Susan Sell, 1996, North-South Environmental Bargaining: Ozone, Climate Change and Biodiversity (*Global Governance*, 2: 97 – 118) pp. 110. See in particular, Marian Miller, 1995, *The Third World in Global Environmental Politics*, (Colorado: Lynne Rienner) for a discussion of the Third World as a negotiating bloc in global biodiversity governance.

appeal to economics to promote better environmental behavior.

Less Developed Countries, the Environment, and Development

The idea that LDCs have a particular relationship to the environment and to development was made internationally prominent in the early 1970s. In the lead up to the 1972 Stockholm Conference, Maurice Strong and 26 experts from developing countries published the *Founex Report*, in which they argued that the environmental problems of less developed countries (LDCs) were fundamentally different from those of highly industrialized countries (HICs). In brief, LDCs face structural factors that differentiate them from HICs.

First, the environmental problems of immediate consequence to LDCs are not generally those receiving most attention in the international arena. Rather than confronting global “green” environmental issues such as biodiversity loss, ozone depletion and transboundary acid rain, the pressing environmental issues facing LDCs are predominately those associated with local, “brown” developmental problems, such as access to sanitary drinking water, communicable diseases and a chronic lack of adequate housing,⁸ all of which are exacerbated or caused by poverty, technological disadvantages

⁸ Dana R. Fisher and Jessica F. Green, 2004, Understanding Disenfranchisement: Civil Society and Developing Countries’ Influence and Participation in Global Governance for Sustainable Development (*Global Environmental Politics*, 4: 65 – 84) pp. 68; Adil Najam, 2004, Dynamics of the Southern Collective: Developing Countries in Desertification Negotiations (*Global Environmental Politics* 4: 128 – 154); Jordi Diez and O. P. Dwivedi, 2008, *Global Environmental Challenges: Perspectives from the Global South* (Broadview Press); Roberts and Parks in 2007, *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* (Cambridge: MIT Press)..

and low capital development. Currently, the Millennium Development Goals, drafted in 2000 as a blueprint for eradicating global poverty, explicitly links underdevelopment to environmental problems endemic to LDCs.

Second, global environmental problems such as climate change, transboundary acidification and ozone depletion, are predominantly the result of action taken by HICs during the era of industrialization.⁹ LDCs that do experience negative externalities of these problems, for example the low-lying Maldives and poverty-stricken coastal Bangladesh, both vulnerable to climatic disruptions and rising oceanic levels, are suffering from the poor environmental behavior of other, richer states. Poor states are also less likely to be able to mitigate environmental catastrophe. Global environmental governance then takes on strong undertones of injustice, as LDCs bear a disproportionate burden of the costs of management.¹⁰

Third, in the practice of international politics, LDCs tend to be disenfranchised. Environmental governance is generally dominated by HICs, either because international institutions, such as the World Bank, are dominated by HICs, or because negotiations

⁹ CFCs are historically concentrated in: the United States, which produced about half of global CFCs in the 1970s; the UK; France; Germany; Italy; and the Netherlands. See Peter Haas et al, eds., *Institutions for the Earth*, pp. 29. There are also some natural sources of atmospheric chlorine. NASA identifies volcanic eruptions as contributing to this factor, but notes that anthropogenic sources comprises at least 75% of chlorine in the atmosphere, NASA, *Major and Minor Sources of Stratospheric Chlorine*, 2001, retrieved April 2006 from <http://www.nasa.gov/About/Education/Ozone/depletion.html>

¹⁰ Roberts and Parks in 2007, *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* (Cambridge: MIT Press)

require a level of expertise and technical knowledge beyond the reach of most LDCs.¹¹

Fourth, many of the environmental problems associated with LDCs are ostensibly solvable by industrial development. As countries become richer and more industrialized, they will better be able to reduce domestic environmental vulnerability, and respond to pressing issues such as water access and housing problems. Therefore, LDC governments would arguably be better served by focusing on domestic economic development to address the “poverty, malnutrition, illiteracy and sheer misery”¹² characterizing domestic natural resource use, rather than spending scarce resources on assisting the international society to address ‘global’ environmental problems.

Fifth, LDCs are highly indebted. The pressure of debt-servicing in the global South, as well as the dependence of these countries on the export of agricultural commodities means that LDCs are stuck in a perpetual game of ‘catch-up’ to the model of development exemplified by the developed world. This contributes to further subordination of the environment to development, as LDCS attempt to solve their economic problems and address chronic underdevelopment by increasing the stress on their production of primary goods and agriculture.¹³

¹¹ Roberts and Parks, 2007, *A Climate of Injustice*

¹² Margaret Biswas and Asit K. Biswas, 1982, Environment and Sustained Development in the Third World: A Review of the Past Decade (*Third World Quarterly* 4 (3): 479 – 491) pp. 484.

¹³ Lawrence Susskind, *Environmental Diplomacy: Negotiating More Effective Global Agreements* (New York: Oxford University Press, 1994) pp. 19. This situation is neither ecologically nor politically sustainable in the long term. The 1987 WCED Report noted the interplay of global markets and the comparative disadvantage of LDCs in the international capital markets by observing that “economic policies of some major

The combination of these factors means that environmental management in LDCs poses significant opportunity costs to governments. Curbing deforestation or addressing biodiversity loss might be environmentally friendly at the global level, but at a domestic cost for LDCs, which have to limit, *inter alia*, road construction, agricultural expansion and the construction of living areas for a growing population.¹⁴ Given these economic and environmental pressures, one concern is that attempts to promote environmentally friendly ideas and behavior will be constrained by the overwhelming concern of LDC governments to promote short-term growth, almost always by exploiting natural resources. Can transnational civil society networks persuade policymakers in LDCs to adopt environmentally friendly ideas, particularly when the benefits of managing goods like biodiversity are diffused globally and the costs concentrated domestically? Can ideas about environmentalism prevail over the economic developmental concerns of LDCs?

The Role of Ideas in International Relations

By focusing on the use of ideas and persuasion to shape state behavior and governance, this research takes a constructivist approach to explaining international relations. In short, constructivism asserts that ideas deployed by non-state actors can

industrial countries had depressed and destabilized the international economy, which aggravated these pressures on developing countries,” cited in Steven Bernstein 2001, *The Compromise of Liberal Environmentalism* pp. 65

¹⁴ See Steven Bernstein, 2001. *The Compromise of Liberal Environmentalism*; Marian Miller, 1995. *The Third World in Global Environmental Politics*. Colorado: Lynne Reiner Publishers; Phillip Fearnside, 1986; *Human Capacity of the Brazilian Rainforest*; Columbia University Press, New York

shape behavior by precluding or endorsing certain policy options. This diverges from much of traditional IR which limits the study of causal variables to the distribution of military capabilities and other material resources among unitary actors (almost always states) with fixed, definable interests.

The kinds of ideas deemed consequential in constructivism may vary. Causal arguments may clarify that certain actions will result in outcomes that are harmful to existing interests. Norms, or ideas about appropriate behavior by a specific group of actors in a given context, may indicate that certain actions are simply inappropriate.

In political science, the power of ideas has been used to explain several prominent international outcomes. The downfall of the Soviet Union; international support for sanctions against apartheid South Africa; the stability of the international currency regime; the tendency of states to create meaningless but costly institutions for environmental governance; and global reluctance to use nuclear weapons have all been attributed to the responses of states to internationally held norms, rather than to changes in material conditions. The Soviet Empire was brought down by internal conflicts between the ideas of democratic capitalism and Soviet statism, not by changes in the distribution of military power between the two poles.¹⁵ The international society, including the US and the UK, both of which had economic ties to South Africa, imposed crippling sanctions against the apartheid regime to protest the idea of institutionalized

¹⁵ See Thomas Risse-Kappen, 1994. Ideas do not Float Freely: transnational coalitions, domestic structures, and the end of the cold war. *International Organization* 48: 185-214; Frederking, Brian. 2000. *Resolving Security Dilemmas: A Constructivist Explanation of the INF Treaty* (Ashgate)

racial hierarchy.¹⁶ Despite the decline of US hegemony and the loss of the gold standard, the international system of states maintained internationally stable trade through the principle of competitive currency devaluation.¹⁷ States have adopted a norm of environmental multilateralism, and thus create treaties and institutions to address problems such as global deforestation, even when there is no additional problem-solving capacity gained by doing so.¹⁸ Although contemporary conventional weapons may exceed the destructive power of nuclear weapons, international revulsion against using nukes has meant a de facto 65-year ban on their use, despite the eruption of several military conflicts in that time-span.¹⁹ In all of these examples, norms affected how states behaved.

Constructivism, Networks, and Global Environmental Governance

This research continues in the tradition of constructivism by attempting to explain when norms matter, what kinds of norms matter, and identify which actors deploy norms

¹⁶ See Audie Klotz, 1995. *Norms in International Relations: The Struggle Against Apartheid* (Cornell University Press); Audie Klotz, 2002, Transnational Activism and Global Transformations: The Anti-Apartheid and Abolitionist Experiences. (*European Journal of International Relations* 8 (1): 49 – 76).

¹⁷ John G. Ruggie. 1982, International Regimes, Transactions, and Change: Embedded Liberalism in the Postwar Economic System (*International Organization* 36 (2): 379-415).

¹⁸ Radoslav Dimitrov, 2005, Hostage to Norms: States, Institutions and Global Forest Politics (*Global Environmental Politics*, 5: 1 – 24)

¹⁹ See Richard Price and Nina Tannenwald, 1996. Norms and Deterrence: the Nuclear and Chemical Weapons Taboos. In Peter Katzenstein, ed., *The Culture of National Security*. New York: Columbia University Press

to constrain behavior. To be sure, some constructivist approaches restrict the study of relevant actors to focus on the state.²⁰ However, this research is developed from existing approaches that focus on the role of non-state actors known as *transnational advocacy networks* (TANs), loosely-organized coalitions of “actors working internationally on an issue, who are bound together by shared values, a common discourse, and dense exchange of information and services.”²¹

TANs have been instrumental in several instances of global environmental governance. Existing studies point out that TANs have: persuaded Brazilian policymakers and the World Bank to endorse environmental impact assessments of Amazonian development on indigenous communities;²² lobbied states to push for the adoption of a moratorium on commercial whaling in the International Whaling Convention (IWC);²³ convinced the World Bank to allow independent review of the

²⁰ See Alexander Wendt, 1992. Anarchy is What States Make of it. *International Organization* 46, 2; Alexander Wendt, 1999. *Social Theory of International Politics*. New York Cambridge University Press.

²¹ Margaret Keck and Kathryn Sikkink, 1998 *Activists Beyond Borders* (Ithaca, New York: Cornell University Press) pp. 2. As networks oriented around a shared purpose, one not based on national loyalties, TANs challenge the primacy of the sovereign nation-state as the primary organizing principle of relevant action in international politics. Some scholars however, such as Lucy Ford, are critical of the idea that the global civil society represents a fundamental change in the ordering of power and preferences in global governance. Rather, they argue, the global civil society reproduces the same divisions of labor and international hierarchy (2003, Challenging Global Environmental Governance: Social Movement Agency and Global Civil Society, *Global Environmental Politics* 3 (2): 120 – 134).

²² María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics* (Ithaca: SUNY).

²³ Tora Skodvin and Steinar Andresen, 2004, Non-state Influence in the International

environmental and social impact of dams in India;²⁴ assisted states to negotiate the UN Convention on the Law of the Seas;²⁵ and persuaded consumers in Western Europe to boycott Shell in protest against deep sea disposal of oil storage structures.²⁶

These cases demonstrate the dynamic, multilevel activity of TANs. They may shape international outcomes by constraining the language and negotiation of international treaties, influencing the mandates of international organizations, or by influencing the behavior of other politically significant transnational non-state actors, who then shape state behavior from the ground up by domestic, grassroots activism.²⁷

Epistemic Communities

In explaining how TANs generate norms and persuade target audiences to change behavior, this research relies strongly on the *epistemic communities* approach. *Epistemic communities* are knowledge-based networks of individuals who are recognized as experts

Whaling Convention, 1970 – 1990 (*Global Environmental Politics*, 3: 61 – 86).

²⁴ Sanjeev Khagram, 2004, *Dams and Development: Transnational Struggles for Water and Power* (New York: Cornell University Press)

²⁵ Ralph B. Levering, 1997, *Brokering the Law of the Sea Treaty, Transnational Social Movements and Global Politics* (Syracuse: Syracuse University Press). See also the discussion of environmental TANs in chapter 4 of Margaret Keck and Kathryn Sikkink. 1998. *Activists Beyond Borders*. (Ithaca, New York: Cornell University Press).

²⁶ Paula Owen and Tony Rice, 1999, *Decommissioning the Brent Spar* (F&N Spon Press).

²⁷ See Paul Wapner, 1996, *Environmental Activism and World Civic Politics* (New York: SUNY Press) for a discussion of the various levels of engagement (both at the state and sub-state levels) of global civil society actors, such as TANs.

in one field of research, and who share a consensus on: causal beliefs; normative concerns; appropriate policy recommendations; and scientific validity claims.²⁸ Keck and Sikkink indicate that epistemic communities are different from TANs by distinguishing the principled ideas held by TANs from the shared causal ideas driving epistemic community action, and by arguing that TANs rely on interpretation and meaning, whereas epistemic communities do not.²⁹ However, it is not clear that there is a decisive difference between the two categories of networks. Both Haas³⁰ and Litfin³¹ point out that epistemic communities deliberately selected certain cognitive models to interpret data, understand problems and explain complex processes to policymakers negotiating a treaty to curb ozone depletion. Further, Litfin, Haas and Karvonen and Brand³² assert that epistemic communities are also motivated by principled beliefs and

²⁸ Peter Haas 1989. Do Regimes Matter?: Epistemic Communities and Mediterranean Pollution Control. *International Organization* 43: 377-403; Peter Haas 1992. Introduction: epistemic communities and international policy coordination. *International Organization* 46: 1-35; Steven Bernstein 2001. *The Compromise of Liberal Environmentalism*. Chichester, New York: Columbia University Press; Radoslav Dimitrov 2003. Knowledge, Power and Interests in Environmental Regime Formation. *International Studies Quarterly* 47: 123 – 150;

²⁹ Margaret Keck and Kathryn Sikkink. 1998. *Activists Beyond Borders*. Ithaca, New York: Cornell University Press pp. 30.

³⁰ Peter Haas, 1992, Banning Chlorofluorocarbons: epistemic community efforts to protect stratospheric ozone, in Peter Haas, ed., *Knowledge, Power and International Policy Coordination* (South Carolina: University of South Carolina Press, pp. 187 - 224)

³¹ Karen Litfin 1994. *Ozone Discourses*. New York: Columbia University Press

³² Andrew Karvonen and Ralf Brand, 2009, Technical Expertise, Sustainability, and the Politics of Specialized Knowledge, (in Gabriela Kutting and Ronnie D. Lipschultz, ed., *Environmental Governance: Power and Knowledge in a Local-Global World*, New York: Routledge).

Khagram, Riker and Sikkink indicate that epistemic communities may constitute important actors in broader transnational networks.³³ Finally, principled networks often use scientific knowledge to buttress their policy claims.³⁴ This dissertation will treat epistemic communities as a particular subset of transnational networks by virtue of the fact that, while consensually held scientific knowledge is an important constitutive element in epistemic communities, they nevertheless share features with TANs, including shared principles that transcend national identity.

The use of consensually validated scientific knowledge distinguishes epistemic community action from other kinds of TANs, as moral claims, unlike scientific reasoning, do not rely on hypothesis testing and the validation of causal relationships pertinent to an emerging problem.³⁵ The fields of expertise of epistemic communities include natural science, but these networks may be comprised of social scientists, including economists and legal scholars.³⁶

³³ Sanjeev Khagram, James V. Riker and Kathryn Sikkink, 2002, *From Santiago to Seattle*, in *Restructuring World Politics: Transnational Social Movements, Networks and Norms* (Minneapolis: University of Minnesota Press).

³⁴ Tony Rice and Paula Owen, 1999. *Decommissioning the Brent Spar*. London: E & FN Spon; MJ Peterson, 1992, Whalers, Cetologists, Environmentalists and the International Management of Whaling (*International Organization* 46: 146 – 186).

³⁵ Peter Haas, Policy Knowledge: Epistemic Communities. In Smelser, Neil and Paul Bates eds, *International Encyclopedia of the Social and Behavioral Sciences*. New York. See also Audie Klotz, 2002. Transnational Activism and Global Transformations: The Anti-Apartheid and Abolitionist Experiences. *European Journal of International Relations* 8 (1): 49 – 76; “...scientific expertise and [purely] principled ideas are not the same... epistemic communities are not moral movements” (pp. 52).

³⁶ See for example John Ruggie’s book on the spread of “embedded liberalism” in international markets in the post World War II era for an example of an economic

Scientific reasoning and shared causal beliefs not only distinguish epistemic communities from other kinds of advocacy networks, but also are the causal mechanisms by which epistemic communities shape environmental governance. Scientific knowledge claims are commonly seen as ‘objective,’ ‘competent,’ and ‘valid,’ and science portrayed as derived from a “permanent, ahistorical” truth.³⁷ It should be noted, however, that the perceived objective, impartial nature of science, while generally accepted by the lay public, is often contested by academics, analysts and advocates.³⁸ Nevertheless, the perception of scientific consensus reduces uncertainty, de-legitimizes competing claims, and clarifies appropriate courses of action.³⁹ When science-based communities generate a consensus about causal relationships in a problem area, they have a powerful cognitive tool to convince target audiences, including state policymakers, corporations, and

epistemic community. John Ruggie, 1998. *Constructing World Polity*. Routledge

³⁷ See Steinar Andresen et al 2000. *Science and Politics in International Environmental Regimes*. New York: Manchester University Press; Radoslav Dimitrov 2003. Knowledge, Power and Interests in Environmental Regime Formation; Margaret Keck and Kathryn Sikkink 1998. *Activists Beyond Borders*.

³⁸ For approaches critical of the idea of science as impartial, see Karen Litfin 1994. *Ozone Discourses*. New York: Columbia University Press pp. 24; Andrew Karvonen and Ralf Brand, 2009, Technical Expertise, Sustainability, and the Politics of Specialized Knowledge, (in Gabriela Kutting and Ronnie D. Lipschultz, ed., *Environmental Governance: Power and Knowledge in a Local-Global World*, New York: Routledge). These critical approaches are particularly concerned about the authority accorded to scientific knowledge, particularly since doing so privileges one value set at the expense of others.

³⁹ Steinar Andresen et al, 2000, *Science and Politics in International Environmental Regimes*; Radoslav Dimitrov 2003. Knowledge, Power and Interests in Environmental Regime Formation; Peter Haas 1992 Introduction: epistemic communities and international policy coordination; Margaret Keck and Kathryn Sikkink 1998; Thomas (2003).

secretariats of international institutions to adopt a certain understanding of the world and act appropriately.

At the same time, networks motivated by principled beliefs may yet play an important role in the advocacy efforts of epistemic communities. Principled networks can provide financial, political and intellectual support to emerging epistemic communities, all of which may improve the ability of these knowledge-based networks to generate credible, up-to-date information.

The epistemic communities approach has been applied to explain several instances of global environmental governance. The development of the UN Economic Commission for Europe's convention on Long Range Transboundary Air Pollution (LRTAP),⁴⁰ the creation of a Mediterranean Action Plan to manage oil pollution,⁴¹ and the negotiation of the regulatory Montreal Protocol of the Vienna Convention on the Protection of the Ozone Layer⁴² have been attributed to efforts networks of scientific researchers to persuade target audiences of the need to modify behavior to an emerging problem. Though the particulars differed, the causal explanation in each case was that a

⁴⁰ Levy, M.A. 1993, European Acid Rain: The Power of Tote-Board Diplomacy, in P.M. Haas, R.O. Keohane and M.A. Levy (eds) *Institutions for the Earth: Sources of Effective International Environmental Protection*, (Cambridge, MA: MIT Press) pp. 75 – 132; J. Wettestad, 1997, Acid Lessons? LRTAP Implementation and Effectiveness (*Global Environmental Change* 7(3): 235–249).

⁴¹ Peter Haas, 1990, *Saving the Mediterranean* (New York: Columbia University Press); Peter Haas, 1989, Do Regimes Matter: Epistemic Communities and Mediterranean Pollution Control. (*International Organization* 43: 377-403).

⁴² Peter Haas, 1992, Banning Chlorofluorocarbons: epistemic community efforts to protect stratospheric ozone, in Peter Haas, ed., *Knowledge, Power and International Policy Coordination* (South Carolina: University of South Carolina Press, pp. 187 - 224)

scientific consensus among a network of publicly recognized experts was used to persuade policymakers to implement policy in accordance with the conclusions derived from the arguments of the experts.⁴³

Issue-framing and the Socio-Political Context of Knowledge

At the same time, the success of epistemic communities depends on more than getting the science right. While scientific authority is an important cognitive tool available to epistemic communities, civil society networks nevertheless have to persuade target audiences, whether policymakers or CEOs, that their claims are salient, and that their interests are congruent with the pre-existing interests of managers.⁴⁴ This requires that epistemic communities and TANs negotiate the social and political norms in which they operate, as causal arguments that violate institutionalized norms will be dismissed by target audiences, even if the underlying science is valid.⁴⁵ It is this need to appeal to domestic norms that suggests that epistemic communities will have to frame their arguments in language that is likely to appeal to the worldview of managers.

⁴³ See among others: Steinar Andresen et al, *Science and Politics in International Environmental Regimes* (New York: Manchester University Press, 2001); William C. Clark et al, 2003, Acid Rain, Ozone Depletion, and Climate Change; Miranda Schreurs et al, 2003, Issue Attention, Framing and Actors; Radoslav Dimitrov, 2003, Knowledge, Power, and Interests in Environmental Regime Formation (*International Studies Quarterly* 47).

⁴⁴ Amitav Acharya, 2004, How Ideas Spread: Whose Norms Matter? Norm Localization and Institutional Change in Asian Regionalism (*International Organization* 58: 239 – 275).

⁴⁵ Steven Bernstein, 2001, *The Compromise of Liberal Environmentalism*.

In discussing the success of a transnational epistemic community in persuading policymakers to adopt international regulations on ozone management, Karen Litfin points out that skillful issue-framing, as much as scientific credibility played a significant role. Prior to 1986, there was no international support for a strong regulatory regime to curb the production and consumption of ozone depleting substances (ODSs).⁴⁶ Uncertainty over the rates of increased ozone loss from additional emissions of ODSs, and an approach that discussed ecological and human effects of ozone depletion led to little agreement among experts on what the significance of ozone loss was.

However, between 1986 and 1987, scientists linked the discovery of an anomaly in the ozone layer over the Antarctic with a change in the perception of the problem to focus on stratospheric chlorine loading and increased skin cancer rates. With this model of the problem, scientists then suggested that “...something unprecedented and potentially catastrophic was happening in the stratosphere.”⁴⁷ This normative interpretation of the problem led to greater support from US Congressmen for a stronger international approach to ozone governance, and eventual adoption of the regulatory

⁴⁶ As a result, the negotiated regime was a framework treaty, the 1985 Vienna Convention, which committed Parties only to further study of the relationship to anthropogenic chlorine and stratospheric ozone.

⁴⁷ Karen Litfin, *Ozone Discourses* pp. 139. Other potential environmental consequences observable as a result of ozone depletion are: disruption of the oceanic food cycle, a decrease in the productivity of terrestrial agriculture, and an increase in the degradation of synthetic materials. See Karen Litfin, *Ozone Discourses* (Columbia University Press: New York, 1994); Steinar Andresen et al., *Science and Politics in International Environmental Regimes*. (New York: Manchester University Press, 2000); William Clark et al, 2001, Acid Rain, Ozone Depletion and Climate Change, p. 38. Haas et al, *Institutions for the Earth*, passim.

Montreal Protocol.

The strategic change in the description of the problem of ozone depletion suggests that the ability to choose appropriate *frames* (or the set of metaphors, symbolic representations, and cognitive cues used to interpret an issue, provide a rationale for action, and mobilize support)⁴⁸ is an additional important cognitive tool increasing the success of scientific arguments. By extension, when emerging problem areas are framed in such a way as to resonate with the predetermined interests and institutionalized norms of target audiences, managers are more likely to self-identify as potential stakeholders, and internalize the arguments presented.⁴⁹

Economics, Politics, and Management in Developing Countries

If frames and institutionalized norms affect how knowledge is propagated by non-state norm entrepreneurs, then one concern about environmental management in LDCs is that institutionalized economic norms will constrain the propagation of environmental arguments. In other words, environmental management in LDCs may be limited by the norms and historical development particular to the developing world. This dissertation investigates this concern by testing the hypothesis: H1: transnational advocacy networks

⁴⁸ Doug McAdam, John D. McCarthy and Mayer N. Zald, ed. 1996. *Comparative Perspectives on Social Movements* (New York: Cambridge University Press).

⁴⁹ Ronald B. Mitchell, William C. Clark, and David Cash, 2006, Information and Influence, in Mitchell, Cash and Clark, eds., *Global Environmental Assessments: Information and Influence* (Cambridge: MIT Press), p. 310

must frame environmental policy as relevant to national economic development in order to influence LDC governments. Focusing on national economic development encourages advocacy networks and other norm entrepreneurs to link environmental management to prominent, economic productive sectors. These vary across cases, and are described in more detail throughout.

Influence, Knowledge and Power

Influence is a function of power; networks exercise influence when they convince policymakers to take action that they ordinarily would not have. However, this knowledge-based view of power is not materialistic, nor is it manipulative in the sense that it is a product of networks convincing policymakers to act against their objectively determined interests.⁵⁰ From a constructivist perspective, interests are not fixed, but are constituted by norms, and hence subject to change in ways not entirely dependent on material realities. Thus, by exercising knowledge-based power, networks do more than bring problems to light. They attempt to negotiate meanings and shape the discourse around an emerging issue-area.⁵¹

As discussed in this research, the successful exercise of influence by networks

⁵⁰ See in particular, Karen Litfin, 1994, *Ozone Discourses*, pp. 15; Lukes' Third Face of power indicates that power is exercised by an actor A when A convinced B to take action contrary to B's objective interests.

⁵¹ Clark et al illustrate this iterated conception of influence in William C. Clark, Ronald B. Mitchell, and David W. Cash, 2006, Evaluating the Influence of Global Environmental Assessments (Chapter 1 in Roland B. Mitchell et al, eds. *Global Environmental Assessments: Information and Influence*. Cambridge: MIT Press) pp. 11.

means that policymakers will look to epistemic communities for information and theories, accept the conclusions drawn by scientists, and adopt the policy implications therein.⁵² Further, the frameworks used by policymakers to understand an emerging problem may also change, indicating a deeper level of influence. In practice, this means a concordance between the proposals made by networks and the policies and management approaches adopted by policymakers, provided that these represent a change from the previous manner of doing things. If the first hypothesis is correct, the influence of knowledge networks in LDCs will be sharply constrained by the need to appeal to national economic development norms, even if scientific consensus is present. Consequently, transnational activism in LDCs will be affected by different factors than activism in the industrialized world.

This hypothesis is tested in conjunction with additional tests of hypotheses drawn from the epistemic communities literature. As suggested above, the epistemic communities approach asserts that knowledge consensus is the causal variable through which networks generate influence. However, if issue-framing is sufficient to cause influence, then consensus may be unnecessary, a proposition which may undermine the epistemic communities approach. To determine whether consensus matters, this dissertation will also test the following hypothesis. H2: scientific consensus increases the influence of transnational advocacy networks.

Finally, tests of these hypotheses are carried out simultaneously with tests of the

⁵² See Steinar Andresen et al. 2000. *Science and Politics in International Environmental Regimes*, passim.

influence of socialization on learning. *Socialization* is the regular exchange of information and ideas between actors. It contributes to the development of shared perceptions among connected actors, and improves the chance that knowledge produced among interacting agents will be mutually accepted and legitimated.⁵³ Finally, socialization can promote *framing alignment*,⁵⁴ or the development of shared interests, values and beliefs between various groups.⁵⁵ Consequently, the literature on social processes and knowledge generation suggests the following hypothesis: H3: socialization increases the influence of transnational advocacy networks.

A Heuristic Approach to Hypothesis Testing

These hypotheses indicate that there are three independent variables that can

⁵³ See María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics: Transnational Advocacy Networks in Brazil, Ecuador, and India* (State University of New York); Roland B. Mitchell, 2006, Information and Influence (Chapter 11 in Roland B. Mitchell et al, eds. *Global Environmental Assessments: Information and Influence*. Cambridge: MIT Press).

⁵⁴ David Snow et al, 1986, Frame Alignment Processes, Micromobilization, and Movement Participation (*American Sociological Review*, 51: 464 – 481), pp. 464; Miranda Schreurs et al, 2001, Issue Attention, Framing and Actors, pp. 354; Mario Diani, 1996, Linking Mobilization Frames and Political Opportunities: Insights from Regional Populism in Italy (*American Sociological Review*, 61: 1053 – 1069).

⁵⁵ The idea that the frames adopted by a social advocacy network function to provide an internally consistent rationale for action is mentioned in sociological studies of social movements, for example in Mario Diani, 1996, Linking Mobilization Frames and Political Opportunities: Insights from Regional Populism in Italy (*American Sociological Review*, 61: 1053 – 1069), David Snow et al, 1986, Frame Alignment Processes, Micromobilization, and Movement Participation (*American Sociological Review*, 51, no. 4 (August) : pg. 464 – 481), as well as in previously mentioned political science studies of transnational social movements by Sanjeev Khagram, María Guadalupe Moog Rodrigues, and Margaret Keck and Kathryn Sikkink.

explain the success or failure of transnational network advocacy: issue-framing, knowledge consensus, and socialization. What will be investigated here is how these variables interact in the propagation of knowledge from advocacy networks to policymakers. Understanding how transnational networks function in LDCs will require multiple tests of these variables in order to determine which are sufficient and/or necessary. For example, if knowledge consensus is the only variable that corresponds with network influence in LDCs, then a narrowly-focused epistemic communities approach would suffice. This would undermine the argument that environmental advocacy in the developing world is subject to a particular economic logic. However, if variation in knowledge consensus does not correspond with influence, and the primary variable predicting influence is economic issue-framing, then this research would suggest that the primary factor increasing network influence in LDCs is not scientific coherence, but carefully chosen symbols and metaphors.

Of course, there are other possibilities, including the chance that the three independent variables: framing; consensus; and socialization, all interact together to lead to the dependent variable: network influence. Parsing the impact of these variables is best carried out by a heuristic investigation of network advocacy.

A heuristic approach is also sought in this case as the relationship in the literature between socialization, political openness and influence is ambiguous. In short, it is not clear if more or less political openness is conducive to socialization. This has implications for the study of activism in the developing world, since LDCs tend to be more politically closed systems.

On one hand, science should be credible. For science to be considered credible, the conclusions drawn should not be derived from an already-established political agenda, but rather based on a neutral (as far as possible) assessment of the facts at hand, as knowledge that is produced with a visible political bias is easier to delegitimize.⁵⁶ Scientific credibility is more likely to emerge in politically open states, where ENGOs and academic research institutions are free to formulate ideas and research programs, communicate with policymakers and establish relationships with transnational researchers.⁵⁷

On the other hand, socialization between expert networks and policymakers may paradoxically be stronger in closed political systems. There, the production of policy-relevant knowledge is more likely to be controlled by policymakers concerned about the implications of allocating scarce benefits to political constituencies.⁵⁸ Political elites are more likely to be invested in the pronouncements of research programs.⁵⁹ Scientific community members may also be drawn from government bureaucrats or state agencies, reinforcing the states' involvement in the production of knowledge. As a result, scientists conducting policy-relevant research in autocratic countries may be more likely to

⁵⁶ See Steinar Andresen et al, 2000, *Science and Politics in International Environmental Regimes*, pp. 10 and passim; Karen Litfin, 1998, *Ozone Discourses*.

⁵⁷ María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics*

⁵⁸ Margaret Keck and Kathryn Sikkink, 1998, *Activists Beyond Borders*

⁵⁹ See Steinar Andresen et al. 2000. *Science and Politics in International Environmental Regimes*, passim; Karen Litfin, 1998. *Ozone Discourses*.

socialize with policymakers.

The Interplay Between Comparative Politics and IR

Thus, domestic politics affect the use of transnationally held knowledge that is generated in response to global problems. As such, this research includes a necessary comparative element to the study of the influence of knowledge networks. As illustrated in the figure below, knowledge is shaped at multiple levels, and is affected by relationships between states, between non-state actors within a network, and between governments and their citizens.

Consequently, investigating the influence of advocacy networks on policymaking in developing countries depends on several tests of combinations of the three identified independent variables: framing, consensus and socialization. In addition, for a heuristic investigation into the impact of political openness on influence, this research depends on taking a comparative study of transnational activism in countries under varying stages of political liberalization. By doing so, this research will investigate whether and how developmental concerns particular to developing countries constrain the advocacy efforts of transnational environmental networks.

Biodiversity Management in Developing Countries

As indicated above, one prominent global environmental issue that is associated with the developing world is biodiversity management. Restricting the study of

environmental advocacy to cases focused on carrying out biodiversity management confers certain advantages. First, focusing on one environmental issue area allows comparability across cases. Second, global biodiversity management, as currently conceptualized, has significant scope for actors to proffer their own interpretations of social reality and problem dimensions.

The cases studied here center on the domestic implementation of the UN Convention on Biological Diversity (CBD) but involve other biodiversity-oriented MEAs, such as the Ramsar Convention on Wetlands and the Convention on Migratory Species (CMS).⁶⁰ As a framework convention, the CBD leaves substantial room for implementing states to interpret treaty obligations. For example, Article 8 of the CBD recommends that Parties create and manage protected areas for *in situ* conservation, while the IUCN has also recommended an international standardization of protected areas management pursuant to the CBD. However, states complying with the CBD are free to manage protected areas to the extent that policymakers see fit.⁶¹ Protected areas can range from zones restricted only to scientific researchers for the purpose of knowledge and data gathering, to “cultural landscapes,” with human populations daily utilizing the natural resources within, to sites of tourism, to ‘paper parks,’ legally created areas that

⁶⁰ An aggregation of regimes treating one issue-area may be referred to as a “regime complex.” See Kal Raustiala and David G. Victor, 2004, The Regime Complex for Plant Genetic Resources (*International Organization*, 58 (2): 277 – 309).

⁶¹ See K. J. Mulongoy and S. P. Chape (eds), 2004. *Protected Areas and Biodiversity* pp. 9 – 10.

have no management practices in place.⁶² Technically, states may therefore be in compliance with biodiversity treaties if they create additional protected areas, regardless of whether these additional areas signify an improvement in management or not. As a result, transnational networks may significantly impact biodiversity management, by proposing which geographic areas are relevant to biodiversity management, how to evaluate appropriate management policies in protected areas, and how to measure biodiversity.

Case Selection

A short description of the research methodology follows. Cases were selected by searching for GEF-funded projects carried out in developing countries to implement the CBD. Projects were identified by examining the online GEF database, which maintains a list of funded efforts in LDCs pursuant to various MEAs. In addition, screens were applied to the universe of LDCs carrying out GEF-funded biodiversity management projects in order to narrow case selection by removing those cases which were less likely to have the material conditions to support epistemic community emergence.

Among the universe of LDCs, cases had to demonstrate a base level of an institutional capacity for science and technology, conditions identified as conducive to the emergence of epistemic communities in countries.⁶³ This consists of governmental

⁶² K. J. Mulongoy and Chape, S. P. 2004. *Protected Areas and Biodiversity* pp. 9 - 10

⁶³ Peter M. Haas, 2001, Epistemic Communities and Policy Knowledge, in: *International Encyclopedia of Social and Behavioral Sciences* (New York: Elsevier), S. 11578–11586. Thomas Risse-Kappen, 1994. Ideas do not Float Freely: transnational

support for research, level of scientific development, and capacity of the state to generate scientific knowledge and investigate environmental issues. A rough measure of this characteristic was taken by comparing several existing indicators.

First, countries with minimal resources, in particular those which have to spend a great deal of their income on debt-servicing, are unlikely to be able to support a substantial science community.⁶⁴ Using the World Bank classifications of indebtedness, which calculates debt service to gross national income for 2005, and the ratio of debt service to exports from 2001 – 2005, low-income countries that were highly indebted were eliminated from the sample as unlikely to have the necessary resources to support scientific research.

Second, this rough measure was refined by comparing the 2005 Environmental Sustainability Index (ESI) measure of *social and institutional capacity*⁶⁵ and the World Bank Governance Research Indicators Database (GRID), for the years 1996 – 2004.⁶⁶ The ESI score is an aggregate measure of four components: *environmental governance*;

coalitions, domestic structures, and the end of the cold war

⁶⁴ Peter M. Haas, 2001, Epistemic Communities and Policy Knowledge, in: *International Encyclopedia of Social and Behavioral Sciences* (New York: Elsevier), S. 11578–11586

⁶⁵ Found in Appendix B of Esty et al 2005.

⁶⁶ Kaufman, Daniel, Aart Kraay and Maasimo Mastruzzi, 2005; *Governance Matters IV: Governance Indicators for 1996 – 2004*; World Bank; Washington, DC; Retrieved February 2006 from http://www.worldbank.org/wbi/governance/pdf/GovMatters_IV_main.pdf

eco-efficiency; private sector responsiveness; and science and technology, each of which are aggregates of several other indicators “evaluating the institutions and underlying social patterns of skills, attitudes, and networks that foster effective responses to environmental challenges.”⁶⁷ The GRID comprises 6 indicators of governance that affect the capacity of governments to implement policies in response to new information: *voice and accountability; political instability and violence; government effectiveness; regulatory burden; rule of law; and control of corruption*.⁶⁸ Governments that score comparatively low on measures of governance could confound research, as poor governance could inhibit the effective implementation of environmental policy, even if epistemic communities are successful in transmitting claims to policy makers. Cases that scored below the median on these indicators were considered less useful tests, and excluded from consideration, as they are unlikely to have the necessary structures for effective biodiversity management.

Further, the research question requires investigating the relationship between

⁶⁷ Esty, Daniel, Marc Levy, Tanja Srebotnjak and Alexander de Sherbinin, 2005; *2005 Environmental Sustainability Index: Benchmarking National Environmental Stewardship*; (Yale Center for Environmental Law & Policy: New Haven), pp. 11. Although the methodology of calculating all the indicators is not entirely clear, nor the weighting of each, the indicators measure relevant socio-political phenomena affecting the ability of scientific research communities to emerge and conduct scientifically legitimate research. These include measures of: *government effectiveness; knowledge creation in environmental science, technology and policy; World Economic Forum on Survey on environmental governance; Gross tertiary enrollment rate; Innovation index; and number of researchers per million people*.

⁶⁸ Appendix D of Kaufman et al 2005 provides definitions of the concepts used, which include “the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions,” Kaufman et al 2005, 130 – 132.

political openness and socialization, and so case selection had to include variation for the sake of comparison. To order the remaining cases, I compiled a series of measures of political democratization, namely: Freedom House ratings from 1975 – 2005; the Reporters sans Frontiers Press Freedom Index of 2005; the 2002 and 2003 Polity IV indicators of Democracy, Polity and Autocracy; and the Polity IV 2003 measures of Levels of Authority from 1970 – 2003. By investigating GEF biodiversity projects in developing countries, screening countries to ensure they had an institutional base for science, and choosing countries that varied according to their levels of political development, the following four projects were selected.

Jamaica

The first project studied was carried out in Jamaica. Jamaica is currently classified as a parliamentary democracy, even though the country has had longstanding problems with political patron-clientelism. Under this system, political decision-makers have historically formed tacit alliances with economic elites, using political power to create favorable environments for capitalist growth, even where such policies may conflict with the interests of the mass public. Nevertheless, the measures of political openness indicate that Jamaica is institutionally and in practice a fairly robust democracy. For example, the country has never scored below a 3 on any Freedom House indicator since 1973. Similarly, the Polity IV measures score Jamaica as receiving a 10 (highly democratic) continuously since 1962, only falling to an eight in the early 1990s. The project studied in this case is the *Project on Sustainable Conservation of Globally*

Important Caribbean Bird Habitats, intended to manage biodiversity in the Cockpit Country, an area of roughly 450km² located between the western and northwestern parishes of Trelawny, St. Elizabeth and St. James (see **Figure 1.1**).

Mexico

In comparison to Jamaica, Mexico is relatively autocratic. Despite the history of regular presidential and parliamentary elections, culminating in the first transition between parties in 2000, the country has long been described as corporatist. Power has historically been centralized and concentrated in the executive branch of the Institutional Revolutionary Party, which has traditionally managed to avoid ceding accountability to the mass public through a combination of electioneering, and practices such as the *de facto* appointment of presidential successors by party elites. Nevertheless, the above measures of political organization indicate that the country has, since 2000, become markedly more democratic, though still falling short of Jamaica in terms of length of experience with democracy. Again, using Freedom House data for comparison, Mexico has historically scored fours and fives on measures of Political Rights and Civil Liberties prior to the 2000 transition. Polity IV data also show a transition to democracy (scored as a six) in 2000, only after decades of autocracy.

Two projects are studied in this country. The first, the *Proyecto para la Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano* (SAM) is carried out along the eastern coast of the state of Quintana Roo to manage the reef ecosystem (see **Figure 1.2**). The second Mexican project studied is the *Proyecto del Corredor*

Biológico Mesoamericano (CBMMx) carried out in the states of Quintana Roo, Yucatán, Campeche and Chiapas (see **Figure 1.3**). These projects are formally related in that the SAM was conceived of as a component of the CBMMx, and initially designed as an extension of the CBMMx project to the marine and coastal ecosystems along the eastern part of the Yucatan peninsula.⁶⁹ However, administration of the two is being carried out by different state agencies, and separate agencies were created in Mexico to monitor and administer the project. Further, the ENGOs, scientific community members and some of the political institutions involved in managing the two projects differ.

Egypt

The final case is a project being carried out in Egypt. Egypt is the most autocratic of the three, with only minimal concessions to democratic institutions. Freedom House scores over time are universally measured as unfree since data was recorded in 1973. The Polity IV index similarly ranks Egypt as continually autocratic since the 1950s. Elections are held regularly, but party lists and eligibility are tightly controlled, and again power is concentrated in the executive branch. More so than Mexico, the executive branch is closely identified with the current president, Hosni Mubarak, giving a comparatively personalist dimension to Egyptian political organization than is the case in the other two countries. In this case, the project studied is the development of the *Project*

⁶⁹ See, for example, UCP, 2002, *Reporte de Avance no. 2* (Belize City: Unidad Coordinadora del Proyecto) pp. 10; World Bank, 2001, *Documento de Evaluación sobre el Proyecto Propuesto por EU\$ 15.2Millones...* (CCAD) pp. 13, describing the SAM as designed to administer the “marine elements” (author’s translation) of the CBMMx.

for Sustainable Conservation of Migratory Soaring Birds, to be carried out in Egypt along the coast of the Red Sea and the Sinai peninsula (see **Figure 1.4**).

Operationalizing Concepts

TANs and Epistemic Communities

Having identified cases, it was then necessary to operationalize and construct measures of epistemic communities and TANs in order to determine which kinds of networks were involved in advocacy. Likely core groups of epistemic communities and transnational networks were identified by reviewing documents associated with the GEF-funded projects, and determining which ENGOs were officially involved in project implementation. Subsequently, snowball sampling was used to identify and bound the population of networks to which these ENGOs may have been members. These measures were then triangulated with analyses of archival materials, such as project documents, workshop reports, meeting minutes, and jointly-produced studies to bound the populations of the tentatively identified networks.

Population bounding is, at best, an approximate exercise. Network membership is amorphous, as it depends on informal and perhaps tenuous connections between people, not just on formalized relationships that can be discovered through investigating participation in recording meetings, or through identifying authorship of jointly produced documents. As a result, the chapters, in describing the size of the various networks, gives a range of potential members based on analyses of organization size, the research focus of identifiable members, which are triangulated as much as possible through archival

analyses of meetings, committees, and other recorded data on network participation.

Nevertheless, the numbers throughout are not precise.

As described above, *epistemic communities* are networks of science-based professionals with publicly recognized expertise in a particular domain, and holding an intersubjective consensus about a problem in their area. Again, a scientific consensus distinguishes epistemic communities from other kinds of TANs, and is considered one of the primary independent variables being tested in this research. Using Dimitrov's understanding of consensus, I disaggregated the concept into 3 indicators: the presence of agreement on 1) *causes*, 2) *consequences* and 3) *extent* of an environmental issue.⁷⁰ Some level of disagreement on one or more of these indicators would weaken consensus, but as long as a network held a core agreement, it would be coded as an epistemic community.

There may be cases in which one network evinces more internal agreement than a comparative network, which allows some determination to be made that one case may depict greater consensus than another. However, in the absence of finely tuned measures of cognitive perceptions, it is still useful to consider knowledge consensus as an ordinal variable, that is, that a hierarchical ordering of cases is possible, but the degrees of separation between their ranks is difficult to measure. To determine if a network held an intersubjective consensus, I used multiple sources, including elite interviews and project

⁷⁰ Radoslav Dimitrov, "Knowledge, Power and Interests in Environmental Regime Formation." *International Studies Quarterly*, 47 (2003): 123 – 150. As suggested by Dimitrov, disagreement would be most problematic for an epistemic community when there is a lack of consensus on the consequences of a problem.

documents to identify whether members of a network agreed on the causal relationships relevant to an emerging issue area, whether they were aware that agreement within the network was shared, and whether they were accurate in their assessment of the causal relationships under study.

Of the four cases studied here, epistemic communities were active in only two of them, in Jamaica and in the Mesoamerican reef system in Mexico. In the remaining two cases, a transnational network emerged to advocate for improved environmental management, but lacking an intersubjectively recognized agreement on the pertinent causal relationships, was not measured as an epistemic community. Making a clear distinction between network types was necessitated by virtue of the fact that in the first two cases, TANs played an important supportive role in the advocacy efforts of the epistemic communities. In these cases, the relationship between the TAN and the epistemic community was described, as well as the reason for classifying the networks as different actors.

Issue Framing

In addition, the frames used by networks had to be measured. The proposals advanced by networks were analyzed to determine whether and how networks were using a consistent set of metaphors, cognitive cues, and descriptive language to justify action. This variable is a nominal variable, and described in more detail in the cases. If the frames used to communicate with policymakers and managers differed from the internal reasoning used by networks to justify action, they were described as engaging in *external*

strategic framing based on their interpretation of the internalized value systems of their external audience.⁷¹

Socialization

Finally, it was necessary to measure the extent of socialization between policymakers and networks. In the generation of policy-relevant knowledge, socialization may be manifested by such processes as jointly conducted reports between norm entrepreneurs and target audiences, mutual participation in workshops, and exchange of staff. In each of the cases, the kinds of relationships between networks and audiences were qualitatively assessed. Socialization was considered strong if multiple points of contact existed between audiences and networks, and the exchange or recruitment of personnel between populations was considered a particularly strong indicator of socialization. Since the precise measures of socialization will vary across cases, it is again useful to consider socialization as an ordinal variable. The measures of socialization varied, and are described in more detail in each chapter.

The Dependent Variable: Network Influence

Finally, the end result would be the existence of network influence on the actions taken by managers to regulate biodiversity. *Influence* existed when policymakers and managers looked to epistemic communities for information and theories, accepted the

⁷¹ See in particular, Mayer N. Zald, 1996, *Culture, Ideology and Strategic Framing* (chapter 11 in Doug McAdam, John D. McCarthy, Mayer N. Zald, ed. *Comparative Perspectives on Social Movements*. New York, NY: Cambridge University Press.

conclusions drawn by scientists, and adopted the policy implications of the advocacy groups. Therefore, when networks had influence, target audiences would change their behavior, whether as policies and practices, in such a way that they would converge on the preferred practices of the advocacy networks. Since, as will be demonstrated in the case studies, biodiversity management is a multisectoral issue, measuring influence required evaluating the behavior of several actors in each case, including in the private and public sectors.

Measuring influence required comparing the stated preferences of network members, as discussed in internally generated project documents and interviews, with the following behavioral outputs: First, influence occurs if the network exercises control over project design, such that the essential components of biodiversity management as preferred by the network are included. This includes determining the biodiversity-relevant area covered by the GEF funds; identifying which species are targeted for protection; or specifying management tools (measurement criteria, for example) to be adopted as a condition of the project.

Second, control over the terms of the project does not necessarily equate to influence if the government is laggardly on carrying out substantive changes in policy. Thus, another indicator of influence would be the adoption of policies by natural resource management agencies such that new action corresponds with proposed policies suggested by network members. I triangulate upon this measure by conducting interviews and archival analyses to determine if newly adopted regulation was effectively implemented, rather than existing as toothless formal declarations. For example, if the responses of

policymakers and managers are limited to general exhortative statements extolling the virtues of conservation, but without real efforts to regulate environmentally harmful activity, or if policymakers create empty policy, such as ‘paper parks,’ protected areas without a meaningful regulatory framework, no influence can be said to have occurred.

Third, influence occurs if the network’s recommendations lead to changes in the practices of private sector actors, such as corporations, cooperatives, or other non-state entities.

Unfortunately, network influence does not always mean that there will be measurable improvements in environmental degradation. Natural disasters, time-lag problems, external threats, and a lack of clear information may all prevent the recommendations of epistemic community members from having a measurable impact on biodiversity conservation, even if adopted by policymakers and private-sector managers. This is of particular concern, given that the management efforts started in these projects are still ongoing, and the projects that have formally concluded did so less than 3 years ago. Thus, while desirable, recording changes in population of important species would provide a measure of low discriminant and convergent validity.

Thus, to test the argument, the following steps were taken: in each case, the transnational network was identified and measured, determining whether the network was an epistemic community comprised of like-minded scientists, or a TAN. The advocacy efforts of the network were process-traced, to discover whether individuals repurposed arguments and justifications for action to persuade policymakers and managers of the economic rationale for taking environmental action. The level of socialization between

the network and target audiences was described by examining the strength of contact between the two populations. The regulations and practices adopted by policymakers and managers were compared with the recommendations of identified networks to verify whether or not networks had any influence on biodiversity management. These steps then led to conclusions about the effect of scientific consensus, strategic framing, socialization, and domestic political organization on the efforts of transnational networks to inform and influence the management of biodiversity in LDCs.

Outline of the Dissertation

In Chapters 2, I describe the case study of the *Project on Sustainable Conservation of Globally Important Caribbean Bird Habitats* carried out in the Cockpit Country of Jamaica. In that case, a transnational epistemic community emerged during the 1990s and early 2000s to advocate for the protection of sensitive ecosystems in an area threatened by bauxite mining. The epistemic community, concerned about the ecological integrity of the Cockpit Country, had to contend not only with various natural resource policymaker agencies in the environmental and agricultural ministries, but also managers in the powerful bauxite industry, and peasant and agricultural residents, all of whom had sometimes incompatible preferences.

Chapter 3 presents the SAM project carried out in Mexico. Again, this case involved an epistemic community engaging with competing interests of various actors. Here, these consisted of policymakers in the environmental and agricultural ministries, managers in the transnational hotel sector, and peasant and subsistence populations. An

important theoretical distinction between this case and Jamaica, is that this biodiversity project took place in a post-transitional autocratic country.

Chapter 4 investigates a case that takes place under the same level of political openness, as the CBMMx was also carried out in Mexico. Moreover, this case study did not involve an epistemic community, as the transnational network that emerged to advocate for improved biodiversity management did not hold an intersubjective consensus on the relevant causal relationships in the Yucatán peninsula. The advocacy efforts of the TAN in this case focused on natural resource policymakers and marginalized agricultural populations throughout the Yucatán. Nevertheless, the absence of consensus in this case allowed for more robust tests of the importance of scientific agreement on the influence exercised by transnational networks.

Chapter 5 presents the final empirical case study, illustrating the *Project for Sustainable Conservation of Migratory Soaring Birds* carried out in Egypt. As with the CBMMx case study, this project involved a transnational network that did not generate an intersubjective consensus. Further, by discussing a case study in an autocratic polity, this dissertation further engages with questions about the effect of autocracy and centralized decision making on the advocacy efforts of transnational networks.

In Chapter 6, I discuss alternative hypotheses to observed variation in the case studies. In particular, I engage with the neoliberal institutionalist school of international relations theory, which indicates that properly designed institutions can constrain state behavior and lead to effective global management, in this case, of the environment. Institutions allow states to generate predictable rules, and bargain for concessions to

promote desirable behavior. As indicated above, the countries involved are signatories, not only to the CBD, but also to various other regional and international biodiversity-oriented MEAs. Accordingly, the projects described may be embedded in different institutions for each country. It is therefore possible that any variation observed in these cases could be due, not to differences in the strength and cognitive skill of epistemic communities, but rather to the strength of regimes of the relevant country. Variation in observed implementation will therefore be tested against the institutionalist approach to see whether the comparatively methodologically untidy and far less parsimonious epistemic communities approach has more explanatory power.

In the conclusion, the summation of the causal relationships is given, clarifying which independent variables are necessary and/or sufficient to lead to transnational network influence on policymakers in developing countries. In addition, the impact of political openness on socialization is discussed, as well as final statements on the chance of improving project design and advocacy efforts for improved global biodiversity management.

Table 1.1: Multiple Levels of Knowledge

	LEVEL OF ANALYSIS		
	<i>International</i>	<i>Transnational</i>	<i>Domestic</i>
Impact on Knowledge	International treaties and obligations create the impetus for gathering knowledge on global environmental problems	Internal relationships in knowledge networks affect the likelihood that networks develop an intersubjective consensus	Political relationships between the state and its citizens affect the ability of transnational networks to socialize with relevant policymakers
	International indebtedness limits the appeal of environmental norms to LDCs	Shared understandings determine the frames adopted by networks	

Figure 1.1: Map of the Jamaican Cockpit Country

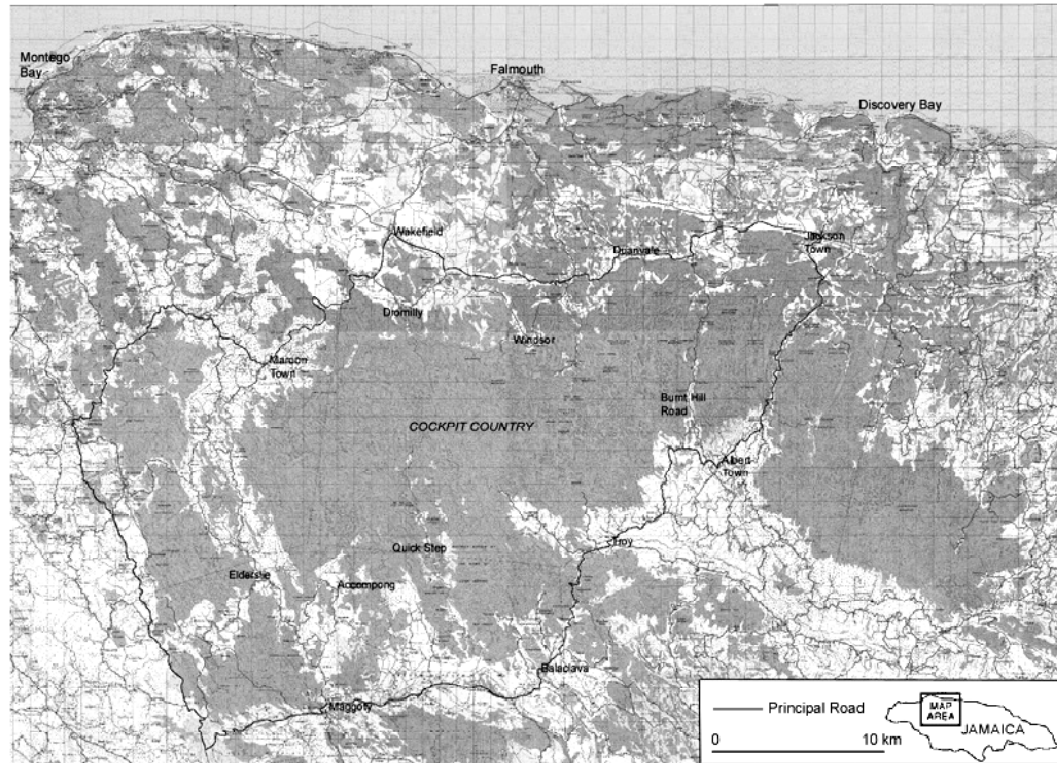


Figure 3.1. Cockpit Country in its regional context and recommended peripheral buffer zone road.

Figure 1.2: Map of The Mesoamerican Reef Region



Figure 1.3: Map of the Mesoamerican Biological Corridor – Mexico

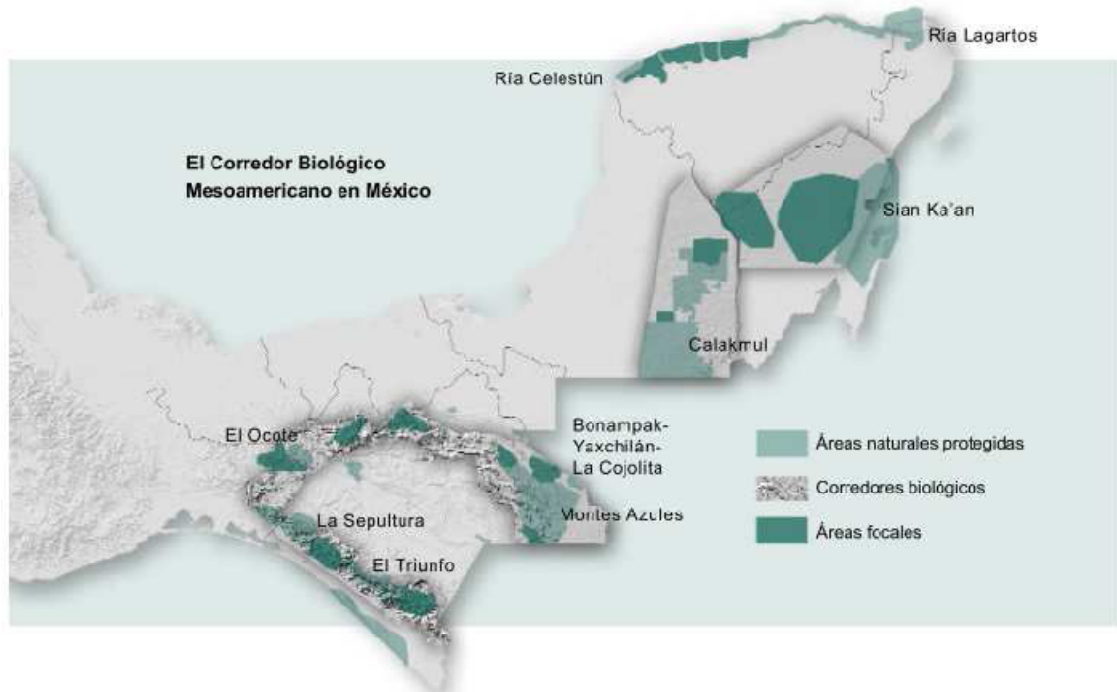
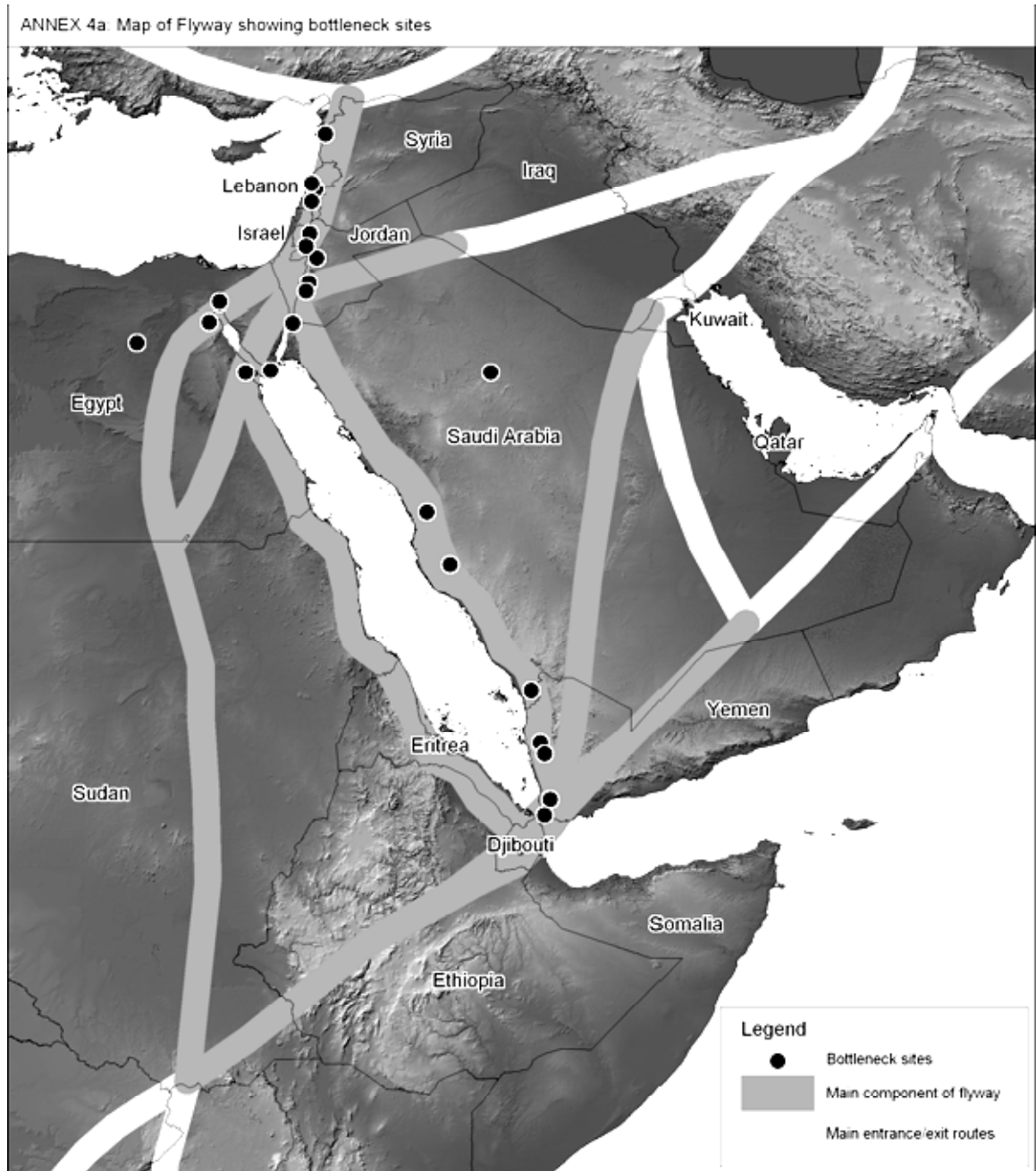


Figure 1.4: Map of the Rift Valley/Red Sea Flyway



CHAPTER 2

JAMAICA AND BIODIVERSITY MANAGEMENT IN THE COCKPIT COUNTRY

Introduction

In the case study carried out in Jamaica, a transnational network of ecologists, ornithologists and geologists developed an interest in biodiversity management in the Cockpit Country, a roughly 450km² area of karst limestone located within the parishes of Trelawny, St. Elizabeth and St. James (see **Figure 1.1**). As an epistemic community, this network of scientists held a consensus about the causal processes of human activity in the Cockpit Country, appropriate policy responses and a rationale for conserving the biodiversity and endemism in the area. The advocacy efforts of the community centered on carrying out the GEF-funded *Project for Sustainable Conservation of Globally Important Caribbean Bird Habitats*, an effort to implement the Convention on Biological Diversity (CBD). As described in the introduction, this chapter investigates how epistemic communities attempted to engage with policymakers, and whether the developmental pressures and political systems of developing countries constrained the arguments employed by epistemic communities.

To test this argument, as well as the corresponding hypotheses, I identified the relevant actors: policy makers, an epistemic community, knowledge brokers, and a transnational advocacy network (TAN). I process-traced how concern about biodiversity management in the Cockpit Country led to the constitution of a transnational social

network. I also tested whether policymakers in natural resource management agencies learned from the epistemic community's understanding of environmental processes, by examining the output of state responses in terms of policy and management approaches to the claims of the epistemic community.

A qualitative analysis of the data indicates that the epistemic community had mixed success in promoting environmentally friendly policies in the Cockpit Country. While there are overlapping policy jurisdictions, biodiversity management in the Cockpit Country was subject to the management authority of two ministries, the Ministry of Agriculture, and the Ministry of Environment. Further, authority within these ministries can be further disaggregated across subordinate agencies. Within the Ministry of Agriculture, the Forestry Department, the Mines and Geology Division, and the Ministry itself functioned as three distinct nodes of authority, while the Ministry of Environment had a subordinate agency in the National Environmental Protection Agency (NEPA). As these five agencies were responsible for distinct aspects of biodiversity management, the network's advocacy efforts can be described as consisting of five different campaigns, under the overall goal of improving the environment.

Of these agencies, the only policymaker institution whose subsequent management approach demonstrated influence by the epistemic community network was the Forestry Department. The Department adopted recommendations made by the community, changed management procedures, and supported the epistemic community's biodiversity management framework. However, this was not matched by similar success in the Mines and Geology Division, the Ministry of Agriculture, NEPA, or the Ministry

of Environment.

Of the three variables discussed in the hypotheses: issue-framing, socialization, and scientific consensus, the only variable positively associated with influence in this case was socialization. As an epistemic community, the network used its scientific consensus as a cognitive tool in all campaigns; consequently, it did not vary with epistemic community influence. Further, the one area in which the community used economic issue-framing, that is, to lobby the Ministry of Agriculture, there was no measurable influence on policy. The only variable that distinguished the advocacy campaign targeting the Forestry Department from the rest was the presence of a high level of socialization between the Department and the network. This suggests that socialization is a necessary variable, and that economic issue-framing is neither necessary, nor sufficient. However, it is not clear from this data whether socialization is sufficient to cause influence if consensus is absent. Nevertheless, this chapter demonstrates that credible science is insufficient to lead to network influence in developing countries. The following explains how the epistemic community emerged to advocate for improved biodiversity management in the Cockpit Country, and details the successes and failures of its advocacy efforts.

Overview of Threats to the Cockpit Country

The Cockpit Country is identified by the World Bank, the UN and Jamaican policy makers and civil society as a site of high biodiversity, measured as a variation in

the number of species and genetic variation within species.⁷² This wealth of biodiversity is due to the unique geomorphological characteristics of the region. The isolated conical hills and depressions characterizing the area have, in combination with poor species dispersal capability, led to the creation of numerous microhabitats and specialized evolution.⁷³ Of 150 species of plants have been identified in the area, 101 are endemic.⁷⁴ This highly sensitive biodiversity is subject to a range of human activity, both from subsistence and small-scale activities from marginalized, agrarian populations, and from large-scale extractive activities from powerful economic sectors.

Subsistence and Small-Scale Agriculture

The Cockpit Country is sparsely settled by various agrarian communities. These communities, consisting of marginalized rural populations, engage in a variety of small-scale activities, such as: subsistence agriculture; logging; charcoal production; hunting and collection of local species; and very occasionally, acting as ad hoc tour guides in for

⁷² World Bank, 1999, *Jamaica Cockpit Country Conservation Project* (Project Proposal for GEF: World Bank) p. 1; National Environmental Protection Agency, 2003, *National Biodiversity Strategy and Action Plan* (Kingston: NEPA), passim; The Nature Conservancy, 2003, *Jamaica National Biodiversity Strategy and Action Plan: National Implementation Support Partnership* (Kingston: TNC), pp. 1

⁷³ Susan Koenig, with Ann Hayes-Sutton, George Proctor and Peter Vogel, 2000, *Cockpit Country Conservation Report: Biodiversity Assessment* (Prepared for NRCA: Kingston, p. ii).

⁷⁴ Southern Trelawny Environmental Agency, 2000, *Biodiversity Manual* (Trelawny: STEA) pp. 6

tourists.⁷⁵

The impact of these communities on local biodiversity is exacerbated by socioeconomic factors common to developing countries, such as high wealth concentration and an inequitable distribution of resources. In the Cockpit Country, 3% of landowners control 62% of the available farmland in the area, and as such, small farmers have to rent or lease land from larger property owners or otherwise conduct incursions into virgin forested areas. In turn, this contributes to migratory farming and fragmented and dispersed agricultural plots.⁷⁶ As agricultural productivity decreases, farmers turn to logging for fuelwood and timber production to generate income.⁷⁷

Yam production, one of the main agricultural practices, requires the harvesting of yam sticks for crop cultivation, where saplings are cut and stripped to provide a support

⁷⁵ “Small scale” agriculture refers to farming carried out on agricultural plots of 10 hectares or less, and the majority of agriculture in the area is practiced on farms of 4 hectares or less. Balford Spence, *GEF Cockpit Country Conservation Project: Land Management Report* (prepared for NRCA: Kingston, Jamaica) passim; ENACT Programme, 2003, *Policy on Strategic Environmental Assessment (draft)* (Government of Jamaica: Kingston, Jamaica) p. 15. Logging is not generally a result of industrial, large-scale activity, but carried out on a small scale, with teams of 3-4 individuals working with chainsaws, and transporting materials manually through the area. Balford Spence, *Land Management Report*, pp. 17-18; Forestry Department, 2001, *National Forest Management and Conservation Plan* (Forestry Department: Kingston, Jamaica) pp. 40.

⁷⁶ Tony Weis, 2000, Beyond peasant deforestation: environment and development in rural Jamaica (*Global Environmental Change* 10: 299 – 305), p. 302. David Barker and David J. Miller, 1995, *Farming on the Fringe*, pp. 281. Several farmers owned more than one plot, with a modal class of 3 plots per farmer, cited in this 1995 study.

⁷⁷ Balfour Spence, 1999, *Land Management Report* pp. 40.

for the biomass of the plant.⁷⁸ The removal of saplings prevents the regeneration of the forest, contributing to overall deforestation; in turn, this exacerbates forest degradation caused by the conversion of forest cover to monoculture in agricultural production.⁷⁹ Nationally, the parish of Trelawny is the primary yam and yam-stick producing parish.⁸⁰ Other kinds of decentralized agriculture include marijuana, which creates inroads into virgin territory as farmers seek hidden lands for cultivation.⁸¹

Clearing the forest for agriculture or logging creates ecological vulnerabilities and gaps that may allow invasive species to gain access to vulnerable areas as well as introduces crops as alien invasive species in sensitive habitats.⁸² Industrialized

⁷⁸ Forestry Department, 2001, *National Forest Management and Conservation Plan*.

⁷⁹ See *inter alia*, Balford Spence, *GEF Cockpit Country Conservation Project: Land Management Report* (prepared for NRCA: Kingston, Jamaica) passim; ENACT Programme, *Policy on Strategic Environmental Assessment (draft)* (Government of Jamaica: Kingston, Jamaica, 2003) pp. 19; NRCA, 1999, Jamaica: Toward a Watershed Policy, *Green Paper* no. 2/99 (Kingston, Jamaica: 1999) pp. 5 – 6.

⁸⁰ The eastern and southeastern buffer zones provide approximately 42% of Jamaica's national yam output, and of a total 15 million yam-sticks produced nationally per annum, an estimated 6 million are produced in the Cockpit Country. See *inter alia*, Balford Spence, *GEF Cockpit Country Conservation Project: Land Management Report* (prepared for NRCA: Kingston, Jamaica) pp. 15

⁸¹ Balfour Spence, 1999, *GEF Cockpit Country Conservation Project: Land Management Report* (Kingston: NRCA) pp. 17

⁸² The Nature Conservancy, *Cockpit Country Conservation Action Plan: A Summary*, Appendix D; United Nations Environment Programme (UNEP), *Global Environment Facility Project Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 55; also NEPA, *National Strategy and Action Plan on Biodiversity*, passim; Forestry Department, 2001, *Forestry Policy 2001* (Kingston: the Forestry Department)

commercial sugarcane production takes place in the southwestern and northeastern zones of the Cockpit Country, and production of citrus takes place in the northwestern zone.⁸³ In addition to contributing to monoculture and forest clearance on a larger scale than that caused by peasant communities, industrial agriculture introduces chemicals from pesticides and fertilizer, which may leach into soils and enter the hydrological regime as biological toxins.⁸⁴

Bauxite Mining in the Cockpit Country

Since the Cockpit Country contains bauxite deposits, bauxite mining is also a potential and significant threat to biodiversity (see **Figure 2.1: Map of Bauxite Deposits in the Cockpit Country**).⁸⁵ Further, bauxite mining, as shall be described below, is a nationally prominent industry. Ore is extracted through the *standard open-cast* method, which entails removing the entire layer of topsoil and vegetation covering a deposit. Immediate impacts of this process include deforestation, forest degradation,⁸⁶ and the

⁸³ Balfour Spence, 1999, *GEF Cockpit Country Land Management Report* pp. 18.

⁸⁴ See *inter alia*, Steve Bass and Tighe Geoghan, 2007, Incentives for Watershed Management in Jamaica: Results of a Brief Diagnostic. *CANARI Technical Reports* 314 (CANARI: Kingston) pp. 7; NEPA, *National Strategy and Action Plan on Biodiversity*, passim.

⁸⁵ See *inter alia*, Balfour Spence, 1999, *Land Management Report* pp. 93; David Barker and David J. Miller, 1995, Farming on the Fringe. In Barker, D. & D. F. M. McGregor (eds) *Environment and Development in the Caribbean: Geographical Perspectives*, (Kingston: The Press, UWI, pp. 271 – 292) pp. 282; Karyl Walker, “Cockpit Country Worry.” (*Sunday Observer*, 19 November 2006); Kayenne Taylor. 1999, *Report on the Legal Imperatives and Implications of the Cockpit Country Conservation Project*, pp. 93

⁸⁶ National Environment and Planning Agency (NEPA), 2003, *National Strategy and*

emission of potentially toxic fumes and dust.⁸⁷ In addition, the use of heavy machinery in mining areas requires the construction of access roads, which segment ecosystems, allow further access into formerly pristine areas and contribute to deforestation.⁸⁸

The interaction of these processes can cause widespread soil erosion, downstream run-off and sedimentation, exacerbating the loss of forest cover, in turn causing eutrophication in aquatic ecosystems.⁸⁹ The relationship between human activity and environmental degradation in Cockpit Country is thus quite complex, especially since the environmental resources of this area are highly interdependent.

Tensions in National Economic Development

These processes complicate the idea that national development may conflict with environmental management. As described in the Founex Report, national economic development may be a way for developing countries to supersede their “poverty, malnutrition, illiteracy and sheer misery.”⁹⁰ Moreover, since poverty, malnutrition and

Action Plan on Biodiversity in Jamaica. (National Environment and Planning Agency: Kingston); NEPA, *National Biodiversity Strategy and Action Plan Development Project: Sector Assessment Reports – Mining*, (prepared by Morrison, Dennis and Michael Mitchell. National Environment and Planning Agency: Kingston, 1999b).

⁸⁷ NEPA, 2003, *NBSAP* pp. 27 – 28. Mick Day, 1993, Karst Terrains: Environmental Changes and Human Impact (*Catena Supplement* 25: 109 – 125) pp. 121.

⁸⁸ UNEP, 2000, *GEF Project Document*, pp. 56.

⁸⁹ Kimberly John, author interviews conducted July 12, 2006. Transcript of audiocassette recording

⁹⁰ Margaret Biswas and Asit K. Biswas, 1982, Environment and Sustained Development in the Third World: A Review of the Past Decade (*Third World Quarterly* 4 (3): 479 –

misery are exacerbated by environmental problems such as water scarcity and land degradation, there is a sense that industrial development is the solution, not only to economic woes, but also to environmental problems.

However, this should be problematized. In Jamaica, bauxite mining is seen as a harbinger of economic growth and national development. While mining can attract a substantial amount of foreign income and is a significant contributor to GDP, mining in the Cockpit Country would directly harm the ability of rural communities in the Cockpit Country to conduct subsistence activities, either from being directly physically displaced, or because the removal of plant cover for ore extraction precludes agricultural activity. In other words, national development, if conceptualized as an industrial process, could conflict with the environmental and economic wellbeing of already marginalized populations.

Identifying the Social Actors Involved in Biodiversity Management

The policy makers responsible for managing natural resources within the Cockpit Country are located in a variety of Ministries and Agencies (see **Table 2.1: List of Policy Makers**). Despite reforms in the Jamaican environmental governance structure since 1991, authority over environmental management has remained dispersed across various state actors, with 52 identifiable articles of legislation pertaining to environmental management.⁹¹

491) pp. 484.

⁹¹ NEPA, 2003, *National Strategy and Action Plan on Biological Diversity in Jamaica*.

NRCA/NEPA and the Ministry of Environment

The National Resources Conservation Agency (NRCA) was created in 1991 as the executive agency of the Ministry of Environment.⁹² In 2001, the NRCA was merged with two urban planning agencies, the Town Planning Department and the Land Development and Utilization Commission, to form the National Environmental Planning Agency (NEPA). The agency regulates the use of fauna through the implementation of hunting seasons, licenses for the removal of species for research purposes, and the conduct of environmental impact assessments (EIAs).⁹³ The Ministry of Environment, lead agency of the NRCA/NEPA, can propose certain areas to be managed as National Parks with the approval of the Prime Minister's Cabinet.

(Kingston, Jamaica: NEPA) pp. 13; see also *Jamaica's National Biodiversity Strategy and Action Plan: National Implementation Support Partnership* (Kingston, Jamaica) pp. 3.

⁹² The environmental portfolio has been transferred to various other ministries since its inception. In 1992, the portfolio was created in the Ministry of Tourism and the Environment. In 2000 the portfolio of Environment was shifted to the Ministry of Land and Environment; in 2001, as the Ministry of Local Government and the Environment; in 2007 as the Ministry of Health and the Environment. Throughout the dissertation, the Ministry will be referred to as the Ministry of Environment for consistency. Information taken from Author interviews with Jean Jo Bellamy, from notes taken from phone interview. Author interview with Franklin McDonald, from notes taken from phone interview. C. Easton and associates, 2004, *ENACT Jamaica Case Study: A Governance Model in Capacity Enhancement for Sustainable Development* (Kingston: ENACT Programme, 2004).

⁹³ Author interviews with Yolanda Mittoo. Taken from handwritten notes; *NRCA Act*, retrieved October 2006 from http://www.nrca.org/legal/nrca_act_lpart1.htm; *Town, Planning and Development Act*, retrieved October 2006 from http://www.nrca.org/legal/town_planning_act.htm; *Land Development and Utilization Act*, retrieved October 2006 from http://www.nrca.org/legal/LDUC_ACT.htm

The Ministry of Agriculture

The Ministry of Agriculture, which contains three relevant agencies in the Forestry Department, the Mines and Geology Division, and the Jamaica Bauxite Institute (JBI), is a key actor in biodiversity management.⁹⁴ The Ministry of Agriculture can declare areas as Forest Reserves, bestowing management authority to the Forestry Department. In addition, the Ministry regulates the issuance of mining licenses over the Cockpit Country to bauxite companies.

The Forestry Department

The Forestry Department, executive agency of the Ministry of Agriculture, gains jurisdiction over resource management when the Ministry declares Forest Reserves. In these reserves, the Department can regulate activities such as tree clearance, road construction and the killing of wildlife, in particular avifauna.⁹⁵ Since the 1950s, most of the area known as the Cockpit Country has been declared a Forest Reserve (see **Map 2.2: Forest Reserves in the Cockpit Country**).

⁹⁴ Between 1994 and 2008, the Department of Mining was a part of the Ministry of Agriculture (94 – 97), Ministry of Mining and Energy (97 – 02), Ministry of Land and Environment (02 – 05), Ministry of Agriculture (06 – 07), Ministry of Agriculture and Lands (07 – June '08) and the Ministry of Mining and Telecommunications ('08 – present). Mines and Geology Division, 2008, *Background Information* (retrieved December 2007 from http://www.mgd.gov.jm/index.php?option=com_content&task=view&id=27&Itemid=38).

⁹⁵ See the 1996 version of the Forest Act in the Forestry Department, 1996, *The Forest Act 1996*. See also later modifications to the *Forest Act* that expanded the role of the Forestry Department to manage species and biodiversity in the Forestry Department, 2001, *The Forest Regulations* and in 2001, *Forest Policy*.

The Department of Mining, the JBI and the Ministry of Agriculture

The Department of Mining, also known as the Division of Mines and Geology, grants mining licenses and evaluates the environmental soundness of post-mining activity.⁹⁶ Its research division in the Jamaica Bauxite Institute (JBI), a quasi-state organization established in 1974, acts as the Government's technical adviser in mining and regulates and monitors the activities of industrial bauxite companies.⁹⁷ The JBI also conducts EIAs on mining activities and, where necessary, develops planning strategies for population relocation and post-mining land use and restoration.⁹⁸

The Prime Minister's Cabinet

The primary role of the Cabinet in managing the biodiversity in the Cockpit Country is the regulation of land use policy. Cross-cutting agency jurisdictional claims can become conflictual, as agencies with different mandates may seek to implement incompatible management strategies in the same territorial area. For example, leases established under the Mining Act allow bauxite companies to access subterranean

⁹⁶ Dennis Morrison & Michael Mitchell, *Mining*; National Environment and Planning Agency, *National Strategy and Action Plan on Biodiversity in Jamaica* (National Environment and Planning Agency: Kingston, 2003) pp. 14.

⁹⁷ Ivette Torres, *The Mineral Industry of Jamaica*, (Kingston, Jamaica 1998), pp. 1 – 3. Also Shanti Persaud, author interviews conducted July 3, 2006. Taken from handwritten notes.

⁹⁸ Shanti Persaud, author interviews conducted July 3, 2006. Taken from handwritten notes. See also Dennis Morrison & Michael Mitchell, *Mining*, pp. 14.

resources in Forest Reserves, even though standard open-cast mining would result in the complete removal of all forest cover.⁹⁹ Where necessary, the Cabinet may clarify competing jurisdictional claims and acceptable land use policy under existing or modified environmental regulations.

Transnational Mobilization around the Cockpit Country

The Emergence of the Cockpit Country Epistemic Community

As with the policy makers, the groups and individuals that comprise the epistemic community relevant to policy management in the Cockpit Country come from a variety of backgrounds and specializations (see **Table 2.2: List of Epistemic Community Members**). Although scientists had been conducting research on the biodiversity in the Cockpit Country for decades, the emergence of a social network sharing a rationale for action, causal claims and beliefs in appropriate policy began in 1995, when a transnational bird-watching ENGO called the Gosse Bird Club became an affiliate of Birdlife International under the leadership of Catherine Levy, changing its name to Birdlife Jamaica.¹⁰⁰ In the mid to late-1990s, Birdlife Jamaica and Peter Vogel, a herpetologist from the Department of Life Sciences at the University of the West Indies

⁹⁹ The Forest, 1996, *The Forest Act* and 2001, *Forest Regulations*. Government of Jamaica, 1947, *The Mining Act* (amended 1998).

¹⁰⁰ Mike Schwartz, Susan Koenig. Author interviews, conducted July 30, 2006, transcript of audiocassette recording. Also, Catherine Levy. Author interview, conducted June 30, 2006, handwritten notes of telephone interview; Catherine Levy, 2008, *Tribute to Audrey Downer: 1918 – 2007* (retrieved December 2008 from <http://www.jamaicachm.org.jm/Article/PDF/August2008.pdf>). John Fletcher, author questionnaire, received December 9, 2008. Taken from transcript of typed responses.

(UWI), became concerned about a global decline in populations of migratory Yellow- and Black-billed parrots. Since 95% of the world's population resides temporarily in the Cockpit Country,¹⁰¹ this area became an important site for study.

The onset of interest in the mid-1990s grew, as other researchers joined the network. Birdlife Jamaica hired Susan Koenig, an ornithologist from Arizona, to assist in the Cockpit Country parrot study.¹⁰² In 1998, Koenig and British freelance researcher Mike Schwartz, created the Windsor Research Centre (WRC), a decision motivated in part to establish alliances with other organizations, in particular the transnational ENGO the Nature Conservancy (TNC).¹⁰³ In 1999, Birdlife Jamaica, WRC and TNC planned the *Cockpit Country Conservation Project*, an NRCA implemented effort to conserve the Cockpit Country as an area of bird habitats and sensitive biodiversity. Like the eventual *Project on Sustainable Conservation*, this was to be funded by the GEF as relevant to the

¹⁰¹ University of the West Indies, 2008, *Amazona Parrots* (retrieved December 2008 from <http://www.mona.uwi.edu/lifesciences/parrot.htm>). Susan Koenig. Author interviews, conducted July 30, 2006, transcript of audiocassette recording. Birdlife International, 2006, *Bauxite Mining threatens unique Jamaican wildlife* (Press release available at http://www.birdlife.org/news/news/2006/10/cockpit_country.html).

¹⁰² Mike Schwartz, Susan Koenig. Author interviews, conducted July 30, 2006, transcript of audiocassette recording. At the time, Koenig was also planning to carry out a project to study parrot populations in Dominica. John Fletcher, author questionnaire, received December 9, 2008. Taken from written responses.

¹⁰³ TNC had considerable assets, claiming over US\$4 billion in total assets for the fiscal year ending in 2005. The Nature Conservancy, *Consolidated Financial Statements*, retrieved December 2006 from <http://www.nature.org/aboutus/annualreport/files/arfinancials2005.pdf>. The Nature Conservancy, *About Us*, retrieved December 2006 from <http://www.nature.org/aboutus/>. Kimberly John, author interviews conducted July 12, 2006; Ann Hayes-Sutton, author questionnaire received September 27, 2006.

CBD, especially Articles 7 and 8.¹⁰⁴ However, the project was aborted in 1999 when the government of Jamaica refused to use IUCN classification to create a protected area, leading to the withdrawal of World Bank financing.¹⁰⁵

The Emergence of a Core Pool of Knowledge

Although aborted, the generation of studies and inter-network links for this project contributed to the emergence of a core pool of knowledge and transnational ties among concerned actors on Cockpit Country biodiversity. In 1999, preparation for the *Cockpit Country Conservation Project* led to the production of various reports, including a Biodiversity Assessment of the Cockpit Country by Koenig, Ann Hayes-Sutton of TNC, and George Proctor, a botanist from UWI and a Land Management Assessment conducted by Balfour Spence, a geologist from UWI. These studies were then circulated among research organizations in the network, including Birdlife Jamaica, TNC, the WRC and STEA, a local ENGO created in 1996 to advocate for ecotourism in the region.¹⁰⁶

¹⁰⁴ World Bank, 1999, *Cockpit Country Conservation Project* (Project prepared for the GEF) pp. 1 – 5. Susan Koenig et al, 2000, *Cockpit Country Conservation Project: Biodiversity Assessment* (Kingston: prepared for NRCA, World Bank). Susan Koenig, author interviews conducted August 3, 2007, taken from audiocassette recording. Adam Rhodes, 2006, Bauxite vs. the Cockpit Country (*Farquharson Forum – A Guest Column*).

¹⁰⁵ Adam Rhodes, 2006, Bauxite vs. the Cockpit Country (*Farquharson Forum – A Guest Column*). Convention on Biological Diversity, Articles 7 and 8, available at <http://www.cbd.int/convention/convention.shtml>.

¹⁰⁶ Windsor Research Centre, 2008, *Cockpit Country Fact Sheet* (retrieved December 2008 from <http://www.cockpitcountry.org/factsheet.html>). The findings of these reports and the maps proposed by the community were cited in, *inter alia*: Susan Koenig and Mike Schwartz, author interviews conducted August 3, 2007, taken from audiocassette

This growing set of information identified some of the major threats to biodiversity in the Cockpit Country, focusing on agriculture, mining and the introduction of invasive species.¹⁰⁷ Moreover, the reports began outlining the policy preferences of the emerging network, including the creation of a National Park in the Cockpit under IUCN guidelines, and establishing a geographic outline of what the community felt was the Cockpit Country ecosystem (see **Figure 1.1**).¹⁰⁸

The Forestry Department of Jamaica also became part of the emerging epistemic community in this time of emerging interest. In 1998, the Department concluded a decade long LANDSAT study using satellite imaging to determine the net contribution of certain types of human activity to deforestation. This report found that bauxite mining was the greatest national contributor to deforestation, and also established the officially accepted rate of deforestation nationwide as 0.1% loss in forest cover per annum.¹⁰⁹ In

recording; TNC, *Cockpit Country – Conservation Action Plan – A Summary* (Kingston: TNC); Adam Rhodes, 2006, *Bauxite vs. the Cockpit Country*

¹⁰⁷ UNEP, 2003, *Global Environment Facility Document Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 97. Balfour Spence, 2000, *Cockpit Country Conservation Project: Land Management Report* (Kingston: NRCA / World Bank).

¹⁰⁸ Balfour Spence, 2000, *Land Management Report* pp. 3; Susan Koenig et al, 2000, *Biodiversity Assessment*, Figure 3.1 on pp. 12. The map produced in the Biodiversity Assessment was cited on the WRC website, and provided by the TNC to the author during field research.

¹⁰⁹ Forestry Department, *National Forest Management and Conservation Plan*. Retrieved June 2006 from http://www.forestry.gov.jm/PDF_files/ForestPlan.pdf, 2001b pp. 19 – 20, pp. 66

2000, the Forestry Department started a joint program with the WRC to receive bird-banding training in order to conduct species monitoring and population assessments of birds in the Cockpit Country.¹¹⁰ The Department also created formal working relationships with WRC and STEA through the creation of memoranda of understanding (MOUs).¹¹¹ In particular, one of the goals of the MOUs was the creation of Local Forest Management Committees (LFMCs), joint training workshops conducted by the Forestry Department, STEA and the WRC to share information on subsistence agriculture, and promote environmentally friendly practices among residents of local communities.¹¹²

The Forestry Department also incorporated the 1999 studies into its own management plans, using the 1999 Biodiversity Assessment to determine which areas were of critical importance to management.¹¹³ In 2001, TNC began a Parks in Peril (PiP)

¹¹⁰ Kevin Porter, author interviews conducted over several days in August, 2006. Taken from handwritten notes. Respondent staff member in the Forestry Department, author interviews conducted over several days in August 2006. Taken from handwritten notes. Susan Koenig, author interviews between August 1 and August 6, 2006. Taken from handwritten notes, and transcript of audiocassette recording.

¹¹¹ Forestry Department, 2001, *National Forest Conservation and Management Plan* (Kingston: the Forestry Department) pp. 45; Hugh Dixon, author interviews conducted July 31, 2006. Transcript of audiocassette recording; Owen Evelyn, author interviews conducted June 23, 2006. Transcript of audiocassette recording.

¹¹² Forestry Department, 2001, *National Forest Conservation and Management Plan* (Kingston: the Forestry Department) pg. 45; Hugh Dixon, author interviews conducted July 31, 2006. Transcript of audiocassette recording; Owen Evelyn, author interviews conducted June 23, 2006. Transcript of audiocassette recording.

¹¹³ In the terminology of the Forestry Department, these were referred to as Critical Emphasis Areas. See Forestry Department, 2001, *National Forest Conservation and Management Plan* (Kingston: the Forestry Department) pp. 34. Susan Koenig, author interviews conducted August 2005. Handwritten notes.

project to set priorities for biodiversity management and recommend appropriate management strategies.¹¹⁴ The Forestry Department also used this research to design internal strategies for the conservation and management of forest resources and biodiversity.¹¹⁵

Creation of the Project and Constitution of the Network

In 2001, Birdlife Jamaica and regional partner ENGOS in the Dominican Republic and the Bahamas began to advocate for international funds to manage biodiversity in the habitats of migratory birds. These organizations lobbied for GEF funds to create a *Project on Sustainable Conservation for Globally Important Caribbean Bird Habitats* as relevant to Party obligations under several Articles of the CBD, including Articles 7 and 8.¹¹⁶ With a total budget of almost US\$2 million, the *Project on Sustainable*

¹¹⁴ TNC, 2008, *Parks in Peril: Conservation Area Planning* (retrieved December 2008 from <http://www.parksinperil.org/howwework/methods/cap.html>); Kimberly John, author interviews conducted July 12, 2006; Ann Hayes-Sutton, author questionnaire received September 27, 2006.

¹¹⁵ See the text of the Forest Plan in the pp. 9, Section E.10. See also United Nations Environment Programme (UNEP), *Global Environment Facility Project Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 54; The Nature Conservancy, 2005, *Cockpit Country Conservation Action Plan: A Summary* (TNC: Kingston) pp. 3.

¹¹⁶ United Nations Environmental Programme, 2003, *Global Environmental Facility Project Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 49; Convention on Biological Diversity, Articles 7 and 8, available at <http://www.cbd.int/convention/convention.shtml>.

Conservation in Jamaica was slated to begin in October 2003 and was scheduled to run for 42 months under the implementation of the United Nations Environment Programme (UNEP) and Birdlife Jamaica.¹¹⁷ In Jamaica, it was agreed that the project would take place in the Cockpit Country. While the precise boundaries of the area covered by the new GEF-funded project remained unclear, due to the fact that the Cockpit Country was not a legally defined area, the *Project for Sustainable Conservation* did reference the same area size – 450 km² – as the area given in the 1999 Biodiversity Assessment study.¹¹⁸

After 2001, the network continued to grow, as researchers from international academic institutions and domestic organizations joined the advocacy efforts. These included Mick Day, a University of Wisconsin specialist in karst geography, and Dayne Buddo, the former director of the Jamaica Clearing House Mechanism (CHM).¹¹⁹ Precisely bounding the population is complicated by the fact that there are numerous scientists who conduct work and contribute to knowledge on the Cockpit Country, yet

¹¹⁷ See UNEP, *Global Environment Facility Project Document*, pp. 1.

¹¹⁸ UNEP, 2003, *GEF Project Document*, pp. 51 – 52.

¹¹⁹ Mick Day and Susan Koenig, 2002, Cave Monitoring Practices in Central American and the Caribbean (*Acta Carsologica* 30(1): 123 – 134); Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording. The CHM is a quasi-state organization in the National History Division of the Institute of Jamaica, created in 2002 in order to fulfill Jamaica's obligations as a signatory to the Convention on Biological Diversity with a mandate to conduct sourcing and standardization of data and methodology among researchers, and facilitate the exchange of information among scientists. NEPA, *The National Biodiversity Strategy and Action Plan*, pp. 43. Forestry Department, *National Implementation Support Partnership* (Kingston, c. 2000) pp. 10; Interviews with Dayne Buddo, Jamaica Clearing House Mechanism. Lacunae are often identified when CHM staff members participate in ecological workshops

should not be considered part of the epistemic community. In fact, in a database of research relevant to Cockpit Country conservation maintained by the WRC, over 270 scientists have been identified as involved with knowledge production.¹²⁰

However, the vast majority, although they do not challenge the core claims of the epistemic community, do not self-identify, nor were they identified by the core members as participating in the process of policy advocacy. Their contribution was ad hoc or and motivated not by shared principled policy beliefs, but by opportunistic linkages between their personal goals and the goals of the epistemic community, for example in attaining funds for dissertation research.¹²¹

Nevertheless, some of this work has been significant to the core information of the epistemic community. L. Alan Eyre, a geographer from UWI authored a series of studies in the late 1980s calling attention to the high rate of deforestation in Jamaica and Cockpit Country in particular, and was one of the most important contributors to the body of early scientific knowledge on environmental degradation in the area.¹²² David Miller,

¹²⁰ Database drawn from Windsor Research Centre, *Researchers Database*, retrieved August 2006 from <http://wrc.cockpitcountry.com/rdbsearchresearchers.php>

¹²¹ Interviews with Kurt McLaren and Michaela D'Andrea. Most autonomous natural scientists, particularly those from international institutions, do not regularly contribute to project reports or policy documents. The Cockpit Country Conservation Action Plan (CAP) had over 21 organizations participate in the 2005 workshop, including the Jamaican Caves Organization, Mountain Pioneer Farmers Association, Environmental Fund of Jamaica, and Appleton Estate. (Drawn from the participant list of the Cockpit Country Conservation Action Planning Workshop Participants List, provided by Kimberly John of TNC).

¹²² Eyre's work cited by epistemic community members as influential in project documents include: "Slow death of a tropical rainforest: the Cockpit Country of Jamaica, West Indies". In: Luria, M., Steinberger, Y. and Spanier, E. (eds.) *Environmental quality*

Duncan McGregor and David Barker, geographers from UWI, have also conducted policy relevant research on the economic catalysts for peasant agricultural expansion in the area, and its impacts on environmental degradation.¹²³ The core network of the epistemic community consisted of a group of approximately twenty to thirty researchers, fourteen of whom are listed by name, training and organizational affiliation in **Table 2.2: List of Epistemic Community Members.**

Maintaining the Network

This network maintained cohesion through a variety of network-building linkages, including physical meetings and electronic communication during the progress of the project. In interviews with respondents from the WRC, STEA, TNC, UWI, the CHM and the Forestry Department, these links were described as regular, yet generally informal or semi-formal affairs, based around the principle of information exchange with identified authorities on Cockpit Country biodiversity and management.

The physical meetings took place either in the Cockpit Country itself, or in Kingston. In the Cockpit Country, the WRC maintained a high profile, due to its physical location within the area. For example, the WRC continued the process of regular bird-banding training with Forestry Department rangers, including those listed below, from

and ecosystem stability – Vol IVA – Environmental quality. (ISEQS Publication: Jerusalem, Israel, 1994) pg. 599–606; and “The tropical rainforests of Jamaica.” *Jamaica Journal*, **26**(1989):26–37.

¹²³ For a good survey of their work, see the volume produced by D.F.M. McGregor, D. Barker, and S. Lloyd (eds.) *Resource Sustainability and Caribbean Development* (The Press: Mona, Jamaica, 1998) passim.

2000 until the time of writing. The Forestry Department maintained its LFMCS in the Cockpit Country region with periodic meetings between the Forestry Department, local community residents, and the assistance of the region's ENGOs, namely STEA and the WRC, as well as with TNC. Finally, by virtue of establishing a research outpost within the Cockpit Country, the WRC offered room and board, and hence face-to-face contact to visiting researchers from UWI and foreign academic institutions, including researchers such as Mick Day from the University of Wisconsin, who came to study the area.

The Kingston meetings had less direct involvement by the WRC. Dayne Buddo from the CHM described an information exchange system maintained by a series of ad hoc committee meetings covering the period of the project, ranging in frequency up to three times a week, and attended primarily by members of UWI and TNC. At the same time, the physical meetings were only a part of the information exchange and network building process. In 2002, shortly after the TNC launched its PiP program, it held virtual conferences with biodiversity experts, administered in part by Susan Koenig of WRC, and WRC and CHM maintained online research databases stocked with submitted studies conducted by researchers, including those within the network. Moreover, the process of conducting joint studies on Cockpit Country biodiversity that began in the late 1990s continued, as combinations of individuals from the WRC, STEA, UWI and TNC composed shared reports and manuals on Cockpit Country conservation between 2000 and 2007.

A rough diagram of these links can be seen in **Figure 2.4: Diagram of Epistemic Community Links**. This diagram also suggests that certain organizations, by virtue of

the preponderance of connections they shared with other groups and actors, functioned as the centrally important organizations of the network. This perspective was reinforced by the fact that these organizations, namely WRC, the Forestry Department, TNC and UWI, were also the institutions universally cited as key in environmental advocacy by policymakers and researchers involved in Cockpit Country management.

The Cockpit Country Epistemic Community Develops a Managerial Approach

In interviews, epistemic community members indicated that they were primarily concerned about the ecological impacts of biodiversity loss on the Cockpit Country. Under this perspective, biodiversity was framed internally as a matter of ecological importance, in that each living component of the Cockpit Country ecosystem was considered integrally important in maintaining national ecological health and a functioning biosphere. The following section summarizes the internal justification for management as given in interviews and documents circulated within the network.

The Impact of Biodiversity Loss

One concern given about biodiversity management is that the impacts of loss of key elements of biodiversity would not be restricted to their immediate area. In addition to being a site of endemic flora, the limestone rainforest, provides a habitat for local and migratory fauna. Arthropods, invertebrates and crustaceans as well as charismatic species of Giant Swallowtail butterflies and Black and Yellow-billed parrots, all

contribute to ecosystem stability by maintaining intricate trophic relationships.¹²⁴ This interconnectivity was described as a motivating factor in epistemic community interviews and documents:

If you're looking at it as a scientific point of view, if you lose elements of biodiversity, a particular segment of biodiversity, it's going to impact the entire biodiversity. Whether it's trophic levels, relationships, you're going to impact the entire thing.¹²⁵

Selective removal of large timber species could cause unpredictable losses of biodiversity, far greater than predicted by the proportion of forest removed, because of the associated losses of host-specific parasites, epiphytes or other symbiotic and commensal organisms.¹²⁶

And sometimes, you know, you don't lose something because of a direct impact; you lose it because of an indirect impact, because you moved its food source... So, sometimes it's indirect, and you end up wiping out these endemic species, these rare species.¹²⁷

Endemism was also highlighted as an important dimension of concern, as it gives an additional dimension of fragility and uniqueness to Cockpit Country ecosystems, as described by epistemic community member Dayne Buddo:

There's one section in Cockpit Country where there's this particular road, right? There's this part, these plants are only found in that section, in that place, and *nowhere else* in the world. I mean, that is remarkable! Only in

¹²⁴ STEA, *Biodiversity Manual* pp. 8. Kimberly John, author interviews conducted July 12, 2006. Transcript of audiocassette recording.

¹²⁵ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording

¹²⁶ Susan Koenig, 1999, *Cockpit Country Conservation Report: Biodiversity Assessment* (Prepared for NRCA/NEPA: Kingston) pp. 30.

¹²⁷ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording.

that section, that *one* small section.¹²⁸

Identifying the Primary Ecological Threats

Concerns about ecological integrity and the irreplaceable loss of endemic biodiversity unified the epistemic community behind the perception that bauxite mining was the primary threat to biodiversity in the Cockpit Country. In interviews and policy documents, members emphasized the permanent transformation and disruption of ecological relationships that would occur if open-cast mining took place in the area. From this perspective, none of the available management strategies could cope with the severity of biodiversity loss caused by bauxite mining. As Spence observed in 1999, “[mining] should not be allowed in the Cockpit core because land reclamation will not restore the original ecosystem to acceptable levels,”¹²⁹ and it would become impossible to manage the Cockpit Country for other resources, including forest conservation:

[Forest management] would be obsolete if bauxite mining takes place in the Cockpit Country. There will be no trees to take anyway. That’s a *huge* threat. Really above what an NGO can do, really above what scientists at the University [of the West Indies] or Institute [of Jamaica] can do. You’re talking about a Minister, almost, decision. You can’t have bauxite mining in the Cockpit Country. It’s the last place that you want to have that.¹³⁰

The network also shared a concern about the expansion of agriculture and logging

¹²⁸ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording. Emphasis based on author interpretation of phrasing of respondent.

¹²⁹ Balfour Spence, *GEF Cockpit Country Conservation Project: Land Management Report* (prepared for NRCA: Kingston, Jamaica) pp. 34.

¹³⁰ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording.

in the Cockpit Country. Yam harvesting in particular is problematic because of the potential to clear vast tracts of land and contribute to deforestation by preventing the regeneration of the forest.¹³¹ Other threats, such as commercial agriculture, were not widely cited as of primary concern by epistemic community members.

Creating a Managerial Framework

Accordingly, the epistemic community developed an internal set of policy preferences that emphasized the ecological importance of biodiversity in the Cockpit Country. These preferred policies were based in part on the ecoregion mapping conducted by the emerging epistemic community in 1999, including the Biodiversity Assessment, which divided the Cockpit Country into a proposed core area of sensitive biodiversity and a buffer zone.¹³² Throughout the entirety of the Cockpit Country, the epistemic community sought a moratorium on mining and a fundamental change in the harvesting of yam-sticks. In the area proposed as a buffer zone, the community sought the promotion of sustainable agriculture and regulated timber extraction. In the core, the community also sought a ban on agricultural incursions.

At the same time, there was some contention within the network about the appropriate regulation of agricultural activity in the Cockpit Country. While all network members were opposed to bauxite mining in the area, some members, mostly Jamaican-

¹³¹ The Forestry Department, 2001, *National Forest Management and Conservation Plan* (Kingston: Forestry Department) pp. 12.

¹³² World Bank, 1999, *Cockpit Country Conservation Project*, pp. 1; Susan Koenig et al, 1999, *Biodiversity Assessment* pp. 11

born scientists, agreed that sustainable agriculture in the Cockpit Country buffer zone was acceptable. Sustainable agriculture, if managed correctly, could incorporate local communities into governance efforts, promoting biodiversity conservation while simultaneously maintaining economic wellbeing for marginalized and rural populations, as described by interview respondents such as Hugh Dixon of STEA, and Kimberly John and Ann Hayes-Sutton of TNC:

[When] you get the little bits of research... you start to say, “Hey, I can use the resource, because I know it’s renewable. And I can know what levels I can use it, to make it renewable to sustain it over time,” as against indiscriminate use of it.¹³³

I think that all life is obviously, and not so obviously connected, and we need to make sure that we keep it working if we want to survive. The fact is that we wouldn’t, human beings or humanity wouldn’t be alive if we didn’t maintain and manage biodiversity.¹³⁴

I do not agree that there are species that should never be used for economic purposes, nor do I agree that there are some uses (such as hunting) that should never be considered, provided such use can be shown to be consistent with the conservation of the species... I believe that conservation of biodiversity is not just important but fundamental to the maintenance of humanity.¹³⁵

However, a small fraction of the community, three of the approximately two dozen members, including both Schwartz and Koenig of the WRC, indicated greater opposition to agricultural incursions into the Cockpit Country even from marginalized

¹³³ Hugh Dixon, author interviews conducted July 31, 2006. Transcript of audiocassette recording.

¹³⁴ Kimberly John author interviews conducted July 12, 2006. Transcript of audiocassette recording.

¹³⁵ Ann Hayes-Sutton, author questionnaire received September 24, 2006. Transcript of typed responses.

and subsistence populations. In interviews, these respondents suggested that permitting infrastructure development in the Cockpit Country, such as access to electricity and maintained roads, would have a detrimental effect on biodiversity management, by contributing to further access into ecologically sensitive zones. These three took a preservationist approach not shared by most of the network, as suggested in the following quotes from Schwartz and Koenig.

...I'm part of the human plague that has descended upon this planet... I would be very happy if everyone on this planet voluntarily decided to go extinct and leave it to the rest of the animals to have a chance to exist [*laughing*].¹³⁶

So, we need to set a good example to this future species that takes over the world... [We] should voluntarily go extinct to protect the rest of biodiversity.¹³⁷

However, this internal tension was not fundamentally threatening to the coherence of the network. First, these comments did not become a visible part of the internal policy debate, and second, maintaining cohesion against the overarching threat of bauxite mining remained the primary goal of the epistemic community.

Transnational Advocacy Network (TAN): A Wider Network of Policy Advocacy

As the epistemic community became constituted around the ecological importance of Cockpit Country biodiversity, a larger transnational advocacy network

¹³⁶ Mike Schwartz, author interviews conducted between August 1 and August 6, 2006. Transcript of audiocassette recording.

¹³⁷ Susan Koenig, author interviews conducted between August 1 and August 6, 2006. Transcript of audiocassette recording.

(TAN) emerged to parallel the interest of the research network. This TAN consisted of a range of organizations including: community based organizations (CBOs) of Accompong Maroons, descendants of escaped slaves and indigenous Indians; Birdlife International; the Environmental Foundation of Jamaica (EFJ); the Jamaica Environmental Advocacy Network (JEAN); the Jamaica Environmental Trust (JET); the Jamaica Caving Organization (JCO); the Jamaica Conservation and Development Trust (JCDT).¹³⁸

The membership of this network overlapped with that of the epistemic community, insofar as Mike Schwartz from WRC and Diana McCauley of JET were members of both networks. In addition, the information generated by the epistemic community, highlighting the risk to Cockpit Country ecology posed by bauxite expansion, was crucial in raising awareness about the potential encroachment of bauxite companies on Cockpit Country biodiversity.

However, the TAN functioned as a different network, as the organizing principles were different from those of the epistemic community. While TAN organizations recognized the findings of the epistemic community, including the threat assessment and the proposed boundaries of the ecoregion,¹³⁹ the TAN was not motivated by scientific reasoning, nor was the network solely concerned about the ecological ramifications of

¹³⁸ World Bank, 1999, *Jamaica Cockpit Country Conservation Project* (World Bank) pp. 1; Kenneth Bilby, 1999, *Cockpit Country Conservation Project: Social Component – Maroon Component* (Kingston: NRCA), passim.

¹³⁹ See Jamaica Caves Organization, 2008, *Jamaica Caves Organization Advisory* (available at <http://www.jamaicancaves.org/cockpit-country-bauxite-mining.htm>); Jamaica Environmental Advocacy Network, 2007, *Cockpit Country Fact Sheet* (Kingston: Press release prepared by JEAN)

Cockpit Country biodiversity loss. For example, TAN organizations, such as the aforementioned Accompong Maroons, value the Cockpit Country not only for its role in providing economic opportunities, but also for its cultural importance as a historic site in which rebel slave garrisons resisted British colonialism.¹⁴⁰ Nevertheless, the TAN assisted the advocacy efforts of the epistemic community by, among other things, contributing funding to the *Project on Sustainable Conservation* and TNC's PiP project, aiding in the generation of scientific knowledge.¹⁴¹

Framing Alignment

The constitution of a shared ecological focus within the epistemic community demonstrates the process of *framing alignment*, where actors in a network converge on a set of norms, by exchanging information, ideas and building horizontal links.¹⁴² In

¹⁴⁰ Kenneth Bilby, 1999, *Cockpit Country Conservation Project: Maroon Component*, passim. See also Peter Haas, 2001, *Institutions for the Earth: Sources of Effective International Environmental Protection*. (Cambridge, Massachusetts: MIT Press) and Haas, 2001, Policy Knowledge: Epistemic Communities (*International Encyclopedia of the Social and Behavioral Sciences*, ed. Smelser, Neil and Paul Bates. New York) for a discussion on the conceptual separation of epistemic communities from other kinds of social networks due to the production of the former of scientific knowledge and research.

¹⁴¹ See TNC, 2006, *Cockpit Country Conservation Action Plan – a Summary* (Kingston: TNC), References and Acknowledgements; UNEP, *Global Environment Facility Project Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 54.

¹⁴² David Snow et al, 1986, Frame Alignment Processes, Micromobilization, and Movement Participation (*American Sociological Review*, 51: 464 – 481), pp. 464. See also Margaret Keck and Kathryn Sikkink, *Activists Beyond Borders* pp. 2-3. Taken from the literature on social movement organizations (SMOs), the concept of frame alignment

particular, the effort towards creating mutually intelligible information required that researchers conduct investigations and create relationships with specialists outside their area of expertise. Besides building connections to other potential allies, this process led to a shared understanding of the integrated ecological relationships in the Cockpit Country, as described in the following quote by Susan Koenig.

...[When] you start doing one little bit of research, then the system has its story to tell you, and you start seeing the interactions with the other animals and the system... Also, I was kind of the resident biologist... So everyone kind of directs the questions to me and so I started doing bat monitoring for Windsor Great Caves, because “birds fly, bats fly, so therefore Susan must know something about bats.”¹⁴³

This also assisted the network in converging upon shared expectations and ideas about the important environmental relationships in the Cockpit Country. The idea that bauxite mining was the primary threat did not become a unifying idea until after 2000, as ENGOs such as the WRC did not focus initially consider bauxite an imminent danger to biodiversity:

[When] we did our analysis, we were supposed to be looking at the active threats, not the potential threats. And there was no bauxite mining taking

explains the internal dynamics within networks converging on a shared set of norms. See also Mario Diani, 1996, Linking Mobilization Frames and Political Opportunities: Insights from Regional Populism in Italy (*American Sociological Review*, 61: 1053 – 1069), pp. 1058.

¹⁴³ Susan Koenig, author interviews conducted between August 1 and August 6, 2006. Transcript of audiocassette recording. Also based on interviews with Mick Day, Dayne Buddo, Mike Schwartz and Marilyn Headley. While conducting field research in the Cockpit Country, the author engaged in trust building with the members of the WRC. During this time, the WRC was engaged in collecting and categorizing species of snakes and frogs for taxonomy and population monitoring. In particular, the TNC Parks-in-Peril (PiP) Project, commissioned by the World Bank, played a key role in this norm transmission.

place. Therefore, it kind of dropped, might have been lower ranked than otherwise...¹⁴⁴

The diminution of bauxite mining as a major threat was also demonstrated in the 1999 Biodiversity Assessment, which, while recognizing bauxite mining as a potential threat, focused on a management approach aimed at improving practices among local subsistence and agrarian populations.¹⁴⁵ This benign neglect of bauxite mining as a policy concern was justified on the basis of the logistical difficulties of extending mining into the difficult-to-access area.¹⁴⁶ It was simply too cost-prohibitive for bauxite companies to consider extractive efforts in the late 1990s.

However, after 2000, national policy developments and industrial practices in the bauxite sector indicated mounting national interest in developing access infrastructure in the Cockpit Country. First, the government of Jamaica began planning the construction of Highway 2000, a major thoroughfare traversing the southern coast of the island, with a

¹⁴⁴ Mike Schwartz, author interviews conducted between August 1 and August 6, 2006. Transcript of audiocassette recording.

¹⁴⁵ Susan Koenig, *Cockpit Country Conservation Project: Biodiversity Assessment*, 2000 pp. 57. This report also neatly captures epistemic community members' understanding of what 'intrinsic value' entails: "Intrinsic value includes recognizing that a species deserves to survive for its own sake, regardless of whether it is deemed 'aesthetically-pleasing' or 'interesting' and recognizing the contribution of biodiversity in the maintenance of a healthy environment" (Ibid pp. 57). Ann Sutton, author questionnaires, conducted September 24, 2006; Mick Day, author questionnaire, conducted September 24, 2006.

¹⁴⁶ Mick Day, author questionnaires, conducted September 24, 2006; Ann Sutton, author questionnaires, conducted September 24, 2006. Marilyn Headley, author interviews conducted July 6, 2006

link between the north and south coast passing through the Cockpit Country.¹⁴⁷ Although the plan for this north-south link was abandoned due to the foreseen difficulties of constructing the highway within Cockpit Country, the initial proposal indicated that the government was considering the possibility of major and unprecedented infrastructure development in the Cockpit.¹⁴⁸ Second, as bauxite deposits were being depleted nationwide, companies began increasing the scope of mining activities across the island, and it increasingly seemed as if Cockpit Country with its projected reserves would be an imminent target for mineral extraction.¹⁴⁹ Consequently, by 2001, the network agreed internally that mining was an imminent concern.

[Now, the TNC's] analysis *or* our analysis gives bauxite mining as the biggest threat. And we certainly agree with *that*.¹⁵⁰

Measuring the Epistemic Community's Knowledge Consensus

Along with adopting a framework that shared a focus on ecological relationships, the network established an intersubjective consensus to explain the causal relationships between human activity and environmental degradation. In interviews, respondents in

¹⁴⁷ Balfour Spence, *Land Management Report*, pp. 21. Kayenne Taylor, 1998 *Report on the Legal Imperatives and Implications of the Cockpit Country Conservation Project* pp. 94 – 95. Marilyn Headley, author interviews conducted July 6, 2006. Transcript of audiocassette recording

¹⁴⁸ Marilyn Headley, author interviews conducted July 6, 2006. Transcript of audiocassette recording.

¹⁴⁹ Shanti Persaud, author interviews conducted July 3, 2006. Taken from handwritten notes.

¹⁵⁰ Mick Day, author questionnaire, conducted September 24, 2006.

the epistemic community and the broader scientific community indicated that there was no contention, either within the network or externally, about the severity and extent of the anthropogenic threats facing biodiversity management in the region. As a result, the network in this case evinced the characteristics of an epistemic community, namely a knowledge consensus and a rationale for action.

Measuring Consensus on Bauxite Mining

Bauxite Mining: Agreement on the Causes

The idea that bauxite mining was an overwhelming threat to biodiversity in the Cockpit Country after 2000 was universally shared within the epistemic community. First, bauxite production has a privileged position in Jamaican national development. Bauxite mining is a significant percentage of annual GDP, between 8.5% and 10% per annum. In 1999 production stood at 13 million tonnes per annum, or 7% of the total world supply.¹⁵¹ Second, governmental agencies also directly benefit from bauxite production. Between 2004 and 2006, the JBI received J\$5m in interest from bauxite deposits and J\$11.5m from commercial projects. The government has 50% ownership in Clarendon Alumina Production, one of the bauxite companies possessing prospecting

¹⁵¹ Although this figure is the contribution of mining in all sectors, bauxite mining makes up 99% of the total revenues of the mining sector. See the NRCA reports prepared by Dennis Morrison and Michael Mitchell, *Sector Assessment Reports – Mining*, 1999 pp. 2-3; STATIN, *Jamaican Statistics* (Retrieved August 2007 from <http://www.statinja.com/stats.html>). NRCA reports prepared by Dennis Morrison and Michael Mitchell, *Sector Assessment Reports – Mining*, 1999 pp. 2-3; STATIN, *Jamaican Statistics* (Retrieved August 2007 from <http://www.statinja.com/stats.html>).

leases in the Cockpit Country.¹⁵² Bauxite interests have also been highly placed in other agencies, with the appointment in the mid 2000s of Parris Lyew-Ayee, the director of the JBI, to the directorship of NEPA.¹⁵³ Third, there is wide recognition of which specific companies are likely to conduct mining in the area. At the time of writing, the only companies with Ministry of Agriculture-issued mining licenses for the bauxite in the Cockpit Country were Alcoa and Clarendon Aluminium Production.

Bauxite Mining: Agreement on the Consequences

Further, the common recognition of the ecological importance of Cockpit Country biodiversity led to a shared understanding that the consequences of bauxite mining would be the irrevocable loss of sensitive biodiversity. This was facilitated by the standardization of industrial extraction practices in the bauxite sector, and awareness of these practices within the network. Concern about the irreparable nature of bauxite mining on biodiversity can be found in internally cited reports such as TNC's *Cockpit Country Conservation Action Plan*,¹⁵⁴ STEA's *Biodiversity Manual*,¹⁵⁵ and in interview

¹⁵² Jamaica Information Service, 2008, *The Jamaica Bauxite Institute* (retrieved December 2008 from <http://www.jis.gov.jm/jamaicaBauxiteInstitute/index.asp>); Jamaica Ministry of Finance and Planning, 2005, *Public Bodies – Jamaica Bauxite Institute* (retrieved from <http://www.mof.gov.jm/downloads/2004/ped/JBI.pdf>), pg. 96.

¹⁵³ Carib Cement, 2005, *2005 Annual Report* (retrieved December 2008 from http://www.caribcement.com/files/cms/CCCL_Annual_Report_2005.pdf); Former NRCA staff member, author interviews not for attribution. Notes taken from telephone interview.

¹⁵⁴ The Nature Conservancy, *Cockpit Country Conservation Action Plan: A Summary*. Kingston, 2005 passim and Appendix C.

responses from network members Owen Evelyn from the Forestry Department, and other respondents from UWI.

You will notice that in the [National Biodiversity Strategy and] Action Plan, the primary threats, or potential threats, is bauxite mining. Okay? We regard it as probably the most significant threat, because most of the Cockpit is bauxite... Other threats are not *that* extensive. But the bauxite is extensive, because if they go inside, it will affect all the biodiversity planning that we have identified.¹⁵⁶

[Any] kind of intrusive land cutting that the bauxite company would do would just basically kill the area. There would be nothing left.¹⁵⁷

Bauxite Mining: Agreement on the Extent

During the period of transnational mobilization and network-building, there had been no mining in the Cockpit Country. Nevertheless, there was a shared understanding within the network about the likely extent of bauxite mining in the region due to the recognition of certain details. The community shared maps illustrating the presence, size, and location of bauxite reserves in the Cockpit Country (see **Figure 2.1: Map of Bauxite Deposits in the Cockpit Country**). These maps and figures were cited in reports such as the 1999 Biodiversity Assessment conducted by Koenig of the WRC, Vogel of

¹⁵⁵ Southern Trelawny Environmental Agency (STEA), *Biodiversity Manual* (Kingston, Jamaica c. 2003), pp. 15.

¹⁵⁶ Owen Evelyn, author interviews conducted June 23, 2006. Transcript of audiocassette recording.

¹⁵⁷ UWI researcher, author interviews not for attribution. Transcript of audiocassette recording.

Birdlife/UWI, Hayes-Sutton of TNC and Proctor of UWI¹⁵⁸ and the Land Management Assessment conducted by Spence.¹⁵⁹ Since the network was convinced by 2001 that bauxite companies intended to mine the Cockpit, these maps contributed to a growing alarm about the likely scope of bauxite extraction activities in the area:

...[Mining] is the biggest threat. It's an inevitable threat, and it's going to be a significant impact on the Cockpit Country.¹⁶⁰

...[The] whole issue that they will face in the near future, as you probably would have heard, is that [the Cockpit Country is] supposed to be a huge bauxite reserve. And so if we do run out of areas of bauxite outside the Cockpit Country, they're going to actually head in there.¹⁶¹

Consequently, the epistemic community demonstrated a shared agreement about the scientific knowledge on every indicator of knowledge about bauxite mining and environmental degradation. As described above, a qualitative assessment of the status of scientific knowledge indicates that, for this process, scientific consensus within the network is both present and strong.

Measuring Scientific Consensus on Agriculture and Logging

In comparison to the state of knowledge on the effect of bauxite mining on environmental degradation, there was less agreement within the epistemic community on

¹⁵⁸ Koenig et al, 1999, *Biodiversity Assessment* (figure 3.8, pp. 23).

¹⁵⁹ Spence, c.2000, *Land Management Report* (figure 6).

¹⁶⁰ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording.

¹⁶¹ UWI researcher, author interviews, not for attribution. Transcript of audiocassette recording.

the causes, consequences and extent of agricultural environmental degradation. This was due to a lack of clear information in some sectors, differences in methodology within the network, and a qualitative difference between the network's approach to understanding the ecological impact of bauxite, and its approach to agriculture. Nevertheless, the observed dissensus was not described by the network as a cause for undermining the core knowledge consensus.

Agriculture and Logging: Agreement on the Causes

First, marijuana cultivation is illegal in Jamaica, though regularly carried out as part of the informal economy. Similarly, unauthorized logging and unauthorized farming of licit crops takes place in the Cockpit Country. In these cases, activities which are hidden from the view of policymakers do not follow any formal reporting systems. Thus, for some agricultural activities, it is difficult to isolate specific actors, practices and conduct accurate models of the environmental impact of agricultural activity.¹⁶²

As a proxy indicator for the lack of agreement on the causes of subsistence agriculture, epistemic community members do not have a consistent ranking scheme of the severity of the threat of agricultural activity. The terms used to classify and evaluate the different activities, namely "agriculture," "yam-stick cultivation," and "forest conversion" are not used in a consistent manner across policy documents. TNC's threat assessment for its PiP program lists the three as distinct, each with differing levels of

¹⁶² O. B. Evelyn and R. Camirand, 2003, Forest cover and deforestation in Jamaica: an analysis of forest cover estimates over time (*International Forestry Review*, 5: 354 – 363) pp. 355; David Barker and David J. Miller, 1995, Farming on the Fringe, *passim*.

importance, and separating the low-ranked yam-stick harvesting from broader agricultural practices.¹⁶³ The Forestry Department, while ranking yam-stick harvesting as a prominent threat, also separated it from agriculture, while the 1999 *Land Management Assessment* produced by Spence of UWI included yam production in agriculture, calling it the “most significant immediate threat” to biodiversity management in the Cockpit Country.¹⁶⁴ Nevertheless, network members from the Forestry Department, WRC, STEA and UWI all ranked yam-stick harvesting, whether included as an agricultural activity, or counted separately, as the prominent agricultural threat in the region, with only TNC as an outlier.

Agriculture and Logging: Agreement on the Consequences

A lack of clear information also inhibits collecting scientific information on the consequences of subsistence agriculture and logging on biodiversity. For example, a 1995 study of subsistence agriculture in the Cockpit Country revealed samples of small farmers who completely bulldozed forested areas for cattle, but also indicated that other farmers painstakingly conserved the natural forest during crop cultivation.¹⁶⁵ Although

¹⁶³ The Nature Conservancy, *Cockpit Country Conservation Action Plan: A Summary* (Kingston, 2005) Appendix

¹⁶⁴ Respectively, see: Kayenne Taylor, *Report on the Legal Imperatives and Implications of the Cockpit Country Conservation Project* (Kingston) pp. 7; Balfour Spence, *GEF Cockpit Country Management Report: Land Management Report* (prepared for NRCA: Kingston, c. 2000) pp. 3 Based on interviews with Owen Evelyn, Kimberly John and Donna Blake. See also the *NBSAP*; TNC, 2005, *Conservation Action Plan Summary*.

¹⁶⁵ David Barker and David J. Miller, 1995, *Farming on the Fringe*, pp. 283.

marijuana cultivation may contribute to further incursions into sensitive areas, it may inadvertently lead to the conservation of certain broad-leafed tree species due to their utility as aerial camouflage.¹⁶⁶ As a result, precisely accounting for the impact of agricultural activity on biodiversity in the Cockpit Country would require an extensive qualitative survey of decentralized, under-reported activity; failing this, the current models have some inescapable element of uncertainty.

Agriculture and Logging: Agreement on the Extent

Finally, the fact that agricultural activity was considered to be less severe of a threat than bauxite mining contributed to another element of uncertainty. With bauxite mining, it was assumed that any such activity would lead to complete destruction of biodiversity. Since agricultural activity was less traumatic, the network relied on more finely gradated assessments of environmental degradation, which led to some disagreement when network members could not agree on a shared methodology for measuring the extent of biodiversity loss.

The Forestry Department used its LANDSAT study to fix the rate at 0.1% loss of forest cover per annum, a figure that is also recognized currently by TNC.¹⁶⁷ At the same time, UWI scientists have produced reports positing a range from a low of 0.03% to a high of 11.3% loss per annum.¹⁶⁸ Spence's 1999 Land Management Assessment

¹⁶⁶ Balfour Spence, *GEF Cockpit Country Management Report* pp. 18.

¹⁶⁷ Forestry Department, *National Conservation and Management Plan* pp. 23 – 24.

¹⁶⁸ See a survey of the rates of deforestation in O. Evelyn and R. Camirand 2003, *Forest*

claimed the rate of deforestation in the Cockpit Country between 1961 and 1991 at 0.97%, and the 1999 Biodiversity Assessment cited studies by L. Alan Eyre fixing the rate of loss at 2.8%.

One of the cited reasons for this recognized discrepancy is the presence of methodological differences, particularly in distinguishing between native and non-native species, and in projecting rates of change of foliage cover over time. Indeed, this was one of the conclusions of the 1999 Cockpit Country Conservation Project reports by TNC, WRC and UWI network members.¹⁶⁹ However, there were no references to this disagreement in the contemporary policy proposals and internal documents, even as there was a verbal acknowledgement of this difference in interviews.

To reiterate, there was universal agreement on the dimensions of bauxite mining and its causal impact on biodiversity loss. In contrast, there was some disagreement between TNC and the rest of the network about the precise *causes* of agricultural degradation, some diffuse uncertainty about the *consequences* of agricultural degradation, and despite an official acceptance of the Forestry Department's figure, acknowledgement by all members of disagreement on the *extent* of agricultural degradation in the Cockpit Country. Nevertheless, these disagreements did not surface in the network's policy

cover and deforestation in Jamaica: an analysis of forest cover estimates over time (*International Forestry Review* 5: 354 – 363) pp. 355. Forestry Department, 2001, *National Forest Conservation and Management Plan* pp. 23 – 24. Balfour Spence, *GEF Cockpit Country Management Report: Land Management Report* pp. 19.

¹⁶⁹ Susan Koenig, with Ann Hayes-Sutton, George Proctor and Peter Vogel, *Cockpit Country Conservation Report: Biodiversity Assessment* (Prepared for NRCA/NEPA: Kingston, 2000) pp. 11

discussions, and although consensus was certainly higher in the case of bauxite mining, it was nevertheless present throughout the network on the anthropogenic causes of biodiversity loss in the Cockpit Country.

Measuring Network Socialization with Managers

While consensus was relatively uniform across the threats observed by the network, there was substantial variation in the degree of socialization between the epistemic community and targeted policymakers in natural resource management agencies.

High Socialization with the Forestry Department

There were very robust ties between the Forestry Department and the network. In fact, the Department functioned as part of the epistemic community. As indicated above, this meant that researchers from the civil society and the governmental agency shared information and knowledge about causal relationships and the importance of biodiversity in the region through joint reports, training sessions, and information exchanges. Further, the Department conducted LFMCs with STEA, TNC and WRC. However, the strength of this relationship between policymaker and epistemic community distinguishes the Forestry Department from other natural resource management agencies in Jamaica.

Very Low Socialization between the Network and NEPA

In the case of the environmental management agency, NEPA, the relationship between the network of scientists and the governmental agency was almost antagonistic. This was not always the case. Prior to 2001, when the agency was still referred to as the NRCA, members of the emerging epistemic community had established strong relationships and created a pattern of information sharing with the environmental agency. For example, the NRCA commissioned a series of Sector Assessment Reports in 1999 to prepare for the construction of a National Biodiversity Strategy and Action Plan (NBSAP), one of the requirements of the CBD.¹⁷⁰ Among some of the researchers contacted by the NRCA to contribute information included epistemic community members Peter Vogel from UWI and Ann Hayes-Sutton from TNC.

However, the 2001 restructuring of the agency led to a rupture in the relationship between the network and the agency.¹⁷¹ First, epistemic community members were concerned about the politics behind amalgamating the NRCA with the Town Planning Department, given earlier tensions between those two bodies:

[The Town Planning Department] wanted to do [a housing scheme], and suddenly they found to their surprise and amazement that they couldn't do it, because NEPA – NRCA – had refused permission, because of the environmental impact. And the government took the shortcut route and said, "Well, we'll fix you. We're going to amalgamate Planning and NRCA into one, NEPA, so this doesn't happen again."¹⁷²

¹⁷⁰ See Article 6 of the Convention.

¹⁷¹ Susan Koenig, author interviews conducted August 3, 2006. Transcript of audiocassette recording.

¹⁷² Mike Schwartz, author interviews conducted August 3, 2006. Transcript of audiocassette recording.

Second, after restructuring, the organization had an almost entirely new staff, with little institutional continuity from the previous agency. In interviews, former high-ranking NRCA staffers indicated that this weakened the regulatory authority of the agency, as the loss of expertise severely hampered the credibility and capacity of the organization to assess and evaluate environmental processes.¹⁷³ The perceived decline of the NRCA/NEPA as a regulatory power later contributed further to the rupture of communication between the civil society and the agency.

The problem with NEPA from what I understand, is how the appointments are made. The high echelon people are people who are appointed by the government, and they might not have any interest in anything per se, other than just doing their jobs. And they aren't necessarily the best people for this position.¹⁷⁴

In 2005, tensions between the civil society and NEPA came to a head when members of the epistemic community and the environmental TAN, such as the JET sued the agency, alleging that NEPA conducted a compromised and flawed environmental impact assessment (EIA) of a proposed hotel development on the north coast. From an environmental perspective, the suit was successful, as Justice Brian Sykes barred construction of the hotel, asserting that NEPA had failed its mandate. However, as described in interviews with NEPA staff and epistemic community members, the public

¹⁷³ These points made in interviews with the following: Franklin McDonald, author interviews, conducted August 2007. Notes taken from telephone interview; Mike Schwartz, author interviews conducted August 3, 2006. Taken from transcript of audiocassette recording; Yolanda Mittoo, author interviews, conducted August 2005. Taken from handwritten notes. Donna Blake, author interviews conducted June 28, 2006. Taken from audiocassette recording.

¹⁷⁴ Kurt McLaren, author interviews conducted. Transcript of audiocassette recording.

confrontation between the civil society and the agency created irreconcilable tensions between the ENGOs and the environmental ministry.

Low Socialization between the Network and Other Agencies

While less confrontational, the remainder of relationships between the civil society epistemic community members and natural resource management agencies was characterized by far less socialization than was the case with the Forestry Department. Channels of communication between the various populations of social actors were not institutionalized, but rather ad hoc and irregular. Most of the communication to policymakers took place through letter-writing drives and media efforts by a few actors, in particular Mike Schwartz of the WRC, Ann Hayes-Sutton of TNC and Diana McCauley of the Jamaica Environment Trust (JET), who wrote letters to the Ministry of Agriculture and issued press releases during 2005 – 2006. Occasionally, epistemic community organizations would attempt to create more formal communication between the populations of policymakers and civil society researchers. For example, in planning for the Conservation Action Plan, TNC held a series of workshops with epistemic community organizations from 2004 – 2006, and invited policy makers from the JBI, the Ministry of Agriculture, the Ministry of Environment, NEPA and the Forestry Department to attend.¹⁷⁵ However, only the Forestry Department participated while the

¹⁷⁵ Author questionnaire, Mike Schwartz, Jan 14, 2007, taken from typed responses; Peter Vogel, 1999, *NBSAP Sector Assessment Report – Terrestrial Fauna* (Kingston: NEPA); Ann Hayes-Sutton, 1999, *NBSAP Sector Assessment Report – Terrestrial Flora* (Kingston: NEPA); Diana McCauley, author questionnaire received 18 January, 2007. Taken from typed responses.

JB1, NEPA and the remainder of the Ministry of Agriculture abstained, a pattern of agency participation characterized as typical by epistemic community respondents. Consequently, the only campaign in which socialization between the network and the policymaker agencies existed, occurred in the case of the Forestry Department.

Measuring the Framing Strategies Used by the Network

Strategic Economic Frames: Persuading Managers

In assessing the advocacy efforts of the network, economic frames were used extensively in communicating with the various managers associated with bauxite mining. Between 2001 and 2006, the network deliberately adopted the language of economic cost-benefit analysis to “translate” its claims by constructing models indicating that biodiversity management in the Cockpit Country was intimately linked to economic activity in other nationally important economic productive sectors, and that degradation would lead to economic opportunity losses. Through interviews and policy documents, epistemic community members stated that this was a necessary strategy of communicating with policy makers that were primarily concerned with fostering national development through prominent industrial sectors.

Since our decision makers, I don’t think they are really well educated about ecology and so on... I think it’s best we, to frame the message of biodiversity management in something that in a sense seems [economically] conservative.¹⁷⁶

¹⁷⁶ Kimberly John, author interviews conducted July 12, 2006. Transcript of audiocassette recording.

Using Economics to Frame Environmental Impacts

The productive sector used to highlight the link between environmental management and national economic development was the tourist industry. The choice of tourism was considered appropriate, as tourism is a comparable contributor to national development, bringing a similar amount of foreign revenue, and in 2003 contributing 10% of GDP and 50% of national foreign currency earnings. Including auxiliary employment, tourism is credited with contributing to the creation of 1 in every 4 jobs in Jamaica.¹⁷⁷ According to interviews with the epistemic community network, this link was deemed more convincing than appeals to environmentalism.

We're trying to communicate to [policy makers] in dollars and cents. Which is a language that they more understand than to say, "This is a particular species that is only found in Jamaica." They probably don't relate to it as much, as then saying, "If you lose this, you stand to lose millions of dollars in tourism."¹⁷⁸

The link was made possible by the importance of the Cockpit Country to the hydrological regime of the north coast. The Cockpit Country encompasses several watersheds, or areas "drained by a single stream, river, or drainage network," organized since 1995 by the Water Resources Authority into two Watershed Management Units (WMUs), the Martha Brae and Rio Bueno WMU.¹⁷⁹ These WMUs supply municipal and

¹⁷⁷ JAMPRO, *The Importance of the Tourism Mega-Cluster in the National Export Strategy* (from Conference on Global Tourism Growth: A Challenge for SMEs, 2005. Retrieved October 2007 from <http://www.oecd.org/dataoecd/27/5/36886099.pdf>) p. 2

¹⁷⁸ Dayne Buddo, author interviews conducted July 20, 2006. Transcript of audiocassette recording.

¹⁷⁹ Definition taken from the Forestry Department's *Forest Regulations*, pp. 1. See Roland Camirand and Owen Evelyn, *National Forestry Inventory Report*, pp. 21. There

drinking water to the northwestern section of the island, including to economically important tourism centers in Montego Bay. In 2003, TNC began planning a water valuation study of the hydrological resources of Cockpit Country, intending to demonstrate the economic importance of the region, distributing these results to the Forestry Department, the JBI, NEPA, the Ministry of Environment and the Water Resources Authority.¹⁸⁰

Water resources were regarded as a key starting point for the valuation of the ecological services of Cockpit Country because of the very significant municipal, agricultural and tourism interests downstream of the area and because it would provide a compelling cost-benefit analysis when compared with high-value activities such as bauxite mining.¹⁸¹

What we were going to do is attach a cost, that there's a price associated with the clean water that's supplied by the Cockpit Country... If you compare water with bauxite mining... [compare] the benefits to the society and the economy of maintaining the resources.¹⁸²

[Bauxite] brings revenue into a weak economy, so, you let the land, and mine the bauxite, and get out as much as possible, and let's rake in the money... [The] only thing that is going to stem that exploit, indiscriminate exploit, is the ability of the communities to put forward a case on the value of the water.¹⁸³

are a total of 26 WMUs in Jamaica and a total of 33 watersheds.

¹⁸⁰ For this study, TNC received a grant of \$13,000 of technical support from USAID and Development Alternatives Inc. The Nature Conservancy, 2005, *Cockpit Country Parks in Peril: Water Valuation Study Update* (The Nature Conservancy: Kingston, Jamaica) p. 1

¹⁸¹ The Nature Conservancy, *Cockpit Country Parks in Peril: Water Valuation Study Update* (The Nature Conservancy: Kingston, Jamaica, 2005) pp. 2.

¹⁸² Kimberly John, author interviews conducted July 12, 2006. Transcript of audiocassette recording.

¹⁸³ Hugh Dixon, author interviews conducted July 31, 2006. Transcript of audiocassette recording.

At the same time, community members themselves continued to believe that the real goal of environmental management was the maintenance of ecological integrity. The same documents and reports that advocated using economic arguments to communicate with policy makers observed that the primary goal of these arguments was to “conserve the biodiversity of the area in perpetuity,” noting that the water resources were chosen as the main focus of the conservation efforts, as “the karstic freshwater ecosystems [are] a major component of Cockpit Country’s biodiversity.”¹⁸⁴ Further, epistemic community members asserted through interviews that economic valuation was an incomplete metric in understanding the fundamental value of biodiversity.

So, to some extent, we have to find, we have to – to make a rational decision, you should know what’s the value of the biodiversity, of the geo-diversity, and compare it with the value of the bauxite. That’s one approach, the economic approach... [But] we have 67 or something different species of mosquito in Jamaica, and they’re all valuable, and some are endemic, and we love them too. I mean, how do you value them? So it is, there is a problem.¹⁸⁵

How do you put a value on some of these things? ...We’re talking about plant material, you know? I mean, apart from actually *timber*, you know? How do you value these other, other targets that we have identified? We’re talking about the yellow Boa, and the butterfly. How do you put a value to these?¹⁸⁶

Consequently, the epistemic community did use economic framing although, as

¹⁸⁴ The Nature Conservancy, *Cockpit Country Parks in Peril: Water Valuation Study Update* (The Nature Conservancy: Kingston, Jamaica, 2005) pp. 1.

¹⁸⁵ Mike Schwartz, author interviews conducted August 3, 2006. Transcript of audiocassette recording.

¹⁸⁶ Owen Evelyn, author interviews conducted June 23, 2006. Transcript of audiocassette recording.

will be seen later, not in every campaign attempt. As an epistemic community, this network also generated an intersubjective consensus on the primary causal relationships in the environmental threats studied. Finally, the network generated socialization processes, although limited to the Forestry Department of the Ministry of Agriculture. The following section discusses the epistemic community advocacy, illustrating when the network made use of economic frames to communicate its arguments.

Environmental Policy Advocacy

Ministry of Agriculture: Establish a Moratorium on Bauxite Mining

Having established an economic argument to curb mining, the epistemic community first sought the declaration, by the Ministry of Agriculture, of an official moratorium on bauxite mining in the area. Throughout the period of epistemic community advocacy, knowledge brokers conducted a letter-writing drive to Minister Roger Clarke, as well as conducting a media drive to convince the government of its position.¹⁸⁷ Existing environmental regulations were simply ineffective, and the threat of bauxite mining was too great to environmental, cultural, and social concerns in the Cockpit Country.

Under Jamaican law, the primary environmental regulatory policy over mining is the requirement that companies restore mined land, governed by certification processes

¹⁸⁷ Mike Schwartz, author questionnaire received January 7, 2007. Taken from handwritten notes. Diana McCauley, author questionnaire, received 18 January, 2007; Jamaica Environmental Trust, 2006, *Cockpit Country Press Release* (Press release 2006).

from the Department of Mining.¹⁸⁸ However, mined lands do not have to be restored to their previous ecological relationships, but can be converted to commercial agriculture, or simply to grasslands. In fact, between 1995 and 2000, the bauxite companies Kaiser and Alcan planted a total of 3 million trees in restoration efforts, with the vast majority of these as commercial fruit trees, grass or fast-growing species,¹⁸⁹ a process which nevertheless was certified as adequate restoration by the Department of Mining.¹⁹⁰ Citing uncertainty, the epistemic community argued for the precautionary approach:

[Mining restoration] is complicated, because once the soil is removed, the hydrology of the area is altered, and we don't really understand the relationship among soil dwelling microbes, fungi and all other plant and animal species, such as pollinating roles, seed dispersal and chemical relationships.¹⁹¹

As a result, epistemic community members rejected the idea that mining restoration would be an adequate environmental management strategy in the Cockpit Country, pointing out: “You cannot restore forest which has been completely cleared.”¹⁹²

¹⁸⁸ Forestry Department, 2001, *National Forest Management and Conservation Plan* pp. 95. The Mining Act of Jamaica, 1947, amended 1988 requires that mining companies “...restore all mined lands to at least the level of agricultural or pastoral productivity or of suitability for afforestation, which existed before mining.” Cited in NEPA, *The National Biodiversity Strategy and Action Plan* pp. 16.

¹⁸⁹ Dennis Morrison and Michael Mitchell, 1999, *Mining* pp. 20.

¹⁹⁰ Susan Koenig, *Cockpit Country Conservation Report* pp. 52. In the Forestry Department, *Jamaica National Forest Management and Conservation Plan: Roundtable Meeting of Partners in Development* (Forestry Department: Jamaica, 2000) Appendix 11, pp. 1-2, the authors note that grass has in fact been the primary reclamation crop used in mining restoration.

¹⁹¹ STEA, *Biodiversity Manual* pp. 15.

¹⁹² George Proctor. Quoted at the 2005 Strategies Workshop on the Cockpit Country

To be sure, there was some disunity in the community's campaign with the Ministry of Agriculture in this regard. Instead of supporting the network's hardline stance against mining, the Forestry Department recommended new regulations on post-mining activity, advocating that companies reforest mined areas, or an equivalent area elsewhere with comparable species. This proposal, referred to as the "no net-loss"¹⁹³ strategy, contrasted with the preferences of the civil society members of the epistemic community.

However, in interviews, Forestry Department personnel admitted that the removal of forest cover would permanently change the biodiversity composition of the area. Staffers admitted that the compromise position was a second-best preference, chosen only in assumption of the fact that bauxite mining in the Cockpit Country was inevitable:

Well, what we are trying to get across to the bauxite companies is that... if you're taking out forest land, you should really start thinking that you need to replace some forest somewhere... Purists don't agree because they say that you've lost the forest. Well, we've lost the forest. So our next step now is to get them to put a forest somewhere else.

But you know, you can't really replace the Cockpit Country. You can put a forest somewhere else, you can pay for a forest to be planted somewhere else, but you can't replant the Cockpit Country.¹⁹⁴

Parks-in-Peril Project, in Bridgette B. Barrett, *Strategies Workshop Report*, prepared for The Nature Conservancy (Kingston: TNC, 2005) pp. 5

¹⁹³ Forestry Department, 2001, *Forest Policy 2001: Appendix II* (Kingston, Jamaica: The Forestry Department) pp. II-2. Forestry Department, 2001, *National Forest Conservation and Management Plan*, pp. 66

¹⁹⁴ Marilyn Headley, author interviews, conducted June 23, 2006. Transcript of audiocassette recording.

Ministry of Environment: Establish a National Park under IUCN Guidelines

One of the longstanding policy recommendations held by the epistemic community, was the creation by the Ministry of Environment of an IUCN classified National Park to define the borders and management strategy of the Cockpit Country. This was one of the core recommendations in the 1999 studies, and the associated *Cockpit Country Conservation Project*.¹⁹⁵ Like the proposed moratorium, this suggestion rested on the network's attempt to use economic arguments to highlight the benefits of environmental management, by stating that IUCN classification would raise the international profile of the Cockpit Country, encouraging international donors to contribute funds for domestic biodiversity management.¹⁹⁶

If adopted, this policy would legally establish the buffer zone and core areas of the Cockpit Country under Jamaican law. While much of the area known as the Cockpit Country is classified as a Forest Reserve, and while the area is generally recognized in common language in Jamaica, and although the GEF-funded project references “the Cockpit Country,” the area was not, at the launch of the project, a legally defined

¹⁹⁵ Patrick Yugorsky and Ann Sutton, 2004, *Categorization of Protected Areas in Jamaica* (The Nature Conservancy: Kingston), p. 3. Sacha-Renée Todd, *A Framework to Manage Jamaica's Protected Areas* pp. 3-4. World Bank, 1999, *Cockpit Country Conservation Project* (Project prepared for the GEF) pp. 1 - 5

¹⁹⁶ Patrick Yugorsky and Ann Sutton, *Categorization of Protected Areas in Jamaica* (The Nature Conservancy: Kingston, 2004) passim; Sacha-Renée Todd, *A Framework to Manage Jamaica's Protected Areas*, passim. By one study, tourists visiting the BJCMNP spend US\$2.5 million in the area per year. According to one study, if the Park were to implement access fees, there would be a further gain of US\$420,000 per annum, making it a model for developing ecotourism as a means for environmental protection and sustainable development (see ENACT, *Policy on Strategic Environmental Assessment*, pp. 20).

geographical area. If the IUCN National Park used the boundaries suggested by the community, this would increase the size of the area currently protected under Forest Reserve status (see **Figure 2.2: Map of Forest Reserves in the Cockpit Country**).¹⁹⁷

Moreover, the adoption of IUCN classification was considered instrumental in properly implementing the CBD. In 1997, the NRCA recommended the adoption of IUCN standards in Jamaican protected areas management. In 2004, Ann Hayes-Sutton, citing the Programme of Work on protected areas adopted at the 7th Conference of Parties (COP-7) of the CBD, called for the adoption by the Forestry Department and NEPA of IUCN classification to create an internationally standardized, protected area in the Cockpit Country.¹⁹⁸

Besides complying with the CBD recommendations and the COP-7 pronouncements, IUCN status was considered a more permanent form of protection than are Forest Reserves. While Forest Reserve status is considered by the government of Jamaica to be in technical compliance with Article 8 of the CBD, the legislative structure

¹⁹⁷ See *inter alia* NEPA, 2003, *NBSAP* passim; David Barker, 1998, Yam Farmers on the Forest Edge of Cockpit Country: Aspects of Resource Use and Sustainability in McGregor, D.F.M., Barker, D. & S. Lloyd Evans *Resource Sustainability and Caribbean Development: Geographical Perspectives*, (Kingston: The Press U.W.I), pp. 357 – 371

¹⁹⁸ The Nature Conservancy, 2004, *Jamaica National Biodiversity Strategy and Action Plan: National Implementation Support Partnership* (Kingston: TNC), pp. 8 – 11. Patrick Yugorsky and Ann Sutton, 2004, *Categorization of Protected Areas in Jamaica* (The Nature Conservancy: Kingston) pp. 3; Sacha Reneé-Todd, 2006, *A Framework to Manage Jamaica's Protected Areas* (prepared for the Protected Areas Systems Master Plan) pp. 3; Convention on Biological Diversity, 2004, *COP 7 Decision VII/28: Protected Areas (Articles 8 (a) – (e))* §31.

allows mining leases to be issued in Forest Reserves and National Parks.¹⁹⁹ In other words, National Parks and Forest Reserves can be overruled by bauxite companies interested in extracting resources in the Cockpit Country.²⁰⁰

Ministry of Environment and NEPA: Implement Ecotourism as a Management Strategy

In a related issue, the epistemic community recommended the promotion of ecotourism in the Cockpit Country, both as a biodiversity management plan, and as a revenue generating activity. Ecotourism proposals date back to the 1999 campaign, when Spence's Land Management Assessment requested \$561,000 Jamaican from the government of Jamaica to develop infrastructure for ecotourism in the proposed buffer zones and core of the Cockpit Country.²⁰¹ In 2001, the *Project for Sustainable Conservation* continued the call for ecotourism as a viable means of promoting greater

¹⁹⁹ The Nature Conservancy, 2003, *Jamaica National Biodiversity Strategy and Action Plan: National Implementation Support Partnership* (Kingston: NRCA) pp. 12. Forest Reserves, one of the earliest forms of systematic protected areas have been in place since 1930 with the creation of The Forest Act. The Forest Act was originally intended primarily to regulate extraction and production for industrial timber interests, rather than create areas specifically for environmental protection. Sacha Renée-Todd, *A Framework to Manage Jamaica's Protected Areas*, pp. 3.

²⁰⁰ Earthtrends, 2003, *Protected Areas* (retrieved December 2008 from http://earthtrends.wri.org/pdf_library/data_tables/Bio2_2003.pdf). Under the epistemic community's and the Forestry Department's understanding, National Park status would not remove the Forestry Department's control of the area as a Forest Reserve in Jamaican law. Forestry Department, 2001, *National Forest Management and Conservation Plan* pp. 58.

²⁰¹ Balfour Spence, 1999, *Land Management Report*, passim

state interest in conservation, as well as changing domestic practices of subsistence and agricultural communities.²⁰²

In part, the administration of the IUCN defined Park could be funded by promoting ecotourism and low-impact recreational activities in protected areas of the Cockpit, and charging user access fees to foreign and domestic visitors.²⁰³ An ancillary benefit gained by promoting ecotourism in the Cockpit Country would be the alleviation of pressure caused by the concentration of the tourist market on large-scale development in high-traffic coastal areas, which have been showing signs of degradation, beach erosion and shallow water pollution.²⁰⁴

As described above, these policy recommendations were organized in such a manner as to highlight the economic merit of biodiversity conservation in the Cockpit Country. In contrast, recommendations to the Forestry Department to regulate agricultural and subsistence activities did not rely on linking biodiversity management to prominent economic sectors important to national development. When economic arguments were used, they referenced the economic livelihood of marginalized, agrarian populations.

²⁰² UNEP, 2000, *GEF Project Document* pp. 101; UNEP, 2000, *GEF Project Document* pp. 51 - 54. Burnt Hill Road was particularly important to developing an effective environmental protection management regime. It is the only one that traverses the Cockpit Country, which though it allows access to sensitive environmental areas, offers “spectacular vistas of the Cockpit Country landscape” (Ibid pp. 54).

²⁰³ Patrick Yugorsky and Ann Sutton, *Categorization of Protected Areas in Jamaica* pp. 17;

²⁰⁴ Douglas Webster and Marcela Daye, 1999, *Tourism*

Forestry Department: Implement Sustainable Agriculture

One of the concerns about implementing protected area status in the Cockpit Country was the potential for prohibiting agricultural and subsistence activities in the region.²⁰⁵ On one hand, this would create additional economic stress for lower-income populations who would no longer be able to legally carry out their livelihood. On the other hand, this could create additional environmental pressure, if farmers took agricultural activity into secluded and virgin territory, in order to escape governmental scrutiny.

For these reasons, the epistemic community recommended that the Forestry Department foster sustainable agriculture as a matter of policy among marginalized populations.²⁰⁶ By creating alternative wealth generation opportunities among lower-income communities, sustainable agriculture could function as an incentive package to persuade subsistence populations to eschew the most harmful agricultural practices, particularly the use of tree saplings as yam-sticks.

Again, these policy preferences have been a longstanding goal of epistemic community organizations. The 1999 studies contained recommendations that the

²⁰⁵ David Barker, 1998, Yam Farmers on the Forest Edge of Cockpit Country: Aspects of Resource Use and Sustainability in McGregor, D.F.M., Barker, D. & S. Lloyd Evans *Resource Sustainability and Caribbean Development: Geographical Perspectives*, (Kingston: The Press U.W.I), pp. 357 – 371 passim; David J. Miller, 1998, Invasion of the Cockpits: Patterns of Encroachment into the Wet Limestone Rainforest of Cockpit Country, Jamaica (in the same volume) pp. 373 – 389, passim.

²⁰⁶ Balfour Spence, 1999, *Land Management Report* pp. 40 – 41

Forestry Department fund the cultivation of fast-growth trees as yam-stick material, by distributing free seedlings to local communities.²⁰⁷ Similarly, STEA had developed in 1999 a program to promote hedgerows in the Cockpit Country, where fast-growth trees used for yam-sticks are planted in rows with cash crops cultivated in the “alleys” between the rows. Besides functioning as renewable sources of yam-sticks, hedgerows can minimize surface runoff and erosion.²⁰⁸

Therefore, as described above, the epistemic community developed a set of policy recommendations between 1999 and 2001 about appropriate biodiversity management in the Cockpit Country, particularly in regards to *in situ* conservation. The community, which had generated a knowledge consensus on the relevant dimensions of human activity sought the following: the creation of an ICUN National Park by the Ministry of Environment and NEPA; a moratorium on bauxite mining by the Ministry of Agriculture and the Mines and Geology Division, and the promotion of sustainable agriculture by the Forestry Department.

Evaluating Epistemic Community Influence

Laggardly Behavior from NEPA and the Ministry of Environment

Despite holding an intersubjective consensus on dimensions such as the

²⁰⁷ Balfour Spence, 1999, *Land Management Report* pp. 36; NEPA, 2003, *NBSAP* pp. 39 – 40; Hugh Dixon, author interviews conducted July 31, 2006. Taken from audiocassette recording.

²⁰⁸ Balfour Spence, 1999, *Land Management Report* pp. 22 – 23; Koenig et al, 2000, *Biodiversity Assessment* pp. 68.

boundaries and importance of the Cockpit Country ecoregion, the epistemic community did not influence the management of protected areas under the Ministry of Environment. The government failed to implement the IUCN Park recommendations, despite their occurrence in the 1997 NRCA recommendation, the 1999 *Cockpit Country Conservation Project* proposals, and the PAMP conducted by Hayes-Sutton in 2004.²⁰⁹

Implementing Sustainable Agricultural Reforms by the Forestry Department

The community did register influence on the policies of the Forestry Department. The Department's 2001 *Management Plan* incorporated recommendations by the epistemic community to produce and distribute seedlings for quick-growth trees. These seedlings, provided for free to subsistence and agricultural communities, were intended to be used as yam-sticks, replacing the unsustainable practice of cutting saplings.²¹⁰ Further, the Forestry Department actively engaged in promoting sustainable agriculture in local communities through the LFMCS, conducted with assistance from epistemic community ENGOs.

More than demonstrating a willingness to adopt policies suggested by civil society researchers, the Forestry Department demonstrated a similar adoption of ecological arguments for environmental management. Prior to the emergence of

²⁰⁹ Adam Rhodes, 2006, Bauxite vs. the Cockpit Country (STEA press release in *Jamaica Observer*, December 17, 2006); Sacha René-Todd, 2006, *A Framework to Manage Jamaica's Protected Areas*, pp. 3 – 4; Patrick Yugorsky and Ann Sutton, 2004, *Categorization of Protected Areas in Jamaica*, pp. 5 – 6.

²¹⁰ The Forestry Department, 2001, *National Forest Management and Conservation Plan*, pp. 97

epistemic community advocacy, the Forestry Department was criticized by civil society researchers as uninterested in the ecological relationships of the Cockpit Country, and focused on the commercial development of timber:

I mean, most of the, especially like in the John Crow Mountains, most of the deforestation that was created in John Crow was by the Forestry Department. You have this little stupid man basically going in and clearing an area of forest, of natural forest, to plant up pine and all kinds of crap.²¹¹

By the time the project concluded in 2007, the Forestry Department had changed its environmental approach. Of the Jamaican natural resource management agencies, the Forestry Department's regulatory articles and the Forest Act of 1996 and 2001 are the only specific references to biodiversity management as an environmental goal.²¹² Moreover, at the time of field research, the Department had adopted an approach that, like the civil society epistemic community after the period of framing alignment, linked forestry management with the wellbeing of fauna, other flora, and ecosystem integrity.

[Biodiversity] is a new discussion, and I suppose what has changed [are] the views of managing forest for different, different reasons... So everybody is talking about the ecosystem, and the habitat, and we even talk about birds and bats, which we didn't do, in the Forestry Department before. When we started as the Forestry Department, it was just the trees, we just never overlapped.²¹³

As described in interviews with civil society epistemic community members, this

²¹¹ Kurt McLaren, author interviews. Taken from transcript of audiocassette recording.

²¹² NEPA, 2003, *NBSAP* pp. 15; the Forestry Department, 1996, *The Forestry Act: 1996*, pp. 8; 2001, *Forest Policy: 2001*, pp. II-1; 2001, *National Forest Management and Conservation Plan*, passim.

²¹³ Marilyn Headley, author interviews conducted July 6, 2006. Transcript of audiocassette recording.

not only marks a difference between earlier management approaches of the Forestry Department, but also distinguishes the current approach of the Department from that of the Ministry of Agriculture:

So the one good thing about the Forestry Department is that the Forestry Department have changed their mandates, and they have a new outlook on how to go about doing things... I worked there in '97 briefly, and it's just, they just realized that forestry was not just about planting trees to cut them down, you know?²¹⁴

Forestry Department's willingness is not reflected within other branches of the Ministry [of Agriculture].²¹⁵

Governmental Retrenchment in Mining Exploration

However, the success of the epistemic community in promoting ecological management practices in the Forestry Department marked the only instance of network direct influence on natural resource management. While the environmental ministry seemed either unwilling or unable to incorporate the claims of the epistemic community, the Ministry of Agriculture and the mining regulatory agencies were antipathetic to the preferences of the transnational civil society network.

Despite the letter-writing and media drive, these agencies continued to support bauxite mining in the Cockpit Country as critical to national development. In 2004, the Ministry of Agriculture granted Alcoa and the Clarendon Alumina Production exclusive

²¹⁴ Kurt McLaren, author interviews conducted. Transcript of audiocassette recording.

²¹⁵ Mike Schwartz, author questionnaire received January 17, 2007. Taken from typed responses.

licenses to prospect for bauxite deposits.²¹⁶ In 2006, after Catherine Levy left Birdlife Jamaica, the organization lost its Birdlife International affiliate status and left the *Project on Sustainable Conservation* over a year before its completion.²¹⁷ The WRC and JET then became the primary knowledge brokers, maintaining the advocacy efforts to prevent mining, but with no measurable success.

In 2006, the mining licenses, scheduled to expire at the end of the year, were being considered for renewal by the Ministry of Agriculture. In September, communities in the Cockpit Country reported that bauxite companies had already begun prospecting mining in the area and relocating residents from lands with mining deposits.²¹⁸ After the epistemic community requested information to investigate these reports, the JBI and the Ministry of Agriculture insisted that extractive mining was not planned for the Cockpit Country, that the licenses would not be renewed, and claimed confidentiality to avoid discussing mining plans.²¹⁹

In October, concerned about what seemed like stonewalling, the TAN organized around epistemic community and organizations associated with the Cockpit Country. TAN formally organized to create the Cockpit Country Stakeholder's Group (CCSG).

²¹⁶ *Jamaica Observer*, Sunday November 19, 2006.

²¹⁷ Mike Schwartz, Susan Koenig. Author interviews, conducted July 30, 2006, transcript of audiocassette recording. Also, Catherine Levy. Author interview, conducted June 30, 2006, handwritten notes of telephone interview.

²¹⁸ *Jamaica Observer*, Sunday November 19, 2006.

²¹⁹ *Jamaica Observer*, Friday December 15, 2006; *Jamaica Gleaner*, December 20, 2006; Parris Lyew-Ayee, 2006, *No Plans to Mine in the Cockpit Country* (Press release for Jamaica Bauxite Institute).

The CCSG began a public campaign to mobilize local and transnational grassroots political pressure through petitions, letter writing and by threatening public demonstrations in order to pressure the government.²²⁰

From October to November, domestic members of the CCSG continued requesting information on mining plans and license renewal from the Ministry of Agriculture, in conjunction with press releases highlighting the severe environmental harm to the Cockpit Country posed by bauxite mining. In December, the government seemed to respond favorably, inviting TAN and epistemic community members Schwartz of the WRC, Dixon of STEA and Diana McCauley of JET to participate with Minister Clarke and the JBI in a Mining Policy Consultation, intended to be a multisectoral planning workshop to analyze the environmental impact of mining in the Cockpit Country. However, at the Consultation, the Minister revealed that the licenses had been granted a week earlier, causing the members of the civil society ENGOs to “storm out”²²¹ of the meeting and issue a public repudiation of the decision making process two hours later.²²² From the end of 2006 to 2007, public pressure mounted, as the CCSG TAN

²²⁰ Jamaica Environmental Trust, 2006, *Bauxite mining poses major threat to Cockpit Country wildlife and watershed* (Press release for Cockpit Country Stakeholder’s Group); Jamaica Environment Advocacy Network, 2006, *Petition to Save Cockpit Country* (Petition created for Cockpit Country Stakeholder’s Group); Wendy Lee, author questionnaire, received February 13, 2007.

²²¹ Mike Schwartz, author questionnaire received January 2007. Taken from typed responses.

²²² *Jamaica Observer*, Friday December 15, 2006. Cockpit Country Stakeholder’s Group, 2006, *Statement for a Meeting to be Held with the Minister of Agriculture and Lands Hon. Roger Clarke* (Press release created by CCSG).

continued its public campaign to ban mining in the Cockpit Country. In 2007, Minister Clarke issued a hold on mining and prospecting leases, citing in part, a need to establish the legal borders of the Cockpit Country.

However, tensions between the mining regulatory agencies and the civil society continued, as both sides failed to agree on the dimensions of the area. The epistemic community reiterated its call for the borders to comprise the area defined in the 1999 studies, but now claimed an additional portion of the Cockpit Country region, increasing the size of the proposed area from 450km² to 1,142 km², while UWI geologist Parris Lyew-Ayee Jr., the son of JBI Director Lyew-Ayee, indicated in a study commissioned by the JBI that the Cockpit Country ecosystem should only comprise 288 km² (see

Figure 2.3: Revised Epistemic Community Cockpit Country Map).²²³

The conflict seemed to abate after the 2007 parliamentary elections, when Bruce Golding's government appointed Christopher Tufton as the new Minister of Agriculture, who then asserted that the Cockpit Country would be permanently off-limits to mining. This development, while positive, emerged less from the persuasive knowledge claims of the epistemic community, than from the public mobilization engendered by the TAN. However, at the time of writing, the issue of the legal cartographic definition of the Cockpit Country had not yet been definitively established.

²²³ *Jamaica Gleaner*, December 27, 2006. Dr. Lyew-Ayee is the son of Parris Lyew-Ayee of the JBI.

Conclusion

The results support one hypothesis, undermine another, and are inconclusive in the third. The following table summarizes the predicted and observed relationships between the independent variables: economic framing, consensus and socialization, and the dependent variable: influence (see **Table 2.3: Summary of Observed and Predicted Outcomes**).

As the data show, the independent variable that was only present in the campaign that evinced network influence, that is, the campaign to persuade the Forestry Department to change management practices, was socialization. This finding supports the hypothesis H3: Socialization improves the influence of epistemic communities, and indicates that socialization is a necessary, if not sufficient, causal variable.

As described above, the network socialized extensively with the Forestry Department, which had by the late 1990s become highly integrated into the production of knowledge with the epistemic community. As a result, the Forestry Department demonstrated a singular interest in learning from the transnational network, promoted sustainable practices by issuing seedlings for hedgerows and fast-growth trees to minimize yam-stick harvesting and adopted an ecological approach to biodiversity management emphasizing the forest's function as a habitat and food source for local and migratory fauna. This contrasted with their previous management approach, which emphasized the production and rapid turnover of commercial timber. Further, other agencies that did not socialize with the epistemic community, namely the rest of the Ministry of Agriculture, its mining agencies, and NEPA were either environmental

laggards or actively opposed to implementing policy recommendations.

Second, the data undermine the hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments. The JBI and the Ministry of Agriculture were uninterested in arguments that ecological relationships in the Cockpit Country were important to national economic developmental interests in the tourist market. The water valuation study was unpersuasive, and the projected national revenues promised from ecotourism were found to be unreliable without additional and significant investment from the state.²²⁴

The water is critical to tourism, to the people that live in here, so that's the approach we hope to use if and when mining decides they're ready. Right now we don't have enough data to substantiate any case.²²⁵

What's the value of a tourism, what's the value to the tourism *industry* to have a particular forest? We don't have those figures. And we've been told number and number of times that because we don't have those figures, we really don't have that sort of a balance to push into the economic model that says bauxite will earn so many billion US dollars.²²⁶

Throughout the end of 2006, policy makers in the JBI and the Ministry of Agriculture indicated privately in interviews and publicly in media statements that the economic valuations conducted by the epistemic community were unconvincing. In

²²⁴ World Bank, 1999, *Jamaica Cockpit Country Conservation Project: Preparation Report* (World Bank) pp. 11.

²²⁵ Donna Blake, author interviews conducted June 28, 2006. Transcript of audiocassette recording.

²²⁶ Marilyn Headley, author interviews conducted July 6, 2006. Transcript of audiocassette recording.

public challenges to the epistemic community's scientific knowledge between October and December of 2006, these policy makers also asserted that the impacts of prospecting mining on the hydrological regime were overstated:

What is the value of the butterfly? What is the value of the trees? Who cares if there's one butterfly, or two butterflies, or no butterflies in the Cockpit Country? ...Who is the Cockpit Country going to appeal to? Not the kids playing video games.²²⁷

[Prospecting] will not affect the water or damage the environment. If you follow the environmentalists, you would never mine anything.²²⁸

Although the end of 2006 saw the cessation of mining leases, this occurred only after public opposition to mining raised the political cost of permitting leases in the area. In other words, the Ministry of Agriculture did halt the issuance of mining leases, not because it learned from the arguments presented by the epistemic community, but rather due to concerted public pressure. Moreover, the fact that communication with the Forestry Department did not rely on economic arguments undermines the argument that LDC policymakers are most likely to be persuaded by developmental arguments.

Third, the data are unclear about the hypothesis H2: scientific consensus increases the influence of transnational advocacy networks. Consensus was present in all campaigns, both the failures and the successes. This indicates that consensus is insufficient to lead to influence, even if recognized, and deployed in a concerted effort by publicly recognized experts. However, the lack of variation on this variable in this case does not allow for conclusions as to the necessity of consensus for influence.

²²⁷ Shanti Persaud, author interviews July 3, 2006. Taken from handwritten notes.

²²⁸ Minister Roger Clarke, quoted in *Jamaica Observer*, December 15, 2006.

As a result, this case study gives an incomplete picture in understanding how epistemic communities function in LDCs. While the actions of the epistemic community confirm that policy advocates believe that developmental pressures matter in how arguments are deployed, it is not clear that this is the case. Rather, socialization seems to have a greater effect in explaining influence than other factors, including the presence of knowledge consensus. Further understanding the effect of economic and political factors on epistemic community advocacy requires additional analyses of case studies, which are addressed in the following chapters.

Table 2.1: List of Policy Makers in Jamaica

AGENCY	JURISDICTION EST. THROUGH	REGULATES
The Ministry of Agriculture	Mining Act/ Forest Reserve Act	Issuance of mining permits to bauxite companies. Parent institution to the Forestry Department, JBI and Mining Department
The Forestry Department	Forest Reserve Act	Regulates (monitors and enforces) logging and clearing for agriculture
Jamaica Bauxite Institute	Mining Act	Conducts environmental impact assessments (EIAs) on proposed bauxite mining on behalf of NEPA
Mining Department	Mining Act	Certifies restoration in mined areas.
The Ministry of Environment	National Resources and Conservation Act	Parent institution to National Environmental Protection Agency (NEPA)
NEPA	National Resources and Conservation Act	Regulates (monitors and enforces) human activity affecting fauna species
Prime Minister's Cabinet		Evaluates jurisdictional conflicts between agencies and ministries.

Table 2.2: List of Jamaican Epistemic Community Members

ORGANIZATION	INDIVIDUALS	FUNCTIONS	SCIENCE TRAINING
Windsor Research Centre	Mike Schwartz	Population monitoring (fauna). Conducts training of Forestry Department personel. Habitat health evaluation.	Biology
	Susan Koenig	Population monitoring (fauna). Conducts training of Forestry Department personel. Habitat health evaluation.	Ornithology
St. Thomas Environmental Agency	Hugh Dixon	Population monitoring (fauna). Socioeconomic surveys	Ecology
The Nature Conservancy	Kimberly Johns	Population monitoring (fauna). Underwater ecology.	Freshwater ecology
	Ann Hayes-Sutton	Population monitoring (fauna)	Conservation ecology
The Forestry Department	Owen Evelyn	Population monitoring. Flora taxonomy. Habitat health evaluation.	Botany
	Kevin Porter	Population monitoring (fauna). Flora taxonomy	Botany
	Respondent	Population monitoring (fauna). Flora taxonomy. Habitat health evaluation.	Botany
University of Manitoba / University of the West Indies	Balfour Spence	Habitat health evaluation.	Geology / geography
Clearing House Mechanism	Dayne Buddo	Population monitoring (fauna)	Marine ecology
University of Wisconsin	Mick Day	Karst limestone ecology. Habitat health evaluation	Geomorphology
University of the West Indies	Peter Vogel	Population monitoring (flora, fauna)	Conservation ecology
	George Proctor (retired)	Habitat health evaluation.	Botany
Birdlife Jamaica	Catherine Levy	Population monitoring (fauna)	Ornithology

Table 2.3: Summary of Observed and Predicted Outcomes in Cockpit Country Advocacy

Agency	Desired Outcomes	Independent Variable Present			Observed Influence
		<i>Economic Framing</i>	<i>Consensus</i>	<i>Socialization</i>	
Ministry of Agriculture	Issue moratorium on bauxite mining in Cockpit Country according to network-drafted boundaries	✓	✓		No
	Support sustainable agriculture; implement existing Forestry Department regulations		✓	✓	Yes
Forestry Department	Adopt ecological management practices		✓	✓	Yes
	Support moratorium on bauxite mining	✓	✓		No
Division of Mines and Geology/JEI Ministry of Environment	Adopt IUCN classifications	✓	✓		No
	Declare Cockpit Country a protected area according to network-drafted boundaries	✓	✓		No
NEPA	Manage newly declared Cockpit Country protected area according to network-drafted boundaries; support ecotourism	✓	✓		No

Figure 2.1: Map of Bauxite Deposits in the Cockpit Country



Figure 3.8. Simplified map of Jamaica's mineral resources.

Figure 2.2: Map of Forest Reserves in the Cockpit Country

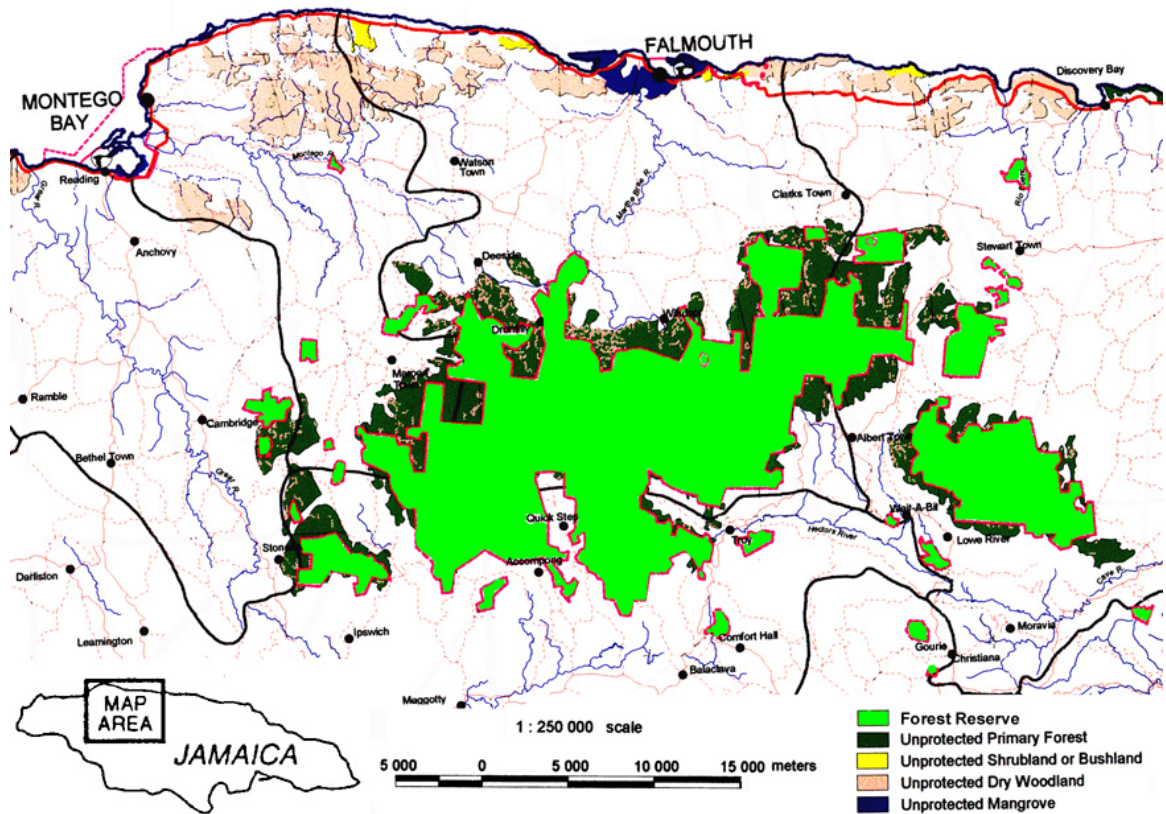


Figure 2.3: Revised Epistemic Community Cockpit Country Map

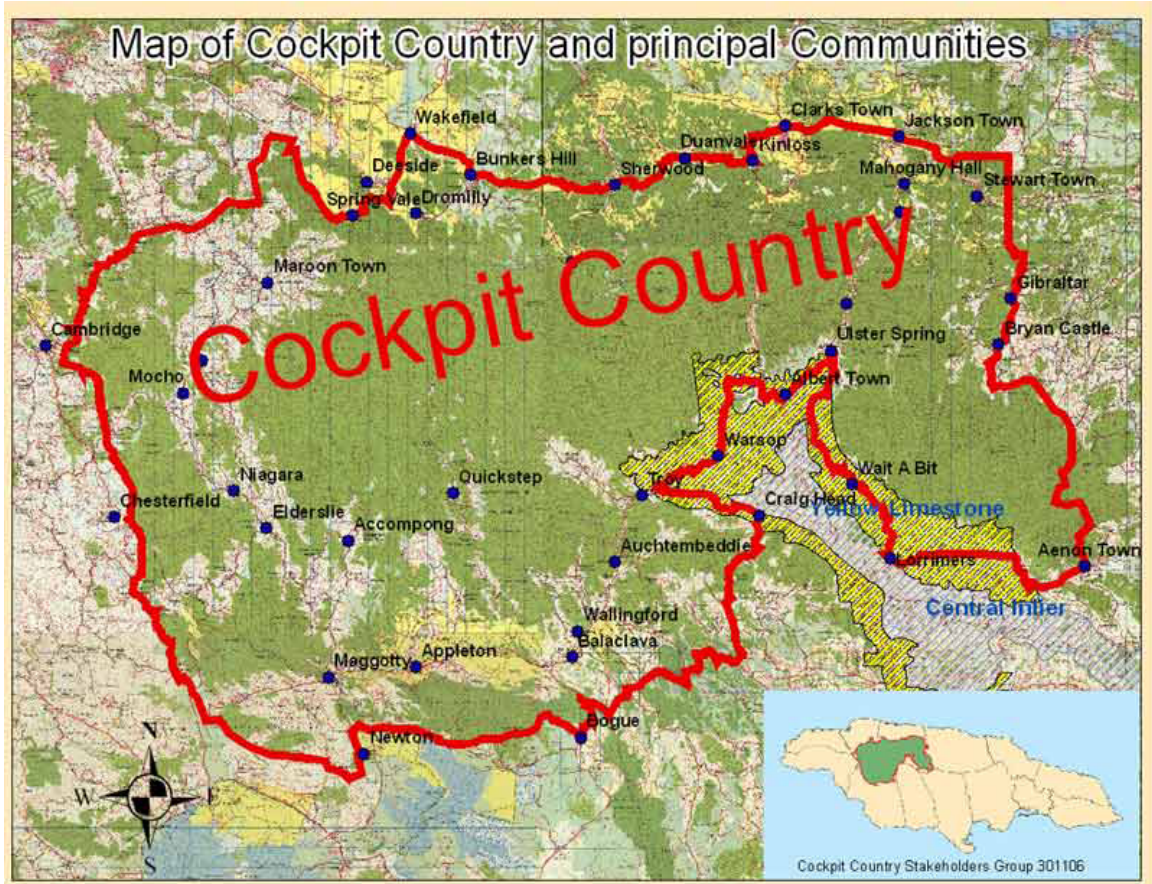
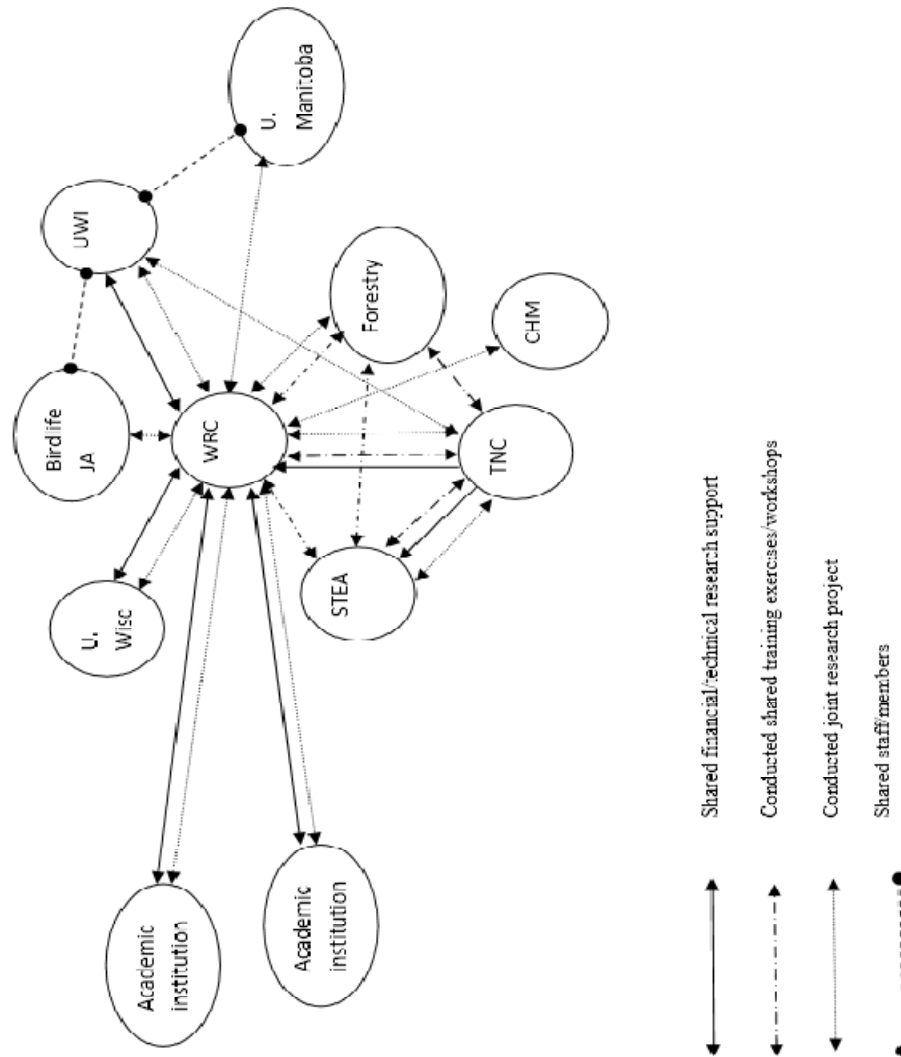


Figure 2.4: Diagram of Epistemic Community Links in Jamaica



CHAPTER 3

MEXICO AND BIODIVERSITY MANGEMENT IN THE MESOAMERICAN BARRIER REEF SYSTEM

Introduction

In Mexico, as in Jamaica, a transnational coalition of researchers mobilized to advocate for biodiversity management in a sensitive area in the 1990s. Again, this culminated in the effort of an epistemic community to influence the implementation of a GEF-funded project pursuant to the CBD. This GEF-funded project, the *Proyecto de la Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano*, (SAM Project), was a regional effort by Mexico, Belize, Guatemala and Honduras to implement their obligations under Article 8 and 10 requirements of the Convention on Biological Diversity (CBD), for *in situ* conservation and sustainable use of biodiversity respectively.²²⁹

In this case, however, the area under consideration was not a limestone forest, but a reef ecosystem off the eastern coast of the Yucatán peninsula (see **Figure 1.2**).

Nevertheless, this case study demonstrates some of the same processes as did epistemic

²²⁹ The reef system within the Mesoamerican basin measures 1,000km in length, making it the second largest continuous reef system in the world, second to the Australian Great Barrier Reef. Gabriela G. Nava Martinez et al, 2006, *Reporte del Programa de Monitoreo Arrecifal: Parque Nacional Arrecifes de Cozumel 2004 – 2005* (Cozumel: CONANP) pg. 2; Unidad Coordinadora del Proyecto (UCP), 2004, *Políticas de Desarrollo Sustentable de los Recursos Pesqueros, Turismo y Áreas Marinas Protegidas Transfronterizas en el Sistema Arrecifal Mesoamericano* (Belize City: SAM) pg. 1.

community advocacy in Jamaica. Again, there were a series of policymaker agencies and managers targeted by the epistemic community. These consisted of the federal environmental secretariat, SEMARNAT, and its subsidiary agency in protected areas management, CONANP; the federal agricultural secretariat, SAGARPA, and its fishing commission, CONAPESCA; the government of Quintana Roo, its environmental management agency, SEDUMA, and its tourism secretariat, SEDETUR; and private sector managers in fishing cooperatives and the hotel industry. In all, these comprised nine overlapping campaigns for improved biodiversity management in the reef region.

As occurred in Jamaica, the epistemic community did not have universal success, although comparatively more goals were met. The network demonstrated influence in the management practices and approach of: the federal environmental secretariat, the agricultural secretariat, the federal protected areas commission, the fishing commission, and the private sector fishing cooperatives. Again, the impact of consensus is not clear from this case: it occurred in all campaigns including those that failed, suggesting that consensus is insufficient to lead to influence, even when used in a concerted campaign by experts. Economic framing also does not seem to have an independent impact on the chance for network influence, as it was neither necessary for success nor failure. Finally, this case underlined the importance of socialization, as socialization, with one exception, corresponded with a successful campaign. The remainder of the chapter explains how issue-framing, socialization and knowledge consensus affected the ability of epistemic communities to influence policymaking and biodiversity management in Mexico. Where

documents and interviews were originally in Spanish, I have provided my own translation of the material throughout.

Overview of Threats to the Mesoamerican Barrier Reef

In a reminder of the transnational nature of biodiversity, the area of concern in the Mesoamerican basin comprises the territorial waters of the four countries signatories to the SAM Project: Mexico, Honduras, Guatemala and Belize. Mexican management jurisdiction extends across approximately 400 km of coastline, from Yum Balám in the northern part of the Yucatán peninsula to Banco Chinchorro, in the southern coast of the state of Quintana Roo (see **Figure 1.2**).

Like the Cockpit Country, the Mesoamerican basin is a site of internationally recognized high biodiversity. The coral reef, formed by the deposits of calcium by polyps presents one of the most visibly striking components of the system, with substantial variation in the resident populations of fish, crustaceans and zooplankton, as well as within the corals themselves.²³⁰ A sample of biodiversity at Mexican sites at Sian Ka'an, Xcalak, Banco Chinchorro and Majahual (see **Figure 1.2**), yields over 90 species of coral and 1,000 species of flora and fauna, including endemic and IUCN Red List registered species.²³¹ In all, reefs may house up to 3,000 species of marine life.

²³⁰ M. García-Salgado, T. Camarena L., G. Gold B., M. Vazquez, G. Galland, G. Nava M., G. Alarcón D. and V. Ceja M., 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano* (Belize City: SAM), pg. 6

²³¹ Hernández, A., F.A. Rodríguez-Zaragoza, M.C. García, J.M. Castro y J. Medina-Flores, 2008, *Hacia el manejo sostenible de los recursos pesqueros de Banco Chinchorro*. (Cancún: WWF-México) pg. 5; Unidad Coordinadora del Proyecto (UCP),

Biodiversity relevant to the ecosystem is also measured by genetic variation in pastures of seagrasses closer to the shore and in coastal mangrove zones. Mangrove zones and seagrass provide shelter to reef-dwelling populations of scaled fish and crustaceans in juvenile and larval stages and thus may be considered part of the reef ecosystem.²³² They also act as filters, removing sediment and organic matter from river outlets and coastal runoff, and preventing sedimentation in the reef.²³³ Because the ecosystem comprises terrestrial, reef, and coastal environments, potentially harmful human activity consists of both marine and terrestrial activity, including: coastal tourism and urban development; inland industrial development; overfishing; and port practices.²³⁴

2003, *Manual – Guía Común para la Evaluación de Estudios de Impacto Ambiental de Proyectos Turísticos en la Zona Comprendida por el SAM* (Belize City: SAM) pg. 69. Mar Caribe roundtable, *Ficha Técnica para la Evaluación de los Sitios Prioritarios para la Conservación de los Ambientes Costeros y Oceánicos del SAM* (available online at:

http://www.conabio.gob.mx/gap/images/2/29/78_Humedales_Costeros_Arrecife_Xcalak_Majahual.pdf), pg. 1 – 5.

²³² WWF, 2007, *How to Profit by Practicing Sustainable Fishing: Lobster Fishing Practice Guidelines for the Mesoamerican Reef* (WWF), pg. 5

²³³ M. García-Salgado, T. Camarena L., G. Gold B., M. Vazquez, G. Galland, G. Nava M., G. Alarcón D. and V. Ceja M., 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano* (Belize City: SAM) pg. 100.

²³⁴ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis (Draft)* (Presented for Conservation and Sustainable Use of the Mesoamerican Barrier Reef System) pg. 5; Comisión Centroamericana de Ambiente y Desarrollo (CCAD), 2001, *Documento de Evaluación de Proyecto sobre el Proyecto Propuesto por EU\$ 15.2 Millones, Incluyendo una Donación del Fondo Fiduciario del Fondo Mundial para el Medio Ambiente por la Cantidad de EU\$ 11.0 Millones Equivalentes a la Comisión Centroamericana de Ambiente y Desarrollo para un Proyecto Regional para la Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano* (CCAD) Anexo 4, pg. 1 – 5.

Coastal Tourism and Hotel Development

Coastal tourism in the Mesoamerican basin is concentrated primarily in the northern third of the state, manifested in the development of large-scale and all-inclusive hotel resorts in the popular Riviera Maya and the Cancún metropolitan resort area.

Tourism can also cause direct impacts on reef health when recreational users exceed the loading capacity of the area. Motorized access boats and swimmers can agitate the ocean floor, scattering sand on the reef polyps. Even when snorkelers or divers do not intentionally or accidentally touch the highly sensitive polyps, chemicals present in sunscreen may be highly toxic to the biota.²³⁵

Indirect impacts stem from the construction of hotels and urban centers on the coast. Hoteliers developing beachfront property have to drain, cut and fill mangrove zones with concrete, which contributes to sedimentation, run-off and nitrification in marine environments.²³⁶ Multiple story buildings erected too close to the coast interrupt

²³⁵ P. C. Almada-Villela, P. F. Sale, G. Gold Bouchot and B. Kjerfve, 2003, *Manual de Métodos para el Programa de Monitoreo Sinóptico del SAM* (Belize City: SAM) pg. 136 Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis* pg. 8; UCP 2003, *Diseño e Implementación del Foro de Turismo Sostenible del SAM* (SAM: Belize City) pg. 3; UCP, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos* pg. 63 – 64; M. García Salgado et al, 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano* pg. 6. Also based on conversations with park managers at Puerto Morelos National Park.

²³⁶ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett) passim. M. García Salgado et al, 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano* pg. 109 – 110; World Wildlife Fund México (WWF-México), 2008, *Draft WWF MAR Strategic Action Plan* (Cancún: WWF-México) pg. 70. Juan José Domínguez Calderón, author interviews conducted

the rate of replenishment of beach sand and contribute to a loss of coastline and increased beach erosion, which may depress the rate of regeneration and growth within corals. Current regulations on water treatment and disposal are insufficient in preventing groundwater contamination, as pipelines constructed for waste water disposal are ineffectively monitored and designed, and often transmit waste water directly to the water table.²³⁷

Inland and Riparian Pollution

Marine pollution may also arise from inland industrial and agricultural development, often considerably geographically removed from the reef region. For example, riparian agriculture on the Rio Hondo separating Belize and Mexico contributes to marine contamination by the runoff of agricultural pesticides and fertilizer, while inland groundwater contamination can flow to the coastal region by the underground complex of rivers and limestone caves of the Yucatán peninsula.²³⁸

Port and Docking Practices

January 24, 2008. Taken from transcript of audiocassette recording.

²³⁷ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett) passim.

²³⁸ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis* pg. 6 – 7; CCAD, 2001, *Documento de Evaluación*, Anexo 4, pg. 3

In addition, inappropriate port practices can harm reef ecosystems. Improperly monitored docking of cruise ships can lead to collisions with reefs, and poorly regulated waste disposal practices can result in offshore sewage contamination of marine environments.²³⁹ The construction of docks and ports for cruise ships also contributes to sedimentation and erosion by disrupting the flow of marine currents, often causing shorelines to recede.²⁴⁰

Overfishing

Fishing practices in the region are another source of environmental stress on the basin. Certain species of scaled fish and shell-fish that are targeted for commercial use have, since the late 1980s, experienced precipitous declines in population due to overexploitation of these resources (see **Figure 3.1: Graph of Declining Populations**).²⁴¹ Fishermen target the largest species of fish in commercial stocks, leading to a gradual diminution of the average size of adult fish in these populations.²⁴²

²³⁹ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis* pg. 10; CCAD, 2001, *Documento de Evaluación*, Anexo 4, pg. 4 – 5.

²⁴⁰ See *Los Amigos* documents; CCAD, 2001, *Documento de Evaluación*, Anexo 4, pg. 4 – 5.; UCP, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos*, pg. 62, 70

²⁴¹ Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal: Programa de Acuacultura y Pesca* (Quintana Roo: SAGARPA) pg. 56; CCAD, 2001, *Documento de Evaluación*, Anexo 4, pg. 4

²⁴² Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal*, pg. 56; WWF-México, 2008, *Best Fishing Practices in Coral Reefs: Methods for Collecting Ecological Data that Support the Ecosystem-Based Fisheries Management* (Cancún: WWF-México) pg. 20

The impact of overfishing on fish populations and marine ecology is exacerbated when population collapses in overexploited species causes fishermen to target populations at lower trophic levels.²⁴³ Overfishing can negatively affect the viability of the coral reef, as herbivorous populations of Parrotfish and other species both depend on coral reefs for shelter and curb the growth of algae that may compete with coral species for nutrients and living space.²⁴⁴

Tensions in National Economic Development

This case also demonstrates some tensions between national development and the economic wellbeing of marginalized populations. Tourism is of considerable importance to economic growth, both at a national level, and to the state of Quintana Roo. Thus, there is an argument that tourism is a massively important productive sector, as it brings substantial amounts of foreign revenue to the nation and the state. At the same time, tourism may contribute to increased short-term revenue among fishing populations. High tourist traffic contributes to demand for seafood, and increased scarcity in the supply of commercial populations tends to drive up the final sale price of these fish.²⁴⁵

²⁴³ WWF-México, 2004, *MAR Strategic Plan: 2004 – 2009* (Cancún: WWF-México) pg. 24; WWF-México, 2008, *Best Fishing Practices* pg. 20

²⁴⁴ WWF-México, 2008, *Best Fishing Practices in Coral Reefs: Methods for Collecting Ecological Data that Support the Ecosystem-Based Fisheries Management* (Cancún: WWF-México) pg. 20

²⁴⁵ WWF-México, 2006. *How to Profit by Practicing Sustainable Fishing: Lobster Fishing Practices for the Mesoamerican Reef* (ICRAN/WWF-México) pg. 3.

In the long run, however, increased demand for fish may be unsustainable. However, since tourist development, by contributing to coral reef loss, can deplete fish populations, unregulated tourism can create opportunity losses for low-income communities who depend on fishing for their livelihood. As in Jamaica, ‘national development’ may directly conflict with the economic interests of marginalized actors.

In addition, tourist development creates indirect hardships for low-income populations. Inland migrants attracted by the possibility of gainful employment establish shantytowns as “support communities” around hotel sites, providing cheap labor generally in the form of custodial services or construction to hoteliers. Because these shantytowns develop spontaneously, they are not covered by municipal planning and services, nor are they incorporated into the water and sewage treatment plans of the hotels. A lack of oversight in combination with absent treatment facilities means residents have incentives to dump refuse directly into the ocean, or in hastily dug pits which in turn leach materials into the water table.²⁴⁶

Identifying the Social Actors Involved in Biodiversity Management

²⁴⁶ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis* pg. 6; CCAD, 2001, *Documento de Evaluación*, Anexo 4, pg. 2. According to interviews with *Los Amigos* staffers, sewage treatment in Quintana Roo is poorly administered, and in Cancún, approximately half of the volume of liquid waste is not treated prior to disposal. Author interviews with Gonzalo Merediz Alonso, conducted February 2008.

Federal Policy Makers

Technically, policy management of the problems described above falls under the jurisdiction of various governmental agencies in Mexico, both within the federal government, and in state agencies. The federal branch has supremacy in implementing multilateral agreements (such as the CBD and the SAM Project) relevant to reef management; national policies including the Constitution, the General Law of Wildlife (LGVS) and the General Law of Ecological Equilibrium and the Environment (LGEEPA) locate authority over relevant environmental processes, such as biodiversity, coastal management and natural resource management, in the federal government.²⁴⁷ The most relevant federal agencies are located in the environmental ministry, SEMARNAT and the agricultural ministry, SAGARPA (see **Table 3.1: List of Reef Policy Makers**).

SEMARNAP/SEMARNAT and CONANP

The environmental and fisheries secretariat, *La Secretaría de Manejo Ambiental, Recursos Naturales y Pesquería* (SEMARNAP) was created in 1996 in the federal executive branch. In 2002, under a series of bureaucratic reforms carried out by Vicente Fox's newly elected *Partido Acción Nacional*, control over fisheries was transferred to the agricultural secretariat, *La Secretaría de Agricultura, Ganadería, Alimentación y Desarrollo Rural*, (SAGAR); this turned SEMARNAP into SEMARNAT and the

²⁴⁷ See CONABIO, 2000, Apéndice: Proceso de Formulación de la Estrategia. *Estrategia Nacional para la Biodiversidad* (Mexico, DF: CONABIO) pg. 79; Federation of Mexican States, 2003, *Ley Orgánica de la Administración Pública Federal*, Art. 32.

Agricultural Secretariat into SAGARPA.²⁴⁸ Currently, SEMARNAT's environmental management responsibilities include: proposing the creation of federal Natural Protected Areas (ANPs) and Marine Protected Areas (AMPs) to the executive branch, and establishing appropriate land use policies and management plans for these areas. Further, SEMARNAT can pass regulatory declarations called *Normas Oficiales Mexicanas* (NOMs) that restrict or authorize appropriate environmental activity within ANPs, AMPs. The NOM-059 series, for example, establishes management authority in SEMARNAT to issue protection to species identified as nationally important and/or under threatened.²⁴⁹

SEMARNAT has additional subordinate agencies relevant to reef management. The National Commission for Natural Protected Areas (*La Comisión Nacional de Áreas Naturales Protegidas* or CONANP), created in 2000 at the end of the Zedillo administration as a specialized and autonomous agency of SEMARNAT, shares responsibility with SEMARNAT for the creation and management of federal protected

²⁴⁸ Prior to SEMARNAT's creation, environmental management was scattered across various specialized agencies. Interview, SEMARNAT official, not for attribution; SEMARNAT, 2008, *Programa Regional de Educación para la Sustentabilidad en Áreas Naturales Protegidas* (SEMARNAT), pg. 24.

²⁴⁹ NOM-059-ECOL-1994 and NOM-059-ECOL-2001 indicate that SEMARNAT has the authority to protect species recognized as integral to Mexico's ecology, as well as species under threat, in the interest of maintaining national biodiversity. These regulations available in the *Diario Oficial de la Federación*, 6 March, 2002. SEMARNAT, 2009, *¿Qué hacemos?* Retrieved January 2009 from <http://www.semarnat.gob.mx/queessemarnat/Pages/quehacemos.aspx>. SEMARNAT, 2003, *Reglamento de la Ley General de Equilibrio Ecológico y Protección al Ambiente* (Mexico: *Diario Oficial de la Federación*). CONABIO, 2000, *Apéndice: Proceso de Formulación*, pg. 77 – 78.

areas.²⁵⁰ CONANP may also conduct EIAs, and conduct monitoring of activities carried out in protected areas.²⁵¹

SAGARPA and CONAPESCA

SAGARPA and the national fisheries commission (*La Comisión Nacional de la Pesca*, CONAPESCA), its executive agency, are responsible for designating appropriate areas for commercial and sustainable fishing and evaluating appropriate fishing techniques.²⁵² CONAPESCA has a mandate to record catch sizes and set harvest quotas with assistance in determining officially sanctioned rates of capture from the National Fisheries Institute.²⁵³ CONAPESCA authorizes the creation of fishing cooperatives, or

²⁵⁰ Taken from ICRI National Committee Progress Report – Mexico, available at www.icriforum.org/secretariat/word/CebuCPC_13.doc

²⁵¹ Interviews with Alfredo Arellano, March 2008. Taken from transcript of audiocassette recording. José Juan Domínguez Calderón, author interviews conducted Jan 24, 2008. Taken from transcript of audiocassette recording. CONANP, 2006, *Qué es la CONANP?* Retrieved January 2009 from <http://www.conanp.gob.mx/qienes.html>. The abbreviation CONANP comes from the Spanish name of the agency, which is *la Comisión Nacional de Áreas Naturales Protegidas*. Unidad Coordinadora del Proyecto, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos* (Belize City: SAM) pg. 32.

²⁵² José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008. Taken from transcript of digital voice recording. CONAPESCA, 2009, *Acerca de*. Retrieved January 2009 from http://www.conapesca.sagarpa.gob.mx/wb/cona/cona_mision_y_vision_acerca. CONAPESCA comes from the name of the agency in Spanish, *la Comisión Nacional de Acuacultura y Pesca*.

²⁵³ José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008.

associations of fishermen that share investment capital, resources and profits, and requires permits for access in sensitive areas.²⁵⁴

State Governmental Agencies

SEDUMA, SEDETUR and the State Government

Mexico's governance efforts relevant to the Mesoamerican basin take place almost exclusively in the state of Quintana Roo. As a result, certain state governmental agencies were identified as relevant by epistemic community members. The state *Secretaría de Desarrollo Urbano y Medio Ambiente* (SEDUMA) can create zoning ordinances through the *Programa de Ordenamiento Ecológico Territorial* (POET), a regulatory framework allowing SEDUMA to assess environmental loading capacities and determine appropriate land use policies for biologically sensitive sites. Zoning can function to endorse or proscribe certain activities from being adopted in a geographically described area.²⁵⁵ In addition, the government of Quintana Roo can propose protected areas to be administered at the state level. Similar to the federal government, the state can determine appropriate borders wherein restrictive policy applies and file areas as protected under law.

²⁵⁴ José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008; A. Hernández, F.A. Rodríguez-Zaragoza, M.C. García, J.M. Castro y J. Medina-Flores. 2008, *Hacia el manejo sostenible de los recursos pesqueros de Banco Chinchorro*. (CONANP/WWF-México), pg. 11; Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal: Programa de Acuacultura y Pesca* (Quintana Roo: SAGARPA), pg. 13 - 14

²⁵⁵ David Martínez, author interviews conducted April 29, 2008. Taken from transcript of digital voice recording.

In practice, the application of POETs is almost exclusively restricted to the northern third of the state, while in the southern two-thirds, only the Laguna Bacalar, a small site north of Chetumal, was assigned a POET zoning policy at the time of writing. At the time of writing, the extension of POETs was being considered for the Othón P. Blanco municipality, wherein sites incidental to the SAM Project, including Xcalak, Majahual and Banco Chinchorro are located.²⁵⁶ However, the use of POETs as a regulatory tool was challenged by civil society respondents, skeptical of the commitment of the state government to restricting development:

[T]hese have not been sufficient to brake the lack of control of economic development. Instead of allowing a fixed quantity of construction per unit area, whenever there is a certain interest, the quantity is changed and increased, which permits greater degradation than what was originally thought.²⁵⁷

Finally, the tourist secretariat of the state government of Quintana Roo (*Secretaría de Turismo del Estado de Quintana Roo* or SEDETUR) is responsible for promoting the development of tourism in the state. In practice, this means acting as a liaison for tourist interests to state and federal environmental agencies, clarifying regulatory policies applicable to prospective construction and hotel development, and developing recommendations for best practices, for example, in hygiene and hospitality.²⁵⁸

²⁵⁶ Gustavo Olivares, author interviews conducted April 9 and 10, 2008.

²⁵⁷ Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording.

²⁵⁸ SEDETUR, 2010, *Conócenos*. Available online at http://www.caribemexicano.gob.mx/index.php?option=com_content&view=article&id

Managers from the Civil Society and the Private Sector

In this case, the epistemic community engaged actively with private sector managers with de facto regulatory power over environmental degradation and biodiversity loss. These private actors consisted of the economically significant tourist industry, as well as marginalized fishing populations in coastal communities.

Fishing Cooperatives

Fishing communities along the coast of Quintana Roo are organized into profit- and equipment-sharing cooperatives. They vary in the number of members, access to equipment and techniques employed, ranging from the 9 member SCPP Horizontes Marino, to the 90 member SCPP Laguna Macax.²⁵⁹ In addition to serving as a source of income to marginalized and low-income populations, fishing has some cultural importance, as the occupation is transferred intergenerationally among families of fishermen. In the aggregate, the actions of cooperatives can have significant implications for fish populations and hence biodiversity governance in the reef ecosystem. As an

[=306&Itemid=420](#); David Martínez. Author interviews conducted April 29, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

²⁵⁹ See chart of surveyed cooperatives for state research published in Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal: Programa de Acuacultura y Pesca* (Quintana Roo: SAGARPA), pg. 47. See also references to differences in size and practices of cooperatives in CONANP, 2007. *Programa de Conservación y Manejo*, pg. 24 – 25. A. Hernández, F.A. Rodríguez-Zaragoza, M.C. García, J.M. Castro y J. Medina-Flores. 2008, *Hacia el manejo sostenible de los recursos pesqueros de Banco Chinchorro*. (CONANP/WWF-México), pg. 11.

example, in 2001, Quintana Roo fishermen captured 45% of the total lobster catch in the Mexican Gulf and Caribbean Sea.²⁶⁰

The Hotel Industry: An Oligopoly of Tourism

Internal practices of the economically significant hotel sector are also important to ecosystem stability and governance. Whereas the fishing community consists of decentralized actors, hotel capital and ownership is concentrated in the hands of a few actors, who in turn have formed statewide neocorporatist business associations for the protection of tourist interests. The primary associations in Quintana Roo are: the *Asociación de Propietarios e Inversionistas de la Riviera Maya* (APIR), *Grupo Quintana Roo*, *la Asociación de Clubs Vacacionales* (ACLUVAC), and the *Centro Coordinador Empresarial y del Caribe* (CCEyC).²⁶¹ Hoteliers have considerable leeway in determining the point of construction of hotels, as well as the size of hotel infrastructure, the number of rooms and the presence and extent of treatment facilities. In addition, because hotel chains may provide reef access to tourists as part of vacation packages, hotel policy and regulations on recreational diving could influence the impact of human activity on reef health. The list of relevant managers and policymakers is provided in the table below.

²⁶⁰ Secretaría de Economía, 2009, *Fideicomiso Fomento Económico Quintana Roo 2025 Cluster Pesca y Acuacultura*. Retrieved online, August 2009 from http://www.economia.gob.mx/pics/p/p2757/Sector_Pesca_QROO.pdf. Pg. 3.

²⁶¹ Taken from interviews with David Martínez, conducted April 29, 2008.

Transnational Mobilization around the Mesoamerican Barrier Reef

The Emergence of the SAM Epistemic Community

Between 1995 and 2001, self-identified stakeholders in Mexico, the other countries implicated in the SAM Project, the United States, and international governmental and non-governmental organizations began a diffuse process of information-sharing and mobilization for improved reef governance in the Mesoamerican basin. Over time, the network developed specific policy proposals, an intersubjective consensus on the relevant causal relationships, a shared understanding of processes, and shared policy preferences and tactics for engagement. By 2001, a core group of actors had emerged, sharing the characteristics of an epistemic community, and holding a common management approach for the reef (see **Table 3.2: List of Epistemic Community Members in the SAM Project**).

One of the earliest identified ENGOs involved in reef advocacy is the Mexican branch of the World Wildlife Fund (WWF-México), which had been conducting research in discrete sections of the Mesoamerican reef system since 1982. By promoting local and transnational governance efforts for reef and coastal management in Quintana Roo, the agency acted as a catalyst in a process of network-building among other organizations and agencies. In 1986, WWF-México lobbied the federal government for the application of federal protection to what is currently known as the Sian Ka'an Biosphere Reserve. The Reserve had been established as a state protected area in 1982, subsequent to prior research on biodiversity conducted by the *Centro de Investigaciones de Quintana Roo*

(CIQRO), a state research organization.²⁶² WWF-México's 1986 successful petitioning for federal protection at Sian Ka'an also led to the creation of *Los Amigos de Sian Ka'an*, a civil society research organization, based in Cancún. *Los Amigos* adopted a mandate to monitor human activity and environmental processes in the newly created federal protected area, to promote compliance with environmental regulations.

The emergence of environmental reef and coastal activism in Mexico in the 1980s occurred as these and other ENGOs began advocating for improved environmental governance in other Mesoamerican countries. WWF affiliate, WWF-Centroamérica similarly lobbied for the creation of what became the Hol Chan marine reserve in Belize in 1987.²⁶³ A quasi-state organization, the Coastal Zone Management Institute (CZMI) emerged from a local network of actors in 1989 to monitor environmental processes in the newly created protected area.²⁶⁴

²⁶² CONANP, 2007, *Programa de Conservación y Manejo: Reserva De La Biósfera Sian Ka'an, Reserva De La Biósfera Arrecifes De Sian Ka'an Y Área De Protección De Flora Y Fauna Uaymil* (México, D.F.: CONANP) pg. 4 – 5.

²⁶³ WWF-México, 2004, *MAR Strategic Plan: 2004 – 2009*, pg. 10; Unidad Coordinadora del Proyecto. 2003. *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos*, pg. 27; Sale, Peter F., Ernesto A. Chávez, Bruce G. Hatcher, Colin Mayfield and Jan J. H. Ciborowski, c. 2000, *Guidelines for Developing a Regional Monitoring and Environmental Information System: Final Report to the World Bank* (INWEH/UNU) pg. 22, Gonzalo Merediz Alonso, author interviews conducted February 2008. Taken from transcript of audiocassette recording

²⁶⁴ Gonzalo Merediz Alonso, author interviews conducted February 2008. Taken from transcript of audiocassette recording. Unidad Coordinadora del Proyecto. 2003. *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos*, pg. 27. The Sian Ka'an area is particularly important to the health of the reef system. It has the highest amount of coral coverage of the reef in the Mexican territorial waters. See CONANP, 2007. *Programa de Conservación y Manejo*, pg. 28.

The Germination of Transnational Links

In the 1990s, concern about reef management in Mexico assumed a transnational dimension, as Mexican stakeholders created cost- and information-sharing links to a growing network of domestic, regional and international actors. For example, in the Mexican town of Xcalak, local fishermen became concerned that tourist development would, by harming coral reefs, lead to losses in fish stocks important for subsistence and commercial production.²⁶⁵ In 1994, these fishermen and local activists formed the Xcalak Community Committee (XCC) to articulate and aggregate interests and lobby for the protection of Xcalak's reefs. In 1995, the XCC contacted *Los Amigos* and WWF-México, requesting assistance in their plans to lobby the federal government to create an AMP in the reefs, granting local fishermen exclusive access to fish resources.²⁶⁶ In the process of assisting the XCC, *Los Amigos* and WWF-México partnered with the Coastal Resources Center of the University of Rhode Island (URI-CRC) to conduct studies on populations and migratory patterns of reef fish.²⁶⁷

²⁶⁵ Beth R. Chung, 1999. "A Community Strategy for Coastal Zone Management of Xcalak, Mexico," *Community-Based Land Use Planning in Conservation Areas: Lessons from Local Participatory Processes that seek to Balance Economic Uses with Ecosystem Protection* (América Verde Training Manual No.3. América Verde Publications, The Nature Conservancy) pg. 3 - 4

²⁶⁶ Bezaury, J.C., C.L. Santos, J. McCann, C. Molina Islas, J. Carranza, P. Rubinoff, G. Townsend, et al, 1998, *Participatory Coastal and Marine Management in Quintana Roo, Mexico*. Proceedings: International Tropical Marine Ecosystems Management Symposium (ITMEMS), pg. 6 – 7; CONANP, 2004, *Programa de Manejo, Parque Nacional Arrecifes de Xcalak* (Mexico City: CONANP) pg. 8 – 9.

²⁶⁷ CONANP, 2004. *Programa de Manejo: Parque Nacional Arrecifes de Xcalak* (México, D.F.: CONANP) pg. 2; Bezaury, J.C., C.L. Santos, J. McCann, C. Molina Islas, J. Carranza, P. Rubinoff, G. Townsend, et al, 1998, *Participatory Coastal and*

From 1994 to 1995, *Los Amigos* and TNC conducted studies in the Sian Ka'an Reserve, and concluded that the preservation of ecosystem stability required the addition of a buffer zone in areas contiguous to the Reserve.²⁶⁸ In response to their lobbying efforts, the federal government established an additional 100,000 hectares in 1998 at what is now known as the *Área de Protección de Flora y Fauna Uaymil* in the south, and at the reefs off the coast of Sian Ka'an. Currently, the Sian Ka'an Reserve constitutes the single largest contiguous national protected area in Quintana Roo, with a surface area of 528,147ha.²⁶⁹ Between 1994 and 2000, over 700,000 additional hectares of federal and state areas were declared in Quintana Roo.²⁷⁰

However, although the size and quantity of protected areas in the state grew in the 1990s, it was not clear to the emerging network that management was environmentally effective, as the efficacy and commitment of policymakers to regulation varied significantly. For example, although the Sian Ka'an Reef and the *Área de Uaymil* increased the total coverage at Sian Ka'an, the three sites had management plans that

Marine Management in Quintana Roo, Mexico. Proceedings: International Tropical Marine Ecosystems Management Symposium (ITMEMS), pg. 6 – 7; CONANP, 2004, *Programa de Manejo, Parque Nacional Arrecifes de Xcalak* (Mexico City: CONANP) pg. 8 – 9.

²⁶⁸ CONANP, 2007, *Programa de Conservación y Manejo*, pg. 5

²⁶⁹ CONANP, 2007. *Programa de Conservación y Manejo*, pg. 5; The declaration of the *Área de Uaymil* took place in the *Diario Oficial de la Federación* (DOF), 17 November, 1994. UCP, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos*, pg. 28 – 29.

²⁷⁰ UCP, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos*, pg. 28 – 29.

were developed in isolation from each other.²⁷¹ Other protected areas, such as AMPs at Puerto Morelos and Xcalak, completely lacked management plans when they were first created.²⁷² In addition, fisheries management at the time focused primarily on identifying and regulating individually over-fished species.²⁷³

These approaches were criticized as piecemeal forms of biodiversity management: for fisheries, monitoring and regulating individual species was costly, but failed to consider environmental problems in coral reefs in their function as fish habitats.²⁷⁴ As researchers became aware of the link between environmental processes in areas previously considered separate, they argued that a management approach treating AMPs as discrete entities would be thoroughly ineffective, by failing to understand the link between ecosystems.²⁷⁵ Finally, indicators of reef health, such as coral reef coverage and fish stocks indicated that management was failing to address negative environmental

²⁷¹ CONANP, 2007, *Programa de Conservación y Manejo*, pg. 12 – 13.

²⁷² J. C. Bezaury et al, 1998, *Participatory Coastal and Marine Management in Quintana Roo, Mexico*, pg. 4 – 5. CONANP, 2003, *Parque Nacional: Arrecifes de Xcalak, México* (CONANP/SEMARNAT) pg. 7. See a general description and critique of Mesoamerican environmental protection in UCP, 2001, *Reporte de Avance No. 1*, pg. 6 and World Bank 2000, *Regional (Belize, Guatemala, Honduras, Mexico): Conservation and Sustainable Use of the Mesoamerican Barrier Reef System*, pg. 8

²⁷³ WWF-México, 2008, *Best Fishing Practices*, pg. 5 – 6.

²⁷⁴ Sale, Peter F., Ernesto A. Chávez, Bruce G. Hatcher, Colin Mayfield and Jan J. H. Ciborowski, c. 2000, *Guidelines for Developing a Regional Monitoring and Environmental Information System: Final Report to the World Bank* (INWEH/UNU) passim, especially pg. 35 - 36.

²⁷⁵ Peter Sale, author interviews conducted August 26, 2008. Taken from typed notes of interview via Skype. Gonzalo Merediz Alonso, author interviews conducted February 2008. Taken from transcript of audiocassette recording.

change; coral reef coverage was being lost at a rate of 3% per annum, and fish stocks continued falling in the periods under investigation.²⁷⁶

The Emergence of a Core Pool of Knowledge: ICZM as a Unifying Concept

Throughout the late 1990s – 2001, advocacy groups and research institutions in the emerging network began developing a new management approach. Now, the network sought to shift the focus of governance from its emphasis on piecemeal, site-specific management to incorporate a holistic view of ecosystem health. In addition, whereas the SAM was considered a collection of separate reefs, it was now described in epistemic community documents as a unitary reef system, second in size only to the Great Australian Barrier Reef.²⁷⁷ In this timeframe, the network began expanding further and increasing the robustness of social ties among the members, as various researchers began conducting new studies and sharing information on environmental processes within the basin.

Various transnational forums, including workshops provided by the International Coral Reef Initiative (ICRI), an umbrella NGO consisting of marine ecologists and researchers, contributed to the development of shared ideas and knowledge. In 1995,

²⁷⁶ Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. WWF-México, 2008, *Best Fishing Practices*, pg. 5 – 6.

²⁷⁷ This concept that the Barrier Reef System was second in size only to the Great Barrier Reef of Australia was mentioned independently in almost every interview conducted with epistemic community members and policymakers in the process of field research, as well as cited in documents including the UCP, 2002, *Plan Operativo Anual Período: Julio 2002 – Junio 2003* (Belize City: SAM), pg. 1, among others.

ICRI held a series of workshops in Cancún to consider links between Caribbean reef management and processes in marine currents, benthic habitats and trophic webs in coastal and marine environments.²⁷⁸ Participants at these workshops included actors relevant to transnational mobilization in the Mesoamerican reef, such as WWF-México and TNC in Mexico, as well as NGOs from the other three Mesoamerican reef countries and the industrialized world.

Creation of the SAM Project

In 1996, regional political activity provided an additional networking forum. That year, the Central American Commission for Development (CCAD) issued a general statement calling on the Central American countries to promote environmental management.²⁷⁹ To carry out this pronouncement, the governments of Mexico, Belize, Guatemala and Honduras drafted and signed the Tulúm Declaration, pledging to coordinate management efforts in the Mesoamerican reef.²⁸⁰ In 1997, CCAD and environmental ministry representatives of the four countries invited WWF-México and

²⁷⁸ WWF-México, 2004, *MAR Strategic Plan 2004 – 2009*, pg. 10; Gonzalo Merediz Alonso, author interviews conducted February 2008. ICRI, 2002, Declaration from ICRI Regional Workshop for the Tropical Americas, held Cancún, June 14 – 22, 2002.

²⁷⁹ UCP, 2004, *Políticas de Desarrollo Sustentable*, pg. 2. Original text reads: “...para impulsar el desarrollo regional por la senda de la sustentabilidad económica, social y ecológica”. See also the CCAD website, available at <http://ccad.sgsica.org>

²⁸⁰ Adela Vázquez Trejo, 2005, La cooperación acerca de la cuestión ambiental en Centroamérica. (*Co/incidencias* No. 2 (July – Dec): 35 – 43), pg. 41; UCP, 2004, *Políticas de Desarrollo Sustentable*, pg. 3; UCP, 2001, *Plan Operativo Anual Período: Julio 2001 – Junio 2002* (Belize City: SAM) pg. 1

the World Conservation Union (IUCN) to participate in project design for what was to become the GEF-funded *Proyecto de la Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano*, a project cited as relevant to the Tulúm Declaration and the CBD.²⁸¹

To the emerging transnational network, the Tulúm Declaration and the planned CCAD project offered “a framework for perhaps the most viable and transcendental opportunity on the planet for carrying out a multinational conservation effort” to integrate coastal and marine management with reef conservation.²⁸² With an institutional role in project design, actors in the reef network began holding meetings and workshops aimed at constructing a management approach to reef governance that incorporated the emerging understanding of the reef ecosystem.

In this timeframe, the concept of Integrated Coastal Zone Management (ICZM) became one of the core organizing principles of the emerging epistemic community. ICZM, developed between 1998 and 2001, elaborated an ecological approach to management incorporating ecosystem wide characteristics. In 1998, epistemic community member organizations and a transnational network of global reef stakeholders

²⁸¹ UCP, 2004, *Políticas de Desarrollo Sustentable*, pg. 3; A Hernández, author interviews conducted May 15, 2008. The World Bank, 2000, *Regional (Belize, Guatemala, Honduras, Mexico): Conservation and Sustainable Use of the Mesoamerican Barrier Reef System – Submission for Work Program Inclusion* (Office Memorandum prepared for GEF Secretariat) Annex 3, pg. 5; WWF-México, 2004, *Meosamerican Reef Strategic Action Plan 2005 – 2009* (WWF).

²⁸² Bezaury, J.C., C.L. Santos, J. McCann, C. Molina Islas, J. Carranza, P. Rubinoff, G. Townsend, et al, 1998, *Participatory Coastal and Marine Management in Quintana Roo, Mexico*. Proceedings: International Tropical Marine Ecosystems Management Symposium (ITMEMS).

participated at a symposium in Australia to evaluate ICZM application at existing and proposed Mexican AMPs at Xcalak, Yum Balám and Sian Ka'an.²⁸³ In 1998 and 1999, ICZM was used by the Atlantic and Gulf Reef Rapid Assessment (AGRRA) project, an international endeavor by the UN Institute of Water, Environment and Health (UNU-INWEH), to evaluate methodologies for measuring reef health.²⁸⁴ In addition, in 1999 Juan Bezaury of TNC, formerly of *Los Amigos*, and Bessy Aspra de Lupiac of Honduras conducted a *Threat and Root Cause Analysis* to evaluate the primary anthropogenic threats to biodiversity in the Mesoamerican basin.²⁸⁵ At this time, the network had expanded beyond the initial groups of stakeholders that had emerged in the early 1990s to include: Mexican academic institutions *el Centro de Investigaciones y Estudios Avanzados* (CINVESTAV), *el Colegio de la Frontera Sur* (ECOSUR, formerly CIQRO); the Brazilian agency CZMA/I, staffers at the Hol Chan reserve; governmental staffers at the Cayos Cochinos Research station in Honduras; and federal employees from marine parks at Punta Cancún and Punta Nizuc in Mexico.²⁸⁶

²⁸³ Bezaury, J.C., et al, 1998, *Participatory Coastal and Marine Management in Quintana Roo, Mexico*.

²⁸⁴ Atlantic and Gulf Rapid Assessment, AGRRA, available online at <http://www.agrra.org/index.html>. AGRRA Methods Workshop, held in Miami in 1998. List of participants available online at <http://www.agrra.org/workshops/attend.html>. AGRRA is a civil society network interested in developing strategies for post-crisis rapid response coral reef monitoring in the Caribbean Sea. See also the AGRRA Methods Workshop, held in Akumal, Mexico in May 17 – 21, 1999.

²⁸⁵ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis (Draft)* (Presented for Conservation and Sustainable Use of the Mesoamerican Barrier Reef System)

²⁸⁶ A list of participants of the AGRRA workshops was accessed in March, 2009 online

At the same time as the development of the CCAD project, WWF-México began planning and carrying out research for an autonomously designed conservation efforts. The WWF-México efforts further contributed to what was becoming a pool of scientific knowledge and policy relevant information regarding environmental processes specific to the Mesoamerican reef system, through workshops with a participant list that overlapped significantly with the CCAD workshops. These included workshops in Cancún and Belize in 1999 to construct an understanding of the basin by mapping relevant ecological features, including benthic habitats, marine and downriver current flows and physical characteristics.²⁸⁷ The WWF-México planning efforts were concluded in 2000, with the creation of the WWF Mesoamerican Reef Alliance Project (WWF MAR Project), which similarly applied an ecological focus to fisheries management.²⁸⁸

at <http://www.agrra.org/workshops/finalrep.html#Appendix%201>. See further lists of participants for shared members at: Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis (Draft)* (Presented for Conservation and Sustainable Use of the Mesoamerican Barrier Reef System), pg. 15 – 16. The World Bank, 2000, *Regional (Belize, Guatemala, Honduras, Mexico): Conservation and Sustainable Use of the Mesoamerican Barrier Reef System – Submission for Work Program Inclusion* (Office Memorandum prepared for GEF Secretariat), pg. 16.

²⁸⁷ Participants at these workshops included agencies involved in the CCAD project, such as members of *Los Amigos*, TNC and the Belizean Coastal Zone Management Authority and Institute (CZMA/I). See WWF-México, 2004, *MAR Strategic Plan 2004-2009*, pg. 11. Philip A. Kramer and Patricia Richards Kramer, 2002, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef* (WWF-Centroamerica), pg. 27; Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis (Draft)*, pg. 3; Philip A. Kramer and Patricia Richards Kramer, 2002, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef* (WWF-Centroamerica)

²⁸⁸ See Appendix A and Appendix B in Philip A. Kramer and Patricia Richards Kramer, 2002, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef* (WWF-Centroamerica), also maps beginning pg. 54. World Wildlife Fund México (WWF-México), 2008, *Draft WWF MAR Strategic Action Plan* (Cancún: WWF-

In 2001, the CCAD-planned SAM Project was finalized, and was declared active on the 30th of November.²⁸⁹ The regional goals of the project were coordinated by the *Unidad Coordinadora del Proyecto* (UCP) which would, among other things, recommend areas of focus (such as developing monitoring techniques, modernizing and standardizing protected areas management programs, and identifying legislative gaps) by creating yearly Plans of Action (*Planes Operativos Anuales* or POAs) for the relevant management authorities. These POAs were informed by formally established Technical Working Groups, or *Grupos Técnicos de Trabajo* (GTTs), groups of scientists, mobilized annually to gather data relevant to regional reef management.²⁹⁰

In Mexico, as in the other three countries, responsibility for project implementation was accorded to a National Reef Committee. The Mexican Committee was headed by CONANP, and staffed by civil society actors from *Los Amigos* and WWF-México. Under CONANP regional director and marine biologist Alfredo Arellano Guillermo, the Committee was responsible for *inter alia* conducting an inventory of biodiversity in the area, evaluating the necessity of creating new federal AMPs in

México) passim

²⁸⁹ Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. World Bank/SAM/CCAD, 2004, *Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano: Revisión de Medio Término* (IBRD/SAM/CCAD) pg. 1. UCP, 2001, *Reporte de Avance No. 1*, pg. 1. UCP, 2001, *Plan Operativo Anual: Período: Julio 2001 – Julio 2002*, passim

²⁹⁰ UCP, c. 2000, *Términos de Referencia para los Grupos de Trabajo Técnico* (Belize City: SAM) pg. 1 – 3.

ecologically sensitive areas, and recommending legislative and regulatory instruments for reef management.²⁹¹

After the adoption of the project in 2001, the network of information expanded further with the addition of academic agencies to the knowledge pool. CONANP established Memoranda of Understanding with agencies such as ECOSUR and CINVESTAV for assistance in monitoring and analysis in specific aspects of the SAM Project, in matters such as chemical, physical and pollution analyses at selected sites.²⁹² Like the Forestry Department in Jamaica, CONANP functioned both as a policymaker organization and as an epistemic community organization, gathering data as part of the Reef Committee, contributing members to research gathering workshops, and recruiting from civil society agencies in the epistemic community network. In 2002, Global Visions International (GVI), a British ENGO interested in coastal ecosystem integrity, created a formal relationship with CONANP and *Los Amigos* to conduct research and recreational expeditions in Sian Ka'an.²⁹³

²⁹¹ CCAD, 2001, *Documento de Evaluación*, pg. 7. Alfredo Arellano Guillermo, author interviews conducted March 2008. Taken from transcript of audiocassette recording. M. García-Salgado, T. Camarena L., G. Gold B., M. Vazquez, G. Galland, G. Nava M., G. Alarcón D. and V. Ceja M., 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano* (Belize City: SAM).

²⁹² M. García-Salgado, et al, 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano*, pg. 138. Juan José Domínguez Calderón, author interviews conducted Jan 24, 2008. Currently, ECOSUR monitors reef health at Punta Allen and Xcalak as an official *Agencia de Apoyo* to CONANP in the context of implementing the SAM. Taken from interviews with Eloy Sosa, Felipe Serrano, Laura Carrillo, and Rosa Loreto Viruel.

²⁹³ Ponce-Taylor, Daniel J., Arochi Zendejas Cynthia A. and Cameron, Andrew, 2006, *Global Vision Internacional (GVI) en México: una nueva fórmula de turismo*

By 2001, the core actors of the epistemic community had established a comprehensive series of network links, and a broad network comprising of various actors from a range of organizations in the public and private sector. Although measurement is complicated by the amorphous nature of the coalition, it was apparent that this network was substantially larger than the epistemic community identified in Jamaica. **Table 3.2: Partial List of Epistemic Community Members** identifies only 17 individuals within the network, but *Los Amigos*, which is entirely comprised of epistemic community actors, alone has 14 members. ECOSUR, based in Chetumal, similarly counts another eight more members who are involved in studying marine and coastal environments in the Mesoamerican reef region, while URI-CRC counts an additional eleven. These 31 additional members suggest that a very conservative estimate of the size of this epistemic community would give a network of over 60 members, and perhaps as much as 100.

Maintaining the Network

This comparatively large network was maintained by more regularly established links than the network active in the Cockpit Country, although informal ties played a role as well. Most informally, but perhaps quite significant in developing network links, several epistemic community organizations had exchanged members during the period of advocacy. Specifically, both CONANP and TNC hired staffers away from *Los Amigos* between 1997 and 2000.

alternativo en Quintana Roo (Global Vision International: Mexico).

In addition, there have been a series of regular physical meetings between epistemic community organizations throughout the Yucatán peninsula. For example, between 1998 and 2004, URI-CRC conducted six meetings in Chetumal with UQROO and local actors, five in Xcalak with *Los Amigos* and the XCC, and additional meetings in Belize and Cancún with ENGOS involved in Mesoamerican reef management. As part of the conduct of the SAM Project, epistemic community members from the various organizations jointly participated in several meetings a year since 2001, not only as part of the annual GTT meetings held in rotating countries, but also in periodic Meetings of the Experts held by the UCP, one held between 2001 and 2002, three between 2002 and 2003, and two from 2004 to 2005, as well as myriad other meetings referenced throughout the chapter. Further, these network links were supplemented by other processes, including the drafting of widely cited jointly-authored reports, such as the *Threat and Root Cause Analysis*, the electronic circulation of information through a database on reef management operated by UQROO, and through financial support, particularly from TNC, which gave research grants to *Los Amigos* and GVI.

In **Figure 3.4: Diagram of Mesoamerican Reef Epistemic Community Links**, there is a partial diagram of the above mentioned connections between some of the core agencies involved in the epistemic community network. As the number of connections indicates, there were agencies that were identified as central to the maintenance of the network, namely *Los Amigos*, CONANP, WWF-México and TNC. These organizations were similarly identified in interviews as key actors in constituting the network.

The Emergence of a Transnational Advocacy Network (TAN)

The emergence of this epistemic community was also paralleled by the emergence of coalitions of civil society actors concerned about ecological processes in the reef and coastal ecosystems. As described above, one of these was a transnational advocacy network (TAN) of reef management stakeholders, who were committed to global and regional reef management. This TAN emerged from organizations such as ICRI, which provided funds and created networking forums,²⁹⁴ and the UNU-INWEH AGRRA reef monitoring workshops, all of which were integral to the generation of scientific knowledge relevant to reef management.

Although ICRI and other organizations within the coral reef TAN shared a scientific epistemology with the epistemic community, these were nevertheless separate networks. An epistemic community is constituted by actors who share common policy goals,²⁹⁵ and several participants in the AGRRA and ICRI workshops were not directly involved in policy advocacy pertinent to reef management in Mesoamerica. For example, participants in the AGRRA network include the Venezuelan academic institutions *Simon*

²⁹⁴ UCP, 2005, *Reporte de Avance Técnico y Financiero. Reporte No. 8. Período: Enero – Junio 2005* (Belize City: SAM) pg. 22. ICRI Coordinating and Planning Committee [CPC], 2002, *Report of the Meeting: ICRI Coordinating and Planning Committee*. Final Report of a meeting held in Cancún, Mexico, 15th – 16th June 2002. For example, the Coral Reef Initiative held a 2002 joint workshop in Cancún with participant members of the epistemic community and of ENGOs and government bodies from Greater and Lesser Antilles as well as the Latin American states of the Mesoamerican basin. International Coral Reef Initiative, 2002, *Report of the Regional Workshop for the Tropical Americas: 12 – 14 June 2002* (Cancún: ICRI). Pages 57 – 71 list the workshop participants.

²⁹⁵ Peter Haas, 1992, Banning Chloroflourocarbons.

Bolivar Universidad and *la Universidad Central de Venezuela*, as well as the University of the West Indies and the Natural Resources Conservation Authority (NRCA/NEPA) in Jamaica, all of which are focused on managing local reefs.

In addition to this TAN, a local network emerged in Mexico in the 1990s. In contrast to the reef TAN and the epistemic community, this network had an exclusive interest in the management of mangrove zones. At the same time, the objectives of the local network and the transnational networks overlapped substantially. Like the epistemic community, the mangrove network argued that mangrove swamps were important as repositories of biodiversity and as buffer zones against coastal erosion and hurricanes.²⁹⁶ Similarly, the mangrove network was concerned about key coastal sites in Quintana Roo, including: the Cancún-Tulum corridor; Sian Ka'an; Xcalak; Chetumal; Cozumel; and Banco Chinchorro.²⁹⁷

This network consisted of stakeholders from research organizations such as the National Autonomous University of Mexico (UNAM) and groups local to states such as *Grupo Ecológico Mayab* (GEMA) of Quintana Roo and *Pronatura Noroeste* of Baja

²⁹⁶ This function of mangrove zones was mentioned recently in the Mexican Chamber of Congress in *Diario de los Debates*, Tuesday 4 March, 2008. Órgano Oficial de la Cámara de Diputados del Congreso de los Estados Unidos Mexicanos, LX Legislatura (Sesión no. 11), pg. 54; in a study conducted on ecosystem health for the SAM Project in M. García-Salgado et al, 2005, *Línea Base del Estado del SAM*, pg. 109, and in interviews with respondents from the epistemic community, including Álvaro Hernández, Patricia Santos and Gonzalo Merediz Alonso.

²⁹⁷ *Diario de los Debates*, Tuesday 4 March, 2008. Órgano Oficial de la Cámara de Diputados del Congreso de los Estados Unidos Mexicanos, LX Legislatura (Sesión no. 11), pg. 67; de Jesús Navarrete, Albert and José Juan Oliva Rivera, 2002, Litter Production of *Rhizophora Mangle* at Bacalar Chico, Southern Quintana Roo, Mexico (*Universidad y Ciencia* 18(30): 79 - 85

California. As a national movement, this group also had visible political support from then environmental minister Lichtinger and party members in the Green Ecological Party of Mexico (PVEM) and the Institutional Revolutionary Party (PRI), particularly from assumed PRI presidential successor Luis Donaldo Colosio.²⁹⁸ Although the local network did not coordinate advocacy efforts with the epistemic community, the efforts of this network later played an important role in the federal management of coastal hotel development.

The SAM Epistemic Community Develops an Ecological Managerial Approach

This epistemic community mobilized and recruited new members around the principle that improved environmental management in the reef was necessary as a matter of ecosystem stability, linking biodiversity conservation and protected areas management to ecological health and functioning ecosystems. As occurred in the Jamaican Cockpit Country, epistemic community members were also concerned about the impact of management on the employment and subsistence potential of marginalized communities who depended on access to, and the exploitation of natural resources.²⁹⁹ Granted, the Jamaican case focused on agricultural, rural communities in the limestone forest, while the SAM case study concerned coastal fishing communities. Nevertheless, the ecosystem management goals of the epistemic community had to confront not only the interests of

²⁹⁸ Exequiel Ezcurra, author interviews conducted May 2009. Taken from handwritten notes of phone interview.

²⁹⁹ The World Bank, 2000, *Regional: Conservation and Sustainable Use of the Mesoamerican Barrier Reef System*, passim.

nationally significant economic actors, but also the interests of disenfranchised populations. The following section indicates the internally held ecological perspective of the epistemic community by discussing interviews and documents held by its members.

The Impact of Biodiversity Loss

By focusing on ecosystem-level processes, the epistemic community portrayed biodiversity loss as a threat to overall ecosystem integrity, where a loss in the functionality of any area of the ecosystem could lead to irreversible harm in the entire ecological network. The *Normas Prácticas* studies, among others, framed mangrove loss as a problem of a loss in nursery habitats of fish, and eventually depleted fish populations.³⁰⁰ Moreover, mangroves were cited as important to ecosystem stability, as mangrove trees buffer against marine surges during storms and hurricanes.³⁰¹ Biodiversity in fish populations was also considered important in itself, and also because a healthy genetic variation in fish populations would have positive impacts on coral reef health by:

...[providing] the corals the capacity to maintain their vital functions in healthy conditions for their growth, reproduction and development, while the presence of numerous coral structures gives the fish places where they

³⁰⁰ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett) pg. 15

³⁰¹ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett) pg. 11

can be protected, where they can find food, reproduce and maintain other vital functions.³⁰²

The link between mangrove health and overall reef health, and between fish and coral reef biodiversity was emblematic of the interconnectivity described as important by epistemic community members:

There is a very close relationship between the mangrove and the health of the reef. Because for many species of fish and other species that keep the reef healthy, part of their life cycle is developed in the mangrove zone. Then, when someone destroys this part of the ecosystem, the mangrove, people generally think, “The reef is over there, and what I’m destroying are these trees here.” But all these species have a very important interaction.³⁰³

If you remove coastal material, in the mangrove and the forest, it’s a chain that affects everything. In other words, the forest that is over here, contributes energy to the mangrove, and the mangrove contributes energy to the lagoon, to the reef lagoon, and the reef lagoon – but then people don’t understand this trophic or ecological chain.³⁰⁴

The epistemic community was also concerned with the impact of natural resource and “biodiversity and ecosystem equilibrium” for economic resource generation and sustained consumption among low income populations.³⁰⁵ From this perspective, certain processes were seen as the primary threats to successful ecosystem management.

³⁰² WWF-México, 2008, *Best Fishing Practices in Coral Reefs*, pg. 11

³⁰³ Álvaro Hernández, author interviews conducted May 15, 2008. Transcript of digital voice recording. Translated from Spanish.

³⁰⁴ Interview 2. Author interviews conducted January 2008. Taken from transcript of audiocassette recording. Translated from Spanish.

³⁰⁵ UCP, 2004, *Políticas de Desarrollo Sustentable de los Recursos Pesqueros, Turismo y Áreas Marinas Protegidas Transfronterizas*, pg. 13 – 14.

Identifying the Primary Ecological Threats

The primary threat was seen as hotel development, which not only degraded the reef ecosystem, but also competed with the land ownership claims of indigenous and lower income populations,³⁰⁶ threatening the economic sustainability of these communities by preventing sustainable use of natural resources.³⁰⁷ Although hotel development at present is largely restricted to the Riviera Maya in the northern third of the state, officials in SEMARNAT, the state agency SEDETUR and the research community have indicated that the southern third of the state, including in rural and undeveloped areas such as Majahual, is a target for future development and hotel expansion.³⁰⁸

As indicated above, coastal hotel development contributes a range of direct and indirect threats to reef ecology. Further, hotel development and the attendant tourism exacerbate the stress caused by other activities, such as increasing the demand on fishing:

The principal threat is tourism... not just because of the people who are maybe directly diving, or fishing, or stepping on the reef... [If] you have 10 million tourists a year in one place, these tourists generate solid residues... waste water from human activity, from bathrooms, from whatever... When there's fishing in certain places, the fish will probably

³⁰⁶ UCP, 2005, *Manual de Métodos para la Elaboración de Programas de Uso Público en Áreas Protegidas de la Región del Sistema Arrecifal Mesoamericano* (SAM: Belize City) pg. 35.

³⁰⁷ Secretaría de Economía, 2009, *Fideicomiso Fomento Económico Quintana Roo 2025 Cluster Pesca y Acuicultura*. Retrieved online, August 2009 from http://www.economia.gob.mx/pics/p/p2757/Sector_Pesca_QROO.pdf

³⁰⁸ Enrique Galvez Herrera, author interviews conducted February 2008. David Martinez, author interviews conducted April 29, 2008. Bezaury, J.C., et al, 1998, *Participatory Coastal and Marine Management in Quintana Roo, Mexico*, pg. 1.

be overexploited... If there weren't tourism, fishermen wouldn't need to fish these enormous quantities to support the demand.³⁰⁹

Nevertheless, there was no call within the community for a ban on hotel construction. Given the prominence of hotel tourism to state and federal GDP, such an approach would probably not have been politically tenable. Rather, epistemic community members proposed reform in practices and policies governing the physical location, size, and environmental management practices of newly constructed hotels:

And currently, at the international level, and also here in Mexico, we are promoting the sustainable use of resources... In Cancun, where anyone can come and fish, and they don't need a permit, we don't imagine that this is sustainable... At the same time, if we want sustainability in fishing, we want tourism to become sustainable as well.³¹⁰

Overfishing is similarly recognized as a major threat in ecosystem management in the SAM. Scaled fish, particularly red snapper (*Epinephelus morio*), and shellfish such as lobster and conch, are targeted for commercial and subsistence fishing throughout Quintana Roo.³¹¹ Unchecked, the stress of commercial fishing is likely to increase, as fishing rich sites along the coast at Majahual, Banco Chinchorro and Xcalak are recognized as potentially lucrative, and attract a growing number of inland migrants.³¹²

³⁰⁹ Albert Franquesa, autor interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³¹⁰ Álvaro Hernández author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³¹¹ Hernández, A., F.A. Rodríguez-Zaragoza, M.C. García, J.M. Castro y J. Medina-Flores. 2008, *Hacia el manejo sostenible de los recursos pesqueros de Banco Chinchorro* (Cancún: WWF-México) pg. 4 – 5; Patricia Santos, autor interviews conducted May 15, 2008.

³¹² For example, WWF, 2007, *How to Profit by Practicing Sustainable Fishing: Lobster*

Creating a Managerial Framework

Concerned about ecological integrity, the epistemic community developed a management approach focusing on the interconnectivity of biodiversity in the reef.

...[At] a scientific or practical level, biodiversity is a necessary component for ecosystems to last... [It's] like the different organisms that we have in our bodies. Everything has a function, and we can live without a piece, or without one organ... The same thing happens with an ecosystem... If you remove one of the species, you would probably think that the ecosystem is not going to collapse. But each time you remove one, and another, and another, you're closer to the point where the ecosystem stops functioning.³¹³

In particular, epistemic community members were dismissive of the idea that additional AMPs would lead to improved biodiversity conservation, if the management practices were not improved:

When we get into this topic, when we get into biodiversity, the government acts like everything is OK. Because they argue: "In Quintana Roo, we have a high percentage of coastal areas as protected areas. We *are* carrying out management." ...For me, the concern is where there aren't any protected areas, right? There, there has been a very strong impact.³¹⁴

Fishing Practice Guidelines for the Mesoamerican Reef (WWF), pg. 32 notes that in one year (2004), the population of resort areas in Quintana Roo increased by 10.4%, a figure confirmed in interviews with CONANP staff working at the Puerto Morelos National Park and AMP, SEMARNAT staff in Chetumal and with *Los Amigos* staff in Cancún as a consistent rate of increase since the 2000s. At that rate, the population would double every 7 years.

³¹³ Albert Franquesa, author interviews conducted February 2008. Transcript of digital voice recording. Translated from Spanish.

³¹⁴ Eloy Sosa, author interviews conducted February 2008. Transcript of digital voice recording. Translated from Spanish.

The ICZM approach, developed in the UNU-INWEH and the ICRI workshops, posited that protected areas management should be fundamentally reformed to reflect the range of environmental processes in the region. Similarly, effective management in fisheries would incorporate concern about ecosystem stability, while maintaining the ability of marginalized communities to earn a livelihood.

Framing Alignment

The adoption of a management approach organized around ICZM changed the focus of some of the core organizations of the epistemic community. Prior to the emergence of the network, organizations such as *Los Amigos* were focused on improving management in specific locations, rather than on the reef as an integrated ecosystem. As described by Gonzalo Merediz Alonso of *Los Amigos*, ideas about managing the reef as a unitary ecosystem evolved over time, as the various organizations participated in the constitution of the network:

... [Over] the years we understood that it wasn't making sense to have a Reserve being conserved like an island, right? Sian Ka'an exchanges water with the area, the reefs are linked, the forests are connected.³¹⁵

³¹⁵ Gonzalo Merediz Alonso, author interviews conducted February 2008. Taken from transcript of audiocassette recording. Translated from Spanish. This sentiment would be repeated in a study produced by Gonzalo Merediz Alonso, director of *Los Amigos*, in his chapter in Holliday, Laura, Luis Marin and Henry Vaux, eds. 2007. *Sustainable Management of Groundwater in Mexico: Proceedings from a Workshop* (Washington, DC: National Academies Press) pg. 97 – 102.

Measuring the Epistemic Community's Knowledge Consensus

In addition to sharing a rationale for action based on an ecological understanding of the reef, this network shared a causal consensus on the relationship between human activity and environmental degradation. As occurred in Jamaica, not only did the various researchers agree on the scientific causal explanations, but they also were aware that a general agreement existed within the network. As explained by Patricia Santos of CONANP, this agreement emerged for specific reasons:

First, because the data is generated by experts. Experts whom almost all of us know, because we are friends, or colleagues, or teachers, or students. Or, we know they're experts because we read each other's publications. Second, because the methodology that is used is standardized, which makes it trustworthy. Third, there is no reason for anyone to dress up the information being collected.

This consensus did not apply to all the potential threats addressed by the SAM project, however. While the consensus was strongest in relation to hotel development and fishing practices, there was an admitted lack of clear scientific knowledge linking inland industrial and agricultural development to offshore marine degradation. At the same time, these processes were not an overt part of the policy advocacy campaigns. The following section assesses the level of consensus on the identified threats.

Knowledge Consensus on Tourism Development

Tourism Development: Agreement on the Causes

There was a universal recognition within the community about the causal significance of coastal tourist and hotel development on environmental degradation in the reef. Project reports such as the *Threat and Root Cause Analysis* produced for the SAM

Project, as well as interviews indicate a shared awareness of the association between tourism-based development and its various impacts on reef environmental health.³¹⁶

Similar to bauxite production in Jamaica, coastal tourism in Quintana Roo is seen as a prominent threat due to its privileged position in federal and state economic development. Since the 1970s, the PRI government had promoted coastal tourism as a key driver of the economy. Cancún and the Riviera Maya were specifically established through a federal program as major sites for tourist development, with the government providing credit and investing in infrastructure for the development of large-scale tourism.³¹⁷

Economically, this proved a windfall for Quintana Roo and Mexico. Between 1997 and 2003, the number of hotel rooms in the Riviera Maya increased from 4,000 to 28,000, and by 2007, Cancún and the Riviera Maya combined had 59,000 rooms.³¹⁸ From 1999 to 2006, between 28% and 38% of the total tourism revenue in Mexico and

³¹⁶ See project proposals and reports in, *inter alia*, Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis*.

³¹⁷ Graciela Pérez Villegas and Eurosia Carrascal, 1999, El Desarrollo Turístico en Cancún, Quintana Roo y sus Consecuencias sobre la Cubierta Vegetal. *Investigaciones Geográficas, Boletín del Instituto de Geografía, UNAM*(43: 145- 166) pg. 149. David Martínez, author interviews conducted April 29, 2008. María del Consuelo Méndez Sosa, “Desarrollo Económico en Cancún a Partir del Sector Hotelero.” Produced for La Confederación Nacional Turística. Retrieved online August 2009 from http://www.confederacion.org.mx/upload/file/PensandoenTurismo/Art_02.pdf?phpMyAdmin=b48389183b3f9a240227c4f9d2d29a46.

³¹⁸ Secretaría de Turismo de Quintana Roo (SEDETUR), 2009, *Indicadores Turísticos Enero 2007*. Available online at <http://sedetur.qroo.gob.mx/estadisticas/2007/enero.php>; Alfredo Arellano Guillermo, 2005, La Reserva de la Biosfera Sian Ka'an en el Contexto del Desarrollo Regional (*Revista de Medio Ambiente, Turismo y Sustentabilidad* 1 (1): 1 – 6), pg. 2

between 75% and 80% of the total state revenue of Quintana Roo came solely from earnings based on Cancún and the Riviera Maya.³¹⁹ As a result, hotel development has, over the past four decades, been a significant part of the politics of development in the reef region.

Tourism Development: Agreement on the Consequences

In interviews and project documents, respondents indicated a high level of awareness of the consequences of tourism-based development for the ecological health in the reef. Members universally acknowledged that tourism-based development led to depleted mangroves, which in turn caused a chain reaction of coastal erosion, loss in reef cover, and exposure to tidal energy.³²⁰ Because of this contribution to various processes, epistemic community members ranked tourism-based development as the main environmental threat to coastal management in interviews, and in threat assessments conducted since the 1999 AGRRA studies.³²¹

³¹⁹ David Martínez, autor interviews conducted April 29, 2008. Taken from transcript of digital voice recording; The revenue stream for this period is estimated to fall between US\$2,771 million and US\$3, 319 million per year. SEDTUR, 2009, *Indicadores Turísticos*, available online at <http://sedetur.qroo.gob.mx/estadisticas/estadisticas.php>. By another measure, tourism in Cancún brings approximately 25% of the GDP of Mexico. See Sale, Peter F., Ernesto A. Chávez, Bruce G. Hatcher, Colin Mayfield and Jan J. H. Ciborowski, c. 2000, *Guidelines for Developing a Regional Monitoring and Environmental Information System: Final Report to the World Bank* (INWEH/UNU) pg. 24.

³²⁰ Philip A. Kramer and Patricia Richards Kramer, 2002, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef*, pg. 35.

³²¹ See in particular Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis*.

The primary threat is tourism. Right now, in the Maya coast, the reef system is directly at risk, because of the explosive boom of tourism. Not just the tourists that come to enjoy the beach, but those that come to construct, let's say, a support infrastructure for tourism... [starting] a process of urbanization that deforests, that impacts...more than just the wetlands, but also the forest, the coastal landscape.³²²

We *believe* that coastal development, particularly in the case of Mexico, is the principal threat to the integrity of the ecosystem. Coastal development, which, in the majority of the cases, is associated with tourist development.³²³

Knowledge Consensus on Fishing

Fishing: Agreement on the Causes

Fishing, though less economically significant than tourism, is still a significant source of income for coastal communities, and the political economy of this practice similarly contributes to the impact of this activity on the reef ecosystem. Although fishing contributes an average of only 0.8% toward internal state revenue per annum, over 3,000 fishermen in the state earned an average of MX\$60,939 per year, or approximately US \$6,000, an attractive income to marginalized populations.³²⁴ While recognized as a causal threat by the epistemic community, there is some equivocation about the causal weight of fishing in the Mesoamerican basin. As occurred with the

³²² José Juan Domínguez Calderón, author interviews conducted Jan 24, 2008. Taken from transcript of audiocassette recording. Translated from Spanish.

³²³ Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³²⁴ Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal: Programa de Acuacultura y Pesca* (Quintana Roo: SAGARPA), pg. 9. Also, taken from discussions with José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008.

peasant agricultural practices in the Cockpit Country, Jamaica, clandestine activity prevents precise models of the impact of fishermen on reef biodiversity.

Fishing: Agreement on the Consequences

Overfishing is universally cited as a source of pressure on the marine ecosystem, both in interviews and confirmed in reports conducted by TNC on fish populations and spawning sites, or areas in which gathered to fish reproduce.³²⁵ Overfishing as described by the epistemic community could result in population collapses, leading to disruption of the benthic cycle and trophic network of the marine ecosystem. Again, there was some uncertainty insofar as the impact of clandestine activity is unclear.

Measuring Consensus on Inland Industry and Agriculture

Inland Industry and Agriculture: A Lack of Agreement on the Causes

The epistemic community lacks a scientific consensus for other threats cited in SAM Project documents, such as inland agricultural and industrial development. Although information is available indicating the presence of pesticides commonly associated with agricultural runoff in coastal and marine areas, specific information about the contribution of various point sources to marine pollution is nonexistent, due to a lack of information about the direction of subterranean river flows in the Yucatán.³²⁶

³²⁵ Will Heyman et al, 2003, *Informe Final de la Consultoría*, passim.

³²⁶ In 2008, *Los Amigos* and the Ecological Service of Austria were attempting to rectify this informational lacuna by developing a scientifically valid mapping of the flow of the subterranean rivers in the Yucatan peninsula and identifying the flow of

A Consensus on the Aggregated Extent of Environmental Degradation

Studies on the reef ecosystem have created an aggregate measure of the projected and current extent of environmental degradation in the Mesoamerican reef. In 2005, the epistemic community concluded a baseline study of reef conditions in the four countries in the basin. In Mexico, the sites studied were Cozumel in the north and Banco Chinchorro and Xcalak in the south. In this study, researchers gathered information on indicators of reef and ecosystem health including: the size, density, species and average cover of coral species; the diet, nesting patterns and biomass of 23 indicator species of fish; the quantity of seagrass; and the density of mangrove cover as measured by number of trees per hectare.³²⁷ In addition, studies of pollution in the Bay of Chetumal generated figures on the presence of chemical and organic compounds from agricultural pesticides and plaguicides, such as polychlorinated biphenyls (PCBs) and DDT, as well as generating information on the chemical and physical composition of water.³²⁸

Some studies were more narrowly tailored towards specific threats. For example, CONAPESCA and the FAO had conducted longitudinal studies on declines in catch size and populations of important commercial species, such as spiny lobster, snapper and

inland pollution via underground rivers.

³²⁷ M. García-Salgado, et al, 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano*, passim.

³²⁸ M. García-Salgado, et al, 2006, *Línea Base del Estado del Sistema Arrecifal Mesoamericano*, pg. 120 – 153, especially pg. 151 - 153.

conch, dating back to the 1970s.³²⁹ The CONAPESCA and the baseline studies were shared among epistemic community members through member participation in the various threat assessment workshops and research methodologies workshops conducted among network participants for the SAM Project.

With high agreement on the extent of environmental degradation, as well as a stated awareness within the community about the existence of this agreement, the data indicate that consensus is high for two of the identified threats relevant to management under Mexican jurisdiction: tourism-based development and overfishing, but absent for inland agriculture and industry.

Measuring Network Socialization with Managers

High Levels of Socialization with SEMARNAT and CONANP

In this case, the epistemic community established strong socialization ties to federal agencies, particularly in the environmental secretariat, SEMARNAT and its executive agency in protected areas management, CONANP. As described above, the SAM Project was administered by a National Reef Committee staffed by CONANP and by epistemic community organizations *Los Amigos* and WWF-México; the GTTs that

³²⁹ The Quintana Roo delegation of CONAPESCA provided figures of population changes over time, noting a general tendency to decrease over time in Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal: Programa de Acuacultura y Pesca* (Quintana Roo: SAGARPA). Specific charts referencing these figures are sampled above in this chapter. See also The World Bank, 2000, *Conservation and Sustainable Use of the Mesoamerican Barrier Reef System*, pg. 5, discussing the increasingly visible decline in catch sizes and biomass among commercially harvested fish in the reef region.

provided recommendations to the coordinating UCP were also comprised of CONANP and ENGO organizations from the epistemic community. Beyond these formalized links under the SAM Project, CONANP held occasional additional information-gathering meetings with researchers from epistemic community organizations, such as ECOSUR and CINVESTAV in the course of its duties as manager of protected areas.³³⁰

These ties were strengthened by the exchange of personnel and training between CONANP and the civil society. Former staffers of *Los Amigos* were employed by CONANP in reef monitoring during the period of field research, and the agency participated in regionally coordinated training workshops with civil society actors, such as a 2003 workshop held in Belize to evaluate protected areas management.³³¹

Low Socialization with State Managers in Quintana Roo

CONANP was the most integrated of the policymaker agencies relevant to SAM governance. The epistemic community did create additional ties to agencies in the state government of Quintana Roo, but these were only weakly established. There, epistemic community members invited state officials to participate in the 1990s Xcalak reef management workshops, to design appropriate management strategies with civil society

³³⁰ Enrique Galvez, author interviews conducted February 2008.

³³¹ UCP, 2003, *Principios de Manejo para las Áreas Marinas Protegidas: Manual* (Belize City: SAM). Developed through a workshop titled “*Capacitación en los Principios de Manejo para las Áreas Marinas Protegidas en la Región del Sistema Arrecifal Mesoamericano (SAM)*”, or “Training in Management Principles for Marine Protected Areas in the Region of the Mesoamerican Reef System” (author’s translation).

managers.³³² However, this process of socialization did not mirror the regularized meetings with CONANP. It was limited to discussions on the Xcalak management workshops, but did not extend to discussions on hotel management, either with SEDETUR, or the state government itself.

Socialization with SAGARPA and CONAPESCA

For the governance of fisheries, the epistemic community reinforced its links with CONANP, as well as creating ties to federal agencies in SAGARPA and CONAPESCA. For the WWF MAR Project, the epistemic community organizations WWF-México, CINVESTAV and ECOSUR held a series of information-building and exchange workshops on fisheries management and conservation with federal agents in CONANP and CONAPESCA throughout the 2000s.³³³

Socialization with Fishing Cooperatives

In addition, the epistemic community fostered ties to private sector actors in fishing cooperatives. This gave the fisheries governance efforts a multilevel dimension, as it involved the civil society as well as public policymakers. As fishermen had regular

³³² Beth R. Chung, 1999, “A Community Strategy for Coastal Zone Management of Xcalak, Mexico,” *Community-Based Land Use Planning in Conservation Areas: Lessons from Local Participatory Processes that seek to Balance Economic Uses with Ecosystem Protection* (América Verde Training Manual No.3. América Verde Publications, The Nature Conservancy) pg. 5.

³³³ See a list of participants in the WWF MAR workshops in WWF-México, 2007, *How to Profit by Sustainable Fishing*, pg. 42.

access to the reef and a store of knowledge about fish populations and migratory patterns, cooperatives were identified by policymakers and researchers as crucial sources of information in areas relevant to management, including: identifying common sites of capture, measuring diversity within and among fish species, and identifying capture techniques.³³⁴ Consequently, they were included in the WWF MAR Workshops with SAGARPA and CONAPESCA. For the fishermen, these workshops resulted in the publication of manuals and recommendations for safety precautions, appropriate fishing techniques and population monitoring.³³⁵

Socialization with Private Sector Actors in Hotel Management

Epistemic community members also created formal and ad hoc channels of communication with private sector managers in the tourism sector. *Los Amigos* and URI-CRC conducted periodic studies on the relationship between coastal hotel construction and environmental degradation, and issued a series of voluntary recommendations titled

³³⁴ Referenced in interviews with José Manuel Cárdenas Magaña, Álvaro Hernández and Gonzalo Merediz Alonso. See also WWF-México, 2008, *Best Fishing Practices in Coral Reefs*, pg. 13 – 14. The benefit of including local actors, such as fishing cooperatives, in environmental management is recognized as a good governance practice by Jeffrey McNeely of the World Conservation Union in a 1992 article, “The Biodiversity Crisis: Challenges for Research and Management,” advocating for sustainable biodiversity governance, pg. 21 – 22 of O. T. Sandlund et al, eds, 1992, *Conservation of Biodiversity for Sustainable Development*.

³³⁵ WWF-México, 2008, *Best Fishing Practices in Coral Reefs*, pg. 13 – 14 and 2007, *How to Profit by Sustainable Fishing*, passim. Álvaro Hernández, author interviews conducted May 15, 2008.

Normas Prácticas to hotel managers in the Riviera Maya.³³⁶ In addition, transnational epistemic community organizations such as Conservation International and *Los Amigos* established the Mesoamerican Reef Tourism Initiative (MARTI), an informal association of hoteliers and civil society researchers. Like the *Normas Prácticas* studies, the MARTI initiative was created to promote voluntary good environmental practices in the tourism sector, including in the operation of cruise ships, reef visitation practices, and hotel operation and construction.³³⁷

Measuring the Framing Choices of the Community

As described above, the epistemic community had variable levels of socialization with environmental managers in the public and private sector in Mexico. Similarly, the epistemic community used economic framing, or the linkage of environmental management to the wellbeing of nationally important productive economic sectors, in different campaigns to promote environmental management in the Mesoamerican reef. This formed a strategic choice, as interview respondents indicated that the network, continued to be internally motivated by broader concerns about biodiversity and ecosystem integrity:

But I believe that what should be recognized is that the [natural] resources have a value per se... They're valued not just because they might be

³³⁶ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett). Gonzalo Merediz Alonso, author interviews conducted February 2008. Albert Franquesa, author interviews conducted February 2008.

³³⁷ Gonzalo Merediz Alonso, author interviews conducted February 2008.

valuable to mankind. Or, they're not just valuable because we can get some money from them. They're valuable per se, by the fact of their existence, from all that they represent for evolution, all the complexity and their place in the biosphere.³³⁸

Using Economic Frames with Hotel Managers

The primary framing tactic of the epistemic community was to link biodiversity loss to economic harm in the hotel sector, identified as the primary economic productive sector in the state. This link allowed epistemic community members and knowledge brokers to argue to hotel managers that proper environmental management would avoid the erosion, attendant pollution and reef sedimentation that could damage hotel infrastructure and the market appeal of coastal landscapes. For example, the *Normas Prácticas* studies conducted by *Los Amigos* projected that coastal erosion would necessitate the construction of buffering walls to maintain the long-term structural integrity of the coastal buildings (see **Figure 3.3: Effect of Erosion on Hotel Construction**), theoretically creating a picture whereby environmental loss would negatively affect long-term profit margins:

Those gentlemen that want to do away with the mangrove should understand that if they do away with the mangrove, they're doing away with the coral reef, which is what they want to sell. Or that if they tear out the seagrass near the coast, their fine sand beach is going to be lost.³³⁹

Well, each one of [the hoteliers] wants to get the maximum utility from their hospitality, from their investment in the land. And to get the

³³⁸ Patricia Santos, autor interviews conducted May 15, 2008. Taken from transcript of audiocassette recording. Translated from Spanish.

³³⁹ Enrique Galvez, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

maximum utility, they have to build a lot of rooms, a lot of concrete, they have to alter the landscape a lot. When you speak to them about environmentally friendly development, something less destructive... they look at it from an accounting perspective.³⁴⁰

Using Economic Frames with Fishing Managers

Similarly, environmental management was linked to the economic interests of cooperatives in their capacity as managers of coastal fishing practices. The multilevel workshops coordinated by WWF-México and the epistemic community were designed to persuade fishermen that overexploitation would result in a decreased future ability to utilize coastal resources.³⁴¹ While not a prominent economic sector, this nevertheless counts as economic framing, as the cooperation of civil society fishing managers (cooperatives) was sought by convincing them of the economic benefit of environmental action. Moreover, the sustainability of commercially harvested fish populations was linked not only to overharvesting per se, but also to the maintenance of health of other populations and the degradation of terrestrial and marine ecosystems external to the reef.³⁴² Reports produced for the SAM by epistemic community members also emphasized the economic merit of conserving and sustainably managing fish harvesting:

³⁴⁰ Eloy Sosa, autor interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁴¹ ICRAN, c. 2005, *Lobster Fishing Practices Guidelines for the Mesoamerican Reef* (ICRAN/WWF).

³⁴² WWF-México, 2007, *How to Profit from Sustainable Fishing*, pg. 5.

...Overfishing and a lack of regulations in reproductive and nursery sites can bring the size of *commercial captures* to a decline, possibly close to collapse.³⁴³

One can consider that the protection of reproductive aggregation sites is similar to the protection of a savings account in a bank. If possible, we should capture the interest, not the savings capital... This analogy is particularly appropriate when one considers the management of reproductive aggregations – source sites for the reproduction of the majority of the *commercially important reef fish* in the regions of the SAM.³⁴⁴

In interviews, epistemic community respondents indicated that the choice of economic language to describe the impacts of biodiversity loss and environmental degradation was necessary to persuade these local stakeholders about the rationality of environmental management and good practices. Again, respondents indicated that the use of economic language was a strategic choice, as it differed with internally held reasons for biodiversity management, which emphasized the holistic rather than the consumptive value of reef ecosystems:

[U]nfortunately, our society is based largely on the issue of costs and compensation for environmental impacts... [If] we don't carry out that kind of valuation, the people will not, they might not pay it any mind.³⁴⁵

If we look at it from the perspective that the people do, that is, only economic, well [biodiversity] does have its value, right?... [B]ecause it's

³⁴³ UCP, 2002, *Reporte de Avance Técnico y Financiero. Reporte No. 3. Período: Julio 2002 – Diciembre 2002* (Belize City: SAM) pg. 17. Translated from Spanish.

³⁴⁴ Will Heyman and Nicanor Requena, 2003, *Informe Final de la Consultoría*, pg. 13. Translated from Spanish. Emphasis added.

³⁴⁵ Alfredo Arrellano Guillermo, author interviews conducted March 2008. Taken from transcript of digital voice recording. Translated from Spanish.

generating economic revenue for them. As a naturalist or biologist, the value that it has is for human health.³⁴⁶

This case gives variation on two of the independent variables, framing and socialization, but again has no variation on consensus in regards to the policy campaigns studied. As described above, the community generated a robust intersubjective consensus on two of the primary anthropogenic threats assessed here: fishing and coastal hotel development. The other threats, inland agriculture and industry, were not addressed by the advocacy efforts. Second, the community created strong social links to policymakers in the environmental and fishing governmental agencies, particularly in the federal level, as well as with private sector managers in the hotel and fishing sectors. Third, in the interest of persuading actors and policymakers interested in the economic exploitation of natural resources, the epistemic community adopted strategic frames attempting to demonstrate the economic importance of biodiversity conservation to hoteliers and fishing cooperatives. The following section assesses the success of the community in influencing biodiversity policies and practices in the Mesoamerican basin.

Environmental Policy Advocacy

Bounding the Cartographic Limits of the Ecoregion

In contrast to the Jamaican Cockpit Country project, where the Cockpit Country remained amorphously described, the epistemic community in this case was more involved in establishing specific geographic limits in the GEF-funded project. The

³⁴⁶ Rosa María Loreto Viruel, autor interviews conducted April 18, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

outcome of this process was that the community exercised additional influence on the eventual management approach taken by federal environmental policymakers in Mexico. The area studies in the 1999 *Threat and Root Cause Analysis*, which was intended to understand the environmental threats in the Mesoamerican basin, was chosen to “approximate the limits defined by World Wildlife Fund (WWF) for the Meso-American Caribbean Reef Ecoregion” (see **Figure 3.1: Map of WWF Defined Ecoregion**).³⁴⁷ This control also allowed the epistemic community to include references to ecological management in the project, including coastal with marine management. As adopted by the coordinating body, the *Unidad Coordinadora del Proyecto* (UCP) of the SAM Project, the areas relevant to biodiversity management in the reef included coastal and marine environments, such as mangroves and seagrasses,³⁴⁸ some of the core principles of ICZM developed by the emerging scientific network during the late 1990s.

Second, in relation to project design, the epistemic community promoted the adoption of a standardized investigative methodology to evaluate reef health, also based on the principles of ICZM and an ecological understanding of the environmental processes in the reef. Prior to the launch of the SAM Project, Mexican natural resource policymakers had not established a standard methodology for monitoring federal and

³⁴⁷ Bessy Aspra de Lupiac et al, 1999, *Threat and Root Cause Analysis*, pg. 2

³⁴⁸ CCAD, 2001, *Documento de Evaluación*, pg. 2 states: “In pristine areas exist wetlands, lagoons, beds of seagrass and coastal mangrove forests; these sustain an exceptionally high biodiversity and provide an important habitat for threatened species” (Translated from Spanish).

state AMPs.³⁴⁹ In 2002, the CCAD and the UCP requested the development of a standardized, scientifically valid monitoring program to investigate regional reef health for the SAM. In May of 2002, a transnational consortium of researchers headed by Peter Sale of UNU-INWEH held a workshop in Cancún to this end. Over 35 scientists from the four countries and the international community participated in this workshop, including members of Mexican epistemic community organizations, *Los Amigos*, WWF-México, and CINVESTAV, and organizations such as CZMA/I from the broader regional reef TAN.³⁵⁰ The methodology developed by the consortium was called the *Programa de Monitoreo Sinóptico* (PMS), and was synthesized from earlier studies, including the 1999 AGRRA workshops, and the ICZM symposia.³⁵¹ The PMS specified monitoring methods, environmental modeling, biodiversity indicators and relevant sites of investigation in the region, and by using the ecosystem framework developed in ICZM, incorporated coastal mangrove zones and seagrasses in the monitoring approach. Much as occurred with the geographic area defined in the 1999 *Threat and Root Cause Analysis*, the PMS was incorporated as part of the regional management approach in the SAM Project.

³⁴⁹ CCAD, 2001, *Documento de Evaluación*, pg. 9

³⁵⁰ See P. C. Almada-Villela et al, 2003, *Manual de Métodos para el Programa de Monitoreo Sinóptico del SAM*, passim. UCP, 2002, *Reporte de Avance No. 2*, pg. 11 – 12; UCP, 2003, *Reporte de Avance Técnico y Financiero: Reporte No. 4: Enero – Junio 2003* (Belize City: SAM) pg. 4

³⁵¹ UCP, 2001, *Reporte de Avance No. 1*, pg. 11; UCP, 2003, *Reporte de Avance Técnico y Financiero No. 4*, pg. 5. The World Bank, 2000, *Regional (Belize, Guatemala, Honduras, Mexico): Conservation and Sustainable Use of the Mesoamerican Barrier Reef System*, Annex 2, pg. 2.

SEMARNAT and the Federal Branch: Expand the ZFMT

A minor campaign in the epistemic community advocacy attempt was the goal of reforming a coastal zone referred to as the *Zona Federal Marítimo-Terrestre* (ZFMT). The ZFMT consists of the coastal area measured 20 meters from the average tide level, in which large development projects such as hotel construction are subject to an environmental impact assessment, and have to be approved by SEMARNAT and PROFEPA.³⁵²

However, at present the epistemic community considers the ZFMT as an inadequate management tool. Studies of beach erosion cited in the *Normas Prácticas* studies have demonstrated that large structures between the first sand dune and the coastline are severely disruptive of sand replenishment and contribute to beach erosion. As the location of the first sand dune on a beach may be substantially more than 20 meters away, hotels constructed out of the ZFMT and hence free from this federal oversight may contribute strongly to coastal erosion and reef sedimentation.³⁵³ However, this became a site of policy advocacy for a small subsection of the epistemic community, only in the *Normas Prácticas* studies of *Los Amigos* and URI-CRC recommended that the

³⁵² Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett), pg. 28 – 29.

³⁵³ Amigos de Sian Ka'an. 1998, *Normas Prácticas para el Desarrollo Turístico de la Zona Costera de Quintana Roo, México*. (Coastal Resources Center: University of Rhode Island, Narragansett), pg. 28 – 29. The inefficiency of this zone to prevent coastal degradation and erosion was also mentioned in interviews conducted with epistemic community members in *Los Amigos*.

federal government expand the ZFMT from 20 meters to a construction-free zone extending up to 5 meters behind the first sand dune.

SEMARNAT and CONANP: Reforming AMPs

In addition, the epistemic community sought the reform of SEMARNAT's and CONANP's practices in managing federal AMPs in sites relevant to the SAM. *Los Amigos* recommended the addition of federal AMP status in currently non-protected areas, primarily at Majahual and Xaban Ha, an area near Cozumel.³⁵⁴ *Los Amigos* and other epistemic community organizations, including ECOSUR and WWF-México sought the incorporation of ecological principles established under ICZM in existing protected areas, both in those without plans, and in those with insufficiently designed plans. This was explicitly advanced to CONANP and SEMARNAT: in 2003 civil society organizations and CONANP participated in a series of workshops in Belize to discuss incorporating the principle of ecosystem loading capacity in general AMP management.³⁵⁵ Throughout the conduct of the SAM Project, epistemic community

³⁵⁴ As stated by Felipe Serrano of ECOSUR in interviews conducted March 2008. Translated from Spanish. This point of view that the epistemic community would use their access in designing and reforming management plans to advance their ecological understanding was further referenced in interviews with: Gonzalo Merediz Alonso, author interviews conducted February 2008. Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording, Eloy Sosa, author interviews conducted February 2008. The contribution of ECOSUR and other organizations to the management plans of SEMARNAT and CONANP were also cited in Rosa María Loreto Viruel, author interviews conducted April 18, 2008. Philip A. Kramer and Patricia Richards Kramer, 2002, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef*, pg. 112

³⁵⁵ UCP, 2003, *Principio de Manejo para las Áreas Marinas Protegidas: Manual*, pg.

members in WWF-México and ECOSUR sought to persuade CONANP to redraft existing plans at Xcalak and at the “buffer zones” at Sian Ka’an, *Área de Uaymil* and the Reefs of Sian Ka’an, such that they conform to a “scientific or ecological point of view of biodiversity.”³⁵⁶

Fishing Cooperatives: Reform Existing Practices

For fishing management, the epistemic community took a multilevel approach to governance. In the WWF MAR Project, epistemic community participants in CONANP and WWF-México directly engaged with participating fishing cooperatives, promoting the adoption of sustainable fishing practices, such as the voluntary adoption of size restrictions on lobster, compliance with fishing regulations, and protecting spawning sites.³⁵⁷ Epistemic community members combined this approach with encouragement that fishermen curtail the quantity of fish extracted for commerce or subsistence, by shifting toward other forms of income generation such as catch-and-release or sport fishing. Promoting internal compliance and the voluntary adoption of sustainable practices was necessary to effective governance, as the cost to the government of monitoring and enforcing marine practices is extremely prohibitive. The epistemic

26; CONANP, 2003, *Informes de Logros 2003*. Retrieved August 2009 from http://www.conanp.gob.mx/pdf_informes/logros_2003.pdf, pg. 32; UCP 2003, *Diseño e Implementación del Foro de Turismo Sostenible del SAM* pg. 46 – 48.

³⁵⁶ Álvaro Hernández, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording.

³⁵⁷ WWF, 2007, *How to Profit by Practicing Sustainable Fishing: Lobster Fishing Practice Guidelines for the Mesoamerican Reef* (WWF).

community sought to persuade cooperatives to take this action by arguing that these restrictions would improve the long-term durability of fish resources necessary to continued economic exploitation.³⁵⁸

For the SAM, fisheries management only has two activities... The search for new, alternative livelihoods for fishermen, so that they change their practices. So, training for sport fishing, so that they move toward tourism, ecotourism, whatever... And the other is monitoring the reproductive aggregations.³⁵⁹

SAGARPA and CONAPESCA: Reform Fishing Regulations

At the policy level, epistemic community members recommended that CONAPESCA establish regulations identifying and protecting fish spawning sites. In 2002, TNC and other organizations conducted a study identifying spawning sites throughout the Mesoamerican basin.³⁶⁰ As sensitive areas and crucial to fish biodiversity, the epistemic community argued that CONAPESCA ban or restrict fishing in these zones.³⁶¹ Moreover, the epistemic community recommended that CONAPESCA,

³⁵⁸ WWF, 2007, *How to Profit by Practicing Sustainable Fishing: Lobster Fishing Practice Guidelines for the Mesoamerican Reef* (WWF). WWF, 2008, *Best Fishing Practices*.

³⁵⁹ Eloy Sosa, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁶⁰ Key to this effort was a 2002 workshop in Belize, attended by scientists of the four countries, and transnational organizations such as TNC. See Will Heyman and Nicanor Requena, 2003, *Informe Final de la Consultoría: Sitios de las agregaciones reproductivas de peces en la zona del SAM: Recomendaciones para su monitoreo y manejo* (Belize City: SAM), pg. 4.

³⁶¹ Will Heyman and Nicanor Requena, 2003, *Informe Final de la Consultoría: Sitios de las agregaciones reproductivas de peces en la zona del SAM: Recomendaciones*

CONANP and SEMARNAT coordinate the protection of spawning sites with AMP management. AMPs created by CONANP and SEMARNAT in fishing spawning sites would be governed as exclusive access zones for registered cooperatives who would in turn could contribute to reef governance through monitoring and the adoption of sustainable practices.³⁶²

Hoteliers: Change Hotel Management and Land Use Practices

As described above, the MAGTI partnership and *Normas Prácticas* studies attempted to convince hoteliers to change practices by using economic framing arguments. These focused on practices such as aggressively implementing recommendations for recreational reef access, voluntarily restricting the height and coastal proximity of hotels, and generally incorporating environmental best practices:

For the hotels that are currently in operation, what we do is carry out a diagnosis with them, on how to manage energy, water, toxic residues... Things that are practical and that help them to save energy, water, money, and that is an element, to answer your question, as to how we approach them. So that they see that [the environment] has an economic value as well.³⁶³

para su monitoreo y manejo (Belize City: SAM) pg. 11 – 13; UCP, 2003, *Reporte de Avance Técnico y Financiero Reporte No. 4: Período: Enero – Junio 2003* (Chetumal: SAM) pg. 13; Álvaro Hernández, author interviews conducted May 15, 2008. Eloy Sosa, author interviews conducted February 2008.

³⁶² WWF, 2008, *Best Fishing Practices* pg. 14 – 15.

³⁶³ Gonzalo Merediz Alonso, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

Evaluating Epistemic Community Influence

In this case as well, the epistemic community had mixed success in promoting their preferred management approach in the governance of the region of concern. Epistemic community members had considerable success in persuading environmental policymakers in CONANP, SEMARNAT, and CONAPESCA to adopt new policies. Similarly, the epistemic community attained some success in persuading fishing cooperatives to change practices. However, the community had little success in engaging with the governance of coastal hotel construction, either as taken by hoteliers, or by the state government of Quintana Roo.

Managing AMPs under CONANP and SEMARNAT

In AMP management, epistemic community influence filtered from the top-down, as the regional SAM institutions in the UCP and CCAD adopted the recommendations issued by the civil society network. The PMS methodology designed by the UNU-INWEH consortium, and which was based on ICZM studies carried out by epistemic community members during the late 1990s, was adopted by CONANP and SEMARNAT as the monitoring strategy for AMPs in the Mesoamerican basin.³⁶⁴ After the SAM Project concluded in 2007, the federal agencies continued to employ PMS, indicating that its adoption was not contingent on GEF support.³⁶⁵

³⁶⁴ UCP, 2003, *Reporte de Avance Técnico y Financiero Reporte No. 6*, pg. 9; UCP, 2005, *Reporte de Avance Técnico y Financiero. Reporte No. 8*, pg. 10 – 12 shows 100% compliance of PMS methodology in the sites of the SAM by 2005.

³⁶⁵ José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15

The domestic management of AMPs was also directly influenced by epistemic community advocacy. In the Sian Ka'an area, CONANP and SEMARNAT replaced the 1993 management plan with a plan designed with assistance from civil society organizations such as *Los Amigos* and TNC. Under the new plan, monitoring and protection of the Biosphere Reserve was integrated with management of the Reefs of Sian Ka'an and the Área de Uaymil, and incorporated into what is currently referred to as the "Sian Ka'an Complex," with over 652,000 hectares, or approximately half of the total protected area coverage in Quintana Roo.³⁶⁶ In addition, the agencies entered into sponsorship agreements with UNESCO and international MNCs, such as Gillette, to purchase sections of coastal wetlands in Sian Ka'an for conservation, monitoring these areas through joint efforts with actors in the epistemic community, namely TNC and *Los Amigos*.³⁶⁷

Similarly at Xcalak, epistemic community members WWF-México, TNC and URI-CRC successfully drafted a federally accepted management plan, with the approval of CONANP and SEMARNAT for the newly created AMP; this plan included limitations

May, 2008. Enrique Galv  z, author interviews conducted February 2008. Mar  a Carm  n Garc  a, author interviews conducted March, 2008. Gustavo Olivares, author interviews conducted April 9 and 10, 2008. SEMARNAT official, author interviews conducted May 2008, not for attribution.

³⁶⁶ CONANP, 2007, *Programa de Conservaci  n y Manejo: Reserva De La Bi  sfera Sian Ka'an, Reserva De La Bi  sfera Arrecifes De Sian Ka'an Y   rea De Protecci  n De Flora Y Fauna Uaymil* (Mexico: CONANP) pg. 3.

³⁶⁷ See The Nature Conservancy, 2008. *The Caribbean Conservation Results: July 2007 – June 2008*; International Corporate Wetlands Restoration Partnership (ICWRP). 2004. Press release on wetlands management in Sian Ka'an. Mexico City

on the quantity of divers (recreational or otherwise) based on ecosystem loading capacity, prohibitions on the use of SCUBA and other types of augmenting fishing equipment, and the creation of zones of no-capture and restricted access for registered cooperatives.³⁶⁸

Not all recommendations were incorporated into the policies of the environmental agencies, however. At the time of writing, the adoption of additional federal protected areas status at sites recommended by the epistemic community, such as Majahual, were not carried out. CONANP members were concerned that the adoption of AMP status in these areas, though preferred by *Los Amigos*, was not justified, due the environmental health of the area.

This suggests a further split in the overall consensus within the epistemic community, as both agencies are prominent members of the network. Nevertheless, this difference was not an observed source of tension within the network, as it was not mentioned outside of one interview with CONANP staff, and the reason given for refusing protected areas status was based on a pragmatic consideration of the costs of managing marginally important zones.

There are zones where, even if there are corals, the population density is very low. There's just pure rock, sand, seagrass, and one little coral here, another over there, one here, and we can't call that the reef, nor can we call it a coral community... And then, when a place is already very altered... it doesn't merit having a category of protection that requires money, personnel, equipment... In other words, it's so deteriorated that it's not worth the trouble to give it a special category of protection.³⁶⁹

³⁶⁸ CONANP, 2001, *Programa de Manejo: Parque Nacional Arrecifes de Xcalak, México* (CONANP), passim, especially section 10, treating the administrative rules of the AMP, pg. 86 - 107.

³⁶⁹ Patricia Santos, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

Multisectoral Governance of Fisheries

The practices and policy of fisheries management was also directly influenced by the epistemic community. After the project to monitor spawning sites concluded in 2003, the epistemic community identified additional sites in Mexico, increasing the recognized number from 27 to 39.³⁷⁰ In these sites, SAGARPA and CONAPESCA adopted policies requiring permits for fishing cooperatives, establishing seasonal allowances, and limiting the use of fishing boats to those with small outboard motors.³⁷¹ CONANP also coordinated with CONAPESCA to manage spawning sites, classifying them as protected areas under environmental law, and banning commercial fishing in them in the interest of maintaining ecosystem health.³⁷²

Fishing cooperative practices demonstrated some epistemic community influence as well. Throughout the coast, there were some exemplary cases of the reform of fishing

³⁷⁰ A. Medina-Quej et al, 2002, *La Agregación del Mero Epinephelus Striatus en “El Blanquizal” en la Costa Sur de Quintana Roo, México* (ECOSUR); Álvaro Hernández, autor interviews conducted May 15, 2008; José Manuel Cárdenas Magaña, autor interviews conducted between 12 and 15 May, 2008. Will Heyman et al, *Informe Final de la Consultoría: Sitios de las agregaciones reproductivas de peces en la zona del SAM: Recomendaciones para su monitoreo y manejo*, pg. V. Reports generated by epistemic community members indicate that spawning aggregation sites may have existed in the northern third of the state, but have long been collapsed due to overexploitation. See Heyman et al, *Informe Final*, pg. 4.

³⁷¹ Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal*,

³⁷² CONANP, 2007, *Programa de Conservación y Manejo: Reserva de la Biósfera Sian Ka'an, Reserva de la Biósfera Arrecifes de Sian Ka'an y Área de Protección Flora y Fauna Uaymil*, (Mexico, DF: CONANP).

practices, such as at Xcalak. After the involvement of epistemic community organizations in the constitution of the XCC, the fishing community established no-take zones, limited appropriate extractive techniques to low-impact methods, and agreed to protect overall health in the region, all without additional government regulation.³⁷³ At Punta Allen, the cooperatives adopted a voluntary ban on the use of SCUBA equipment for lobster harvesting.³⁷⁴

At a broader level, in a 2006 CONAPESCA survey of fishing cooperatives, 26.7% were identified as carrying out a high level of sustainable management and extraction, including using low-impact fishing techniques and regulated harvesting; 40% carried out moderate action, but stopped short of specifically targeted conservation of stocks whereas 33% carried out no discernible management effort.³⁷⁵

Multisectoral Resistance to Hotel Management and Coastal Land Use Reform in Quintana Roo

While the community had some success in informing protected areas and fisheries management, specific reforms aimed at restricting coastal tourism and development, through either regulatory policy or practice, failed to take place. Although federal policy eventually led to significant restriction on coastal construction, this was due to advocacy

³⁷³ Beth R. Chung, 1999. "A Community Strategy for Coastal Zone Management of Xcalak, Mexico," pg. 5

³⁷⁴ SAM/FMAM/CCAD, 2004, *Informe de Revisión de Medio Término 9 al 21 de marzo*, pg. 18.

³⁷⁵ Comité Técnico Estatal de Evaluación, 2006, *Informe de Evaluación Estatal*, pg. 52.

efforts outside the reef epistemic community. Despite the efforts of the epistemic community, beachfront construction remained the preferred model of coastal construction by hoteliers, who remained unconvinced by economic arguments for ecological conservation. In fact, epistemic community respondents noted that economic arguments for limited coastal development would be unlikely to convince hotel managers, whose economic calculations fundamentally diverged from the sustainable management preferences of the epistemic community:

Traditionally, in the case of tourism in coastal development in Mexico, the expectation of a return on investment among the major hotel developers, is a return in six, seven, eight years. In sustainable development, the plan for a return on investment of resources and benefits, we're talking about the long-term, possibly 15 years. To the way of thinking of the investor, it's a notable difference.³⁷⁶

In addition, attempts to encourage hoteliers to adopt measures to provide municipal services for the spontaneously emerging "support communities," and to place a higher value on maintaining ecological integrity failed to take hold:

The mangrove bothers them, because it disturbs the hotel surroundings, or it bothers them because of the mosquitoes. The hotels want to be on the beach. They don't want to be inland. And so – and they want to invest as little as possible – and so, the easiest thing to do, is fill the mangrove.³⁷⁷

[Hoteliers] are supposed to come with a treatment plan and location for services, for the hotel as well as for communities that form, the support communities. But right now, the tourist developers are only thinking about investing in their own hotel.³⁷⁸

³⁷⁶ Alfredo Arrellano Guillermo, author interviews conducted March 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁷⁷ Enrique Galvez, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁷⁸ José Juan Domínguez Calderón, author interviews conducted Jan 24, 2008. Taken

State agencies did maintain that this development in Majahual and other underdeveloped rural areas was compatible with environmentally friendly behavior. Asserting that Majahual and southern coastal zones would be developed through a different model of development, encouraging higher end customers for less intensive development, officials at SEDETUR were assuring that development plans would be minimally environmentally destructive:

Majahual has the concept of low impact development... Sure, there are pressures on the part of hotel chains, as far as I know in this case from Spain, that want to get permits to construct hotels of 1,000 or 2,000 rooms in a place where the ecosystem cannot support this stress. But then, it hasn't had that explosive development [as in Cancún], precisely because the POETs haven't allowed it, and the government of the state and the federation have maintained that the environment be protected.³⁷⁹

However, this perspective contrasted with the view of the epistemic communities that, although sustainable coastal development was possible, current and planned development systematically failed to incorporate ecological concerns into design. As a result, scientists within the network continued to express their disapproval of development in the southern third of the state.

But that area of Majahual, as I'm saying, is an area of pure mangrove. Well, where there would be mangroves, that are now filled and cut, filled with stone. And who cared? Who said anything? Sure, the scientists, but so what? They had said that the zone was very fragile, that there should be a zoning plan for minimal growth, low-impact ecotourism... In front of Majahual is the biggest reef in Mexico, the Mesoamerican reef. Part of

from transcript of audiocassette recording. Translated from Spanish.

³⁷⁹ David Martínez. Author interviews conducted April 29, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

the Mesoamerican reef. But it's not that [the hoteliers] don't know, it's that they don't care.³⁸⁰

As of the time of writing, there was no systematic data on compliance within hotels on restrictions on loading capacity of reefs. CONANP managers did produce regulations, including establishing sanctions, limiting the amount of recreational divers in reef environments within AMPs, and also established monitoring patrols.³⁸¹ However, the cost of comprehensive marine monitoring is extremely costly, in time and resources, and so the federal government has been unable to establish independent verification of compliance with these guidelines. Finally, the recommendations to establish a wider zone of restriction to replace the ZFMT have to date, not been enacted. Overall, epistemic community influence has been mixed.

A Brief Look at Local Activism in Coastal Regulation

What success occurred in reforming coastal hotel development emerged not from the epistemic community, but from the efforts of the national network in Mexico, which lobbied the federal government to restrict future construction in the interest of protecting the environment. In 2003, SEMARNAT adopted a federal norm titled NOM-022-SEMARNAT-2003, following the publication of studies conducted by researchers in the mangrove advocacy network on the importance of mangrove swamps to coastal

³⁸⁰ Adriana Yolojóchitl Olivera Gómez, author interviews conducted March 2008. Taken from transcript of audiocassette recording. Translated from Spanish.

³⁸¹ CONANP, 2007, *Programa de Conservación y Manejo: Reserva de la Biósfera Sian Ka'an*

ecosystems. NOM-022 established federal regulations such as barring construction within 100m of mangrove zones, except where necessary to restore the function of degraded mangrove zones and maintain the flow of fresh water to the open ocean from inland sources.³⁸² This policy had clear, positive implications for the management goals of the epistemic community, by restricting legitimate coastal construction.

Over the next four years, this policy became the site of political contestation. In 2003, Minister Lichtinger was replaced by Minister Luege under Fox's PAN administration. After a spirited national campaign by neocorporatist hotelier associations and state governors, including (from Quintana Roo) ACLUVAC, APIR, *Grupo Quintana Roo*, and then governor Hendricks Díaz, Minister Luege added Section 4.43 to NOM-022, stating that coastal construction and mangrove removal would be permitted, provided developers paid certain "compensation measures," generally measured as a one-time fine of \$1,000 per hectare cleared, and received permission from the state government.³⁸³

As the \$1,000 fine was substantially less than the potential revenue stream per hectare of hotels, and since littoral states such as Quintana Roo received a substantial part of income from tourism, Section 4.43 functioned to remove effective sanctions from

³⁸² See NOM-022-SEMARNAT-2003, particularly section 4.

³⁸³ NOM-022-SEMARNAT-2003, Section 4.43, allowing construction "as long as, in the preliminary report or in the event of an environmental impact, compensation measures are established to benefit the wetlands, and the corresponding authorization to change the land use designation is obtained." Translated from Spanish.

coastal construction and mangrove clearing.³⁸⁴ Federal protection was later restored in 2007 after a national campaign from the mangrove TAN led to congressional approval of federal Article 60 TER of the LGVS, prohibiting:

The removal, filling, transplant, cutting, or any work or activity that affects the integrity of the hydrological flow of the mangrove; of the ecosystem and its zone of influence; of its natural productivity; of the natural loading capacity of the ecosystem for touristic projects; of the zones of shelter, reproduction, refuge, feeding and fish fry.³⁸⁵

In Quintana Roo, this resulted in a halt of planned and current development and construction throughout the state.³⁸⁶ Unsurprisingly, hotelier associations and governors once again began a national campaign to repeal federal protection of mangrove zones. In 2007, Quintana Roo's governor Felix González Canto led an association of 16 governors from Baja California and other littoral states, requesting that Calderón's administration overturn Article 60 TER. The hoteliers supported this effort, arguing that "the people in

³⁸⁴ Exequiel Ezcurra, author interview conducted May 2009. Taken from handwritten notes of phone interview. Figure also confirmed in a press release by PRONATURA, a civil society organization in Baja California. Figures available online at: <http://www.pronatura-noroeste.org/manglaresdelgolfoedecolifornia.php>

³⁸⁵ Diario Oficial de la Federación, 2008, *Ley General de la Vida Silvestre* (DOF October 14, 2008), Article 60 TER. See also "Manglares, refugio de especies comerciales importantes" in *La Jornada*, Monday 25 February, 2008; "Increpan regidores del Verde Ecologista a García Pliego" in *Novedades*, Friday 2 February, 2007.

³⁸⁶ Enrique Galvez, author interviews conducted February 2008. Eloy Sosa, author interviews conducted February 2008. *El "Respaldo de SCJN a humedales será fundamental para Q. Roo," Periódico de Quintana Roo*, Wednesday, 19 August 2009.

the state aren't going to live by eating mangrove,"³⁸⁷ and that Article 60 placed an excessive financial burden on the development potential of coastal states.³⁸⁸

[One] of the political processes that is trying deliberately to counter [LGVS Article 60 TER] is the state government... It's not just me saying that, the *press* is saying that. The press has realized that there is a group of governors that is intending, let's say, to bend this law, or change this law, and among them is the very same governor [of Quintana Roo].³⁸⁹

...[Now] there is the law of flora and wildlife, the [LGVS]. This law impedes the destruction of mangroves by the hotels. And the powerful businessmen are exerting pressure on the local government to give them permits to destroy the mangrove. So, there is a *very* direct conflict that SEMARNAT, and also PROFEPA, are confronting in this case.³⁹⁰

Yet, even though to date this policy advocacy has not resulted in a change of Article 60 TER, media reports, research and interviews indicate that hoteliers often find other ways to avoid the application of the law. For example, after hurricane Dean struck the Yucatán peninsula in 2007, large areas of coastal mangrove were destroyed along the

³⁸⁷ Quote taken from APIR president Miguel Ángel Lemus. Cited in "Promueven industriales veto a reformas en ley de vida silvestre, denuncian ONG," *La Jornada*, Wednesday, 24 February, 2007. Translated from Spanish. In addition, various accounts of hotelier mobilization and state support presented in interviews with epistemic community members, and in the following: "Defienden por internet el recurso natural," *Novedades Quintana Roo*, Wednesday, 6 February 2008; Centro de Estudios Jurídicos y Ambientales [CEJA], 2007, "Van empresarios contra manglares de QR," *Noticias Ambientales*. Retrieved online August 2009 from http://www.ceja.org.mx/noticia.php?id_article=929.

³⁸⁸ "Increpan regidores del Verde Ecologista a García Pliego" in *Novedades*, Friday 2 February, 2007. Also taken from interviews with epistemic community members

³⁸⁹ Eloy Sosa, author interviews conducted February 2008. Taken from digital voice recording. Translated from Spanish.

³⁹⁰ Enrique Galvéz, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish.

coast of Quintana Roo, including at Majahual. By effectively clearing the mangrove, hurricane Dean opened the way for coastal construction, and by April of 2008, infrastructure including road paving and hotels were taking place, disrupting the hydrological flow of fresh water from mangrove zones.³⁹¹ Hoteliers would also simply resort to corruption where necessary.

Conclusion

Again, the results support one hypothesis, undermine another, and are inconclusive in the third. **Table 3.3: Summary of Observed and Predicted Outcomes** summarizes the predicted and observed relationships between the independent variables: economic framing, consensus and socialization, and the dependent variable: influence.

As the data indicate, socialization is present in every campaign in which the epistemic community exercised influence. This supports the hypothesis H3: Socialization improves the influence of epistemic communities. Notably, there was one instance in which the presence of socialization did not result in network influence, notably in the campaign to persuade hoteliers. This issue is addressed in more detail below.

As described above, CONANP had staffers participating as epistemic community members, gathering information and reports as part of a research network and sharing

³⁹¹ Observed through firsthand observation of Majahual during April 2008, in conjunction with interviews with members of SCPP Andrés Quintana Roo, and Abril Navarro.

findings with civil society researchers including *Los Amigos*, WWF-México, TNC and others. Similarly, CONAPESCA members and fishing cooperative members were also comprehensively socialized with the epistemic community. The fishing management workshops, for example, incorporated knowledge and capacity building exercises between epistemic community members, fishing policymakers in the federal government, and managers from various cooperatives. Like CONANP, CONAPESCA members conducted joint studies of reef environmental processes, although targeted more specifically at fish conservation rather than ecological management per se. Although the justifications of management were driven by economic reasons, socialization corresponded with the willingness of managers to adopt sustainable practices and policy. This supports arguments that socialization leads to a willingness of policymakers to accept the claims of the scientists and act accordingly.

The importance of socialization in promoting learning and norm sharing among actors is challenged by the fact that hoteliers did not adopt the arguments of the epistemic community. Socialization developed in the MARTI workshops and the jointly designed *Normas Prácticas* diagnostics produced with *Los Amigos* did not result in changes in behavior and understandings in private stakeholders that satisfied the ecological management preferences of the epistemic community. The models constructed by the epistemic community simply could not compete with the interests of resource and benefit extraction adopted by hoteliers.

This suggests two characteristics of the impact of socialization on network advocacy. First, an argument that socialization leads to epistemic community influence

has to be a probabilistic argument, not a deterministic one. Second, socialization, while necessary, is not a sufficient causal variable.

Again, in evaluating hypothesis H2: scientific consensus increases the influence of transnational advocacy networks, the data suggest that scientific consensus, even if shared by a publicly recognized network of experts, is insufficient to lead to a change in behavior. While present in the campaigns in which the epistemic community exercised influence, it was not enough to lead to policy support among the state government of Quintana Roo, SEDETUR, or the hotelier associations. At the same time, since every campaign evinced knowledge consensus (no variation on the independent variable), it is not clear if consensus is necessary from this case, or from the previous chapter.

Finally, there is a lack of support for the hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments. While economic framing was present in successful campaigns, namely the campaigns to reform fishing management from governmental agencies in SAGARPA and CONAPESCA, it was also present in the failed campaigns to influence hoteliers and the state government of Quintana Roo.

On one hand, economic arguments were cited by epistemic community respondents as crucial in influencing fishermen in cooperatives to adopt changes to their fishing practices.

And here, fortunately, in some areas that we have been able to demonstrate, what the fishermen have been able to see is that protected areas have served to protect their interests. There haven't been any more permits given out, for people to fish. And so, AMPs have become like exclusive areas, and they see this as an advantage... "I recognize what

you're telling me, that we're on a good path, and that now we have some kind of sustainability with lobster fishing, and other species besides.”³⁹²

Economic arguments similarly were cited by CONAPESCA as relevant to biodiversity management, as environmental protection was necessary to continue the sustainable extraction of economic benefits from the natural resources.

The committee for inspection and state monitoring, which comes from the fishing delegation of SAGARPA was created to coordinate with other authorities, like the Army, PROFEPA, SEMARNAT, the Navy, for improvement of our inspection and monitoring methods. Because otherwise, by tomorrow, bit by bit, we won't have anything left to sell.³⁹³

Similarly, CONAPESCA respondents registered support for increased protection of mangrove and coastal zones under Article 60 TER, based on its contribution to commercial fish reproduction, and by implication, economic sustainability among coastal communities:

It's a very good law. It's a very good form of conservation because the mangrove, besides helping us by forming dunes and impeding the direct impact of the tide on the coast, well, it's a very important area of fish reproduction, for lobster larvae, right?³⁹⁴

³⁹² Alfredo Arellano Guillermo, author interviews conducted March 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁹³ José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

³⁹⁴ José Manuel Cárdenas Magaña, author interviews conducted between 12 and 15 May, 2008. Taken from transcript of digital voice recording. Translated from Spanish. See also SAM/FMAM/CCAD, 2004, *Informe de Revisión de Medio Término 9 al 21 de marzo*, pg. 6.

However, economic arguments were ineffectual in persuading hoteliers to adopt internal regulations, or comply with existing policy, on coastal development, and unnecessary in influencing reform in CONANP or SEMARNAT.

CONANP adopted the PMS monitoring strategy and incorporated findings and parameters of the environmental problem as espoused by the network of scientists. In addition, CONANP staff members shared the ecological perspective of the civil society actors within the epistemic community. In interviews, staffers of CONANP argued, like the epistemic community, that the Mesoamerican reef region functioned as an integrated ecosystem, rather than as a collection of discrete reef environments:

These aren't the tiny little isolated communities like in other parts of the world, right? And the SAM project, to me, it seems like it fulfilled a primary attempt to understand the area, recognize how valuable this barrier reef is at the environmental level and to classify it... There are marine currents that come like so, from south to north, that implicate all the richness and biodiversity in this zone.³⁹⁵

However, as the following chapter will make clear, knowledge consensus based on scientific research principles, which is the distinguishing characteristic of epistemic communities, remains an integral variable in the advocacy efforts of scientific networks.

Consequently, the following chapter illustrates a case of scientific advocacy by a network that lacked a shared knowledge consensus. This network attempted to influence terrestrial biodiversity management in the Yucatán peninsula relevant to the CBD did so in part through a process of socialization and network-building with federal policymakers. While epistemic community members themselves in this chapter and

³⁹⁵ Patricia Santos, author interviews conducted May 15, 2008. Taken from transcript of digital voice recording. Translated from Spanish.

Chapter 2 suggested that economic arguments may be necessary to communicate with policymakers, the data suggest that strategic framing has no independent impact on changing patterns of behavior by state or civil society environmental managers.

Table 3.1: List of Reef Policy Makers

AGENCY/MANAGER	JURISDICTION EST. THROUGH	REGULATES
SEMARNAT	Federal supremacy over biodiversity; Constitution; various laws on natural resources	Environmental monitoring. Defines and regulates marine protected area (AMPs).
CONANP	SEMARNAT agency	Manages AMPs. Environmental monitoring.
SAGARPA	1958 Law of Ministries and Departments	Regulates fisheries activities. Certifies permits granted to fishing cooperatives in Quintana Roo
CONAPESCA	SAGARPA agency	Regulates and monitors fishing activity in Quintana Roo.
SEDUMA/ State Government of Quintana Roo	State control over natural resources	Administration of POETs / land zoning management
SEDETUR	Agency of the state government	Promotion of tourist development
<i>Quintanarroense Cooperatives</i>	De facto control over fishing practices and excursions	Internal control over fishing practices, use of technology, possible contribution to monitoring
Hotelier Associations	De facto control over tourist activity	Internal control over tourist excursions, recreational practices, and hotel/infrastructure construction

Table 3.2: Partial List of Epistemic Community Members

ORGANIZATION	INDIVIDUALS	FUNCTIONS	SCIENCE TRAINING
<i>Los Amigos de Sian Ka'an</i>	Gonzalo Merediz Alonso	Protected areas monitoring. Habitat health evaluation.	Marine Biology
	Albert Franquesa	Protected areas monitoring. Habitat health evaluation.	Marine Biology
UNU-INWEH	Peter Sale	Designing monitoring methodology	Ecology
The Nature Conservancy	Juan Bezaury Creel (formerly of <i>Los Amigos</i>)	Protected areas monitoring	Land use planning
	Will Heyman	AMP monitoring	Marine Sciences
CONANP	Alfredo Arellano Guillermo	Population monitoring. Habitat health evaluation. National Reef Committee coordinator	Marine biology
	Rosa Loreto Viruel (formerly of <i>Los Amigos</i>)	Protected areas monitoring, Puerto Morelos AMP management	Marine ecology
	Juan Domínguez Calderón	Protected areas monitoring	Marine biology
	Patricia Santos	Population monitoring (fauna). Flora taxonomy. Habitat health evaluation.	
URI-CRC	Pamela Rubinoff	Monitoring methodology	Coastal management
ECOSUR	Eloy Sosa	Reef ecology monitoring	Marine ecology
	Felipe Serrano	Reef ecology monitoring	Marine ecology
	Laura Carrillo	Reef ecology monitoring	Marine ecology
WWF-México	Melanie McField	Threat analysis, monitoring methodology	Conservation ecology
	Álvaro Hernández Gil	Habitat and marine fauna monitoring	Ecology

Table 3.3: Summary of Observed and Predicted Outcomes in Mesoamerican Reef Advocacy

Agency	Desired Outcomes	Independent Variable Present			Observed Influence
		<i>Economic Framing</i>	<i>Consensus</i>	<i>Socialization</i>	
Federal Government	Expand ZFMT (minor campaign by <i>Los Amigos</i> and URL-CRC)		✓		No
SEMARNAT	Reform AMP management by adopting new management plans/reforming existing plans		✓	✓	Yes
	Adopt ecoregion definition (carried out through control of boundaries in SAM Project design)		✓	✓	Yes
	Adopt ecological practices (e.g., PMS monitoring, through influence in SAM Project design)		✓	✓	Yes
CONANP	Reform AMP management by adopting new management plans		✓	✓	Yes
	Adopt ecoregion definition (carried out through control of boundaries in SAM Project)		✓	✓	Yes
	Adopt ecological practices (e.g., PMS monitoring, through influence in SAM Project design)		✓	✓	Yes
	Declare new areas as AMPs (minor campaign by <i>Los Amigos</i>)		✓	✓	No (difference in casual beliefs)
SAGARPA	Identify and protect fish spawning sites	✓	✓	✓	Yes
CONAPESCA	Identify and protect fish spawning sites	✓	✓	✓	Yes
<i>Quintanarroense</i> Cooperatives	Voluntarily adopt internal controls on harvesting practices of members	✓	✓	✓	Yes
Hoteliers	Voluntarily adopt internal controls on hotel construction practices – siting, size etc.	✓	✓	✓	No
State government of QR	Support environmental controls on coastal hotel construction	✓	✓		No
SEDETUR	Support environmental controls on coastal hotel construction	✓	✓		No

Figure 3.1: Map of WWF Defined Ecoregion

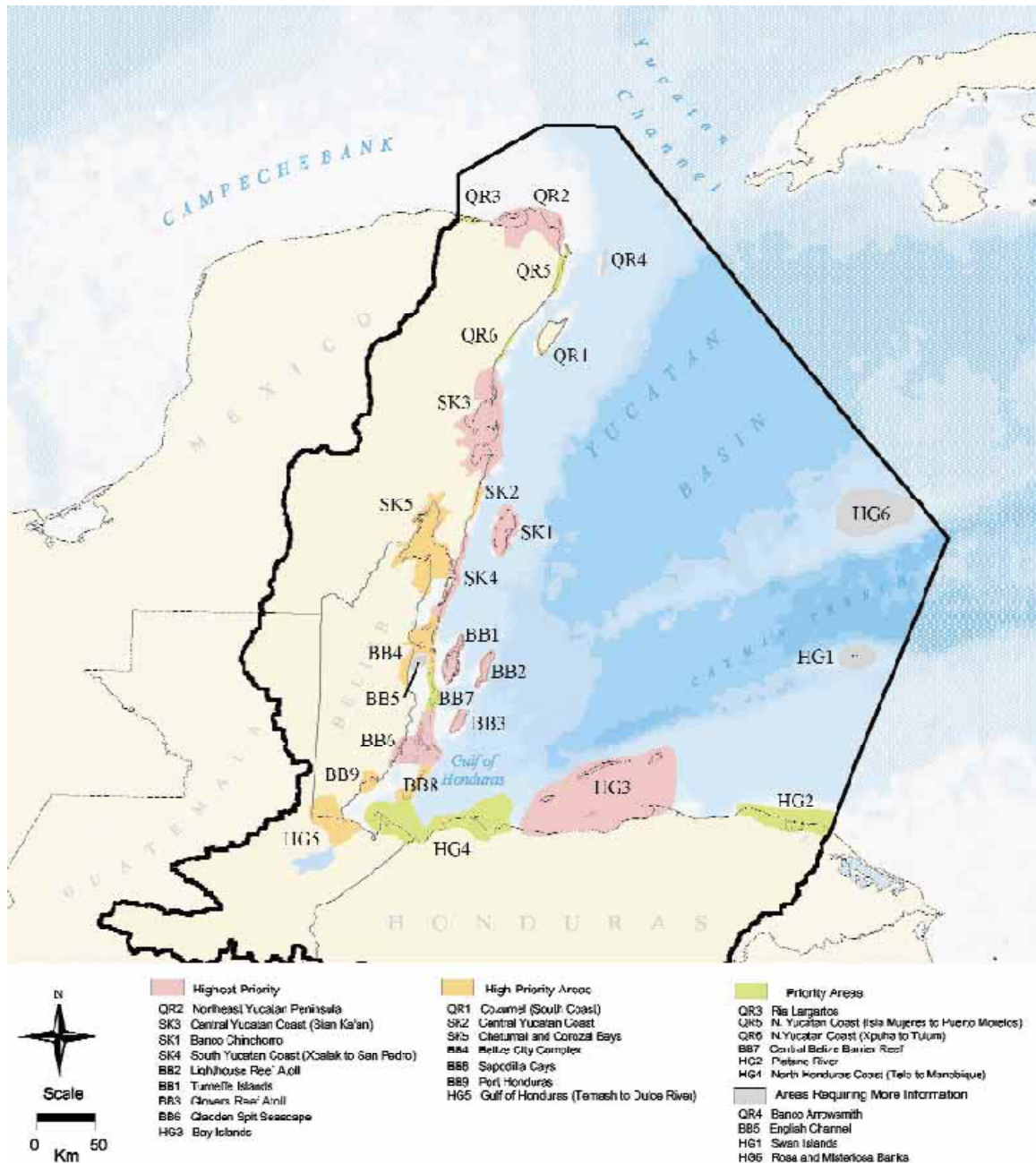
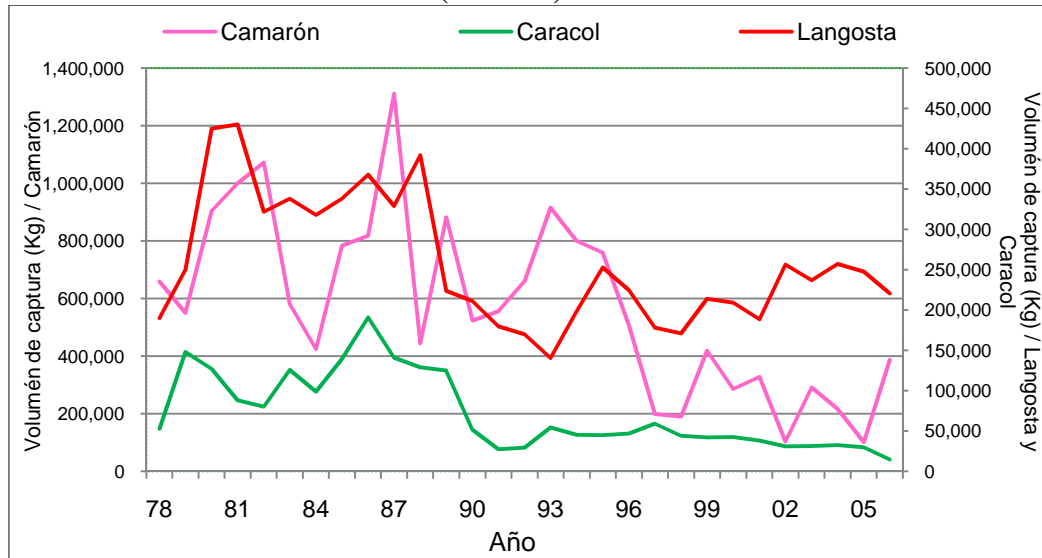


Figure 3.2: Graph of Declining Populations
Volume of Fisheries Production in Lobster (*Langosta*), Shrimp (*Camarón*) and Conch (*Caracol*): 1978-2006.



Volume of Production of Scaled Fish (*Escama Total*), Lobster (*Langosta*) and Shark (*Tiburón*): 1978-2006.

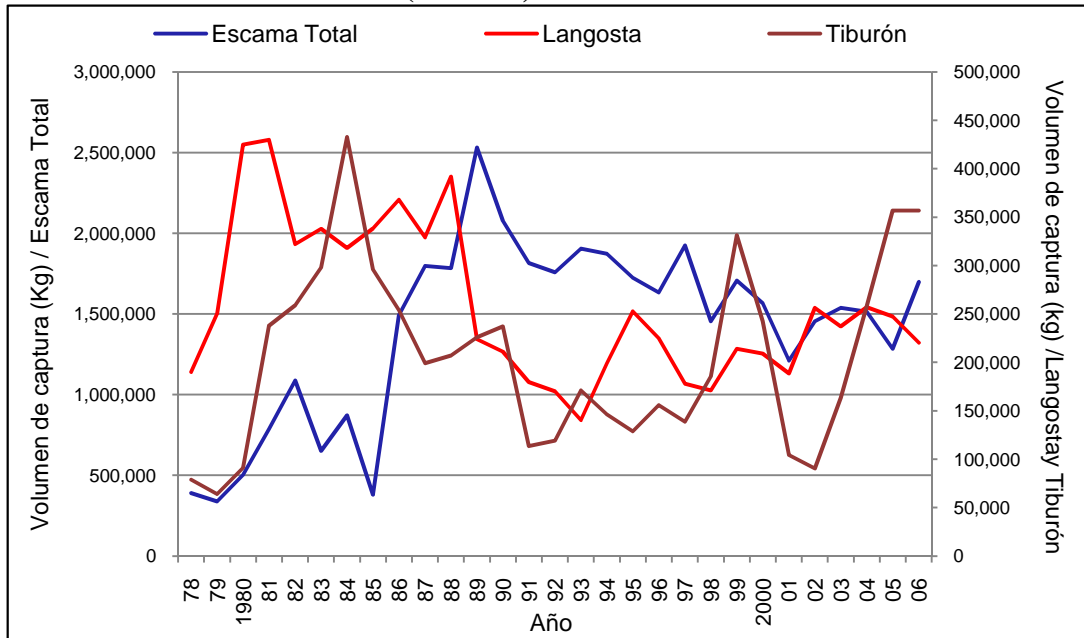
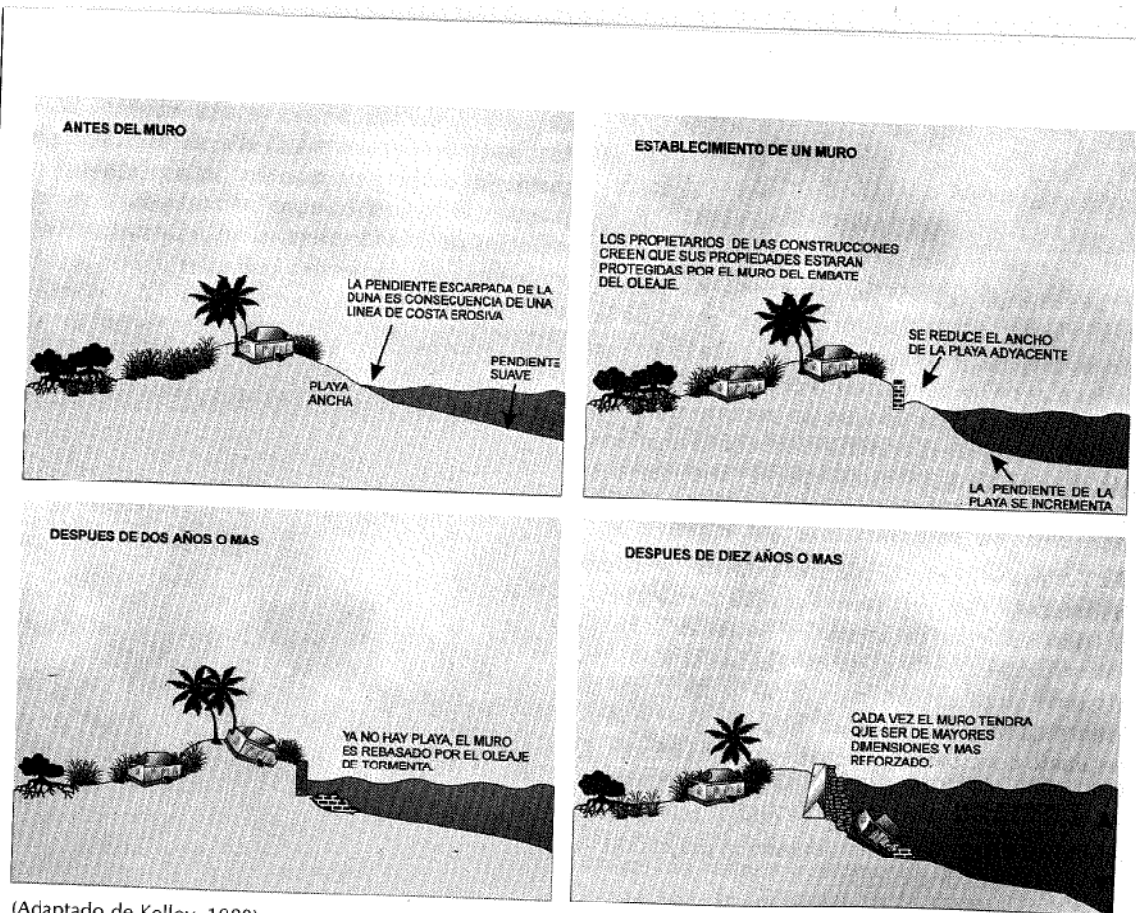


Figure 3.3: Effect of Erosion on Hotel Construction



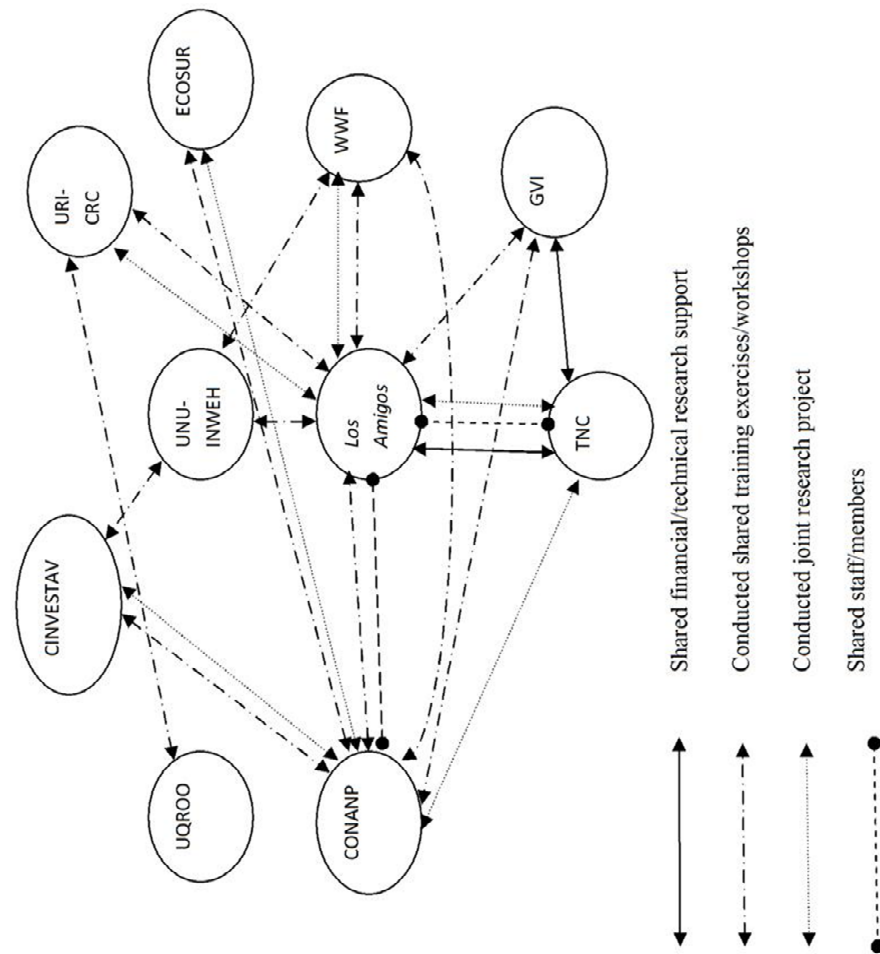
(Adaptado de Kelley, 1989)

Consecuencias del establecimiento de un muro paralelo a la playa a lo largo del tiempo.

The title of the boxes are, clockwise from top left:

1. Before the wall (buffering wall to protect building from tides and storms)
2. Establishment of a wall
3. After 10 or more years (note depiction of building, formerly on hill, now at the bottom of the ocean)
4. After 2 or more years (note depiction of failing structural integrity)

Figure 3.4: Diagram of Mesoamerican Reef Epistemic Community Links



CHAPTER 4

MEXICO AND BIODIVERSITY MANGEMENT IN THE MESOAMERICAN BIOLOGICAL CORRIDOR

Introduction

The previous two cases demonstrated that transnational epistemic communities can successfully contribute to biodiversity governance in developing countries. In Jamaica and Mexico, national governments adopted biodiversity management projects after epistemic communities exposed an emerging crisis to internationally and regionally important biodiversity. Later, these communities contributed to the creation of policy and behavior by key managers, influencing including land use designations, monitoring and project compliance efforts. Subsequently, natural resource policymakers and managers learned from epistemic community claims, adopting the information, theories, and policy conclusions drawn by scientists.

The previous two chapters strongly support the hypothesis H3: socialization increases the influence of transnational advocacy networks. Socialization, or the participation of epistemic communities and target audiences in knowledge exchange processes, enabled epistemic communities to convince managers to take environmentally friendly action for biodiversity management. These processes included processes transnational information-generation forums, project development workshops and joint training exercises relevant to the projects studied. When socialization was absent,

epistemic communities were unable to advance environmental learning among managers, even if network members shared an internal consensus.

However, while the previous two chapters indicate that knowledge consensus is not sufficient to lead to network influence, it is not clear if consensus is necessary, due to the fact that there has been no variation on this independent variable. In order to have a clearer test of hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments, this chapter process traces the advocacy campaigns of a transnational network concerned about biodiversity governance in the southeastern states of Mexico. This case is distinguished from the previous two, as this network did not generate an intersubjective knowledge consensus on the causal dimensions of the problem.

What this chapter found is that consensus is, in fact, necessary (but insufficient) for network influence. The network here generated measurable socialization with targeted policymaker agencies in the Mexican federal government, but failed to generate influence on some of the primary goals of policy advocacy. This suggests that knowledge networks who do not have an unquestioned scientific authority on their side are operating at a cognitive disadvantage in influencing policymaking; socialization is necessary, but as this chapter indicates, insufficient.

This chapter also returns to testing the hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments. As indicated in Chapters 2 and 3, economic arguments have been ineffectual in independently persuading target audiences to change

behavior. In this case as well, the transnational advocacy network active in this case was unable to convert economic arguments into policy, as framing did not lead to network influence. This supports the argument that the use of economic language cannot persuade managers that long-term conservation efforts are a reasonable alternative to the short-term developmental gains from continuing contemporary patterns of natural resource exploitation. The remainder of the chapter explains how issue-framing, socialization and knowledge consensus affected the ability of epistemic communities to influence policymaking and terrestrial biodiversity management in Mexico. Where documents and interviews were originally in Spanish, I have provided my own translation of the material throughout.

Overview of Threats to the Mesoamerican Corridor

As in the previous two cases, this chapter involves TAN advocacy for biodiversity management through a project funded by the Global Environmental Facility (GEF) as relevant to the UN Convention on Biological Diversity (CBD). This project, titled the *Proyecto para la Consolidación del Corredor Biológico Mesoamericano – México* (Project for the Consolidation of the Mesoamerican Biological Corridor – Mexico, or CBMMx Project), was carried out in the peninsular states of Campeche, Yucatán and Quintana Roo, as well as in Chiapas (see **Figure 1.3**).

This Mesoamerican region, part of a transboundary zone connecting seven Central American countries and the southern states of Mexico, is considered to be an

internationally important site of endemism and biodiversity.³⁹⁶ The Mexican section is comprised largely of a karst limestone base, with low lying wetlands in Quintana Roo, dry forests in Campeche, rainforests in Yucatán and temperate mesophile forests in Chiapas.³⁹⁷ Unique climatological and geomorphological features of this region, including frequent hurricanes, thin subsoil, an absence of aboveground rivers, and millennia of evolution under these circumstances have contributed to the exceptional biodiversity characterizing the area.³⁹⁸

Studies of the peninsula have found thousands of different species of plants and hundreds of mammals, birds, reptiles and amphibians in the region, with as many as 900 different plant species and 200 animal species per hectare, many of them endemic.³⁹⁹ This biodiversity is subject to human pressure from various sources, as local

³⁹⁶ World Bank, 2000, *Mexico: Mesoamerican Biological Corridor* (World Bank project document), Annex 3, pp. 1; Comisión Nacional de la Biodiversidad [CONABIO], 2003, “El Corredor Biológico Mesoamericano,” (*Biodiversitas* 7(47)), pp. 2; CCAD, 2002, *El Corredor Biológico Mesoamericano: Un plataforma para el desarrollo regional* (CCAD: Serie Técnica 01) p. 7. .

³⁹⁷ Jorge L. Tamayo, 2005, *Primera fase del Sistema de Evaluación y Monitoreo para el Corredor Biológico Mesoamericano - México (Componente de Geomática): Informe Final* (Centro de Investigación en Geografía y Geomática), p. 10.

³⁹⁸ World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, p. 3

³⁹⁹ Corredor Biológico Mesoamericano [CBM], 2000, *Biodiversidad Total y Endémica de Mesoamerica*. Comisión Centroamericana de Ambiente y Desarrollo [CCAD], 2000, *Corredor Biológico Mesoamericano: Del Paseo Pantera a un modelo de desarrollo sustentable* (CCAD: Costa Rica); World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, p. 2; Jorge L. Tamayo, 2005, *Primera Fase del Sistema de Evaluación*, pp. 10.

communities, oil exploration and agro-industry extract benefits from the exploitation of natural resources in the region.

Agriculture and Land Conversion

Agricultural activity, whether slash-and-burn agricultural cultivation among peasant and indigenous populations, mechanized and commercial agro-industry, or cattle-farming, typically requires broad land conversion of pristine forest to monoculture crops, such as the popularly consumed chili peppers. Land clearance also further allows easier access for invasive species, including fast-growth plants such as *guarumbo*.⁴⁰⁰ Cattle-farming is particularly harmful, as the thin topsoil and poor vegetative conditions in the Yucatán peninsula require an intensive use of resources, such as fertilizer, to create conditions propitious to cattle.⁴⁰¹ Moreover, cattle-farming has had a high level of support from the federal government, which has, through the 1990s, provided subsidies to cattle ranchers for the expansion of farms throughout the Yucatán. Agro-industry and subsistence agriculture exacerbate problems associated with land clearance when

⁴⁰⁰ UNEP, 1999, *Establecimiento de un Programa para la Consolidación del Corredor Biológico Mesoamericano*, (CCAD/PNUD GEF Project Document), p. 5; Morales Barbosa, Juan José, 1995, *La Gran Selva Maya*, (from the series *Sian Ka'an: Introducción a los Ecosistemas de la Península de Yucatán*, Cancún, Q. Roo: Amigos de Sian Ka'an) p. 151.

⁴⁰¹ CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano* (CBM: Managua) pp. 52

practitioners introduce chemical pesticides and biocides, which accumulate as toxins in terrestrial and subterranean aquatic ecosystems.⁴⁰²

Land conversion and loss of forests for agriculture and logging also contribute to regional forest fires. Degraded and poorly managed forests tend to accumulate flammable debris, including discarded twigs and shrubbery, which exacerbates the propensity of the spread of fires, in turn worsened by the prevalence of slash-and-burn production among rural populations.⁴⁰³ Since 2005, the Mesoamerican states of Quintana Roo, Chiapas and Oaxaca have been three of the top 19 states in the country affected by forest fires.⁴⁰⁴

Logging

Unsustainable logging for firewood and timber production also contributes to biodiversity loss. Timber production tends to be concentrated on a few commercially viable species, such as mahogany and cedar, which are produced for the tourist market and subsequently overharvested. By depleting these species, rural populations can

⁴⁰² World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, Annex V, pp. 7 – 11.

⁴⁰³ UNEP, 1999, *Establecimiento de un Programa para la Consolidación del Corredor Biológico Mesoamericano* (CCAD/PNUD) pp. 25; USAID, 2008, *Assessment Of Tropical Forest And Biodiversity Conservation In Mexico* (FAA SECTIONS 118-119 Report) p. 52

⁴⁰⁴ USAID, 2008, *Assessment Of Tropical Forest And Biodiversity Conservation In Mexico* (FAA SECTIONS 118-119 Report) p. 51.

degrade the regenerative capacity of the limestone jungle.⁴⁰⁵ Moreover, the demand for these timber products creates incentives for rural populations to develop tree plantations in jungle areas, which has caused problems due to the introduction of invasives in sensitive ecosystems.⁴⁰⁶ Hunting for subsistence consumption or for sport among different sectors of the peninsular population may also become problematic if unregulated, particularly when endangered species are targeted.

Industrial Development

However, there are also significant industrial sources of environmental degradation as well. The construction of roads and high-speed throughways in jungle areas causes environmental stress by fragmenting ecosystems and interrupting migratory patterns of land-based fauna.⁴⁰⁷ Incidental pollution from vehicle emissions negatively affects the immediate environment of sensitive flora by contributing to the accumulation of toxins in plants. Oil spills and other resultant pollution from petroleum extraction are

⁴⁰⁵ Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor* (World Resources Institute) p. 23

⁴⁰⁶ CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano* (CBM: Managua), pp. 65; Timothy J. Synott, 2007, Evaluación de las plantaciones forestales en el área Sian Ka'an-Calakmul, *Corredor Biológico Mesoamericano/México: Serie Conocimiento*. (CONABIO: Tlalpan, México) pp. 13 – 17

⁴⁰⁷ CCAD, 1999, *Establecimiento de un Programa para la Consolidación del Corredor Biológico Mesoamericano* (CCAD/PNUD) pp. 5; Enrique Galvez, autor interviews conducted March 2008; López, Alexander and Alicia Jiménez, 2007, *Latin America Assessment Environmental Conflict and Cooperation: The Mesoamerican Biological Corridor as a Mechanism for Transboundary Cooperation* (UNEP, Report of the Regional Consultation 4-5 July 2006, Mexico City, Mexico) p. 10.

significant threats to environmental integrity. Oil exploration takes place throughout the states in Mesoamerica, namely Tabasco, Campeche, Veracruz, creating problems when the toxic material is spilled, or when heavy machinery emits incidental air pollution.⁴⁰⁸

Tensions in National Economic Development

Again, there are tensions in conceptualizing national economic development insofar as some of the goals of ‘national development’ conflict with the economic wellbeing and natural resource management goals of marginalized populations. Oil exploration, one of the most important national productive sectors, may contribute to additional environmental and social problems. The disruption caused by mining and drilling can impel the displacement of rural communities, who then migrate and contribute to more extensive patterns of resource use and environmental degradation.⁴⁰⁹ In addition, subsidized cattle-farming, while ostensibly aimed at improving the livelihoods of agrarian populations in the Yucatán, fractures ecosystems by converting large areas to monocultural pasturelands, and economically displaces traditional and subsistence agricultural practices.⁴¹⁰

⁴⁰⁸ CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano* (CBM: Managua) p. 10.

⁴⁰⁹ Comisión Nacional para el Desarrollo de los Pueblos Indígenas [CDI], 2004, *Consulta a los Pueblos Indígenas Sobre sus Formas y Aspiraciones de Desarrollo: Informe Final*. (Comisión Nacional para el Desarrollo de los Pueblos Indígenas : México, DF), p. 32

⁴¹⁰ María Esther Ayala, 2001, *La Apicultura de la Península de Yucatán: Un Acercamiento Desde la Ecología Humana* (Master’s Thesis, Centro de Investigaciones y Estudios Avanzados [CINVESTAV]), p. 27.

Yet, environmental management problems are generally blamed on the activities of low-income and rural communities in the Yucatán peninsula and in Chiapas. Population growth is one of the drivers of environmental degradation, and in the peninsula, the tourist center of Cancún and the Riviera Maya is a significant attraction for in-land migrants. In the municipality of Felipe Carrillo Puerto alone, in-land migration of low skilled workers seeking employment in the tourism center of Cancún and the Riviera Maya has contributed to a tenfold population increase between 1970 and 2000.⁴¹¹ However, assigning responsibility for environmental degradation to the activities of marginalized populations obscures the contribution of state-sponsored activities and institutions to those same activities.

Identifying the Social Actors Involved in Biodiversity Management

Federal Policymakers

As in the previous cases, the constellation of potential sources of anthropogenic environmental degradation implicates a variety of federal and state institutions in the process of biodiversity management. The following section details the various governmental agencies involved in natural resource management pursuant to the implementation of biological corridors in southeastern Mexico (see **Table 4.1: List of Policy Makers**).

⁴¹¹ Luis Alfonso Argüelles Suárez, 2005, *Diagnóstico y Programas del Corredor de Sian Ka'an-Calakmul*. CBM-M, (National Forestry Commission [CONAFOR]) p. 8

CONABIO: Implementing Agency of the CBMMx

One of the primary agencies in the context of this project, and one targeted in project campaigns, is the *Comisión Nacional para el Conocimiento y Uso de la Biodiversidad* (National Commission for the Study and Use of Biodiversity or CONABIO), an intersectorial commission created under the federal government in 1993 with the overarching mandate of coordinating biodiversity management.⁴¹² CONABIO carries out activities such as conducting inventories of national biodiversity stocks and assessments of the impact of human activity on natural resources, and since 1997 has been delegated as the agency responsible for designing the National Biodiversity Strategy and Action Plan, required by states as signatories to the CBD.⁴¹³ When the CBMMx was launched, CONABIO was the agency assigned responsibility for disbursing funds for local projects and activities in the areas identified as part of the constituent corridors.⁴¹⁴ Indeed, as described later, CONABIO was a gatekeeper agency in determining which zones would be included as areas covered by the CBMMx Project, and hence subject to GEF funds. Later, after the project was created, administrative agencies established specifically for the CBMMx were placed under CONABIO's authority.

⁴¹² World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, pp. 13

⁴¹³ CONABIO, 2000, *Estrategia Nacional sobre Biodiversidad de México* (SEMARNAT: México). CONABIO completed this in 2000, drawing from a three-year coordinated, multisectoral study.

⁴¹⁴ Comisión Nacional del Uso y Conocimiento de la Biodiversidad [CONABIO], 2001, *Manual de Operaciones* (SEMARNAT: Mexico, D.F.) pp. 8.40

SEMARNAT, CONAFOR, SAGARPA

In addition to CONABIO, individual federal agencies participating in natural resource management include SEMARNAT, the *Comisión Nacional Forestal* (National Forestry Commission, or CONAFOR) and SAGARPA. SEMARNAT conducts land-zoning policies under programs such as *Unidades para el Manejo Ambiental de la Vida Silvestre* (Wildlife Conservation Management Units or UMAs). When UMAs are created and registered, SEMARNAT is responsible for determining what kind of resource consumption is appropriate, whether hunting, preservation or agriculture, and governing the rates of resource consumption available to incident populations.⁴¹⁵ As described in Chapter 3, SEMARNAT's executive agency in CONANP monitors environmental processes in protected areas, including in those near to corridor zones.⁴¹⁶ SAGARPA provides federal resources, such as funds, subsidies and development permits to states

⁴¹⁵ Fuentes Rossi Vida, author interviews conducted March 2008. Taken from handwritten notes. Simbiosis, 2006, *Memorias: 1er Seminario de Unidades de Manejo para la Conservación de la Vida Silvestre en el Sureste de México* (Chetumal, Q. Roo: Simbiosis), pp. 15 – 16. The article goes on to indicate that federal authority through SEMARNAT is located in a variety of legislative articles, including several articles in the LGVS, articles 83 and 87 in the aforementioned LGEEPA, and NOM-059-ECOL-2001.

⁴¹⁶ Taken from ICRI National Committee Progress Report – Mexico, available at www.icriforum.org/secretariat/word/CebuCPC_13.doc. Interviews with Alfredo Arellano, March 2008. Taken from transcript of audiocassette recording. José Juan Domínguez Calderón, author interviews conducted Jan 24, 2008. Taken from transcript of audiocassette recording. CONANP, 2006, *Qué es la CONANP?* Retrieved January 2009 from <http://www.conanp.gob.mx/qienes.html>. Unidad Coordinadora del Proyecto, 2003, *Manual – Guía Común para la Evaluación de EIAs de Proyectos Turísticos* (Belize City: SAM) pp. 32.

and municipalities for agriculturally based development.⁴¹⁷ CONAFOR, created in 2001, is an administrative agency of SEMARNAT and manages forestry resources, including restoration and conservation activities in corridor zones.⁴¹⁸ In particular, these agencies were responsible for designing and adopting biodiversity conservation projects under the rubric of the CBMMx.

CDI

Corridor management also impacts on indigenous rights issues, as the majority of the population of corridor zones in Quintana Roo, Chiapas and Campeche is indigenous. Most of the land within these zones are organized into *ejidos*, or communally owned agrarian areas, wherein the low-income population is highly dependent on subsistence and commercial agriculture.⁴¹⁹ In these areas, the *Comisión Nacional para el Desarrollo de los Pueblos Indígenas* (National Commission for the Development of Indigenous Peoples or CDI), a federal agency created in 2003, promotes economically oriented projects and activities such as agricultural and artisanal practices.⁴²⁰ In addition, CDI

⁴¹⁷ Dzahuindanda Flores, author interviews conducted 12 May 2008

⁴¹⁸ See CONAFOR, 2010, *Quiénes Somos?* Available online at http://www.conafor.gob.mx/index.php?option=com_content&task=view&id=430&Itemid=454

⁴¹⁹ World Bank, 2000, Implementation Letter for GEF Trust Fund Agreement re: Mesoamerican Biological Corridor Project, p. 1; CBMMx, c.2000, *Mexico Mesoamerican Biological Corridor Indigenous Peoples Development Plan* (CBMMx) p. 3

⁴²⁰ Comisión Nacional para el Desarrollo de los Pueblos Indígenas [CDI], 2009, *Ley de la CDI*. Retrieved online, October 2009 from

assists in legal advocacy for indigenous communities, particularly in Chiapas, where *ejidos* often lack official documentation and legal recognition of land ownership, placing individuals in these areas at risk for land appropriation and dispossession.⁴²¹ At the same time, its role as a target audience for transnational advocacy is comparatively small, and limited to the concomitant development of sustainable conservation projects in marginalized communities.

State Governments in the CBMMx

Corridor management involves coordinating activity with state governments, which provide technological training and subsidies to local communities for agricultural production. Under the CBMMx, the governor's office of each state was encouraged to formally include references to biological corridors and biodiversity management in their periodic State Development Plans, and to incorporate ecological concerns in the management and zoning of POETs described in Chapter 3. In addition, state level agencies in natural resource management, such as the Secretariat of Ecology in Campeche, inform state governments of appropriate land use management. Some of the

http://www.cdi.gob.mx/index.php?option=com_content&task=view&id=5&Itemid=8; CDI, 2004, *Consulta a los Pueblos Indígenas Sobre sus Formas y Aspiraciones de Desarrollo: Informe Final*. (Comisión Nacional para el Desarrollo de los Pueblos Indígenas : México, DF); CDI Official, interviews conducted March 2008; CDI, 2009, *Quiénes Somos*. Retrieved online, October 2009 from http://www.cdi.gob.mx/index.php?option=com_content&task=view&id=2&Itemid=4; CDI, 2007, *Lineamientos del Proyecto Manejo y Conservación de Recursos Naturales en Zonas Indígenas* (CDI Project Document for Proyecto MCRNZI 07 revisado con DGEC y DGAJ_16_07_07).

⁴²¹ GEF Trust Fund Grant No. TF 024371 (Mesoamerican Biological Corridor Project) Implementation Letter, p. 6.

key agencies relevant to the management of biological corridors are listed in **Table 4.1:**

List of CBMMx Policymakers.

Mobilization around the Mesoamerican Biological Corridor

Emergence of the Network and the Corridor Concept

The concept of biological corridors, introduced to Mexico through the process of transnational activism, was discussed in the United States as early as 1967 in studies conducted by Harvard biologist E. O. Wilson. Wilson argued that the ability of species of fauna and flora to thrive was a function of the size of their available habitat. Even when species are placed on protected reserves, fauna and flora become more vulnerable to threats, degradation, and predators if the allotted habitat is too small. Consequently, when protected areas are established, care has to be taken to ensure that they do not fragment ecosystems into tiny islands of biodiversity, but that they permit the free movement of migratory species in “biological corridors.”⁴²²

In the 1980s, international wildlife specialists from the University of Florida and the Wildlife Conservation Society (WCS) observed that ecosystem fragmentation was a

⁴²² Cited in *Science*, 2001, Bold Corridor Project Confronts Political Reality, (Available online at <http://www.sciencemag.org/cgi/reprint/sci;293/5538/2196.pdf>) p. 2197.

“Biological corridors” are defined as zones running between existing protected areas, managed under environmental regulations to alleviate anthropogenic stresses on important biodiversity. This definition is taken from a variety of the project documents associated with the CBMMx Project; see e.g. World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of Sdr 11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), pp. 5

common problem in protected areas management in Mesoamerica.⁴²³ Concerned about the conservation of migratory species, the WCS headed a coalition of actors in 1989 to advocate for more effective management under a project called the *Paseo Pantera*. The *Paseo Pantera*, which relied on the biological corridor concepts described by Wilson and contemporary researchers like Reed Noss of the University of Florida, advocated for the creation of a regional biological corridor between Mexico and Panama. This proposed corridor would theoretically allow comparatively safe passage for migratory wildlife between established protected areas and preserves.⁴²⁴ Within Mexico, some of the areas identified as important to biodiversity management included the Biosphere Reserve of Calakmul, near the border of Guatemala.⁴²⁵

From 1989 through the early 1990s, the TAN advocacy efforts found fertile political ground for a regional biodiversity project. In the buildup to the 1992 Rio UN Conference on Environment and Development (UNCED), the Central American states and Mexico endorsed the idea of multilateral environmental management through a variety of forums and conventions supported by international institutions including the

⁴²³ Reed F. Noss, 1987, Corridors in Real Landscapes: A Response to Simberloff and Cox (*Conservation Biology*, 1, 2(August): 159 – 164); CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano* pp. 14.

⁴²⁴ Adela Vázquez Trejo, 2005, La cooperación acerca de la cuestión ambiental en Centroamérica (*Co/incidencias* July – Dec: No. 2), p. 40; Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor*; *Science*, 2001, “Bold Corridor Project Confronts Political Reality.”

⁴²⁵ Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor* (WRI) p. 3.

Central American Commission for Development (CCAD).⁴²⁶ Although Mexico was not an official member of CCAD, its transboundary forest zone with Guatemala, known as the Selva Maya, made it essential to the goal of biodiversity management in the region.⁴²⁷

In 1993, at the first Wildlife Congress, CCAD and Mexico discussed ways in which they could improve the regional management of biodiversity. Here, experts on biological corridors, including Dr. Reed Noss who was attending as part of a legal network addressing land use policy, recommended the adoption of biological corridors in Mesoamerica.⁴²⁸ At this point, the proposals on biodiversity management advanced in the Wildlife Congress made specific reference to including non-mammalian animal species, including arthropods and insects, and plants, in ecosystem management, moving it beyond the *Paseo Pantera* project, which was limited to charismatic megafauna.⁴²⁹

⁴²⁶ CCAD-PNUD/GEF, 2002, “Proyecto Para La Consolidación del Corredor Biológico Mesoamericano” (Managua: Proyecto Corredor Biológico Mesoamericano) pp. 12. See also the CCAD website, available at <http://ccad.sgsica.org>

⁴²⁷ López, Alexander and Alicia Jiménez, 2007, *Latin America Assessment Environmental Conflict and Cooperation: The Mesoamerican Biological Corridor as a Mechanism for Transboundary Cooperation* (UNEP, Report of the Regional Consultation

4-5 July 2006, Mexico City, Mexico) pp. 27; Morales Barbosa, Juan José, 1995, *La Gran Selva Maya*, (from the series *Sian Ka'an: Introducción a los Ecosistemas de la Península de Yucatán*, Cancún, Q. Roo: Amigos de Sian Ka'an) passim.

⁴²⁸ Reed Noss, author correspondence via email, October 2009. *Newsletter of the Mesoamerican Biodiversity Legal Project*. 1993, retrieved online at: <http://www.ciesin.org/docs/008-594/008-594.html>.

⁴²⁹ Jorge L. Tamayo, 2005, *Primera fase del Sistema de Evaluación y Monitoreo para el Corredor Biológico Mesoamericano – México*, pp. 14.

In February 1996, the CCAD states and Mexico met at the second intergovernmental Tuxtla Summit (Tuxtla II) in Costa Rica, and agreed that biological corridors were the appropriate management mechanism for improving the regional management of biodiversity. To concretize this goal, the member states issued a statement called the “Mechanism of Dialogue and Concertation,” supporting the creation of a Mesoamerican Biological Corridor (*Corredor Biológico Mesoamericano* or CBM).⁴³⁰ The Mexican component of this project was titled the *Corredor Biológico Mesoamericano – México* (CBMMx). With the formal adoption of a plan of action on the Mechanism of Dialogue in 1996, the government of Mexico began requesting information and research on regional biodiversity from local and transnational experts on biological corridors and on biodiversity in Mesoamerica.⁴³¹

Organizing around Biological Corridors

These knowledge-building efforts fostered the expansion of the network concerned with biological corridor management. Although civil society organizations

⁴³⁰ Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor*, pp. 35; *Declaración Conjunta: Tuxtla II*, Article 1; World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, pp. 4; CONABIO, 2003, El Corredor Biológico Mesoamericano (*Biodiversitas* 4(47)). According to Project design documents for the CBMMx, Mexico represented an “essential building block for the Mesoamerican Biological Corridor.” World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, pp. 5

⁴³¹ World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), pp. 26.

were numerically important, the efforts of the federal agency CONABIO were instrumental in constituting the network. CONABIO's central role emerged in part from the fact that the agency had historically been involved in supporting cooperative research endeavors between itself and other environmentally oriented investigative institutions. For example, CONABIO provided research funds to academic institutions including the Intercultural Mayan University of Quintana Roo, the University of Quintana Roo (UQROO), *El Colegio de la Frontera Sur* (ECOSUR), and the National Autonomous University of Mexico (UNAM) when their purposes overlapped with CONABIO's mandate.⁴³²

In addition, CONABIO recruited over 125 organizations to help the agency draft the country's National Biodiversity Strategy and Action Plan (*Estrategia Nacional de la Biodiversidad* or ENB).⁴³³ Among these 125 organizations included TAN members such as: locally active groups *Los Amigos de Sian Ka'an*, *Yum Balám A.C.*, and *Econciencia A.C.*; regionally active organizations *Pronatura A.C.* and *Simbiosis SA de C.V.*; and transnational environmental NGOs Conservation International, The Nature Conservancy (TNC) and the World Wildlife Fund for Nature (WWF). By the late 1990s, these groups had become involved in conducting research on Mesoamerican biodiversity by among

⁴³² One of the earlier studies was carried out in the Sian Ka'an forests by María Magdalena Vázquez of UQROO, titled "Estudio de la fauna edáfica en una selva baja inundable de la reserva de la biosfera de Sian Ka'an, Q. Roo." As indicated in the previous chapter, Sian Ka'an later became a central point of interest for emerging transnational coalitions around marine biodiversity. Ma. Magdalena Vázquez G, 2001, *Fauna Edáfica de las Selvas Tropicales de Quintana Roo* (Universidad de Quintana Roo : Chetumal, Quintana Roo).

⁴³³ CONABIO, 2000, *Estrategia nacional sobre biodiversidad de México*, pp. 63 – 66.

other things, promoting nutrition and health among rural communities in the Yucatán through traditional medicine; monitoring pollution in sensitive ecosystems; and educating local communities about the legal framework of natural resource exploitation.⁴³⁴ Finally, civil society agencies developed inter-network links autonomous from CONABIO, by sharing research on ecosystems and biodiversity in the Yucatán peninsula in the early 1990s.⁴³⁵

After the Mexican government agreed to endorse the proposed CBMMx in 1996, CONABIO took further steps to constitute a transnational network of experts on biodiversity management and biological corridors in Mesoamerica. In 1996 and 1998, CONABIO held a series of CBMMx planning workshops in Tuxtla Gutierrez, Chiapas and Cancún, Quintana Roo respectively, with ENGOs and institutions such as ECOSUR, *Pronatura*, *Los Amigos*, and Conservation International, some of whom had already established ties with CONABIO.⁴³⁶ In 1999, CONABIO held an additional workshop in Cancún, with participants from domestic and international academic institutions

⁴³⁴ Several of these projects were funded by the GEF Small Projects Grants (SPG) Programme between 1998 and 2009, including activities taken by Yum Balám, *Los Amigos*, and *Pronatura A.C.* Over 300 projects by these local ENGOs were identified by conducting a search at the GEF SPG website at <http://sgp.undp.org/index.cfm?module=Projects&page=AdvancedSearch>.

⁴³⁵ See for example a series titled *Sian Ka'an: Introducción a los Ecosistemas de la Península de Yucatán*, produced by *Los Amigos* in Quintana Roo, with research assistance from Conservation International and The Nature Conservancy.

⁴³⁶ CCAD-PNUD/GEF, 2002. *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano* (CBM: Managua) pp. 10.

including UQROO, UNAM ECOSUR, Oxford University, the University of Central Florida, and the California Academy of Sciences.⁴³⁷

These planning workshops were oriented around organizing an appropriate management framework for construction biological corridors in Mesoamerica. Among the issues raised were the identification and siting of ecologically important areas, the development of appropriate conservation projects, the choice of appropriate regulations, and an appropriate monitoring strategy. As corridor zones were organized into *ejidos*, the decision was made to use existing *ejidos* and communities as focal areas for project implementation.⁴³⁸ At the 1999 Cancún workshop, CONABIO finalized the project proposal for the CBMMx, and submitted it to the GEF.⁴³⁹

By this time, this informal network which consisted of federal agencies, civil society actors, and academics, formed a TAN. Researchers shared a common policy enterprise, namely the development of managed biological corridors in Mesoamerica, based on their understanding of the important ecological relationships in the area, and built on information exchanges and shared values developed during the the *Paseo*

⁴³⁷ Reed Noss, author correspondence via email, October 2009; World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, pp. 24; Marcela Morales, author interviews February 2008. Taken from transcript of digital voice recording.

⁴³⁸ CCAD-PNUD/GEF, 2002, *Proyecto para la Consolidación del Corredor Biológico Mesoamericano* (CBM: Managua), pp. 47; World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), pp. 6.

⁴³⁹ World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank).

Pantera project.⁴⁴⁰ After 2000, other organizations joined in the production of policy relevant knowledge, of which a partial list is given in **Table 4.2: Partial List of TAN Organizations**. The importance of CONABIO in constituting the network is suggested in **Figure 4.6: Diagram of TAN Links**, which indicates that the majority of connections within the network were fostered through CONABIO's work in collecting biodiversity relevant information.

As in the SAM Project epistemic community described in Chapter 3, this network was substantially larger than the table indicates. *Los Amigos*, a member organization of both networks, has a total of 14 members. ECOSUR has an additional nine involved in studying terrestrial ecology and agroforestry and *Pronatura A.C.* has six members in its Yucatán branch who are involved in researching terrestrial biodiversity and conservation. Again, the size of the network is larger than the 12 organizations listed below would indicate, and a conservative estimate would put the figure at 70 to 120 members, slightly larger than the range given for the SAM Project epistemic community. The CBMMx was officially launched in 2000 with the signatures of the World Bank and the government of Mexico.

⁴⁴⁰ See discussions about transnational advocacy networks in Margaret Keck and Kathryn Sikkink, 1998, *Activists Beyond Borders* (Cornell University Press); Sanjeev Khagram in 2002, *Restructuring World Politics* (Minneapolis: University of Minnesota Press); María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics: Transnational Advocacy Networks in Brazil, Ecuador, and India* (State University of New York)

Maintaining the Network

This network was maintained by the same processes as occurred in the SAM Project, in part because, as is indicated by comparing **Table 4.2** and **Table 3.2**, there is significant overlap between the organizations of the SAM epistemic community and the CBMMx TAN. For example, SAM epistemic community organizations such as TNC, UQROO, UNAM, WWF-México and *Los Amigos* participated in a series of biodiversity management workshops, threat analysis exercises, and taxonomic studies, both nationally and focused on the Mesoamerican region between 1992 and 2008, along with CBMMx specific agencies, such as *Pronatura*.

The CBMMx network links were reinforced by institutions that were created by CONABIO and the federal government under the project itself. As part of the administration of the CBMMx, CONABIO established agencies in each state called *Consejos Consultivos Estatales*, or CCEs, to identify areas critical for biodiversity management, evaluate funding requests for conservation pilot projects, and to recommend appropriate environmental regulations and zoning policies in corridor zones.⁴⁴¹ These CCEs are staffed by locally based participants from ENGO, academic, and social sectors including *Pronatura*, *Econciencia*, and Intercultural Mayan University of Quintana Roo.⁴⁴² At the local level, the CCEs held several meetings a year, albeit

⁴⁴¹ World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), pg 13; PADEP A.C., 2004, *Evaluación Técnica del Corredor Biológico Mesoamericano – México: Reporte Final* (PADEP), pp. 10.

⁴⁴² CONABIO, 2001, *Manual de Operaciones* (SEMARNAT: México, DF) pp. 4.6;

described as irregular and infrequent by participants. At the national level, CONABIO held annual meetings with federal agencies, as well as with TAN member organizations, such as *Los Amigos* and WWF-México.⁴⁴³ These officially mandated meetings thus comprised one of the ways in which the networks maintained cohesion throughout the project.

Measuring Consensus

Agreeing to Disagree: Dissensus with the Network

Although this transnational network, like the SAM and the Cockpit Country epistemic communities, was constituted by a growing number of researchers who shared a concern about biodiversity management in a specific locale, this TAN did not hold an intersubjective consensus on the causal relationships relevant to environmental management. In interviews and project reports, TAN members and scientific assessments universally agreed that, despite the shared interest in promoting biological corridors, there was no shared agreement on key indicators of biodiversity management and the dimensions of the problem. Simply put, academic researchers disagreed about what comprised important biodiversity and how to measure it:

Ildefonso Palermo, author interview conducted March 2008.

⁴⁴³ CBMMx, 2009, *Donacion TF-02437I - Proyecto "Corredor Biológico Mesoamericano - México" Plan De Adquisiciones Y Contrataciones (PAC) Contratos Sujetos A Examen Posterior Del Banco* (available online at http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2008/01/28/000333038_20080128025407/Rendered/PDF/422180PROP0SPA101091101071Ver1Final.pdf).

A researcher from ECOSUR can have an opinion about the state of biodiversity in some region, or state, and it's not necessarily the same opinion as that of a researcher from a national university. And this has happened, it's happening constantly.⁴⁴⁴

A series of evaluations conducted by a consultant agency during the process of project administration clarified that this lack of consensus had been a constant feature of the CBMMx, observed as early as 2000, and again in 2004:

...[T]here is no unified scientific agreement regarding the role of corridors to combine genetic, demographic, and other forces threatening small populations nor is there accord on the relative importance of these threats.⁴⁴⁵

...[T]here is still no established baseline [of information]... there are absolutely no shared criteria about the geographic demarcation definition, there are no shared geophysical, nor political-administrative, nor biological, nor ecological, nor land ownership criteria...⁴⁴⁶

Without a knowledge consensus, this network cannot be considered an epistemic community. However, this case study offers variation from the previous two cases on the independent variable *consensus*, which makes it a useful test of the hypotheses.

⁴⁴⁴ Felipe Serrano, author interviews conducted March 2008. Taken from transcript of digital voice recording. Author's translation from Spanish.

⁴⁴⁵ World Bank, 2000, *Mexico: Mesoamerican Biological Corridor*, p. 24

⁴⁴⁶ PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 13 - 14. Translated from Spanish by author.

Measuring Network Socialization with Managers

High Levels of Socialization with Federal Policymakers

Having identified a network and measuring the lack of consensus, this research then went on to measure the degree of socialization between the TAN and managers in the CBMMx Project. In this case, the data indicate a high degree of formalized socialization between the network and managers.

Socialization with CONABIO, Federal, and State Agencies

The federal agency CONABIO, responsible for, among other things, identifying and selecting project areas was comprehensively socialized with the transnational network. This formal socialization extended as well to federal natural resource management agencies, such as SAGARPA, SEMARNAT, and CONAFOR, as well as state governmental agencies. This pattern developed because one of the conditions of the project was the construction of extensive, formal links between civil society experts and governmental policymakers at both levels of government.

To administer the CBMMx, the Mexican government established an agency under CONABIO called the National Technical Unit (*Unidad Técnico Nacional* or UTN). The UTN is responsible for drafting annual Plans of Action (POAs), assessing the status of project implementation, making recommendations for sub-projects, issuing funds for the purchase of equipment, and conducting progress reports for the World Bank.⁴⁴⁷

⁴⁴⁷ World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), pg

Subordinate to the UTN are two regionally based organizations called Regional Technical Units (*Unidad Técnico Regional* or UTR), organized such that one is responsible for all the peninsular states of Quintana Roo, Campeche and Yucatán, and the other for Chiapas. These UTRs work with the aforementioned CCEs, which in addition to serving as sites of information exchange between TAN members, are staffed by governmental representatives at all levels; municipal, state and federal. Finally, the local generated policy recommendations are transmitted back to the central administering body, CONABIO, after being revised by a national supervisory agency called the *Consejo Consultivo Nacional* or CCN (see **Figure 4.1: Diagram of CBMMx Agencies**).⁴⁴⁸ The CCN, which provides federal oversight of the project, is constituted of federal agencies from the secretariats of environment (SEMARNAT), agriculture (SAGARPA), social development (SEDESOL), transport (SCT), agrarian reform (SRA), education (SEP), health (SSA) and trade (SECOFI), all of which had formally pledged to collaborate in environmental management.⁴⁴⁹

Through these myriad agencies, civil society organizations in the TAN are socialized with policymakers in generating biodiversity-relevant knowledge at each level:

12; World Bank, 2000, Implementation Letter for GEF Trust Fund Agreement re: Mesoamerican Biological Corridor Project, pp. 1

⁴⁴⁸ World Bank, 2000, *Project Appraisal Document*, pg 14 – 15; CONABIO, 2001, *Manual de Operaciones*, pp. 3.5; CONABIO, n.d., Retos, Perspectivas Y Estrategias Del CBMM En La Península De Yucatán (Powerpoint Presentation provided by CONABIO).

⁴⁴⁹ CBMMx, c.2000, *Mexico Mesoamerican Biological Corridor Indigenous Peoples Development Plan* (CBMMx), pp. 9.

at the federal level with CONABIO and the CCN; at the regional level with the UTRs; and at the state level with the CCEs. Both the federally-oriented CCN and the state-based CCEs have formally established seats for civil society actors to participate in project design. On the CCN, members of the transnational organization WWF and faculty members from UNAM and ECOSUR were officially recognized as participants. At the regional level, the UTRs of Chiapas and the Peninsula held a series of knowledge-generating workshops between 2005 and 2009 with locally recognized ENGOs and academics to assist in designing locally relevant projects for biodiversity management.⁴⁵⁰

Moreover, the civil society was encouraged to participate in the goals of the CBMMx, particularly in the design of biodiversity management projects. TAN organizations such as *Simbiosis*, *Econciencia* and *Pronatura*, and others with locally relevant knowledge could submit project requests in areas such as ecotourism, artisanal development and sustainable agricultural projects in corridor zones. Occasionally, TAN actors worked directly with federal policymakers rather than through the CBMMx. For example, SEMARNAT, which sought to rationalize ecological zoning through the implementation of UMAs, participated in information-gathering seminars with TAN members from *Simbiosis*, *Pronatura*, UNAM, ECOSUR and UQROO, as well as with

⁴⁵⁰ CBMMx, 2009, *Donacion TF-02437I - Proyecto "Corredor Biológico Mesoamericano - México" Plan De Adquisiciones Y Contrataciones (PAC) Contratos Sujetos A Examen Posterior Del Banco* (available online at http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2008/01/28/000333038_20080128025407/Rendered/PDF/422180PROP0SPA101091101071Ver1Final.pdf).

state environmental agencies.⁴⁵¹ In 2005, *Econciencia A.C.* worked with CDI to create an ecotourism project in the rural *ejido* of Kantemó, one of the areas identified as relevant to biological corridor management.⁴⁵² As a result, the TAN generated patterns of socialization with policymakers at all levels in CONABIO, SEMARNAT, SAGARPA and state government agencies. The following section then tests for the final independent variable, issue-framing.

Measuring the Framing Choices of the Community

The Strategic Choice of Frames: Persuading Natural Resource Policymakers

In this case, the TAN accepted the idea that biodiversity conservation would have to be portrayed as a nationally economic good in order to persuade policymakers in the federal and state government to take conservationist action. To be clear, this perspective was advanced by governmental representatives at the planning meetings on biological corridor design during the 1990s.

When biological corridors were proposed as a management approach in the *Paseo Pantera* initiative, it was assumed by ENGO proponents in the WCS coalition that this would entail the creation of additional protected areas. In response, the participating governments in the 1996 Tuxtla II Summit indicated concern with what they described as

⁴⁵¹ María Luisa Villarreal Sonora (ed), 2006, *Memorias de 1er Seminario de Unidades de Manejo para la Conservación de la Vida Silvestre en el Sureste de México* (Simbiosis A.C.: Chetumal, Quintana Roo).

⁴⁵² Arturo Bayona, author interviews conducted April 2008. *Biodiversitas*, 2007, "Proyecto Kantemó," (CONABIO monthly bulletin).

a preservationist approach to protected areas and biodiversity conservation. Specifically, governments in the CCAD coalition asserted that protected areas organized under a preservationist, or “no-access” regime would lose political support, as marginalized communities and policymakers would fundamentally oppose any regulations preventing them from economically exploiting natural resources.⁴⁵³ In Mexico, federal policymakers argued that economic developmental pressures would make it very difficult to gain governmental support for environmentally restrictive policies.

The problem is one of development. How can we provide for the people that live in these communities? We can’t say to them, “don’t sow, don’t cultivate, don’t work,” because then they’ll tell us, “ok, then give me something to eat.” We can’t do that. But at the same time, we have to correctly manage the resources.⁴⁵⁴

Members of the WCS coalition disagreed with the characterization of the *Paseo Pantera* efforts as antithetical to development, if development was linked to the interests of local, marginalized communities. At the 2001 Congress of the Mesoamerican Society for Biology and Conservation, Jim Barborak of the WCS linked ecological conservation and biological corridor management with the wellbeing of agrarian populations. Sustainable, low-impact, environmentally friendly management could lead to sustained commerce among marginalized and poor populations, while incorporating locally

⁴⁵³ López, Alexander and Alicia Jiménez, 2007, *Latin America Assessment Environmental Conflict and Cooperation: The Mesoamerican Biological Corridor*, pp. 32; Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor*, pp. 5. Camacho, Isabel et al, 2008, *Community Conserved Areas*, pp. 17; *Science*, 2001, “Bold Corridor Project Confronts Political Reality,” pp. 2197.

⁴⁵⁴ Dzahuindanda Flores, author interviews conducted 12 May 2008. Taken from transcript of digital voice recording. Author’s translation.

oriented projects into corridor management could strengthen land tenure claims, particularly among indigenous societies.⁴⁵⁵ While the Mexican government agreed that biodiversity management could take place by “increasing economic viability for the diversified and ecologically sustainable Mayan rural economy,”⁴⁵⁶ there was still an assertion that biological corridor management should incorporate productive sectors in domestic and international markets to receive governmental support.⁴⁵⁷

The link between economic value and environmental management was made official after the project was launched, when the CCAD commissioned an economic valorization of biodiversity management in corridor zones, assessing prices to services provided by functional ecosystems.⁴⁵⁸ This valorization argued the following: The underlying *causes* of biodiversity loss lay in the failure of the market to recognize the economic value of natural resources, a problem widespread among “... thousands of individuals acting in a decentralized manner in diverse points.”⁴⁵⁹ The *impacts* of

⁴⁵⁵ Taken from minutes from the symposium “Conceptualización Y Criterios Para Corredores Biológicos En Mesoamérica” (V Congreso de la Sociedad Mesoamericana para la Biología y la Conservación San Salvador, El Salvador; López, Alexander and Alicia Jiménez, 2007, *Latin America Assessment Environmental Conflict and Cooperation: The Mesoamerican Biological Corridor*, pp. 30 – 32.

⁴⁵⁶ World Bank, 2000, *Project Appraisal Document*, pp. 3.

⁴⁵⁷ López, Alexander and Alicia Jiménez, 2007, *Latin America Assessment Environmental Conflict and Cooperation: The Mesoamerican Biological Corridor*, pp. 32

⁴⁵⁸ Radoslav Barzev, 2003, *Developing A Methodology For Implementing And Assessing Economic Instruments For The Conservation Of The Environmental Goods And Services In The Mesoamerican Biological Corridor*, (Managua: CCAD/GEF) p. 4

⁴⁵⁹ Barzev, Radoslav, 2002, *Guía Metodológica de Valoración Económica* (Managua:

biodiversity loss were economic, consisting of the loss of goods such as potable water, tourism, artisan goods, and ecosystem damage in commercially important zones.⁴⁶⁰

Finally, the appropriate *policies* relevant to the CBM and corridor management were those that acted as a “catalyst for sustainable development,” both for local communities and for national economic development.⁴⁶¹

In Mexico, this was conceptualized by linking development to the interests of politically important productive sectors. At the state level, biological corridor management was to be incorporated into the state government’s sexennial development plans, while at the federal level, biological corridors were to be incorporated into prominent industries, namely tourism in the Riviera Maya and the foreign export market.⁴⁶² TAN members agreed, observing that environmental arguments were more likely to be politically supported if they were presented as economically oriented:

I don’t need to tell you what the government thinks about NGOs. We went to the corridor meetings, and we said, “You have to conserve the forest, and do so legally and sustainably,” and they said, “Yeah, yeah, it’s those treehugger NGOs again.” ...And so we said, “We’re going to get certified as a business.” And as a business, the next meeting we had with the government was incredible. We arrived, and “Oh, it’s those NGOs

CCAD/GEF), p. 40. Author’s translation.

⁴⁶⁰ Ibid pp. 43.

⁴⁶¹ Jorge L. Tamayo, 2005, *Primera fase del Sistema de Evaluación y Monitoreo para el Corredor Biológico Mesoamericano – México*, pp. 13. Author’s translation; Barzev, Radoslav, 2002, *Guía Metodológica de Valoración Económica*, p. 41. Author’s translation.

⁴⁶² See for example, section IV.10.4, “Aprovechamiento Sustentable de los Recursos Naturales” in the Quintana Roo *Plan Estatal de Desarrollo 2005 – 2011*, produced by the Government of the State of Quintana Roo.

again.” “No, no, no,” we said, “We’re a business. We’re certified as a business.” “Business? Oh, perfect.” ...And with this in mind, we said we’d better continue presenting ourselves as a business rather than as an NGO.⁴⁶³

This case offers a useful test of hypothesis H2: scientific consensus increases the influence of transnational advocacy networks, particularly since it is the first case to offer variation on this variable. At present, data from the previous cases suggest that consensus is insufficient for influence, but this does not necessarily mean that it is unnecessary.

The test of this variable is made stronger by the fact that there is a high level of socialization throughout the network advocacy process in this case. As the previous cases suggest, tests of the hypothesis H3: Socialization improves the influence of epistemic communities indicate that socialization is necessary for influence. Since socialization is present throughout this case, a measured lack of influence would suggest that first, socialization is insufficient and second, that consensus is necessary. Conversely, if network influence is measured, this would suggest that socialization is sufficient to lead to influence, undermining the necessity for advocacy networks to generate consensually held, unquestioned scientific arguments. Finally, since economic framing was used in this case as well, the data allow further tests of the hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national

⁴⁶³ María Villareal, author interviews conducted March 2008. Taken from transcript of digital voice recording. Author’s translation.

economic development in order to influence LDC governments by examining the advocacy attempts of the network in Mesoamerican biological corridor management.

Policy Preferences of the CBMMx Transnational Network

Focus on Community-Based Agriculture

As indicated above, the CBMMx focused on improving environmental practices in *ejidos*, identified as the relevant focal areas for project efforts. While oil exploration was recognized as environmentally problematic, it was not considered a potential target of advocacy, due to the perceived political difficulty in regulating such an important state enterprise:

Well, here, the country depends on [the oil producing entity] PEMEX. So, it's an issue – criticizing PEMEX is like criticizing the Bible, or something like that, right? Nobody is hearing anything about PEMEX [in the CBMMx]; everyone is hearing about the forest fires... But it really has a severe impact, with oil spills and other serious problems.⁴⁶⁴

Cattle farming lost importance as a threat to biodiversity, largely because after the 2000 change in administration, SAGARPA recognized that the thin subsoil and poor plant conditions in the region were simply incompatible with the needs of cattle farming, and thus did not merit additional federal subsidies.⁴⁶⁵ While cattle farming was still taking place in corridor communities and *ejidos*, the areas affected by cattle farming were

⁴⁶⁴ Ulises Huesca, autor interviews conducted April 20008. Taken from transcript of digital voice recording. Translation by autor.

⁴⁶⁵ María Magdalena Vásquez, autor interviews conducted February 2008. Dzahuindanda Flores, autor interviews conducted 12 May 2008. Falcon Paz, autor interviews conducted 12 May 2008.

an insignificant proportion of the total corridor zone,⁴⁶⁶ and network advocacy efforts focused on the reform of practices and policy governing agricultural activity in the Mesoamerican corridor zone.

SAGARPA, SEMARNAT, State Governments: Create Local Projects

Throughout the project, TAN organizations advocated for state and federal support, in the form of funds, subsidies, and market access for sustainably produced goods, to assist with the creation of pilot projects in the CBMMx. These projects, to be implemented in *ejidos* and rural communities, would combine the goals of biodiversity conservation and local economic development. These included activities such as promoting ecotourism in the *Proyecto Kantemó* by *Econciencia A.C.*; developing a range of artisanal, hunting, agricultural and tourism projects by *Simbiosis*; and generating support for ecotourism projects by *Yum Balám* and *Los Amigos*. In interviews, TAN members asserted that a key element to pilot project design was the allocation of CBMMx funds from state and federal policymakers to environmentally and economically vulnerable populations:

There are communities here in Quintana Roo that receive some economic support in order to stop them cutting trees down. This support allows them to develop other activities that, at the same time, conserves – activities that are related to the conservation of the forest. In other words, like they’re paying the peasants to care for the forest. Well, they have to do it this way, because the peasants don’t understand the value of conserving the forest.⁴⁶⁷

⁴⁶⁶ Luis Alfonso Argüelles Suárez, 2005, *Diagnóstico y Programas del Corredor de Sian Ka’an-Calakmul. CBM-M*, (National Forestry Commission [CONAFOR]), pp. 10

⁴⁶⁷ María Magdalena Vázquez, author interviews conducted February 2008. Taken

What is needed, is a discourse of the soul, rather than of the economy... But at the end of the day, the people are carrying out these projects for economics. And yes, we can speak about the importance of the environment, that could be a second point. But we know very well that if we don't do it like this, if you don't have [the economic argument], you won't have [environmental management].⁴⁶⁸

Federal Government: Define Corridor Zones

Given the importance of the allocation of GEF funds to corridor zones in biodiversity management, an essential part of CBMMx management was the selection of areas to be officially recognized as constituting the Mexican section of the biological corridor. This process of identifying corridor zones was part of a prolonged campaign between the emerging network and federal policymakers in the executive branch and CONABIO.

Over time, the size and number of areas proposed as potential corridor zones increased with the size of the TAN. Between 1989 and 1995, the areas recommended by the TAN were fairly small, and focused primarily on the zones proposed in the *Paseo Pantera* efforts, namely in the Selva Maya zone in the two states of Campeche and Quintana Roo. At the 1996 Tuxtla Gutiérrez meeting in Chiapas, the participants proposed a total of 10 corridors in four states, Campeche, Quintana Roo, Chiapas and Yucatán, adding to the zones previously identified near Calakmul.⁴⁶⁹ In the 1998 Cancún

from transcript of digital voice recording. Author's translation.

⁴⁶⁸ Arturo Bayona, author interviews conducted April 2008. Taken from transcript of digital voice recording. Author's translation.

⁴⁶⁹ CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico*

meeting, the network participants proposed a total of 31 corridors in Mesoamerica, adding the states of Tabasco, Veracruz and Oaxaca to those four previously considered, bringing the total states relevant to the CBMMx to seven.⁴⁷⁰ At the final conceptual workshop in Cancún in 1999, these 31 proposed corridors were submitted in the final negotiation for the CBMMx.⁴⁷¹ Since the zones that were selected would receive funds and support from the state government, the CBMMx institutions and CONABIO, the selection of areas was of particular importance, not only to biodiversity management, but also the economic wellbeing of marginalized populations, especially in *ejidos* and indigenous communities.

Evaluating TAN Influence

Lack of Success in Defining Corridor Zones

However, when the project was launched, the zones accepted by the Mexican government and CONABIO differed noticeably from the recommendations presented by the CBMMx TAN in 1999. All identified corridor zones in the states of Oaxaca and

Mesoamericano, pp. 10.

⁴⁷⁰ World Bank, 2000, *Project Appraisal Document* Appendix 2, pp. 1.

⁴⁷¹ The *Sian Ka'an* series produced by *Los Amigos* included the Tabasco protected areas under the newly developed strategy for biological corridor development, for example in Juan José Morales, 1995, "La Gran Selva Maya," pp. 158. See also CCAD-PNUD/GEF, 2002, *Proyecto Para La Consolidación del Corredor Biológico Mesoamericano*, pp. 10; Kenton Miller et al, 2001, *Defining Common Ground for the Mesoamerican Biological Corridor* pp. 8 also lists the Tabasco protected areas as part of the CBMMx, as does the map presented in *Science*, 2001, "Bold Corridor Project Confronts Political Reality," pp. 2196.

Veracruz, as well as some of those in Yucatán were removed from consideration. Shortly before the launch of the CBMMx in 2000, all identified corridor zones in the state of Tabasco were excised, reducing the final number of recognized corridors to five, and the number of included states to four. A series of maps illustrating how the outlines of the Mexican component of the biological corridors changed over time is available in **Figures 4.2 – 4.5** which demonstrate the changing political geography of the corridor zones. Ultimately, the research indicates that this was due to the inability of the TAN to generate an intersubjective consensus on the science behind corridor selection.

Mixed Success in the Promotion of Sustainable Projects

The TAN had some success in promoting state-supported sustainable development projects in the zones that had been chosen in the implementation of the CBMMx. In Quintana Roo, SAGARPA, SEMARNAT and CONAFOR provided funds for sustainable agricultural development in focal area *ejidos* within the Sian Ka'an-Calakmul corridor in 2005.⁴⁷² In Campeche, these agencies also held a series of information and awareness-building workshops in *ejidal* focal areas, to foster local support for government-directed sustainable use projects, as well as to evaluate ecological zoning under the POET system.⁴⁷³ Ecological certification from the federal

⁴⁷² Luis Alfonso Argüelles Suárez, 2005, *Diagnóstico y Programas del Corredor de Sian Ka'an-Calakmul*. CBM-M, (National Forestry Commission [CONAFOR]) passim.

⁴⁷³ Consultoría Mesoamericana de Asistencia y Desarrollo Popular Asociación Civil [COMADEP], 2005, *Creación De Bases Para El Ordenamiento Ecológico Regional Participativo Y Fortalecimiento De Líneas De Acción Detonantes En El Área Focal De La Montaña, Campeche México* (Final Report for the CBMMx), passim.

government was an important element in generating market demand, as it would add value to sustainably produced goods in foreign markets:⁴⁷⁴

When you have a certification process – let’s say you’re producing deer meat under conditions that don’t allow you to get the environmental certificate. It’s a tremendous difference in price. And that’s also what we want to do with timber, any timber that has the “green seal.” And with this “green seal,” countries that buy the timber pay an enormous price. Just like they’re doing with the certification of organic honey. Germany and all those places, especially in Europe, are willing to pay extra for honey that is certified organic, and that comes from here.⁴⁷⁵

The CBMMx and participating agencies promoted goods and services produced in corridor zones through a variety of economically oriented publications and events between 2005 and 2009. In 2007, CONABIO and the UTN published a catalogue of commodities and services produced in corridor zones for promotion in regional markets.⁴⁷⁶ Between 2006 and 2008, the UTR-Chiapas and the UTR-Peninsula participated in a variety of forums linking the CBMMx with lucrative markets, including a 2006 forum linking international tourism with the CBMMx in Chiapas, a 2007 forum on organic certification and corridor goods, and a 2007 forum between producers of corridor commodities and tourist conglomerates in the Riviera Maya.⁴⁷⁷

⁴⁷⁴ Enrique Galvez, author interviews conducted February 2008.

⁴⁷⁵ Dzahuindanda Flores, autor interviews conducted March 2008. Author’s translation.

⁴⁷⁶ CONABIO, 2007, *Comercio Sustentable Por Un Consumo Responsable Y Comprometido Con El Medio Ambiente* (Corredor Biológico Mesoamericano/México: México).

⁴⁷⁷ Grupo Xcaret, 2008, *Balance Social, Cultural y Ambiental: Sustainability Report* (Tourism Bulletin); CBMMx, 2009, *Donacion TF-02437I - Proyecto "Corredor Biológico Mesoamericano - México" PAC*.

In some areas, such as the management of forest fires caused by slash-and-burn practices, economic interests did not play a visible role. For fire management, federal agents in the National Forestry Commission (CONAFOR) assisted in the creation of forest fire management teams in *ejidos* in Chiapas and Campeche.⁴⁷⁸ However, the incorporation of corridor commodities in tourism forums, the production of the Sustainable Use Commerce series, and the CCAD economic valuation demonstrate the continued interest of the federal and state governments in linking corridor management to economic development.

Problematically, from the perspective of biodiversity management, the use of economic language confounded the broader goals of biodiversity conservation. In the first place, an evaluation of the goals of the CBMMx found that the emphasis on attracting funds from the World Bank for economically oriented projects superseded the goal of promoting "...the development of sustainable use projects intended to benefit the environment."⁴⁷⁹ As observed by Barborak of WCS, some of the later project documents focused on economic development such that "if not for a brief mention of the CBM, you wouldn't know that you were talking about a project whose original goal was contributing to biodiversity conservation in the region."⁴⁸⁰

⁴⁷⁸ COMADEP, 2005, *Creación De Bases Para El Ordenamiento Ecológico Regional Participativo*, pp. 13.

⁴⁷⁹ PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 21. Translated from Spanish by author.

⁴⁸⁰ Taken from minutes from the symposium "Conceptualización Y Criterios Para Corredores Biológicos En Mesoamérica" (*V Congreso de la Sociedad Mesoamericana para la Biología y la Conservación* San Salvador, El Salvador).

Second, respondents from SEMARNAT and the Quintana Roo CCE noted that the inclusion of corridor commodities in existing markets was complicated because, as occurred in Jamaica, environmental advocates found it difficult to persuade managers to actually invest capital and resources in action that required a longer timeframe for economic turnover. For example, the attempt to promote peninsular ecotourism commodities and sustainable development by linking it with the Riviera Maya market failed to gather support from the state due to the comparatively low income projected from ecotourism.

...[The] ecotourism projects are of no interest to the state government. They don't compare with the quantity of resources, the demand, the number of businesses and the sources of finance there to develop Cancún, Tulum, Playa del Carmen, Cozumel. That's a lot of money, it's a tremendous amount in comparison with the few, scanty resources and the little capacity invested in the communities where there are also attractions, and which could possibly be important.⁴⁸¹

If we had the support of the state tourism secretariat, it would be easy. But we don't have it. There isn't a center for sustainable tourism in Quintana Roo. The only thing we have is Cancún, Cozumel, because that's where the millions come in.⁴⁸²

The Loss of Legitimacy and Local Support for CBMMx Initiatives

Moreover, mixed and laggardly influence in creating and implementing projects, combined with very low influence in delineating which zones would receive GEF funds exacerbated underlying problems affecting corridor management. At the local level,

⁴⁸¹ Enrique Gálvez, author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish by author.

⁴⁸² Arturo Bayona, author interviews conducted April 2008. Taken from transcript of digital voice recording. Translated from Spanish by author.

TAN organizations such as *Simbiosis*, *Pronatura*, *Econciencia* and *Los Amigos* had, by working with marginalized and indigenous communities in corridor zones and *ejidos* since the 1980s and 1990s, established a broad base of legitimacy within these communities.⁴⁸³ In contrast, distrust between *ejidal* residents and the federal and state governments was driven by the history of indigenous marginalization, linguistic barriers, problems with land tenure and property rights, and by violent ethnically based conflict in the state of Chiapas.⁴⁸⁴ Simply put, political conflicts and historic disenfranchisement created barriers to cooperation between rural communities and federal and state policymakers. In these instances, ENGOs affiliated with the TAN have occasionally served as intermediaries between the federal government and local communities, encouraging residents to comply with federal and state environmental regulations, and serving as advocates for indigenous and rural property rights.⁴⁸⁵

However, while TAN organizations could have served as useful intermediaries between federal and state agencies involved in corridor management and *ejidal* residents,

⁴⁸³ Camacho, Isabel, Carlos del Campo and Gary Martin, 2008, *Community Conserved Areas in North America: A Review of Status and Needs* (Global Diversity Foundation), p. 14. See also discussion above regarding the range of projects developed by civil society ENGOs in corridor zones throughout the 1990s – 2000s.

⁴⁸⁴ Camacho, Isabel, Carlos del Campo and Gary Martin, 2008, *Community Conserved Areas in North America*, pp. 52.

⁴⁸⁵ See Ramos-Fernández, G et al, 2005, “Conservación Comunitaria en Punta Laguna: Fortalecimiento de Instituciones Locales para el Desarrollo Sostenible,” (proceeding from 1st International Congress of Sustainable Development Successful

Cases on the Tropics. Boca del Río, Veracruz, México), which discusses the role of *Pronatura* in aiding in the implementation of CONANP decrees in Chiapas.

civil society actors were increasingly ignored in project administration, despite their institutionalization in the bodies of the project. Despite occasional participation in project design as described above, and despite official participation in the State Advisory Councils (CCEs) and Regional Technical Units (UTRs), project design was dominated by governmental interests, leaving TAN members skeptical of the extent of their de facto influence:

Well, if we only get involved at the end of project proposals, we have no way to influence how they're designed and carried out. It's done already. But that *is* what is happening. And that's how the majority of the council members feel, at least in the academic and social sectors... Why? Because it's not in our hands to call a meeting. Or set the agenda. [The policymakers] call the meetings; *they* set the agenda.⁴⁸⁶

These problems severely undermined project legitimacy. While the Mexican government was supposed to constitute these councils as part of the administration of the project, their implementation was laggardly, and the first CCE was launched only in 2003 in Quintana Roo, a full three years after the start of the CBMMx.⁴⁸⁷ Due to this delay, the World Bank initially refused to release funds to CONABIO, and budgetary documents and interviews reveal that project financing did not begin until 2005.⁴⁸⁸

⁴⁸⁶ State Consultative Council member from one of the Yucatán peninsula states, author interviews, conducted March 2008. Taken from transcript of digital voice recording. Author's translation.

⁴⁸⁷ PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 10 – 11; Pilar Rodríguez, 2007, *Promoción de la red de monitoreo ecológico multiescala en el Corredor Biológico Mesoamericano – México* (CONABIO). [See interviews].

⁴⁸⁸ Budgetary plans for the CBMMx from 2005 to 2009, titled *Donacion TF-02437I - Proyecto "Corredor Biológico Mesoamericano - México" Plan De Adquisiciones Y Contrataciones (PAC) Contratos Sujetos A Examen Posterior Del Banco* are available online at <http://www->

Unfortunately, the government of Mexico had, in an attempt to “sell” the CBMMx to peasant populations, persuaded community members and local stakeholders that the CBMMx would lead to significant economic revenue, with resources flowing from international funding mechanisms to marginalized communities. Since these funds were unavailable for several years after the predicted start date of the project, and since the TAN had little to no control over where funds were being disbursed, *ejido* residents and TAN organizations began doubting the commitment of corridor agencies to needed local development efforts.

[The CBMMx] was planned for seven years. We’ve gone through almost seven years now, about six years. But for five years, it didn’t operate. The resources were there. The proposal was there. The personnel was there – well, to oversee the political side of it, rather than the practical, applied side. So, the resources weren’t in operation, practically nothing was done. It was stagnating.⁴⁸⁹

...[The] government thought the CBMMx would be some World Bank program, an international program, that was going to bring in funds to this zone, because the political decision was to focus on this zone. But it didn’t turn out that way... We heard our colleagues saying, “They’re just paying for consultants, and consultants, and consultants, and they’re not carrying out the projects they said they would.” ...And we began to see conflicts. And what happened is, we got to a point where the CBMMx lost all credibility. And we saw various meetings where only two people attended. They invited everybody in the zone, all the businesses and everything, but nobody came... There were large expectations for the

wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2008/01/28/000333038_20080128025407/Rendered/PDF/422180PROP0SPA101091101071Ver1Final.pdf.

See also PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 10 – 11; Pilar Rodríguez, 2007, *Promoción de la red de monitoreo ecológico multiescala en el Corredor Biológico Mesoamericano – México* (CONABIO); Enrique Gálvez, autor interviews conducted February 2008.

⁴⁸⁹ Enrique Gálvez, autor interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish by author.

project, and it didn't meet the expectations. Even the NGOs began to dissent.⁴⁹⁰

This loss of legitimacy was such that, in corridor zones of Chiapas, *ejido* residents became convinced that the CBMMx was part of a federal government plan to seize communally held lands and *ejidos* for the launch of a regional industrialization project.⁴⁹¹ Since *ejidos* began resisting the government-led efforts to implement the project, the administrative goals had to be changed after 2007, abandoning the previous ideal of focusing on ecologically important focal areas, to the implementation of the project in those remaining communities that were more likely to “have a good disposition toward the project.”⁴⁹² Overall, despite some success in launching pilot projects, the TAN in this case had very low influence over project management.

Conclusion

In this case, an environmentally oriented TAN emerged in the 1990s to advocate for increased biodiversity protection in Mesoamerica through the adoption of biological corridors, administered and managed by governmental policymakers and the civil society. However, while the TAN introduced the ideas of biological corridors, the network had limited success in Mexico in influencing the administration of the CBMMx. Specific

⁴⁹⁰ María Villarreal, autor interviews conducted March 2008. Taken from transcript of digital voice recording. Translated from Spanish by author.

⁴⁹¹ PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 18

⁴⁹² Pilar Rodríguez, 2007, *Promoción De La Red De Monitoreo Ecológico Multiescala En El Corredor Biológico Mesoamericano – México* (CONABIO) pp. 2. Author's translation.

goals of the TAN, particularly in regards to defining ecologically important areas, were not realized, and TAN members were critical about the commitment of governmental agencies to incorporate their input in project implementation. **Table 4.3: Summary of Observed and Predicted Outcomes** summarizes the predicted and observed relationships between the independent variables: economic framing, consensus and socialization, and the dependent variable: influence. It should be noted that, although the table indicates that the network had diffuse success through affecting (albeit in an unsatisfactory manner) the design of sustainable conservation projects, this positive impact is outweighed by the fact that the network lost influence on the campaign of primary importance: the selection of biological corridor zones based on ecological need.

The loss of influence by the TAN over the selection of project areas supports the hypothesis H2: scientific consensus increases the influence of transnational advocacy networks, insofar as consensus is necessary for influence, but not sufficient. While TAN respondents admitted that there was no shared consensus among researchers in the network regarding the validity of each of the initially submitted areas, they were unequivocal in stating that the final selection of important zones in the Mesoamerican region was scientifically dubious. Although the official World Bank project documents asserted that the final selection was based on “biodiversity significance,” as well as “social viability, technical feasibility and social and political support,”⁴⁹³ TAN

⁴⁹³ World Bank, 2000, *Project Appraisal Document On A Proposed Grant From The Global Environment Facility Trust Fund In The Amount Of \$11.5 Million To Nacional Financiera, S.N.C. For A Mesoamerican Biological Corridor Project* (World Bank), Appendix 2, pp. 1.

respondents argued that the areas selected were not representative of biodiversity:

What we wanted to include in the corridor, and what was logical was, [*pointing to map*] this is Sian Ka'an, and here is Calakmul. So, we said that... the corridor should take all that's right here, so Felipe Carrillo Puerto, here is José María Morelos, Solidaridad, here is Othón P. Blanco, which is the biggest municipality we have, and so on. And where there are more forests, better conserved and everything. And more biodiversity than in the rest of the state. But then the decision was to take only Felipe Carrillo Puerto and José María Morelos. And a tiny little piece of Othón P. Blanco. But they basically left the whole municipality out.⁴⁹⁴

There were discussions in which we weren't all in agreement about the project. And right now, there are some important ecological areas in Yucatán for example, that are not connected at all with the rest of the Corredor Biológico Mesoamericano. There are more ecosystems that weren't chosen, and now some people are saying: "What happened?"⁴⁹⁵

Moreover, some respondents suggested that political calculations, rather than ecological considerations, were the primary driving factors inducing area selection. In particular, respondents suggested that the selection of corridor zones was a patronage effort by state and federal government agents, who sought to use international funds to disburse resources to politically important areas:

The corridor design had a political function. Because they wanted to focus on Felipe Carrillo Puerto – it's one of the most politically conflicted municipalities of the state... and José María Morelos. Those two municipalities have been a little bit problematic, politically. So, they were basically thinking that they were going to distribute funds with the money that the Corredor Biológico Mesoamericano project was going to bring in, put in a whole heap of things for the people and all that.⁴⁹⁶

⁴⁹⁴ María Villareal, author interviews conducted March 2008. Taken from transcript of digital voice recording. Author's translation.

⁴⁹⁵ María Magdalena Vásquez, author interviews conducted February 2008.

⁴⁹⁶ María Villareal, author interviews conducted March 2008. Taken from transcript of digital voice recording. Author's translation.

There is a concern that what started out as a science-based project has become populist-based and less guided by ecological principles.⁴⁹⁷

...[Around] 1999 or 2000, I was contacted by some people with the World Bank and other agencies, who wanted to include me in some research and workshops related to design of the Mexican part of the corridor. However, when it became clear (through conference calls) that I thought biological considerations should drive corridor location, and that new core conservation areas had to be part of legitimate corridor design, I was uninvited from the project.⁴⁹⁸

Even if insufficient for influence, knowledge consensus is nevertheless necessary, as advocacy networks that lack an intersubjective agreement on the causal relationships of an emerging problem will find it more difficult to influence policymakers and managers to take appropriate action.⁴⁹⁹

Monitoring Under Low Consensus

This lack of consensus also negatively affected the TAN's ability to influence other areas of biodiversity management in the context of the CBMMx. One of the primary challenges to network building and information gathering, was the problem that

⁴⁹⁷ Jim Barborak, quoted in *Science*, 2001, "Bold Corridor Project Confronts Political Reality," pp. 2196.

⁴⁹⁸ Reed Noss, author correspondence via email, October 2009.

⁴⁹⁹ Peter Haas 1989. Do Regimes Matter?: Epistemic Communities and Mediterranean Pollution Control. *International Organization* 43: 377-403; Peter Haas 1992. Introduction: epistemic communities and international policy coordination. *International Organization* 46: 1-35; Radoslav Dimitrov 2003. Knowledge, Power and Interests in Environmental Regime Formation. *International Studies Quarterly* 47: 123 – 150; Margaret Keck and Kathryn Sikkink. 1998. *Activists Beyond Borders*. Ithaca, New York: Cornell University Press

there was no standardized methodology for ecosystem monitoring in place in the mobilization of concern around the CBMMx. Agencies involved in gathering information on biodiversity, such as ECOSUR, UQROO, *Pronatura*, UNAM, and governmental agencies in SEMARNAT and SAGARPA, did so in an uncoordinated manner, focusing on research specific to their areas of expertise and interest, rather than functioning as parts of an integrated monitoring system.⁵⁰⁰

Currently in the Corridor, we have a lot of work left to do in coordinating methodologies and all that. I think that in the [SAM Project], we've had more advances. I think the synoptic methodology, the synoptic monitoring methodology [of the SAM] is a real advance in this sense. But in this area, we have plenty, plenty of work left for the Corridor. For example, various organizations are working in the area of bird and habitat conservation, and, well, at this moment there just isn't an agreed-upon methodology to study and monitor bird populations.⁵⁰¹

During the administration of the project, CONABIO attempted to remedy this situation by contracting in 2005 a study on biodiversity monitoring with the Jorge L. Tamayo Center of Studies in Geography and Geomatics (*CentroGeo*), a Geographic Information Science modeling institution in Mexico. *CentroGeo* was supposed to investigate the possibility of creating a standardized monitoring methodology under the CBMMx by, among other things, establishing a standard series of indicators for biodiversity health and creating a baseline analysis of the contemporary state of the

⁵⁰⁰ PADEP A.C., 2004, *Evaluación Técnica del CBMMx*, pp. 14; Pilar Rodríguez, 2007, *Promoción De La Red De Monitoreo Ecológico Multiescala En El Corredor Biológico Mesoamericano – México*, pp. 19 - 21

⁵⁰¹ Gonzalo Merediz Alonso. Author interviews conducted February 2008. Taken from transcript of digital voice recording. Translated from Spanish by author.

environment through an “exhaustive investigation of existing methods.”⁵⁰² In 2006, the CBMMx UTR-Peninsula held a workshop to determine whether the diverse monitoring methods could be integrated to create a coherent picture of biodiversity in the region.⁵⁰³ However, at the time of writing, *CentroGeo* and the CBMMx had yet to propose a specific methodology, reiterating instead the need to generate a standard model of investigation and baseline monitoring for an accurate picture of terrestrial biodiversity.⁵⁰⁴

Further, the data undermine the hypothesis H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments. In none of the cases studied so far has the use of economic rationales independently enabled transnational knowledge networks to influence biodiversity governance in developing countries. In this case, TAN members supported the use of economic language to evaluate biodiversity management, an evaluative framework that was deliberately advanced by the federal government in the CBMMx, yet as described above, the biodiversity management goals of the TAN were confounded by the fact that state leaders were not persuaded of the necessity to invest in low-return sustainable development.

⁵⁰² Tamayo, Jorge L., 2005, *Primera fase del Sistema de Evaluación y Monitoreo para el Corredor Biológico Mesoamericano - México (Componente de Geomática)* (CentroGeo) pp. 6. Author’s translation.

⁵⁰³ CBMMx, 2009, *Donacion TF-02437I - Proyecto "Corredor Biológico Mesoamericano - México" PAC*.

⁵⁰⁴ Tamayo, Jorge L., 2005, *Primera fase del Sistema de Evaluación y Monitoreo para el Corredor Biológico Mesoamericano – México*, passim.

Finally, in testing the hypothesis H3: Socialization improves the influence of epistemic communities, this chapter indicates that socialization is a necessary, but ultimately insufficient causal variable in predicting network influence. In this case, the TAN was comprehensively socialized with the array of natural resource policymakers responsible for administering the project. In particular, the formal role the TAN agencies played with the CBMMx, CONABIO and the CBMMx institutions suggest that those organizations should have had significant influence on the design and selection of corridor zones. However, this was not the case, as what influence was present was limited, and undermined by policymaker interests in political constituencies.

The final question, addressed in Chapter 5, is whether socialization is more likely in autocratic or democratic countries. In this and the previous chapter, Mexico as a post-transitional and centralized government demonstrated systematically more socialization between policymakers and the civil society members of a transnational network than in Jamaica. In the following chapter, I examine a transnational network that attempted to influence the management of biodiversity and protected areas in Egypt, the most autocratic of the three countries studied.

Table 4.1: List of CBMMx Policy Makers

AGENCY	JURISDICTION EST. THROUGH	ACTIONS
CONABIO	Federal supremacy over biodiversity; Constitution; various laws on natural resources	Coordinates actions across other federal agencies. Collects information on biodiversity. Developed National Strategy. Housing agency of CBMMx institutions
SEMARNAT	See above	Establishes UMAs. Environmental monitoring. Land zoning.
CONANP	SEMARNAT agency	Conducts environmental impact assessments (EIAs); monitors activities in protected areas
SAGARPA	1958 Law of Ministries and Departments	Assists in regulating UMAs. Environmental monitoring. Funding for agricultural development.
CONAFOR	SEMARNAT agency	Parent institution to National Environmental Protection Agency (NEPA)
PROFEPA	SEMARNAT agency	Enforcement of environmental laws and compliance monitoring.
CDI	Federal decree	Evaluates jurisdictional conflicts between agencies and ministries in relation to indigenous rights. Indigenous rights advocacy.
State Governments	State authority over land use management	Include biodiversity management objectives in state development plans

Table 4.2: Partial List of TAN Organizations

ORGANIZATION	INDIVIDUALS	FUNCTIONS	SCIENCE TRAINING
Simbiosis SA de CV	Martín Balám	Ecosystem monitoring. Habitat health evaluation. Project development in corridor <i>ejidos</i> .	Biology
	María Luisa Villarreal Sonora	Ecosystem monitoring. Habitat health evaluation. Project development in corridor <i>ejidos</i> .	Biology
Los Amigos de Sian Ka'an	Various	Population monitoring (fauna and flora); biodiversity monitoring; project development in <i>ejidos</i> .	Various
The Nature Conservancy	Various	Population monitoring (fauna).	Ecology
Conservation International	Various	Project development in corridor <i>ejidos</i> .	Various
University of Florida	Reed Noss	Research on biological corridors	Conservation biology
Wildlife Conservation Society	Jim Barborak	Research on biological corridors	Conservation biology
Yum Balám	Various	Project development in corridor <i>ejidos</i> . Monitoring.	Various
Pronatura A.C.	Various	Project development in corridor <i>ejidos</i> . Monitoring.	Various
Econciencia AC	Arturo Bayona	Project development in corridor <i>ejidos</i> .	Biology
UQROO	Benito Presas	Population monitoring of fauna and flora. Ecosystem monitoring. Human impact studies	Biology
	Alberto Perreira	Population monitoring of fauna and flora.	Biology
	María Magdalena Vásquez	Population monitoring of fauna, arthropods, mites.	Biology
ECOSUR	Various	Population monitoring of fauna, arthropods, mites. Ecosystem monitoring. Human impact studies	Primarily biology.
UNAM	Various	Population monitoring of fauna, arthropods, mites. Ecosystem monitoring. Human impact studies	Various

Table 4.3: Summary of Observed and Predicted Outcomes in the CBMMx

Agency	Desired Outcomes	Independent Variable Present			Observed Influence
		<i>Economic Framing</i>	<i>Consensus</i>	<i>Socialization</i>	
CONABIO	Identify and delineate biological corridor zones based on ecological need	✓		✓	No
	Economic support for local sustainable conservation projects	✓		✓	Limited
	Adopt network recommendations on biodiversity conservation projects in local communities	✓		✓	Limited
SEMARNAT	Implement UMAs in ecologically sensitive zones	✓		✓	Yes
	Adopt network recommendations on biodiversity conservation projects in local communities	✓			Limited
CONANP	Adopt network recommendations on biodiversity conservation projects in local communities	✓		✓	Limited
SAGARPA	Adopt network recommendations on biodiversity conservation projects in local communities	✓		✓	Limited
State Governments	Adopt network recommendations on biodiversity conservation projects in local communities	✓		✓	Limited
	Economic support for local sustainable conservation projects	✓		✓	Limited
Municipal Governments	Adopt network recommendations on biodiversity conservation projects in local communities	✓		✓	Limited

Figure 4.1: Diagram of CBMMx Agencies⁵⁰⁵



⁵⁰⁵ Taken from a powerpoint presentation held by the CBMMx titled Retos, Perspectivas Y Estrategias Del CBMM En La Península De Yucatán.

Figure 4.2: 1995 Map of Relevant Protected Areas to CBMMx According to *Los Amigos*, Including Areas in Tabasco

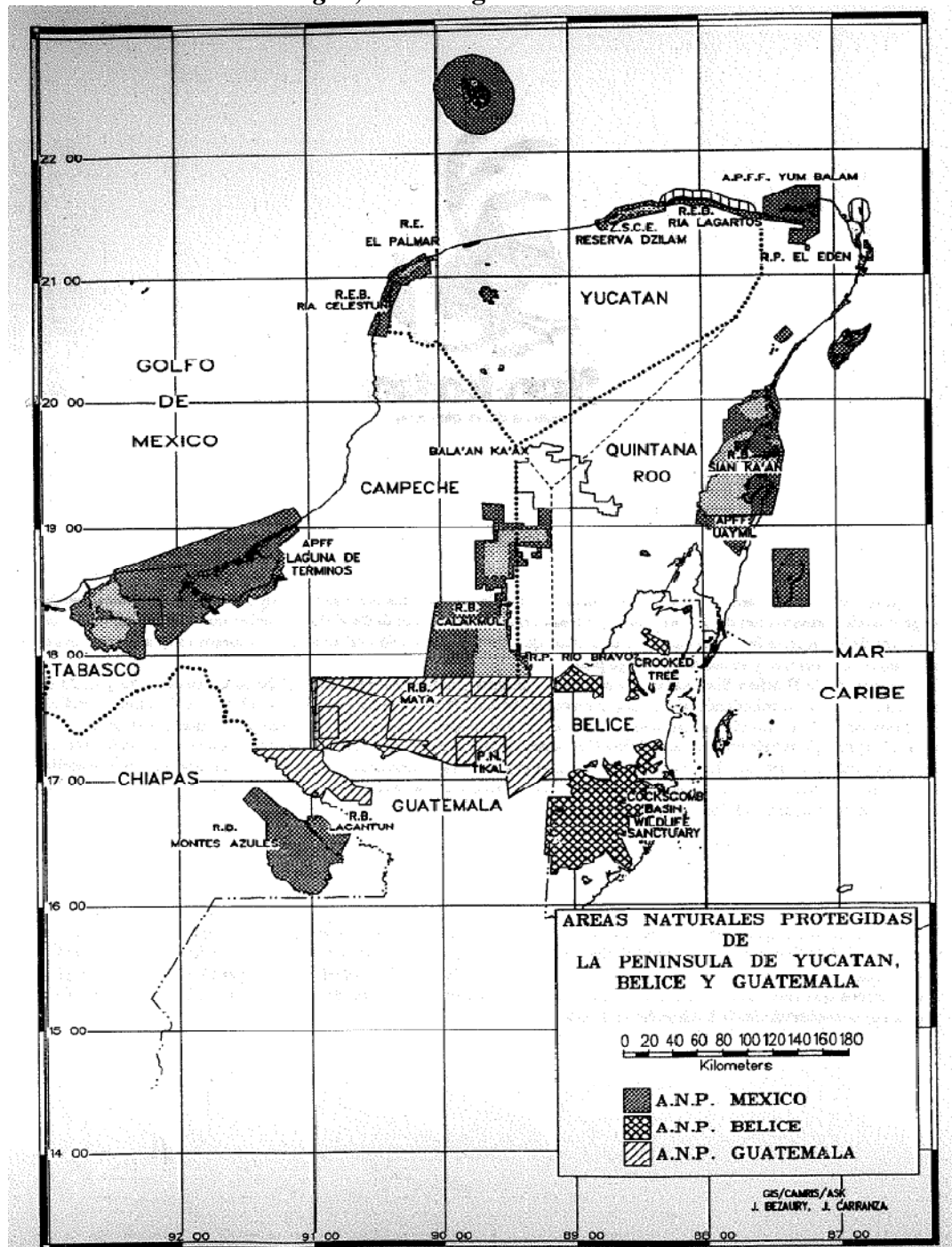
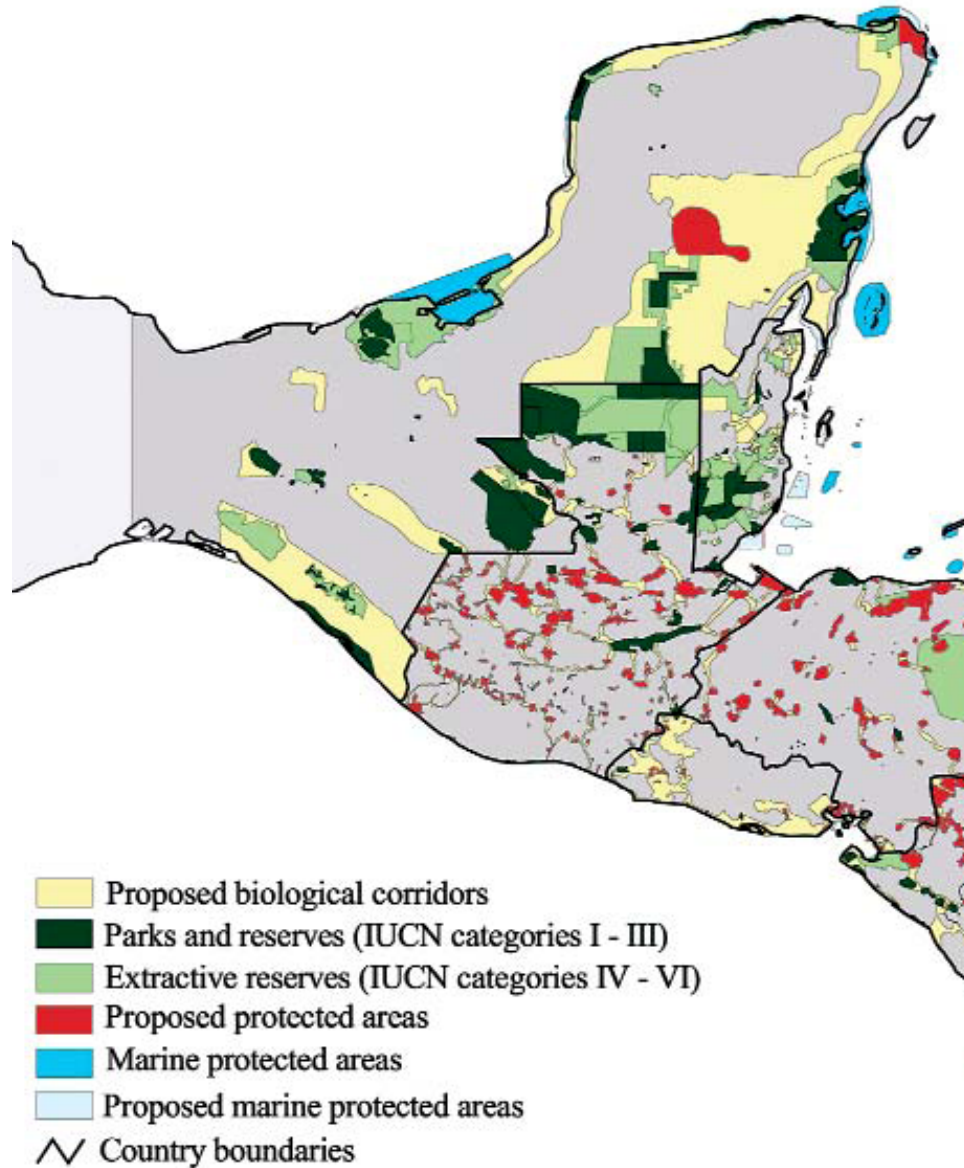


Figure 4.3: 1996 Proposal from WCS Including Zones on the West Coast of Campeche, Tabasco, Northern Third of Quintana Roo⁵⁰⁶



⁵⁰⁶ Reprinted in *Science*, 2001, "Bold Corridor Project Confronts Political Reality," pp. 2197

Figure 4.4: 2000 CONABIO Final Selection, Having Removed Zones in West Campeche, Northern Third of Q. Roo, and Tabasco

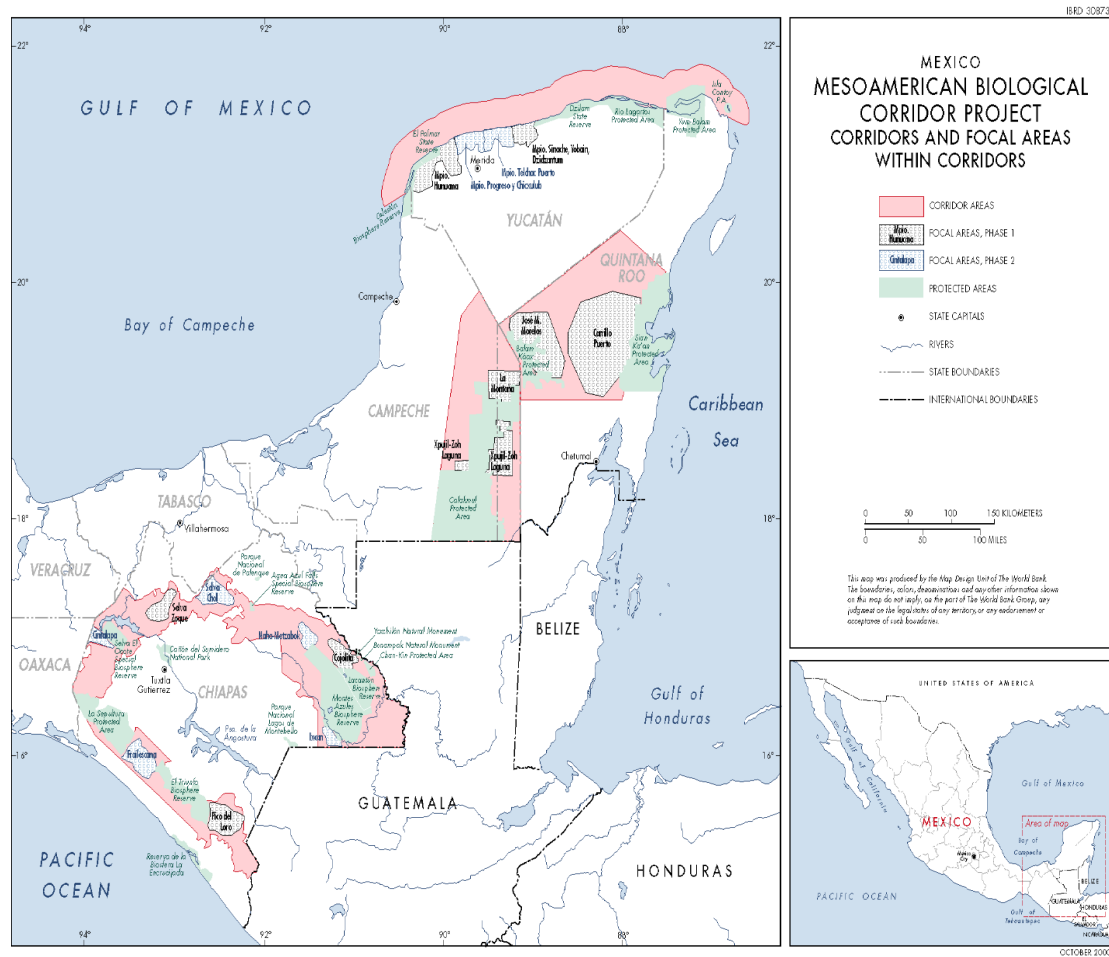


Figure 4.5: 2006 Proposed Elements of Mesoamerican Biological Corridor from the World Resources Institute, Based on 1996 WCS Proposal

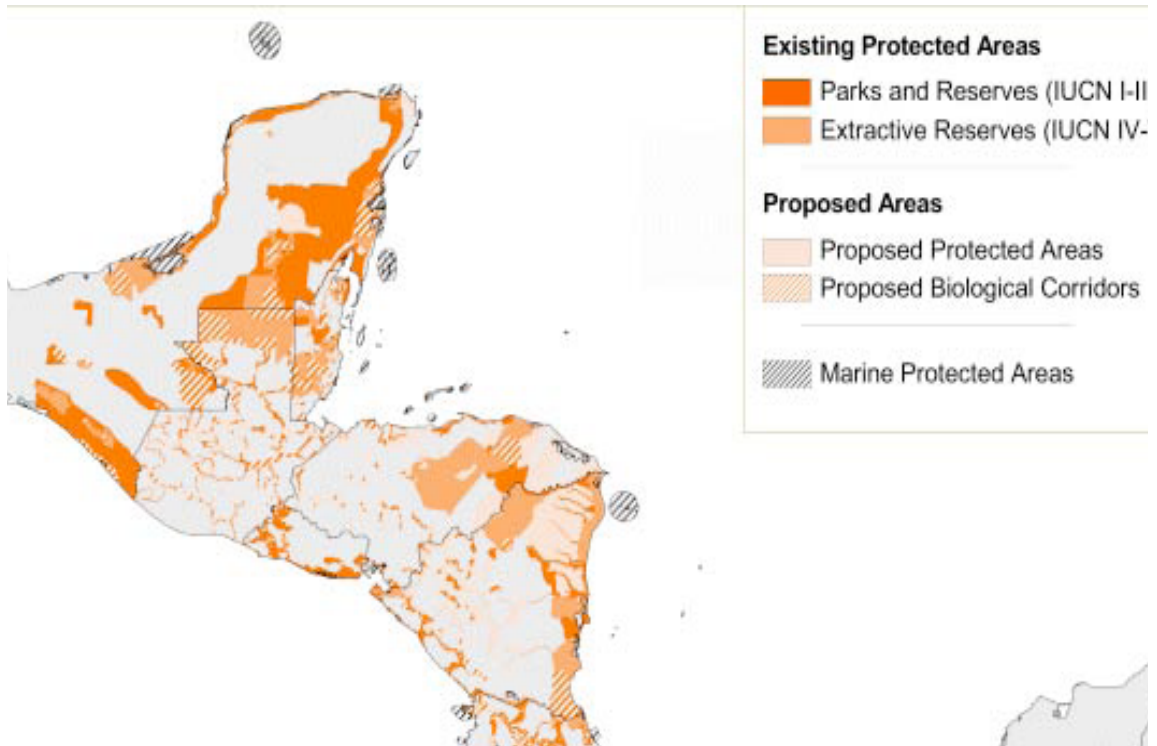
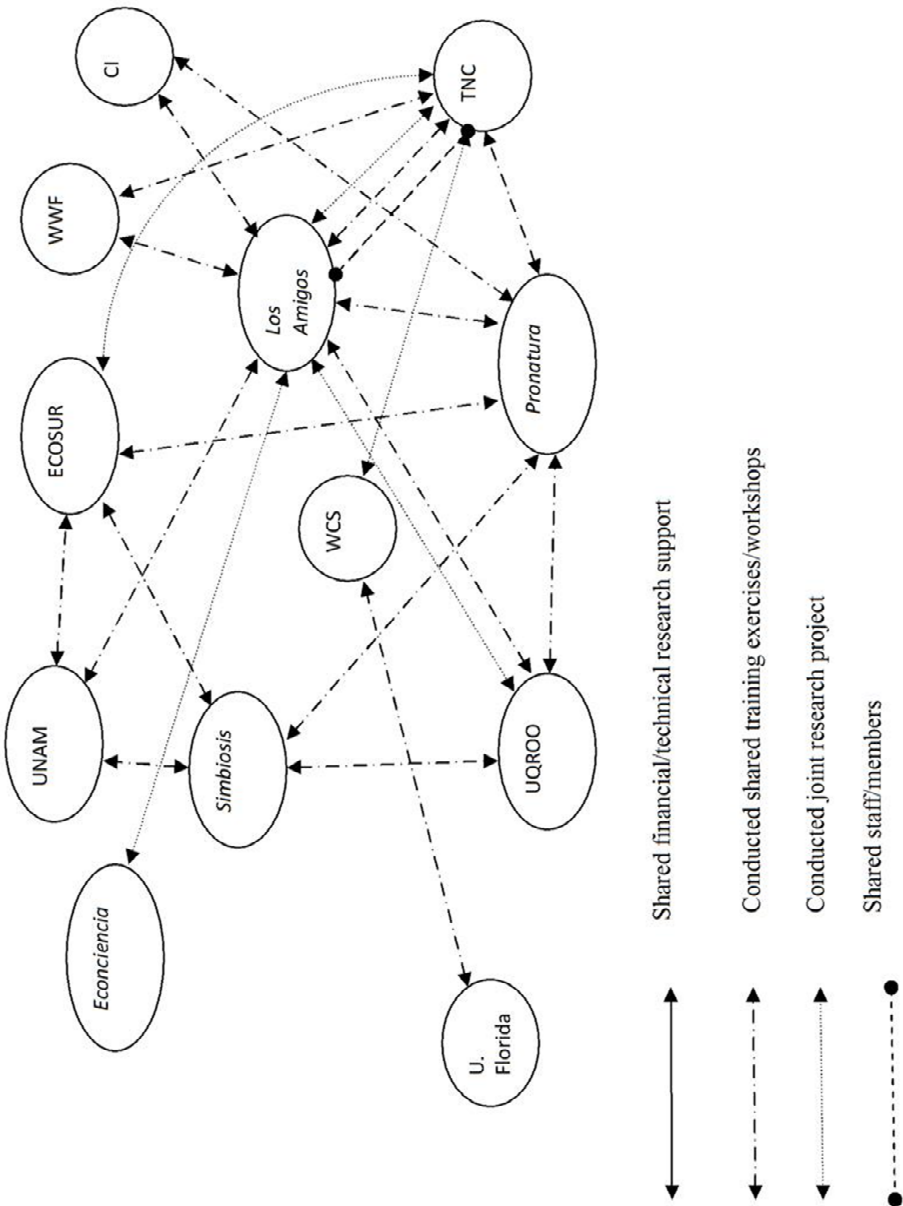


Figure 4.6: Diagram of TAN Links



CHAPTER 5

EGYPT AND THE MIGRATORY SOARING BIRDS PROJECT

Introduction

This final case study investigates further the factors that allow transnational advocacy networks to generate influence over environmental policymaking in LDCs. The research indicates that, of the three variables identified: issue-framing, knowledge consensus, and socialization; two of these are causally important and necessary for influence. Knowledge consensus functions as predicted by the epistemic communities approach by delegitimizing competing arguments, while socialization encourages target audiences to internalize the perspectives of networks. Without socialization, target audiences may very well believe the claims advanced by knowledge networks, but nevertheless resist environmental reform.

This case offers no new variation on the independent variables, but does address the question of whether increased autocracy and political centralization have a positive or negative impact on socialization. Of the campaigns addressed in Jamaica in Chapter 2, a small minority demonstrated the presence of socialization between policymakers and audiences (see **Table 2.3**). As noted in the Introduction, the Jamaican case study took place in the most democratic and politically open of the countries studied. On the other hand, as **Table 3.3** and **Table 4.3** indicate, most of the reef campaigns in the SAM Project, and all of the CBMMx campaigns in Mexico demonstrated the presence of socialization. However, Mexico is a historically bureaucratic-autocratic state, and even after 2000 is characterized by post-corporatism and greater political centralization.

This suggests that the more democratic a state, the less likely that civil society networks of experts will socialize with policymakers as knowledge is being generated. In fact, some of the existing literature on knowledge networks suggests that, as politically closed states tend to co-opt civil society groups, knowledge networks in autocratic states are more likely to have greater access to decision makers. However, in process tracing the efforts of a TAN in an extremely autocratic country, this research indicates that high levels of political centralization preclude network influence. This chapter examines the efforts of a TAN to influence natural resource management in Egypt to conserve bird species and habitats in Egypt through a GEF funded project titled the *Project for Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along the Rift Valley/Red Sea Flyway*.

Overview of Threats to the Rift Valley/Red Sea Flyway

In this case, a TAN emerged in the late 1990s, concerned about an area referred to as the Rift Valley/Red Sea Flyway, part of the larger migration route known as the African-Eurasian Flyway. This area can be imagined as an aerial corridor taken by migratory birds traveling from states north of the Mediterranean Sea through the eastern coast of the African continent, passing through the airspace of several countries, including Egypt (see **Map 1.4**).⁵⁰⁷ This area is a crucial zone for global populations of

⁵⁰⁷ These flyways begin in Europe and Eurasia, near the Turkey-Syria border, one of which splits off, crosses the Gulf of Suez, and heads south along the Nile Valley through Egypt, Sudan, Eritrea and Ethiopia. See UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, p. 2; Leshem, Yossi & Yoram Yom-Tov, 1998, Routes of Migratory Soaring Birds (*Ibis* 140: 41 – 52); MSEA/EEAA, 2006,

migratory soaring birds (MSBs), as for some species, between 50% and 100% of their global population traverses the Red Sea flyway.⁵⁰⁸ Like the Northern Bald Ibis, several of these species are listed on the IUCN Red List.⁵⁰⁹

The significance of this area for global biodiversity stems in part from the fact that several of these species face extinction. In addition, effective management of birds is likely to lead to improved management overall in sensitive ecosystems. Predatory MSBs often represent the top of a food chain, and so losses in their population may have negative ramifications for lower trophic levels and ecosystem equilibrium.⁵¹⁰ MSBs also serve as indicator species, and severe declines in populations could indicate a disruption of the natural ecosystem. For example, the toxification of sensitive ecosystems, including globally important wetlands, has been manifested in mass mortalities of MSBs in bottleneck and resting sites.⁵¹¹

Biodiversity Conservation Capacity Building in Egypt (Cairo: MSEA/EEAA), p. 162.

⁵⁰⁸ Some of the species identified in the project and in interviews include UNDP/Birdlife International [Birdlife], 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway* (UNDP Project Document) p. 2.

⁵⁰⁹ Graham Tucker, 2005, *Migratory Soaring Birds: Review of status, threats and priority conservation actions* (Report to Birdlife International) p. 188

⁵¹⁰ UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, p. 1.

⁵¹¹ Convention on Migratory Species [CMS] Secretariat, 2008, Press Release (Retrieved online June 10 from http://www.cms.int/news/PRESS/nwPR2008/10_Oct/CMS_Press_Release_Raptors_MoU.pdf). See also Mohammed A. Ayyad, Amal M. Fahkry and Abdel Raouf A. Moustafa, 1999, Plant Biodiversity In The Saint Catherine Area Of The Sinai Peninsula (*Biodiversity and Conservation* 9: 265–281) for a study of biodiversity in the Sinai

The origin of the threats to MSBs owes much to the manner in which the birds travel in their autumn and winter migrations. In order to conserve energy on the transcontinental route, MSBs fly by soaring and gliding on hot air thermals, flapping as little as possible, primarily on ascent. Because hot air thermals are formed primarily over level ground, rather than large bodies of water and mountain ranges, MSBs have very restricted migratory paths, and are funneled through identifiable “bottlenecks,” both providing spectacular bird-watching possibilities, and exposing large numbers of birds to human interference within a compressed time-frame.⁵¹² It is in these bottleneck areas that MSBs are most vulnerable to human activities.⁵¹³

First, since MSBs rely on thermals, they often travel at very low altitudes, easily within rifle range.⁵¹⁴ Persecution through, for example, unregulated hunting and trapping, is one obvious way in which human activities threaten these birds. In some instances, birds fly low enough that trappers need only construct large nets to capture

peninsula; See also Egypt Elbadry, Esam Ahmed. c. 2002. Protected Areas of the Mediterranean MedWetCoast Egypt (Project document for the Mediterranean Wetlands Coast Project), and Khalil, Magdy T. and Kamal H. Shaltout. 2006. *Lake Bardawil and Zaranik Protected Areas*, p. 531. Zaranik, for example, is a registered Ramsar site with over 900 species of flora and fauna, 5 of which are endemic.

⁵¹² Yossi Leshem & Yoram Yom-Tov, 1998, Routes of Migratory Soaring Birds, pp. 50; Global Environment Facility [GEF], 2003, Bottlenecks for Migratory Soaring Birds (Project Concept Paper), pp. 3.

⁵¹³ Gudrun Hilgerloh, 2009, The Desert at Zeit Bay, Egypt: a bird migration bottleneck of global importance (*Bird Conservation International*, 19: 332 – 352); Khalil, Magdy T. and Kamal H. Shaltout. 2006. *Lake Bardawil and Zaranik Protected Areas* (Cairo: State Ministry of Environment, Publication of Biodiversity Unit, no. 15) pp. 534

⁵¹⁴ GEF, 2003, Bottlenecks for Migratory Soaring Birds, pp. 23.

them.⁵¹⁵ In addition, the use of lead shot in hunting creates problems when lead pellets accumulate in rest areas and are ingested directly or indirectly by MSBs.⁵¹⁶

Second, at rest areas along their migration route, even well-meaning but uninformed tourists may disturb exhausted and under-nourished birds, leading to further stress and hence death:

...in Sharm el Sheikh... the biggest majority of the storks from Eastern Europe fly through this point, and have a resting place at a sewage farm in Sharm el Sheikh. All these bikers going through the sewage farms are scaring the birds away. They can't rest, they have to fly further south, some of them are exhausted, more of them will die.⁵¹⁷

Third, and related, the onset of tourism and urban development in flyway zones has exposed birds to toxic chemicals. This may occur either through improper waste disposal in existing bodies of water, or through the creation of standing pools of polluted water in, *inter alia*, sewage treatment plants, which attract dehydrated birds.⁵¹⁸ Pesticides, rodenticides and poisoned bait, ostensibly aimed at pests such as feral dogs plaguing agricultural areas, may also kill or harm some species of predatory or carrion birds.

⁵¹⁵ István Moldován, author interviews conducted October 11 – 18, 2008.

⁵¹⁶ Wetlands International, 2000, *International Update Report on Lead Poisoning in Waterbirds* (Retrieved online from http://www.unep-aewa.org/publications/publication_others/wi_lead_poisonwbirds_en_2000.pdf).

⁵¹⁷ István Moldován, author interviews conducted October 11 – 18, 2008. Taken from transcript of digital voice recording.

⁵¹⁸ EgyBirdGroup, personal communication; UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 8, 137 – 138.

Finally, the construction of wind farms along the flyway may create hazards for birds that become trapped in powerlines, or collide with wind turbines. The same wind conditions that are most conducive to energy generation are also propitious for soaring birds, which either risk collisions or have to detour from the flyway, again increasing the chance of exhaustion and death.⁵¹⁹

Tensions in National Economic Development

As in all other cases studied, the anthropogenic threats identified here incorporate tensions between economic activity associated with the primary productive sectors of Egypt, and economic activity associated with the wellbeing of marginalized populations. On one hand, it is clear that the activities of lower-income Bedouin populations who reside in the desert of the Sinai Peninsula and along the Red Sea Coast can contribute to the stresses described above. Bedouin tribal groups, most of whom are not nomadic, do engage in trapping and hunting of birds.⁵²⁰ On the other hand, prominent economic sectors, particularly in tourism, contribute not only the primary sources of stress on desert

⁵¹⁹ José Luis Tellería, 2009, Potential Impact of Wind Farms on Migratory Soaring Birds Crossing Spain (*Bird Conservation International* 19: 131 – 136); UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pg 6 – 7; Luis Barrios, Alejandro Rodríguez, 2004, Behavioural And Environmental Correlates Of Soaring-Bird Mortality At On-Shore Wind Turbines (*Journal of Applied Ecology*, 41 (1): 72 – 81); Frank Bergen, 2007, *Ornithological Expert Opinion as a part of the Feasibility Study for a Large Wind Farm at Gulf of el Zayt, Egypt* (Germany: Report for Deutsche Energie-Consult Ingenieurgesellschaft mbH Norsk-Data-Straße 1 [DECON]).

⁵²⁰ Birdlife International, 2006, *Religious, Cultural, and Socioeconomic Importance of Migratory Birds Hunting* (Synthesis Report IV, Birdlife).

biodiversity management, but also displace the potential of Bedouin communities to use natural resources.

In some cases, this displacement is indirect. Waste disposal from tourist sites, or excessive water usage reduces the utility of subterranean and groundwater supplies, upon which Bedouin communities depend for subsistence agriculture.⁵²¹ More directly, the expansion of coastal tourism in the Red Sea and Sinai governorates has led to the physical removal of littoral Bedouin campsites from areas planned for tourist development.⁵²²

Identifying the Social Actors Involved in Biodiversity Management

Environmental Management: The MSEA/EEAA and Subordinate Agencies

The management of these processes falls under the purview of a range of different governmental authorities. Direct environmental management is the jurisdiction of the Ministry of State for Environmental Affairs (MSEA) and its executive agency, the Egyptian Environmental Affairs Agency (EEAA). The EEAA was established in 1994 under National Environmental Law 4/1994, and in 1997, ministerial restructuring made

⁵²¹ J. Grainger, 2003, 'People are living in the park'. Linking biodiversity conservation to community development in the Middle East region: a case study from the Saint Katherine Protectorate, Southern Sinai

(*Journal of Arid Environments*, 54: 29 – 38)

⁵²² Jeannie Sowers, 2007, Nature Reserves and Authoritarian Rule in Egypt: Embedded Autonomy Revisited (*The Journal of Environment and Development*, 16: 375 – 397), p. 388.

that agency the executive branch of the MSEA.⁵²³ The MSEA/EEAA has various mandates, including the issuance of environmental impact assessments (EIAs); the generation of national action plans; the setting of pollution standards; and the coordination of regulatory activities with other ministries that may have jurisdictional overlap in managed territories.⁵²⁴

Formally, the EEAA's authority over natural resource management is concentrated in the Nature Conservation Sector (NCS).⁵²⁵ The NCS is the focal point for the Convention on Biological Diversity (CBD) and other multilateral environmental agreements (MEAs) relevant to the management of migratory birds and transitory habitats, including the Convention on Migratory Species (CMS) and the Ramsar Convention on the protection of wetlands.⁵²⁶ NCS authority is further delegated to a National Biodiversity Unit and a Protectorates Division.⁵²⁷

⁵²³ Nature Conservation Sector. 2006. *Protected Areas of Egypt: Toward the Future* (Cairo: Nature Conservation Sector, EEAA); EEAA, 2010, *About MSEA –EEAA: Institutional Framework*. Accessed online from <http://www.eeaa.gov.eg/English/main/about.asp>

⁵²⁴ Jeannie Sowers, 2007, Nature Reserves and Authoritarian Rule in Egypt: Embedded Autonomy Revisited (*The Journal of Environment and Development*, 16: 375 – 397), endnote pp. 396; EEAA, 2010, *About MSEA – EEAA*.

⁵²⁵ See EEAA, 2006, *EEAA Organization Structure Approved by Central Agency for Organization and Administration* (Retrieved online from <http://www.eeaa.gov.eg/English/reports/OrgStructure/OrgStructureEnglish.pdf>); MSEA/EEAA, 1998, *Egypt: National Strategy and Action Plan for Biodiversity* (MSEA: Cairo), pp. 3.

⁵²⁶ UNEP/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt* (MSEA), pp. 5.

⁵²⁷ BioMAP Document. 2004. *Institutional Strengthening of the Nature Conservation*

The Biodiversity Unit is charged with conducting national biodiversity inventories, and with implementing the Convention on Biological Diversity (CBD) by drafting a *National Strategy and Action Plan for Biodiversity* (NBSAP).⁵²⁸ Since some of the areas important for bird management are found within the network of protected areas, and under environmental Law 102/1983, the Protectorates Division has some authority to determine entry conditions, regulate hunting permits, and appoint rangers to staff and monitor established areas.⁵²⁹

The Governorates and Municipal Management

In addition, the Protectorates Division is tasked with coordinating management of protected areas with Egypt's governorates, of which there are 29 since 2009 (see **Figure 5.1**).⁵³⁰ Three in particular are important to MSB and flyway management: the North Sinai, the South Sinai and the Red Sea governorates, although migrating birds have found as far inland as Helwan. Some of the key protected areas addressed in these governorates

Sector and National Biodiversity Department for Monitoring and Assessing of Biodiversity and Natural Heritage (BioMAP) (Produced by Government of the Arab Republic of Egypt, Government of Italy, UNDP); EEAA, 2010, *About MSEA – EEAA*.

⁵²⁸ MSEA/EEAA, 1998, *Egypt: National Strategy and Action Plan for Biodiversity*. As indicated throughout the dissertation, the drafting of an NBSAP is part of a Party's obligations to the CBD under Article 6.

⁵²⁹ Interview, Mohammed Kassas; Interview Samir Ghabbour; Interview, Tahr Issa; Nature Conservation Sector [NCS], 2006, *Protected Areas of Egypt: Towards the Future* (Cairo: MSEA/EEAA) pp. 18; Interview, Alaa El Din.

⁵³⁰ MSEA/EEAA, 1998, *Egypt: National Strategy and Action Plan for Biodiversity* (MSEA: Cairo), passim

are: in the Red Sea governorate, the Red Sea Islands; in the South Sinai governorate, Ras Mohammed and Sant Katherin National Parks; in the North Sinai governorate, Zaranik. Governors manage local pollution standards, monitor waste management, and have oversight over development projects in their jurisdiction. To coordinate with the NCS, governors work through Environmental Management Units established in each governorate.⁵³¹

The Tourist Development Authority and the Military

Further, some of the conflicts between human activity and migratory soaring birds involve management issues in other state bodies, in the Ministry of Tourism and the military infrastructure. The Red Sea and the Sinai Peninsula are major sites of tourist attraction. Of 5 million tourists visiting Egypt annually, approximately 2.1 million of these participate in coastal tourism in the Red Sea.⁵³² When measured in terms of constructed hotel space, the Red Sea and the South Sinai governorates have 28% and 24% of the total share of Egyptian tourism respectively. The North Sinai governorate is less important to tourism, with the lowest share of hotel rooms at 0.5% as of 2000.⁵³³

⁵³¹ EEAA, c.2002, *Self-Assessment of National Capacity in Egypt to Manage the Global Environment* (Proposal for GEF funded project on capacity building), pp. 4; Jeannie Sowers, 2007, *Nature Reserves and Authoritarian Rule in Egypt*, pp. 381 – 382; Saad Eddin Ibrahim, 1996, *Reform and Frustration in Egypt* (*Journal of Democracy*, 7.4: 125 – 135), p. 387.

⁵³² Monitoring, Verification and Evaluation [MVE] Unit, c.2003, *Economic Valuation of the Egyptian Red Sea Coral Reef* (Policy brief for the Egyptian Environmental Policy Program) p. 2.

⁵³³ Adel Rady, 2002, *Tourism and Sustainable Development in Egypt* (prepared for Plan

The Ministry of Tourism and its executive agency the Tourist Development Authority (TDA) are responsible for allocating resources and permits for tourist development and infrastructure. Created by presidential decree in 1991, the TDA has an autonomous budget and substantial authority to regulate land sales in tourist development locations.⁵³⁴

Finally, the military apparatus has substantial formal regulatory power over natural resource management. Due to the history of the Sinai Peninsula as a site of conflict with Israel, as well as due to ongoing border concerns with Sudan, the military has “retained use-rights to large tracts of land,” and can restrict at will the mobility of researchers, academics and tourists in the interest of security.⁵³⁵ In addition to this control, internal management within the military has implications for natural resource conservation in Egypt. Military encampments and stations along the Red Sea coast can contribute to the problem of improper waste disposal and the creation of standing pools of polluted water, while military personnel have been observed using MSBs for target practice.⁵³⁶ These agencies described above are those with the formal responsibility for

Blue: Tourism Development Authority)

⁵³⁴ Jeannie Sowers, 2007, *Nature Reserves and Authoritarian Rule in Egypt*, pp. 389 – 390.

⁵³⁵ Jeannie Sowers, 2007, *Nature Reserves and Authoritarian Rule in Egypt*, pp. 386 – 387.

⁵³⁶ UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, p. 8; EgyBirdGroup, personal communication.

managing natural resources in the context of MSB conservation in Egypt (see **Table 5.1: List of MSB Policy Makers**).

Political Centralization and Institutional Distortion

At the same time, actual management authority is centralized to a degree not found in either Mexico or Jamaica, and is concentrated in the executive branch (the Prime Minister and the President) and the state security apparatus. The declaration of additional land as protected areas is limited, as the Prime Minister has fixed the number and location of all current and proposed protected areas in Egypt through the creation of a Land Utilization Map in 1997.⁵³⁷ This map currently describes 27 existing and 13 planned protected areas, comprising the 40 sites to be declared in 2017 on the Land Utilization Map (see **Figure 5.2: Map of Protectorates in Egypt, est. 1997 Land Utilization Map**).⁵³⁸

The political role played by governors concentrates the decision-making authority over natural resource management in the center. Governors are appointed by the President, rather than elected by the mass public, directing accountability toward the executive branch. Further, the military has additional informal authority over natural

⁵³⁷ These areas are visible in Land Utilization Maps available in Egypt's NBSAP. See MSEA/EEAA, 1998, *Egypt: National Strategy and Action Plan for Biodiversity*, Map 1.

⁵³⁸ Samy Zalut, author interviews conducted September 24, 2008; UNDP/NCS, 2008, *Strengthening Protected Area Financing And Management Systems* (GEF Project Identification Form) pp. 3. This was later supported by research conducted at the Nature Conservation Sector of the MSEA/EEAA, where staffers provided me with a copy of the Land Utilization Map for review.

resource management, as significant numbers of executive appointees to natural resource management agencies come from the state security apparatus, regardless of training or scientific background.⁵³⁹ Personal ties between apparatchiks in natural resource agencies matter significantly in allocating authority over environmental management.

This personalist system, described as “embedded cronyism,”⁵⁴⁰ differs markedly from the post-corporatist Mexican system and the patron-clientelist Jamaican system. The importance of personal relationships and the centralization of land use authority in Egypt is greater than those of the centralized, erstwhile bureaucratic-authoritarian Mexican government, and the comparatively politically open Jamaican system. Further, as will be indicated below, there are far greater restrictions on autonomous mass public political expressions in this case than in the previous two countries studied. As a result, the formal division of authority and institutional jurisdiction gives a distorted view of the real allocation of power and authority, which is more arbitrary than indicated in the management structure. It is within this context of de facto centralization and personalistic structures of authority that the *Project for Mainstreaming Conservation of Migratory Soaring Birds* developed.

Transnational Mobilization around the Red Sea/Rift Valley Flyway

⁵³⁹ Jeannie Sowers, 2007, Nature Reserves and Authoritarian Rule in Egypt, pp. 381. See also Amr Ismail Adly, 2009, Politically Embedded Cronyism: The Case of Post-Liberalization Egypt (*Business and Politics*, 11 (4): 1 – 26), p. 10.

⁵⁴⁰ Amr Ismail Adly, 2009, Politically Embedded Cronyism: The Case of Post-Liberalization Egypt (*Business and Politics*, 11 (4): 1 – 26)

The Emergence of the MSB TAN and Policy Advocacy through the Development of the Project

The emergence of the MSB Project followed the same essential pattern as the previous three cases: concern about the management of globally important biodiversity developed among a set of core, transnationally organized civil society actors who, in the process of mobilizing support for management among target audiences, developed a common policy enterprise. Again, identifiable ENGOs were crucial to the development of a nucleus of concerned actors (see **Table 5.2: List of TAN Members in the MSB Project**).

The Emergence of a Network Concerned about MSB Management

Concern about the bird flyways in the Red Sea and Rift Valley region developed among a transnational network of birders in the 1970s. In 1972, ornithologist R. E. Moreau compiled studies to map out the routes of the Eurasian-African flyway.⁵⁴¹ The Eurasian-African flyway was identified at the time as one of the three globally important routes for migratory birds, the other two occurring in the Americas and the Palaearctic-South Asian flyway (see **Figure 1.5**). This study was later cited as a foundational project by other ENGOs who became concerned about depleting populations of MSBs in the 1980s and 1990s, such as Birdlife International.⁵⁴²

⁵⁴¹ GEF, 2003, Proposal for a PDF Block B Grant (Proposal for Project titled: *Conservation of soaring migratory birds in the eastern sector of the Africa-Eurasia flyway system (Rift Valley and Red Sea flyways)*), footnote pp. 4.

⁵⁴² GEF, 2003, Proposal for a PDF Block B Grant, pp. 4.

In the early 1990s, Birdlife and other transnational stakeholders in MSB management, such as the IUCN and Wetlands International, began conducting research and sharing information to identify emerging threats and problems with the integrity of the flyway. Between 1991 and 1992, Birdlife and Wetlands International, then known as the International Waterfowl and Wetlands Research Bureau, held a series of international workshops to conduct threat analyses and map the geographic dimensions of the African-Eurasian flyway.⁵⁴³ Between 1992 and 1995, Birdlife and Wetlands International developed a series of projects to protect bird species in the European section of the flyway.⁵⁴⁴

At the same time, Birdlife began establishing contacts with domestic sources of expertise in Middle Eastern and North African flyway countries, such as Egypt. These contacts between domestic expertise and Birdlife emerged as local actors similarly developed concerns about management and populations of MSBs. In Egypt, a group of researchers had created the Egyptian Ornithological Society in the 1980s. Though small and short-lived, the group counted among its members Egyptian experts on birding, such

⁵⁴³ One study in particular emphasized the dangers of the bioaccumulation of lead from discarded shot. See Wetlands International, 2000, *International Update Report on Lead Poisoning in Waterbirds* (Retrieved online from http://www.unep-aewa.org/publications/publication_others/wi_lead_poisonwbirds_en_2000.pdf).

⁵⁴⁴ Wetlands International, 2000, *International Implementation Priorities for 2000 – 2004* (Wetlands International), pp. 2. Some of the species covered in the Birdlife/Wetlands 2000 European initiatives and the later MSB Project in Egypt include: the Dalmatian Pelican (*Pelecanus crispus*) and the Eurasian Bittern (*Botaurus stellaris*). See UNEP/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt* pp. 84 and UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds* pp. 4.

as Sherif Baha el Din and Moustafa Fouda.⁵⁴⁵ Sherif became affiliated with Birdlife in 1989, when he married Mindy Rosenzweig, an American ornithologist hired by Birdlife to work in Cairo. In 1990, Birdlife hired Sherif Baha el Din to be the official Birdlife Affiliate in Egypt, assigning him the responsibility of conducting research on mapping and species identification of birds in Egypt.⁵⁴⁶

In the middle to late 1990s, the efforts of the emerging TAN found purchase in the international political arena, as governments in the region sought to demonstrate compliance with MEAs relating to biodiversity and endangered species management. In 1995, Parties to the 1979 Convention on Migratory Species negotiated an MEA subordinate to the CMS called the African-Eurasian Waterbird Agreement (AEWA). In AEWA, the Parties used the research on bird migration conducted between 1991 and 1995 from Birdlife, Wetlands International, the WWF and the IUCN, to promote improved regional management of migratory birds and habitats among neighboring countries in the flyway zone.⁵⁴⁷ In 1997, the Egyptian government explicitly linked AEWA to its efforts to carry out the Convention on Biological Diversity.⁵⁴⁸

⁵⁴⁵ Mary Megalli, author interview, conducted October 4, 2008. At this time, Sherif had published two books on Egyptian avifauna in 1985 and 1989, *Common Birds of Egypt* and *Birds of Egypt* respectively. See PBS, 2010, *Mindy and Sherif Baha el Din*, retrieved online June 2010 from <http://www.pbs.org/saf/1106/hotline/hbahaeldin.htm>.

⁵⁴⁶ Personal communication, Mindy Baha el Din; CV of Sherif Baha el Din; PBS, 2010, *Mindy and Sherif Baha el Din*, retrieved online June 2010 from <http://www.pbs.org/saf/1106/hotline/hbahaeldin.htm>.

⁵⁴⁷ D. E. Pritchard, 1999, Statement on Behalf of Non-Governmental Organizations (6th COP Meeting to the CMS/1st MOP to the AEWA).

⁵⁴⁸ MSEA/EEAA, 1997, *First National Report to the Convention on Biological*

As Parties began planning the management and monitoring processes to carry out AEWA, member governments drafted Action Plans, created with input from the network of ENGOs, to use *in situ* conservation to protect waterbirds. In the Action Plan, Parties reiterated some of the same concerns generated by Wetlands and Birdlife, highlighting the significance of the flyway for global species and ecosystems, and discussing the need to ban or phase out environmentally harmful activities such as: the use of lead shot; illegal taking of birds; human disturbances in resting sites; and the use of poisoned bait.⁵⁴⁹ After AEWA entered into force in 1999, members of Birdlife, Wetlands International, the IUCN and the WWF became officially involved with the institutions, by serving on its Technical Committee, and participating as observers in the Meetings of the Parties (MOPs).⁵⁵⁰

During the late 1990s, Birdlife reinforced connections between the transnational pool of knowledge and local expertise in the various countries. For example, between 1997 and 2003, Birdlife and the UNDP launched a project to identify Important Bird Areas (IBAs) in Africa, defined as those areas in which at least 1% of a global population of migratory birds pass through, or areas which function as bottlenecks.⁵⁵¹ In Egypt, this

Diversity (MSEA/EEAA: Cairo) p. 30.

⁵⁴⁹ UNEP/AEWA Secretariat, 2002, Action Plan adopted by MOP 2; See compilation study: UNEP/AEWA Secretariat, n.d., *Non-toxic shot: A path towards sustainable use of the waterbird resource* (Technical Series No. 3: UNEP/AEWA).

⁵⁵⁰ D. E. Pritchard, 1999, Statement on Behalf of Non-Governmental Organizations (6th COP Meeting to the CMS/1st MOP to the AEWA).

⁵⁵¹ Bennun, L. A. & Fishpool, L. D. C., 2000, *The Important Bird Areas programme in Africa: an outline*. Ostrich 71: 150 - 153 (Proc. PAOC 10); Birdlife, 2010, *Middle East*

was carried out by Sherif Baha el Din, culminating in the identification of 34 IBAs, most of which were also identified as sensitive wetlands (see **Figure 5.3: Map of BLI Registered IBAs**).⁵⁵² As in the AEWA study, this report highlighted the geophysical parameters of the flyway, adding specificity to the knowledge of important areas to birds, and illustrated anthropogenic threats to MSBs including: tourist development, pollution, agriculture and unregulated persecution.⁵⁵³

Creation of the MSB Project

By the end of the 1990s, reports and studies generated for AEWA, the IBA program, and domestic studies indicated that the existing management structure was insufficient to protect these birds and their habitats from existing anthropogenic threats. In order to address this problem, Birdlife began developing an additional project to improve management of all MSBs and habitats in the flyway region, drafting a proposal for a GEF-funded effort in 2003.⁵⁵⁴

IBA Criteria (retrieved online, June 2010 from http://www.birdlife.org/datazone/sites/middle_east_criteria.html). UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, p. 22.

⁵⁵² Sherif Baha el Din, n.d., *Important Bird Areas in Africa and Associated Islands – Egypt* (Birdlife International), p. 245.

⁵⁵³ Sherif Baha el Din, n.d., *Important Bird Areas*, pp. 243.

⁵⁵⁴ Mindy Baha el Din, personal communication and author interview, July 2006; Hala Barakat, personal communication.

As conceptualized, the project was intended to focus on those countries with poor environmental governance, but which were critical to the effective management of MSBs in the African-Eurasian flyway. These were Djibouti, Egypt, Eritrea, Ethiopia, Jordan, Lebanon, Saudi Arabia, Sudan, Syria, Yemen and territories controlled by the Palestinian Authority.⁵⁵⁵ The part of the flyway covered by these countries was called the Rift Valley and Red Sea flyway. Like AEWA, the planned project initially took a site-specific approach to the *in situ* conservation of IBAs,⁵⁵⁶ and was linked to other biodiversity related MEAs, such as the CBD and the Ramsar Convention.⁵⁵⁷

In order to clarify the needs of the project, Birdlife commissioned a threat assessment in 2004. Building on research conducted by Baha el Din in Egypt, and local expertise in other countries, this assessment reiterated the need for improved legislation and environmental regulation in the Red Sea/Rift Valley countries. Further, the assessment, carried out by Graham Tucker of Birdlife, identified as significant regional

⁵⁵⁵ Birdlife International, 2003, *Protection of Key Bottleneck Bird Areas for Soaring Migratory Birds in the Eastern Sector of the Africa-Eurasia Flyway (Rift Valley and Red Sea Flyway)*, (UNDP/World Bank, proposal for a PDF Block-B Grant).

⁵⁵⁶ Birdlife International, 2003, *Protection of Key Bottleneck Bird Areas*, pp. 2; Birdlife International, c. 2003, *Bottlenecks for Soaring Migratory Birds – Project Concept* (Proposal for a PDF Block-B Grant) pp. 14. The benefit of taking a site-specific approach to IBA protection is that IBAs are considered small enough to be protected in entirety. See Rachael Adam, 2008, Waterbirds, The 2010 Biodiversity Target, And Beyond: Aewa's Contribution To Global Biodiversity Governance (*Environmental Law*, 38: 88 – 137), fn 245.

⁵⁵⁷ Birdlife International, 2003, *Protection of Key Bottleneck Bird Areas*, pp. 5.

threats some of the same concerns brought up earlier in the AEWAs studies and the IBA studies, namely unregulated hunting, tourism and improper waste disposal.⁵⁵⁸

The project proposal was finalized in 2005. That year, Birdlife ornithologists Graham Tucker and Richard Porter conducted a study on the species of MSBs primarily dependent on the flyway, and identified 37 species, which then became the primary indicator species for the success of the GEF funded project.⁵⁵⁹ Thus, by the early 2000s, an informally organized network oriented around conserving migratory bird species using the African-Eurasian flyway had emerged, part of which was based in Egypt and interested in the Red Sea/Rift Valley section of the flyway.

Centralization of Authority and the Management of the Project

Generally, Birdlife's *modus operandi* is to delegate management authority and funds garnered from GEF projects to local, affiliated ENGOs. However, whereas countries such as Lebanon had civil society ENGOs approved to work independently on migratory bird issues, Egypt did not. In order to keep Egypt involved in the Birdlife-developed project, the MSEA/EEAA was made the implementing agency, with the understanding that a domestic ENGO would be incorporated later, become an official

⁵⁵⁸ Graham Tucker, 2005, *Migratory Soaring Birds: Review of status, threats and priority conservation actions* (Report to Birdlife International) passim. This report noted that, of globally important IBAs in Egypt, only Ras Mohammed was protected. The others, including Ain Sukhna, Gebel el Zeit and Suez were not covered by any legislation.

⁵⁵⁹ UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, pp. 9 footnote 1.

Birdlife Affiliate, and function as the implementing agency of the MSB Project.⁵⁶⁰ To this end, Mindy and Sherif Baha el Din, along with associates from the Egyptian Academy of Scientific Research and Technology and Cairo University created Nature Conservation Egypt (NCE) as an ENGO in 2005.

The Creation of the NCE as the Site of Transnational Activism

NCE became a Birdlife Affiliate, and after 2006, resident birders from Egypt and countries such as the United States, Romania and the UK joined the organization, which currently numbers 28 members, to advocate for improved MSB and habitat management. The network grew further with the creation of an email list called EgyBirdGroup, established by Romanian ornithologist István Moldován, also an NCE member, to share reports and information on birds with a transnational network interested in Egyptian birding. The EgyBirdGroup network was an important source of technical information for the TAN, as some of the ornithologists participating in the EgyBirdGroup mailing list included Tom Coles and Nick Williams, both of whom were recognized experts on Sooty Falcons (*Falco concolor*), one of the indicator soaring birds addressed by the project.⁵⁶¹

By 2007, when GEF committed to funding the project, a transnational advocacy network (TAN), concerned about managing the African-Eurasian flyway to protect

⁵⁶⁰ Mindy Baha el Din, author interview, July, 2006; Hala Barakat, personal communication; UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, pp. 15; István Moldován, author interview conducted October 11 – 18, 2008.

⁵⁶¹ EgyBirdGroup, personal communication; István Moldován, author interviews conducted October 11 – 18, 2008;

migratory soaring birds (MSBs), had emerged in Egypt (see **Table 5.2**). This network built on foundational research conducted in the 1970s and concretized between 1991 and 2003, demonstrating the importance of the flyway to globally endangered MSBs, identifying key MSBs to be covered by management efforts, and highlighting the threats faced in each flyway country.

Like the other networks identified in the research, the size of the TAN is larger than is suggested in the provided table. The EgyBirdGroup alone counts 185 members, but, like the 270 members of the WRC's scientist database discussed in Chapter 2, most of these actors were not a core part of the network. During the period of field research, of the emails on the list, which included exchanges of draft reports, discussions of threats to birds, and requests for hospitality for visiting researchers, most messages were sent by ten to fifteen members. These included seven members of NCE, as well as researchers from the Birdlife and from academic institutions in the UK, USA, and Germany. Given that not all members of the NCE are involved in MSB advocacy, an approximation of the network suggests that it counts between 30 and 40 members, larger than the Jamaican Cockpit Country epistemic community, but smaller than the networks active in Mexico.

Maintaining the Network

The core knowledge of this TAN was built on transnational research conducted by the Birdlife-Wetlands International-IUCN network, and embedded in local research and expertise. In 2009, the Government of Egypt launched the project, with the MSEA/EEAA and the NCE listed as the official implementing agencies.

The network maintained cohesion primarily through the informational exchanges established through the EgyBirdGroup mailing list, and by virtue of the fact that NCE recruited members from other institutions, including Cairo University and Birdlife International. The link between transnational and Egyptian knowledge was facilitated by the Baha el Dins, who later influenced the creation of the NCE, as well as through Moldován's creation of the EgyBirdGroup mailing list. In addition, transnational researchers conducting field surveys of migratory birds had to work with locally-based expertise in remote, desert sites. For example, Alaa el-Din, a ranger in the Red Sea Protectorate, and István Moldován who conducted research near Hurghada, also in the Red Sea, were contact points for Birdlife researchers, such as John Grainger and Nick Williams, and researchers from other organization, such as Dick Hoek of WWF. Notably, the Egyptian network was not maintained by a comparable level of regular meetings and formalized processes as occurred in the other networks, especially the SAM network. Nevertheless, the personal connections and informational exchanges were a constitutive part of this TAN.

However, the TAN in this case faced substantial difficulties in translating transnationally generated knowledge into meaningful action at the domestic level. First, the TAN failed to generate an intersubjective and scientifically valid consensus on the relationship between human activity and MSB population declines. Second, the political system in Egypt, characterized by autocratic centralization, embedded cronyism, and a domestically weak civil society, prevented the TAN from generating socialization with policymakers.

Measuring Consensus Within the Network

Lack of Consensus within the MSB TAN

As indicated in the previous chapters and the literature, knowledge consensus is a defining feature of epistemic communities. As this network did not generate an intersubjective consensus on the causal relationship between human activity and depletion of bird populations, it is not an epistemic community. The TAN did share a pool of common knowledge and a core rationale for action. By 2003, the transnational network generated and shared information about the existence of the African-Eurasian flyway, the location of the Red Sea/Rift Valley component, and agreed that human activity, such as hunting and waste disposal, was negatively affecting migratory bird populations. In 2006, the network agreed on the main species of MSBs at concern.

However, at the time of writing, there was still substantial uncertainty within the network. While it was clear that human activity was contributing to declines in global populations of MSBs, there was a lack of specificity in this information. There was no clear agreement on how to disaggregate and measure the relative contribution of each kind of anthropogenic activity to bird mortality rates at a regional or domestic level, and in some cases, disagreement about whether observed mortalities were the result of human activity. In a 2005 assessment of bottleneck sites, Birdlife ornithologist Richard Porter noted that:

Whilst the main threats to soaring birds on migration have been studied elsewhere in the world, there is a serious lack of quantitative data for the Middle East. For example it is known that the shooting of raptors for the

stuffed-bird trade is a common practice in Syria but there is no information on the numbers involved.⁵⁶²

The finding of substantial uncertainty was reiterated throughout the development of the MSB Project. In 2005, the final project proposal for the MSB Birdlife project noted the “lack of quantitative information”⁵⁶³ giving a clear picture of the contribution of specific activities, such as tourism and hunting to MSB populations, observing that “...beliefs about what threatens MSBs during migration may not be supported by evidence.”⁵⁶⁴ In 2007, the German Development Bank commissioned an investigation of the potential impact of wind farms on MSB populations in Gebel el Zeit in the Red Sea governorate. Like the Porter report, this study concluded that clear, uncontested and scientifically valid data on the likely impact of wind turbines on MSB populations was not available.⁵⁶⁵ In 2008, the EgyBirdGroup circulated multiple reports of mass mortalities of migrating White Storks near reservoirs in Sharm el Sheikh, a tourist destination in the South Sinai governorate. Within the network, explanations for this mortality varied significantly, and the scientists, including some from NCE offered as

⁵⁶² R. F. Porter, 2005, *Soaring Bird Migration In The Middle East*, pp. 141.

⁵⁶³ UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, pp. 9

⁵⁶⁴ UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, pp. 27.

⁵⁶⁵ Bergen, 2007, *Ornithological Expert Opinion*, passim. The study concluded with a recommendation that, in light of the lack of certainty about the impact of windfarms on species, and considering the endangered status of several of migratory birds passing through the area “...in terms of strict bird conservation aspects it is highly recommended to avoid construction of a wind power plant within the whole concessionary area [of Gebel el Zeit]” (pp. 55).

potential reasons anthropogenic causes such as: consumption of polluted water; human persecution; and natural phenomena, such as bacteria, bird flu and exhaustion.⁵⁶⁶ The correlation between the number of observed storks and actual site mortality was also debated, as one birder noted that the arid climate at Sharm el Sheikh desiccates and preserves bird corpses, possibly leading to the over counting of bird deaths.

Measuring Network Socialization with Managers

Barriers to Communication in Egypt

One of the primary issues addressed by this chapter is whether political centralization and autocracy is conducive to greater socialization or not. The data here strongly suggest that high levels of autocracy preclude the possibility of socialization. As described above, the Egyptian political system is very tightly closed. Formally, there is minimal scope for the exchange of ideas and information between the civil society and policymakers, and every interview respondent, in the civil society and in policymaker agencies, has observed that there is no “mechanism”⁵⁶⁷ for communication between the government and ENGOS. While Egypt has a few dozen ENGOS, most of which are based in Cairo,⁵⁶⁸ they have little autonomy under the Egyptian legal system.

⁵⁶⁶ EgyBirdGroup, personal communication; István Moldován, personal communication. It should also be noted that bird flu was an unlikely cause of this mortality, as at the time of the observation, there were no clear reports that White stork populations were exhibiting signs of bird flu.

⁵⁶⁷ Hala Barakat. Taken from hand-written notes.

⁵⁶⁸ One study in 1997 puts the number of ENGOS in Egypt at 62. This figure taken from Salwa Sharawi Gomaa, 1997, *Environmental Policy-Making in Egypt* (University

As one example, the 2002 parliamentary Law 84 permits the dissolution of NGOs by executive order, and criminalized any association between domestic civil society and transnational NGOs without prior permission.⁵⁶⁹ The allocation of funds for the project is similarly controlled by the government, as the MSEA/EEAA has the final authority over fiscal management of the MSB Project.

Exacerbating communication problems associated with formal centralization, barriers between the MSEA/EEAA and its subsidiary agencies in the NCS prevent the flow of knowledge from the ground up, as ties between the civil society and the NCS do not translate into ties between the civil society and executive agencies. At the time of writing, there were formally established ties between the TAN and policymakers in the NCS. The current director of the Nature Conservation Sector is Moustafa Fouda, former member of the Egyptian Ornithological Society and erstwhile colleague of Sherif Baha el Din. As of the time of writing, Sherif himself was in the employ of the MSEA/EEAA as a technical consultant to the NCS and scientific advisor to the Zaranik Protected Area in the North Sinai, making the Baha el Dins and Moustafa Fouda potential points of connection between the civil society and policymakers in the NCS.

Press of Florida), pp. 20 and Appendix 2. In 2003, the Egyptian government counted a few hundred, giving no specific number, in a GEF-funded project assessing the government's capacity for environmental management in EEAA/UNDP, 2003, *Self-Assessment of National Capacity in Egypt to Manage the Global Environment* (Project proposal for GEF funding) pp. 3.

⁵⁶⁹ Aziza Hussein, 2002, NGOs and Development Challenges (in M. Riad El-Ghonemy, *Egypt in the Twenty-First Century: Challenges for Development*, New York: Routledge) p. 203; UNDP/Institute of National Planning, Egypt, 2008, *Egypt Human Development Report 2008: Egypt's Social Contract* (Cairo: UNDP) pp. 92 – 94.

However, these social links were sharply limited, as first, there was little communication between other members of the TAN and Fouda or other policymakers, and second, what links were present were described in interviews as ad hoc:

I think that maybe people like Moustafa Fouda get advice on scientific matters on an individual basis, not in any organized manner. There is no science advisory committee for these protected areas. It is not accessorized.⁵⁷⁰

The isolation of the NCS in environmental policymaking further complicates the communication between the civil society and the Egyptian government. First, as described above, environmental authority over protectorates rests with the center and the security apparatus through institutions such as personal ties and the power of the governorates.⁵⁷¹ Second, at the time of writing, the NCS was still chronically underfunded, and did not have the authority to independently carry out essential functions, such as allocating resources, hiring staff and setting priorities for management in established protectorates, whether IBAs or otherwise. The Sant Katherin National Park and Ras Mohammed in the South Sinai governorate generate revenue through the imposition of user access fees. However, these funds are not collected and managed by the Protectorates Division of the NCS, but submitted to a centrally controlled Environment Protection Fund under the executive branch.⁵⁷² Of the revenues collected

⁵⁷⁰ Mohammed Kassas code. Taken from transcript of digital voice recording.

⁵⁷¹ Jeannie Sowers, 2007, *Embedded Autonomy Revisited*, passim; MSEA/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt*, pp. 17.

⁵⁷² UNDP/NCS, 2008, *Strengthening Protected Area Financing And Management Systems* (GEF Project Identification Form) pp. 4.

by protected areas, about 57% are returned to the NCS, and the remainder allocated to other projects taken by the MSEA/EEAA, subsidizing the Ministry's other functions with revenue generated in national parks.⁵⁷³ The NCS resources then have to be reinvested across all areas, exacerbating the distributional problems in the allocation of funds. Parks and protected areas in Ras Mohammed, Sant Katherin and the Red Sea Islands generate approximately 96% of revenue from protected areas,⁵⁷⁴ yet receive only a fraction in return as maintenance and upkeep.⁵⁷⁵

Measuring the Framing Choices of the Community

The Strategic Choice of Frames: Persuading Natural Resource Policymakers

Again, the TAN indicated that successful communication of environmental policy to governmental agencies would depend on the use of economic arguments, in particular, those that linked environmental management to the interests of prominent economic sectors. Between 2002 and 2005, the GEF began promoting the concept of *Biodiversity Mainstreaming*, described as the:

...integration of biodiversity conservation and sustainable use principles into policies, plans, programs, and production systems where the primary

⁵⁷³ UNDP/NCS, 2008, *Strengthening Protected Area Financing And Management Systems* (GEF Project Identification Form) pp. 4; Jeannie Sowers, 2007, *Embedded Autonomy Revisited*, pp. 392

⁵⁷⁴ UNDP/MSEA/EEAA, 2010, *Strengthening Protected Area Financing And Management Systems* (Request for CEO Endorsement for Full-Sized Project), pp. 14

⁵⁷⁵ In 2006 for example, Ras Mohammed generated US\$1.9 million in revenue, of which only US\$353,000 was reinvested in park upkeep. See MSEA/UNDP/GEF, 2006, *Strengthening the National System of Protected Areas* (UNDP/GEF) pp. 4.

focus has previously been on production, economic activity, and development, rather than on biodiversity conservation losses or gains.⁵⁷⁶

In the development of the MSB Project, one of the primary recognized threats to the development of political will for biodiversity conservation was the fact that MSB conservation was recognized as an area of very low economic value to the primary developmental sectors in participating countries.⁵⁷⁷ As a result, Birdlife, in the 2003 draft of the MSB Project and again in 2005, asserted that effective management would require using the concept of “mainstreaming” to link biodiversity conservation with the interests of prominent economic sectors. In particular, engagement with policymakers in the tourism sector, namely the TDA and the Red Sea and Sinai governorates was predicated on the idea that increasing environmental regulation over waste disposal, waste management and tourist access would depend on increasing the economic attractiveness of biodiversity conservation by linking it with the tourist industry.

You can't go to them and talk about conservation. You have to insert it in other things, like ecotourism and so on, to make it sound like development.⁵⁷⁸

...the decision makers understand only the economics. They don't believe in biology or in the importance of some – you can talk about only money, and the importance of it, and how much they are going to lose. So, we have to work for the importance of biodiversity this way, so they can

⁵⁷⁶ Global Environment Facility, 2005, *Mainstreaming Biodiversity in Production Landscapes* (GEF Working Paper) pp. 2.

⁵⁷⁷ Birdlife International, 2003, *Protection of Key Bottleneck Bird Areas for Soaring Migratory Birds*.

⁵⁷⁸ Hala Barakat, author interviews conducted September 29, 2008. Taken from handwritten notes.

understand. And I think most of it – not most – a *lot* of people understand now, especially in the tourism part.⁵⁷⁹

Thus, while some degree of political centralization was conducive to civil society communication in Mexico, this case suggests that extreme political centralization associated with hardline autocracy is detrimental to socialization between networks of experts and policymakers. The literature suggests that autocratic policymakers may facilitate communication between themselves and networks of experts as part of the process of controlling the production of policy relevant knowledge. However, it is clear from this case that the risk faced by civil society networks in autocratic countries is that the exercise of political control over information may disenfranchise experts, even in comparatively politically innocuous issue-areas. As described above, the political organization of the state left the MSB TAN isolated.

The fact that the network also failed to generate an intersubjective consensus also suggests that the influence exercised by the MSB TAN in this case is likely to be low. While the community adopted economic language as a strategy for policy advocacy, the previous three cases argue that this would be unlikely to overcome the barriers presented by scientific dissensus and low political socialization.

Policy Preferences of the CBMMx Transnational Network

Shifting from Site-Specific Management to Sectoral Approaches

⁵⁷⁹ Tahr Issa, author interviews conducted September 20, 2008. Taken from transcript of digital voice recording. Emphasis in original recording.

By the launch of the project in 2009, the goals of the TAN had changed. Between 2005 and 2009, Birdlife and the UNDP agreed that a site-specific approach focusing on protected areas management would have been inappropriate, in part since MSBs exhibited some variation in flight patterns and resting arrangements.⁵⁸⁰ While still necessary, protected areas management of key sites was to be complemented by a “double-mainstreaming” effort, where practices conducive to the conservation of MSBs would be adopted by ongoing projects in key development sectors. For example, since tourist development had negative implications for MSB conservation, tourist development projects in the Red Sea governorate were targeted by the TAN to become more flyway friendly. All the sectors targeted for the “double-mainstreaming” approach in Egypt were: hunting and persecution; poisoning from agricultural cultivation; improper waste management; and collision with energy structures, including wind turbines and power lines.⁵⁸¹ The following section explains how these double-mainstreaming efforts were carried out.

Improving Protected Areas Management

⁵⁸⁰ UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 4

⁵⁸¹ UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 4; Ministry of Environment [MoE] Lebanon, 2008, *National Report on the African-Eurasian Waterbird Agreement [AEWA]* (Beirut) pp. 5 – 6.

Although shifting away from an exclusive site-specific approach, the management of protected areas remained central to the goals of the TAN.⁵⁸² Of the 34 IBAs identified in Egypt, 15 are in currently existing protected areas, and 3 lie within future proposed areas to be established by 2017.⁵⁸³ At the same time, only 6 of these were identified as “receiving adequate protection”⁵⁸⁴ in 2000, leaving considerable scope for improved management. TAN members advocated for reform of protectorate management, albeit in an ad hoc manner. For example, István Moldován of NCE and EgyBirdGroup participated occasionally in the training of rangers involved in protectorate management in the Red Sea.⁵⁸⁵

Reforming Tourism and Promoting Ecotourism

The reform of tourist practices was key to TAN advocacy efforts. As described above, the Red Sea and Sinai governorates are important areas for both tourism and MSB management, as the Red Sea governorate has 9 of the officially identified IBAs in Baha el Din’s study, while the North and South Sinai governorates have 5 each.⁵⁸⁶ As a result, TAN efforts focused on mainstreaming MSB concern into ongoing projects in these

⁵⁸² UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 203.

⁵⁸³ Sherif Baha el Din, n.d., *Important Bird Areas*, pp. 245.

⁵⁸⁴ Sherif Baha el Din, n.d., *Important Bird Areas*, pp. 245.

⁵⁸⁵ István Moldován, author interviews.

⁵⁸⁶ Sherif Baha el Din, n.d., *Important Bird Areas*, pp. 245.

areas, largely by promoting ecotourism organized around MSB bird watching. Through this effort, policymakers in the TDA, NCS and governorates could regulate tourist incursions into bird habitats and resting areas by promoting greater awareness of bird sensitivity among visitors.⁵⁸⁷

For example, one of the tourist projects in the Red Sea is the Livelihood and Income from the Environment (LIFE) project, a USAID funded effort to assist the Tourist Development Authority (TDA) to develop sustainable tourism.⁵⁸⁸ This further builds on earlier efforts started by the TDA, the Red Sea governorate, and the MSEA/EEAA to launch ecotourism-driven development in the Red Sea in 2003.⁵⁸⁹ This project was specifically chosen by the TAN as a potential demonstration case of the feasibility of mainstreaming in tourism in Egypt, and the GEF funded efforts by TAN members to undertake activities toward this end.⁵⁹⁰ As part of this effort, Birdlife funded a manual

⁵⁸⁷ R. F. Porter, 2005, *Soaring Bird Migration In The Middle East*.

⁵⁸⁸ UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 13; USAID, 2004, *Biodiversity Conservation: USAID's Biodiversity Conservation Programs, Fiscal Year 2003* (USAID), pp. 37 – 38; Sherif Baha el Din, c. 2008, *Where to Watch Birds in Wadi el-Gamal National Park and Neighboring Areas* (USAID/Egypt). As indicated in Sowers' article on nature conservation in Egypt, the management of protected areas in Egypt is carried out by identified, quasi-official patrons who have staked out claims in distinct areas. The Red Sea governorate has historically been the province of US action through USAID (Jeannie Sowers, 2007, *Embedded Autonomy Revisited*).

⁵⁸⁹ MSEA/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt*, pp. 42.

⁵⁹⁰ UNDP/Birdlife, 2006, *Mainstreaming Conservation of Migratory Soaring Birds*, pp. 14.

compiled by Sherif Baha el Din promoting eco-friendly birdwatching in the Wadi el Gamal National Park on the Red Sea coast.⁵⁹¹

Ecotourism, if supported by the government, would not only contribute to national economic revenue generation and biodiversity conservation, but would also contribute additional benefits through the inclusion of marginalized populations, primarily of nomads and Bedouins. By acting as tour guides, Bedouins could contribute local knowledge and expertise to protected areas management, and be compensated through user access fees. This was an important step in improving governance, as local, marginalized populations contributed significantly to stressors such as unregulated hunting and excessive pesticide use while having historically been excluded from management by autocratic park managers.⁵⁹²

Energy Management

Finally, the TAN sought to incorporate MSB concerns into the planned construction of wind farms in Egypt, by having the government locate turbines in areas less likely to interfere with the flight pattern of migrating birds. The main wind farm project launched in the period of the project was a 2006 effort funded by the German

⁵⁹¹ Sherif Baha el Din, c. 2008, *Where to Watch Birds in Wadi el-Gamal National Park and Neighboring Areas* (USAID/Egypt).

⁵⁹² MSEA/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt*, pp. 48; R. F. Porter, 2005, *Soaring Bird Migration In The Middle East*; Joseph J. Hobbs, 1996, Speaking with People in Egypt's St. Katherine National Park (*Geographical Review*, 86: 1 – 21).

Development Bank in Gebel el Zeit, an IBA in the Red Sea governorate.⁵⁹³ This farm was intended to contribute a significant amount of energy to the power grid of Egypt – potentially in excess of 3,000 MW. As part of the planning effort, the German Development Bank commissioned a feasibility study from a team of ornithologists, led by a German specialist in migrating birds, Gudrun Hilgerloh, from Johannes Gutenberg University, and followed up with a later review in 2007.⁵⁹⁴ Hilgerloh, who had been exchanging information on the EgyBirdGroup list, divided the proposed construction area into three zones, and argued that construction should be limited to the northern-most zone, the area least likely to lead to substantial losses in bird populations.⁵⁹⁵

Evaluating TAN Influence

Lack of Success in Influencing Protected Areas Management

Using these examples of environmental advocacy, the data suggest that the TAN was unable to influence environmental management in the context of this project. The results are summarized in **Table 5.3: Summary of Observed and Predicted Outcomes.**

⁵⁹³ Ministry of Electricity and Energy, 2007, *Feasibility Study for a Large Wind Farm at Gulf of Zayt: Ornithological Field Monitoring Report* (NREA/Decon), p. 4; Gudrun Hilgerloh, 2009, *The Desert at Zeit Bay, Egypt*, p. 2.

⁵⁹⁴ Frank Bergen, 2007, *Ornithological Expert Opinion as a part of the Feasibility Study for a Large Wind Farm at Gulf of el Zayt, Egypt* (Germany: Report for Deutsche Energie-Consult Ingenieurgesellschaft mbH Norsk-Data-Straße 1 [DECON]); Ministry of Electricity and Energy, 2007, *Feasibility Study for a Large Wind Farm at Gulf of Zayt: Ornithological Field Monitoring Report* (NREA/Decon).

⁵⁹⁵ Ministry of Electricity and Energy, 2007, *Feasibility Study for a Large Wind Farm at Gulf of Zayt: Ornithological Field Monitoring Report* (NREA/Decon); Gudrun Hilgerloh, 2009, *The Desert at Zeit Bay, Egypt*.

While TAN members may have been occasionally included in ranger training, the network had minimal success in influencing the reform of protectorates. Interviews with former protectorates managers indicate that such collaborations between the civil society and the government was under supported at best, and discouraged at worst.

If you follow the governmental system, you have to communicate to the higher level of management. You are not allowed to communicate with journalists, for instance. You are not allowed to communicate with people, or elected officials.⁵⁹⁶

In addition, the general system of protectorate management is complicated by the fact that the NCS remains marginalized within the MSEA/EEAA. As described above, this means that the ostensible policymaking authorities on protectorate management are limited in their ability to set management priorities in protected areas, regardless of civil society participation.

Since the late 2000s, the government of Egypt has taken some steps toward reforming protectorates management, and improving the autonomy of the NCS. In 2008, the government submitted a proposal for a GEF-funded project, slated to begin in June of 2010, to improve protected areas management relevant to IBAs and migrating birds covered by the MSB Project.⁵⁹⁷ As part of this project, the government has endorsed the

⁵⁹⁶ Former Red Sea protectorates manager, author interviews. Taken from transcript of digital voice recording.

⁵⁹⁷ UNDP/NCS, 2008, *Strengthening Protected Area Financing And Management Systems* (GEF Project Identification Form) pp. 3; UNDP/MSEA/EEAA, 2010, *Strengthening Protected Area Financing And Management Systems* (Request for CEO Endorsement for Full-Sized Project), pp. 29

delegation of further authority and autonomy to the NCS, a key step to improving policy, and necessary to close existing institutional gaps.⁵⁹⁸

However, the historic implementation of protected areas management in Egypt shows a considerable gap between legislation and practice. As observed by a prominent Egyptian biologist from the UNESCO Man and Biosphere program,⁵⁹⁹ and a former director of Red Sea protectorates, formally passed policies may go unfulfilled:

“...[the law] says that each nature reserve must have a Board of Directors. No Board of Directors has been appointed until now for any one of the 27. Only a Director. Number two; it says that the Ministry must designate a buffer area around the natural reserve – this has not been done yet – in which the Ministry has authority to control activities that will... affect the nature reserve. So, according to that law, which is not implemented, you can’t have a factory which will send air or water which is polluted to the natural reserve. You shouldn’t do that, if you apply that law to the letter. But it hasn’t been implemented.”⁶⁰⁰

...in Egypt, you can find a lot of protected areas, you know. They have everything, you know. They have the infrastructure, they have the management plan, but they don’t have the mentality, the good mentality of the managers. Some of them are not even – they don’t know why these protected areas are established.⁶⁰¹

⁵⁹⁸ UNDP/MSEA/EEAA, 2010, *Strengthening Protected Area Financing And Management Systems*, pp. 29.

⁵⁹⁹ This is a UNESCO funded effort to improve knowledge about biodiversity management

⁶⁰⁰ Samir Ghabbour, author interviews conducted October, 2008. Taken from transcript of digital voice recording.

⁶⁰¹ Former director of Red Sea protectorates, author interviews conducted September, 2008. Taken from transcript of digital voice recording.

Minimal Success in Promoting Tourist Reform

As described above, members of the TAN, particularly Sherif Baha el Din, had some input in the design of formal ecotourism projects and in the inclusion of MSBs as a developmental concern in the Red Sea area. However, TAN members indicated that this inclusion was ephemeral at best. In particular, respondents indicated that gaining full state support would rely on projecting improbably large and rapid returns on promoting ecotourism based on bird-watching. Failing this, the project risked a loss of institutional support.⁶⁰² This was especially problematic, given that, as described in interviews, commitment to improved management tended to fade when initial impetus – such as funding generated from USAID and LIFE projects – ended.⁶⁰³

Another problem with these funded projects – I think they're great when the project is still funded, because they're constantly putting in money. As soon as they leave, all the money coming in, is gone. There's no way to maintain what is established.⁶⁰⁴

Further, despite the LIFE project's inclusion of MSB management, the Egyptian Tourism Federation, a public-private partnership between the Ministry of Tourism and hoteliers, did not mention MSBs in their ecotourism plans in the Red Sea coast.⁶⁰⁵ Finally, as described below by a former protectorates manager from the South Sinai and a

⁶⁰² UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, p. 9.

⁶⁰³ See Jeannie Sowers, 2007, *Embedded Autonomy Revisited*, pp. 394.

⁶⁰⁴ Ahmed, author interview conducted September 2008. Taken from transcript of digital voice recording.

⁶⁰⁵ UNDP/Birdlife, 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway*, pp. 11.

study on biodiversity capacity building in Egypt, the problem with ecotourism implementation in Egypt is that policymakers and managers may use the term to refer to a broad array of practices, even those which are contrary to the spirit of environmentally sustainable management:

...all the hotels in Sharm say that they have an ecotourism. Because the people come and enjoy the open air, the nature. But over there is not completely – it's not ecotourism. Ecotourism is going in your virgin places and trying to not hurt that virginity, and using whatever minimum resources... But you go over there, one guest over there in Sharm uses about 2, 3 cubic meters of water daily, and about, let us say, 10, 20 kilowatts of electricity. So, it's not ecotourism.⁶⁰⁶

While “ecotourism” has become a fashionable term used in the development realm, its practical implementations have been of variable quality.⁶⁰⁷

Integrate Biodiversity with Energy Management

The primary success in the TAN's efforts to influence biodiversity conservation and mainstream MSB concern occurred with energy management in the Red Sea. The German Development Bank responded favorably to Hilgerloh's suggestion, banning construction in the southern three zones, and committing to search for alternative sites for future construction in Egypt.⁶⁰⁸ In that case, the recommendations of the civil society became practice. However, the fact that this took place in an area not administered by

⁶⁰⁶ Former manager of South Sinai protectorate, author interviews conducted September 2008. Taken from transcript of digital voice recording.

⁶⁰⁷ MSEA/EEAA, 2006, *Biodiversity Conservation Capacity Building in Egypt*, pp. 155.

⁶⁰⁸ EgyBirdGroup, personal communication; See also <http://www.wind-watch.org/documents/huge-wind-farm-in-the-migration-bottleneck-of-zait-bay-egypt/>.

governmental agencies emphasizes the fact that the civil society had little influence in the design and implementation of governmental policymaking in biodiversity conservation in this case.

Conclusion

Formally, the effort of the TAN to “mainstream” concern about migratory soaring birds in various sectors in Egypt was successful. As indicated above, concerns about MSB conservation and habitat management were incorporated into existing plans for protected areas management, including bilateral tourist development projects in the Red Sea, national biodiversity management objectives, and into energy management plans.

However, the TAN remained dissatisfied with the actual institutional response to MSB management. First, despite the formal recognition of MSB concerns in policy documents and national strategy plans, the actual governmental response to new information remained hampered by centralization and institutional distortions in natural resource management. The Protectorates Division and the NCS continued to suffer from a lack of resources and low institutional autonomy. The long-term commitment of the MSEA/EEAA to MSB mainstreaming, beyond verbal inclusion in project documents was not considered meaningful by TAN interview respondents.

Second, with few exceptions, the TAN remained excluded from the policy decision process. Although the NCS maintained some ties with members of the MSB TAN, including Sherif Baha el Din and Mindy el Din, this communication did not extend to the rest of the NCE, or the MSB oriented network. Despite the formal inclusion of the

NCE in the MSEA/EEAA's efforts, interview respondents were unanimous in stating that the NCE had no formal input into the implementation of the project, the allocation of resources, or the priorities set in management. The one sector that evinced TAN success was in wind farm construction, and that occurred primarily because ornithologists were able to influence the German Development Bank, the funding agency behind wind farm construction in Gebel el Zeit, not due to any success in persuading Egyptian policymakers directly. At the local management level, members of the TAN were occasionally able to make contact with park rangers in, for example, Red Sea protectorates and Sant Katherin for training sessions and information exchange, but these successes were unorganized, and unsystematic.

To some extent then, the failure of the TAN in this case may be overdetermined. As argued in the previous chapters, there is no support for the idea that using economic arguments will improve TAN influence in developing countries: H1: epistemic communities and advocacy networks will be comparatively successful in influencing environmentally friendly management in LDCs if they use economic arguments to justify action. In addition, the network did not generate an intersubjective consensus, nor was it able to socialize with policymakers in relevant natural resource management agencies. Thus, both H2: epistemic communities will be more successful in generating influence than other kinds of TANs and H3: Socialization improves the influence of epistemic communities would indicate that the TAN would have limited chance of success in this case.

Here, the data suggest that low socialization, more so than a lack of consensus, prevented the TAN from influencing management. In this case, the exclusion of the MSB TAN from de facto project management, and the lack of support from the MSEA/EEAA presented a barrier to the network's information generation efforts. As suggested, socialization between the civil society and policymakers, as well as the ability of the civil society TAN to generate a knowledge consensus, were undermined by the personalist, autocratic Egyptian natural resource management regime.

Implications for Effective Environmental Governance

As described in this and the previous three chapters, the domestic governance of globally relevant biodiversity was influenced by the advocacy efforts of transnational networks of experts. These networks were constituted when various researchers around the world became concerned about ecosystem health in sensitive areas, and drafted or participated in the design of GEF-funded projects aimed at supporting state capacity to implement Party obligations to the CBD. As described throughout, these obligations included carrying out activities such as state-driven *in situ* conservation and conducting biodiversity taxonomies. Despite the beliefs of transnational advocates and policymakers, strategically designed arguments highlighting the purported economic attractiveness of environmental management had no independent impact on the influence exercised by networks of experts.

When transnational networks generated an intersubjective consensus on the causal dimensions of an environmental problem, and when they were able to socialize with

policymakers in natural resource management agencies, state bodies were more willing to undertake real reforms in biodiversity management. In addition, this chapter indicates that the domestic political organization of the state also matters. Since socialization is crucial to transmitting knowledge and beliefs from transnational networks to managers, modes of political organization that preclude socialization, such as extreme political centralization and autocracy, are not likely to support epistemic community influence.

While the reforms proposed by epistemic communities and advocacy networks may not, in the long run, solve the problems of biodiversity governance in their respective issue areas due in part to exogenous factors,⁶⁰⁹ epistemic communities and advocacy networks can persuade states to take action where otherwise they might not have. In other words, transnational networks of concerned experts contribute to the effectiveness of international biodiversity governance.⁶¹⁰ Indeed, as described in these cases, understanding how transnational advocacy function is key to understanding how states understand and implement MEAs.

⁶⁰⁹ For example, with respect to Chapter 4 and the SAM Project, coral reefs are sensitive to increasing ocean temperatures, which are driven by global climate change. Therefore, even with unprecedented action by managers in Mexico, rising temperatures could lead to a loss in coral reef coverage in the Mesoamerican basin.

⁶¹⁰ Using positive change short of full compliance under a treaty as a measure of environmental effectiveness is used throughout the literature on global environmental governance, including in: Peter Haas, Robert Keohane and Marc Levy, 1993, *Institutions for the Earth: Sources of Effective Environmental Protection* (Cambridge: MIT Press); Ronald B. Mitchell, 2001, Institutional Aspects of Implementation, Compliance, and Effectiveness, in Urs Luterbacher and Detlef F. Sprinz, ed., *International Relations and Global Climate Change* (Cambridge: MIT Press); Carsten Helm and Detlef F. Sprinz, 2000, Measuring the Effectiveness of International Environmental Regimes (*Journal of Conflict Resolution*, 45(5): 630 – 652).

The implication then is that other factors are less important in explaining effective global governance. In particular, this conclusion differs from schools of global environmental governance that attribute effective management to regime characteristics, including the specificity of requirements, procedural transparency, and capacity building in weak states.⁶¹¹ When regimes are improperly designed, states will be less willing to carry out cost prohibitive management. This is particularly likely in environmental problems such as biodiversity governance, where the global benefits of effective management are dispersed, but the costs concentrated.

The following chapter therefore engages with the question of regime design, to investigate whether variation in regime design explains the variation in state commitment among these cases to carrying out domestic policies for biodiversity governance. As mentioned in the Introduction and throughout, while all three states have signed the CBD, it is not the only international or regional MEA relevant to the projects described. Each participating case is situated in a *sui generis* complex of international agreements and declarations, including the Tulúm Declaration in Mexico and AEWA in Egypt. As such, it is entirely possible that variations in the characteristics of the MEAs relevant to each country will explain variations in the state behavior described here.

⁶¹¹ See Ronald B. Mitchell, 2006, Problem Structure, Institutional Design, and the Relative Effectiveness of International Environmental Agreements, (*Global Environmental Politics*, 6 (3): 72 – 89); Ronald B. Mitchell, 1994, Regime Design Matters: Intentional Oil Pollution and Treaty Compliance (*International Organization* 48(3): 425 – 458).

Table 5.1: List of MSB Policy Makers

AGENCY	JURISDICTION EST. THROUGH	ACTIONS
Governorates (esp. Red Sea and Sinai)	Political Geographic divisions	Tourist regulations; municipal management
Tourist Development Authority	Executive power	Tourism regulations and support for tourist development
MSEA/EEAA	Law 4/1997 Law 102/1983	Allocation of funds for environmental regulation; Lead agency of NCS
NCS	Agency of MSEA/EEAA; Law 102/1983	Management of protected areas (in Protectorates Division); Regulation of biodiversity, including taxonomy (in Biodiversity Unit)
Executive Branch	Formal and informal executive power	Land use zoning, allocation of funds, de fact political centralization of power

Table 5.2: List of TAN Members in the MSB Project

ORGANIZATION	INDIVIDUALS	FUNCTIONS	SCIENCE TRAINING
Birdlife International	Graham Tucker	Threat assessment, species monitoring	Ornithology
	Richard Porter	Species monitoring	Ornithology
	Sherif Baha el Din (also NCE)		Ornithology
	Mindy Baha el Din (also NCE)	Species monitoring	Ornithology
Cairo University	Mohammed Kassas (also NCE)	Protected areas ecology; biodiversity studies	Ecology
NCE	Hala Barakat		Ornithology
	Mary Megalli	Species and habitat monitoring	Ornithology
	John Grainger (also EgyBirdGroup)	Species and habitat monitoring	Ornithology
	Mohammed Amin	Species and habitat monitoring	Ornithology
EgyBirdGroup	István Moldován	Ranger training / habitat monitoring/species monitoring	Ornithology
	Tom Coles	Species and habitat monitoring	Ornithology
	Nick Williams	Species and habitat monitoring	Ornithology
	Dick Hoek	Species and habitat monitoring	Ornithology
	Alaa El-Din	Habitat monitoring and protected areas management	Ranger
	Gudrun Hilgerloh	Habitat monitoring	Ornithology

Table 5.3: Summary of Observed and Predicted Outcomes in MSB Advocacy

Agency	Desired Outcomes	Independent Variable Present			Observed Influence
		<i>Economic Framing</i>	<i>Consensus</i>	<i>Socialization</i>	
MSEA/EEAA	Improve overall protected areas management through implementation of existing laws	✓			No
	Adopt MSB concerns in existing protected areas	✓			No
	Include Bedouins and local users in natural park management plans	✓			No
TDA	Include MSB concerns in tourism and ecotourism	✓			No
	Adopt environmentally friendly tourism regulations				No
	Include Bedouins and local users in natural park management plans	✓			No
Governorates	Support inclusion of MSB concerns in ecotourism planning	✓			No

Figure 5.1: Map of Governorates of Egypt⁶¹²



⁶¹² This map does not show the Helwan governorate.

Figure 5.2: Protectorates in Egypt, est. 1997 Land Utilization Map

EXISTING AND PROPOSED NATURAL PROTECTORATES IN EGY

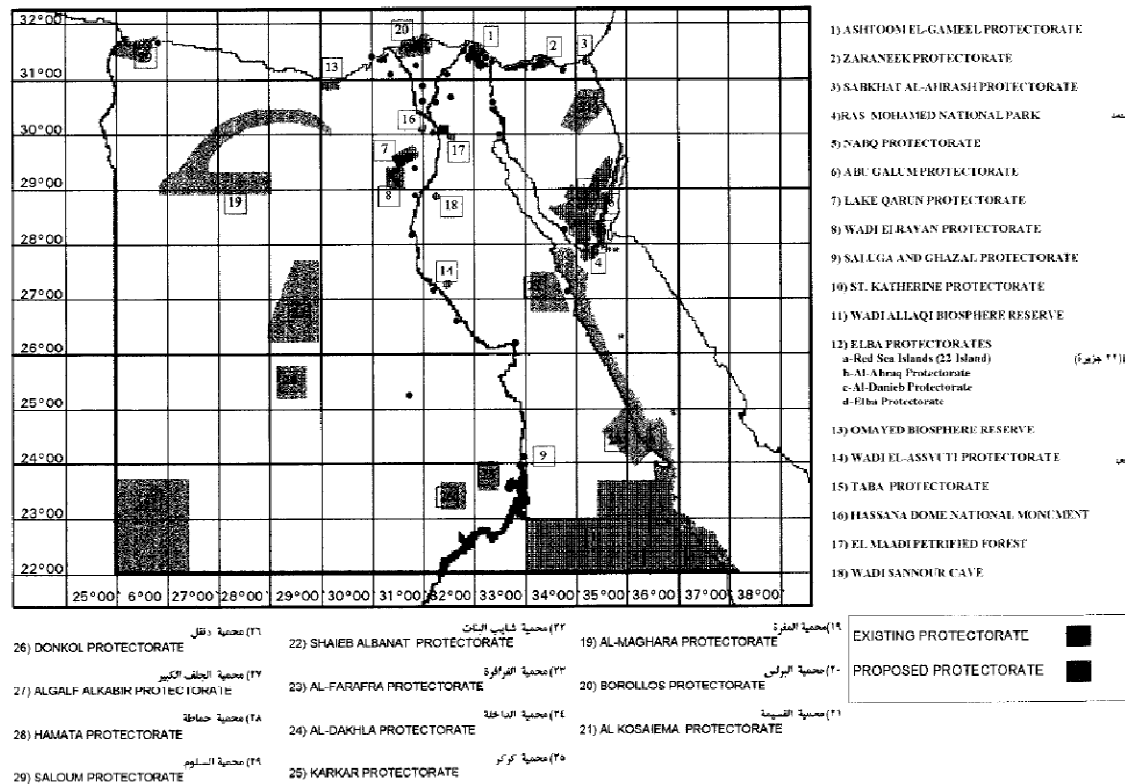


Figure 5.3: Map of BLI Registered IBAs

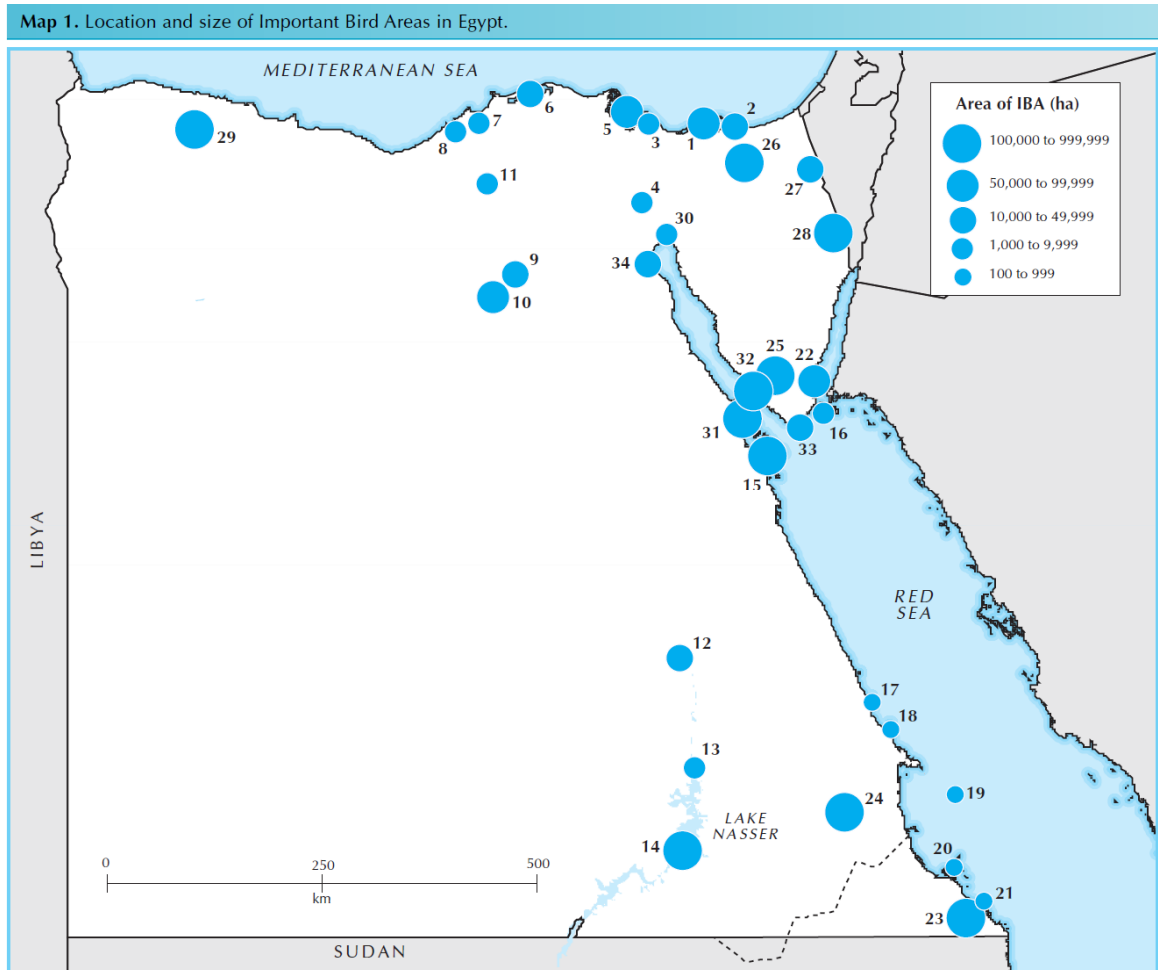
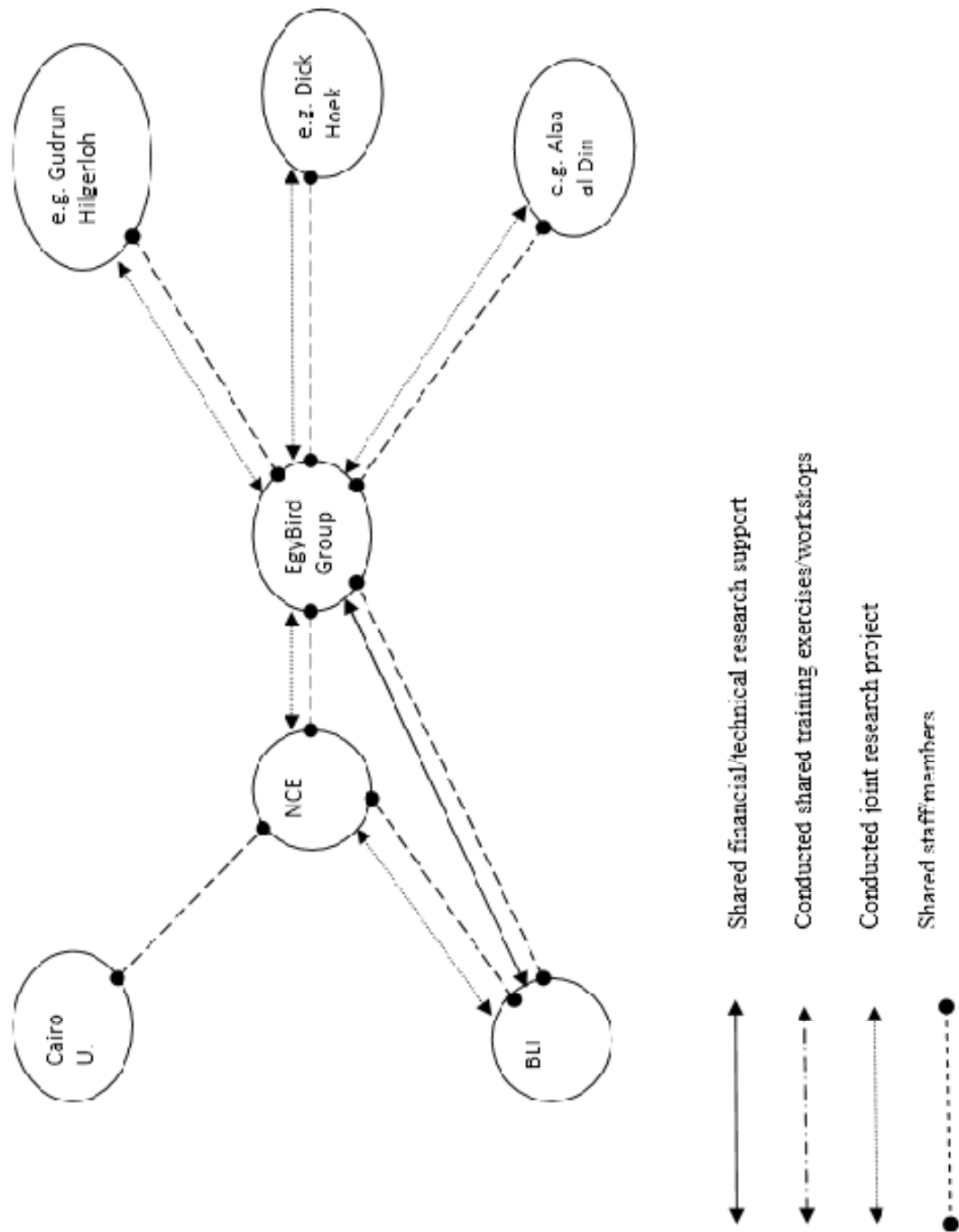


Figure 5.4: Diagram of MSB TAN Links



CHAPTER 6

INSTITUTIONAL DESIGN ANALYSIS

Introduction

The previous chapters argue that the commitment of state policymakers to environmental governance can be influenced by the actions of transnational knowledge networks. As indicated, networks that generate socialization between themselves and target audiences, as well as an intersubjective consensus, will be more likely to persuade policymakers and managers to adopt their policy recommendations and act accordingly. However, while policymakers, academics and advocates may believe that economic framing increases the likelihood that networks will be able to influence state environmental management, there is no support for this argument.

This gives a constructivist explanation for global environmental outcomes. Changes in environmental behavior are attributed to the ability of transnational networks to generate norms and persuade policymakers and managers to internalize these norms and act accordingly. Consequently, the analysis here is engaged primarily with the interplay between the transnational level of norms and knowledge and the domestic level of local politics and civil society participation. As described throughout, this multi-level, normative approach has implications for the study of international environmental relations, by offering explanations of how governments respond to their obligations under multilateral environmental agreements (MEAs).

Conversely, a level of analysis that examines the relationship between states and international institutions is discounted as not offering explanatory power. This focus on transnational processes should be justified, as approaches at the international level argue that state behavior is conditioned, not by norms deployed by non-state actors, but by the structures and rules of international institutions. In general, state-centric approaches argue that international outcomes can be meaningfully shaped by institutions that are designed such that they, among other things, provide financial incentives to laggardly actors; clarify appropriate rules; and specify requirements for compliance.⁶¹³ The study of international institutions has to include a two-level perspective, as obligations and incentives have to be translated through domestic implementing agencies in relevant cases. Nevertheless, from this perspective, the international regime, consisting of the actions, expectations, rules and negotiations of states, comprises the “basic unit of analysis,”⁶¹⁴ so that variations in regime design explain variations in state behavior.

This argument should be tested, as the cases studied here in Jamaica, Mexico and Egypt were embedded in different complexes of international institutions. These

⁶¹³ See *inter alia*, Edward L. Miles et al, ed., 2002, *Environmental Regime Effectiveness: Confronting Theory with Evidence* (Cambridge: MIT Press); Helmut Breitmeier, Oran R. Young and Michael Zürn, 2006, *Analyzing International Environmental Regimes from Case Study to Database* (Cambridge: MIT Press); Oran Young, ed., 1999, *The Effectiveness of International Environmental Regimes* (Cambridge: MIT Press); Peter Haas, Robert Keohane and Marc Levy, 1993, *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, MA: MIT Press); Robert Keohane and Marc Levy, ed., 1996, *Institutions for Environmental Aid* (Cambridge: MIT Press).

⁶¹⁴ Helmut Breitmeier, Oran R. Young and Michael Zürn, 2006, *Analyzing International Environmental Regimes from Case Study to Database* (Cambridge: MIT Press) p. 229.

complexes vary significantly in regards to their design structure, despite a common concern with protected areas and biodiversity management. As indicated in **Table 1.1** in the Introduction, and as discussed in the chapters throughout, the projects emerged subsequent to biodiversity-oriented MEAs and institutions. Some of these are held in common across all cases, including the Convention on Biological Diversity (CBD), the United Nations Environment Programme (UNEP) and the Global Environment Facility (GEF), while others, such as the Ramsar Convention and the Convention on Migratory Species (CMS) are only relevant to some. Consequently, in each of these cases, the governmental natural resource agencies discussed throughout could be responding primarily to the incentives and obligations contained in these institutions, rather than to the norms and knowledge deployed by transnational networks.

In order to have confidence in the utility of the transnational network approach, it is necessary to test the explanatory power of the institutionalist approach. The following sections explain how institutions constrain state behavior, and then examine the integration of natural resource agencies in international institutions across cases.

The Explanatory Power of International Institutions

Constraining State Behavior

The international institutionalist perspective argues that institutions, such as international organizations, multilateral environmental agreements (MEAs), secretariats, and Conferences of the Parties (COPs) can constrain the behavior of states. Institutions do this by structuring incentives for action, generating shared expectations, coordinating

behavior, and formalizing rules and obligations to which states generally abide. As such, institutions can contribute to the effective management of global problems, by encouraging states to take needed action where they otherwise would not.⁶¹⁵ This applies even if the behavioral change observed stops short of some ideal metric of compliance.⁶¹⁶

Of course, the existence of an institution is not sufficient to cause changes in behavior. Institutions have to be constructed in such a way as to maximize the likelihood that governments and their regulatory agencies will carry out the domestic requirements of institutional compliance. For example, where institutions provide clearer obligations, link regime requirements to issues of concern to states, and establish greater financial assistance, the behavior of participating governments will be more likely to converge on the desired behavior of a given regime.

Designing Effective Institutions

The literature gives a fairly consistent set of explanations as to how institutions may structure incentives for states to comply with international obligations. Effective institutions, that is, those most likely to influence state behavior, are theorized to be those

⁶¹⁵ Edward L. Miles et al, ed., 2002, *Environmental Regime Effectiveness: Confronting Theory with Evidence* (Cambridge: MIT Press); Helmut Breitmeier, Oran R. Young and Michael Zürn, 2006, *Analyzing International Environmental Regimes from Case Study to Database* (Cambridge: MIT Press); Oran Young, ed., 1999, *The Effectiveness of International Environmental Regimes* (Cambridge: MIT Press).

⁶¹⁶ Ronald Mitchell, 2001, Institutional Aspects of Implementation (in Urs Luterbacher and Detlef F. Sprinz, ed., *International Relations and Global Climate Change*, Cambridge: MIT Press); Arild Underdal, 2002, One Question, Two Answers (in Miles et al, *Environmental Regime Effectiveness*, Cambridge: MIT Press).

exhibiting the “three C’s” described in 1993 by Haas, Keohane and Levy.⁶¹⁷ That is, effective environmental institutions will be those that provide or foster *concern* among participating governments, a *contractual environment* conducive to making credible commitments, and the *capacity* of participating states to carry out their requirements. These are found in institutions that, among other things: provide financing or a funding mechanism to needy states, establish clear and well-defined requirements, create a credible monitoring and reporting system, and encourage the participation of NGO and civil society experts.⁶¹⁸ No single one of these features is sufficient, and in fact these are inter-related and self-reinforcing.⁶¹⁹ The following elaborates on the mechanics of providing the “three Cs.”

⁶¹⁷ Peter Haas, Robert Keohane and Marc Levy, 1993, *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, MA: MIT Press). See Andrea K. Gerlak, 2004, One Basin at a Time: The Global Environment Facility and the Governance of Transboundary Waters (*Global Environmental Politics*, 4: 108 – 141) for a recent discussion on the three C’s as applied to biodiversity management institutions.

⁶¹⁸ See *inter alia*, Ronald Mitchell, 2001, Institutional Aspects of Implementation (in Urs Luterbacher and Detlef F. Sprinz, ed., *International Relations and Global Climate Change*, Cambridge: MIT Press); Oran Young and George Demko, 1996, Improving the Effectiveness of International Environmental Governance Systems, in Oran Young et al, eds. *Global Environmental Change and International Governance* (Hanover: University Press of New England); Oran Young, ed., 1999, *The Effectiveness of International Environmental Regimes*; Ronald B. Mitchell, 2006, Problem Structure, Institutional Design, and the Relative Effectiveness of International Environmental Agreements, (*Global Environmental Politics*, 6 (3): 72 – 89); Ronald B. Mitchell, 1994, Regime Design Matters: Intentional Oil Pollution and Treaty Compliance (*International Organization* 48(3): 425 – 458).

⁶¹⁹ Oran Young, ed., 1999, *The Effectiveness of International Environmental Regimes* (Cambridge: MIT Press), p. 20.

Concern

One of the fundamental obstacles to implementing the obligations of environmental institutions is a lack of political will among the relevant governmental agencies tasked with carrying out domestic regulation. After all, while the goal of institutionalist approaches is to explain state behavior, international treaties are implemented when governments translate requirements into domestic action. As a result, effective regimes should promote sufficient *concern* about the need to take necessary action among implementing states and their regulatory agencies and influential domestic actors.

With regard to carrying out biodiversity-oriented MEAs, concern can be generated in several ways. Within implementing states, the management of ecosystems could be linked domestically to the interests of privileged sectors, such as tourism and trade industries. In addition, the concern of the central government itself could be raised by linking ecosystem management to other MEAs, such as those dealing with climate change, land degradation or deforestation, thus raising the profile of a given issue.

An important component of concern as well, is whether credible, institutionalized knowledge is available to all stakeholders. Institutions that provide a forum for centralized knowledge gathering, and disseminate expert information to central governments and to domestic sectors can lead to a growing awareness among key actors of the severity of environmental problems and the need for urgent action.

Capacity Building

One of the primary obstacles to generating positive change in environmental policy and practice is the fact that without sufficient resources, even the most environmentally sympathetic government will find it difficult to carry out needed reforms. As a result, effective regimes should promote capacity in key states and domestic actors. A prominent recommendation for building capacity in global biodiversity management is the provision of a funding mechanism to relevant parties, particularly developing countries.⁶²⁰ As observed earlier, one of the challenges facing biodiversity governance is the fact that the costs of implementing regulations pursuant to biodiversity MEAs are borne by LDCs, while the benefits received, whether aesthetic, moral, or pharmaceutical, are dispersed globally. Providing sufficient funds to LDCs to offset the costs of regulating and protecting the environment is thus critical. Financial incentives are not the only means of capacity building, however. Accurate technical knowledge, training, up-to-date information, and recommendations for effective management practices can all contribute to the capacity of states to manage emerging problems, by clarifying the most effective courses of action.

⁶²⁰ For a recent synopsis of various arguments on enhancing capacity and aid, see in particular Stacy D. VanDeveer, and Geoffrey D. Dabelko. 2001. It's Capacity, Stupid: International Assistance and National Implementation (*Global Environmental Politics* 1: 18– 29). See Simon Lyster, 1996, Effectiveness of International Regimes Dealing with Biodiversity from the Perspective of the North, (in Oran Young et al, eds. *Global Environmental Change and International Governance*) for a specific discussion of the role of financial assistance in generating capacity and will in LDCs pursuant to biodiversity management.

Contractual Environment

Finally, a hospitable contractual environment provides the ability for states to make credible commitments, fulfill requirements, and generate converging expectations of appropriate behavior. Again, this is a multidimensional metric, depending on several interrelated factors. For states to make credible commitments, regimes should be constructed so that it is possible to monitor the activities of states' that impinge on the goals of constructed regimes. Regular monitoring and reporting not only verifies when states are in violation of treaty requirements, but may also assist states in gathering information on domestic environmental activity. For example, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) requires Parties to collect data on the status of domestic legislation on species and habitat management, while identifying and maintaining national records on the transit of species governed by the Convention.⁶²¹ Similarly, Parties to the Kyoto Protocol of the UN Framework Convention on Climate Change (UN FCCC), as part of their reporting and monitoring requirements, have to create national monitoring centers, using methodologies created by the Intergovernmental Panel on Climate Change (IPCC) to evaluate domestic contributions to global climate change.⁶²²

However, having states monitor and report on compliance efforts will not necessarily lead to effective management unless it is clear what compliance entails. For

⁶²¹ Convention on International Trade of Endangered Species of Wild Fauna and Flora, Article 7, 13 March 1992.

⁶²² See relevant decisions in Kyoto Protocol, Articles 5, 7 and 8, and the 3rd Conference of Parties to the Kyoto Protocol, FCCC/CP/1997/7.Add.1 Decision 2/CP.3

example, a requirement that Parties take a specific step toward treaty implementation, such as requiring a 30% cut in sulfur emissions or transboundary fluxes among neighboring European states,⁶²³ allows actors to make accurate assessments about whether or not states are fulfilling their obligations. Conversely, broad, open-ended obligations, for example exhortations that Parties improve governance, allow for substantial ambiguity in measuring compliance. Thus, the more specific the requirements for treaty implementation are, the more the treaty enhances the contractual environment of compliance.

The Role of the Global Civil Society

Institutionalists do address the potential participation of the global civil society. As dynamic sources of information, civil society actors such as ENGOs and epistemic community networks can contribute to all dimensions of effective regime design.⁶²⁴ As proselytizers about emerging problems, the civil society can contribute to state *concern*. As sources of expertise and knowledge, they may contribute to state *capacity* to respond to emerging problems. Finally, by contributing to monitoring and reporting, the civil society may enhance the *contractual environment* of regimes by ensuring that infractions will be recorded.

⁶²³ Taken from the Helsinki Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution (UN ECE LRTAP).

⁶²⁴ See Edward L. Miles et al, ed., 2002, *Environmental Regime Effectiveness: Confronting Theory with Evidence* (Cambridge: MIT Press).

This argument, while asserting some agency to non-state actors and transnational NGOs, differs from the cognitivist-ideational approach taken by the dissertation. The global civil society matters in regime design, not because they influence how states conceptualize of their interests and identities, or because of their ability to shape the normative assessments of emerging environmental problems, but because they can contribute a knowledge base necessary for rational decision making.⁶²⁵ While potentially important to the conduct of regimes, their inclusion in institutions is purely functional, and again constrained by the rules of participation allowed by states.⁶²⁶ Thus, rather than shaping norms and commonly held understandings, networks of experts function as problem-solvers. At the same time, understanding how regimes and institutions constrain states still requires that some attention be paid to the actions of non-state actors, such as ENGOs.

Comparing Regimes: Variation in Project Embeddedness

With this in mind, the following section describes the institutions invoked by the projects studied. As described above, each of the projects examined in the case studies is embedded in a different constellation of international institutions; each references ecosystems, species, and management approaches that invoke different international and regional MEAs created to manage, *inter alia*, fish, flora, coral reefs, wetlands and

⁶²⁵ Arild Underdal, 2002, One Question, Two Answers.

⁶²⁶ See in particular, Kal Raustiala, 1997, States, NGOs, and International Environmental Institutions (*International Studies Quarterly*, 41: 719 – 740)

rainforests. Some projects invoke specific obligations of MEAs, some are only tangentially related.

In the following section, I identify which MEAs are invoked by the GEF Projects. I measure how each constellation of MEAs generates concern, provides capacity, and enhancing the contractual environment among Parties in the interest of global biodiversity management. In particular, I examine how these MEAs and obligations are incorporated into the natural resource agencies discussed in each case. As indicators of *concern*, I examined whether the relevant institution linked biodiversity management to other local or international issues, and disseminated promotional information on the state of the environment. To measure the *capacity building* strength of the institution, I examined whether the institution provided financial support for project implementation, or fostered the production of expert knowledge linked to effective project management. This was enhanced if the institution made recommendations of best practices in environmental management.

Finally, to identify whether the *contractual environment* of an institution was conducive to carrying out biodiversity management, I examined the goals of the institution to see if they reinforce and replicate the goals of the project. For example, institutions will enhance the contractual environment of a project if they call on Parties to take action in specific geographic locations, or to protect the species identified in the GEF-funded projects.

The indicators of *concern*, *capacity-building*, and the hospitableness of the *contractual environment* were measured by examining the features of the various

institutions invoked by the projects. These features included the texts of treaties and their associated Protocols, resolutions, and recommendations adopted at various Conferences of the Parties (COPs). I also examined domestic and international institutions created pursuant to the various treaties, including domestic standing technical or scientific bodies; funding mechanisms; and central clearing houses of information. In each case, the mechanisms through which the institution promotes the three Cs are explained below.

Regime Design: the CBD and the GEF

Since the projects were established pursuant to the Convention on Biological Diversity (CBD) and financed by the Global Environment Facility (GEF), these institutions are the first addressed here. All parties are members of the CBD, and all have received funds from the GEF for carrying out these projects. As a result, the ratification of these institutions will not predict variation between the Parties in their commitment to the domestic implementation of global biodiversity obligations. Nevertheless, insofar as they contribute to the ability of states to carry out biodiversity management, the CBD and the GEF are discussed below.

Concern

As currently designed, the CBD has a variety of mechanisms that were designed with the purpose of promoting greater concern about biodiversity in participating states. First, the Parties to the CBD created mechanisms to promote and disseminate information highlighting the global importance of biodiversity conservation. At the first Conference

of the Parties (COP-1) in 1994, member states cited Article 18.3 calling on Parties to create a central clearing house of information within the Convention, called the Clearing House Mechanism (CHM).⁶²⁷ Between 1994 and 1999, the CHM entered into a pilot phase, and succeeding COPs elaborated on the function of the institution. COP-2 recommended that Parties establish national CHM focal points as part of a global information exchange network,⁶²⁸ and COP-4 requested that Parties promote the inclusion of knowledge generated from local and indigenous communities.⁶²⁹

These and other recommendations emphasizing the decentralized collection of biodiversity-related knowledge and the dissemination of such knowledge among Parties were adopted after the end of the pilot phase at COP-5.⁶³⁰ Currently, the Information Centre of the CHM continues the mandate of disseminating knowledge by producing synthetic reports on the state of global biodiversity, including the Global Biodiversity Outlook and assorted newsletters.

Second, the CBD and the GEF have attempted to link biodiversity conservation with other international obligations as a means of generating concern. At COP-6, the Secretariat of the CBD linked biodiversity loss with the goals of other MEAs, including the Convention to Combat Desertification, the Framework Convention on Climate Change (reiterated at COP-10), the Cartagena Convention, and the Ramsar Convention

⁶²⁷ UNEP/CBD/COP/1/Decision I/3

⁶²⁸ UNEP/CBD/COP/2/Decision II/3.4, Decision II/3.5

⁶²⁹ UNEP/CBD/COP/4/Decision IV/2.10

⁶³⁰ UNEP/CBD/COP/5/INF/3

on Wetlands. This was carried out to highlight the synergy between the CBD and other MEAs, some of which are specific to the countries discussed in the dissertation.⁶³¹ As suggested above, the fact that multiple treaties invoke the same, or overlapping obligations, arguably reinforces the concern of member states to carry these obligations out.

Further, pronouncements made at COP-6 and COP-7 of the CBD recommended that parties link biodiversity management with important domestic concerns, especially those with economic development implications, such as tourism, trade and labor.⁶³² The link between domestic development and biodiversity was reinforced in 2006, when the GEF promoted “biodiversity mainstreaming,” or the integration of “the sustainable use of biodiversity into the sectors of the economy that strongly impact biodiversity outside of protected areas,”⁶³³ pursuant to a recommendation made by its Scientific and Technical Advisory Panel (STAP).⁶³⁴

Domestic Internalization

In each case, this concern was incorporated into domestic natural resource management agencies. Pursuant to Article 18.3 and decisions taken at COP-2, the

⁶³¹ UNEP/CBD/COP/6/Decision VI/15/Annex II.14

⁶³² UNEP/CBD/COP/6/Decision VI/15/Annex II.15; UNEP/CBD/COP/7/Decision VII/14

⁶³³ GEF-4 Biodiversity Strategy, pg. 8.

⁶³⁴ GEF-4 Biodiversity Strategy, pg. 8.

relevant countries created national Clearing House Mechanisms as part of a global information-sharing network. There was, however, some difference across cases in the relationship between the national CHM and the government. In Jamaica, the national Clearing House Mechanism was a quasi-independent institution, housed in the Institute of Jamaica (IOJ), a governmental cultural organization. In contrast, the national CHMs of Mexico and Egypt were more directly involved in natural resource management. The Egyptian CHM is located in the Nature Conservation Sector, a branch of the environmental ministry (MSEA/EEAA), while the Mexican CHM is situated in the *Comisión Nacional para el Uso y Conocimiento de la Biodiversidad* (CONABIO).⁶³⁵ As described in Chapters 3 through 5, the MSEA/EEAA and CONABIO are two of the major policymaking institutions in the MSB Project in Egypt, and the CBMMx Project in Mexico respectively, while the Jamaican CHM functioned primarily as an additional actor within the epistemic community network. Nevertheless, this process indicates the interplay between domestic level structures and international institutions.

Capacity

The primary capacity building institution within the biodiversity regime is the GEF, administered financially and technically by the World Bank, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP). The GEF was created specifically to transfer funds and technical expertise to

⁶³⁵ Information on the location of the national CHMs is taken from the CBD's webpage on the Clearing House Mechanism, retrieved online, February 2011 from <http://www.cbd.int/chm/>

developing countries, under the rationale that most of the terrestrial biodiversity exists within the jurisdiction of LDCs, and that urgent action within these countries is central to effective conservation of biodiversity.⁶³⁶ While the World Bank and the UNDP are the prominent financiers of GEF activity,⁶³⁷ the UNDP and UNEP also engage in capacity building, through project support, and conducting technical training with natural resource agencies in Parties.⁶³⁸ In the most recent funding cycle for GEF, for 2006 – 2010, the organization allocated \$2.8 billion for biodiversity management projects in Parties to the CBD.⁶³⁹

⁶³⁶ UNEP Global Biodiversity Assessment, cited in Rosendal, *Interacting International Institutions* pg. 3; see also Lyle Glowka et al. 1994. *A Guide to the Convention on Biological Diversity* (IUCN: Gland, Switzerland) p. 1. This conclusion has also been reiterated in meetings of the administrative bodies of the Convention, including the first Conference of the Parties (COP-1): “The genetic resources are, to a large extent, found in the developing countries” (UNEP/CBD/COP/1/Inf.9). The Global Environment Facility (GEF) was chosen to act as an interim mechanism in the first COP meeting, and was finalized through a Memorandum of Understanding as the permanent financial mechanism in the third COP meeting. See UNEP/CBD/COP/3/10, which contains a reproduction of the Memorandum.

⁶³⁷ According to GEF OPS4 as of 2009, the share of World Bank funds as part of GEF’s budget has declined from a high of 58% during the pilot phase, to less than 30% currently.

⁶³⁸ Andrea Gerlak, 2004, One Basin at a Time: The Global Environment Facility and the Governance of Transboundary Waters (*Global Environmental Politics* 4: 108 – 141)

⁶³⁹ GEF, 2010, OPS4.

Domestic Internalization

This capacity building process was further incorporated into domestic natural resource management agencies. In the projects studied, the GEF provided substantial funds to actors within the participating states. Again, there was substantial variation between cases in regards to the incorporation of this capacity building exercise into domestic institutions. In Jamaica, the GEF provided US\$200,300 to Birdlife International for the *Project for Sustainable Conservation* in the Cockpit Country.⁶⁴⁰ This project was to be carried out primarily by partnerships between Birdlife International and local NGOs, including Birdlife Jamaica and the Windsor Research Centre (WRC), and natural resource managers in the Forestry Department and the National Environment Protection Agency (NEPA).

In comparison, the GEF provided more direct capacity building to national regulatory agencies in Mexico and Egypt. The funds for the CBMMx Project in Mexico, in the amount of US\$14,840,000, were provided to the governmental financial agency, *Nacional Financiera A.C.* to be distributed to CONABIO.⁶⁴¹ In Mexico, GEF provided US\$680,000 directly to the MSEA/EEAA as the implementing partner, and another

⁶⁴⁰ United Nations Environment Programme (UNEP), *Global Environment Facility Project Document for project titled Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 26

⁶⁴¹ World Bank, 2000, *Mexico: Mesoamerican Biological Corridor* (World Bank project document), pp. 1

US\$1,100,000 through the Red Sea Governorate Project for MSB double-mainstreaming efforts in Egypt.⁶⁴²

Contractual Environment

While the GEF and the CBD institutions do contribute to generating concern among parties, and have established mechanisms for capacity building, the institutions have a weak contractual environment. The GEF has made ratification of the CBD a condition for receiving funds for the ongoing projects discussed in the research, thus establishing clear rules for compliance, and a system of incentives for doing so. Formally, the Convention is a binding treaty, and has specific obligations of which compliance can be measured.

However, the substantive obligations of the CBD are vague enough that there is sufficient scope for Parties to equivocate in practice, while formally complying with the procedural requirements of the treaty. The primary specific requirement of the CBD is the creation by Parties of a National Biodiversity Strategy and Action Plan (NBSAP) to outline the participating government's approach to managing biodiversity conservation,⁶⁴³ but the actual content of domestic implementation is left to the discretion of states. Further, there is a monitoring mechanism for the CBD, which is carried out by the Convention's Subsidiary Body for the provision of Scientific, Technical and

⁶⁴² UNDP/Birdlife International [Birdlife], 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway* (UNDP Project Document), pp. 102

⁶⁴³ Convention on Biological Diversity, Article 5.

Technological Advice (SBSTTA).⁶⁴⁴ However, the SBSTTA depends largely on self-reporting by the Contracting Parties to perform this function, rather than on conducting independent monitoring.⁶⁴⁵ Thus, on this metric, the CBD and the GEF provide a very weak contractual environment for regime implementation.

Domestic Internalization

Although the contractual obligations of the CBD and the GEF Projects were minor, they were nevertheless incorporated at the domestic level into governmental institutions. As mentioned above, the national governments of Jamaica, Mexico and Egypt all ratified the CBD prior to receiving funds for project implementation. In addition, in all cases, natural resource regulatory agencies were directly involved in drafting the NBSAPs, the Article 6 requirement. In Jamaica, the NBSAP was drafted by NEPA, in consultation with local experts;⁶⁴⁶ in Mexico, the NBSAP was drafted by

⁶⁴⁴ The SBSTTA also holds regular meetings, first meeting in 1995, having held 13 meetings to date. Taken from the Convention website on the SBSTTA, found at <http://www.cbd.int/sbstta/>.

⁶⁴⁵ Andrea Gerlak, 2004, One Basin at a Time: The Global Environment Facility and the Governance of Transboundary Waters (*Global Environmental Politics* 4: 108 – 141)

⁶⁴⁶ National Environment and Planning Agency (NEPA), 2003, *National Strategy and Action Plan on Biodiversity in Jamaica [NBSAP]*. (National Environment and Planning Agency: Kingston);

CONABIO;⁶⁴⁷ in Egypt, by the Biodiversity Unit, a subsidiary body of the NCS and the MSEA/EEAA.⁶⁴⁸

However, the CBD and the GEF are not the only institutions in which the projects are embedded. The following section describes the other MEAs relevant to the management of biodiversity in each of the countries carrying out the GEF-funded projects. In each case, the MEAs cited were taken from the ratified treaties listed by the Ministry of Environment of each country. The MEAs contribute either generally to biodiversity management pertinent to the project issue area, or contribute specifically to iterated goals within the project, as illustrated below.

Jamaica and Cockpit Country Management

Of the four case studies, the project carried out in the Jamaican Cockpit Country is the least embedded in additional international biodiversity institutions. Aside from the CBD and the GEF, the biodiversity MEAs invoked in this project are: 1) the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region⁶⁴⁹ (Cartagena Convention), 2) its 1990 protocol on specially protected areas and

⁶⁴⁷ CONABIO, 2000, *Estrategia nacional sobre biodiversidad de México*

⁶⁴⁸ MSEA/EEAA, 1998, *Egypt: National Strategy and Action Plan for Biodiversity*

⁶⁴⁹ Defined in Article 2 of the Cartagena Convention as “...the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30 deg north latitude and within 200 nautical miles of the Atlantic coasts of the States referred to in article [25](#) of the Convention.”

wildlife (SPAW Protocol),⁶⁵⁰ and 3) the Ramsar Convention. A summary table of the impact of these institutions on the management of biodiversity in the Cockpit Country is given in **Table 6.1: Summary Impact of Institutions on Cockpit Country**

Management. The following section explains how the *concern, capacity* and *contractual environment* found within these MEAs and institutions intersect with the goals of the *Project on Sustainable Conservation* and local natural resource management.

Concern

As discussed above, COP-6 of the CBD linked the biodiversity management goals of the Ramsar Convention with the CBD. While Cockpit Country management does not involve wetlands or littoral ecosystem management, this association arguably raises the profile of biodiversity management in Jamaica, as it is a signatory to the Ramsar Convention. In addition, NEPA, the environmental regulatory agency of Jamaica, is the national Ramsar Administrative Authority. While the Ramsar sites in Jamaica are all located on the south coast, there is some evidence that participation in this MEA has contributed to concern for ecologically-oriented biodiversity management in the national government. For example, the text of the Ramsar Convention and the 1999 COP-4 call

⁶⁵⁰ Kayenne Taylor, *Report on the Legal Imperatives and Implications of the Cockpit Country Conservation Project* (Kingston), pp. 10, 76; (UNEP), *Global Environment Facility Project Document* for project titled *Sustainable Conservation of Globally Important Caribbean Bird Habitats: Strengthening a Regional Network for a Shared Resource* (retrieved October 2005 from www.gefonline.org/projectDetails.cfm?projID=1604) pp. 88.

on Parties to manage wetlands in part to conserve migratory birds.⁶⁵¹ Since then, NEPA has carried out bird monitoring in Ramsar sites, most recently in 2010.⁶⁵² As mentioned in Chapter 2, the integration of ecosystem management with bird welfare was an important component of the *Project for Sustainable Conservation*. However, this contribution to direct concern for biodiversity management in the Cockpit Country is marginal.

The Cartagena Convention, drafted in 1983, was established subsequent to the 1979 Caribbean Environment Programme (CEP-UNEP), one of UNEP's Regional Seas Programmes. Cartagena establishes general obligations for Contracting Parties to conserve and sustainably manage marine ecosystems in the Caribbean Sea,⁶⁵³ to limit land-based sources of marine pollution,⁶⁵⁴ and calls on Parties to establish additional protocols augmenting regional environment.⁶⁵⁵ While the Cartagena Convention is primarily focused on conserving marine ecosystems, subsequent Meetings of the Parties

⁶⁵¹ Ramsar Convention, Article 5; Ramsar Convention COP-4, Recommendation 4.4 and 4.12.

⁶⁵² NEPA, 2010, *Wetland bird and habitat monitoring of 2 RAMSAR sites in Jamaica*. Retrieved online, February 2011 from http://www.nepa.gov.jm/projects/description/wetland_bird_habitat_monitoring.pdf

⁶⁵³ Cartagena Convention, Articles 3 and 4.

⁶⁵⁴ Cartagena Convention, Article 7.

⁶⁵⁵ Cartagena Convention, Article 4.

(MOPs) of the Convention have illustrated the linkage of biodiversity conservation to other global concerns, including climate change and coastal management.⁶⁵⁶

As a Party to the Cartagena Convention since ratification in 1987, chair of the Monitoring Committee in 2000, and as host to the offices of the CEP-UNEP, Jamaica has been central in the promotion of concern about biodiversity under the Cartagena Convention.

The SPAW Protocol also tangentially links marine biodiversity management to coastal and terrestrial ecosystems in the wider Caribbean ecoregion.⁶⁵⁷ As described in the 1999 Legal Assessment of land use policy,⁶⁵⁸ Hayes-Sutton's 2004 PAMP study,⁶⁵⁹ and in the GEF project documents,⁶⁶⁰ the SPAW Protocol could be invoked as a reason for conserving the Cockpit Country, insofar as the downstream degradation of mountain ecosystems could negatively impact coastal management.

Moreover, these elements of concern have also been incorporated at the domestic level in the Jamaican political system. As discussed in Chapter 2, the finding that downstream degradation from mountainous ecosystems was harmful to coastal management was reiterated in the 1999 NBSAP studies conducted on behalf of the

⁶⁵⁶ UNEP(DEC)/CAR IG.19/6

⁶⁵⁷ Preamble, Articles 4 and 5 of the SPAW Protocol.

⁶⁵⁸ Kayenne Taylor, *Report on the Legal Imperatives and Implications of the Cockpit Country Conservation Project*

⁶⁵⁹ Patrick Yugorsky and Ann Sutton, *Categorization of Protected Areas in Jamaica* (The Nature Conservancy: Kingston, 2004), pp. 7 - 8

⁶⁶⁰ UNEP, *GEF Project Document*, pp. 88.

NRCA/NEPA. More directly, the Jamaican national government is carrying out its obligations under the Cartagena Convention through domestic natural resource agencies involved in the Cockpit Country Project, namely NEPA and the Forestry Department. Under a National Plan of Action drafted in 2003,⁶⁶¹ NEPA is tasked with coordinating environmental management to reduce, among other things, coastal sewage disposal relevant to the goals of the Convention. In addition, the Forestry Department has the mandate to declare additional Forest Reserves in coastal zones needing protection. However, language associating mountainous ecosystems to marine management is not found within the SPAW Protocol itself, indicating again only a marginal connection between the MEA and the goals of the *Project for Sustainable Conservation*.

Capacity

Neither the Cartagena Convention, nor the SPAW Protocol, nor the Ramsar Convention has established mechanisms for capacity building relevant to Cockpit Country management. The information collected by the Secretariats for environmental management pertains to marine ecosystems; mountainous ecosystems such as the Cockpit Country, are not addressed. The primary capacity building efforts in regards to Cockpit Country management stem from the CBD and GEF funds provided for the *Project for Sustainable Conservation*.

⁶⁶¹ NEPA, 2004, *Jamaica's National Programme of Action for the Protection of the Coastal and Marine Environment from Land-Based Sources of Pollution* (Kingston: NEPA).

Contractual Environment

Similarly, none of the above listed MEAs impacts the *contractual environment* of the *Project for Sustainable Conservation*. Although terrestrial ecosystems are mentioned as potentially relevant to marine management in the SPAW Protocol, the Cockpit Country is not specifically mentioned, nor are mountainous ecosystems in general.

Mexico and the Mesoamerican Reef System

The SAM Project and the CBMMx Project both invoke Mexico, and so there is substantial overlap among the institutions in which they are both embedded. The institutions pertaining to the SAM Project are: 1) the Cartagena Convention; 2) its SPAW Protocol; 3) its Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol); 4) The Ramsar Convention; 5) The Tulúm Declaration; 6) the Centroamerican Commission on Environment and Development (CCAD); and 7) the Caribbean Environment Programme of the UNEP (CEP-UNEP).

A summary table of the impact of these institutions on the management of biodiversity in the Cockpit Country is given in **Table 6.2: Summary Impact of Institutions on SAM Management**. The following section explains how the *concern*, *capacity* and *contractual environment* found within these MEAs and institutions intersect with the goals of the SAM Project.

Concern

Concern about managing the Mesoamerican reef region is enhanced by the fact that several MEAs and institutions highlight the importance of governance in this area to myriad international obligations. The Ramsar Convention, as described above, raises the profile of biodiversity management in wetland ecosystems such as the Sian Ka'an Biosphere Reserve, part of the SAM Project's focal points. As in Jamaica, local regulatory agencies associated with GEF Project management have been incorporated into the country's obligations under the Convention. Mexico designated SEMARNAT and CONANP as the Administrative Authority and Focal Point respectively of the Ramsar Convention, requiring these agencies to participate in the regular Conferences of the Parties.

The Cartagena Convention, ratified by Mexico in 1985, links marine management in the Caribbean Sea, part of which includes Mexico's territorial waters in the Mesoamerican basin, to the broader goals of global biodiversity conservation. As described above in Jamaica, the Cartagena Secretariat holds regular MOPs, highlighting the importance of global marine management, and Article 7 of the Convention calls on Parties to prevent or reduce land-based pollution of marine ecosystems. SEMARNAT is the implementing agency of the Cartagena Convention

This concern in turn was reinforced by the adoption in 1999 of a Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) to the Cartagena Convention. The LBS Protocol requires states to cooperate bilaterally or

regionally to limit transboundary marine pollution,⁶⁶² hold regular meetings of the Parties⁶⁶³ and report to UNEP on the implementation of the agreement.⁶⁶⁴ Like the SAM Project, the LBS Protocol is concerned with limiting terrestrial sources of marine pollution. The contribution of these protocols to concern in domestic agencies in Mexico is minimal however; the federal government has not to date ratified either of them.

Finally, the SAM Project took place in part due to a regional agreement between the four Mesoamerican countries. The 1997 Tulúm Declaration, described in Chapter 3, committed the participating countries to take jointly coordinated action to conserve the shared ecoregion in the Mesoamerican basin.⁶⁶⁵ The Declaration linked sustainable development and Agenda 21 to the conservation of the reef ecosystem as a site of globally important biodiversity, a buffer zone against coastal erosion, and as relevant to tourist development.⁶⁶⁶

Beyond MEAs and declarations, the institutions of the CCAD and CEP-UNEP also raise the profile of marine management in the Mesoamerican reef. As discussed in Chapter 3, CCAD asserted in 1996 that the regional governments of Central American

⁶⁶² LBS Protocol, Article V and IX.

⁶⁶³ LBS Protocol, Article XV

⁶⁶⁴ LBS Protocol, Article XIII.

⁶⁶⁵ UCP, 2001, *Plan Operativo Anual Período: Julio 2001 – Junio 2002* (Belize City: SAM) pg. 1

⁶⁶⁶ Declaración de Tulúm. Reproduced in Unidad Coordinadora del Proyecto (UCP), 2004, *Políticas de Desarrollo Sustentable de los Recursos Pesqueros, Turismo y Áreas Marinas Protegidas Transfronterizas en el Sistema Arrecifal Mesoamericano* (Belize City: SAM), pp. 3 – 4.

countries and Mexico should cooperate for improved, multilateral environmental management, particularly for transboundary ecosystems. In addition, CEP-UNEP, established to promote regional cooperation in the Caribbean for marine governance, produces promotional material for Parties illustrating the need to conserve marine species and environments, including, since 2008, quarterly reports on environmental management. However, the Declaration of Tulúm and the CCAD were not well integrated into domestic regulatory agencies; the Mexican government only has observer status at CCAD, and the Declaration was signed by the then president of Mexico, Ernesto Zedillo, rather than a representative from SEMARNAT.

Capacity

The LBS Protocol and the CEP-UNEP further enhanced the capacity of states to respond to problems associated with coastal environmental degradation from land-based sources. The CEP-UNEP functions as a standing scientific body for the Protocol, publishing information on the causes and types of marine pollution in the Wider Caribbean Region, including 48 technical reports since 1989. In 1994, it concluded a technical report highlighting the contribution of sedimentation, hydrocarbons, sewage and agricultural runoff to marine environmental degradation, all of which pertain to marine management off the coast of Quintana Roo.⁶⁶⁷ In addition, the organization maintains highly technical information for Parties, such as databases on marine litter,

⁶⁶⁷ CEP-UNEP, 1994, *Regional Overview of Land-Based Sources of Pollution in the Wider Caribbean Region* (Kingston: CEP Technical Report No. 33. UNEP Caribbean Environment Programme).

protected areas management, and surveys on pollution loading in the Mesoamerican basin.⁶⁶⁸

The capacity to manage ecosystems relevant to the SAM Project is also enhanced by this MEA. To assist in the implementation of Ramsar, the Parties established a standing investigatory body, the Scientific and Technical Review Panel (STRP), after COP-5 in 1993,⁶⁶⁹ and since then, Mexico has had a national representative on the STRP investigative body.⁶⁷⁰ In addition, the Mexican government is required to establish a National Focal Point for the STRP, which is currently situated in the Institute of Ecology. The STRP has, since 1994, held irregularly scheduled meetings (at least twice per triennium) to, among other things, collect and centralize information on the management of invasive species and propose guidelines on the appropriate management of wetlands.

The STRP has also promoted capacity building in Mexico by incorporating local actors and ENGOs in information gathering pursuant to biodiversity management. In 2002, COP-8 of the Ramsar Convention reformed the STRP in order to institutionalize the relationship the body had with civil society ENGOs such as Wetlands International and Birdlife International, both of which are engaged in promoting conservation in the

⁶⁶⁸ CEP-UNEP, 1994, *Regional Overview of Land-Based Sources of Pollution in the Wider Caribbean Region*, pp. 14.

⁶⁶⁹ COP-5, Recommendation 5.5

⁶⁷⁰ For example, the 2006 – 2008 Mexican representative was Francisco Contreras of the *Universidad Autónoma Metropolitana*.

Sian Ka'an Reserve.⁶⁷¹ Currently, the STRP holds periodic workshops on Thematic Working Areas (TWAs) on issues such as wetlands management and climate change.

Contractual Environment

The contractual environment of regimes pertinent to SAM management is improved as well by the SPAW Protocol and the Ramsar Convention, both of which give additional specificity in defining international regime compliance. Articles 5 and 11 of the SPAW Protocol call on Parties to take specific conservation measures, including the prohibition of activities harming endangered species of flora and fauna, the regulation or prohibition of coastal sources of pollution, and the regulation of tourist and recreational activities. Some of these species listed in the Annexes to the SPAW Protocol include the coastal mangroves and seagrasses, all of which were identified as crucial to coastal ecosystem management in the SAM Project.⁶⁷²

The Ramsar Convention also enhances the contractual environment pertaining to the SAM Project, as it calls on Parties to take action in regions relevant to SAM management in order to be in compliance with the regime. As a signatory to the Ramsar Convention, Mexico is required to identify wetlands of international importance, designate them as such in a centrally recognized List,⁶⁷³ and create domestically

⁶⁷¹ Ramsar Convention, COP-8, Resolution VIII.28.

⁶⁷² SPAW Protocol, Annexes.

⁶⁷³ Ramsar Convention, Article 2

established measures for conservation of the area through its Administrative Authority, SEMARNAT and CONANP.⁶⁷⁴

Between 1990 and 2003, the time period of the generation of concern about SAM management, the Ramsar Convention evolved further, developing more specific recommendations about wetland designation. At COP-4 in 1990, in a Strategic Plan drafted at COP-6 in 1996, and at COP-7 in 1999, the Contracting Parties agreed that the kinds of ecosystems that could be considered for Ramsar certification should be extended to include areas such as spawning grounds for fish and coral reefs, which were identified as relevant to global biodiversity, and an important part of the SAM Project.⁶⁷⁵ As of 2010, several of the areas involved in the SAM Project are Ramsar sites, including the Sian Ka'an Reserve (declared 2003), National Parks at Xcalak (2003), Puerto Morelos (2004), Banco Chinchorro (2004) and Cozumel (2005).

Mexico and the Corredor Biológico Mesoamericano

The CBMMx Project is embedded in similar institutions as the SAM Project. These are 1) the Action Plan of the Tuxtla Gutiérrez II Summit; 2) the Ramsar Convention; and 3) the CCAD. A summary table of the impact of these institutions on the management of biodiversity in the Cockpit Country is given in **Table 6.3: Summary Impact of Institutions on CBMMx Management**. The following section explains how

⁶⁷⁴ Ramsar Convention, Articles 3 and 4.

⁶⁷⁵ See COP-4, Recommendation 4.1; Ramsar Convention Strategic Plan 1997 – 2002 (available online at http://www.ramsar.org/pdf/key_strat_plan_1997_e.pdf).

the *concern, capacity and contractual environment* found within these MEAs and institutions intersect with the goals of the CBMMx Project.

Concern

Like the *Sistema Arrecifal Mesoamericano* (SAM) Project, the efforts toward managing the *Corredor Biológico Mesoamericano – México* (CBMMx) emerged in the background of regional efforts to coordinate environmental management, and as such, several regional institutions raised the political profile of action in the biological corridor region. The 1996 Tuxtla II Summit mentioned in Chapter 4 comprised a multilateral meeting between the heads of state of Mexico and the Central American countries to coordinate transboundary activity in security, trade and the environment. Subsequent to this summit, the Central American states and Mexico issued the Tuxtla Declaration, which called on states to promote the establishment of the *Corredor Biológico Mesoamericano*.

First, the Tuxtla Declaration enhanced the level of concern around the eventual CBMMx Project, in that it linked regional environmental cooperation to the broader goals of regionalism and interdependence in matters of trade, transboundary crime, and social development.⁶⁷⁶ Second, the CCAD, established to promote regional integration in Central America and Mexico, similarly linked coordinated environmental management to

⁶⁷⁶ Declaración Conjunta y Plan de Acción de la Cumbre Tuxtla Gutiérrez II, Preamble (26).

economic, social and ecological sustainability, and regional development.⁶⁷⁷ However, like the SAM Project, these pronouncements were not directly integrated into the practices of natural resource management agencies. As described earlier, Mexico only has an observational relationship with CCAD, and the Tuxtla Declaration, like the Tulúm Declaration, was an inter-presidential agreement.

Capacity

There is some capacity building in the institutions in which the CBMMx is embedded. As described above in the SAM Project, the Ramsar Convention has institutionalized a base of technical knowledge on wetlands in the STRP. As some of the regions in the CBMMx, such as parts of the Sian Ka'an Biosphere Reserve, are wetlands, this base of technical pertains to CBMMx management. Again, SEMARNAT and CONANP, natural resource management agencies implicated in the implementation of the CBMMx, are Administrative Authorities of Ramsar.

Contractual Environment

The Ramsar Convention also contributed to the *contractual environment* of biodiversity management pertaining to the CBMMx as the Convention calls on Mexico to take action in areas designated as Ramsar sites that comprise parts of the biological corridor, specifically the Sian Ka'an Biosphere Reserve. Finally, the Tuxtla Declaration indicates which areas are to be managed by Parties signatory to the Declaration, by

⁶⁷⁷ CCAD, *Políticas del Desarrollo Sustentable*, pp. 6.

defining the Mesoamerican Biological Corridor as the area running from the neovolcanic zone in Mexico to Panama (**Figure 6.1: Map of Neovolcanic Zone in Mexico**).⁶⁷⁸

Although this zone was not well-defined, it nevertheless included areas in the southern states of Mexico that eventually were subsumed in the CBMMx Project.

Egypt and the Management of Migratory Soaring Birds

The MEAs signed by Egypt that impinge on the management of the MSB Project are: 1) the Ramsar Convention; 2) its Protocol to Amend the Convention on Wetlands of International Importance Especially as Waterfowl Habitat; 3) the African Convention on the Conservation of Nature and Natural Resources; 4) the Convention on Migratory Species (CMS); 5) the African-Eurasian Waterbird Agreement (AEWA); 6) the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (under the Barcelona Convention); 7) the Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden (under the Jeddah Convention). Of these seven MEAs, the Ramsar Convention, CMS and AEWA were specifically cited in MSB Project documents, while the remaining four reference elements of biodiversity management that are pertinent to governance in the Red Sea/Rift Valley flyway. Finally, the World Conservation Monitoring Centre of UNEP (UNEP-WCMC) provides additional support for biodiversity management to Egypt. A summary table of the impact of these institutions

⁶⁷⁸ Declaración Conjunta y Plan de Acción de la Cumbre Tuxtla Gutiérrez II, Article XVIII (2).

on MSB management is given in **Table 6.4: Summary Impact of Institutions on MSB Management**. The following section explains how the *concern*, *capacity* and *contractual environment* found within these MEAs and institutions intersect with the goals of the MSB Project.

Concern

Concern for MSB species and habitat management in Egypt is highlighted by the following factors: several institutions and MEAs raise the profile of biodiversity management in the Red Sea/Rift Valley flyway by reinforcing the importance of migratory bird and bird habitat management to the goals of international environmental governance. Moreover, concern is channeled through domestic regulatory agencies, in particular the MSEA/EEAA of Egypt, which is at the center of the country's steps in carrying out international environmental obligations.

In 1998, concerned about the burden of national reporting requirements, UNEP and the secretariats of the CBD, the CMS, the Ramsar Convention, CITES, and the World Heritage Convention (WHC) commissioned the WCMC to undertake a study on the possibility of harmonizing reporting requirements between those five biodiversity-oriented MEAs. In response, WCMC issued a report in 1998 asserting that biodiversity management required effective coordination between the goals of those MEAs, all of which were signed by Egypt, as well as potential future agreements and protocols.⁶⁷⁹

⁶⁷⁹ World Conservation Monitoring Centre [WCMC], 1998, *Feasibility Study for a Harmonised Information Management Infrastructure for Biodiversity-related Treaties* (UNEP-WCMC), accessed January 2011 from <http://www.unep->

Subsequent to this report, UNEP-WCMC held harmonization workshops in 2000⁶⁸⁰ and 2004⁶⁸¹ with the Secretariats of the following MEAs: the CBD, CMS, Ramsar Convention and AEWA, all of which were cited by the MSB Project documents as relevant to biodiversity management in the flyway.

These workshops asserted a common interest of these treaties in biodiversity management, thus linking the goals of the CBD with migratory bird management under the CMS and AEWA, and with wetlands conservation under Ramsar. As described in Chapter 5, several of the ecosystems used by MSBs as resting points, particularly in the North Sinai, are wetlands, and several resting areas are important to migratory waterfowls. As in Jamaica and Mexico, the major environmental agency in this case, namely the MSEA/EEAA through its Nature Conservation Sector (NCS) is the Administrative Authority for the Ramsar Convention.

The importance of management within the flyway is further reinforced by the Protocol Concerning Special Protected Areas of the Barcelona Convention (henceforth

wcmc.org/convent/treaties.pdf; UNEP Division of Environmental Law and Conventions [UNEP-DELC] and UNEP-WCMC, 2008, *Joint Core Reporting Elements of Biodiversity-related Conventions and Agreements* (Report from the UNEP Knowledge Management Project), accessed January 2011 from http://www.unep-wcmc.org/conventions/docs/Report%20on%20joint%20core%20report%20elements_3_Mar_08.pdf.

⁶⁸⁰ UNEP-WCMC, 2000, *Towards the Harmonization of National Reporting* (Report of a workshop convened by UNEP), accessed January 2011 from <http://www.unep-wcmc.org/conventions/harmonization/workshop/REPORT.pdf>.

⁶⁸¹ UNEP-WCMC, 2004, *Towards the Harmonization of National Reporting to Biodiversity-Related Treaties* (Report of a workshop convened by UNEP), accessed January 2011 from http://www.unep-wcmc.org/conventions/harmonization/workshop04/Workshop_report.pdf.

the Protocol Concerning Protected Areas), and the Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and the Gulf of Aden (henceforth the Protocol Concerning Biological Diversity in the Red Sea). The Protocol Concerning Protected Areas asserts that littoral ecosystems, including coastal wetlands, are crucial to the management of the Mediterranean Sea and the broader goals of the CBD,⁶⁸² while the Protocol Concerning Biodiversity in the Red Sea asserts that management of coastal and littoral ecosystems in the Red Sea is necessary, due to the occurrence of globally important migratory species in this region.⁶⁸³ Finally, the African Convention on the Conservation of Nature calls on Parties to conserve natural resources, including fauna and flora,⁶⁸⁴ while Article III of the CMS calls on Parties to “endeavour”⁶⁸⁵ to conserve endangered and threatened migratory species and their habitats.

In all these cases, the NCS as lead agency of the MSEA/EEAA is directly involved in the administration of these MEAs. Reports to the CMS are drafted by the NCS, in particular by Moustafa Fouda and Sherif Baha El Din in their current capacity as

⁶⁸² Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, Articles 1 and 2.

⁶⁸³ Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea, Article 7.

⁶⁸⁴ African Convention on the Conservation of Nature and Natural Resources, Articles VI, VII, and VIII.

⁶⁸⁵ CMS, Article III.4

NCS staff.⁶⁸⁶ Consequently, the concern building exercises of these treaties are grounded in the regulatory agencies relevant to MSB Project management.

Capacity Building

As described above in the SAM Project, the Ramsar Secretariat has established a Scientific and Technical Review Panel (STRP), pursuant to Conferences of the Parties, that collects information on wetlands management, and has formalized the incorporation of technical knowledge from ENGOS, including Birdlife International and Wetland International. Like Mexico, the Egyptian government has a National Focal Point for the STRP. However, the Egyptian focal point is again located in the national government, namely the NCS and the MSEA/EEAA, rather than in an academic institution, grounding the knowledge produced in the STRP more directly in governmental agencies.

As the Egyptian project focuses more strongly on migratory species than the projects in Jamaica or Mexico, the Convention on Migratory Species (CMS) and its subsidiary African-Eurasian Waterbirds Agreement (AEWA) are considered particularly relevant to the project.⁶⁸⁷ Like the CBD, the CMS focuses on improving the role of science and information as a tool to promote effective treaty implementation. Article

⁶⁸⁶ See for example various submissions to the CMS Secretariat by El Din and Fouda, including, for example, the 2002 National Report of the Arab Republic of Egypt (Cairo: MSEA/EEAA).

⁶⁸⁷ See multiple references to the CMS in the GEF Project Document: UNDP/Birdlife International [Birdlife], 2006. *Mainstreaming Conservation of Migratory Soaring Birds into Key Productive Sectors along The Rift Valley/Red Sea Flyway* (UNDP Project Document) passim.

VIII of the CMS established a Scientific Council, which, based on ongoing research, can make recommendations to COPs to include species in Appendix I and II. In 1997 for example, COP-5 adopted the Lesser Kestrel (*Falco naumanni*), one of the migratory birds using the Red Sea/Rift Valley flyway, on Appendix I pursuant to a recommendation by the Scientific Council.

Much of this information gathering and management recommendations overlaps with the functions of AEWA. As with the CMS, AEWA identifies particular species whose conservation is of global concern, which includes falcons and birds of prey covered in the GEF Project. To carry out its mandate, AEWA has a Technical Committee that performs parallel functions for AEWA Parties as does the CMS' Scientific Council. Some of the Action Plans adopted by CMS were adopted concurrently by AEWA in its own meetings.

Further, the CMS and AEWA, in the interest of attaining expert information on migratory species management, encouraged the official participation of ENGOs in the functions of the treaties. The IBAs identified by Birdlife, and wetlands highlighted by Wetlands International were referenced as important in AEWA and CMS documents, including the 2007 CMS Action Plan.⁶⁸⁸ As such, the CMS and AEWA Secretariats facilitate the promotion of scientifically validated, current information on the status of endangered species relevant to treaty implementation.

Finally, the efforts of the CMS and AEWA Secretariats to gather information on migratory species for implementing Parties are supplemented by UNEP-WCMC. The

⁶⁸⁸ UNEP/CMS/AERAP-IGM1/8_Agreed Text

WCMC conducts synthesis reports based on national submissions from Parties to the CMS, and developed the Information Management System for the CMS, a database of parties covered by the Convention.

Contractual Environment

The *contractual environment* is highlighted by the following institutions which specify which species are to be conserved, as well as giving recommendations regarding how to sustainably manage biodiversity. By doing so, the institutions clarify what appropriate compliance entails. Moreover, the species and ecosystems specified by the listed MEAs all pertain to the goals of migratory soaring bird management as discussed in the goals of the MSB Project.

The Ramsar Convention highlights key areas within the Red Sea/Rift Valley flyway as meriting conservation. The Ramsar site in Egypt that falls within the flyway is Lake Bardawil in the Sinai Peninsula (declared 1988), which is also identified as a Birdlife Important Bird Area (IBA).⁶⁸⁹ Like SEMARNAT and CONANP in Mexico, Egyptian environmental governmental agencies are the relevant Administrative Authorities of the Convention.

In addition to the Ramsar site in the Sinai, several other MEAs specify which bird species need conservation, as well as recommending what kind of protection is warranted. The African Convention on the Conservation of Nature calls on ratifying

⁶⁸⁹ Khalil, Magdy T. and Kamal H. Shaltout. 2006. *Lake Bardawil and Zaranik Protected Areas*. Cairo: State Ministry of Environment, Publication of Biodiversity Unit, no. 15; Ramsar Site List, available online at <http://www.ramsar.org/pdf/sitelist.pdf>

states to ban the hunting and killing without prior approval of several endangered species, including storks, pelicans, cranes and vultures, all of which are covered by the MSB Project.⁶⁹⁰ In addition, the Protocol Concerning Protected Areas calls on Parties to protect, conserve and manage endangered species and their habitats.⁶⁹¹ Bird species listed by name in this Protocol include the Dalmatian Pelican (*Pelecanus crispus*), one of the species identified in the MSB Project.⁶⁹²

The CMS, an MEA to which Egypt is a signatory, similarly illustrates the importance of conserving identified species, which are listed in Appendices I and II to the Convention.⁶⁹³ These goals have been elaborated upon at the triennial COPs, as parties have proposed that additional, critically important species be included in the Appendices, and recommended that states take action to conserve them and their habitats. Some of the species adopted at COPs include species adopted at COP-5 in 1997, such as the Steppe Eagle (*Aquila heliaca*), the Dalmatian Pelican (*Pelecanus crispus*), and the White Stork (*Ciconia ciconia*), all of which were listed in Graham Tucker's 2005 study on migratory

⁶⁹⁰ African Convention on the Conservation of Nature, List of Protected Species under Class A.

⁶⁹¹ Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, Articles 3 and 4.

⁶⁹² Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, Appendix II.

⁶⁹³ CMS, Article III and IV distinguish between Appendix I (endangered) and Appendix II (species that have an unfavorable conservation status) species, yet note that species may be cross-listed between the two.

soaring birds for the MSB Project.⁶⁹⁴ By the early 2000s, in conformity with several resolutions passed at the COPs, the Appendices singled out several of the MSB species that traversed the Palaearctic-African flyway and the Red Sea/Rift Valley region of Egypt and East Africa as meriting additional attention from parties.⁶⁹⁵

In 2005, member states of the EU proposed a recommendation to COP-8 of the CMS calling on Parties within the African-Eurasian flyway zone to cooperate to conserve migratory birds. This recommendation focused primarily on raptors, owls, and their habitats, and also called on parties to focus on specific threats, including poisoning and shooting.⁶⁹⁶ In 2007, the CMS drafted an Action Plan calling on Parties to protect birds in the African-Eurasian flyway zone, including recommendations that, “where possible,” Parties ban exposed poison bait, prevent the disturbance of rest sites, and create protected areas in identified zones; in Egypt, these zones were the IBA sites identified by Birdlife in the early 2000s.⁶⁹⁷ More generally, COPs have illustrated certain anthropogenic activities as problematic for migratory species, as did COP-7, which passed a Resolution calling on Parties to assess the impact of wind turbines on migratory birds.⁶⁹⁸

⁶⁹⁴ CMS COP-5, Recommendation 5.1

⁶⁹⁵ Appendix I and II of the CMS; Graham Tucker, 2005, *Migratory Soaring Birds: Review of status, threats and priority conservation actions* (Birdlife).

⁶⁹⁶ UNEP/CMS/Rec. 8.12/Rev 1.

⁶⁹⁷ UNEP/CMS/AERAP-IGM1/8_Agreed Text. The sites were identified in Sherif Baha el Din, n.d., *Important Bird Areas in Africa and Associated Islands – Egypt* (Birdlife International)

⁶⁹⁸ CMS COP-7, Resolution 7.5

Comparing the Embeddedness of Projects in International Institutions

As described above, the cases studied in this dissertation exhibit substantial variation in the embeddedness of the projects in international institutions. The institutions vary in particular with respect to concern and capacity engendered; some institutions identify specific areas as of interest to global biodiversity management, some highlight particular animal and plant species. Indeed, some institutions single out threats and make recommendations for what action is necessary for biodiversity conservation. A comparison of Tables 6.1, 6.2, 6.3, and 6.4 indicate the degree in which each country's GEF-funded project is embedded in MEAs and international institutions.

The Implications of International Institutions

As indicated, the case with the highest degree of international institutional embeddedness is the Migratory Soaring Bird (MSB) Project in Egypt. First, the Protocol on Protected Areas, the African Convention for the Conservation of Nature, the CMS and AEWA highlighted particular species of MSBs as meriting conservation, including those covered by the eventual GEF Project. Second, the African Convention on Nature, the CMS, its COPs, and the Action Plans adopted by the bodies also illustrated certain threats as germane to MBS conservation, while the Ramsar Convention described one site, Lake Bardawil, as a site of particular concern. The UNEP-WCMC reports also highlighted the synergy between all the MEAs cited by the MSB Project: the CMS, AEWA, Ramsar Convention and the CBD. Third, several of the institutions pertinent to the MSB Project,

namely the CMS, AEWA, and the UNEP-WCMC, contain standing scientific bodies aimed at generating up-to-date technical information on biodiversity and environmental degradation in areas directly related to the project.

All of these treaties are then grounded in the national environmental agency, the MSEA/EEAA by virtue of the fact that it is the administering agency of the relevant MEAs, as well as the implementing agency of the MSB Project. In addition, the MSEA/EEAA is more directly involved in the capacity-building exercises of the Ramsar Convention by virtue of the fact that this case is the only example of a governmental agency functioning as the National Focal Point for the Convention's STRP. Of the four cases, this project benefits from the most international concern related to project management, when considering the number and specificity of the MEAs concerned.

The SAM and CBMMx Projects are somewhat less embedded than is the Egyptian project. In regards to the SAM Project, both the LBS and SPAW Protocols of the Cartagena Convention illustrate the importance of marine management, reef ecosystems, and terrestrial zones including mangrove habitats. CEP-UNEP, functioning as the standing scientific body of the LBS Protocol, has also arguably improved the capacity of participating states to respond to environmental degradation through its dissemination of technical information. Further, the SPAW Protocol called on states to address conservation of specific fauna and flora species, including mangrove species involved in the SAM ecosystem. The Ramsar Convention as well demonstrated the importance of coral reefs, and the Tulúm Declaration reinforced the call for regional

management of the Mesoamerican Barrier Reef System. In contrast to Egypt, however, the Focal Point for the STRP is an academic institution, not a governmental agency.

In regards to the CBMMx Project, the Ramsar Convention, through the STRP, provided institutions aimed at improving the capacity of states, as well as highlighting the importance of key sites to global biodiversity. Further, the *Tuxtla II* summit highlighted the regional importance of biological corridor management, and the Ramsar Convention highlighted the international importance of terrestrial zones in the Yucatán Peninsula.

The least embedded project of the four was the Cockpit Country Project in Jamaica. International references to this region as important for global biodiversity were oblique, at best. Neither the SPAW Protocol nor the Cartagena Convention explicitly references the Cockpit Country, although they do indicate the need for states to consider the integration of downstream terrestrial processes on marine environments. As a result, an analysis of the thickness of institutions bearing on projects, including dimensions such as the specificity of recommendations, would suggest that Egypt would be most likely to fulfill the requirements of the GEF-funded project, and Jamaica the least likely.

Ranking Observed Variation

However, a qualitative analysis of project performance indicates that Egypt was the most laggardly enforcer of the goals of biodiversity conservation. The declaration of a protected area at the Important Bird Area (IBA) of Lake Bardawil, though identified as a Ramsar site, required no change in behavior by the Egyptian government to be protected. Isolated and remote, the site was described in interviews with Egyptian

Environmental Affairs Agency (EEAA) officials as being protected by virtue of the fact that people could not easily access the area.

Interviews with ENGO representatives and scientists indicate that the government was less than committed to improved environmental management in MSB sites. The formal passage of legislation was not matched by enforcement on the ground, as protected areas did not contain adequate management due to the lack of political will in natural resource agencies. Potential regulatory bodies and actors were excluded from contributing to environmental management in the flyway; the central Egyptian government maintained strict control over project funds and management, preventing access not only by ENGOs, but also by the enervated Nature Conservation Sector (NCS). As described in Chapter 5, despite calls by the CMS and AEWA for participation by ENGOs in domestic efforts at biodiversity governance, the closed political society of Egypt precluded any civil society participation.

The CBMMx fared slightly better, as the government of Mexico did commit additional resources to corridor management zones highlighted in the project. The federal government committed funds for project development in *ejidos* and rural communities demarcated by the CBMMx. Further, evidence that institutions mattered in this case is supported by the fact that the failure of the Mexican government to carry out some of its obligations under the project was met by credible sanctions from the GEF. However, it should be noted that the transnational advocacy network of experts has been highly critical of the areas that were selected to be covered by the project, and has argued

that ecosystem management in the Mexican section of the biological corridor is problematic.

The SAM Project demonstrated remarkable activity by the Mexican government. Management plans of already established protected areas were reformed to improve the quality of biodiversity governance. The state adopted new regulations governing the extraction of fish species, in order to mitigate the tendency of fishing communities to overharvest. Finally, the environmental ministry, and then the federal government passed reforms protecting the coastal mangroves from being cleared for hotel construction.

Jamaican environmental management pertinent to the Cockpit Country also improved noticeably. Most critically, after 2007, the government passed legislation declaring the Cockpit Country a protected area, despite the fact that this represented an economic opportunity loss for the JBI, a quasi-state agency. The management of forestry extraction also improved, as forest management was linked to broader biodiversity conservation.

Assessing the Institutional Explanation

Certainly, the institutional explanation could explain the commitment of the Mexican government, in particular SEMARNAT and CONANP to improved reef management in the Mesoamerican basin under the SAM Project. Regional and international organizations raised the profile of reef management in the Mesoamerican basin, and contributed to capacity building among member states. The obligations of some MEAs, such as the Ramsar Convention, the LBS Protocol, and the SPAW Protocol

specified which species needed to be conserved in order to comply with the treaty. Moreover, these organizations were directly invoked by the MEAs, and intimately involved in SAM Project management. As such, it is not surprising from an institutional perspective that Mexico committed political and economic resources to managing and conserving the SAM, including steps such as legislation protected spawning sites for fish, and the passage of substantial reforms to protected areas management.

However, the institutional approach is undermined by the difference in project implementation and biodiversity governance between Jamaica and Egypt. The Egyptian MSB project, while linked to several institutions improving the concern, capacity and contractual environment associated with improved biodiversity management, performed far worse than the Jamaican Cockpit Country project.

As described above, the institutions associated with the Cockpit Country project only tangentially referenced the area, and did not emphasize particular species of flora, nor fauna. In addition, while NEPA was involved in concern and capacity building through the Ramsar Convention and the Cartagena Convention, the Forestry Department, one of the most proactive regulatory agencies in the Cockpit Country, was only tangentially connected to either MEA. Moreover, as indicated above, the Ramsar Convention and the Cartagena Convention are only minimally connected to the goals of biodiversity conservation in the Cockpit.

Nevertheless, this did not prevent the adoption of meaningful reform from Jamaican natural resource management agencies. While the adoption of a ban on bauxite

mining resulted less from persuasion of policymakers in bauxite agencies, and more from political mobilization of the mass public, the fact is that the transnational network functioned as a catalyst for the generation of political pressure that led to the bauxite reform. The institutionalist approach therefore, would underpredict the likelihood that the Jamaican government would adopt meaningful regulation in the Cockpit Country, while overpredicting the commitment of the Egyptian government.

More fundamentally, however, focusing on international institutions as a predictor of behavior obscures the fact that in the context of biodiversity management, what comprised “appropriate behavior” was negotiated not at the international level and then translated to domestic regulatory agencies, but transnationally among networks. While international institutions such as the CBD, GEF, the CMS, AEWA and the Ramsar Convention may have contributed to state willingness to launch biodiversity projects, the state and transnational networks engaged in occasionally acrimonious contestations over the geophysical dimensions of appropriate management.

This can be observed in the debates in Mexico between the civil society and governments over the inclusion of corridor zones in the CBMMx, or in Jamaica between the civil society and bauxite regulatory agencies over the size of the Cockpit Country. As expressed in the concern of transnational networks, government commitment to declaring protected areas and issuing management plans would have meant very little for improved biodiversity governance, if these areas were not carefully selected, and/or if the plans were not adequately designed to meet the needs of local biodiversity.⁶⁹⁹ Thus, the

⁶⁹⁹ This observation invokes one of the core questions about assessing “effectiveness”

analytic utility of the institutionalist approach in this research is further undermined by the fact that focusing on institutional design obscures how the interpretation of international obligations can be continually contested at the domestic level, and that this interpretation has significant outcomes for the goals of environmental governance.

Conclusion

This research focuses on the role of transnational networks, part of an emerging phenomenon referred to as the global civil society.⁷⁰⁰ As indicated in this chapter, examining the role of transnational networks and the global civil society confers benefits on the study of global environmental governance beyond that proffered by a state-centric,

in environmental regimes and institutions. While using “effectiveness” to describe regimes that lead to positive changes in state behavior is parsimonious and (insofar as advocates of environmental management want states to adopt new regulations) logical, it is difficult to justify using this term to refer to institutions that do not lead to positive changes in environmental outcomes. For discussions on contemplating regime effectiveness, see: David Victor, 2006, Toward Effective International Cooperation on Climate Change: Numbers, Interests and Institutions (*Global Environmental Politics* 6 (3): 90 – 103); Roland Mitchell, 2001, Institutional Aspects of Implementation, Compliance and Effectiveness. *International Relations and Global Climate Change* (Cambridge: MIT Press); Helm, Carsten and Detlef Sprinz, 2000, Measuring the Effectiveness of International Environmental Regimes (*Journal of Conflict Resolution* 44 (5): 630 – 652).

⁷⁰⁰ See *inter alia*, Jackie Smith, Charles Chatfield and Ron Pagnucco eds., 1997, *Transnational Social Movements and Global Politics* (New York: Syracuse University Press); Sanjeev Khagram, James Riker and Kathryn Sikkink, 2002, *Restructuring World Politics: Transnational Social Movements, Networks and Norms* (Minneapolis: University of Minnesota Press); Paul Wapner, 1995, Politics Beyond the State: Environmental Activism and World Civic Politics (*World Politics*, 47: 311 – 340); Paul Wapner, 1996, *Environmental Activism and World Civic Politics* (Albany: SUNY Press); Sanjeev Khagram, 2004, *Dams and Development: Transnational Struggles for Water and Power* (New York: Cornell University Press).

institutionalist approach. First, transnational networks may contribute to the effectiveness of regimes and institutions in ways not predictable by an analysis focused on international negotiations and the top-down implementation of regime obligations.

Jamaica, as described above, was the case with the thinnest level of institutional embeddedness. Nevertheless, a transnational epistemic community, motivated by a shared understanding of appropriate action, and informed by a scientific consensus, was able to persuade natural resource managers in the state to adopt meaningful environmental regulation through a combination of direct influence on policymakers, and through the popular mobilization of domestic constituencies. As a result, agencies in the Jamaican government were more willing to carry out reform than those in Egypt, the case with the thickest. Variations in characteristics of transnational networks can also explain variations in environmental governance efforts in the same political system; while the Mexican federal government was carrying out both the SAM and the CBMMx Projects, the SAM epistemic community contributed to what was described in Chapters 3 and 4 as more effective governance in the reef region.

Second, and related, this research supports ongoing approaches that are critical of arguments that limit the search for solutions to governance through the creation or reform of international institutions.⁷⁰¹ Institutions certainly matter, and the provision of technical and financial capacity through the GEF, UNEP, and Secretariats of various

⁷⁰¹ See Jacob Park, Ken Conca and Matthias Finger, eds. 2008, *The Crisis of Global Environmental Governance: Towards a New Political Economy of Sustainability* (New York: Routledge Press); Gabriela Kütting and Ronnie Lipschutz, 2009, *Environmental Governance: Power and Knowledge in a Local-Global World* (New York: Routledge Press).

MEAs were important in supporting the *Project for Sustainable Conservation*, the SAM Project, the CBMMx Project, and the MSB Project. Regardless of political will and commitment, monitoring the isolated and rugged terrain of the Cockpit Country, the marine ecosystems off the coast of the Yucatán, and the desert migrating spots in the Red Sea/Rift Valley flyway can be prohibitively expensive to the Forestry Department in Jamaica, CONANP in Mexico, and the Egyptian NCS respectively. However, using institutions as the analytic focus of global governance marginalizes the importance of the global civil society in interpreting and implementing treaty obligations, ignores state-society relations, and reifies the state as the arbiter of “correct” behavior.

This leads to potential distortions in implementing the environmental goals of international institutions. Top-down requirements by the GEF, UNEP and the World Bank for ENGO inclusion in project management were abrogated by the governments of Mexico and Egypt, in the CBMMx and MSB Projects respectively, in the interests of state leaders and vested political constituencies.⁷⁰² Without actual commitment by state leaders to include the civil society in project implementation, there is little the GEF can do to avoid the de facto marginalization of ENGOs in project implementation.⁷⁰³

⁷⁰² Fisher, Dana R., and Jessica F. Green. 2004, Understanding Disenfranchisement: Civil Society and Developing Countries' Influence and Participation in Global Governance for Sustainable Development (*Global Environmental Politics* 4, no. 3: 65-85); Lucy Ford, 2003, Challenging Global Environmental Governance: Social Movement Agency and Global Civil Society (*Global Environmental Politics* 3 (2): 120 – 134)

⁷⁰³ Andrea Gerlak, 2004, One Basin at a Time: The Global Environment Facility and the Governance of Transboundary Waters (*Global Environmental Politics* 4: 108 – 141); Gerlak, Andrea K., and Laura J. Parisi, 1999, An Umbrella of International Policy: The Global Environment Facility at Work (in Dennis L. Soden and Brent S.

This has an impact on global environmental management as the provision of international institutional support to governments through mechanisms that do not pay sufficient attention to state-society relationships and non-state actors may lead to perverse outcomes in the goals of environmental governance. Without the localization of norms by transnational networks, governments will find it more difficult to sustain environmental projects, which is problematic insofar as GEF funds are finite.⁷⁰⁴ Further, as demonstrated in Egypt and in the CBMMx Project in Mexico, governments and natural resource agencies that have not internalized environmental norms are nonetheless still seen as legitimate arbiters of the allocation of financial and technical assistance (FTA) in the form of GEF funds, and are able to set the terms of project management. The result is that the governance of sensitive ecosystems may be hijacked by vested political and economic interests, to the detriment of environmental sustainability. This is an inefficient and counterproductive use of GEF funds.

Thus, in the interest of environmental sustainability, actors in the global civil society, such as transnational networks of environmental advocates, should be meaningfully incorporated into the theory and practice of global governance. As argued above, transnational networks of committed individuals can foster the needed political commitment in participating states to carry out international environmental agreements.

Steel, ed., *Handbook of Global Environmental Policy and Administration*, New York: Marcel Dekker).

⁷⁰⁴ Gerlak, Andrea K., and Laura J. Parisi, 1999, An Umbrella of International Policy: The Global Environment Facility at Work (in Dennis L. Soden and Brent S. Steel, ed., *Handbook of Global Environmental Policy and Administration*, New York: Marcel Dekker).

This emphasizes the importance of norms and norm entrepreneurs in shaping state behavior; as transnational networks generate shared understandings about appropriate action among state leaders, they can lead to more comprehensive action than might have been expected when examining institutions alone. At the same time, the previous chapters make it clear that the meaningful participation, and hence influence, of these transnational networks is in turn constrained by internal characteristics of the networks, and external political factors. Internally, a shared consensus improves the likelihood that the claims of transnational networks will be taken seriously. Externally, the ability of networks to socialize with policymakers will probably be sharply limited in autocratic polities. By responding effectively to internal and external challenges, transnational networks of environmental advocates can contribute meaningfully to global environmental governance.

Table 6.1: Summary Impact of Institutions on Cockpit Country Management

	Institutional Impact on Project Management		
	<i>Ramsar Convention</i>	<i>Cartagena Convention</i>	<i>SPAW Protocol</i>
Concern	Biodiversity management important	Biodiversity management important	Terrestrial ecosystems may impact marine management.
Capacity	N/A	N/A	N/A
Contractual Environment	N/A	N/A	N/A

Table 6.2: Summary Impact of Institutions on SAM Management

	Institutional Impact on Project Management						
	<i>Tulum Declaration</i>	<i>CCAD</i>	<i>Cartagena Convention</i>			<i>Ramsar Convention</i>	
			<i>Cartagena Convention</i>	<i>SPAW Protocol</i>	<i>LBS Protocol</i>	<i>Ramsar Convention</i>	<i>Protocol to Amend the Convention</i>
Concern	Conserve shared ecosystem in Mesoamerican basin for political integration	Regional environmental cooperation necessary for political integration	Marine management in Caribbean sea (Mesoamerican basin) important to global biodiversity	Create marine protected areas	Terrestrial sources of marine pollution are problematic	Wetlands management important to global biodiversity	Wetlands management important to global biodiversity
Capacity	N/A	N/A	N/A	N/A	N/A	STRP created for national wetlands management	N/A
Contractual Environment	N/A	N/A	N/A	Parties should protect mangroves and seagrasses; species listed in SAM Project	Conserve species listed in Annexes (includes MSBs from Project)	Sian Ka'an, Xcalak etc. listed as Ramsar sites, hence meriting protection under terms of MEA	N/A
							CEP-UNEP Promotes regional cooperation for marine management. Standing scientific body for LBS Protocol; produces synthetic reports on protected areas management N/A

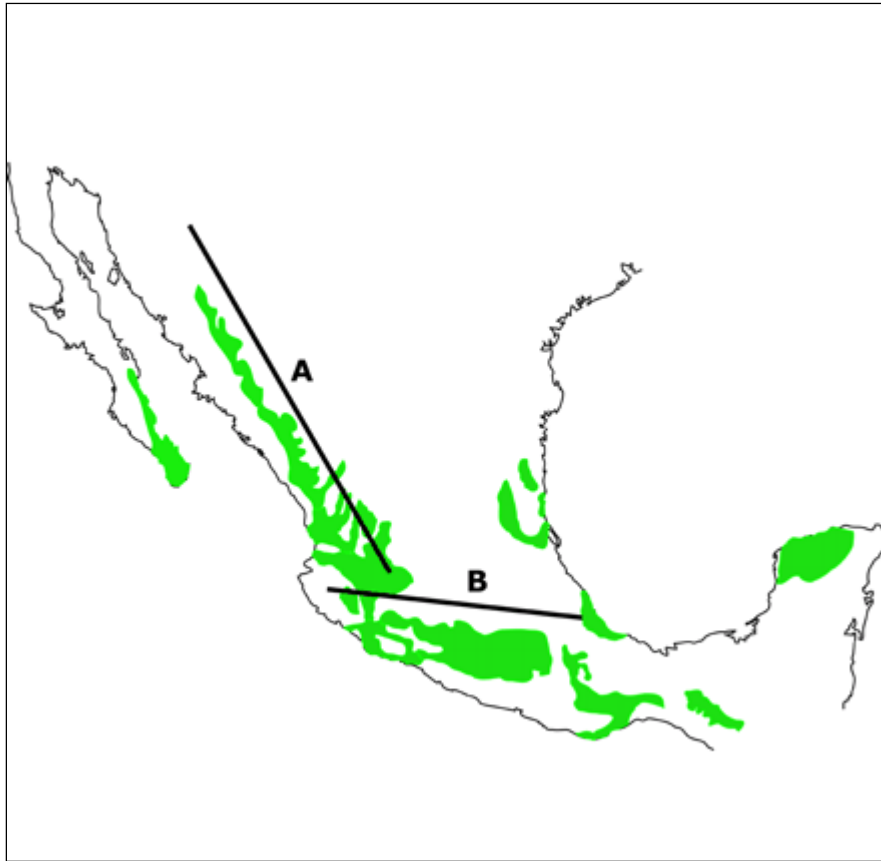
Table 6.3: Summary Impact of Institutions on CBMMx Management

	<i>Action Plan of Tuxtla Gutiérrez II Summit</i>	Institutional Impact on Project Management			<i>CCAD</i>
		<i>Ramsar Convention</i>	<i>Ramsar Convention</i>	<i>Protocol to Amend the Convention</i>	
Concern	Regional environmental cooperation an important component in political integration and regional development	Regional environmental cooperation an important component in political integration and regional development	Wetlands management important to global biodiversity	Wetlands management important to global biodiversity	Regional environmental cooperation an important component in political integration and regional development
Capacity		STRP created for national wetlands management	N/A	N/A	N/A
Contractual Environment	Protect Neovolcanic Zone in Mesoamerica (includes areas incorporated into eventual CBMMx)	Sian Ka'an Biosphere Reserve listed as Ramsar site, hence meriting protection under terms of MEA	N/A	N/A	N/A

Table 6.4: Summary Impact of Institutions on MSB Management

Institutional Impact on Project Management									
	<i>Barcelona Convention Protocol Concerning Protected Areas</i>	<i>Jeddah Convention Protocol Concerning the Conservation of Biological Diversity in the Red Sea</i>	<i>African Convention on the Conservation of Nature and Natural Resources</i>	<i>CMS</i>		<i>Ramsar Convention</i>		<i>UNEP-WCMC</i>	
				<i>CMS</i>	<i>AEWA</i>	<i>Ramsar Convention</i>	<i>Protocol to Amend the Convention</i>		
Concern	Coastal wetlands important to global biodiversity and Mediterranean	Coastal and littoral ecosystems in Red Sea important to migratory species and obligations under CBD	Conserve flora and fauna	Protect migratory species	Protect migratory waterfowl	Wetlands management and migratory birds important to global biodiversity	Wetlands management and migratory birds important to global biodiversity	Reports on harmonization link CBD, CMS, AEWA, all MEAs cited by MSB Project documents.	
Capacity	N/A	N/A	N/A	Standing Scientific Council	Standing Technical Committee; also incorporates new information from ENGOs	STRP created for national wetlands management	N/A	Synthesis reports on protected areas and species management provided to Secretariat and Parties of CMS and AEWA	
Contractual Environment	Protect species, e.g., Dalmatian Pelican under terms of MEA	N/A	Ban hunting and killing of all storks, pelicans, cranes and vultures, all of which are covered by the MSB Project	Conserve species listed in Annexes (includes MSBs from Project)	Conserve species listed in Annexes (includes MSBs from Project)	Lake Bardawil listed as Ramsar site, hence meriting protection under terms of MEA	N/A	N/A	

Figure 6.1: Map of Neovolcanic Zone in Mexico



The area below Line B comprises the neovolcanic zone of Mexico. It includes areas in the states Veracruz, Puebla, Guerrero, Oaxaca, Chiapas and the Yucatán Peninsula

CHAPTER 7

CONCLUSION

Non-State Actors, Transnational Networks, and Governance

The primary question addressed here is: under what conditions do norms and networks matter to global governance as carried out by less developed countries (LDCs)?⁷⁰⁵ To answer this question, this dissertation covers research carried out on four globally important biodiversity management projects funded by the Global Environment Facility, and implemented in Jamaica, Mexico and Egypt as pertinent to their obligations under the UN Convention on Biological Diversity. In each country, a TAN advocated for what it considered appropriate biodiversity management under the rubric of the project, often requiring substantive changes in the implementing government's environmental management approach. However, in only two of the four projects studied did the TAN succeed in persuading state leaders to adopt new norms and thus influence behavior concomitant to the goals of the UN treaty. When are transnational networks more effective in LDCs? What cognitive or material factors contribute to their ability to offer

⁷⁰⁵ LDCs are particularly important to global biodiversity governance, as most of the world's biodiversity is found in the developing world. See *inter alia*, Marc Williams, 2005, *The Third World and Global Environmental Negotiations: Interests, Institutions and Ideas (Global Environmental Politics*, 5: 48 – 69); Adil Najam, 2004, *Dynamics of the Southern Collective: Developing Countries in Desertification Negotiations (Global Environmental Politics*, 4: 128 – 154); Susan Sell, 1996, *North-South Environmental Bargaining: Ozone, Climate Change and Biodiversity (Global Governance*, 2: 97 – 118) pp. 110. See in particular, Marian Miller, 1995, *The Third World in Global Environmental Politics*, (Colorado: Lynne Rienner) for a discussion of the Third World as a negotiating bloc in global biodiversity governance.

interpretations of reality that are accepted by policymakers? How are networks constrained by domestic politics of the state that is the subject of transnational advocacy campaigns?

Hypotheses: TANs and Domestic Politics in LDCs

The first hypothesis predicting how TANs influence policymakers in LDCs is derived from scholarship on environmental governance in the Global South. Academics such as Marian Miller and Lawrence Susskind argue that the relationship between LDC government and the environment is conditioned by the global history of development and industrialization, the worsening environmental North-South split in the years after UNCED, and LDC concerns about the inequitable distribution of global wealth and ownership of capital.⁷⁰⁶ LDCs are highly indebted, yet rely heavily on the production of primary goods, which means that LDC efforts to ‘catch-up’ with the process of industrialization launched in the developed world depend on the immediate overexploitation of natural resources. In order to ensure that LDC governments will take environmentally friendly action, networks have to link environmental management to the interests of economic development. H1: transnational advocacy networks must frame

⁷⁰⁶ Marian Miller, 1995, *The Third World in Global Environmental Politics*, Lawrence Susskind, *Environmental Diplomacy: Negotiating More Effective Global Agreements* (New York: Oxford University Press, 1994); Roberts and Parks in 2007, *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* (Cambridge: MIT Press).

environmental policy as relevant to national economic development in order to influence LDC governments.

This hypothesis was tested concurrently with other theories predicting how knowledge generated by civil society networks becomes adopted by policymakers. The epistemic communities literature links influence to the ability of networks of experts to develop a scientific consensus on the causal dimensions of an emerging problem area,⁷⁰⁷ leading to the hypothesis: H2: scientific consensus increases the influence of transnational advocacy networks. Studies on the politics and sociology of turning information into policy suggest that for policymakers to adopt knowledge claims, they have to be socialized into the process of knowledge generation through processes such as multisectoral workshops.⁷⁰⁸ That is, H3: socialization increases the influence of transnational advocacy networks.

Having established these hypotheses, the research tested their explanatory power by process-tracing the implementation of the four projects. In each case, transnational

⁷⁰⁷ Peter Haas 1989. Do Regimes Matter?: Epistemic Communities and Mediterranean Pollution Control. *International Organization* 43: 377-403; Peter Haas 1992. Introduction: epistemic communities and international policy coordination. *International Organization* 46: 1-35; Steven Bernstein 2001. *The Compromise of Liberal Environmentalism*. Chichester, New York: Columbia University Press; Radoslav Dimitrov 2003. Knowledge, Power and Interests in Environmental Regime Formation. *International Studies Quarterly* 47: 123 – 150; Margaret Keck and Kathryn Sikkink. 1998. *Activists Beyond Borders*. Ithaca, New York: Cornell University Press

⁷⁰⁸ See María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics: Transnational Advocacy Networks in Brazil, Ecuador, and India* (State University of New York); Roland B. Mitchell, 2006, Information and Influence (Chapter 11 in Roland B. Mitchell et al, eds. *Global Environmental Assessments: Information and Influence*. Cambridge: MIT Press).

networks of environmental advocates participated in multiple campaigns to persuade policymakers and managers in various sectors, allowing variation on each of the independent variables: issue-framing, knowledge consensus, and socialization.

The Results

An Overview of the Conclusions

The conclusions strongly support the second and third hypotheses: both consensus and socialization were necessary for networks to generate influence, but neither was sufficient. However, there was no support for the first hypothesis: H1: transnational advocacy networks must frame environmental policy as relevant to national economic development in order to influence LDC governments. Economic issue-framing does not correlate either positively or negatively with changes in environmental management approaches taken by policymakers and managers. As a result, it has no independent explanatory power in predicting the ability of networks to generate influence over environmental management.

In fact, arguments relying on an economic valorization of environmental management are potentially counterproductive, in that they reify an environmental epistemology that is likely to be harmful to the interests of sustainable, long-term management. A description of the cases follows, indicating when networks used economic frames, generated consensus, and socialized with natural resource managers.

Comparing the Cases: The Jamaican Cockpit Country

In Jamaica, a transnational network emerged in the 1990s, concerned about biodiversity loss among globally important bird populations residing in the Cockpit Country, a mountainous rainforest region in the northwestern section of the island. The transnational network generated an intersubjective consensus on the causal dimensions of biodiversity loss. The network then participated in the design and implementation of the *Project for Sustainable Conservation of Globally Important Bird Habitats*, a regional GEF-funded project simultaneously carried out in the Dominican Republic and the Bahamas.

The primary threats identified were bauxite mining and decentralized agricultural activity. The network campaigned to persuade the following actors to adopt environmentally friendly reforms: 1) agricultural policymakers in the Forestry Department; 2) mining policymakers in the Ministry of Agriculture and the Jamaica Bauxite Institute (JBI), and 3) protected areas policymakers in the Ministry of Environment and the National Environment Protection Agency (NEPA).

However, despite the presence of a recognized knowledge consensus on the dimensions of the environmental threats to the Cockpit Country, the network managed to persuade only the Forestry Department to change their environmental practices. In that case, the Forestry Department was also the only agency with which the epistemic community was able to generate socialization processes. Moreover, the demonstrated success in banning bauxite mining in the Cockpit Country had little to do with persuasive powers of the epistemic community, but was rather dependent on the political

mobilization of a TAN concerned about the cultural and social impact of bauxite mining in the ecoregion. While the TAN mobilized around claims and knowledge publicized by the epistemic community, the power and influence deployed was political in nature, not cognitive.

In addition, this case suggested that economic framing had little impact on epistemic community influence. While the network made a conscious effort to use economic arguments to persuade policymakers in bauxite management agencies to limit mining activities in the Cockpit Country, these arguments were ineffectual.

Mexico and the Mesoamerican Barrier Reef

The following chapter discusses a similar case of transnational advocacy around protected areas management and biodiversity. In the 1990s, an epistemic community emerged to advocate for biodiversity management in Mexico through the implementation of the *Proyecto para el Sistema Arrecifal Mesoamericano* (SAM Project). In the SAM Project, the network generated an intersubjective consensus about the primary threats to biodiversity in the Mesoamerican reef system, namely fishing, tourism, and coastal development.

In this case, the network participated in campaigns to persuade various policymakers and managers to adopt environmental reforms. These consisted of 1) protected areas policymakers in *la Secretaría de Manejo Ambiental y Recursos Naturales* (SEMARNAT) and *la Comisión Nacional de Áreas Naturales Protegidas* (CONANP); 2) fishing policymakers in *la Comisión Nacional de Pesquería* (CONAPESCA) and *la*

Secretaría de Agricultura, Ganadería, Desarrollo Rural, y Pesquería (SAGARPA); 3) civil society *quintanarroense* fishing cooperatives; 4) tourism policymakers in the *quintanarroense* state government; and 5) transnational hotelier associations (see **Table 3.3**).

Again, this epistemic community had limited success in influencing environmental management, albeit qualitatively more so than their analogue in Jamaica. The network successfully persuaded all actors, with the exception of recalcitrant policymakers in the state government and transnational hotelier associations, to adopt environmental reform. As in Jamaica, the successful campaigns depended on the presence of both a recognized knowledge consensus and socialization between the community and target audiences. Where socialization was absent, as in the case with the *quintanarroense* state government, the network found itself without influence.

In addition, economic arguments had no discernible impact on network influence. The network did successfully use economic arguments in the campaign to persuade CONAPESCA and fishing cooperatives to change management practices and policy but in the first place, the network also managed to generate both consensus and socialization with target audiences in these populations. Second, the use of economic arguments in those cases depended on linking environmental sustainability with the economic wellbeing of domestic populations, rather than with the interests of transnational capital and the primary economic productive sectors of the state. As shall be indicated, linking environmental sustainability to transnational capital interests rather than domestic actors is a strategy that threatens to undermine the logic of conservationism.

Mexico and the Mesoamerican Biological Corridor

The following chapter, focusing on the *Proyecto para el Corredor Biológico Mesoamericano* (CBMMx Project), clarified that demonstrated that, while insufficient, knowledge consensus was nevertheless necessary. In this case, the TAN participated in campaigns to persuade 1) policymakers in the federal biodiversity agency *la Comisión Nacional de la Biodiversidad* (CONABIO); 2) agricultural management in *la Secretaría de la Ganadería, Agricultura, Desarrollo Rural, Pesca y Alimentación* (SAGARPA); 3) protected areas managers in SEMARNAT and CONANP; and 4) state and municipal governments (see **Table 4.3**).

Here, the TAN created substantial social links with policymakers in key agencies, namely CONABIO, SEMARNAT and SAGARPA, through joint participation in institutions created to administer the project. Moreover, the network consciously adopted economic arguments to persuade policymakers to adopt environmental reforms, such as targeted projects for biodiversity conservation. However, since the TAN was unable to generate a knowledge consensus on the threats faced by biodiversity in corridor zones, or on the relevant elements of what constituted important biodiversity, policymakers in CONABIO and the federal government overrode the network's recommendations for corridor management.

Influential Causal Variables: Consensus and Socialization

Thus, the previous three chapters indicate that, for TANs to increase the likelihood of influencing environmental policymaking in LDCs, the members of the

network should generate an intersubjective consensus on the causal dimensions of the problem at hand, and that they should be socialized with policymakers and target audiences. As indicated here, the socialization processes needed include participating in knowledge-building workshops, exchanging staff members, and participating in joint research projects. This is not an exhaustive list, and other kinds of processes are certainly possible. However, without either consensus or socialization, transnational networks will find it extremely difficult to persuade policymakers to adopt significant environmental reforms.

Consensus, TANs and Epistemic Communities

Consensus functions as expected in the epistemic communities literature, in that it undermines competing arguments, legitimates the claims of activists, and provides boundaries on considerations of accepted policy. As a result, networks of scientific epistemic communities are theorized to occupy a privileged role in the process of environmental advocacy.

However, TANs that are not organized exclusively around scientific reasoning can also play a significant catalytic role in environmental advocacy as occurred in both Jamaica and Mexico. In Jamaica, organizations within the Cockpit Country TAN, such as the Environmental Foundation of Jamaica (EFJ) and associations of Accompong Maroons, provided funds and information to the development of the Nature Conservancy's (TNC's) Parks in Peril Project. As described in Chapter 2, the Parks in Peril Project assisted the epistemic community in generating scientific information on the

Cockpit Country, and in building inter-network links between allies in different institutions.

Moreover, this influence was not limited to the provision of resources for knowledge building. After the epistemic community's campaigns in the *Project for Sustainable Conservation* began, the TAN mobilized public political opposition through the Cockpit Country Stakeholder's Group (CCSG) against the issuance of mining leases in the Cockpit Country.

Similarly, the epistemic community in the Mexican SAM Project developed its shared reef monitoring methodology through participating in workshops held by TAN organizations in the International Coral Reef Initiative (ICRI) and the Atlantic-Gulf Reef Rapid Assessment (AGRRA) networks. While ICRI and the AGRRA networks were also science-based institutions, they were not directly involved in the policy debates over appropriate coastal management in Quintana Roo, and were thus not part of the epistemic community network. Nevertheless, the TAN in this case provided important informational resources to the epistemic community, including data that contributed to the emergence of a scientific consensus and shared policy platform. Thus, the roles of TANs and epistemic communities are mutually supportive. Epistemic communities provide authority and legitimacy to environmental arguments, while TANs provide material and political support to epistemic community knowledge building. The transnational dimension of these different is also important, insofar as links to advocates in other countries give TANs a broader resource base, cognitive, informational, and material than would otherwise be the case.

Since consensus matters, a question relevant to the study of transnational environmental advocacy is: when are epistemic communities likely to emerge within broader networks? Can scientific consensus be, if not deliberately engineered, at least fostered? The failure of the Egyptian TAN to generate an intersubjective consensus also suggests that the generation of a knowledge consensus may be curtailed by the technical difficulty of collecting information. This is highlighted in the failure of the MSB TAN to generate a knowledge consensus, as this problem was caused in part by the inability of the network to gain access to needed administrative and material support. For example, in attempting to identify the cause of bird mortalities at Sharm and other recorded instances of mass deaths, members of NCE and EgyBirdGroup reiterated a common concern, that convincing analysis was impossible without extensive technical support. The 2005 Porter study on bird bottlenecks noted the difficulties of data gathering:

...to undertake a comprehensive count at any site would require a commitment to watch for an entire season for at least eight hours per day. Two observers present for all of the time would be essential and up to four when there are large numbers passing. They would need to be capable of total concentration for searching for high flying birds against a brilliant blue sky, for counting large and wheeling flocks and, of course, tricky identification.⁷⁰⁹

For this to occur, there would have to be sufficient resources, support, and autonomy allocated to researchers to gather the kind of quantitative and qualitative information that would be conducive to generating an intersubjective consensus. Theoretically, governments can provide these kinds of resources to prominent scientific

⁷⁰⁹ R. F. Porter, 2005, *Soaring Bird Migration In The Middle East*, pg 140.

research institutes as is the case in the United States, with the National Science Foundation (NSF). More modestly, the federal government of Mexico, along with the *Universidad Nacional Autónoma de México* (UNAM), created and funded the *Centro de Investigaciones de Quintana Roo* (CIQRO) which later became *el Colegio de la Frontera Sur* (ECOSUR), one of the primary research organizations of the epistemic community active in the Mesoamerican reef system. However, this kind of institutional support to the civil society is simply not present in Egypt.

In Egypt, like in the rest of the world, scientists would be willing to do research if they had funds. Scientists, for instance in Egyptian universities, have no university funds that will support large-scale research projects. And large-scale research projects need to be supported, either by EEAA, or supported by bilateral aid programs, like joint American-Egyptian universities.⁷¹⁰

Consensus Is Not Enough: the Importance of Socialization

At the same time, socialization between networks and managers is needed. In describing how global environmental assessments become influential, Clark, Mitchell and Cash argue that: “the process by which information is generated and delivered affects the potential of that information process to influence outcomes.”⁷¹¹ Actors who are

⁷¹⁰ Mohammed Kassas, author interview, conducted October 2008. Taken from transcript of digital voice recording.

⁷¹¹ William C. Clark, Ronald B. Mitchell, and David Cash, 2006, Evaluating the Influence of Global Environmental Assessments, in Mitchell, Cash and Clark, eds., *Global Environmental Assessments: Information and Influence* (Cambridge: MIT Press), p. 14. See also Karen Litfin, 2000, Environment, Wealth and Authority: Global Climate Change and Emerging Modes of Legitimation (*International Studies Review*, 2(2): 119 – 148) p. 130, where Litfin argues that knowledge generation and internalization is a fundamentally social process

socialized in the generation of information and knowledge associated with an emerging problem are therefore more likely to adopt the normative implications associated with that knowledge and consider the conclusions relevant to their own interests. Despite the scientific credibility of the network, Jamaican policymakers in the bauxite mining sector were resistant to arguments for comprehensive protection of sensitive ecosystems in the Cockpit Country, and consensus in the SAM Project was insufficient to overcome environmental recalcitrance by policymakers in the *quintanarroense* government, or transnational hotelier associations.

Finally, in none of the cases did economic framing correlate with the ability of networks to exercise influence over policy. TANs and epistemic communities shaped behavior when economic framing was not used, and in one instance when framing was. Consequently, it is not an independent predictor of network influence.

The only case in which socialization and consensus did not lead to influence occurred in the case of the SAM Project, where the epistemic community failed to persuade hoteliers to change practices and adopt a more sustainable model. This does not necessarily undermine the argument presented here. In the first place, social science arguments are probabilistic, not determinative. In the second place, as will be argued below, the goals of sustainable resource management cannot be incorporated into the logic of transnational capitalism.

The Role of Democracy in Fostering Socialization

In examining the previous three cases, it is apparent that the civil society had more success socializing with a greater number of natural resource managers in Mexico than in Jamaica, even while Mexico has a more recent history with autocracy, only transitioning away from a bureaucratic-authoritarian model in 2000. One possible explanation is that increased centralization improves the likelihood that powerful political elites will socialize with civil society researchers in the production of policy-relevant knowledge. By doing so, they may be more likely to perceive of such knowledge as legitimate, and share perspectives with civil society actors.

Egypt and the Red Sea/Rift Valley Flyway

The final chapter was selected primarily to test whether increasing levels of political centralization were inimical or not to the process of socialization between managers and civil society network members. In Chapter 5, a transnational network attempted to influence biodiversity management in Egypt by campaigning to change the management structure of 1) the Ministry of State of Environmental Affairs (MSEA) and the Egyptian Environmental Affairs Agency (EEAA); 2) the Nature Conservation Sector (NCS); 3) the governorates of the North Sinai, the South Sinai, and the Red Sea; and 4) the Tourism Development Authority (TDA).

However the failure of the network to generate any meaningful influence in this case suggests that while moderate levels of political centralization may enhance the influence of networks of experts, extreme centralization and autocracy prevents expert-

government socialization. Of the campaigns addressed, the network failed to generate socialization with any of the natural resource management agencies, except the NCS, which was marginalized and ineffective. Closed decision making, governmental antipathy to the civil society, and political cronyism hampered the free flow of knowledge from experts to decision makers by isolating civil society experts, and marginalizing the environmental agencies most likely to be receptive to ecological arguments.

While greater democracy may not be necessary, autocracy is directly harmful. This suggests that the effect of political centralization on the exercise of influence by civil society experts is shaped like a Kuznets Curve. Under increasing levels of centralization, policymakers are likely to be more engaged in knowledge production, and hence more likely to socialize with civil society knowledge networks. At a certain point, however, autocracy and centralization calcifies the state and precludes the possibility that civil society researchers will have necessary access to policymakers. However, given the fact that this research provides only four data points, this hypothesis will have to be tested with further research.

Theoretical and Practical Implications

Implications for Theory: Disaggregating Influence

This research clarifies the importance of taking a multilevel approach to understanding how epistemic communities and knowledge networks influence global environmental governance. While authors such as Betsill and Corell restrict the study of

network influence to focus on the impact of advocacy on international environmental negotiations,⁷¹² it is clear that biodiversity management is shaped by the actions and practices not only of policymakers, but also of transnational corporations, networks, non-state governance structures such as the International Organization of Standards ISO 14000 series and local, community-based organizations (CBOs).⁷¹³ Studying the effect of epistemic communities on environmental management requires paying attention not just to the impact of networks on national policymakers, but also on subnational actors and other transnational interests, including transnational capital.

Expanding the parameters of global environmental management to consider multiple sources and levels of political action further gives a clearer picture of how and when knowledge deployed by networks exerts influence on governance. As indicated in the dissertation, framing matters, although not in the way originally theorized. Epistemic

⁷¹² Betsill, Michele M., and Elisabeth Corell. 2001. "NGO Influence in International Environmental Negotiations: A Framework for Analysis." *Global Environmental Politics* 1, no. 4: 65-85. Similarly, the discussion of epistemic community influence on global ozone management focused on international negotiations on the language and regulatory requirements of the Montreal Protocol. See Peter M. Haas, 1992, Banning Chlorofluorocarbons: epistemic community efforts to protect stratospheric ozone, in Peter Haas, ed., *Knowledge, Power and International Policy Coordination* (South Carolina: University of South Carolina Press, pp. 187 - 224), as well as Radoslav Dimitrov Dimitrov, 2003, Knowledge, Power, and Interests in Environmental Regime Formation (*International Studies Quarterly* 47) and in 2005, Hostage to Norms: States, Institutions and Global Forest Politics (*Global Environmental Politics*, 5: 1 – 24), both of which focus on epistemic community impact on international treaty formation.

⁷¹³ See for example the contribution of multi-level networks to global governance apart from treaty negotiation in Sanjeev Khagram and Saleem H. Ali, 2008, Transnational Transformations: from government-centric interstate regimes to cross-sectoral multi-level networks of global governance, Chapter 8 in Jacob Park, Ken Conca and Matthias Finger, 2008, *The Crisis of Global Environmental Governance: Toward a new political economy of sustainability* (New York: Routledge).

communities were successful in Jamaica and Mexico when they reframed biodiversity loss as integrated with broader problems of ecosystem integrity and threats to sustained resource use for domestic populations. Conversely, epistemic communities and TANs were unable to translate knowledge into action when they framed biodiversity loss as relevant to the interests of transnational capitalism.

What this suggests is that the choice of which frames are relevant to understanding a politically contested issue-area is more than just a rhetorical exercise. Different frames or discourses privilege different courses of action, and by extension different constellations of political actors. In the process of policy advocacy and project implementation, epistemic communities and the project institutions, that is the GEF, UNEP, UNDP and the World Bank, are attempting to change the policies and practices of government agents, domestic populations, and transnational capitalists. However, these target audiences do not necessarily have isomorphic goals. The choice of how problems are framed thus affects which of these interests is validated in environmental management; framing a problem involves determining what values and worldviews are associated with inputs and outcomes. Thus, while an intersubjectively held consensus is an important element in predicting when networks exercise influence, the persuasive power of a scientific consensus may be attenuated or conversely strengthened by the social relationships of knowledge production, and by the power dynamics implied by accepted problem frames.

Implications for Policy: Rethinking the Link between Biodiversity and Economics

The constraining effect of frames on the exercise of knowledge is demonstrated in differences between epistemic community success in persuading policymakers and local actors in Jamaica and Mexico, and failure in persuading transnational capital interests in the same cases. Simply put, environmental frames privileged anti-environmental logic, and minimized the chance of success of epistemic communities to persuade target audiences.

As indicated throughout, transnational capitalism is intimately connected with environmental degradation in the cases studied here. Jamaican biodiversity in the Cockpit Country was threatened by transnational aluminum production; Mexican coastal and terrestrial biodiversity in the Mesoamerican region was threatened by transnational tourism; Egyptian biodiversity in the Red Sea region was threatened by transnational tourism and energy, and in all cases, these stated interests benefited from a privileged relationship with the state.

Economic arguments were adopted, but failed to convince transnational capitalist managers in any of these cases to adopt environmental reforms. Conversely, ecological sustainability arguments which did not depend on privileging the interests of transnational capitalism were adopted in Jamaica by the Forestry Department, and in Mexico by SEMARNAT, CONANP and fishing cooperatives.

What this means is that arguments by the GEF and other international environmental institutions to use “biodiversity mainstreaming” as a counterweight to transnational capitalism subordinate environmental management to the economic

interests of elites. This is contrary to the goals of sustainable development. Economic frames that privilege the worldview of transnational capitalism advance elite preferences for natural resource use to the detriment of local populations, and further mean that concern for substantive environmental reform is likely to be transient. At the end of the day, transnational elites do not have a comparative cultural, emotional or historic attachment to sustained natural resource management to that held by local actors, preferring instead to maximize short-term economic exploitation. Interviews with Alfredo Arellano, chair of the National Reef Committee in the SAM Project, and Ildelfonso Palermo, member of the Quintana Roo *Comité Consultivo Estatal* in the CBMMx Project point to this calculation by transnational capital holders:

Traditionally, in the case of tourism in coastal development in Mexico, the expectation of a return on investment among the major hotel developers, is a return in six, seven, eight years. In sustainable development, the plan for a return on investment of resources and benefits, we're talking about the long-term, possibly 15 years. To the way of thinking of the investor, it's a notable difference. ...Unfortunately, with globalization, the hotel chains – Spanish, Italian and German – are looking for the exploitation of short term resources... And this brings more than environmental impacts, this also has social impacts.⁷¹⁴

...You're going to have very destructive actions in the name of development. Very negative... Because they talk about nature as if it were segmented or fragmented, where you have nature on one side and man on another... So you utilize nature to the maximum because, after all, under this idea, the short term is going to predominate, and of course, profit. Immediate profit. A return on investment as soon as possible. This is pure business.⁷¹⁵

⁷¹⁴ Alfredo Arellano Guillermo, author interviews conducted March 2008. Taken from transcript of digital voice recording. Translated from Spanish.

⁷¹⁵ Ildelfonso Palermo, author interviews conducted July 2008. Taken from transcript of digital voice recording. Translated from Spanish.

Consequently, sustainable biodiversity management is better served by a policy framework that empowers local actors as the primary stakeholders. This is qualitatively different from the stated goals of biodiversity mainstreaming as described by the GEF, which calls for linking sustainable biodiversity management policies to elite economic interests “where the primary focus has previously been on production, economic activity, and development, rather than on biodiversity conservation losses or gains.”⁷¹⁶

First, the successful adoption of frames that privilege and empower local interests raises the possibility that transnational knowledge networks will gain political allies in the campaign for improved environmental management. As indicated in Jamaica, local communities in the Cockpit Country mobilized in support of the biodiversity conservation goals of *the Project for Sustainable Conservation*, lobbying ardently for a moratorium on bauxite mining through the CCSG. Similarly, locally based fishing cooperatives in Mexico were highly supportive of the SAM Project and the sustainable use of marine resources promoted by the TAN. In those cases, local actors, aware of the impact of transnational capitalism on their long-term resource use objectives, provided political support to epistemic communities.

Second, taking a management approach that focuses on empowering local actors minimizes the possibility of local obstructionism in natural resource conservation. If local actors feel alienated from the goals of environmental management, as occurred in the CBMMx Project, they could effectively withdraw from and undermine conservation

⁷¹⁶ Global Environment Facility, 2005, *Mainstreaming Biodiversity in Production Landscapes* (GEF Working Paper) pp. 2.

efforts. In short, local support grounds transnational norms in a specific political context, described as “norm localization” by Acharya.⁷¹⁷

Specific Recommendations for Policy and Practice

Given these constraints on the efficacy of scientific knowledge, namely the need to attain socialization, consensus, and to empower local actors, the following section gives specific recommendations to the GEF and to networks to improve the influence of transnational knowledge-based communities over global environmental governance. As described below, these recommendations focus on enhancing the impact of knowledge networks on the domestic implementation of MEAs and environmental norms. As such, while drawn from these specific cases, they are relevant to environmental issue-areas characterized by similar relationships between international obligations and domestic practices.

Restrict the Focus of Transnational Research

First, it is essential that advocacy networks, in order to give their claims authority, base their arguments on sound scientific claims. Second, the importance of knowledge consensus in legitimating claims is demonstrated here and in the literature, where epistemic communities have more persuasive power than other kinds of networks. Thus, networks should take steps to encourage the development of an intersubjective consensus.

⁷¹⁷ Amitav Acharya, 2004, How Ideas Spread: Whose Norms Matter? Norm Localization and Institutional Change in Asian Regionalism (*International Organization* 58: 239 – 275).

In order to facilitate the emergence of a knowledge consensus, it is essential that transnational knowledge networks restrict the research agenda such that scientists have a commonly shared baseline for understanding emerging problems. The efficacy of a restricted research agenda in generating a workable consensus is demonstrated in the emergence of a knowledge consensus in a transnational epistemic community constituted around the depletion of stratospheric ozone. After the negotiation of the framework Vienna Convention on the ozone layer, Mostafa Tolba, who was adamant about deriving a binding agreement, used UNEP's offices to commission studies on ozone depletion from transnational scientific working groups.

Scientists within these groups focused their research on seven ozone depleting substances, and adopted a program focused on a chlorine-loading model of the stratosphere, all of which comprised a truncated view of the environmental problem.⁷¹⁸ This program fostered a core set of agreed-upon principles and arguments called the Würzburg Consensus, which then strengthened the arguments made by pusher states for a strong regulatory protocol.⁷¹⁹

In the cases studied here, the networks that developed a standardized or restricted research agenda similarly developed a scientific consensus on relevant causal processes, thus becoming epistemic communities. In Jamaica, the Nature Conservancy (TNC) and

⁷¹⁸ Karen Litfin, 1994, *Ozone Discourses*

⁷¹⁹ Peter Haas 1989. Do Regimes Matter?: Epistemic Communities and Mediterranean Pollution Control. *International Organization* 43: 377-403; Peter Haas 1992. Introduction: epistemic communities and international policy coordination. *International Organization* 46: 1-35; The Social Learning Group, *Learning to Manage Global Environmental Risks: Volume 1*. Cambridge: MIT Press

the Windsor Research Center (WRC) developed a shared methodology, which was then later shared with other ENGOS, such as the Southern Trelawny Environment Association (STEA) and the Forestry Department. In Mexico, the reef monitoring methodology used by the network was developed over a period of several years, by the ICRI workshops in the mid-1990s, and the Atlantic Gulf Reef Rapid Assessment (AGRRA) initiative from 1998 onward, before the SAM Project was formally created. The methodology was later formally adopted as a component of the project under the *Programa de Monitoreo Sinóptico* (PMS) in 2002.

In contrast, the transnational advocacy network in the Mexican CBMMx project did not start trying to generate a shared methodology until after the launch of the project, after federal policymakers had already asserted their preferences over project management. The lack of a shared research program prevented the network from generating a shared conceptualization of, and hence knowledge consensus on, biodiversity loss in the CBMMx.

As of the time of writing, the network still had not developed a commonly held methodology on understanding biodiversity loss in Mexican Mesoamerica. Although the project has since formally ended, the CBMMx TAN should foster and generate an intersubjective consensus through a shared understanding of biodiversity. If the TAN demonstrated a scientific consensus on the importance of additional areas to biodiversity conservation in Mesoamerica, the network would have an additional cognitive tool to lobby for additional funds from the GEF, as well as to undermine competing arguments for limited biodiversity protection.

Institutional Empowerment of Transnational Knowledge

The research also shows that institutions such as the GEF can and should play a formative role in fostering a knowledge consensus. First, as occurred with Mostafa Tolba's influence over the ozone scientific network's focus on limited ozone depleting substances, institutions can, under the mandate of gathering useful policy relevant information, constrain the research agenda taken by transnational networks. By doing so, institutions may encourage the adoption of a standardized approach to understanding environmental problems among scientists.

Second, the GEF should ensure that local and transnational networks of experts have sufficient resources to ensure that scientific knowledge is credible. As described above, the Egyptian TAN was unable to generate an intersubjective consensus, in large part due to the absence of validated information on the anthropogenic causes of bird mortalities. An effective, direct transfer of resources to Nature Conservation Egypt (NCE) would have aided the network in conducting research, overcoming the gaps characterizing the current state of knowledge. Moreover, engaging directly with domestic NGOs would obviate the need of experts to depend on antipathetic state agencies. Again, by facilitating consensus, international environmental organizations would improve the chance that networks of experts would influence environmental management and contribute to effective reform.

Third, the institutions of environmental governance, including the GEF, should refrain from uncritically advancing arguments for environmentalism based on the interests of economic capital. As a result of the focus on capitalist growth as a metric for

appropriate policy the key stakeholders named by the GEF and the World Bank documents all included the same transnational interests that were motivated to cause the environmental problems studied in the first place. As environmental problems in LDCs involve local natural resource use, this is not appropriate; rather the primary stakeholders should always be identified as the local users of resources, particularly if they are subsistence or traditional users. In order to include these kinds of actors as proper stakeholders, rather than engage in tokenism, environmental projects should create standing administrative institutions that formalize their participation in project design and management. The CCEs or the National Reef Committee created in Mexico for the CBMMx and the SAM Projects respectively serve as potential templates, as long as the participatory issues described in the chapter on the CBMMx are addressed.

Improving the Level of Socialization

As knowledge consensus is insufficient, international organizations should also promote substantive socialization between governmental agencies and civil society networks of experts in generating policy relevant knowledge. This should be carried out by credibly threatening to withhold project funds unless state agencies effectively integrate local experts into planning and management strategies. While the GEF did include mechanisms for civil society-government interaction in its biodiversity management projects, insufficient attention was paid to the quality of civil society participation, particularly in Egypt.

In that case, the GEF funded a project in which the network of civil society advocates universally asserted that there was no substantive communication between experts and natural resource managers in the government. In fact, during the development of the MSB Project, project partners in Birdlife International recognized that there was no domestic civil society ENGO that could act as an implementing agency. While the Nature Conservation Egypt (NCE) was established shortly after the design of the MSB Project, as described in Chapter 5, they were given only a formal role in project participation, with no authority over agenda setting and project design.

However, as seen in the case of the CBMMx, the GEF can exercise leverage to persuade governments to take a more active role in including civil society participation. As described in Chapter 4, the threat issued by the World Bank to withdraw GEF funds persuaded *la Comisión Nacional de la Biodiversidad* (CONABIO) to finally create the *Consejos Consultivos Estatales* (CCEs), institutionalizing them as forums of participation for civil society experts. At best, projects that lack effective expert participation are likely to lead to inefficiently spent resources. At worst, given the centralization of power in Egypt in a government characterized by embedded cronyism, this is likely to perpetuate harmful patterns of resource use by empowering environmentally antipathetic actors. The GEF should therefore refuse to transfer additional funds to Egypt for the MSB Project unless these concerns are meaningfully addressed, and should take a similar stance in countries characterized by analogous relationships between the state and environmentally exploitative actors. While the Mubarak regime is no longer in power,

this does not necessarily mean that the cloistered political system will liberalize to empower environmental activism without prodding from external economic actors.

Technocracy versus Democracy?

As a final note, critical theorists observe that the privilege accorded to scientific inquiry may lead to technocratic policymaking. This is problematic when science delegitimizes local participation, and hence local democracy, especially when the networks carrying transnational claims and norms to the developing world are rooted in Northern countries. Moreover, as the above policy suggestions indicate, transnational networks may be empowered or facilitated by international financial institutions like the GEF and the World Bank, which have been amply criticized as embodying Northern, capitalist interests. As indicated throughout the dissertation, the transnational networks active in environmental advocacy in Jamaica, Mexico and Egypt are based, at least in part, in ENGOs, academic institutions and scientific communities from the United States, the UK and continental Europe.

The preponderance of apparent Northern actors in these transnational networks is not obviated by observing that the language used by the networks is based on scientific, ostensibly universal epistemologies. Authors such as Kütting and Lipschultz problematize the authority accorded to scientific inquiry as a rationalist epistemology that de-legitimizes worldviews based on, for example, cultural or emotional

epistemologies.⁷²⁰ Additionally problematic, science is validated in ways that tend not to acknowledge the fact that scientific inquiry itself is driven by normative biases.

However, this research indicates that concerns about the potential anti-democratic nature of transnational expert advocacy may not be warranted. In practice, domestic policymaking and natural resource management in developing countries may frequently be non-democratic, even where policymakers can claim a public mandate. Khagram⁷²¹ and Moog Rodrigues⁷²² both illustrate cases of popularly elected governments in India and post-transitional Brazil respectively, where domestic natural resource management policy created tremendous costs for marginalized rural populations.

A similar logic adheres in the cases described here. While Egypt cannot plausibly make the claim to be a representative government, Jamaica and Mexico, especially after 2000, are administered by governments that can credibly base their legitimacy on their electoral support by the mass public. Nevertheless, the erstwhile stances taken by these government officials over natural resource management have clearly negative consequences for local populations. Bauxite mining in the Cockpit Country, if it took place, would have resulted in the loss of economic livelihood among Maroons and

⁷²⁰ See Gabriela Kütting and Ronnie Lipschultz, eds. 2009. *Environmental Governance: Power and Knowledge in a Local-Global World* (New York: Routledge Press) and Park, Finger and Conca eds. 2008. *The Crisis of Global Environmental Governance* (New York: Routledge) for discussions on this topic.

⁷²¹ Sanjeev Khagram, 2004, *Dams and Development: Transnational Struggles for Water and Power* (New York: Cornell University Press)

⁷²² María Guadalupe Moog Rodrigues, 2004. *Global Environmentalism and Local Politics* (Ithaca: SUNY).

agricultural populations who resided in areas of bauxite deposits. Indeed, as the research indicates, bauxite companies were allegedly seeking to relocate residents, before public outcry and a responsive administration halted bauxite expansionist plans. Similarly, the ongoing concern among coastal fishing populations in Quintana Roo was that hoteliers continuing the pattern of large-scale resort construction would damage marine ecosystems to the extent that fishing would become impossible.

Consequently, the anti-democratic assertions of critical theorists can be alleviated by noting that transnational knowledge networks in practice may oppose transnational and domestic forces that marginalize local populations. Indeed, as suggested here, transnational knowledge networks are likely to meet their environmental policy goals when they adopt frameworks and strategies that empower local populations and improve their autonomy over natural resource management. By doing so, transnational science-based activism can contribute not only to global environmental governance, but also to comparatively democratic policymaking in LDCs.

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