

Neoliberalism, Environmental Justice, and the Convention on Biological Diversity: How Problematizing the Commodification of Nature Affects Regime Effectiveness

*Kemi Fuentes-George**

What assumptions underpin payment for ecosystem services (PES) and other neoliberal, market-based approaches to biodiversity management? One of the main challenges in effectively managing environmental problems is translating internationally defined agreements and goals into action at the domestic level.¹ This requires convincing various target groups of domestic actors, policymakers, and populations to take action that is commensurate with international pronouncements.²

Countries participating in international environmental regimes, including for biodiversity, deforestation, and endangered species, are now promoting PES as the most rational approach to environmental management. PES uses the language of economics to convince potentially resistant policymakers, corporate actors and domestic populations, particularly in developing countries, to further ecological goals, such as biodiversity conservation. For instance, Curlier and Andresen, in their assessment of international regime effectiveness, assert that the conservation of endangered species in developing countries “depends on the high economic value of certain species, especially for sustainable utilization programs.”³ International organizations, such as the World Bank and the Global Environment Facility (GEF), use the language of neoliberalism in programs espousing ecosystem services modeling⁴ and biodiversity mainstream-

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1. Miles et al. 2002; Young 1999.
2. Curlier and Andresen 2002; 2002; Mitchell et al. 2006.
3. Curlier and Andresen 2002, 367.
4. Bishop et al. 2008; Carpenter et al. 2006; Fisher et al. 2008; Pimentel et al. 1997.

ing.⁵ The Tenth Conference of the Parties to the Convention on Biological Diversity (CBD) noted that environmental services such as soil stability, forest health and water quality provide unrecognized, but nevertheless quantifiable economic benefits to the gross domestic product (GDP) of countries.⁶ Thus, environmental nongovernmental organizations (NGOs), academics and international organizations alike spend considerable effort trying to “translate” the worth of the environment into the mutually intelligible language of neoliberal economics,⁷ in order to convince policymakers and economic actors of the validity of action.⁸

However, adopting neoliberal approaches like PES may cause problems for the effective management of nature at the local level, and by extension, the implementation of environmental regimes. As critical literature in ecological economics points out, the neoliberal economic model is only “one of the many metaphors necessary to comprehend the complexities of environmental changes and their impacts on humans.”⁹ What the neoliberal approach describes as “effective management” may be incompatible with effective management under paradigms that privilege, for example, cultural and justice claims that lack monetary valuation. For practical, as well as ethical reasons, practitioners need to be critical of any assumption that neoliberal economics is always an appropriate framework upon which to base the local environmental management.

This paper examines the relationship between neoliberal economic norms, environmental justice, and effective environmental management by exploring the implementation of the biodiversity regime in developing countries. Even though Young and others are skeptical about whether it is possible to include “fairness or justice, stewardship [and] participation”¹⁰ in implementing regimes, these aspects go to the heart of effective management. They reflect important normative questions behind biodiversity management, including what biodiversity consists of, what it is being managed for, and for whom it is being conserved. If conservation and biodiversity management is to be subsumed under state-sponsored development policies,¹¹ this raises the question of “development for and by whom?” The literature on environmental justice is very clear: if growth and development are driven by dominant economic actors, their prefer-

5. Millennium Assessment 2005; Peterson and Huntley 2005.

6. UN Convention on Biological Diversity 2010. See also Peterson and Huntley 2005, 3.

7. I am using Bakker’s typology of “neoliberalism” here, to describe two components of a multivariate process that operate at different geographic scales. See Bakker 2010, Castree 2006.

8. Carpenter et al. 2006; Kosoy and Cordera 2010; National Research Council 2004; Norgaard 2010.

9. Norton and Noonan 2007, 665. See also Bakker 2010; Gómez-Baggethun et al. 2009; Kosoy and Cordera 2010.

10. Young 1999. See also Miles et al. 2002.

11. CBD COP-10, Decision X/2; Gómez-Baggethun et al. 2009; Norton and Noonan 2007; Millennium Assessment 2005; Peterson and Huntley 2005.

ences may be mutually incompatible with those of other actors, primarily marginalized or politically disenfranchised communities at the local level.¹²

There are a number of reasons for the incompatibility of neoliberalism with sustainable local management. First, under this paradigm, the timeframe of payoffs is of paramount importance. While degraded natural environments may impose costs in the long run, economic firms tend to heavily discount future costs and benefits, particularly when avoiding future (and ultimately unknowable) costs means sacrificing immediate gains. Second, although the advocates of neoliberalizing nature recognize that commodification is only one part of valuing nature,¹³ if natural resources are evaluated based on their economic value, it may be economically rational to engage in short-term, ecologically unsustainable exploitation. Third, as this article argues, local actors may value the environment through different frameworks—those suitable for smaller-scale economies and non-economic values. Moral concerns arise when the interests of dominant economic forces marginalize these alternative perspectives. Practical concerns arise when different groups of actors have different ideas about what biodiversity and nature “are,” and therefore what “appropriate policy” is. In exploring these links in this article, I link debates on international environmental justice with literature on environmental regime effectiveness and neoliberal ecological economics.¹⁴

PES and Biodiversity Conservation: GEF-Funded Projects in Developing Countries

This article analyzes the relationships between neoliberalism and ecosystem services modeling in the implementation of two CBD and GEF projects in Jamaica and Mexico to protect globally important biodiversity. The catalysts for both projects were epistemic communities, understood as a transnational network of environmental advocates recognized as experts in their field, with a shared consensus on relevant environmental processes and policy recommendations.¹⁵ In implementing these projects, norm entrepreneurs in the epistemic community network utilized the logic of neoliberal economics and national development to argue for biodiversity conservation. However, when actors in the major productive sectors assessed the management of natural resources, their economic logic favored continued environmental overexploitation as in the best interest of national development. Key regulatory agencies in each country supported this view by asserting that appropriate biodiversity management required minimal changes to the status quo.

12. Carmin and Agyeman 2011; Iles 2004; Khagram 2004; Pellow 2007; Schlosberg and Carruthers 2010. For a review of the literature, see Kütting 2004.

13. Carpenter et al. 2009; Millennium Assessment 2005.

14. As Kütting (2004) notes, the mainstream international relations literature, which focuses on treaty implementation, is generally silent on the role of environmental justice. For an exception, see Roberts and Park 2006.

15. Haas, Keohane, and Levy 1993; Hochstetler and Keck 2007; Keck and Sikkink 1998.

Nevertheless, a political movement in each country eventually took up the knowledge produced by the epistemic community in pushing for new environmental regulation. Moreover, they did so by uniting behind cultural and emotional arguments for the value of biodiversity, after early attempts to use PES and neoliberal logics failed to persuade policymakers. In Jamaica, this culminated in a moratorium on mining in a delicate mountain ecosystem, while in Mexico, the federal government adopted new protections on coastal mangrove zones. In defending their sociopolitical and ecological claims, local actors, as shown below, used language invoking defense of traditional practices, land sovereignty, and in some cases, blood and violence.

Case Selection and Research Methodology

To understand how the two projects were implemented and the strategies employed by epistemic communities, local actors, and policymakers, I process-traced design and implementation of these projects through qualitative interviews, project reports, internal memos, and press releases. Interviewees also helped to delineate members of different groups by recommending additional interview subjects, a practice described as “snowball sampling.”¹⁶ Each epistemic community comprised many more organizations than the ones named here, given space constraints. While Jamaica and Mexico exhibit important differences—Jamaica is a unitary parliamentary state, while Mexico has a federal presidential system—they have similar institutional capacities in science, technology, and governance, according to the Environmental Sustainability Index¹⁷ and the World Bank Governance Research Indicators Database.¹⁸ I have provided my own translation of Spanish language documents and interviews.

Establishing a Project to Conserve Biodiversity in Jamaica’s Cockpit Country

The first case discusses conservation efforts in Jamaica’s Cockpit Country, a highly biodiverse region of rainforests and niche microhabitats formed by conical limestone hills and depressions, resembling the cockfighting pits that give the area its name. Cockpit Country does not have a legally fixed border, which makes contestations over what Cockpit Country “is” and what it is “for” politically relevant.

Most residents of Cockpit Country belong to agricultural and peasant communities. Some are descended from populations of Maroons, the escaped slaves and indigenous peoples who fled to the hilly terrain during guerrilla wars against the British. For these communities, Cockpit Country provides subsis-

16. Biernacki and Waldorf 1981; Noy 2008.

17. Esty et al. 2005.

18. Kaufman, et al. 2005.

tence, fuel, and commerce through forest products, timber, and yams, one of the primary agricultural products of Trelawny, a parish in the northwestern section of the island.¹⁹ For the Maroons and other local residents, Cockpit Country is delimited by a peace treaty signed by the British on January 6, 1738, which ceded an area of still-debated size to the sovereign control of the Maroons.²⁰

These local perspectives are contested, however, by the imaginaries of other actors who have radically different ideas about the size and content of what is to be defined as Cockpit Country. The Forestry Department of Jamaica has declared 300 square kilometers of Cockpit Country as a forest reserve. Epistemic community scientists have mapped 450 square kilometers of what they consider Cockpit Country, based on subterranean water cycles and internationally important genetic endemism.²¹ The Maroon community, based on their understanding of the colonial peace treaty, has supported a recently proposed map declaring the area to comprise 1,142 square km.²² In contrast, Jamaican government regulatory agencies for mining and transnational bauxite companies commissioned a study by the Jamaica Bauxite Institute declaring Cockpit Country to be only 288 square kilometers.²³ Clearly, different perspectives about the size of Cockpit Country will affect how much protection is deemed appropriate.

In 1999, the government of Jamaica applied for World Bank funds for biodiversity conservation. Invited by the government and the Bank, experts from Jamaican, British, and American academic institutions, ENGOS, and the Jamaican Forestry Department carried out studies on biodiversity, anthropogenic threats, and land use issues in Cockpit Country.²⁴ By 2001, this transnational network exhibited the characteristics of an epistemic community. Network members shared a scientific consensus, normative approach, and concern that poor management would lead to irreparable biodiversity loss. However, these initial efforts at financing a conservation project were abandoned in 2000 after wavering commitment from the government.

In 2003, the epistemic community lobbied anew for GEF funds to conserve Cockpit Country as a site for endangered parrots, invoking a connection with international regimes on biodiversity and migratory species. Some of the main epistemic community organizations involved included the Windsor Research Centre (based in Cockpit Country but comprised of UK and US researchers); the Jamaica Environment Trust (based in Kingston); the Nature Conser-

19. Cockpit Country provides approximately 42 percent of Jamaica's national yam output. Spence *circa* 2000, 15.

20. Zips 1996, 1998.

21. Mining Commissioner Thompson, author interviews conducted July 14, 2011. Mike Schwartz, member of epistemic community organization the Windsor Research Center (WRC). Author interviews conducted June 5, 2006 and August 12, 2011.

22. Mike Schwartz, member of epistemic community organization the Windsor Research Center (WRC). Author interviews conducted June 5, 2006 and August 12, 2011. Data confirmed by comparing maps produced by epistemic community organizations from 2006–2011.

23. *Jamaica Gleaner*, December 27, 2006.

24. Koenig et al 2000.

vancy (a transnational ENGO); and researchers from the University of the West Indies. Although the Forestry Department is a governmental agency, it functioned throughout the project as an epistemic community organization,²⁵ as staffers participated in training workshops, research projects, and informational exchanges with civil society actors. This time, with commitment from the Government of Jamaica, the GEF approved the Project for Sustainable Conservation to strengthen local capacity to conserve globally important biodiversity under the CBD regime.

At first, the GEF project focused on agricultural practices among local populations, particularly “yam-stick” harvesting, which requires cutting saplings to spur the growth of crop biomass.²⁶ It did not initially consider mining, as the mountainous terrain ostensibly made mechanical extraction prohibitively expensive.²⁷ However, mining soon dominated the agenda, as bauxite companies signaled interest in exploiting Cockpit Country by applying to the Ministry of Agriculture for prospecting and exploration licenses in the early and mid-2000s. At the time, it was assumed that the Ministry of Agriculture, which had a history of pro forma approval of the bauxite industry’s practices, would green-light ore extraction. This requires constructing access roads for large machinery and then cutting and removing all vegetation covering deposits. Such activities would result in major environmental problems, such as deforestation, degraded forest cover, segmented or destroyed ecosystems, soil erosion, and sedimentation and eutrophication in aquatic ecosystems.²⁸

This also raised justice issues, as these practices place disproportionate pressure on the subsistence base of already marginalized communities.²⁹ Land ownership is highly inequitable: three percent of landowners control 62 percent of the available farmland, so small farmers have to rent or lease land from larger property owners or conduct incursions into virgin forested areas, making them more vulnerable to displacement.³⁰

Poverty, Development and Nature: Bauxite Mining in Cockpit Country

Most of the regulatory power over mining lies with the Ministry of Agriculture, which grants mining licenses, as well as the Ministry of Mining and Energy and its Jamaica Bauxite Institute, both of which evaluate the process and environ-

25. In practice, governmental regulatory agencies may often operate as epistemic community organizations. See Thomas 2003, in his discussions of California’s regulatory agencies, or the discussions of the EPA in Haas 1992.

26. Spence *circa* 2000.

27. Shanti Persaud, environmental regulator in the Jamaica Bauxite Institute (JBI), author interview conducted July 3, 2006.

28. Kimberly John, member of epistemic community organization, the Nature Conservancy. Author interview conducted July 12, 2006.

29. See Carmin and Agyeman 2011; Kütting 2004; Pellow 2007; Schlosberg and Carruthers 2010 for discussions on marginalization, poverty, and environmental injustice.

30. Weis 2000, 302. See Khagram 2004 for a discussion of the impact of displacement on marginalized communities with low land-tenure rights.

mental soundness of mining operations.³¹ While Jamaica has a Ministry of Environment, its powers are anemic, enervated by consistent reshuffling of staff since the 1990s,³² a common feature of environmental agencies in developing countries.³³

At the start of the advocacy period in 2004–2005, the epistemic community defined the region by referencing a study of watersheds in the region that members had conducted in 1999. The idea was to use economic language to persuade the government of Jamaica that Cockpit Country was important for tourism and hence for Jamaican GDP, by virtue of its watersheds, which provided municipal and drinking water to tourist centers in the northwestern section of the island.³⁴ Diana McCauley of the Jamaican Environmental Trust indicated that transnational and Jamaican NGOs undertook at least three such studies between 2005 and 2011, and a fourth began under the Windsor Research Center in 2011. The link between conservation and tourism was seen as a strong economic argument. Tourism is a driver of national development, a generator of foreign revenue, and an internationally significant industry in a small island such as Jamaica.³⁵ Tourism, like bauxite, contributes about 10 percent of the country's GDP making both arguably equally important to Jamaica's political economy.³⁶ As noted by a member of the epistemic community,

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 saying, "If you lose this, you stand to lose millions of dollars in tourism."³⁷

However, despite continued campaigning and knowledge generation by members of the epistemic community, the Jamaican government remained unconvinced that conserving biodiversity by preventing bauxite extraction was economically rational. In 2006, it dismissed the first study on the link between tourism and Cockpit Country's water supply as unsubstantiated.³⁸ Claims of projected revenues through conservationist activities like ecotourism, or the value of water's ecosystem services for the tourist sector, were described as too long-term, too vague, and too small to offer a convincing counterbalance to

31. NEPA 1999.

32. Franklin McDonald, former CEO of the National Environmental Planning Agency. Author interviews August 2007.

33. See Hochstetler and Keck 2007, Khagram 2004, Steinberg 2003 for additional cases.

34. The Nature Conservancy 2005, 2.

35. USGS 2006, 10.11. Between 2002 and 2006, Jamaica produced the fourth-highest quantity of bauxite globally, exporting 4.5 million tons to the US alone.

36. NEPA 1999, 2–3.

37. Dayne Buddo, member of epistemic community organization, the Jamaica Clearing House Mechanism. Author interviews conducted July 20, 2006.

38. Donna Blake, senior director of the Forestry Department, author interviews conducted June 28, 2006. Transcript of audiocassette recording on file with author.

mining's role in GDP. In 2011, epistemic community member Diana McCauley observed:

Good luck with [economic valuation] is what I think. I was actually in the room when decisions were taken about things, about natural resources that *had* had economic valuations. It didn't even come up.³⁹

In 2006, the prospecting licenses issued to mining companies expired.⁴⁰ Although the Ministry of Agriculture asserted that mining was not planned and that the licenses would not be renewed,⁴¹ local communities reported in September that bauxite companies had in fact begun prospecting, and were relocating residents from lands with identified deposits.⁴² Galvanized by these reports, the epistemic community pressed for a firm commitment by the Jamaican government for conservation.

In October and November 2006, epistemic community members used the press, radio, and private meetings with mining regulators to argue for a moratorium. In December, the government seemed to relent and invited members of the epistemic community to participate in a private consultation with the Minister of Agriculture and the Jamaica Bauxite Institute. However, the Minister revealed at the consultation that the licenses had already been issued, whereupon the epistemic community members “storm[ed] out”⁴³ of the meeting and issued a public repudiation of the process two hours later.⁴⁴

Local Perspectives on Nature and Biodiversity Management

While the PES modeling failed to promote conservation, local activism informed by epistemic community knowledge succeeded. During the period of project advocacy, the epistemic community formed links with local agricultural and Maroon communities by living with and producing knowledge alongside these residents. This knowledge then formed the nucleus of a budding coalition of local agricultural and Maroon communities, the Jamaican diaspora, and environmental activists in Kingston. Moreover, this coalition converged around a mix of cultural, historic, socioeconomic, and ecological arguments about the value of the natural environment.

As revealed in interviews, local community members were emphatic that the attempt to link Cockpit Country to national development would have severe adverse consequences for their idea of what the region was and the role of its natural resources in their lives. First, local communities critiqued the government's claim that bauxite mining in Cockpit Country would bring “develop-

39. Diana McCauley, member of epistemic community organization the Jamaican Environmental Trust. Author interviews conducted August 1, 2011.

40. Cockpit Country Worry. *Jamaica Observer*, Sunday November 19, 2006.

41. No plans to mine Cockpit Country. *Jamaica Observer*, Sunday, December 10, 2006.

42. Cockpit Country Worry. *Jamaica Observer*, Sunday November 19, 2006.

43. Mike Schwartz, personal communication, January 2007.

44. No plans to mine Cockpit Country. *Jamaica Observer*, Sunday, December 10, 2006.

ment" to the rural poor of the area, given that bauxite mining has become increasingly automated since the 1970s and is not considered a large employer.⁴⁵ Cockpit Country residents are also concerned about the precedent set by bauxite's expansion into other parishes. For example, they referred in interviews to the example of bauxite mining in the parish of St. Ann, where bauxite companies displaced low-income and agricultural residents of mineral rich lands, ". . . took away the best part of the land for bauxite mining," and failed to fulfill their promises of employment after exploiting the parish's natural resources.⁴⁶

Second, even where there was potential gain to be made by accepting payment for relocation, respondents resisted the destruction of what they saw as Cockpit Country, as doing so would mean losing a core component of the identity of yam farmers and Maroons. As one local yam farmer put it, "We have to defend what's ours. We can't let the foreigners come in and take it all away. Because then we'll have nothing left."⁴⁷

In response, members of the epistemic community and the diaspora signed petitions and sent letters to the Cabinet and Ministry of Agriculture, and epistemic community organizations such as the Jamaica Environment Trust and the Windsor Research Center held public denunciations. Maroon communities and local farmers also threatened that "blood will be shed" if mining and its attendant problems, such as water pollution and coerced displacement, were to take place.

Both those who supported and those who opposed extension of bauxite mining in Cockpit Country noted that this resistance was driven by "non-scientific" arguments. One senior mining official who did not want to be identified dismissed the resistance as entirely "irrational" and "emotional." More favorably, epistemic community member Diana McCauley observed:

. . . Not everybody is swayed by the science . . . There was this, sort of factual based approach that said "It's an important source of water," all of that kind of thing, and then there was this more, "this is part of our history, our culture, our most significant remaining natural resource," and that appealed to another set of people.⁴⁸

In the end, public mobilization mattered. In 2007, under political pressure, Agricultural Minister Clarke issued a hold on mining and prospecting leases, pending a definition of Cockpit Country's legal borders. After parliamentary elections, the Ministry of Agriculture asserted that Cockpit Country, as defined by the advocacy coalition, would be permanently off limits to mining. This was an outcome attributed by policymakers and epistemic community members to the concerted activism of the local community, described in the final report of the GEF as "most successful advocacy work."⁴⁹

45. Tramm 1977.

46. Viris Pingue, author interview conducted July 23, 2011.

47. Viris Pingue, local yam farmer in Cockpit Country. Author interview conducted July 23, 2011.

48. Diana McCauley, author interview conducted August 1, 2011.

49. Varty 2007, 28.

This is not to say that the issue has been settled. Shortly after Minister Clarke issued the hold on mining leases, Jamaica held its 2007 parliamentary elections. The opposition Jamaican Labour Party won by a slight majority that year, before the return of the former incumbent People's National Party in December of 2011. Changes in political power have created significant legal uncertainty about the status of the area, given the pattern of low institutional continuity in the Jamaican political system, and the consistent lack of clarity about appropriate boundaries. As the Commissioner of Mining noted in 2011, bauxite extraction is very attractive to the Jamaican state:

What we'd really love is for [environmentalists] to tell us is how can we [mine]. Don't hold up operations. That won't spin in a country where there is poverty. I'm not saying we should mine, and mine at all costs. But mine we must. And when I'm gone, and they're gone, mining is here to stay.⁵⁰

Establishing a Project to Conserve Biodiversity in the Mesoamerican Barrier Reef System

In Mexico, the GEF biodiversity project focused on the Mesoamerican Barrier Reef System (MBRS), a transboundary basin in the territorial waters of Mexico, Guatemala, Honduras, and Belize. Like Cockpit Country, MBRS is a site of high biodiversity, with substantial genetic variation in the visibly striking coral reefs and in resident populations of fish, crustaceans, zooplankton, and sea grasses.⁵¹

As with Cockpit Country in Jamaica, the meaning of nature in the MBRS region varies across audiences. For local fishing communities, its marine life and ecology—including the role of mangrove zones in shrimp reproduction—provide subsistence, commerce, and intergenerational fishing. For hoteliers and those who work in the hospitality sector, the region's scenery is a selling point for tourists, whereas the mangrove zones and coastal vegetation are seen as breeding grounds for mosquitoes, and getting in the way of beachfront construction. For environmentalists and marine ecologists, the region harbors untrammled genetic diversity and has been imagined since the 1990s as an integrated ecoregion and coral system second in size only to the Australian Great Barrier Reef.⁵²

In 1996, the governments of Mexico, Belize, Guatemala, and Honduras pledged to coordinate marine basin management in the interest of regional political integration.⁵³ In 1997 they commissioned a number of domestic ENGOs who had been working in the area, such as Los Amigos and WWF-México, to design a biodiversity project under the CBD.⁵⁴ From 1997 to 2001, these organiza-

50. Commissioner Thompson, author interview conducted July 14, 2011.

51. García-Salgado et al. 2006, 6.

52. This claim that the Barrier Reef System was second in size only to the Great Barrier Reef was mentioned independently in almost every interview conducted with epistemic community members and policymakers. Also see UCP 2004.

53. UCP 2004, 3.

54. *Ibid.*

tions became a transnational network through jointly produced research and workshops held in Mexico, the Caribbean, and Australia. They soon evolved into an epistemic community, in part through producing a shared methodology for measuring the causes, extent, and consequences of biodiversity loss.⁵⁵ The epistemic community also adopted a holistic approach to conceptualizing the MBRS. Whereas previous researchers treated it as a collection of discrete coral communities, the network “saw” the basin by the early 2000s as an ecologically integrated zone, where coral health was linked to the integrity of coastal mangrove zones, beach vegetation, and subterranean water flows.⁵⁶

In 2001, the GEF approved funds for the Proyecto de la Conservación y Uso Sostenible del Sistema Arrecifal Mesoamericano.⁵⁷ In Mexico, the project was carried out entirely in the state of Quintana Roo, under a National Reef Committee. This Committee was comprised of representatives from the National Commission of Protected Areas (CONANP)—a federal environmental agency—ENGOS, and academic institutions. CONANP, a government body like Jamaica’s Forestry Department, also functioned as an epistemic community organization. Other epistemic community organizations included Los Amigos de Sian Ka’an, an ENGO local to Quintana Roo, the Mexican branch of the World Wildlife Federation (WWF-México), and the University of Rhode Island’s Coastal Research Center (URI-CRC).

Poverty, Development, and Nature: Coastal Tourism in Mexico

Unlike in Jamaica, the primary threat to Mexican biodiversity, coastal tourism, was identified at the start of the GEF project. Like bauxite mining, coastal tourism is a major source of foreign revenue, particularly in Cancún and the Riviera Maya.⁵⁸ From 1999 to 2006, 28–38 percent of the total tourism revenue in Mexico and 75–80 percent of the total revenue of Quintana Roo state came solely from earnings in this zone.⁵⁹

Local overfishing is also problematic, as it drives declines in the size of fish populations and in the average size of caught fish.⁶⁰ However, according to epistemic community members and policymakers alike, coastal tourism remains a far greater threat. Recreational users harm coral reefs by agitating sand on the ocean floor, touching the sensitive coral polyps, or depositing toxic chemi-

55. Almeda-Vilella et al. 2003.

56. Gonzalo Merediz Alonso, epistemic community member from *Los Amigos de Sian Ka’an*. Author interviews conducted February 2008.

57. Álvaro Hernández, member of epistemic community organization WWF-México. Author interview conducted May 15, 2008.

58. David Martínez, author interview conducted April 29, 2008.

59. SEDTUR, 2009, *Indicadores Turísticos*, available online at <http://sedetur.qroo.gob.mx/estadisticas/estadisticas.php>.

60. Albert Franquesa, member of epistemic community organization, *Los Amigos de Sian Ka’an*. Author interviews conducted February 2008. Papá Pelochas, retired fisherman in Xcalak. Author interview conducted June 16, 2012.

cals from sunscreen.⁶¹ When hoteliers erect beachfront property, they drain, cut, and fill mangrove zones with concrete, contributing to sedimentation, run-off, and nitrification, while the buildings themselves interrupt the replenishment of beach sand and exacerbate erosion.⁶²

Hotel development also promotes local environmental injustices. Since the 1970s, the Mexican government has promoted northern Quintana Roo for large-scale tourist development via tax incentives and financial support.⁶³ This has attracted migration to an underdeveloped coastal region populated by subsistence and small-scale commercial fishing and agricultural communities. While this led to a windfall for hotel operators, improperly regulated tourism degrades coral reefs, an integral component in marine ecosystems and fish life cycles, while tourist demands for seafood contribute to overfishing. Attracted by the employment potential of tourism, migrants flock to tourist centers, creating shantytown “support communities.” However, employment is limited to poorly remunerated labor in custodial services or construction, and the shantytowns rarely have adequate municipal services, leading residents in some cases to dump refuse directly into the ocean or in hastily dug pits.⁶⁴

Through the 1980s and 1990s, local actors became more cognizant of the negative impacts of tourist development. In 1995, small fishermen in the coastal town of Xcalak established a community based organization called the Xcalak Community Committee to lobby, together with epistemic community organizations URI-CRC and Los Amigos, for federal protection against expansion of the “Cancún model” to the southern part of the state because of concerns about the impact of “development” on local land use.⁶⁵

The most important regulatory agencies in this case are the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), and its protected areas division, the Comisión Nacional de Áreas Naturales Protegidas (CONANP). These agencies are responsible for proposing federal recognition of protected areas. If such recognition is granted, they also have the authority to restrict or permit appropriate environmental activity in these areas. The agricultural ministry, the Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación (SAGARPA), and its national fisheries commission, the Comisión Nacional de Acuacultura y Pesca (CONAPESCA), are also important. They regulate fishing by designating areas and techniques for commercial and sustainable fishing. Third, Quintana Roo agencies can also pass local ordinances and function as gatekeepers for large-scale projects.

Hoteliers, who have formed statewide neocorporatist business associa-

61. Almada-Villela et al. 2003, 136; Hernández et al. 2008.

62. Amigos de Sian Ka'an 1998; García Salgado et al. 2006. Hernández et al. 2008.

63. See María Torres and Momsen 2005.

64. Aspra de Lupiac et al. 1999, 6; Torres and Momsen 2005.

65. Bezaury et al. 1998, 6–7; CONANP 2004, 8–9. Chung, 1999, 3–4; Carolina Quintal Lizama, CONANP staffer at PNAX. Author interviews conducted June 17, 2012. Pelochas, middle-aged fishing cooperative member in Xcalak, author interview conducted June 16, 2012. Oscar, author interview conducted June 18, 2012. Papá Pelochas, author interview conducted June 16, 2012.

tions, also have de facto control over the management of natural resources. They determine which areas are economically attractive, the size of hotels, number of rooms, recreational practices, and design of treatment facilities.⁶⁶ Finally, local fishermen and communities can strengthen or weaken environmental management declarations, by virtue of their access to the coral reef system and its environs.

At the local level, epistemic community members and policymakers in SAGARPA, CONANP, and CONAPESCA tried to convince fishing communities to adopt low-impact practices, such as abandoning scuba equipment in fishing, and complying with federal environmental guidelines. At the federal level, epistemic community members lobbied for increased protected areas management under CONAPESCA and CONANP. For example, they proposed that CONAPESCA identify and protect zones where fish carry out reproductive activities, and declare vulnerable sites as off-limits to all except subsistence fishing communities. Ideally, these fishing communities would then be licensed to act as tour guides, or have exclusive fishing licenses in exchange for compliance with policies like quotas and seasonal bans.⁶⁷ Under SEMARNAT and CONANP, the epistemic community argued that protecting marine areas would have to include extending protection over coastal ecosystems, as well as expanding existing protected areas.⁶⁸

Within Quintana Roo, the epistemic community tried to promote the PES model to convince the state government and managers in the hotel industry that biodiversity conservation was economically tied to development. Epistemic community members including Los Amigos, WWF-México, and URI-CRC took part in a series of meetings with Quintana Roo agencies and hoteliers. This Mesoamerican Reef Tourism Initiative (MARTI) pointed out that environmental degradation would cause severe economic harm, as eroded beaches would weaken hotel infrastructure and be less attractive to visitors. Arguing that remedies would be prohibitively expensive, MARTI suggested adopting low-impact practices from the outset, such as reducing the size of hotels and maintaining the integrity of the coastal ecosystem (including the aesthetically unappealing mangrove zones and sea grasses). As a SEMARNAT employee put it, "if they do away with the mangrove, they're doing away with the coral reef, which is what they want to sell."⁶⁹

Mexican federal agencies and local communities were favorable to the epistemic community's recommendations for new action to conserve biodiversity. Between 2001 and 2010, SEMARNAT and CONANP expanded the size of some protected areas and created new management protocols in others.⁷⁰ In 2003,

66. Interview with David Martínez conducted April 29, 2008.

67. Pelochas, author interview conducted June 16, 2012.

68. Felipe Serrano, member of epistemic community organization *El Colegio de la Frontera Sur* (ECOSUR). Author interviews conducted March 2008. UCP 2003, 26.

69. Enrique Galvez, regional director of SEMARNAT in Quintana Roo. Author interviews conducted February 2008.

70. CONANP 2007, 3.

SEMARNAT declared regulation NOM-022-SEMARNAT-2003, which barred construction within 100 meters of mangrove zones, except where necessary to restore the function of degraded mangroves. SAGARPA and CONAPESCA identified and began protecting spawning sites.⁷¹ Fishing cooperatives adopted new practices; some established no-take zones and low-impact methods, and agreed to protect the ecosystem even without additional government regulation. As of 2006, approximately 67 percent of fishing cooperatives had adopted sustainable practices.⁷²

By including local communities in these new management protocols, the epistemic community, through the National Reef Committee, was able to generate strong local participation in, and support for, biodiversity conservation. In 2001, the epistemic community, the Xcalak Community Committee, and the fishing cooperative in Xcalak successfully proposed a federal management plan for what is now known as the Xcalak Reef National Park (PNAX).⁷³ Although this plan restricts traditional seafood capture practices,⁷⁴ interview respondents from Xcalak and federal policymakers commented that doing so would prevent the destruction of local practices threatened by large-scale economic development:

The people took the initiative [for PNAX]. They didn't want to lose the chance to manage resources with the people, by the people, and for the people. They didn't want to sell their properties and end up like [the developed tourist center of] Majahual.⁷⁵

In the PNAX, the people themselves asked for it, for reef conservation. Because they were talking about possibly bringing in tourism, large-scale tourism, that was going to affect the ecology of the system and damage the reef.⁷⁶

However, hoteliers and their allies in the Quintana Roo government were highly critical of new biodiversity protection, asserting instead that economic development depended on the hotel industry avoiding stringent regulations. To be fair, hoteliers adopted some MARTI recommendations, particularly those oriented towards improving energy and water efficiency.⁷⁷ However, industry and state government strongly resisted including mangrove zones in biodiversity protection. In 2004, a coalition spearheaded by Joaquín Hendricks Díaz, then governor of Quintana Roo, successfully lobbied the new head of SEMARNAT, José Luege, to revise NOM-022. Luege's revisions effectively undercut the regulation by permitting hoteliers to clear mangrove zones if they received permission from the state government and paid a one-time fine of \$1,000 per hectare.

71. Comité Técnico Estatal de Evaluación 2006; CONANP 2007.

72. Comité Técnico Estatal de Evaluación 2006, 52.

73. CONANP 2004, 86–107; Carolina Quintal Lizama, author interview conducted June 17, 2012; Papá Pelochas, author interview conducted June 16, 2012.

74. Unattributed Xcalak fishing cooperative member, author interviews conducted June 16, 2012.

75. Carolina Quintal Lizama, author interview conducted June 17, 2012.

76. Papá Pelochas, author interview conducted June 16, 2012.

77. Amigos de Sian Ka'an 1998; Gonzalo Merediz Alonso, epistemic community member from *Los Amigos de Sian Ka'an*. Author interviews conducted February 2008. Taken from transcript of audiocassette recording.

Local Perspectives on Nature and Biodiversity Management

In response, epistemic community members and environmental advocates joined a growing national coalition demanding the restoration of protection to mangrove zones in the interest of biodiversity, as sources of livelihood for local fishing populations, and as buffer zones against coastal erosion and hurricanes. Some members of this coalition sent letters to federal representatives asserting that hoteliers did not have Mexico's interest at heart. Others wrote directly to then-President Calderón. In Quintana Roo they held a march in 2007. That year, with unanimous support, Congress approved Article 60 of the General Wildlife Law, prohibiting any activity that damages the hydrological and ecosystem integrity of mangrove zones.⁷⁸

Immediately after approval of Article 60, Quintana Roo's new governor Felix González Canto led an association of sixteen governors from Baja California and other littoral states, requesting that Calderón's administration overturn it in the interest of development. Hoteliers argued that "the people in the state aren't going to live by eating mangrove,"⁷⁹ while González Canto asserted that the reform would reduce economic growth.⁸⁰ Even as the law was being debated, media reports, interviews, and firsthand observation demonstrated that hoteliers were subverting it. For example, in Majahual, mangrove zones damaged by Hurricane Dean were cleared and paved in 2008 by hotel developers, who began constructing beachfront hotels in the area.⁸¹ At the time of writing, the law remained in place but hotel interests were still lobbying the federal government for repeal.⁸² As in Jamaica, the success of local activism and environmental advocacy is at present tenuous, and recent regime changes in both countries spell additional uncertainty for the continuity of legislation.

Conclusion: Valuing Biodiversity

In both cases, the economic valuation of ecosystem services made the promotion of biodiversity conservation more politically problematic. Although the PES model in both cases attempted to link biodiversity protection to "national development," low-income communities in rural Trelawny and coastal Quintana Roo were far more supportive of stronger regulation and restrictions on natural resource use. They were also less inclined to frame biodiversity use as an engine of national economic growth. Furthermore, these low-income local communities, and their allies in government agencies and the advocacy network, adopted a far broader conception of what biodiversity was, and what it

78. Manglares, refugio de especies comerciales importantes. *La Jornada*, February 25, 2008.

79. Promueven industriales veto a reformas en ley de vida silvestre, denuncian ONG. *La Jornada*, Wednesday, 24 February, 2007.

80. Increpan regidores del Verde Ecologista a García Pliego. *Novedades*, February 2, 2007.

81. Interviews with members of SSCP Andrés Quintana Roo, and Abril Navarro.

82. María Luisa Villarreal Sonora, member of epistemic community organization *Simbiosis SA de CV*. Personal communication March 2010.

was for, than that promoted by policymakers and managers in state-led models of development. By linking natural resources to autonomy, subsistence, and the cultural and aesthetic needs of local populations, communities in Jamaica lobbied the state to protect a Cockpit Country area five times larger than that preferred by mining policymakers in the government. Similarly, in Mexico, local activists insisted on strengthening the protection of mangrove zones under biodiversity management protocols in the Mesoamerican basin, to the dismay of policymakers in Quintana Roo's government and their hotelier allies. In both cases, as indicated below, members of the advocacy network were skeptical that economic arguments, divorced from consideration of intangibles like culture and history, could be used to encourage biodiversity conservation:

. . . You're going to have very destructive actions in the name of development. Very negative . . . [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.⁸³

The thing with the economic argument is that if you say that water brings in x amount of money for tourism, then the natural thing is that if you get y amount of money from bauxite mining, it makes sense to go ahead and mine.⁸⁴

Thus, promoting management protocols under the neoliberal paradigm is a problematic way of fostering local implementation of natural resource regimes, like the CBD. Doing so may undermine non-economic valuations of nature. It may also exclude local communities from the benefits of consuming commodified nature under national development programs. Furthermore, normatively driven ideas of what nature is, and what it is for, drive what is to be included in natural resource management and how biodiversity is to be conserved. This is also shaped by how local actors participate in and define nature, which may depend on worldviews not compatible with the neoliberal paradigm.⁸⁵ Therefore, what constitutes "effective" regime implementation at the local level is contested and cannot be separated from questions of environmental justice.

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83. Ildelfonso Palermo, author interviews conducted July 2008.

84. Diana McCauley, author interview conducted August 1, 2011.

85. Engel-DiMauro 2009.

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