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## **The Environmental Quality and Social Justice Implications of Shrimp Mariculture Development in Honduras**

Susan C. Stonich<sup>1</sup>

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*Development schemes aimed at reducing Central America's social and economic problems historically have stressed intensified exploitation of the region's natural resources through augmented exports of agricultural commodities and forest products, enhanced agricultural productivity, and expanded industrial fisheries. There is plentiful evidence documenting how succeeding waves of export expansion have displaced small farmers from their lands often initiating cycles of repression and violence while also generating or intensifying environmental destruction. This paper explores the environmental quality and social justice implications of the current prevailing development strategy in the region, the promotion of so-called nontraditional exports. Focusing on the expansion of shrimp mariculture in coastal zones along the Gulf of Fonseca, Honduras, it uses political ecological analysis to examine the interconnections among the dominant export-led development model, the policies and actions of the state, the competition among various classes and interest groups, and the survival strategies of an increasingly impoverished population. Analysis suggests that problems of social justice and environmental quality cannot be understood apart from the underlying social structure of the region.*

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**KEY WORDS:** development; mariculture; social justice; environmental quality; Honduras.

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## INTRODUCTION

Central American countries began the final decade of the twentieth century faced with several grim realities. Despite the millions of dollars which financed a glut of development projects in the region during the previous decades, poverty generally was worse and the region's physical resources were being depleted at an accelerating rate. To a great extent, Central American nations confronted rebuilding in a context of excessive foreign debt, economies still greatly dependent on the export earnings of a few primary natural resource-based commodities, declining or stagnant world prices for those "traditional" exports, and a legacy of violence evident in enduring political conflict. In short, the development models of the past had failed, leaving undiversified economies, greater poverty, a greatly deteriorated environment, and unstable political systems in their wake. Moreover, although declining, population growth rates in the region remained high, making efforts to combat growing poverty and environmental destruction even more complex (Stonich, 1993, pp. 3-8).

In response to continuing crises, Central American governments, committed to market-based economic policies, responded to pressure from international donor and lending institutions and enacted austere economic adjustment programs which embraced the agricultural/aquacultural sector. In the belief that augmented foreign investment and agricultural trade will promote economic growth and ease continuing debt crisis, such programs are connected to international free trade accords such as the North American Free Trade Agreement and the Enterprise for the Americas Initiative, attempts at regional economic integration among Central American countries, and to more specific development efforts such as the Caribbean Basic Initiative which confer preferential treatment to U.S. markets. Key to these endeavors is the expansion of so-called "nontraditional" agricultural exports which advocates maintain will also benefit rural economies and the poor.<sup>2</sup> While there is not, as yet, a comprehensive analysis of the myriad outcomes of this recent economic development strategy in Central America, numerous crucial issues have emerged. Increasing evidence from the growing number of studies that directly address the effects of nontraditional export growth suggest that their impact on the rural poor and the natural environment may not be favorable (Murray, 1991, 1994; Rosset, 1991; Stonich, 1991a, 1992, 1993; Barham et al., 1992; Murray and Hoppin, 1990; Conroy et al., 1994; Stonich et al., 1994).

<sup>2</sup>Nontraditional export crops include many fresh, frozen, processed and otherwise preserved fruits and vegetables (e.g., melons, miniature papayas, mangos, snow peas, broccoli, eggplant), root crops, edible nuts, live plants and cut flowers, and the most commercially desirable species of crustaceans and mollusc — especially shrimp and lobster (Paus, 1988). For a discussion of the growth of nontraditional agricultural exports from Central America to the U.S. see Stonich et al., 1994.

During the post-World War II period, the prevailing development strategy in the region has been founded on the promotion of a series of export commodities which have altered the regional ecology while also decisively diminishing access to common-property resources (forests and rangelands) for most people, thereby contributing to tragic declines in environmental quality and escalating social injustice (Williams, 1986).<sup>3</sup> The current development strategy couched in widespread restructuring has the capacity to expand environmental destruction into zones previously having little perceived economic worth, while also significantly restricting access to the last remaining common property resources (especially coastal areas, fisheries, surface and groundwater). Focusing on coastal zones along the Gulf of Fonseca in Honduras, this paper explores the environmental quality and social justice implications of these transformations (Fig. 1). It uses a political ecology approach to examine the interconnections among the dominant export-led development model which emphasizes the expansion of nontraditional exports, the policies and actions of the state, the competition among various classes and interest groups, and the survival strategies of an increasingly impoverished rural population.<sup>4</sup> The examination of the southern Honduran case indicates that problems of social justice and environmental quality cannot be understood apart from the underlying social structure.

Southern Honduras is an especially appropriate focus for political ecological analysis. During the post World War II period, the landscape of Honduras has been transformed through deforestation, overgrazing, changes in agricultural systems, pesticide abuse, and other environmental stresses. Along with other seriously degraded areas of the world such as Haiti, the Philippines, Southeastern Kenya, and Nepal's middle mountains, it has been designated a "critically endangered region" where basic life-sustaining systems, including water and soils, are threatened (Kasperson et al., n.d.).

<sup>3</sup>Development schemes aimed at alleviating Central America's social and economic problems historically have stressed intensified exploitation of the region's natural resources through augmented exports of agricultural commodities and forestry products, enhanced agricultural productivity, and expanded industrial fisheries. There is an plentiful evidence documenting how succeeding waves of export expansion in Central America have displaced small farmers from their lands, often initiating cycles of violence and repression (Durham, 1979; Williams, 1986; Brockett, 1988). Social conflict has been somewhat ameliorated in the past, however, by the possibility of migration to the agricultural frontier, by the existence of limited domestic markets for the products of peasant agriculture, and (especially during the 1980s) by massive amounts of foreign assistance (Stonich, 1993).

<sup>4</sup>This research expands previous political ecological analyses which focused on highland, foothill, and lowland areas of southern Honduras (Stonich, 1986, 1989, 1991a, 1993). These analyses defined relevant stakeholders in those zones (wealthier peasants, landless peasants, land-poor peasants, corporate farmers, grain merchants, transnational corporations, the state, etc.) and demonstrated how human impoverishment and environmental degradation were the result of the complex historic interconnections among them and rooted in the structure of society.

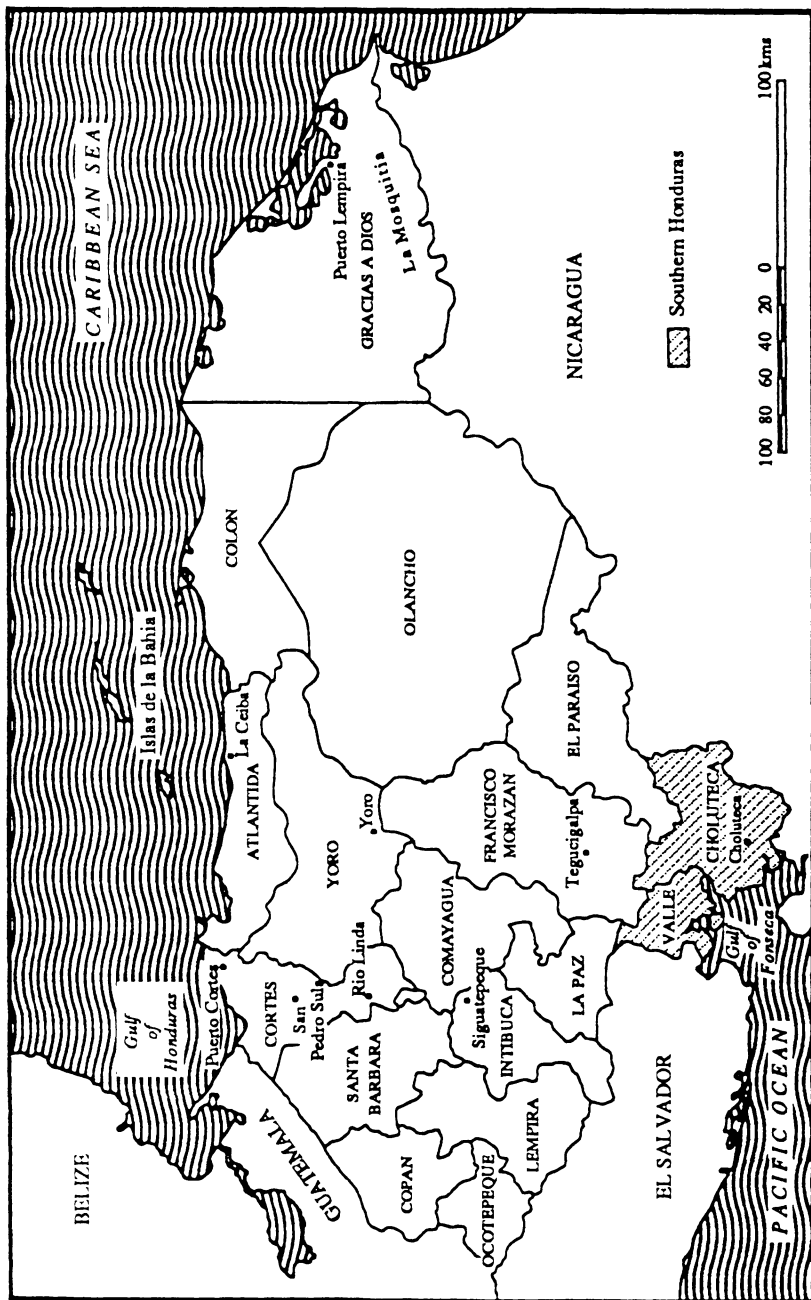


Fig. 1. Map of Honduras and Southern Honduras.

Environmental decline within the country has been most severe in the southern zone where semi-desertification and growing rural impoverishment have spurred extensive migration to other areas within and outside the zone. Southern Honduras is also germane because the region is the site for one of the most active and increasingly violent examples of local resistance to the advancement of nontraditional exports within Central America (specifically to the expansion of shrimp mariculture). It is paradoxical that environmental degradation, human impoverishment, and social conflict are most serious in an area which has been a major target for a series of economic development initiatives aimed at ameliorating those conditions.

### POLITICAL ECOLOGY

Understanding the important environmental quality and social justice issues in coastal and lowland areas along the Gulf of Fonseca in southern Honduras related to the promotion of nontraditional exports requires a theoretical and methodological framework capable of integrating the multidimensional array of social, cultural, economic, political, and environmental factors involved. Political ecology has emerged as one such promising approach (e.g., Blaikie, 1985, 1988; Blaikie and Brookfield, 1987; Little and Horowitz, 1987; Redclift, 1984, 1987). Integrating the perspectives of political economy and human ecology, political ecology has emerged as an interdisciplinary approach often used to demonstrate how interconnected social, economic, and political factors affect the way natural resources are distributed and exploited and lead to intensified human impoverishment and environmental destruction (see, e.g., Hjort, 1982; Messer, 1987; Schmink and Wood, 1987; Bassett, 1988; Sheridan, 1988; Chapman, 1989; Johnson, 1989; Saldanha, 1990; Stonich, 1993).

Among anthropologists, Eric Wolf (1972) used the phrase, "political ecology," in his written response to the symposium, *Dynamics of Ownership in the Circum-Alpine Area*, in which he called for augmented research that "combine[s] our [anthropologists] inquiries into multiple local ecological contexts with a greater knowledge of social and political history" and the study of "inter-group relations in wider structural fields (Wolf, 1972; pp. 204-205). Despite Wolf's charge, it was only during the 1980s, that a political ecology perspective significantly rose among anthropologists interested in environmental issues. In part, this was due to the growing dissatisfaction with earlier paradigms of ecological anthropology which intended to neglect the political dimensions of human/environmental relationships (Painter and Durham, 1994). With few exceptions (e.g., Geertz, 1963; Durham, 1979; Moran, 1981; Bodley, 1982), the political

dynamics which existed internal to local populations as well as those which articulated local groups to wider structural spheres were ignored. Yet, often, it was these political dynamics which affected differential access to, and management of, natural resources.<sup>5</sup>

In their examination of the environmental destruction occurring in the Amazonian lowlands, Schmink and Wood (1987) suggest that political ecological analysis include several crucial components: (1) the ideology that orients resource use and affects which groups benefit and which are disadvantaged from that ideology; (2) international interests such as donor agencies or private investors that may support particular patterns of resource use; (3) the role of the state in defining and executing policies that favor the interests of certain classes of resource users over others; (4) the class structure of the society to which the region belongs and the lines of conflict over access to productive resources; (5) the extent and kinds of market relations in which producers are involved and the mechanisms whereby production beyond that needed to satisfy consumption requirements is extracted as surplus; and (6) the nature of production in a region, especially the degree to which it is oriented toward simple reproduction or capital accumulation. Generally, political ecological analysis follows a chain of explanation through different scales (levels of analysis) beginning with the roles of the world economy and the state, the interrelations among local resource managers and groups of society who affect resource management, and the decisions of local resource managers. Because political economy insinuates analysis of structures external to local groups which influence options and decisions, considerable attention is focused on the ways in which international forces and the state affect natural resources and local people.

Research in Latin America using a political ecology approach has focused primarily on human impoverishment and environmental destruction related to transformations in agricultural systems (Painter and Durham, 1994). These studies have illuminated several issues which have the potential of understanding deteriorating human and environmental conditions in

<sup>5</sup>The rise of political ecology has done more than introduce the political dimension into ecological inquiry by anthropologists. Anthropologists embracing the perspective have tended to focus on contemporary ecological problems and have attempted to increase the voice of anthropologists in contemporary debates about environmental issues. Although it may still be true that "environmental destruction and what to do about it" has not been taken up as a major issue in the discipline (Painter, 1994), recent developments within the discipline point to increased concern with such issues. Especially important are the creation of the Environmental Task Force by the American Anthropological Association and the Committee on Human Rights and the Environment by the Society for Applied Anthropology. These efforts aim at inserting matters of social structure, ethnicity, and culture into global debates regarding environmental issues. These efforts also seek to enhance the interdisciplinary examination of such inquiries.

other contexts. First, environmental destruction associated with production systems of smallholder producers (farmers and others) is most often a consequence of their impoverishment, either absolute or relative to other social classes. Often this impoverishment has taken place along with diminished access to land (or other natural resources) and increased repression and violence at the hands of state authorities and more powerful individual and corporate interests engaged in land speculation (e.g., Collins, 1986). Second, because of their vulnerability and lack of power, smallholder producers often have received a disproportionate share of the blame for environmental destruction associated with their production systems (Stonich, 1989). In contrast, political ecological research has demonstrated that a great deal of land and other natural resources have been degraded by the activities of more powerful private, public, and corporate interests (Stonich, 1989, 1993). Generally, large-scale enterprises that have acted destructively have been granted land on concessionary terms by the state exercising sovereignty over the area in which they operate. This allows them to treat land as a low-cost input, and makes it more economical to move elsewhere after the environment is degraded rather than try to conserve natural resources (e.g., Bakx, 1987; Binswanger, 1991; Murray, 1991). Third, the same policies and practices that result in wealthy interests receiving land on concessionary terms are responsible for the impoverishment of smallholders, because such policies institutionalize and exacerbate unequal access to resources. In sum, the political ecology approach applied to Latin America has so far shown that the crucial issue underlying environmental destruction and continuing human impoverishment is gross inequality in access to resources within a socially institutionalized context (e.g., Painter, 1990).

## DEVELOPMENT TRENDS IN HONDURAS

Except for the banana industry established at the turn of the century along the relatively isolated North Coast, extensive agrarian capitalism in Honduras did not arise until after World War II, during a period of temporarily high prices on the world market for primary commodities. At that time, the industrialized countries promoted capitalist enterprises through increased foreign investment while national security interests prompted the U.S. government to expand programs of economic and military assistance. The Honduran state became an active agent of development, created a variety of state institutions and agencies to expand government services, modernized the country's financial system, and undertook a number of infrastructural projects (Stonich, 1993). With the infrastructural improvement, landowners and investors in the southern part



of the country found it profitable to expand production for the global market, and southern Honduras was firmly integrated into national and international markets for the first time. From then on, diversification and growth of agricultural production for export have characterized the southern Honduran economy. With financial assistance from multilateral and bilateral development and lending institutions, (most importantly the United States Agency for International Development (USAID), the World Bank, and the International Monetary Fund (IMF)), cotton, then sugar and livestock were the primary commodities first promoted in the south. By the mid 1970s, these products were supplemented by sesame and melons and later by a wider variety of so-called "nontraditionals" especially cultivated shrimp (Stonich, 1991a, 1992, 1993).<sup>6</sup>

The Honduran state's (or more appropriately government's) continued efforts to expand export agriculture are more comprehensive given Honduras' extreme economic dependence on agriculture and its continued economic crisis. Honduras remains predominantly an agricultural country; in 1990, agriculture generated about 30% of its Gross Domestic Product, 75% of export earnings, and 55% employment (CONAMA, 1992, p. 67). Dependence on agriculture is part of a broader reliance on natural resource based commodities (including agriculture, forestry, and fisheries) which generated more than 80% of export earnings during the 1980s (Stonich, 1993).

Economic crisis in Honduras intensified through the 1980s: foreign debt grew, productivity declined drastically, unemployment increased, inflation rose, and the real income of a large proportion of the population fell. In addition, private investment dropped as a result of the region's political and social problems as well as because of imbalances in exchange and monetary systems. This situation was aggravated by the economy's exacerbated vulnerability to external fluctuations affecting the prices of its most important traditional export products such as bananas and coffee (Stonich, 1993). Economic and fiscal crisis continued into the 1990s despite the liberal economic policies (including severe structural adjustments) of the Callejas government that came into power in 1990. The crisis continued into 1994 with the inauguration of Carlos Roberto Reina as president, who inherited not only a huge U.S. \$3.6 billion foreign debt and annual debt payments of around U.S. \$400 million (about half the state budget), but also the widespread frustrations caused by the hardships of the structural

<sup>6</sup>Irrigated melons have also been an important nontraditional export promoted in southern Honduras in recent years. For discussions of the social, economic, and environmental effects of the melon industry see Murray, 1991, 1994, and Stonich et al., 1994.

adjustment program of the previous administration (Reuters, 1994). Thus, the natural resource base of the country continues to be under intense pressure. For the Honduran government dealing with persistent economic crisis, grappling with the repayment of onerous foreign debt has taken precedence over conserving natural resources. Expanding the production of cattle, melons, and shrimp meets the demands of international donors and lenders, attracts international financial assistance, and helps satisfy foreign exchange goals, regardless of the social and environmental costs.

### **THE NEW “NONTRADITIONALS”: THE SHRIMP BOOM**

Central American countries are currently championing shrimp mariculture as one of the principal means of attacking the region's continuing economic problems. Several international development agencies including the United Nations Development Program and the United States Agency for International Development predict that shellfish will be the most important primary nontraditional export commodity from the region during the 1990s. Bilateral and multilateral development assistance agencies, national elites, as well as private investors from North America, Japan, Taiwan, and elsewhere are fostering the growth of shrimp mariculture in coastal zones (Stonich, 1991a, 1992).

Exports of shrimp from Central America increased significantly throughout the 1980s as an increasing number of producers became involved in this nontraditional market and began shipping large quantities of frozen shrimp from the Pacific and Caribbean coasts. During the 1980s, as overfishing and destruction of habitats dramatically reduced catches from capture fisheries, the Central American shrimp industry grew increasingly dependent on mariculture to supply shrimp for export. Honduras, Panama, and Costa Rica led the region in the expansion of cultivated shrimp production with most operations located along the Pacific Coast (Stonich et al., 1994). In Honduras where essentially all shrimp are exported, foreign exchange earnings from shrimp were exceeded only by export earnings from bananas and coffee by 1987 (Stonich, 1991a, 1992). Most of this growth was due to the expansion of shrimp farms in coastal zones along the Gulf of Fonseca and occurred simultaneously with the decline in beef as the most important agricultural commodity from the south. By the mid-1980s, principal investors in the industry included transnational corporations, government and military leaders, as well as consortiums of private investors. As in the rest of Central America, the growth of the shrimp industry was financed by national, international,

private, and public capital (SECPLAN/DESFIL/USAID, 1989). This included direct financing through loans and technical assistance supplied especially by USAID, and indirect funding in the form of incentives to foreign investors (USAID/FEPROEXAAH, 1989). Although USAID reports written until the mid-1980s emphasized the importance of integrating resource-poor households into the shrimp industry, mainly through the formation and support of cooperatives, more recent reports conclude that only the larger, semi-intensive operations are profitable (USAID, 1989), and USAID has virtually curtailed its efforts with small producers.<sup>7</sup>

Between 1978 and 1988, the total production of cultivated shrimp grew from 130 metric tons to 2225 metric tons (1611%) and the area in production grew from 1450 hectares to 5500 hectares (280%) in the 3-year period from 1986 to 1989 (USAID/FEPROEXAAH, 1989). By 1988 production and exports from shrimp farms exceeded that from industrial fisheries (SECPLAN/DESFIL/USAID, 1989). By 1993, approximately 11,500 hectares of semi-intensive shrimp operations existed in the south, with sales of more than 4,000,000 kilos of shrimp, valued at U.S. \$40.2 million (Vergne et al., 1993). According to the Chamber of Commerce of the departments of Choluteca and Valle, the shrimp industry provided employment to some 11,900 people (90% women) through 25 commercial farms, six packing plants, and six ice-making operations (Vergne et al., 1993).<sup>8</sup> Although the expansion of the shrimp industry created a number of jobs, it also raised a number of environmental and social justice concerns which, in turn, have provoked widespread conflict and increasingly violent confrontations. The most important environmental issues raised include: the consequences of alterations to, and loss of, mangrove ecosystems; modifications in the regional hydrology due to obstruction of water flow and sedimentation; the capture of wild postlarvae and the associated indiscriminate introduction of hatchery raised seed-stocks; discharges of shrimp farm effluent which result in diminished water quality

<sup>7</sup>Technologically, shrimp farm operations are usually categorized on the basis of size of ponds, kind and extent of inputs utilized (including the use of captured, wild vs. hatchery raised postlarva used as seedstock), etc., from extensive, through semi-intensive, to intensive. For a brief description of the technological criteria used in this classification scheme see Weeks (1992). For a more specific discussion of the technology associated with the Honduran case see SECPLAN/DESFIL/USAID (1989).

<sup>8</sup>Estimates of employment generated by the shrimp industry vary widely. According to the environmental profile published in 1989, the shrimp industry employs fewer than one person per hectare (SECPLAN/DESFIL/USAID, 1989: 179). In contrast, the National Association of Shrimp Farmers of Honduras (ANDAH) whose members tend to be owners and operators of large farms issued their own estimate of 1.5 jobs per hectare in 1990 (ANDAH, 1990) or a total of 25,000 direct jobs.

including eutrophication; the effects on populations of migratory birds, reptiles, amphibians, and aquatic mammals due to the destruction and transformations of habitats (especially seasonal lagoons) and the anti-predator measures taken by farmers; and contamination by pesticides purportedly used by shrimp farm owners.<sup>9</sup> Social justice issues center around diminished access to common property resources brought about by the government controlled concession process,<sup>10</sup> inequities in hiring, wages, and the ability to organize,<sup>11</sup> the creation of a variety of economies of scale (in concessions, land, credit, technical assistance, marketing, etc.) which effectively constrain small producers and cooperatives while favoring highly capitalized investors thereby augmenting unequal access to resources,<sup>12</sup> as well as flagrant harassment, death threats, imprisonments, and murders.

<sup>9</sup>More thorough discussions of these environmental issues can be found in SECPLAN/DESFIL/USAID (1989), Foer and Olsen (1992), IUCN (1992), and Vergne et al. (1993).

<sup>10</sup>Using the definitions and classification scheme presented by Feeny et al. (1990), in southern Honduras common property resources are held within four categories of property rights or regimes: open access, private property, communal property, and state ("national") property. Because most of the coastal zone remained unsurveyed and untitled as of the early 1990s, boundaries among and within each of these categories are often unclear and disputed. In any case, according to a study done by economists at the Honduran National Autonomous University (UNAH), by 1991, five farms owned or had concessions of approximately 1000 hectares or more: Granjas Marinas (5055 hectares), Aquamarina Chismuyu (3000 hectares), Aquacultivos de Honduras (1540 hectares), Aquacultura Fonseca (957 hectares), and Cumar (934 hectares). Of these, only Aquamarina Chismuyu had a concession on what had been private land; the rest were national lands previously available for communal use. This same study estimated that approximately 72% of the total coastal land utilized for shrimp farms is "national" land (Banegas Archaga et al., 1991).

<sup>11</sup>See Stonich 1991a for a discussion of the distribution of different kinds of jobs in the industry and related wages as well as comments regarding the employment of young, single women in the industry. Members of CODDEFFAGOLF militantly dispute most of the claims of ANDAH regarding the number of jobs created by the shrimp industry and the wages that are paid. CODDEFFAGOLF asserts that ANDAH's claim of 25,000 jobs is immensely exaggerated, most jobs are temporary, workers are paid only the minimum wage (approximately U.S. \$3.00 per day) or are paid on a piecework basis. In addition, most workers have no job security or access to benefits (most workers on the farms and packing plants are hired through labor contractors for insufficient periods of time to qualify for benefits under Honduran law), and are not allowed to engage in labor union organizing. This last assertion was supported by a broadcast on National Public Radio in April 1992. The piece included interviews with a number of women who reported being fired after they attempted to form a union. When questioned about this the manager of one of the farms became so angry he grabbed the microphone from the interviewer and threw it to the ground (NPR, 1992). The team responsible for the most recent environmental study of the Gulf of Fonseca commissioned by USAID (Vergne et al., 1993) reported a similar instance in which a shrimp farm manager reacted angrily when he found out that the team had interviewed women employees.

<sup>12</sup>For a discussion of these various economies of scale operating within a broader array of nontraditional agricultural exports throughout Central America see Rosset (1991) and Stonich et al. (1994).

## EXPANDING SHRIMP AND ENHANCED SOCIAL CONFLICT

A major source of regional dissension has stemmed from contradictory and overlapping government policies related to the granting of concessions and the management of coastal zones.<sup>13</sup> In 1993 responsibility for granting concessions was transferred to the National Fisheries Directorate (DIGEPESCA) from the Honduran Institute of Tourism (SECTUR) (which had jurisdiction since 1980 because of its mandate to oversee state lands which border coastal areas). Until 1980, the National Agrarian Institute (INA) managed coastal lands and had granted some concessions. At the same time, the Honduran Corporation for Forestry Development (COHDEFOR) had (until recently) the responsibility for protection and rational use of Honduras' forest resources and shared responsibility for the protection of mangrove areas with the Department of Renewable Natural Resources (RENARE) which also has the right to supervise fishing and aquaculture within the country.<sup>14</sup> The lack of unclouded demarcations of responsibilities among agencies plus the fact that much of the coastal land was unsurveyed, as well as untitled, has led to conflicts and confrontations over concession boundaries and management. Concessions are often granted without taking into consideration environmental suitability for shrimp pond construction, the ability of the applicant to undergo and sustain shrimp operations, or even whether the current request overlaps with already granted concessions (USAID/FEPROEXAAH, 1988). In addition, the growing economic value of coastal land suitable for shrimp farms has led to land speculation. Although under current laws, the rights to a concession lease cannot be legally sold, entrepreneurs have circumvented the law by remaining minority investors in new farms. In general, despite the low cost of concession leases, the lack of political-economic power to influence the granting of concessions has impeded the entry of potential small producers, agrarian reform cooperatives, and poor coastal communities into the industry.<sup>15</sup>

<sup>13</sup>Generally, concessions are granted to individuals or corporations for a period of 20 years for a fee of L4.00 (less than U.S. \$1.00 in 1993) per hectare per year starting in year three. From year three through five the rate of L4 is charged. Subsequently, adjustments are made according to profitability of the operation with a typical maximum rate of L20 (approximately U.S. \$3.25 in 1993) per hectare per year.

<sup>14</sup>For a parallel discussion focused more generally on Honduran government forest policy see Stonich and DeWalt (n.d.).

<sup>15</sup>See Stonich (1991a, 1993) and Stonich et al. (1994) for more specific information on the unequal distribution (in terms of size of farms and area of farmland) of concessions already granted and of shrimp farms in operation as of 1991.

Bitter and increasingly violent confrontations have taken place among various actors who hold overlapping concessions and between concession holders and non-holders who believe that shrimp farms are expanding into government designated natural reserve areas or community held lands (Vergne et al., 1993). Although there are many competing interest groups operating in the region, each of which has its own issues, perspectives, and power, major regional stakeholders can be broadly divided into two groups.<sup>16</sup> On one hand are the artisanal fishers, farmers, and other poor people from coastal communities, many of whom constitute the 5000 members of the Committee for the Defense and Development of the Flora and Fauna of the Gulf of Fonseca — CODDEFFAGOLF.<sup>17</sup> The adversaries of this group of stakeholders are the shrimp farmers and others in the industry whom they believe are illegally depriving fishermen, farmers, and others of access to estuaries, seasonal lagoons, and other areas; destroying the mangrove ecosystem and altering the hydrology of the region thereby destroying the habitats of other vital flora and fauna; and causing a decline in Gulf fisheries through the indiscriminate capture of other species along with the shrimp postlarvae that are used to stock ponds.<sup>18</sup> On the other hand, the owners and operators of the larger shrimp farms and associated industries (many of whom are represented by ANDAH) maintain that the major ecological problems in the south are due to destructive agricultural practices in the highlands (which cause erosion and subsequent siltation, declines in water quality, and ultimate destruction of mangroves and other habitats), the additional loss of mangroves which are cut for fuelwood by lowland/coastal populations for subsistence use and for sale, and over-fishing by estuarine and open water fishers. Since 1988, members of CODDEFFAGOLF and other people from local communities have staged a sequence of protests, physically blocked earth-moving equipment, barricaded roads to shrimp farms, and burned farm structures

<sup>16</sup>These groups are not completely mutually exclusive. For example, many men who work for the shrimp farms capturing wild postlarvae for use as seedstock also are artisanal fishers, as well as members of poor rural communities. In addition, some poor rural communities intentionally have chosen not to become members of CODDEFFAGOLF and some have generally antagonistic relations with the organization. There is also some dissent within CODDEFFAGOLF. The situation among interest groups is much more complex than can be fully explained by a dichotomy. In fact, each of the many interest groups operating in the south has its own stand and perspective on issues. Thus, the division of adversaries into two groups, while useful, is somewhat of an oversimplification of reality.

<sup>17</sup>See Stonich (1991a, 1993) for a discussion of the emergence and significance of this grass-roots group which is at once a social and environmental movement.

<sup>18</sup>An estimated 3.3 billion wild, postlarval shrimp are caught annually to stock ponds (Vergne et al., 1993). Many immature individuals of other species are caught in the process of capturing the wild shrimp postlarvae. Assuming a ratio of 1:5 (target to ancillary catch) estimated by Foer and Olsen (1992), approximately 16.5 billion fry of other species are captured and left to die annually.

and other farm equipment. One of the most well known protests occurred in 1991 when members blocked the Pan American Highway at the bridge over the Choluteca River that leads to the regional urban center of Choluteca in response to the imprisonment of several members. As an alternative to current development practices in coastal areas, the group has urged the Honduran Congress to create (and enforce) national parks and/or resource extraction reserves and is actively supporting the creation of a tri-country (Honduras, El Salvador, and Nicaragua) management plan for the Gulf of Fonseca. CODDEFFAGOLF has generated a good deal of publicity and support for their goals among the Honduran public, the press, and international environmental groups.<sup>19</sup> Their expanding prominence was recognized at United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 where they received a Global 500 award for outstanding environmental achievement from the United Nations Environment program, which was accepted by one of their *campesino*/artisanal fisher members. Although honored outside Honduras, leaders of CODDEFFAGOLF and other community leaders have reported death threats, and artisanal fishermen report increasing harassment by shrimp farm security guards. Three artisanal fishermen active with CODDEFFAGOLF have been murdered (at least one apparently by guards from one of the large shrimp farms) (CODDEFFAGOLF, 1993).

### ENVIRONMENTAL CONCERNS AND CHANGES IN LAND USE

Contributing to the lack of understanding of problems and conflicts is the lack of adequate and reliable information on the coastal human population, society, environment, and ecology. (For example, because fishery catch data do not exist, it is difficult to determine if, in fact, fishery resources have declined and if so by how much.) In 1990 (several years and millions of dollars

<sup>19</sup>CODDEFFAGOLF has been especially successful in integrating both social and environmental ends into its efforts. For example, between 1991 and 1993, CODDEFFAGOLF received grants of about U.S. \$200,000 from the Inter-American Foundation to finance sustainable development projects. This included a project to teach sustainable agricultural techniques to approximately 100 peasant families and to help more than 300 coastal families establish modern salt-evaporation and aquaculture ponds. At the same time CODDEFFAGOLF has also been successful in obtaining funding for environmental conservation projects from the World Wildlife Fund and international environmental organizations. In many ways, CODDEFFAGOLF has both a private and a public face: on the one hand fostering social and environmental justice for themselves and other coastal people while at the same time emphasizing environmental preservation/conservation and receiving support and assistance from more mainstream, international environmental organizations. This international recognition has, to some extent, protected members, in ways and to an extent that did not occur with previous peasant movements in the region.

into USAID's efforts at promoting shrimp mariculture and other nontraditionals in the south), the USAID commissioned environmental analysis of its own Investment and Export Development Project, asserted that the "pitifully little research on the natural resources of the Gulf of Fonseca's estuaries, mangrove forests, and mudflats" make it impossible to evaluate adequately the significance of environmental changes emanating from the ongoing expansion of shrimp farms (Castañeda and Matamoros, 1990). Because USAID financing of shrimp industry expansion was channelled through a financial intermediary (a national development bank), USAID had been able to satisfy the requirements for exclusion from its own environmental regulations. More recently, in response to internal and external pressures, USAID commissioned a number of environmentally related studies including, *Environmental Study of the Gulf of Fonseca*, by Tropical Research & Development, Inc. (TRD) (Vergne et al., 1993). Data contained in the TRD report form the basis for much of the following discussion which focuses on two major environmental/social issues: the loss of mangrove ecosystems/seasonal lagoons and diminished access to common property resources.

Table I summarizes the changes in land use and vegetation cover in coastal zones along the Gulf of Fonseca between 1973 and 1992. During this period, the amount of agricultural and grazing land remained relatively stable while the area used by salt producers increased by approximately 38%. From 1973 to 1982 (before the boom in shrimp farms), the total hectares of high quality mangrove declined from 30,697 to 28,776 representing a loss of 1927 hectares (6%).<sup>20</sup> By 1992 the total hectares of high quality mangrove was 23,937 hectares, a reduction of 4839 hectares (17%) since 1982. During that same ten year period, the area occupied by shrimp farms increased from 1064 hectares to 11,515 hectares — an increase of almost 1000%.

Of the 11,515 hectares of shrimp ponds that existed in 1992, approximately 4307 hectares (37.4% of the total area in shrimp ponds) were constructed in areas once covered by mature, stress, or dwarf mangroves. Of this total, 2132 hectares (18.5%) were dense *Avicennia*, *Rhizophora*, and some *Laguncularia* from forested stands bordering salt/mud flats (playones) and estuaries. The remainder, 2174 (18.9%), were lower density stressed, young, or dwarf mangrove associated with salt/mudflats.

<sup>20</sup>This paper uses the categories of mangrove forest developed by COHDEFOR in 1987 and used by Vergne et al., 1993. These categories include "dwarf," "stress," and "mature/high quality." Dwarf mangroves occupy soils at the outermost limits of soil salinity tolerance (usually more than 100 parts per thousand) and are characterized by sparse stands less than one meter in height. Stress mangroves are located at the outer fringes of mangrove zones where soil salinity is limited. Generally, stands are between one to three meters in height and show other signs of stress such as poor flowering and vulnerability to insect pests. Mature or high quality mangroves are found in areas of frequent tidal inundation within an ideal range of soil salinity and may range from 15 to 20 meters in height (Vergne et al., 1993).



**Table I.** Land Use and Vegetation Cover for the Gulf of Fonseca 1973, 1982, and 1992  
(Total Hectares and Percentages)

| Category              | Year    |      |                   |      |         |      |
|-----------------------|---------|------|-------------------|------|---------|------|
|                       | 1973    |      | 1982 <sup>a</sup> |      | 1992    |      |
|                       | (has.)  | (%)  | (has.)            | (%)  | (has.)  | (%)  |
| Agriculture/grazing   | 84,570  | 51.7 | 85,787            | 52.7 | 83,728  | 51.2 |
| Salt flats (playones) | 46,569  | 28.5 | 44,585            | 27.4 | 40,956  | 25.0 |
| Mangrove <sup>b</sup> | 30,697  | 18.8 | 28,776            | 17.7 | 23,937  | 14.7 |
| Shrimp farms          | —       | .0   | 1,064             | .7   | 11,515  | 7.0  |
| Salt producers        | 957     | .6   | 1,122             | .7   | 1,325   | .8   |
| Population centers    | 848     | .5   | 1,542             | .9   | 1,914   | 1.2  |
| Total                 | 163,641 | 100  | 162,876           | 100  | 163,375 | 100  |

<sup>a</sup> The 1982 aerial photography and resulting report allowed for the classification of mangrove by species and habitat quality. The data in a 1987 COHDEFOR report was used to re-allocate some of the stressed and dwarf mangrove to salt flats in 1982 for comparison purposes with the 1973 and 1992 classification.

<sup>b</sup> Mangroves other than stressed or dwarf. Source: Vergne, Philippe, Mark Hardin, and Billie DeWalt, *Environmental Study of the Gulf of Fonseca*, Tropical Research and Development, Inc., May 1993, p. 40.

The 2132 hectares of dense mangrove forest lost due to shrimp farm construction represents approximately 7% of this category of mangrove cover estimated to have existed in 1973. In comparison, the total loss of dense mangrove stands since 1973 is estimated at 6720 hectares (22% of the original cover). Therefore a significant portion (66%) of dense mangrove loss can be attributed to factors other than shrimp farming. These additional factors include: the cutting of mangrove for fuelwood (approximately 46,300 m<sup>3</sup> per year, equivalent to 250–350 hectares) and construction; changes in hydrology (due to both human activity and nature); road construction; and the use of red mangrove bark by the tanning industry. The loss of dwarf and stress mangrove to shrimp farming, however, is much higher. While these areas are not as biologically productive as areas of denser vegetation, it is probable that their loss will increase sediment loading and negatively affect overall productivity and survival of the denser mangrove stands they border.

Currently, a total of 28,699 hectares of shrimp farm concessions have been approved and an additional 2720 hectares are being considered for approval. The total of 31,419 hectares is virtually equal to the sum of the high quality mangrove and mud/salt flat areas which existed in the area according to earlier reports. Of the 31,419 hectares of lands under concession status, only 12,000 hectares of shrimp farms have been constructed. Of these, approximately 8000 hectares of ponds are owned by members of ANDAH, representing the largest and most technically sophisticated producers who use

semi-intensive methods. The balance of about 4000 hectares is comprised of small and artisanal farms (some integrating seasonal salt production) whose methods are more extensive. A significant portion of the remaining undeveloped concessions is located in areas with denser vegetation cover than exists in already developed areas. Therefore, the amount of mangrove that could be destroyed by construction of the remaining 19,904 hectares of lands conceded would be significantly higher than what has been taken so far. Although the removal of only 2174 hectares of low-density and stressed mangrove might not have had a serious adverse impact on the ecology of the region, the removal of some 10,000 hectares of additional dwarf, stressed, and forested stands of mangrove is much more problematic.

Because the characteristics of areas most environmentally appropriate (i.e., for shrimp farms) and those of high quality mangrove forests are mutually exclusive, thus far there appears to be relatively little invasion and destruction of the higher quality (i.e., mature, young, and regenerating) mangroves by large industrial shrimp farm development. A major portion of large shrimp farm construction has occurred in the San Bernardo region near the Nicaraguan border in areas of extensive salt/mudflats. If possible, more capitalized and powerful investors have chosen unforested areas, especially the interiors of large mud flats, for large pond construction, although clearing of mangrove stands for roads, perimeter dikes, and pumping stations also has taken place. However, because the most suitable sites were chosen first, since the mid-1980s, construction of shrimp farms has expanded into areas of dwarf and stressed stands (USAID, 1985) and there is a tendency for new, larger shrimp farms to be constructed on lands occupied by dense stands of dwarf mangrove. At the same time, there is a detectable trend for artisanal farms to be constructed in areas of higher quality mangrove. These farms often feature dikes that are constructed by hand from mangrove soils from mature stands of *Avicennia* (often located on the border of the salt/mudflats occupied by large farms). The resulting alterations of tidal regimes kill the mangroves in the contained area, thereby expediting burning and the ultimate clearing of the pond site. Thus, although these artisanal ponds are quite small (most vary from 5 to 50 hectares in size) they can have considerable negative environmental costs due to their hydrological effects and the important biological value of the destroyed mangroves. Estimates based on aerial photos suggest that there were about 400 hectares of such small artisanal farms in 1992. The tendency for artisanal operations to use less environmentally desirable land (i.e., higher-quality mangrove stands) implies that these farms have disproportionate adverse environmental consequences. It also predicts an eventual human tragedy for artisanal farmers, given the well known high rate of farm failures, associated with widespread problems of pond management and mangrove soil acidity, in such areas.

### THE EFFECTS ON COASTAL PEOPLE

Among the strategies for resource-poor households dislocated because of the earlier expansion of cotton, beef cattle, and other commodities in the south was relocation to the relatively sparsely populated coastal region of mangrove, mud flats, estuaries, and seasonal lagoons along the Gulf of Fonseca. Unsuitable for large-scale cultivation of crops, pasture, or most other commercial uses, this area became increasingly populated by migrants from other highland and lowland municipalities in the south. Between the years 1974 and 1988, a period of substantial outmigration from the southern region as a whole, rural populations in the six municipalities that border the Gulf of Fonseca grew faster than the country as a whole. The families settling the coastal communities survived by exploiting the resources of the coast and the estuaries. They cleared areas to cultivate crops, but came to depend as well on fish, shrimp, shellfish, animals, and wood gathered from the surrounding common resource areas — lagoons, mangroves, estuaries, and the Gulf of Fonseca. Until the early 1980s, the only major competition for the coastal resources was from commercial salt-making operations.

Ethnographic information from coastal communities that are most affected by the development of shrimp mariculture suggests that the household economies in these communities are much like those in more agriculturally oriented communities in Honduras and throughout Central America, i.e., they are remarkably diversified, flexible, dependent on remittances, and can shift among resources in response to changing market conditions and local resource availability (Stonich, 1991b). Like these communities, there appears to be considerable socioeconomic differentiation as well; while approximately 25% of households own the essential fishing gear (e.g., boats, nets, and motors), the remaining 75% of households work as hired laborers for their more affluent neighbors. In this regard, ownership and control of the means of production (land, agricultural implements, boats, motors, nets, etc.) is similar to that found among agriculturalists and is predominantly centered in the household. Although shared labor does occur such sharing generally takes place among members of extended families. The south has been the site of significant peasant movements for several decades (Boyer, 1982). This tradition of resistance and community action to acquire land resources continues in the context shrimp industry expansion. For example, in 1992, 21 families from one coastal community were engaged in a land occupation on one of the small islands in the Gulf. Such groups are responding to the reduction

of resources available to them which threatens their livelihoods.<sup>21</sup> Until the mid-1980s, when the construction of shrimp farms accelerated, the south's mangrove ecosystems provided a source of communal resources for families inhabiting the coastal zone. Since then, the pattern of granting government concessions has effectively turned these common property resources into private property.

The loss of access to seasonal lagoons has been an especially serious point of contention and the most serious confrontations in the region have taken place between shrimp farmers and communities that exploit the lagoons. These temporary ponds develop annually on the sparsely vegetated mudflats beyond the mangrove fringe. Seasonal peaks in high tides (resulting from runoff elevated water levels in the creeks and rivers) create brackish conditions in the pools and introduce larval and postlarval stages of fish and crustacea. At the end of the rainy season, most lagoons become isolated from open water and begin to dry out. From then on, as the lagoons shrink and finally dry out they are heavily exploited by human populations in the region (as well as by migratory bird populations and other species). Artisanal fishers enter the lagoons as shrimp and fish become concentrated in the dwindling pools. Such efforts can be highly productive at times and represented an important economic option for poor rural people. Conflicts over the use of lagoons arise from their high suitability for conversion to shrimp farms. Dry most of the year with sparse vegetation and with easy access to seawater they are ideal sites for shrimp farm. Some communities have constructed gates and fences and act as armed guards in order to prevent unauthorized access to the lagoons by shrimp farm personnel, wild larva gatherers who supply the larger farms, and other non-community members. Nevertheless, a number of farms have been constructed on what were seasonal lagoons. Examination of areas now occupied by shrimp farms, and of maps of concessions that have been granted, suggests that about one-third of the area of seasonal lagoons has already been, or will be, physically lost. Some of the remaining areas of lagoons could be reduced further by fencing and control of access roads by shrimp farms. In addition, future shrimp farm expansion may alter the regional hydrology, impede water flow to the winter lagoons, and thereby reduce their productivity and jeopardize their long-term viability even more.

<sup>21</sup>In addition to acquiring land, residents of coastal communities have also responded to diminishing resources in other ways. Although the exact number of full and part time fishers is unknown, their numbers are growing rapidly. The number of fishers operating in the Gulf and estuaries was estimated at about 1500 in 1985, 2875 in 1990, and 6000 in 1993 (Vergne et al., 1993). Declining yields have also led to technological changes in the practices of artisanal fishers, who report switching from the use of handlines and cast-nets to more efficient nylon gill-nets and more powerful motorized boats since the mid-1980s.

Similarities in the emerging social and ecological costs related to the boom in shrimp mariculture and the previous promotion of export commodities in the region are striking. Many of the same international and national agencies are promoting the development. Past "enclosure movements" in which small farmers were removed from relatively good agricultural land often by force and with the compliance of local authorities are being repeated on the intertidal lands which have not been cleared. Intertidal land once open to public use for fishing, shellfish collecting, salt producers, and the cutting of firewood and tanbark is now being converted to private use. Conflicts have arisen among the large operations, local medium scale entrepreneurs, and campesino cooperatives and communities over land and access. Violent confrontations have also taken place between shrimp farmers and artisanal fishers (Stonich, 1991a, 1992; Stonich et al., 1994). Reminiscent of earlier peasant movements that stemmed from the loss of forest, range, and farmland, the mounting growth of shrimp farms is taking place over the protests of local people most affected by dislocation because of the shrimp industry. Groups, especially CODDEFFAGOLF, challenge the transformation of what were multi-use/multi-user coastal resources into private property controlled by foreigners and national elites who have the political power to obtain concessions or title to coastal lands (Stonich, 1991a).

## CONCLUSIONS

The political ecology of development in Honduras reveals the interconnections among the dominant development strategy, environmental destruction, and worsening rural poverty. As part of an overall strategy of export-led growth, a series of "nontraditional" agricultural commodities have been championed in southern Honduras since the 1950s. This prevailing development strategy has altered the agrarian structure of the region, exacerbated existing social and economic inequities, and shaped the ways in which natural resources have been exploited. By fostering economic growth at the expense of human populations and the environment, this strategy has encouraged environmental degradation as well as political instability and violence.

An analysis of the growth of the shrimp industry in Honduras is particularly useful in showing how the latest development trend has advanced the social and ecological processes established with the cotton and cattle booms, spatially as well as temporally, to coastal zones now having greatly enhanced economic value. Diminished access to common property resources brought about by government sponsored privatization

efforts and encouraged by international agencies are not new occurrences in the southern Honduras. Neither are “enclosure movements” supported by force which result in rural displacement, repression, and violence. The pattern of expansion of the shrimp farms raises serious social questions about who benefits and who pays the price for growth of the industry. At the same time, although the expansion of the shrimp industry has brought some short-term economic benefits to the region, it has done so at some environmental expense. Although less than half of the decline in high-quality mangroves since 1982 can be directly attributable to shrimp farm construction, an equal area of dwarf or stressed stands of mangrove and significant areas of mudflats were also destroyed. Should the remaining 20,000 hectares of shrimp farm concessions be developed the destruction of stress, dwarf, and mature mangroves will be more serious.

In southern Honduras, human and environmental conditions have been shaped by a long history of progressively more concentrated control of resources. The social and environmental consequences of the predominant export-led development model in the post World War II period can be explained, in large part, by the transformation in agricultural production systems which were configured largely by the structure of social control of natural resources. Local rural power holders, national elites, and international interests repositioned themselves advantageously in the changing rural economy, while the Honduran government channeled international funding through them and ignored the region’s growing impoverished population. Since the 1950s, these interests have invested in a series of agricultural commodities financed and promoted by international agents and the Honduran state. Especially during the cattle boom, wealthier peasants also profited from this agrarian transformation by capitalizing their agriculture and investing earnings from other economic activities in land, livestock, inputs (fertilizer, pesticides), and transportation. The vast majority of poor peasants, on the other hand, lacking capital, unable even to borrow at usurious rates, and without adequate wage labor alternatives, found themselves increasingly disenfranchised. Current goals of economic restructuring, involving the so-called modernization of agriculture and the promotion of nontraditional exports, are intensifying social differentiation — widening the gap between rich and poor as well as between wealthier peasants and poor peasants. A growing number of impoverished peasants swell the bottom strata of their communities, eke out livelihoods as squatters on the peripheries of urban centers, or attempt to procure land by extending the agricultural frontier to previously isolated areas.

Development and environmental projects implemented in the region have not served their nominal aims due largely to the multiple functions of these so-called “development” and/or “environmental” policies. Contradictions and selectivity in the implementation of these policies have stemmed from the political-economic and social structure of resource access and control. International policy analysts often disregard or underestimate the ways in which the internal complexities of developing countries affect the implementation of environmental policy (Cernea, 1992). The assumption is that as long as sufficient commitment, finances, technology, and resources are present, policies will be implemented as stipulated. Ignoring for a moment the question of whether such capabilities exist, a crucial concern entails the ability of governments to execute their own policies as designated. In the Honduran case, many factors intervene between the enacted development/environmental policies of the state and the actual management of natural resources. In effect, policy outcomes are the result of both the political-economic needs of the state and the specific set of historical social relations through which policies are implemented (or too frequently subverted). Adding to the complexity is the substantial financial investment by influential Honduran military and political leaders in the industries fundamentally responsible for environmental destruction in the first place, and who are supported in their efforts by powerful international development assistance and lending institutions. In Honduras, as in other Central American countries (and more generally throughout the developing world), the political and economic systems developed together and are, in many ways, inseparable. As a result, the state often acts both as an agent of economic development and as an important beneficiary.

When evaluating the potential for environmentally and socially sound development policies, the ability of the Honduran state to implement these policies must be taken into account. In all cases, policies are conveyed through historically-based social channels. The underlying concern is that even if the state has the will and the finances to implement a given set of policies, there is no assurance that it will be able to do so. In Honduras, throughout Central America, and in many other developing countries, the ability of the state to execute its stated objectives depends on many intervening factors, including the ways in which policies distribute (or redistribute) access to resources. In Honduras, these factors have proven to be more important than the official aims of the state.

Within this framework, insufficient attention has been given to the social organization/structures that lie at the core of human and environmental problems and policies. It is insufficient to concentrate solely on the enormous diversity of technical issues inherent in specific natural resource realms (e.g., water, forests, mangroves, etc.). Such a preoccupation can too easily lead to

technological approaches which obscure the social conditions which underlie all these domains and are at the root of the problem. The people and physical environment of Honduras are in jeopardy not because of blind, ongoing processes of deforestation, erosion, pollution, etc., but as the result of human agency — the interrelated decisions and actions of many individuals and groups, from poor local farmers and fishers to elite, and often absent, private and public interests. It is the social organization of these diverse managers that needs to be confronted if worsening environmental destruction and related human impoverishment are to be ameliorated and reversed.

At the very least, solving environmental and human problems implies the modification of existing social patterns or, more fundamentally, the foundation of new ones. At the same time and in most cases, development policies that alleviate poverty will also allay pressure on natural resources. Thus, effective development policy is also effective environmental policy. Better environmental policy in Honduras must thus address inequalities in wealth and power while also reconciling fiercely competing social actors with vastly different and often contradictory stakes in how resources are distributed, managed, and used. While this must involve the enhanced participation of local actors/users, especially the poor, it is essential to move beyond mere participatory rhetoric and advocacy. Any effective environmental policy for the region must begin with defining all relevant social actors, determining viable roles for each, and establishing feasible links between them. For example, despite the laudable goals and accomplishments of CODDEFFAGOLF, the organization does not represent the interests of all poor individuals, families, and communities in the south. In addition, while members of CODDEFFAGOLF and rural coastal communities demand a voice and a role in any management plan for the Gulf of Fonseca on the grounds that they depend on those resources for their own livelihoods, there is no reason to assume that their current management of coastal resources is “sustainable” in its own right. The human population living in the coastal zone is not a relatively remote, homogeneous tribal people with well regulated social or cultural institutions to help manage the commons in sustainable ways. In contrast, many are relatively recent migrants to the area whose economic strategies center around the household rather than the community, and whose desperate attempts to eke out a living contribute to environmental damage. Moreover, as I have discussed more thoroughly elsewhere, what emergent social/environmental groups like CODDEFFAGOLF can accomplish is, in part, determined by their relation to the state (Stonich, 1991a). Genuine participation by local users will come about only in the context of more informed and comprehensive social, development, and environmental policy.



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