

DIVIDING THE WATERS:  
RESOURCE USE, ETHNIC RELATIONS, AND COMMUNITY-BASED MANAGEMENT  
AMONG FISHERMEN ON THE SOUTHERN HAITIAN-DOMINICAN BORDER

By

RYAN PESECKAS

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To my parents

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Ryan Peseckas

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This study examines small-scale fishing activities, and recent community-based efforts at managing fishing on the southern Haitian-Dominican border. There is evidence that local marine resources, including the spiny lobster (*Panulirus argus*) and queen conch (*Strombus gigas*), are in decline, and state-level regulation of fishing in the border area is sporadic and inefficient. Both Haitians and Dominicans openly fish on either side of the border, and hundreds of fishermen of both nationalities squat illegally in a national park on the Dominican side of the border. While there are some norms among fishermen concerning access rights and acceptable equipment, these norms do not have a great influence and fishing is largely open access.

Competition between fishermen and the perceived decline in local marine resources has led to territorial disputes between Haitians and Dominicans and tension between fishermen using traditional equipment and those using newer technologies; these tensions are often phrased in the same idiom as the centuries-old antagonism between Haitians and Dominicans. Local Haitian and Dominican fishermen's associations have taken preliminary steps to address conflicts between groups of fishermen and to control exploitation of local resources, but their management efforts face challenges.

The primary methodological tool used in this study was participant observation. Semi-structured interviews were also conducted with some 50 fishermen and other members of the local communities. The focus of the research was on the specific ecological, economic, and cultural factors that determine local fishing behavior and on describing interactions between Haitian and Dominican fishermen in the study area. Major conclusions are that while ethnic tensions do serve as an informal mechanism to exclude non-members of the community from fishing in certain areas, they also make cooperation between groups of fishermen difficult, defeating efforts at management. Ultimately, the local ethnic discourse masks a more fundamental issue: economic inequalities between the Haitian and Dominican communities explain most differences in fishing behavior. With scarce capital and infrastructure, Haitians rely more heavily on nearshore fishing and on unselective equipment such as gillnets. This reliance contributes to a tendency to fish along the coast into Dominican waters. If community-based management is to be successful, Haitian and Dominican fishermen must overcome their cultural differences and tensions, and the economic inequalities between the communities that serve to exacerbate ecological and ethnic problems must be addressed.

## CHAPTER 1 INTRODUCTION

*'Desgraciados!'* (Bastards!) The Dominican fisherman grunts as he hauls up several yards of the Haitian fishing net, swiftly slashing it into tatters with a knife before tossing the badly-damaged net back over the side. Meanwhile, his Haitian fishing assistant looks on impassively. Bewildered by this act of vandalism, I ask the Dominican why he destroyed the net, and how he knew who it belonged to. 'I could tell by the large buoys that it was a net and not a fish trap; the Haitians know they're not supposed to use gillnets in Dominican waters but they do it anyway. They've ruined their own fishing grounds and now they're ruining ours!' One thing the fishermen all can agree upon is that the abundance of local fish, lobster and conch has declined in recent years.

As I mull over what I have just witnessed, our boat, laden with the day's catch, motors back to Lanza So fishing camp, one of several illegal settlements within Parque Jaragua, a national park located in the southwestern Dominican Republic. The camp consists of little more than a string of extremely crude huts on the beach without electricity, running water or even latrines, but the proximity to good fishing is ample incentive for fishermen to put up with the inconveniences. The few-dozen people utilizing Lanza So fishing camp come and go frequently; the present inhabitants are a hodgepodge of Dominicans from Pedernales, Haitians from Anse-a-Pitre, and a few others from more distant parts. Each day boats come and go, bringing new supplies to the camp or taking the week's catch westward to the border towns of Pedernales and Anse-a-Pitre in time to sell it at the biweekly market. Ironically, while the Dominican fisherman described above bemoaned the presence of Haitians in the camp, much of his catch would ultimately be sold to Haitian fish merchants passing along the Dominican coast.

A few days later and a few miles to the west, but also within the boundaries of Jaragua National Park, I encounter some Haitian fishermen resting and cooking their lunch in a coastal cave. The small wooden boats they have anchored by the beach are typical in Haiti, where money is scarce and many boats are still propelled by oars or sails. These fishermen are taking a break after several days' fishing in Dominican waters; tonight they will set their nets one last time before steering home to Anse-a-Pitres in time for the market day.

Two of the fishermen agree to take me along fishing that night and to drop me off in Pedernales on their way back to Haiti. At dusk, after slowly motoring through Bahía de las Aguilas to save precious fuel, they deploy their net (the same kind of net which I saw destroyed a few days before) in shallow water near Cabo Rojo, flinging fold after fold of net over the side until all several hundred feet are hanging in the water column. We sleep fitfully sprawled in the salty, clammy boat as we give the net a few hours to fish. As the Haitians haul the net in again just before dawn, plucking out a variety of small fish captured in the mesh, a larger form emerges out of the inky water: a hawksbill sea turtle.

One fisherman disentangles the wheezing turtle from the mesh and quickly slips it under the folds of net in the bottom of the boat. Although illegal to catch, turtles continue to be consumed in Haiti, where enforcement of conservation laws is almost nonexistent. I feel an uneasy conflict between the conservation ethic I have been brought up with, and my role as an anthropological observer. When I nonchalantly offer to buy the turtle (in order to release it later), the fisherman smiles and insists on setting it free; but behind his smile is a look of concern; while he desperately could use the money from selling the turtle, he is afraid of being reported to Dominican authorities, whom the Haitians consider abusive and violent. Before

these hardworking fishermen leave me on the Pedernales beach, I find out that both of them are just sixteen years old, and dropped out of school years ago to support themselves.

As the two young Haitians slowly motor away from Pedernales beach in their wooden boat, two Dominican fishermen roar past them in a fast fiberglass launch. They are in a hurry because they have a long voyage ahead: their destination is a *balsa* (a fishing buoy known as a ‘fish aggregation device’ or FAD) about 20 miles off the coast in Haitian waters. Because of the depth of the seafloor off the Haitian coast and the habits of migratory pelagic fish, the waters known as *Bajo Haitiano* are ideal for catching large, valuable fish such as tuna, mackerel, marlin, and dorado. However, only the Dominican fishermen possess the necessary equipment, such as GPS units and large 40 horsepower engines, to take advantage of these fishing grounds. In fact, equipment and fuel are so costly that most FAD fishermen must use equipment owned by a *patron*, a provider of boats and fishing gear who then claims exclusive rights to their catch when they return to shore. As a consequence, in addition to declining resources and ethnic tension between Haitians and Dominicans, there are economic inequalities within the fishing economy which are a major issue among local fishermen.

### **Statement of Problem**

As described in these vignettes, the arid stretch of coastline around the southern border is the scene of extensive and complex interactions between Haitian and Dominican fishermen. In terms of labor, materials and markets, there are various economic interdependencies: for instance, Haitian fishermen buy ice and gear such as nets in the DR; meanwhile, some Dominican patrons hire Haitian fishermen as inexpensive workers, and many Dominican fishermen sell their catch to Haitian buyers. In fact, many members of both communities fish and sell their catch on the opposite side of the border.

In the midst of this interwoven cross-border economy, there is widespread agreement among both researchers and fishermen that the local marine resources are being exploited unsustainably. Fishermen on both sides of the border agree that the abundance of lobster, conch and fish has decreased over the past decades; the introduction of new fishing gear and techniques such as outboard engines, compressor diving and gillnets has added to the pressure placed on the inshore marine resources. Concerns over diminishing resources are accompanied by tension, particularly between Dominican and Haitian fishermen, over who may fish in which areas, and using what kind of gear.

Local fishermen, alarmed by the perceived decline of inshore resources and violent incidents between fishermen in past years, as well as desiring greater economic welfare, have formed local fishermen's associations in Pedernales and Anse-a-Pitre. These associations have initiated communication between Haitian and Dominican fishermen and worked toward eradicating the use of unselective fishing nets. The associations also have secured small donations of money from NGOs, which are intended to help fishermen break their economic dependence on patrons (owners of boats and equipment). However, judging from the continuing complaints and tension among fishermen, these associations have not yet been able to resolve the basic ecological, ethnic, and economic issues in the fishery.

The resolution of these issues through regulation of fishing activities would require implementation of a natural resource management regime. Attempts at managing the marine resources on the southern border of Haiti and the Dominican Republic face multiple challenges. Because of the location on the international border, management of marine resources is made difficult or impossible without cooperation on both sides of the border. Exacerbating this problem, state enforcement of fishing regulations is sporadic on the Dominican side of the

border, and nearly absent in Haiti (Nolasco 2000, Theile 2001, Mateo and Haughton 2004). Fishermen admit that closed seasons are often violated or circumvented, and size minimums largely ignored: one 1990 study found that 95% of locally caught lobster is below the legal size limit (PROPESCAR 1994:8-5). Because both Haitian and Dominican fishermen cross the border without apparent government response, the fishing in the area at first appears to be a free-for-all.

In fact, marine resources are being exploited unsustainably around the world; a recent worldwide survey reveals that nearly one-third of once-viable coastal fisheries are now commercially useless (Worm et al., 2006). This disturbing trend continues despite vast allocations of money toward state-level management plans. Ironically, the same coastal communities that rely on marine resources for their future welfare are destroying them in the present day. This seemingly illogical behavior on the part of fishermen is often described as a Tragedy of the Commons (Hardin 1968).

In an attempt to avert uncontrolled exploitation of fisheries, national governments over the last century have increasingly asserted sovereign rights over their coastal waters. However, the continuing decline of state-managed fisheries worldwide has shown that these management regimes are often ineffective due to insufficient research and enforcement capabilities, as well as a lack of enthusiasm among fishermen to cooperate with externally-imposed management plans in whose formulation they play no role. In developing countries where governments lack the significant resources necessary for effective management, fisheries have proven particularly vulnerable to noncompliance with regulations and virtually uncontrolled fishing.

Even as many top-down management regimes are faltering, a multitude of studies have emerged documenting the effectiveness of various community-based management regimes in fisheries (Acheson 1988, Berkes 1986, Pomeroy 1997). As a consequence, resource managers

have begun to explore new approaches which incorporate the norms, traditions, and knowledge of local fishermen, and give them a greater role in devising management regimes. However, the success of these local management arrangements usually depends on strong traditions, cohesion, and organization among the resource users.

To a certain extent, fishermen on the Haitian/Dominican border do conform to a set of informal rules or norms. These norms of fishing behavior are sporadically enforced by individual fishermen through threats, vandalism of fishing gear, or violence. The emergence of norms among Haitian and Dominican fishermen can be seen as a local reaction to the problems of an open access situation. These informal sanctions serve, up to a point, to govern resource exploitation, but are they a sufficient basis for community management aimed at preventing a Tragedy of the Commons? Local fishermen's associations have taken preliminary steps toward clarifying and enforcing these norms, but they face formidable challenges: there is a long history of ethnic tension between Haitians and Dominicans which could prove a barrier to securing cooperation in local management efforts. There exists a local culture of mistrust and scapegoating or 'blaming the other' for shared problems, evidenced by failures of past fishing cooperatives in the DR. In addition, Haiti faces an ongoing economic crisis in which many communities lack basic infrastructure and services; impoverished locals are often faced with the necessity to take what they can today, without the luxury of planning for the future.

This research is specifically concerned with management on the border area between two developing nations. While the Haitian and Dominican states claim legal ownership of the marine resources off their shores, neither state has shown the ability to effectively manage fishing activities; state-level enforcement in the area is so weak that fishermen of both nations tend to fish on both sides of the border while openly flaunting government fishing regulations. In a

situation such as this, community-based management through the local fishing associations may represent a viable option for preventing overexploitation of marine resources while simultaneously resolving local access disputes and attaining social objectives, such as providing ample employment in the study area.

Can the norms and traditions of local fishermen, mediated through the fishing associations, be a sufficient force to address the social and biological issues in the fishery? Any exploration of community-based management must take into account specific local conditions, such as the presence of the international border, the presence of a national park, demand for fish from distant markets, cultural differences between Haitians and Dominicans, and marked economic and infrastructural inequalities between the Haitian and Dominican side of the border. In other words, how do local conditions, especially the existence of the two different groups of resource users, affect attempts at community-based resource management?

### **Research Objectives**

The goals of this study are to document how marine resources on a porous international border are exploited in the absence of effective state-level management, and to explore how local norms (mediated through the lens of ethnic tension) might contribute to future community-based management. The specific setting is the southern Haitian/Dominican border, where both researchers and local fishermen believe that certain economically important marine resources are being exploited unsustainably (PROPESCAR 1994:8-4, Nolasco 2000, Theile 2001:17-19, Mateo and Haughton 2004), and where competition between groups of fishermen has caused tension. This tension revolves around uncertain access rights for Haitians and Dominicans, and the introduction of new fishing gears and technologies that are considered unsustainable by many fishermen; often these tensions are ultimately manifested as ethnic antagonism between Haitians and Dominicans.

This study unravels the interrelationships between ethnic relations, economic inequality, and fishing activities in the study area. The result will be an enhanced understanding of local fishing behaviors, as well as the issues which must be addressed in order to further current attempts at community-based management. This thesis addresses three integrated questions about fishing in a border zone, among them, (1) In the context of two ethnically different groups sharing the same resource, does ethnic antagonism reinforce informal management mechanisms (norms)? (2) In the context of two economically unequal groups sharing the same resource, how does differential availability of technology and equipment among two groups of fishermen shape resource use behavior? (3) In the absence of effective state-level management, can a successful cross-border community-based management regime be implemented among two ethnically and economically disequal groups sharing the same resource?

### **Methods**

I conducted 10 weeks of participant observation in the study area. During this period I lived in the home of a Pedernales fisherman, an experience which provided additional insights into fishermen's lives. I was able to take part in the life of the community at large, and particularly among fishermen, observing their work and the work of the patrons who employ them. I had the opportunity to participate in 7 fishing trips, attend a meeting of the Pedernales fishermen's association, and spend three nights in a fishing camp in Jaragua National Park.

I conducted informal, semi-structured, recorded interviews with some 50 community members in the towns of Pedernales and Anse-a-Pitre, and the Las Cuevas and Lanza So fishing camps. These informants included fishermen, patrons, merchants, government officials, leaders of the local fishermen's associations, and many others. The content and scope of these interviews varied, but usually centered on the scale and nature of local fishing activities, economic, environmental and social issues in the fishing community, and relations between

Dominican and Haitian fishermen. It should be noted that I do not speak Haitian Creole, nor did I hire a Haitian interpreter. Nevertheless, many of the Haitians living in the border region speak Spanish well, and it was through these bilingual fishermen that I attempted to gain insight into the Haitian fishing community. My intent was to provide a balanced analysis of both the Dominican and Haitian communities, although admittedly my research was limited by this circumstance.

In addition to the information I personally collected, I also cite existing data, either published in the literature, or unpublished survey data collected by organizations in the area. Two major sources of quantitative data are cited: survey data on catches and fishing effort collected by the Dominican fisheries office (CODOPESCA) in Barahona, and survey data on Southeast Haitian fishermen collected by CROSE Haiti in Jacmel. These sources of data are more comprehensive than anything I could have personally collected during my fieldwork, and add to the quantitative dimension of this study.

### **Research Site**

The study area encompasses the region around the southern border between Haiti and the Dominican Republic, on the Caribbean coastline of the island of Hispaniola. The study area includes the Haitian village Anse-a-Pitre and the Dominican town Pedernales, which are separated by the international border. This study also incorporates fishing camps within Jaragua National Park, which lies on the Dominican side of the border, and are frequented by fishermen from Anse-a-Pitre and Pedernales.

Although I lived in Pedernales for the duration of my fieldwork I was able to make frequent visits across the border to Anse-a-Pitre; I also visited Jaragua National Park several times, and was able to spend time in Las Cuevas and Lanza So fishing camps. I was unable to visit some of the more distant fishing camps, such as Trudillé and Isla Beata; however I refer to

them in this study, because the fishing activities in these camps reportedly resemble those in the rest of the study area, and a portion of the fish caught as far away as Trudillé and Isla Beata is sold to fish buyers in Anse-a-Pitre and Pedernales, thereby entering the market system described in this study.



Figure 1-1. Haiti and the Dominican Republic. The red box represents the study area. See Figure 4-1 for a more detailed view of the area.

### **Plan of Thesis**

As described above, this study sets out to describe fishing in the study area, as well as emerging forms of community-based management. While systematically addressing these topics, I include both ethnographic observations as well as data on the local communities in order to describe the larger context within which these interactions occur.

Chapter 2 is a literature review describing theories regarding common-pool resources, property, and strategies for management. Chapter 3 is a detailed description of the culture and communities in study area, including information on history, ethnic relations, and economy. Chapter 4 gives an overview of fishing in the study area, from ecology to history to the gears and techniques used, and how fish is marketed. Chapter 5 is purely ethnographic, and describes first-hand experiences I had fishing with locals during my fieldwork, from May-July 2007. Chapter 6 describes both state-level and community-based management in the study area, differentiating

between the official rules and the norms among fishermen. Chapter 7 is a discussion and conclusion synthesizing all of the preceding chapters.

## CHAPTER 2 LITERATURE REVIEW

The theoretical issues in this thesis revolve around natural resources, how they are exploited, and how this exploitation may be controlled for the benefit of society. In the final analysis, these theories reduce to certain assumptions about the basic economic behaviors and motivations of people. Case studies provide a counterpoint to these overarching theories, demonstrating to what extent cooperation, coercion, and economic and social factors are capable of shaping 'natural' human economic behaviors. This chapter outlines some of the major economic concepts which apply to fishing in the study area.

### **Small-scale (Artisanal) Fisheries**

Pollnac and Poggie (1991:1) divide the fisheries of the world into small-scale and large-scale fisheries; these categories are defined by a variety of characteristics including the types of vessels, gear, and technology used by fishermen, the distance from shore at which fishing is conducted, the extent of ties to local and distant markets, the level of capitalization in the fishery, and class relations between fishermen and the owners of fishing vessels. Large-scale fisheries (also known as industrial or commercial fisheries) tend to employ larger vessels, more expensive gear, involve fishing activities conducted far offshore, and often feature capital/labor class relations, because actual fishermen rarely possess sufficient capital to invest in their own equipment. A good example of large-scale fishing would be tuna seining, in which large, technologically advanced vessels with numerous crew fish for months at a time on the high seas.

In contrast, small-scale, or artisanal fisheries generally have low levels of capitalization, low fishing effort, and low catch per unit effort (a measure of efficiency). Fishing is generally conducted within a few miles of shore, and may involve a degree of subsistence consumption, while the rest of the catch tends to be marketed within a limited geographic area. Gears used

tend to be passive, such as gillnets, handlines, traps, etc. Because of the relatively low cost of these kinds of equipment, small-scale fisheries tend to lack permanent owner/worker classes, and fishermen often are able to acquire their own boats and gear over the course of their lifetime. Most developing countries (including Haiti and the DR) have extensive small-scale fishing sectors, a situation which gives rise to unique social and economic issues not present to the same extent among fishermen in industrialized countries (Thompson 1983:7.1). Fishing on the southern Haitian/Dominican border has all of the aforementioned characteristics of small-scale fisheries.

### **Common Pool Resources**

Whether exploited on a small or a large scale, fishery resources belong to a class of resources known as *common pool*. Berkes et al. (1989:91) define common pool resources as ‘a class of resources for which exclusion is difficult and joint use involves subtractability’. In other words, because of the size, mobility, or other characteristics of the resource, it is difficult to limit the access of potential users. *Subtractable* means that if some of the resource is extracted by one user, then a smaller quantity of the resource is left to other users, i.e., if you catch one fish, there are less fish remaining in the ocean. Most marine resources are considered to be common-pool resources because of the obvious difficulties in excluding users at sea, where boundaries are difficult to police, and because of the mobility and invisibility of most marine species.

Common pool resources consist of a *core resource*, which forms the basis for sustained reproduction of the resource, and extractable *fringe units*, which represent the part of the resource which may be extracted without damaging the reproductive and regenerative properties of the core. Overexploitation of a common pool resource therefore consists of unsustainable extraction in which not only fringe units, but also a part of the core resource is being harvested, which decreases future returns to resource users. As mentioned before, both biologists and local

fishermen are convinced that marine resources are being exploited unsustainably in the study area. The overexploitation of a common pool resource is often described as a *Tragedy of the Commons*.

### **The Tragedy of the Commons**

The Tragedy of the Commons (Hardin 1968) predicts the theoretical outcome of multiple resource users exploiting a common pool resource. The analogy used in Hardin's essay is that of a pasture shared by a number of herders. Each herder wants to increase the number of animals in his herd, because each additional animal he raises will bring him a given profit. Each additional animal contributes slightly to the overgrazing of the pasture, constituting an economic loss shared by everyone. However, the economic benefit that the additional animal brings to the herder exceeds his individual share of the loss incurred by the overgrazing animal; in other words, an economically rational herder will make his herd as large as possible despite the degradation of the pasture. In the context of fishing, this corresponds to the overfishing of a species until the fishery collapses, in other words, stocks are so reduced that fishing is no longer an economically viable activity. Before we despair, however, it is important to note that the Tragedy employs a variety of assumptions which do not always hold true:

- Resource users are assumed to seek *maximum short term profits*
- Resource users *do not communicate or cooperate* with other resource users
- There are *no restrictions on access* to the common pool resource.

In addition, the Tragedy model conflates common pool resources with open access resources, an assumption which can not be taken as a given. As will be discussed in the next section, not all common pool resources are open access. For instance, there are a multitude of case studies illustrating the sustainability of a variety of communal or mixed property

arrangements among common pool resource users (Berkes et al. 1989). One of the institutions designed to prevent an open access situation leading to potential overexploitation is *property*.

### **Property Rights and Common Pool Resources**

The term *property right* implies a specific set of rights in relation to a resource. These include the right to use the resource, the right to manage the resource (i.e. decide who can and can't have access, and what the rules of resource use are), and the right to transfer the resource to other ownership.

Ownership of the resource, in this context, has multiple meanings. For instance, by convention, the fish that a fisherman catches belongs to him (or his patron, an arrangement which will be discussed in Chapter 4). However, the fisherman does not own all the fish in the ocean. These living, reproducing organisms form the common pool resource that we have been discussing, and that we are concerned with managing. Following Bromley (1984), there are 4 basic types of property rights regimes under which common property can be held: open access, private property, communal property, and state property:

- *Open access* indicates a complete lack of property rights: the resource is owned by nobody and is open to all. On first glance, this would seem to describe the situation in the study area, but in reality it doesn't. Both local norms and economic limitations form a barrier to access (see Runge (1986) for a clarification of true open access situations).
- *Private property* resources are owned by an individual or corporation that manages access and extraction activities. In practice, private property rarely is found in the context of marine resources, due to obvious issues in demarcating and claiming sections of ocean.
- *Communal property* is an arrangement in which the rights to the resource are assigned to a specific community of users, usually linked to the resource by proximity and a long tradition of use. Members of this community are granted access rights, and may collectively agree to extend access to non-members.
- *State property* means that the government regulates access to the resource and the nature of extraction activities. Under state ownership regimes, rights of access are often extended to all nationals of that country (Feeny et al. 1996:188).

Given the aforementioned categories, it is easy to see that real-world situations rarely fit perfectly within them. Legally speaking, the governments of Haiti and the Dominican Republic are the owners of the marine resources off their coasts, and have the legal right to determine who has access and how resources may be exploited. In reality, access on both sides of the border is essentially open to Haitians and Dominicans, although there are some community norms which govern access and fishing activities to an extent. Now that property rights have been discussed, we will examine the legal and actual status of marine resources in the study area.

### **State Ownership and Management: The Law of the Sea and Sovereign Fishing Rights**

Marine sovereignty, or claims by nations to exclusive control over areas of ocean, is a relatively new concept. The older legal approach to the oceans, (at least in Europe), which dates to the 17<sup>th</sup> century, was the concept of ‘freedom of the seas’, in which national sovereignty extended only 3 nautical miles offshore, and the remainder of the world’s oceans were considered open access, free for the fishing. However in the early 20<sup>th</sup> century, increasing conflicts between coastal nations over disputed offshore fishery and mineral resources led to the United Nations Convention on the Law of the Sea (UNCLOS), a series of negotiations that attempted to standardize various claims to offshore resources. UNCLOS went into force in 1994 and is now considered customary international law.

In what has been characterized as an enclosure movement, UNCLOS established exclusive economic zones (EEZs), which extend up to 200 miles off a nation’s coast. Under UNCLOS, a nation has exclusive rights to all economic resources within its EEZ, including fishing and mining, and therefore the right to manage these resources. Haiti and the Dominican Republic both claim EEZs; this means that within the study area, the Dominican and Haitian governments claim *de jure* (legal) ownership to all marine resources within 200 miles of their coasts. However, this turns out to be a huge area to police, and in the absence of a credible threat

from government enforcement, Haitian and Dominican fishermen seem to assign greater importance to the norms and traditions of their local communities, than the regulations of the state. This is an ideal segue into a discussion of the difficulties of state-level management, particularly in a border context.

### **Management of Shared Fish Stocks**

The implementation of UNCLOS brought about new issues in terms of fishing rights and management of fish stocks. It quickly became apparent that certain fish stocks, for example most of the world's migratory tuna, range over more than one nation's EEZ, and also the high seas farther offshore. Many other, more sedentary species may spawn in one EEZ, while the eggs or larvae drift into another EEZ. Therefore, catch quotas, seasonal restrictions, and other expensive management efforts undertaken by one nation within its EEZ can be rendered ineffective if neighboring nations do not also cooperate. Marine resources which make management by one nation difficult, due to their location, migratory habits, or reproductive habits, are known as *shared fish stocks*.

Shared fish stocks are by no means insignificant; it has been estimated that total catches from shared fish stocks represent approximately one-third of global marine capture fishery harvests (Munro et al. 2004:7). Therefore management of these stocks is of pressing economic and ecological significance. There are two classes of shared fish stocks exploited by artisanal fishermen on the southern Haitian/Dominican border (paraphrased from Munro et. al. 2004:3):

*Highly migratory species* are the first class of shared fish stocks involved in this study. These consist primarily of pelagic (open ocean) species which may migrate through various EEZs and/or the high seas. The tuna, sailfish, mackerel and other species which are mainly caught around offshore buoys (FADs) by Dominican fishermen belong to this category of fish stock. However, because these pelagic fish migrate through the EEZs of multiple nations, their

effective management is a regional issue in the Caribbean, removed from local decision-making, and their management at the community level will not be discussed.

*Transboundary stocks* are another class of shared fish stock, and the ones with which this study is primarily concerned. Transboundary stocks are fishery resources which cross or overlap the EEZ boundary of one state into the EEZs of one or more other coastal states. This includes fish that physically cross national boundaries, stocks lying within an area straddling more than one EEZ, and also stocks whose health in one EEZ is affected by the health of the stock in the other EEZ. This describes most of the fish, mollusks and crustaceans exploited in the study area.

Even if a particular fish does not physically cross from the Dominican to the Haitian EEZ, it is likely that the capture of this fish on one side of the border will affect the reproduction of the species on both sides of the border, i.e., the spawning of many marine species can have population effects many miles away. Although there are an estimated 1000 to 1500 transboundary fishery resources worldwide, it is argued that only a small percentage of these are subject to effective cooperative management (Munro et al. 2004:8); this is largely because the high costs of international state-level management can sometimes exceed the benefits.

### **Costs of Management**

Referring to natural resources, the term management can be defined as the ‘right to regulate internal use patterns and transform the resource by making improvements’ (Ostrom and Schlager 1996:131). Management of a common-property resource therefore requires ownership: the establishment of private, communal or state property regimes. As previously stated, marine resources in the study area are legally owned by the Dominican and Haitian states, although actual state-level management is very sporadic. Meanwhile, the norms of the community are not legally recognized, nor enforced except by the initiative of individual fishermen. Therefore, while the situation is not strictly open-access, neither can it be described as effectively managed.

That said, scientific management of fisheries can be a very costly undertaking. Scientific management requires extensive biological research to determine the size of stocks, and socioeconomic research to determine market factors and the characteristics and needs of the fishing community. Scientific management also requires an administrative machinery to determine which management measures are necessary to attain biological or economic objectives, and the ability to enforce these measures.

All of these requirements can be considered as transaction costs of management, and logically, the benefits of any management efforts should outweigh these costs. In other words, while it would be nice to have volumes of research, a purpose-built office and a fleet of boats to manage a small-scale fishery, the costs of these management measures would very likely exceed the benefits they provide. Therefore the decision to manage a resource is not a foregone conclusion, and if it is undertaken, the management plan must always weigh the costs against the biological, economic and social benefits of management.

### **Management Objectives and Benefits**

If time, effort and money are to be spent in managing a resource, a natural question is, what are the goals of the management effort? What will the benefits be and who will enjoy them? Therefore devising management plans is not a simple exercise from a political or scientific standpoint, and involves compromises between maintaining resource health and abundance, ensuring a high level of economic performance, and achieving socially desirable outcomes in terms of equity, employment and the market. The following three categories of management objectives can be pursued: biological, economic, and social (Gulland 1984).

*Biological:* Every fish stock is capable of sustaining a certain yield, which is a natural balance achieved between the recruitment of young fish on one hand, and losses due to fishing or natural death on the other. Fishing activities tend to *decrease* the size of the remaining fish

stock, while *increasing* the rate of recruitment of new individuals (because there is an increase in available habitat and food for each fish) which creates a new equilibrium population level, or sustainable yield. The maximum sustainable yield (MSY) is obtained through a level of fishing effort that allows the stock to produce its greatest total physical yield (by weight) per year. Management efforts aiming to achieve MSY concentrate on maximizing the physical production of the oceans.

*Economic:* As a primary objective of management, MSY has been criticized by the argument that the goal of fisheries management should be to achieve the maximum economic yield. This is achieved when the difference between total fishing revenue and total cost of fishing is at its greatest. In fact, the level of fishing leading to maximum profit usually *does not* correspond to MSY; due to the concept of diminishing returns, attaining the maximum economic yield usually involves less fishing than does attaining the MSY. There is a certain paradox here: in a centrally-planned fishery, access and fishing effort can be controlled so that the maximum economic benefit accrues to the *industry as a whole*; whereas in unmanaged fisheries, individual fishermen seek to maximize *personal benefit*, with the result that most fisheries are highly overcapitalized, with many more vessels and fishermen, and much more fishing effort than is biologically or economically optimal.

*Social:* Management efforts that seek to maximum economic yield can create unemployment problems by limiting fishing effort. This brings us to the social aspects of management; in some communities heavily dependent upon fishing, it may be socially (and politically) desirable to maintain ample employment in fishing, despite lower economic or biological efficiency. In such cases, high levels of effort may be permitted, while efficiency is sacrificed in order to allow more people to earn a livelihood from fishing. In order to allow more

fishermen to fish without overexploiting the resource, controls must often be placed upon the most efficient equipment or fishing techniques. For instance, spear diving at night may be banned in order to allow more fishermen to fish without overexploiting stocks.

In speaking about the goals of management, we must remember that context of this study is a border area between two developing nations, where government resources for scientific management are scarce. Furthermore, since the fishery on the southern Haitian/Dominican border is small-scale, the modest economic returns from fishing do not economically justify an expensive, greatly expanded state management effort.

Community-based management will now be addressed, which in many cases has proven to be a good alternative to state management. While often incapable of maximizing the biological or economic yield of a fishery, in some cases community-based management has proven to be a less costly and more effective way to achieve biological sustainability and social management goals.

### **Community-based Resource Management**

After all of this discussion about state-level, scientific management, we now will return to the concept of community and norms. Social norms can be defined as *shared understandings about actions that are obligatory, permitted, or forbidden* (Crawford and Ostrom 1995:586); in contrast to laws imposed by an external authority, norms represent the conventional understanding of the ‘way things are done’ among members of a community. If norms have sufficient recognition within the community, they may constitute a form of management:

Berkes et al. (1989:92) lists several well-documented cases of communal ownership and management of common pool resources. Native American hunters and trappers around James Bay, Quebec, have employed a system of family hunting territories to regulate the exploitation of beaver. Beaver was historically a very valuable species, and very easy to find and catch. The

centuries-old family hunting territory system was interrupted by the building of a railroad and an influx of non-native trappers from outside the area. During this period, the traditional management system broke down and open access prevailed. After 1930, when beaver populations had reached an all-time low, outsiders were banned from trapping in the area and the native hunting territorial system gained recognition of the Canadian government. Since that time, a sustainable equilibrium has once more been reached in beaver populations.

Territoriality among groups of lobster fishermen in Maine, USA is documented by Acheson (1988). Lobster has been fished commercially in the isolated communities of the rugged Maine coast since colonial days; by long convention, new fishermen must gain entry to the local harbor gang in order to gain the right to fish there. The harbor gangs have locally-recognized exclusive fishing rights over the local territory. Harbor gangs not only prevent established fishermen from other harbors from fishing in their territory, but more importantly, limit the number of new fishermen in the area. Gang territory is defended through verbal warnings or vandalization of encroaching fishermen's lobster traps. While not recognized by state law, this informal management system is respected by lobster fishermen along the Maine coast, and has helped to maintain lobster catches at a steady level since 1947.

In Fiji, a traditional system of 410 village fishing grounds, or *iqoliqoli*, survives to this day. Boundaries between the fishing grounds of different villages are well-recognized and demarcated. Access to these fishing grounds is managed at the community level, with the village chief as the final authority. The chief also has authority to proclaim halts on fishing of certain species or of fishing in general. Taking advantage of this strong community ownership system, various NGOs and academic institutions have initiated a system of marine protected areas on a village-by-village basis. The national government is presently drafting a bill to give full legal

ownership of fishing grounds to the individual villages, effectively decentralizing inshore fisheries management in Fiji.

These are just a few cases among many in the literature, in which open access resources are subjected to greater restrictions by the development of communal or private property regimes. Community norms play a major role in governing access to, and use of a common pool resource, and in the process of enclosure of an open access resource. However, communal property regimes seldom evolve autonomously in a modern context: while community-based resource management (CBRM) gives greater autonomy and consideration to local people than traditional top-down approaches, it is important to note that they usually rely heavily on institutional financial support from outside the community, i.e. through NGOs, government agencies, etc. Because of a continuing reliance on outside funding and expertise, CBRM should be viewed as an alternative to, not a replacement for top-down government management (Pomeroy 1997).

In places like the Caribbean, where longstanding indigenous institutions were destroyed by the arrival of Europeans, present-day traditions, norms, and community cohesion may not be strong enough to support independent communal resource management. Therefore, where true community-based management is impossible from a legal or practical standpoint, a collaboration between local and state authorities has been suggested. This refinement on pure community management is known as co-management, an arrangement in which power and responsibility is shared between the government and local resource users. Carlsson and Berkes (2005:65) visualize co-management as a problem-solving process involving negotiation and joint learning, the result of which is an effective power-sharing arrangement between state and local communities.

In fact, the state and community are rarely monolithic entities: The government may be divided into various ill-fitting or even antagonistic agencies, while the communities themselves may be complex systems with representatives from differing gender, ethnic and socioeconomic groups. Also, the success of co-management arrangements is contingent on whether external circumstances are conducive to developing such systems, with concerns including a sense of security of resource tenure, facilitation support, etc. (Ostrom 1990). In other words, it is not a foregone conclusion that fishing on the southern Haitian/Dominican border is well-suited to community-based or co-management. However, in many case studies, norms have formed the basis for sustainable, socially accepted communal resource management arrangements. Therefore, determining the strength of local norms and the role that they play in influencing the fishing behaviors of individuals on the southern Haitian/Dominican border will be a central focus of this study.

### **Summary**

Exploitation of common pool resources in a manner which is sustainable, economically efficient and socially equitable is often difficult to achieve. The Tragedy of the Commons model asserts that sustainable use of common pool resources can only be accomplished by establishment of private, communal, or state property rights which confer management authority on the owner. Over the past century, these ownership and management duties have been largely assumed by the state. However, a multitude of case studies have highlighted the ability of communities to manage certain common pool resources through a variety of traditional norms and institutions. The goals of community-based management do not necessarily mirror the goals of state-level scientific management, which is usually geared toward maximizing yields or profits; nevertheless, community-based management has sometimes proven effective in promoting sustainable, socially acceptable resource use. The effectiveness of community-based

management is usually contingent on the strength of traditions, norms, and institutions among local resource users. Therefore in order to evaluate the case for community management among Haitian and Dominican fishermen in the border area, the social setting must be taken into account; this is the subject of the next chapter.

## CHAPTER 3 RESEARCH SETTING

While the preceding chapter provided theoretical background of this study, the present chapter will be more ethnographic in focus, describing in detail the setting of this study: the southern end of the Haitian/Dominican border. This chapter begins by explaining the historical ties between Haiti and the DR, including ethnic relations, and continues by describing the demography, history and economy of Pedernales and Anse-a-Pitre. This social and economic backdrop is vital to understanding the context in which local fishing occurs.

### **Haiti and the Dominican Republic: Colonialism and the Roots of Ethnic Identity**

Initially a Spanish colony in its entirety, the island of Hispaniola was divided in 1697 when the western third of the island (what is now known as Haiti) was ceded to France. The population of this French colony, known as St. Domingue, quickly grew and prospered as a plantation economy, exporting vast amounts of sugar, coffee, and other tropical agricultural products. The plantations in St. Domingue were tended by large numbers of African slaves, who came to outnumber their white and mulatto masters by a ratio of 15 to 1 (Moya Pons 2007:146).

In contrast, the Spanish colony, known as Santo Domingo (now the Dominican Republic), was economically isolated and far less prosperous due to the strangling trade restrictions of Spain. Thus, the sparsely-inhabited Spanish side of the island developed an economy based on lumber extraction, cattle ranching and subsistence farming, rather than plantation agriculture. The population of slaves was far smaller than that of St. Domingue and eventually became integrated within the free population to a large extent. Thus the different economic trajectories of the colonies are largely responsible for Haiti being considered a 'black' society today, while the DR is a highly-mixed 'mulatto' society.

After winning its independence from France in 1804, Haiti (formerly St. Domingue) launched several invasions against still-colonial Santo Domingo. One of many reasons behind the invasions was to reduce the threat of a European re-conquest of the island. These incursions culminated in a lengthy and unpopular Haitian occupation of the Dominican Republic from 1822 to 1844. The popular resistance to the Haitian occupation helped to forge the Dominican national identity, which had as its basis the concepts of Hispanicness, Catholicism and Whiteness, and resistance to Haiti. Even though it arose out of political conflict, the Dominican stigmatization of Haiti was extended to include race, culture, and religion. The Dominican national identity that evolved is in many ways an anti-identity: it arose in such strong opposition to Haitianness that even today many Dominicans define themselves as what Haitians are not (Cassá et al. 1986).

Due to the long legacy of colonial racism, whiteness is still considered prestigious in the DR, while blackness implies socioeconomic inferiority and carries the stigma of Haiti. *Race* is a category created by attaching social and cultural significance to physical features such as skin color, and then by categorizing individuals based on how they conform to these physical characteristics, or phenotypes. The three phenotypes which form the physical components of race in the DR are *skin color, hair type and facial features*; these are placed on a scale which ranges from ‘bad’ African features to ‘good’ European features. In reality, many Dominicans would be hard to distinguish, feature-wise, from Haitians, but while Haitians may be degradingly referred to as *negro* or *prieto* (‘black’ or ‘dark’), a Dominican with the same features is referred to as *moreno*, a polite term which avoids association with ‘African’ Haiti.

It is important to realize that although racial terms are often used in expressing differences between Dominicans and Haitians, the relationship between the two groups is a broader question

of differences in culture and ethnicity. *Ethnicity* can be defined as *an umbrella term under which to group shared identities and the commonalities of race, nation, geographic origin, religion, aesthetics, language and kinship* (Howard 2001:2). Although racial terms are often used in expressing differences between Dominicans and Haitians, the complex and often antagonistic relationship is rooted in cultural differences and friction caused by the deep divide between Haiti and the DR in terms of material welfare.

### **A Brief History: The Closing and Reopening of the Border**

In the early years of the dictator Trujillo's long reign in the DR (1930-1961), the exact demarcation of the border with Haiti was finally agreed upon; the remote border region had long been an unregulated melting pot of Haitians and Dominicans. The marking of the border freshly accomplished, in 1937 Trujillo ordered the killing of all Haitians inhabiting the Dominican side of the border; some 15,000 Haitians and Dominican-Haitians were murdered, and the exodus that followed the massacre left the border region depopulated and economically backward.

During the ensuing decades the Trujillo regime carried out a 'Dominicanization' policy, in which the border was intentionally fortified and 'whitened' by inviting foreign settlers in order to create a starker distinction with the neighboring Haitians; border communities like Pedernales were given the designation 'Guardian of the Frontier'. The border was policed on both sides by military forces and essentially closed to travel or trade, with the exception of Haitian cane cutters contracted by the Dominican state, in collusion with the corrupt Haitian government which profited off of the transaction.

Beginning with the fall of Jean-Claude Duvalier's regime in Haiti in 1986, the border began to reopen. Border commerce took off during the American embargo against Haiti (1992-1994), and continued to expand with Aristide's return to Haiti and the dissolution of the Haitian armed forces and police. The result has been an economic reinvigoration of the border

communities, which have benefitted from the new trade opportunities. The number of Haitians living along the border and crossing to the DR has continued to increase in recent years, and many of the least desirable jobs in the DR, such as agricultural labor, construction and housecleaning, are now occupied by Haitians, a state of affairs which is received ambiguously by Dominicans: Haitian migrants are considered to be economically helpful or even indispensable, but a social burden and a cultural blemish. There is concern in the DR over the growing Haitian migrant population: estimates of Haitians and Dominican-Haitians in the DR range from 500,000 to over a million (OIM/FLACSO 2004), and Haitian migration is characterized in Dominican nationalist rhetoric as a ‘silent invasion’ threatening Dominican culture and society (Howard 2001:155). Since the 1937 massacre, anti-Haitian sentiment has periodically erupted in the D.R., prompting periodic forced repatriations of thousands of Haitians and Dominico-Haitians that have continued to this day.

### **Economic Factors in Migration**

The distinct contrast one feels when crossing the border between Haiti and the Dominican Republic is not simply due to differences in cultural or language. Despite the fact that they share the same island, there is a huge gap in economic development between the two countries; a few statistics will be presented to illustrate this point.

Table 3-1. Comparison of economic and social indicators in Haiti and the DR

Indicator	Haiti	Dominican Republic
Population density (persons/km <sup>2</sup> )	313	193
Population growth rate	2.50%	1.50%
Agriculture as percentage of GNP	28%	12%
Gross domestic product (PPP)	\$1,900	\$9,200
Population below poverty line	80%	42%
Adult literacy rate	53%	87%
Life expectancy at birth	57 years	73 years

Note: This data was obtained from <https://www.cia.gov/library/publications/the-world-factbook/>.

The data in the table above are very telling in terms of why large numbers of Haitians seek to work in the DR. Meanwhile, as Haitians approach and cross the border, large numbers of Dominicans living in the border provinces are migrating eastward toward Dominican urban areas; the Dominican border provinces are relatively poor and reliant on agriculture, and highly unequal land ownership has produced a crisis among small farmers, leading to urban or occupational flight (Dilla Alfonso and de Jesús Cedano 2007:94).

The agricultural land in the lowlands of Pedernales has largely become concentrated on estates larger than 100 hectares. These employ almost exclusively Haitian laborers, who work for as low as \$2 a day, in comparison to a Dominican wage of \$6 (Dilla Alfonso and de Jesús Cedano 2007:96). In summary, the province of Pedernales is experiencing three main migration patterns: Haitians moving to the Dominican Republic, Dominicans moving east from rural to urban areas, and Dominicans migrating overseas. From 1993-2002, the province of Pedernales experienced population growth equal to the national average (1.79%), but in light of outmigration of the Dominican populace, this growth has been attributed to immigration of Haitians into the province (ONE 2004). Meanwhile, Anse-a-Pitre is experiencing significant in-migration of rural Haitians into the community seeking to cross the border, which fits the broader eastward-moving demographic trend.

### **Attitudes and Stereotypes**

For many local Dominicans in Pedernales, Haiti holds no appeal; in fact many lifelong residents of the town claim they have never crossed the border, and although many local Dominicans speak some Creole, this is not something they take pride in or readily admit. In the everyday life of the border communities, the most frequent manifestation of ethnic antagonism is through the use of epithets and stereotypes, almost always communicated without a member of

the other nationality around to hear. Among Dominicans, I frequently heard the following stereotypes expressed about Haitians:

There is no law in Haiti. Haiti is seen as a wild, lawless and dangerous place, and Haitians are incapable of self-governance.

Haitians are criminals. One common complaint about Haitians centers on the repeated thefts of motorcycles from Pedernales. Many mentions are made about Haitians in Anse-a-Pitre being involved in the drug trade. Some Haitian fishermen (and some Dominicans too) are rumored to go out to sea with the pretense of fishing, but really for the purpose of picking up drugs offshore from Colombians in boats.

Haitians are destroying (or already have destroyed) the environment. Dominicans say the natural resources in Haiti are totally exhausted, and that this has to do with careless practices combined with Haitians having excessive numbers of children. This generalization extends to fishing, with the coastal waters on the Dominican side of the border said to be much more productive and Haiti's fishing grounds being pelado ('plucked bare'). Most Haitians mournfully agree, suggesting that this generalization has a basis in reality.

Haitians use witchcraft. Haitians are seen by Dominicans as being very superstitious and religious, but also capable of employing black magic to harm people and get what they want. These generalizations are based on a misunderstanding and rejection of Haitian voodoo religious practices on the part of Dominicans.

On the other hand, there are some neutral and positive conceptions of Haitians among local Dominicans. Dominicans see Haitians as being very hard workers, willing to put up with conditions that Dominicans won't tolerate. Specifically in terms of fishing, Dominicans marvel

at the resourcefulness of Haitians who venture far up and down the coast in their small boats, with little more than rice and beans to eat.

Dominican men also claim that Haitian women are less demanding than Dominican women, with great sexual powers to boot, and thus are desirable, if not for marriage, then at least for informal relations. This preference among 'Spanish' men for African women was noted as early as the 17th century by the adventurer Exquemelin during his travels on Hispaniola; perhaps contributing to the high degree of miscegenation in the Dominican Republic (de Dios Ventura Soriano 1998:18).

Haitians have their own attitudes concerning Dominicans; rather than expressing feelings of superiority over Dominicans, Haitians tend to express resentment toward the haughtiness and racial prejudice of Dominicans, as well as Dominicans' abuse of their privileged social and economic position. There is negativity toward Dominicans stemming from perceived maltreatment, such as forced repatriations of Haitians living in the Dominican Republic (Howard 2001:19). In terms of fishing, Haitians often mention the theft or vandalism of their equipment at the hands of Dominicans, particularly by authorities such as the military.

Dominicans are often seen as opportunistic in their economic relationships with Haitians; Haitians fully realize that they are doing the least desirable jobs in the DR, for less money than a Dominican would be paid, and are providing benefits to many Dominican businesses through their labor. As such, Dominicans are thought to be lazy and wasteful, and generally as drinking too much (Murray et al. 1998:41). Dominican women are sometimes depicted as being loose, owing to the large number of Dominican-run brothels in Port-au-Prince (Howard 2001).

### **Ethnic Relations in the Study Area**

This discussion of the historical backdrop of Haitian/Dominican relations sets the context for describing the ethnic relations between Haitian and Dominican fishermen in the study area.

Of particular interest is the manner in which these ethnic dynamics influence fishing behavior. Characterizing the ethnic relations within any community is inherently difficult, because individuals can differ widely in their views and their behavior toward members of other groups. Without making undue generalizations, I will try to paint a representative picture based on dialogue I heard repeated frequently, as well as based on events that I witnessed or were recounted to me.

Theft of Dominican motorcycles by Haitians was a complaint I commonly heard in Pedernales. Adding to the frustration of Pedernales residents, when the stolen bikes are finally confiscated by authorities in Anse-a-Pitre, the Dominican victim of the theft is usually required to pay a hefty recovery fee to get his property back. On July 4<sup>th</sup> there was an incident at the border which I later heard and read accounts of: some Haitians were accused of stealing motorbikes in Pedernales and bringing them across the border to sell in Haiti. A group of angry Dominicans went into Anse-a-Pitre looking for the supposed thieves. A brawl soon commenced at the border, escalating in a fight with stones and machetes involving some 200 people. By the time Dominican soldiers broke up the fight, eight people had been wounded. The incident even attracted the attention of UN peacekeepers in Haiti and prompted a meeting between Dominican and Haitian provincial representatives.

On another occasion I attempted to enter Anse-a-Pitre to conduct interviews, but was turned back by Dominican soldiers; the crossing had been closed due to another altercation in the border marketplace. The greater capacity of Dominicans to police and close the border crossings serves as a reminder to Haitians that while they depend on access to the DR for work opportunities and products that are scarce in Haiti, ultimately this is only made possible by the

goodwill of Dominicans; because of Haitian economic reliance on the DR, these temporary border closures have an element of collective punishment.

In reality, there is mutual interdependence between Haitians and Dominicans: many Dominican industries, particularly agriculture and construction, rely on cheap Haitian labor. Most agricultural work in the province is now done by Haitians, and many restaurants, hotels and families in Pedernales hire Haitian labor. They often pay scant salaries, sometimes merely providing room and board, in exchange for cleaning, laundry, or other services. Nevertheless, the dependence of the Haitians on the Dominicans is much more pressing than the other way around, because many Haitians rely on crossing to the DR for vital work, goods and services necessary for day-to-day survival.

Haitians who manage to obtain papers to travel beyond Pedernales to Santo Domingo are not safe from scrutiny. There are multiple military checkpoints along the highways in the DR, where inspectors enter the bus to check Haitians' papers (whereas my passport was never checked). These inspectors often demand bribes before they will let the bus continue on its way. When I traveled into Haiti via market boat, I was made to pay a similar arbitrary 'fee' by the Haitian border control. Rather than qualify this behavior as ethnic antagonism, it might be better described as opportunism by corrupt, underpaid officials, which seems more palatable to local people because it is targeted at a group toward which there is already widespread resentment.

The fishermen in the study area have their own history of ethnic conflict. It was difficult to obtain exact reports of what had occurred, but several years ago, there was violence between fishermen of the two communities leading to at least 12 deaths- deaths that were reportedly shootings that occurred at sea. Some years past, the Haitian inhabitants of Trudillé fishing camp were expelled and their equipment taken by the Dominican military, a story frequently

recounted. Other accounts of abuses are more fantastic and difficult to corroborate: one informant related a secondhand story about a Dominican in Trudillé who hired Haitians to work on his fishing boat, but in lieu of paying them at the end of the day, pushed them into the sea to drown. More recent and common complaints from Haitian fishermen allege that Dominican fishermen or authorities who encounter them while fishing sometimes destroy their fishing gear and steal their catch.

Naturally, in a community of any size there will be conflicts and violent incidents. The prevalence of ethnically-inspired conflicts, especially violent ones, between Haitians and Dominicans in the study area should not be overemphasized or portrayed as an everyday occurrence. Local residents say that incidents in other border communities, such as Dajabón, are far more prevalent. Dominican fishermen in particular insist that violence between the two communities of fishermen ended years ago; and while Haitians are quick to point out the injustice and abuses they receive at the hands of the Dominican military, they concede that violence between fishermen rarely occurs nowadays. It is more accurate to describe current Haitian/Dominican relations in the study area as peaceful, and often even amicable, but with an underlying tension that most often manifests itself in the use of epithets and stereotypes, and less frequently manifests itself in vandalism or violence.

Fishermen in the study area are among the groups which have the most frequent interethnic interactions; as such they usually speak some of the other country's language, and have a greater familiarity with the customs and behavior of its citizens. It would be interesting to know whether this high level of interaction among fishermen leads to more friendly relations, or greater friction than among other groups in the community. In a study addressing this question in Dominican schools, interactions between Dominican and Haitian students were studied in

schools with varying proportions of Haitian students. The conclusion in that study was that the degree of social interaction has little significance in determining the strength of anti-Haitian prejudice (Bueno 1992:45). At any rate, the numerous accounts of problems between local fishermen should be taken with a grain of salt, because there is a disproportionately high level of interaction between fishermen in the border communities.

### **Pedernales: Demography**

Several times a day, *guaguas* (public buses) depart the urban congestion of Santo Domingo, and head west for some 335km along the coastal road toward the Haitian border. Seven hours later, having weaved through the arid and sparsely populated Barahona peninsula, the bus arrives at the end of the line: the remote border town of Pedernales, population 13,805 (2002 census) and capital of the province called by the same name. Pedernales has the lowest population density of any Dominican province (10 persons/km<sup>2</sup>), and approximately 73% of the province's population lives in the urban areas of Pedernales and Oviedo. Along the province's western border runs the Pedernales River, taking its name from the flint stones on its banks, and forming the southern border between the DR and Haiti.

### **Pedernales: History**

Although the arid Barahona peninsula was scarcely populated for centuries after the decimation of the Taíno natives by Spanish colonists, by 1905 Dominican settlers had returned to raise livestock there. In 1927 the Dominican government established an agricultural colony at Pedernales with an initial settlement of 50 families. The same year, noting the abundance of marine life offshore, an expert from the Ministry of Agriculture arrived to teach the settlers techniques for catching and preserving fish (Félic 2001:45). In 1929 the long-contended southern border with Haiti was officially established at the Pedernales River; in 1934 a military post was constructed, and the colony was patriotically designated by the Dominican government

as a 'Guardian of the Frontier'. However, the settlement was still very isolated from the rest of the DR: until 1937, when the road was built linking Pedernales to Barahona, the only access to the region was by boat or overland via the Baoruco Mountains to the north.

In 1957 Pedernales was raised to the status of a province by Trujillo, and in that era of Dominican nationalism, enjoyed the perks of being a frontier town standing guard against the supposed Haitian cultural and demographic menace: developments included a hospital, churches, schools, concrete housing and new government buildings, as well as the military base. Settlement was encouraged; in fact as part of his policy of 'whitening' the border region, Trujillo invited a group of Japanese settlers to the area in 1950.

While the death of Trujillo in 1961 caused a reduced emphasis on the ideology of *dominicanismo* and reduced government support for border development, Pedernales was already economically self-reliant: an American (ALCOA) bauxite mining operation became a major source of jobs and revenue from the 1950s on; during the 60s and 70s many Dominican families gravitated toward Pedernales for abundant local job opportunities.

However, the ALCOA bauxite mining operation closed in 1983, depressing the local economy. In the same year the province's two national parks, Sierra de Baoruco and Jaragua, were inaugurated, pinning the hopes for a brighter economic future on tourism. The US embargo against Haiti (1992-1994) spurred an increase in smuggling and illegal commerce across the border with Haiti, which helped to reopen relations which had been closed for decades (Félic 2001:132).

Recent economic developments include the opening of a smaller lime mining operation at Cabo Rojo by a Columbian company in 2003, employing around 250 locals (McPherson and Schwartz 2005:28). There is also a tax-free zone in town with a factory that sorts and re-exports

used clothing, but this provides very little employment (Dilla Alfonso and de Jesús Cedano 2007:97). Alleviating local economic difficulties somewhat, 200 households receive regular remittances from family working abroad (ONE 2006).

### **Pedernales: Infrastructure and Economy**

Presently, Pedernales town possesses a hospital with 12 doctors and 40 nurses, 20 primary schools and 3 secondary schools, various churches, an electric plant, and a radio station. A military base stands just east of town, regulating the passage of Haitians into the D.R. On the main thoroughfares of Pedernales the sleepy atmosphere is shattered by the constant roar of motorcycles and bachata music blaring from corner stores, whereas the wealthier neighborhoods arranged in neat grids south of the town square exude a prosperous torpor reminiscent of an American suburb. In a survey of local housing, more than 90% of Pedernales households were found to have roofs of tin or concrete, walls of wood or concrete, and concrete floors; greater than 90% have electricity; either a flush toilet or latrine, and drink tap water or bottled water (Rounseville 2007). In contrast, in the northern and eastern outskirts of the town, irregular dirt paths are lined with poorer houses, many inhabited by squatters and Haitians.

In a 2004 survey, only 1.7% of Pedernales residents declared employment in fishing, as compared to 14.1% in agriculture, 9.1% in business, and 6.4% in public administration and defense. Notably however, 49.8% of residents did not declare their employment in this study, possibly due to the high rates of unemployment and informal employment in the area, and the relative impoverishment of the border region (ONE 2004). Despite these low figures, fishing is described by locals as one of the major occupations in the town. Perhaps this is because the province is renowned for good fishing, and perhaps because fishing brings outside money to the community, rather than simply redistributing existing wealth as local restaurants and bars tend to do.

## **The Border**

After a short motorcycle taxi ride through the scrubland west of Pedernales, you find yourself on the bank of the Pedernales River, which forms the border with Haiti in this area. Although there is a small border outpost on the Dominican side of the river, Haitians and Dominicans can ordinarily cross freely from one side to the other, either over the narrow cement footbridge or by wading through the shallow water.

Immigration checks for Haitians are not carried out until they pass the military base on the eastern outskirts of the town of Pedernales, meaning that within the town of Pedernales itself Haitians can move about freely. This state of affairs contributes to the large numbers of Haitians that work or sell goods on the street in Pedernales, take advantage of services such as internet cafes, pay phones, ice plants, and the hospital, and some who even reside permanently in the Dominican town. Well over 50% of the agricultural labor force in Pedernales province is Haitian (McPherson 2005:10). Although Anse-a-Pitre has less attractions to offer than Pedernales does, Dominicans sometimes go there to buy cheap *kleren* (Haitian cane liquor), when visiting the border market, and to enjoy the nightlife. As described by local historian Carlos Julio Féliz, ‘beyond mere coexistence, there is an interpenetration of social necessity’ between the two communities (2001:48).

### **Anse-a-Pitre: Demography**

At the border, one simply lifts a chain and crosses a narrow footbridge to the Haitian side of the river. Although just a stone’s throw away from the Dominican side of the river, when walking down the paths of Anse-a-Pitre, one feels transported in time, or at least transported to a land far distant from the much more prosperous Dominican Republic. The first thing one notices is the noise level: with few motorcycles or blaring radios, the atmosphere in Anse-a-Pitre is

quiet; in contrast to Pedernales, there is no paved grid of streets; the meandering paths in Anse-a-Pitre are of dirt and pebbles, with irregular clusters of buildings along the edges.

Anse-a-Pitre is located in the sparsely-populated, rural southeastern corner of the Haitian Departement du Sud-Est. The community extends inland from the Caribbean coast, hemmed in by the river to the southeast and hills to the northwest. Although there is a road linking Anse-a-Pitre with the capital, Port-au-Prince, this is in poor condition and therefore the community is somewhat isolated from the rest of the country; a seven hour journey by boat and then *taptap* (public vehicle) is the easiest mode of transport to Port-au-Prince.

Despite the less-organized and more agricultural appearance of Anse-a-Pitre compared with Pedernales, the Haitian community is more populous. Natural population growth accompanied by an influx of Haitians toward the border community, seeking work or migration to the DR has caused the community to swell, and Anse-a-Pitre has in reality become joined with other nearby communities, such as Banano. The total population of the community and surrounding rural area (*commune*) is some 21,846 (IHSI 2003), compared to 13,805 in the town of Pedernales.

### **Anse-a-Pitres: History**

Anse-a-Pitres has a much longer history of settlement than its Dominican counterpart: during the colonial era, remote Anse-a-Pitre was ‘one of the most notorious haunts of the maroons (runaway slaves)...where the scene was laid of many a frightful legend’. These renegade slaves were known to carry out raids on nearby plantations (Brown 1837:124). In 1849, the village was sacked and burned by the Dominican Navy during an action against Haiti (Schoenrich 1918:50). During the early 20<sup>th</sup> century when Pedernales was still a fledgling settlement, Dominican colonists used to rely on Anse-a-Pitre to obtain basic supplies (Féliz 2001). Later, political conditions caused the closure of the border between Haiti and the DR and

far less interaction between the two communities; open commerce and movement of people did not resume until the border began to reopen in the late 1980s and early 1990s.

### **Anse-a-Pitre: Infrastructure and Economy**

Houses in Anse-a-Pitre are constructed from a wide variety of materials; in an odd juxtaposition, a concrete structure is often neighbored on both sides by wattle and daub huts. Huge piles of used clothing can be seen heaped on house porches; these are used American clothes, bought from the factory in the tax free zone across the border in Pedernales, which will be sorted and sold by the women on market day. Most houses have small yards with kitchen gardens, and not far from the road are larger gardens of subsistence crops, such as cassava, traditionally tended by men in Haiti.



Figure 3-1. A path in Anse-a-Pitre, Haiti.

A walk down to the Anse-a-Pitre beachfront reveals another major local subsistence activity: dozens of fishing boats are pulled up on the pebbly shore. These boats are constructed of colorfully painted wood, are often full of fishing nets but rarely equipped with an engine, which complements the rustic appearance of the surrounding community.

There are huge disparities between Anse-a-Pitre and Pedernales in terms of basic public services: because there is no electricity in Anse-a-Pitre, after the sun goes down the community is plunged into darkness, except for the glow of kerosene lamps and a few buildings lit by small private generators. Whereas only around 32% of Pedernales households rely on wood or charcoal for cooking fuel (ONE 2004), reliance on these fuels is nearly universal in Anse-a-Pitre. Anse-a-Pitre lacks running water, so that people must draw water from wells. In terms of health services, there is a Red Cross clinic (Centro de Salud) on the Haitian side of the border but for serious maladies, residents of Anse-a-Pitre must seek treatment elsewhere, either in Jacmel in Haiti, or rely on care in Dominican hospitals in Pedernales or Barahona. To illustrate the general lack of health services in Haiti, the entire Département du Sud-Est (Southeastern region of Haiti) has only 12 doctors (IHSI 2000a).

In terms of education, there are more than half a dozen government and private primary schools in Anse-a-Pitre, and a middle school which runs up to 8<sup>th</sup> grade. Students who are able to pursue their studies beyond 8<sup>th</sup> grade must move several hours away to Jacmel, Chiote, or the capital, although there are plans to expand the local schools to incorporate more advanced classes.

### **The Biweekly Border Market**

Between Anse-a-Pitre and Pedernales, on the border itself, there is a biweekly market held every Monday and Friday. Anse-a-Pitre/Pedernales is the southernmost of 5 major border

crossings between the two countries, each of which holds market days. The border market is a mechanism through which merchants on both sides of the border meet to buy and sell goods; these goods are bought in bulk to be re-sold at distant locations, or are bought in small quantities by locals who are simply looking for cooking utensils, fresh vegetables or a new t-shirt. Despite the bustling appearance of the Anse-a-Pitre/Pedernales market and its importance to the local economy, it is the smallest of the 5 border markets, accounting for only 3% of the total cross-border trade (Dilla Alfonso and de Jesús Cedano 2007:103).

The market takes place simultaneously on both sides of the border; there is a purpose-built concrete plaza with shaded stalls on the Dominican side, across the river from which is a field with makeshift thatch-roofed shelters on the Haitian side. On market days, the whole border area bustles with buyers and sellers. Trucks full of produce honk impatiently at motorcycles loaded down with huge bags of rice and beans, while perspiring Haitians cross the crowded bridge with wheelbarrows or wade through the shallow river hauling all kinds of merchandise on their shoulders.

The only study focusing on the Pedernales market was conducted in 2002, and found between 200 and 350 vendors, the great majority of which were local Haitian women. These women can be found selling their wares equally on both sides of the border, whereas the few Dominican vendors, mostly men, are found only on the Dominican side of the market. Also notable was the habitual presence of around twenty trucks, mostly carrying agricultural products from Barahona.

Since the construction of the Dominican market plaza, the administration of the market has been carried out by the city council (*ayuntamiento*) of Pedernales, which collects some \$15,000-20,000 annually in taxes and permits, representing 5-10% of the local budget in Pedernales (Dilla

Alfonso and de Jesús Cedano 2007:119). There are customs officials on both the Haitian and Dominican side of the border who collect taxes on goods crossing the border, but this is often done on the spot by approximation, and I could not get access to any records from the local customs officials.



Figure 3-2. A scene from the border market. This is the market plaza on the Dominican side.

The goods being exchanged in large quantities across the border reflect differences in supply and demand between the two countries, and over the past decade this trade has increased dramatically, from an estimated total of \$24.4 million worth of goods exported from the DR to Haiti in 1996, up to \$161.1 million in 2005 (CEDOPEX 2006). The balance of this border trade is overwhelmingly in favor of the Dominican Republic, which only imports some \$12 million of Haitian goods annually (CEDOPEX 2006). However, these figures must only be seen as approximations, as many goods cross the border without being recorded.

The specific goods being exchanged vary over time with changing production, consumption and trade patterns in Haiti and the Dominican Republic. The principal Dominican exports at present are steel bars, flour, eggs, cement, coconut, cardboard boxes, pasta, and rice. The Haitian exports are mainly re-exports from the U.S., including used clothing, cosmetics, etc., and some Haitian produce (Dilla Alfonso and de Jesús Cedano 2007:103). Some of the most conspicuous goods at the border market at the time of fieldwork were large sacks of American rice and beans. These are brought from Port-au-Prince, Haiti, and bought by Dominicans at the border. This American rice is considered to be better than many of the local varieties, and sells for a higher price. Dominicans in Pedernales consume this American rice, while Haitians often consume inferior varieties of Dominican rice. This exchange has an interesting parallel to the way fish is marketed across the border, with the inferior classes of fish flowing west to Haiti while costly species are consumed in the DR.

Fish is sold on a small scale to locals at the market, but the vast majority of fish that moves across the border is destined for distant urban areas, and is already packed in coolers on Anse-a-Pitre beach when market day comes around. This is mainly *tercera clase*, a price category mainly composed of small reef fish that sells for a low price. Throughout the days prior to the market, Haitian buyers accumulate large coolers full of these fish, obtained from both Haitian and Dominican fishermen along the coast as far away as the fishing camps in Parque Jaragua. These fishermen make sure to go fishing on the appropriate days in order to have fresh fish ready for market; until it is sold, the fish is kept cool with blocks of ice manufactured in Pedernales.

In fact, the bulk of the commerce at the local market is in goods which will be re-sold in distant locations, such as Port-au-Prince and Santo Domingo. The goods are transported eastward by truck on the Dominican side, and transported by a fleet of 16 large market boats on

the Haitian side of the border. This fleet travels westward in a long convoy and has a regular schedule revolving around the market, arriving in Anse-a-Pitres on Monday and Friday mornings before the market opens, and leaving for Marigot on Monday and Friday evenings after being loaded with merchandise at the border market.

I had the opportunity to travel to Marigot, Haiti on one of these large wooden boats (about 50 feet long), which are filled with cargo, and then loaded with as many passengers as possible. Because of the large size and draft of the boats, they are moored a little offshore; passengers are carried out to the boats on the shoulders of young men in an attempt to stay dry. Close to midnight the fleet of market boats motors slowly through the night past the silhouette of the mountainous southern Haitian coast, pitch-black from the lack of electricity in the coastal communities, while the cramped, unsheltered passengers pray that it doesn't rain. When the boats arrive at Marigot at dawn, the cargo of charcoal, fish, clothes and assorted other goods is offloaded onto the beach, where trucks will carry it to Port-au-Prince; the emptied boats bob next to the shore, awaiting the cargo they will carry east to Anse-a-Pitre for the next market day.

I spoke to a Haitian merchant, Claude, who buys used clothing in Anse-a-Pitre and sells it in his hometown Benait, in southwestern Haiti. Haitian women in Anse-a-Pitre obtain used clothing from the tax free zone in Pedernales, sort it, and pack it into large bundles. Claude buys these bundles for \$65 apiece in Anse-a-Pitre but can get three times that price in Benait. He pays his passenger fare of \$8 on one of the market boats bound west for Marigot, and pays \$3 for the transport of each bundle of clothes. Fish is carried westward into Haiti in a similar fashion, kept fresh in large thermos coolers.

This chapter provided a broad description of the communities within the study area; even though only a small minority in these communities actually fish for a living, their lives and work

are obviously influenced by, and influential to, the economics, politics and society around them.

This description complete, we can address the major focus of this study, which is the local fishing economy.

## CHAPTER 4 FISHING IN THE STUDY AREA

This chapter deals specifically with fishing activities among both Haitians and Dominicans in the study area. It begins with a description of the natural surroundings and ecosystems which constitute the resource, continues with a description of the history and development of local fishing, and ends with the marketing of fish. Explanations of the various fishing techniques used in the study area can be found in the appendix (Appendix A).

### **Climate, Topography and Bathymetry**

The eastern coastline of the Barahona Peninsula, extending from Oviedo to Cabo Beata, is composed of limestone cliffs interspersed with sandy beaches. The southern tip of the Barahona Peninsula is characterized by coastal lagoons and mangroves, while to the west the coastline is composed of limestone cliffs, broken by the long sandy shoreline of Bahía de las Aguilas. From Cabo Rojo to Pedernales, the coastline is low and sandy and fringed with patches of reef. The combined length of the 13 beaches in the study area is 32 km.



Figure 4-1. A detailed map of the study area. The yellow line in the upper left hand corner is the border between Haiti and the DR. The lightest blue shade of water represents the 100 fathom (~200m) isobath; virtually all local fishing activities (except the offshore FAD fishing) are confined to this zone. Figure reproduced with the permission of ITMB Maps.

The study area is one of the driest regions of the island of Hispaniola, with some 54.2 cm of rain per year (IHSI 2000). Strong winds habitually blow from the east, creating rough sea conditions in exposed areas, such as the seas around Alto Velo Island. However, the area to the west of Cabo Beata, extending past the Haitian border, is usually sheltered from these rough sea conditions by the protruding landmass of the Barahona Peninsula. Due to this factor, the seas in the study area are usually calm, making fishing in small open boats possible.

Bathymetry, or the depth contours of the seafloor, plays a major role in determining fishing activities. Most fishing activities target species living in a given depth range; for instance, trap fishermen who target lobster or reef fish set their traps in shallow water, generally less than 80m deep, whereas fishermen targeting tuna around FADs fish in water thousands of meters deep. Other species, like yellowtail snapper, tend to live next to drop-offs in the reef.

Therefore the activities which fishermen engage in, the equipment they use, and the species they target depend to a large degree on their ability to reach specific offshore locations which are appropriate to that type of fishing. Nearly all fishing activities in the study area are confined to the relatively shallow waters of the continental shelf which extend up to 140m depth in this area (light blue region on the map). The shelf extends up to 10 nautical miles in width between Cabo Beata and Isla Beata, forming a large area suited to artisanal fishing, whereas off of Pedernales and Anse-a-Pitres the shelf is much narrower, often less than 3nm in width. The only group of fishermen not confined to the narrow continental shelf are those who target pelagic fish like tuna, marlin and dorado, which gather around buoys known as fish aggregation devices (FADs) placed some 10-30nm offshore. These fish tend to travel near the surface of very deep water; in consequence, FAD fishermen seek the deepest water they can find close to shore; in the study area, this happens to be in Haiti, off the coast of Anse-a-Pitre.

### **Parque Jaragua**

Established in 1983, Parque Jaragua is the largest national park in the Dominican Republic, embracing a total area 1,374 km<sup>2</sup>, of which 905 km<sup>2</sup> is coastal or marine. The Park extends from Punta San Luis in the East to Punta Aguila in the West, and includes within its boundaries the islands of Beata and Alto Velo, as well as the Los Frailes and Piedra Negra keys. The park is rich in both terrestrial and marine biodiversity, and is considered one of the richest fishing

grounds in the DR, with 154 species of fish represented. Some of the most abundant demersal (bottom-dwelling) varieties include parrotfish, snapper, grunts, goatfish, squirrelfish and grouper.

In addition, Jaragua National Park possesses habitats favorable to the settlement of ocean-borne spiny lobster larvae (*Panulirus argus*) (Herrera 1997), and the lobsters, which are primarily caught with traps at camps within the Park's boundaries, are one of the most important fishery resources in the DR (PROPECAR Vol.1: 3-14). Jaragua National Park is also one of the DR's leading areas for the production of queen conch (*Strombus gigas*), which is primarily brought up by divers supplied with air through a tube from an air compressor in the boat.

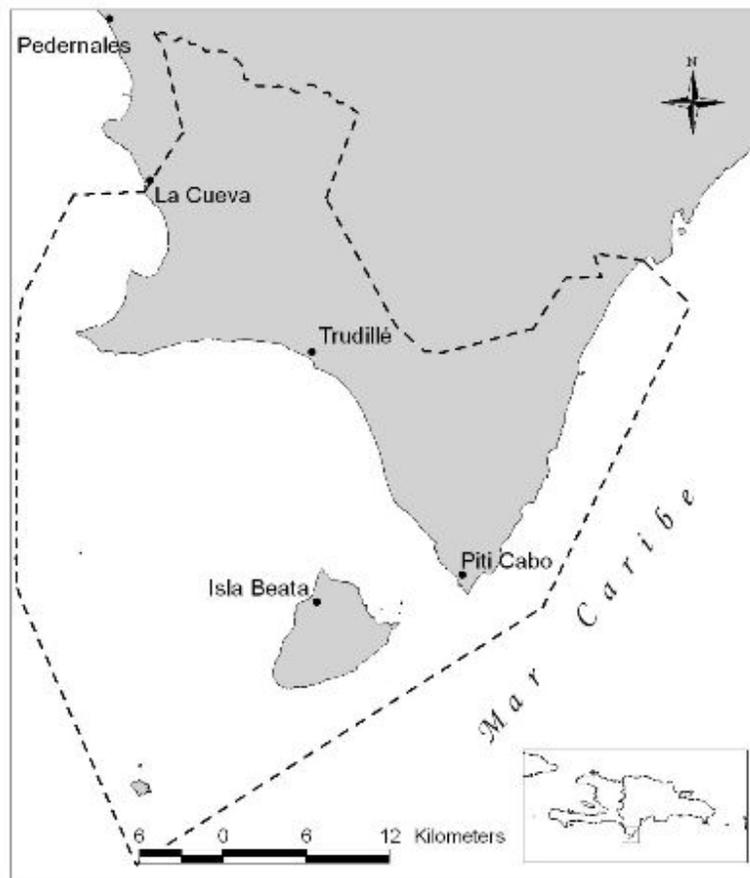


Figure 4-2. The boundaries of Jaragua National Park and locations of some of the fishing camps. Some of the areas within the Park are technically off-limits to fishing, such as Beata Island and the Beata Channel, however, this restriction does not seem to be enforced.

Marine habitats in the Park range from saline coastal lagoons, to mangroves, seagrass meadows and coral reefs. Large meadows of seagrass composed of *Thalassia testudinum* and *Syringodium filiforme* are found in the Beata Channel and stretch from Bahía de las Aguilas to Ticaletón. These undersea meadows are home to abundant schools of sardines and herrings as well as echinoderms such as starfish. Large coral promontories rise west of Alto Velo Island, and smaller reefs and scattered coral heads are found off Lanza So and in the Beata Channel; a total of 32 species of hard corals and 17 species of soft corals are found in Jaragua's marine areas.

As far as terrestrial biodiversity, the park hosts 437 species of plants including mangroves of the *Rhizophora*, *Avicennia* and *Conocarpus* varieties, which serve as bird sanctuaries and habitats for various invertebrates and juvenile fish. Nevertheless, some stands of mangroves close to Pedernales have been cut to produce charcoal. The beaches of Jaragua National Park are the second-most important area in the DR for the nesting of sea turtles, reptiles and birds. There are 15 species of mammals and 135 species of birds in the park, and the island of Alto Velo is believed to have the largest colony of boobies in the Caribbean.

Despite Jaragua's remoteness and the low population density in the area, the park faces increasing threats. Among the principal threats to the park are unsustainable farming practices, including cutting and burning of forest by Haitians and Dominican farmers; livestock raising within the park, mining for limestone and bauxite, hunting of birds and sea turtles, capture of crabs during the breeding season, beekeeping, potential hotel-building in Bahía de las Aguilas, and marine and lagoon fishing (Dilla Alfonso 2007). Fishing is a particularly conspicuous activity in the park, and will form an important part of our discussion.

### Fishing Camps in Parque Jaragua

For more than 50 years, Haitians and Dominicans have camped in the caves and on the sandy beaches on the shores of the Barahona Peninsula as they fish up and down the coast. Several of these waypoints have grown into permanent fishing camps; their early inhabitation by Haitians is indicated by their Creole names- Piticabo, Trudillé, Petit Trou; the island of Alto Velo was also inhabited by Haitians early in the 20<sup>th</sup> century (Julio Félix 2001:186). Despite the opening of the National Park in 1983, there are still several fishing camps presently inhabited by both Haitian and Dominican fishermen on a permanent or temporary basis within the park.



Figure 4-3. A typical dwelling in a fishing camp in Jaragua National Park. Lanza So, DR.

These camps lack basic services like road access, fresh water, sanitation, and electricity, and the majority of fishermen live in makeshift huts or shelters on the beach. In spite of the rough living conditions, fishermen are lured to the camps because they provide easy access to the rich fishing grounds of Jaragua National Park. The fishing camps vary in size, but one of the largest, Trudillé, has up to 200 inhabitants at times. There were an estimated 500 fishermen living within the Park in 1997, and the number has been growing. Most of these fishermen are between the ages of 20 and 40 years, and about half have no primary education at all (Arias et al. 2006).

### **Coastal Fishing in the Dominican Republic and Haiti**

On the whole, fishermen in the Dominican Republic do not represent an influential social group, either politically, economically or numerically. In 2003 the number of artisanal fishermen in the DR was estimated at around 10,000, or some 0.1% of the total population (FAO 2004). Over the past two decades, fishing has only accounted for less than 2% of the total production value of the agricultural sector (PROPESCAR 1994:12-7). In 2005, national production of fish was some 55,000 metric tons (ONE 2006), however more than 50% of fish consumed in the D.R. is imported to satisfy national demand (FAO 2004), and the Dominican fishing sector contributes only 5% of the total protein in the Dominican diet. On the other hand, a portion of the Dominican conch and lobster harvests are exported internationally; due to high prices in the world market, 100 metric tons each of lobster and conch were exported in 2005 (PROPESCAR 1994, ONE 2006).

In Haiti about 30,000 fishermen exploit the nation's coastal waters on a full or part time basis, and fishing represented 3.9% of overall household income among Haitians in 1996 (IHSI 2000a). Nationally, the annual catch has been maintained at about 5,000 tons of fish and some 1,000 tons of crustaceans and other species, and represents some 2.5% of GDP (FAO 2004).

However, Haiti imports an additional 12,000 tons a year of fish to satisfy national demand. Nevertheless Haiti also managed to export about \$4 million worth of lobster, conch and other shellfish throughout the 1980s (CIA 2007). This mirrors a national-level export of luxury foods, which brings much needed income that is then spent on cheaper foods for domestic consumption. This is seen in the study area, where large fish and expensive products like conch and lobster caught by Haitians tend to be sold to Dominican buyers.

### **The History of Fishing in the Study Area**

Fishing activities have been carried on in the study area for several thousand years by Taíno (Arawak) Indians, who originally migrated to Hispaniola from the South American mainland. Jaragua National Park contains remnants of Taíno habitation going back to 2590 B.C. (Julio Félix 2001:170), and piles of discarded conch shells harvested by these people can still be found along the shore. The Taíno are known to have fished with traps similar to those still in use by locals today. In recent centuries, Haitian peasants and Dominican settlers who inhabited the coast of the Barahona peninsula brought renewed fishing activity to the area; this activity intensified during the 20<sup>th</sup> century as the population in the region expanded. Fishing in the present day has become increasingly market-oriented in response to greater demand for fish in distant urban areas, and with the advent of roads and refrigeration, which have enhanced marketing opportunities.

Through interviews with older residents and fishermen, I gained a general idea of the evolution of fishing in the border area over the past decades. The techniques and equipment remembered by the oldest fishermen in Pedernales and Anse-a-Pitre are fishing with hook and line and with bamboo traps, activities carried out in small wooden boats propelled by oars or sails. One longtime fisherman in Pedernales said that his father fished in the 1950s and 1960s with bamboo traps right off the beach in front of the town. ‘In those days people owned fewer

traps, maybe only 20 traps per fisherman, because fish were so plentiful. My father just sold his catch locally, to the townspeople in Pedernales.’

The past 30 years have seen progressive innovations in fishing, beginning with the introduction of outboard engines and fiberglass hulls; however, the spread of these advances was slowed by high costs in acquiring them. In a comprehensive census of fishing in the DR conducted in 1990, 229 fishing vessels were counted in Pedernales province, crewed by 499 fishermen. 93% of the vessels were *yolas*, (small open vessels with a length of 3-7 meters). 83% were propelled by engines, and 88% of the fishing vessels at that time were still constructed of wood. Pescaderías owned 72% of fishing vessels while 24% were individually owned (PROPESCAR 1994:3-14), a statistic which indicates the early importance of patrons as financiers of fishing activities in the study area. The economic influence of patrons in local fishing continues up to the present day. In 1990, the majority of local fishermen were engaged in trap fishing and night fishing with lights, and somewhat less with line fishing during the day (see Figure 4-4 below).

Unfortunately, comparable diachronic data are not available for Anse-a-Pitre; from interviews with experienced Haitian fishermen, it appears that wooden boats propelled by oars or sails, and either trap fishing or line fishing were also the rule in Anse-a-Pitre in past decades. This is still the case on the Haitian side of the border, and although there are more outboard engines in use in Haiti today, they tend to be small (15 or 20 horsepower), and there are very few fiberglass boats. The use of gillnets with small mesh sizes became popular during the 1990s, to the extent that in the year 2000 the Anse-a-Pitre fishermen’s association (APPA) was founded with the intention of banning their use because of perceived damage to the fishery. Nevertheless,

nets are still used with much greater frequency by local Haitians than Dominicans (see Figure 4-7 for a comparison).

### **Local Fishing in the Present Day**

There are 11 points along the coast in the study area from which fishing boats depart, and to which they return with their catch. These include Anse-a-Pite (Haiti), Pedernales (DR), and a string of camps stretching eastward into Jaragua National Park, in the DR. In terms of the number of boats and fishermen, Anse-a-Pitre, Pedernales, and the camps of Las Cuevas, Isla Beata and Trudillé are the most important embarkation points.

Technologically, the face of local fishing has changed significantly over the last 3 decades; in addition to fiberglass hulls and more powerful engines, newly introduced fishing technologies are widely used: these include gillnets, chicken-wire traps, air compressors for diving, fish aggregation devices (FADs or *balsas*), and GPS technology, which is vital for navigating to the FADs which are located up to 30 miles offshore. Fishing with new technologies is often more lucrative than using older ones; for instance, compressed-air divers can harvest many more conch in a day than free divers can. Extremely long gillnets with a small mesh size can capture many species and many sizes of fish, including small juveniles. Thus, some of the newer techniques and equipment have gained a reputation for being profitable but unsustainable. A notable exception to this rule is FAD fishing: while employing new technologies and potentially very profitable, it exploits migratory fish, and thus does not diminish stocks of inshore species.

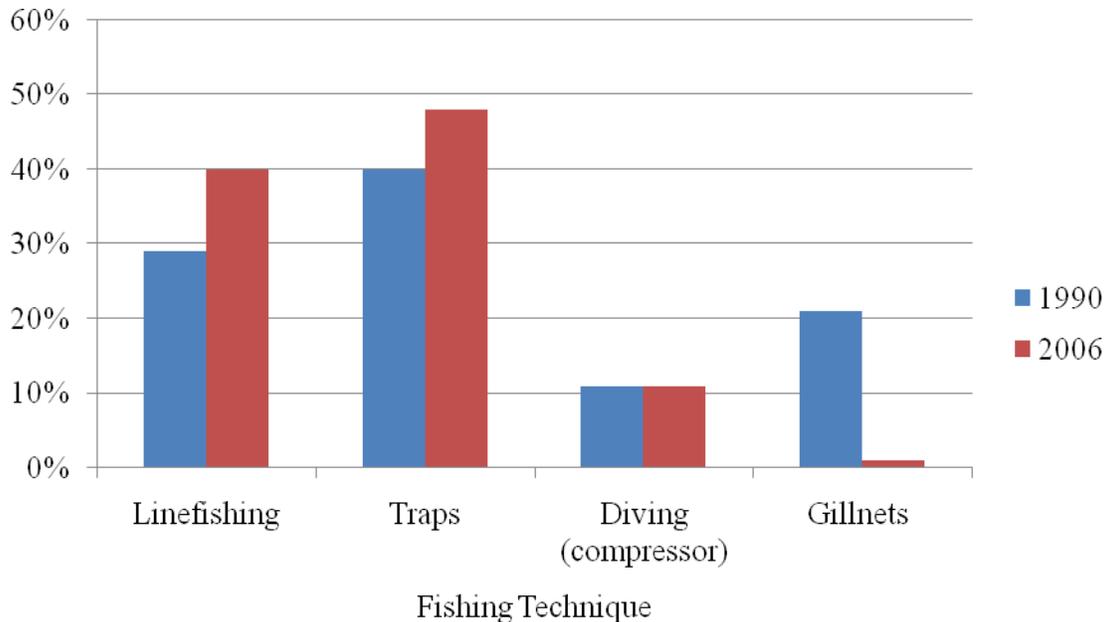


Figure 4-4. A comparison between 1990 and 2006 of the prevalence of major fishing techniques among Dominicans in Pedernales. The most notable change over this 16-year period is the virtual halt in the use of gillnets, which are now banned, among local Dominicans. Note- the two sets of data are not strictly comparable: the 1990 data is for the province of Pedernales and represents the response to the question ‘what is was the primary gear used on this boat?’ (PROPESCAR 1994:3-14). The 2006 data is based on observations of 579 fishing vessels returning from fishing trips on Pedernales beach (CODOPESCA 2007).

An important point to bear in mind is that the recent innovations have not been adopted in the same proportions by Haitian and Dominican fishermen in the study area. Dominicans tend to fish on fiberglass boats with more powerful (30-40hp) engines. Line fishing around FADs far offshore, and compressor diving have become important fishing activities among Dominicans. Virtually all fish traps used by Dominicans are constructed from chicken wire. Meanwhile, Haitians use wooden boats propelled by oars, sail, or smaller (10-20hp) engines, continue to use gillnets and trammel nets with greater frequency, and use fish traps constructed of cane or bamboo. Finally, while many fishermen have adopted the newer technologies, traditional trap and hook-and-line fishing continue to be the most common activities among both Haitian and

Dominican fishermen in the area. Thus, fishing among Haitians today closely resembles traditional techniques (with the exception of the adoption of gillnets, beach dragnets and trammel nets) and to some extent, small engines, whereas the face of Dominican fishing has changed more drastically.



Figure 4-5. A typical Dominican fishing boat. The hull is built of fiberglass, and it is propelled by a 40 hp outboard engine.



Figure 4-6. A typical Haitian fishing boat. It is built of wood, and equipped with oars and a rudimentary sail.

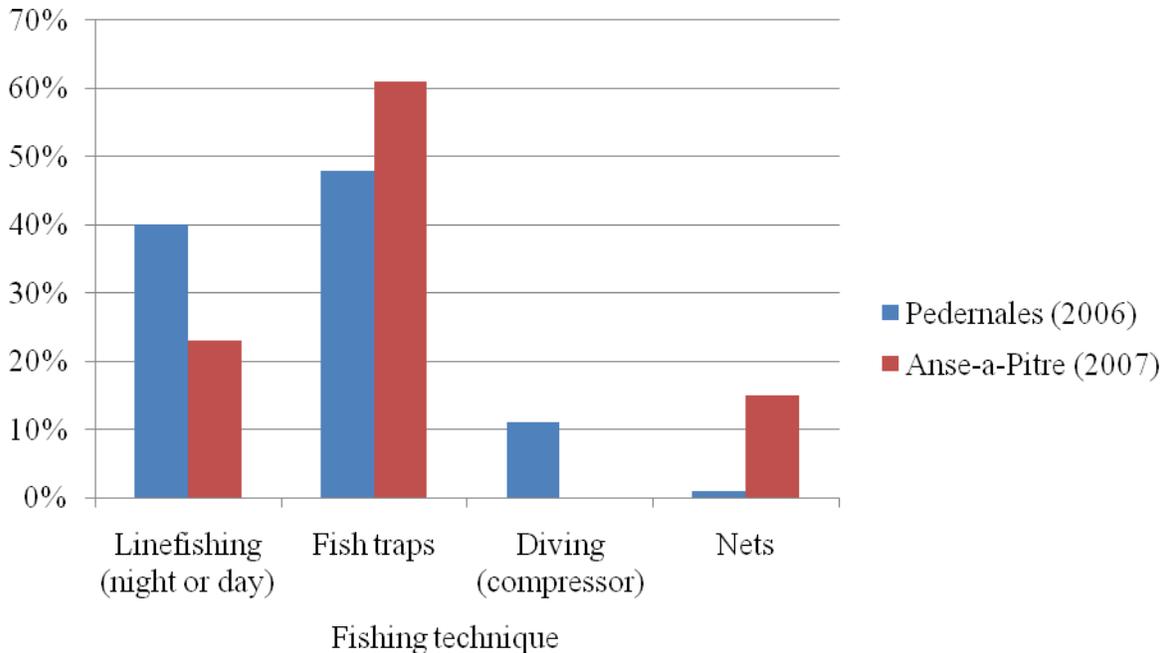


Figure 4-7. A comparison of fishing techniques used in Pedernales and Anse-a-Pitres. The most notable differences are the greater amount of compressor diving and linefishing among Dominicans (largely explained by the adoption of line fishing around FADs by Dominicans). In contrast, Haitians rely more heavily on fish traps and the continued use of gillnets. Note- the two sets of data are not strictly comparable: the Pedernales data is based on the observations of 579 fishing vessels returning to Pedernales beach from fishing (CODOPESCA 2007). The Anse-a-Pitre data represents the response to the question ‘what is the primary fishing gear you use?’ posed to 82 fishermen (CROSE 2007).

The number of fishermen and fishing boats operating out of the towns of Pedernales and Anse-a-Pitre varies, as fishermen often move between the towns and the fishing camps, but counts conducted during fieldwork revealed a dramatic contrast between the fishing fleets on the two sides of the border, with approximately 40 fishing boats on Pedernales beach (nearly all 18 or 22 ft fiberglass boats), and 110 boats on Anse-a-Pitre beach (nearly all wooden boats some 16-20 ft long. In terms of the total number of fishermen, it is difficult to determine; there was no official registry and many men fish part-time. Estimates given by fishermen were that there are approximately 100 fishermen living in Pedernales and ‘many more’ or perhaps a few hundred in Anse-a-Pitre. These estimates seem reasonable, given the number of boats in the two

communities and the fact that Dominicans overwhelmingly fish two men to a boat, and Haitians two or three.

The number of boats and fishermen operating at any given time in the fishing camps in Parque Jaragua is probably at least as great as that of Pedernales and Anse-a-Pitre combined. Due to logistical difficulties, I was unable to attempt a count of fishermen or boats in the camps, but in 1990 there were nearly 400 fishermen, and an estimated 500 fishermen in 1997 (PROPESCAR 1994, Arias et al. 2006). West of Trudillé, the majority of fishermen in the camps are Dominicans from Pedernales and Haitians from Anse-a-Pitre. In Trudillé, Isla Beata and Piticabo, the majority of fishermen are Dominicans from Juancho (a town east of the study area) and Haitians originating in Anse-a-Pitre.

### **Seasonality of Fishing Activities**

Fishing as it is carried out in the study area does not provide a consistent income throughout the year. The specific fishing activities which occur throughout the year are dictated by a combination of the natural migrations and life cycles of marine species, changing weather and sea combinations throughout the year, closed seasons on lobster and conch, and by the economic needs of fishermen. These various factors tend to influence fishermen in the following ways:

*Closed seasons:* As mentioned in the section on state management in Chapter 6, there are closed seasons in the DR on spiny lobster from April 1- July 31 and for queen conch (a restriction which also includes some less important species of mollusk) from July 1- October 31. Local fishermen indicated that despite these closed seasons, fishing for these species goes on year-round, though perhaps at a reduced level.

*Weather:* As mentioned in the previous section on Topography, the seas to the west of the Barahona Peninsula are generally protected from the prevailing wind, which comes from the

east. However, January, February and July are known for high winds, which reduce fishing activities. Another important consideration with weather is the hurricane season, running from May-November. The area has been hit by major hurricanes in 1955, 1966, 1967, and considerably affected in several other years, most recently in late 2007. These hurricanes not only have the capacity to cause death and destruction on land, but also can severely damage inshore marine resources, such as coral reefs.

*Biological cycles:* Fishermen who fish around offshore FADs find their fortunes are tied to the seasonal migrations of tuna, mackerel and other species that travel around the Caribbean. During my fieldwork in June and July, these fishermen were mostly idle and often in debt, waiting for the arrival of the *corrida de atún*, or schools of tuna to arrive off the coast; this season of good fishing lasts roughly from late August to early December. January and February are also low months, but then schools of mackerel and dorado arrive off the coast from the end of February to May. One of the directors of the Pedernales Fishermen's Association pointed to this inconsistency in earnings as a cause of social problems among FAD fishermen, causing them to go into debt during certain times of the year. Another experienced trap fisherman cited the phases of the moon as a major influence on his fishing success; his catches during the full moon are nearly double those during the new moon.

### **Becoming a Fisherman**

When telling locals in Pedernales that I had come to study the fishermen, I often got puzzled looks. Various people cautioned me that this would not be easy, because the fishermen are not a cohesive social group in the community, to be found together at a certain place or time. They come from various families and economic backgrounds, and live all over the community. One of my challenges was to physically locate them, and another to find the commonalities that

make them a community, if not in a social sense, then at least in the sense of a community with similar habits, problems and values.

The two main barriers to becoming a fisherman in either Pedernales or Anse-a-Pitre are experience (knowing how to fish), and access to fishing equipment. In both communities it appears that the most common way to gain the necessary experience and access to equipment is through family members who fish: 86% of fishermen interviewed in Anse-a-Pitre in 2007 report that their father was also a fisherman, indicating that there is a tendency to ‘follow in your father’s footsteps’, or at least that having a father who fishes greatly facilitates one’s ability to become a fisherman. With one exception (whose father was a tailor), the remaining 14% of Haitian respondents all had fathers who farmed (CROSE 2007). Formal education is not an important factor in becoming a fisherman; 58% of all Haitians employed in the fishing/agricultural sector have no schooling whatsoever (IHSI 2000b), and many Pedernales fishermen have only a primary school education. By all accounts, farming (and to a lesser extent, fishing) form the economic base of Anse-a-Pitre; and survey data seems to indicate that employment in Anse-a-Pitre’s various restaurants, shops and other enterprises is concentrated within the few families that own them (CROSE 2007). Similar survey data for Pedernales fishermen is lacking, but three informants corroborated that the great majority of Pedernales fishermen also learn their skills from their father or other male relatives.

#### **Access to Equipment and Economic Arrangements with Patrons**

Along with acquiring the necessary experience, the high costs of boats, fuel and fishing gear are a major factor limiting the access of fishermen to the resource. In both Anse-a-Pitre and Pedernales, the majority of fishermen do not own the boats, motors, and gear they use. In Anse-a-Pitre, 43 of 107 respondents (40%) of fishermen report owning a boat (CROSE 2007). It is unclear from survey data whether this means full or partial ownership: in Haiti, two or more men

often share ownership of a boat. This data indicates that 60% of Haitian fishermen must seek other arrangements to gain access to a boat; usually either through a Haitian patron or by renting from a boat owner and paying with a share of the catch. In the DR, such arrangements are also the norm: in 1994, a nationwide survey found 36% of fishermen working independently, 40% employed by a patron, and 24% were in organized associations. Nearly identically with Anse-a-Pitre, 61% of active fishermen in the Pedernales Fishermen's Association are employed by a patron who provides access to a boat.

The typical Pedernales patron owns a *pescadería* (fish market) and a number of *equipos* (boats with fishing gear). The largest patron operating in Pedernales at the moment owns 15 boats. A *pescadería* typically consists of a courtyard next to the patron's house, where trucks may enter to load and unload fish. Although there is a variety of fishing equipment scattered around the *pescadería*, boats are typically left at the beach, ready to fish. There is usually a walk-in freezer at the *pescadería* where fish is kept fresh until it is picked up by trucks and carried to urban markets; locals may also buy fish from *pescaderías* in small quantities. Infrastructure is somewhat less elaborate in Anse-a-Pitre, where fish is stored in large coolers with ice brought from Pedernales, until it can be loaded onto a market boat bound for Marigot, Haiti and then on toward Port-au-Prince.



Figure 4-8. A pescadería in Pedernales. The white door on the left is a walk-in freezer.

In order to illustrate the costs involved in fishing, and how they shape economic choices of fishermen and patrons, the prices of some equipment will be quoted:

Table 4-1. Prices of some fishing gear in Pedernales in July 2007

Item	Price (\$US)
Fiberglass boat (18 ft long)	4900
Fiberglass boat (22 ft long)	6500
40 hp outboard engine	3000
GPS unit	150-300
FAD (materials for one FAD)	500
Chicken wire fish trap (2 mouths)	35
Gillnet (size) 300 ft x 8 ft	300
Gallon of fuel (July 2007)	4.50

Obviously, startup and operating costs can vary greatly, especially with the size of the boat engine and the amount of fuel used. Much of the inshore trap, line and net fishing in the study

area is carried out in boats with smaller engines, ranging from 10-30 hp. However, line fishing around FADs is exclusively done with 40 hp engines, and consumes large quantities of fuel: a day of FAD fishing 20 miles offshore might consume up to 18 gallons of fuel. With the price of gasoline at around \$4.50/gallon at the time of fieldwork, this could cost two fishermen a total of \$80 for a day of fishing. For this reason, while most trap fishermen in Pedernales have come to own their own boats and gear, almost all FAD fishermen rely on patrons.

In turn, patrons rely on loans in order to finance equipment for their pescaderías: according to financial records at the Fisheries office in Barahona, most of the boats, engines and cold storage facilities in Pedernales are financed either through Dominican banks or government fisheries loans. Fisheries loans are more desirable than loans provided through banks, because they have lower interest rates: while bank loans charge a monthly 2% interest rate on the original amount of the loan, the loans through Fisheries have interest calculated only on the remaining debt, making them much more attractive to the patron.

Ironically, despite patrons' characterizations of fishermen as financially irresponsible, and fishermen's generalization that patrons are rolling in ill-gotten wealth, the books at Fisheries in Barahona indicate that most Pedernales patrons have failed to repay their loans on time, even several years after purchasing fishing equipment; despite this, fishing equipment is rarely repossessed by the Fisheries Department. 'Fishermen say that we are becoming rich by exploiting them, but look, I barely have any functioning boats right now... maintaining equipment is very costly', one patron griped to me while mournfully gesturing toward the inoperative outboard engines cluttering his pescadería.

Payment arrangements between patrons and fishermen can vary. One Pedernales patron, 'Elefante', hires fishermen by the day to haul up his fish traps. Often these are Haitians who

cross the border each day to work; although these men may have extensive experience, they do not own any fishing gear and simply sell their labor. Elefante pays these fishermen a flat daily wage of 8 dollars, an arrangement similar to that of agricultural day labor, although this wage compares favorably to what Haitians are paid to do agricultural work in the DR, which can be as low as 2 dollars per day. Because of the passive nature of trap fishing (the traps catch fish by themselves and merely require labor to haul them up), Elefante is able to utilize a wage labor arrangement without sacrificing on performance.

Other kinds of fishing are not so well-suited to wage labor, because without financial incentive for the fishermen to work hard, they would not be successful and productivity would suffer. This includes various kinds of hook-and-line fishing (including FAD fishing) and compressor diving. Therefore to provide the fishermen with incentive, the standard arrangement in Pedernales is for the patron to allow the fisherman free use of a boat and engine; in return, the fisherman must sell his entire catch to his patron, who buys it at an established price well below the true market value. The difference between what the patron pays the fisherman for a pound of fish, and what the patron is paid by an urban buyer goes toward overhead such as equipment maintenance, the patron's living expenses, as well as profit. Usually every Saturday accounts are settled between patrons and fishermen; the fisherman must subtract out of his earnings all of the fuel he used, as well as any food the patron provided him. If a fisherman manages to invest in his own boat and gear, he can sell fish to any buyer he pleases, and can typically sell his fish for an additional 25-50 cents per pound.

While arrangements with patrons grant fishermen access to the resource without the need to invest in equipment, this system is the source of constant discontent among the fishermen, who feel that the price per pound that patrons pay for fish is excessively low and unfair. As one

experienced fish buyer remarked, ‘There has always been tension between patrons and fishermen; fishermen accuse patrons of greediness while the patrons consider the fishermen financially irresponsible’. One manifestation of this mistrust is that fishermen will occasionally try to hide their catch in order to sell it independently for a higher price. I met one ex-fisherman, who now is relegated to building fish traps for a living because local patrons refuse to hire him; he was caught hiding the fish he had caught while employed by a local patron; this is considered the equivalent of stealing.

Fishermen often gripe about how prices plummet during the October *corrida* (tuna migration) when fish are most plentiful and the market becomes saturated. For instance, while in July 2007 fishermen were paid 20 pesos/lb. for tuna, during the *corrida* the price may drop to a few pesos per pound, and in extreme cases, patrons will stop buying fish altogether when their freezers are full. Many fishermen claim that the Pedernales patrons conspire together to keep prices down; therefore, even though fishermen may freely enter into work arrangements with one of several local patrons, giving at least the illusion of price competition, some fishermen feel that there is really a kind of monopsony with all patrons cooperating. According to the following prices from July 2007 data, patrons tend to retain about one-third of the value of the fish before sale to an urban buyer.

Table 4-2. Typical prices paid to fishermen by patrons vs. true market prices

Type of fish	Price paid to fisherman (\$US/lb.)	Price paid to patron by buyer (\$US/lb.)
Tuna	0.70	1.25
King mackerel	1.00	1.50
Queen snapper	2.50	4.00

At the time of fieldwork, May-July 2007, discontent was particularly evident because it was the low season, fuel prices were extremely high, and many fishermen were in debt and out of work. Whether or not the fishermen’s allegations of price-fixing are true, it is important to

note that when the price offered by Santo Domingo buyers falls, the patrons have the ability to pass this decrease on to the fishermen while maintaining their own profit margin. In this sense the fisherman working for a patron occupies an inherently disadvantaged position in the fishing economy, vulnerable to fluctuations in urban demand which he has no control over.

Despite the frequent griping of the fishermen, there are generally amicable relations between fishermen and patrons, as well as a sense of *patrocinio* or paternalism. This may take the form of loans when the fisherman is in debt or has problems such as illness in the family. According to some patrons, some fishermen sink so deeply in debt that the patron never recovers the money he has loaned out. Patrons, in response to accusations of greed and unfairness, respond that the fishermen in Pedernales make a lot of money relative to the rest of the community, but tend to squander it by drinking too much. Given the large amounts of money that fishermen say that they earn, there might be some truth to this characterization. FAD fishermen say they may earn up to US\$150 on a very good day, while trap fishermen typically make some \$15-45 a day. Earnings of trap fishermen tend to be much more steady, whereas on a bad day of FAD fishing, a fisherman will spend more on fuel than he makes off of his catch, a potential cause of indebtedness. A new neighborhood known as Los Guayacanes is springing up in Pedernales, with spacious concrete houses mostly inhabited by fishermen; these might be particularly successful or frugal members of the fishing community who managed to save their earnings.

Because patrons control such a large portion of the capital in the fishery, their influence in a community-based management plan cannot be neglected. Many of the decisions regarding equipment, fishing activities, and marketing are made by patrons and simply acquiesced to by the fishermen.

## **Secondary Economic Activities of Fishermen**

Fishermen in the study area employ multiple strategies to feed their families and earn money; this is consistent with the occupational multiplicity documented by Comitas in rural Jamaica (1964). This is particularly true on the Haitian side of the border, where most of the population relies to some degree on subsistence agriculture and fishing. According to the CROSE interviews of 111 fishermen in Anse-a-Pitres, 95% of respondents reported that fishing was their primary economic activity. However, 41% did report engaging in other economic activities or occupations. These included 28 working in agriculture, 6 selling products, 3 driving motorcycle taxis, 3 voodoo priests (*houngan*), 2 mechanics, a boat caulker, a mason and a painter. Thus while the majority of Anse-a-Pitre fishermen rely primarily on fishing, nearly half engage in other activities to supplement their incomes. Similarly detailed information for Pedernales is not available, but 2001 data indicates that 75% of Dominican fishermen in the border region rely exclusively on fishing for income (SEA/ONAPLAN/AECI 2001). The greater degree of specialization in fishing among Dominicans makes sense, given the more urban nature of Pedernales, and the greater degree of capitalization of Dominican fishermen.

## **Classification of Fish**

Fish in the study area tend to be identified by common species names, in addition to belonging to broad categories for purposes of marketing. Most species caught by fishermen in the study area have common names in both Haitian Creole and Spanish (A table with the local names for many varieties of fish can be found in Appendix B). The extent to which fish are distinguished by name usually depends on their size and value: while large fish like tuna and grouper are almost always referred to by a common species name, small reef fish are usually collectively referred to as *tercera clase* ('third class') or simply called 'rejects' (*rechazo/rejét*).

According to a folk-knowledge study carried out near Port-au-Prince, Haitian fishermen may classify a fish in terms of morphology (color, size, shape), the habitat it is found in (deep sea, open water, seagrass, rocks), its economic value, or a combination of these factors (Weiner 2001). However, the characteristic of fish that seems to matter most to both Dominican and Haitian fishermen in the study area is the market value, and this is the way the catch is separated for sale. In both Anse-a-Pitre and Pedernales, fish are generally classified in terms of market value in three basic categories: red, white, and black, also known as 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> class. Sometimes Dominicans will distinguish 5 classes, but at other times the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> classes are lumped together as 3<sup>rd</sup> class.

English Translation	Dominican		Haitian (Weiner conf 1.)	Price Level	Examples
Red/ 1 <sup>st</sup>	Rojo/ primera		Pwason rouge	Higher	Snapper, wahoo, tuna, dorado, etc.
White/ 2 <sup>nd</sup>	Primera blanco		Pwason blanc	intermediate	Larger parrotfish, surgeonfish, small snapper, etc.
	Segunda blanco				
Black/ 3 <sup>rd</sup> / rejects	Tercera/ rechazo (the term 'negro' does not seem to be used)	Tercera	Pwason nwa/ rejét	Lower	Small reef fish
		Cuarta			
		Quinta			

Figure 4-9. Local Haitian and Dominican systems of fish classification for market.

Red fish, also known as 1<sup>st</sup> class, includes such large and commercially valuable species as tuna, wahoo and snapper. These fish command a high price per pound, and are generally end up being consumed by restaurants, resorts or wealthier people. When caught by Haitian fishermen, they are usually sold to Dominican buyers in Pedernales. White fish, also known as 2<sup>nd</sup> class, includes such fish as larger parrotfish and surgeonfish, triggerfish, and small snapper. These fish

have an intermediate price level. Black fish, or 3<sup>rd</sup> class, are the small fish such as butterflyfish, wrasses, grunts, squirrelfish, etc. that are caught in large quantities in gillnets and traps. These fish are often kept for food by the fisherman or sold to buyers around \$0.60 per pound. This category of fish is usually sold to Haitian buyers for local consumption or re-export to Haitian urban areas.

Because the size of the fish plays a role in its value, a fish of a particular species may belong to any of the above-mentioned categories, depending on its size and condition. For instance, a small queen parrotfish might be characterized as 3<sup>rd</sup> class, while a large queen parrotfish might be classed as 2<sup>nd</sup> or even 1<sup>st</sup> class. Since a variety of characteristics play a part in a fish's perceived value, the system is naturally somewhat ambiguous and confusing. However, both fishermen and buyers are very knowledgeable about the current value of the various types of fish, and this classification system functions more as a facilitator of transactions than a strict determiner of price. The consistent source of controversy among fishermen seems not to be the proper classification of fish; rather the main controversy is between fishermen and patrons over the fixed price per pound offered by the patrons for the various species.

### **Preservation and Marketing of Fish**

As already explained, fishing takes place all along the coast of the study area, from west of Anse-a-Pitre to the camps at Trudillé and Isla Beata in Jaragua National Park. While the fishermen are generally Haitian residents of Anse-a-Pitre or Dominicans from Pedernales, there are 11 sites within the study area from which fishing is carried out. Aside from the abundance of fish in the area, when choosing a disembarkation site, the two major considerations for fishermen are the ability to prevent their catch from spoiling (with ice, electric refrigeration, sun drying or pickling), and the ability to bring fish to buyers (usually via either road access or by boat).

In terms of preservation, the town of Pedernales is the only place in the study area with electricity. There are some 5 Pedernales pescaderías with walk-in freezers where fish may be stored for months without spoiling. Ice is also produced for sale in Pedernales, in private homes and in 3 dedicated ice plants. The largest of these plants produces 120 pound blocks of ice, which are sold for \$4 apiece. The owner of this plant says he sells around 2 tons of ice a day, some 80% of which is sold to Haitians. They carry the blocks on motorbikes across the border to Anse-a-Pitre, where it is used for a variety of purposes, including fishing throughout the study area. Thus both Haitian fishermen in Anse-a-Pitre and Haitians and Dominicans fishing in the camps depend on a regular supply of ice from Pedernales.



Figure 4-10. Fish sun-drying in Anse-a-Pitre.

When ice is unavailable, fishermen in Haiti and in the camps will often sun-dry or salt their fish. These preserved fish products seem to be bought and consumed exclusively by Haitians. In

fact, there are several varieties of fish that seem to be consumed exclusively by Haitians. These include moray eels, stingrays, salted and sundried fish, and a variety of other small, low-value reef fish. In reality, these fish are not preferred by Haitians, but are consumed anyway because they are more affordable than higher grades. High value species such as large pelagic fish, lobster, conch, and octopus are sold almost exclusively to Dominican buyers, while the aforementioned low-value and 'reject' species are bought by Haitians, reflecting the economic disparities between the two countries. Some Dominicans in Pedernales make a business of travelling by boat along the Haitian coast, buying valuable lobster, shrimp, and conch at low prices and reselling it in the DR. Conversely, most of the 3<sup>rd</sup> class fish caught in the camps in Jaragua National Park makes its way across the border to Haiti.

With relatively small human populations and abundant marine resources, the border communities produce much more fish than they consume. One patron estimated that only 15-20% of fish caught in the area is consumed locally. The majority of the catch is exported to urban areas where there is greater demand, and a higher price for fish. The two poles of external demand are the heavily populated areas around the capital cities of Port-au-Prince, Haiti, and Santo Domingo, Dominican Republic.

Between the fisherman and the final consumer, the fish may pass through several hands. The fisherman generally sells his catch to his patron, or to another local buyer. In Haiti, fish is packed in large coolers with ice, and carried on the market boats which run back and forth twice a week between Anse-a-Pitre and Marigot, Haiti. In Marigot, the fish is carried by truck or other land transport to Jacmel, Port-au-Prince, or other urban areas, where it will likely be sold in a market. On the Dominican side of the border, fish is picked up by trucks, and delivered to wholesalers and retailers in urban areas, generally Santo Domingo.

## CHAPTER 5 EXPERIENCES FISHING WITH LOCALS

During fieldwork I had the opportunity to join seven fishing trips, including once hook and line fishing, three times trap fishing, once free diving, once harvesting top shells, and once with gillnets. The trap fishing excursions were with mixed crews of Dominicans and Haitians, the line fishing was with Dominicans around FADs in Haitian waters, and the gillnet fishing was done with Haitians in Dominican waters. The following are accounts of my experiences and observations, serving to describe some of the major fishing activities, as well as some of the typical attitudes and interactions between Haitian and Dominican fishermen in the study area.

Through one of the local patrons in Pedernales, I was introduced to Rodrigo and Eduardo who are Dominican *balseros* (FAD fishermen). Rodrigo and Eduardo are employed by this patron, fish on his boats, and in turn must sell him their catch at a low price. Hook and line fishing around fish aggregation devices, or FADs, is one of the recent innovations in local fishing, which was introduced in the study area in the early 1990s. FADs are buoys anchored in very deep water, which work on the principle that fish in the open sea will congregate in the shadow of a floating object. At first, small fish gather in the shadow of the buoy, feeding on tiny organisms encrusted on its surface. These small fish attract bigger fish, which in turn attract large, commercially valuable species like tuna, dorado, mackerel and marlin. Thus a buoy the size of a refrigerator can play host to an astonishing quantity and variety of fish.

The FAD itself consists of buoy about 5 feet cubed in size, constructed of Styrofoam and empty plastic jugs tied together with rope netting. To this buoyant mass are tied long palm fronds, which create the large shadow that attracts the fish. The buoy is anchored to the seafloor by a polypropylene line attached to a *muerto*, which is a heavy cement anchor with bent rebar flanges.



Figure 5-1. A balsa or fish aggregation device (FAD). The small buoys on the left are attached to palm fronds, which create a shadow that attracts fish.

In order to attract the maximum number of large pelagic fish, the FADs are deployed in deep water, through which the tuna, marlin etc. are known to pass in their seasonal migrations. These depths, ranging between about 2000-3000m, lie from approximately 8 to 30 miles off the coast in the study area. This is quite a distance offshore, especially for a small fiberglass fishing boat; the great distance makes FAD fishing more adventurous, hazardous and costly than the traditional inshore techniques.

Because the FADs are located so far offshore, *balseros* are awake and ready to go well before sunrise. By 4:30 AM there is a small group down on the Pedernales waterfront, some joking with each other, others silently preparing their boat and equipment, or scrutinizing the sky and the breeze to decide whether they want to gamble an expensive tank of fuel to fish in this weather. On this particular morning, Eduardo and Rodrigo agree that the conditions look all right, and we shove the fiberglass *lancha* off the pebbly beach into the water.

As the coastline sinks below the horizon, Eduardo at the helm occasionally glances at the GPS to stay on course. For over an hour we pound through swells as dawn breaks. When the GPS finally indicates that we are nearing a FAD, we scan the swells intently; the location of the buoy can vary over a large area depending on the wind and current; from a distance, the white Styrofoam buoy resembles just another whitecap.

After a couple of minutes we spot the buoy and Eduardo pulls up close to check its condition, to see that the long palm fronds that create the shadow are still attached, and see if there are some fish gathered in the area. FADs may last up to about 2 years, but eventually the line to the buoy will deteriorate and break, representing a \$500 loss to the fisherman. Today there is a swarm of unwary tripletail and triggerfish mulling around the buoy, which Rodrigo catches with amazing rapidity using a chunk of fish on a short handline. The fishermen lure the triggerfish up next to the boat with a piece of bait, then hack at them with knives, setting off a small feeding frenzy in the bloody water and attracting all kinds of fish from around the balsa. Eduardo and Rodrigo are having a really good time, working rapidly, joking and taunting the fish that follow their bait. I toss the fish that are multiplying in the gory bottom of the boat into the hatch in the covered bow of the boat. The fishermen catch a couple of small amberjacks near the FAD, which are ideal bait for dorado and mackerel. Now that we have bait, the real action begins.

Eduardo and Rodrigo begin trolling, that is, trailing two fishing lines behind the boat as we drive in large circles around the buoy. A heavy 80 lb. monofilament line is used with a wire leader attached to the hook, because mackerel and other large predatory fish can easily bite through a nylon line with their sharp teeth. The hooks are either baited with fish caught near the FAD, such as amberjack or whole albacore tuna, or with synthetic lures.



Figure 5-2. Hauling in a king mackerel caught near the FAD.

After making a couple of passes around the buoy, Rodrigo lets out a shout indicating a bite, and Eduardo immediately cuts the engine as the line is being rapidly pulled in. The local fishermen pull in the lines by hand, rather than using a rod and reel. To prevent their fingers being sliced by the taut straining line, they wear sleeves of rubber tire tube around their fingers. Rodrigo intently hauls in the line, pausing briefly when the fish fights back. As the fish flashes in the water alongside the boat, Pipen deftly hooks it with a gaff hook, flings it over the side of the boat and beats the flailing fish over the head with a wooden club until it lays stunned. It's a 4 foot king mackerel weighing 15 pounds, a common catch around the FADs. This fish will sell to the patron for about \$15. Some of the fish caught around the balsas can be extremely large, especially swordfish, marlin, and sharks: another fisherman recounted a story of fighting a ten

foot swordfish for 11 hours before finally landing it. I toss the mackerel into the covered compartment in the bow and we return to trolling.

After catching a couple more king mackerel, the fishermen try another technique. A length of fishing line is clipped to a small plastic buoy, baited with a live albacore tuna, and left to dangle in the water. The length of line (and thus the depth of the hook) varies depending on what kind of fish they are targeting. The buoy is then left to drift freely, while the fishermen keep trolling. Every few minutes we scan the horizon for the drifting buoy, to see if it is standing rigid and upright, signaling a fish straining on the hook below. We catch another mackerel and a 30 lb. yellowfin tuna using these buoys. As the frequency of bites tapers off, we decide to head to the next FAD and see how the fishing is there.

Because we are far out of sight of shore, the fishermen depend on their GPS to find the FADs, which lie miles apart. Although there are many FADs off the coast, finding them with a simple compass would be the equivalent of finding a needle in a haystack this far out to sea; therefore, GPS has become a vital element in extending local fishing activities offshore. Eduardo and Rodrigo own their own GPS units, and two FADs each, two of which are located in Dominican and two in Haitian waters, in about 2800m depth. As a rule, fishermen only fish around their own FADs or those of their fishing partner, and the GPS coordinates are generally kept secret from others.

As we return to Pedernales in the afternoon after fishing around the other FADs, I can make out the cliffs west of Anse-a-Pitres- clearly the last FAD we visited was located several miles into Haitian waters. I can see a few Haitian boats being rowed with oars off in the distance, and as we continue toward shore, we pass by dozens of floating soda bottles tied with fishing line; these are buoys marking Haitian fish traps, clustered densely over the seafloor until

the bottom drops off into deep water. It is a clear demonstration of the intensity of fishing in Haiti, which both Dominicans and Haitians agree are '*pelado*' (overfished).

As we motor toward shore, Eduardo drives the boat directly over several of the buoy lines, severing them with the propeller; this means that the traps below will be lost to their Haitian owners and sit on the seafloor, uselessly capturing fish. 'Desgraciados!' ('Bastards!') Eduardo growls, directing one of his favorite words against the unseen Haitian fishermen. When I ask Rodrigo about the buoy lines we have just cut, he smiles sheepishly and justifies the vandalism on the grounds that these traps belong to Haitians. 'The Haitians fish in Dominican waters, and they are ruining our fishing grounds with their nets.' In the seven fishing trips I participated in during fieldwork, I witnessed two incidents of Dominicans destroying Haitian fishing gear. While this vandalism may seem targeted especially at Haitians, Dominican fishermen claim that vandalism or theft of gear is a common occurrence among fishermen in the area, and is not directed exclusively at Haitians.

Before we reach Pedernales beach, we cut the engine and Eduardo and Rodrigo clean the fish we caught, toss their guts overboard and rinse down the bloody boat. On the beach, a pickup truck is already waiting to tow the boat back onto the pebbly shore and to carry the catch to the pescadería to be weighed and refrigerated. The day's catch weighs in at 150 pounds of mackerel, tuna and dorado, plus about 30 pounds of tripletail which is kept for personal consumption or sale on the side by the fishermen. The fish sold to the pescadería will bring Eduardo and Rodrigo a total of \$125, but from this will be subtracted about \$50 for fuel; the remaining \$65 is then split between the fishermen. Not a bad day for the off-season of July, they tell me, but just wait a couple of months until the *corrida*, or tuna season arrives!

On another day, the patron nicknamed ‘Elephante’ agrees to take me out trap fishing with him; among Pedernales patrons his business is somewhat unusual because it is built upon trap fishing and compressor diving rather than fishing the FADs. He claims that the steady output of trap fishing makes it a more secure business than fishing on FADs, with less risk of losing money during the off-season; this conservative business philosophy is the reason behind his stubborn nickname.

Before 7 AM two Haitian day laborers, Antoine and Pierre, are already silently waiting in Elephante’s pescadería; they crossed the border early this morning and will return home again to Anse-a-Pitre in the evening after the day’s fishing. They are paid a flat rate of \$8 for the day, regardless of the size of the catch. Along with a couple of Dominican workers, we all pile into a pickup truck cluttered with boat engines, plastic tubs, and a couple of newly-constructed wire fish traps, and drive several miles east to the beach at Cabo Rojo where Elephante keeps his boats. The area around Cabo Rojo, just west of Parque Jaragua, has a shallow, reefy bottom which is good for trap fishing; Elephante’s traps are set in rows about a mile offshore in water 20-30m deep.

Fishing with traps (*nasas*) is one of the traditional techniques used in both Haiti and the Dominican Republic. Fish traps resemble woven mesh baskets, each with a number of entrances known as *bocas* (mouths), through which fish can enter the enclosure. Because of the way the mouths extend into the trap, once inside, fish are unable to find their way back out again. The dimensions of fish traps can vary quite a bit based on the number of mouths, of which there are either one, two or three, two mouths being the most common arrangement. There are two main materials from which traps are constructed: woven strips of bamboo or cane (collectively called *nasas de bambú*), or of chicken wire (*alambre de gallinero*). Both varieties of fish trap require

wooden sticks to provide structural stiffness, but those of chicken wire require far more wood and cost more to build. Each material has certain advantages, and as will be discussed later, Haitians continue to use bamboo traps while nearly all Dominicans use wire traps.

The traps are left on the seafloor for 1-3 days then hauled up again by the line which is attached to the marker buoy, emptied of captured fish and dropped to the seafloor to fish again. The traps must be emptied frequently because the fish will die if left inside too long; thus trap fishing involves scheduling and calculation on the part of the fisherman, to keep the traps on the seafloor in constant rotation. Some *naseros* (trap fishermen) bait their traps with fire-roasted starfish (*estrellas de mar*) or roasted cactus (*melon espinoso*), which give off an odor that can attract larger and more valuable fish such as grouper and snapper. Others leave small lobsters inside, which are said to attract more lobsters. However, many *naseros* don't bait their traps at all, because it is less time-consuming and many fish will enter the traps out of pure curiosity; this is Elephante's strategy.

The two hired Dominicans crew one of Elephante's boats, while Elephante, the two Haitians and I take the other. We chug out over the gentle swells, scanning the water for the first soda-bottle buoys which mark the positions of the traps. Having fished for 20 years and singlehandedly built up his business, Elephante knows every submerged trap by heart; to prove his point, he tells me the details of each trap's construction before it is pulled up onto the boat: 'This next trap has three mouths, it fishes well, but it's getting worn out...'; and he is correct in his forecast every time.

The Haitian workers Antoine and Pierre haul up the traps while Elephante drives the boat and directs their labor, bantering with them in a mixture of Creole and Spanish between commands. Antoine grabs the next buoy as the boat passes alongside it, and the two men haul

the line up steadily, hand-over-hand. Hauling up the traps is backbreaking work, because raising the large trap creates considerable resistance in the water; after helping to haul up a couple of traps, I've satisfied my curiosity and let Antione and Pierre do the rest.



Figure 5-3. Hauling a trap up from the sea. This trap is built of chicken wire.

Once the unwieldy trap is dripping on the deck of the boat, Pierre unhinges the wire in one of the corners of the trap to shake the flopping fish out. These traps capture a wide variety of bottom-dwelling species, such as parrotfish, grunts and soldierfish. The vast majority of the fish we are catching are small colorful reef fish, only 3-12 inches long; these are collectively sold as ‘3<sup>rd</sup> class’ fish, usually to Haitian buyers. An occasional octopus, conch or spider crab may also find its way into the traps, but the most lucrative catch for naseros is the spiny lobster, and many

fishermen lay their traps exclusively in areas in which the most lobsters can be found, particularly the area off Trudillé fishing camp in Jaragua National Park, which is one of the major lobster fishing grounds in the DR.

As more and more traps come up, we aren't having much luck; almost half of them come up empty; Elephante scowls and quickly detects a small tear in the chicken wire through which the fish have presumably escaped; the traps must be constantly patched in order to work properly. One of the traps we retrieve is over a year old and has multiple small holes in it. This old trap is in such poor condition that it is more of a liability than an asset, and Elephante cuts the usable line off the trap and motions for the Haitians to toss it over the side. This is how old fish traps are disposed of in the study area, and a diver in shallow areas can see many abandoned traps littering the bottom. This practice could pose a problem in terms of 'ghost fishing', or the continued wasteful killing of fish by abandoned equipment left at sea.

The rest of the traps come up with several small fish flopping around in them, and sometimes a snake-like moray eel. Morays are a nuisance because they feed on the fish in the trap, often regurgitating their stomach contents in the boat, causing a foul smell. Antoine and Pierre handle these sharp-toothed eels warily, keeping their toes and fingers well out of the way until the eels are clubbed over the head. Moray eel is one of several species of fish shunned by Dominicans but consumed by Haitians: these eels will be sliced in two and sun-dried before sale in Anse-a-Pitre.



Figure 5-4. Some typical small reef fish caught in traps in shallow water. These will be sold to Haitian buyers as '3<sup>rd</sup> class' for about \$0.60 per pound.

Finally after 5 hours of laboriously hauling some 70 traps, the day's work is done. We load two tubs of fish into the pickup and head back to Pedernales. Our haul also includes a few out-of-season lobsters, which are kept out of sight in case we are stopped at a police checkpoint. Later that afternoon the combined catch from both boats is weighed at the pescadería and sold to a Haitian buyer for \$190; a couple of days later the fish will be sent on a market boat toward its final destination in Port-au-Prince. Having earned their \$8 day's wage the hard way, Antoine and Pierre stiffly make their way back to their homes across the border in Anse-a-Pitre; they will be back again early tomorrow morning for another day's work.

A week later, on a daytrip to the beautiful and undeveloped beach at Bahía de Las Aguilas, I pass through Las Cuevas ('The Caves'). This is a curious fishing outpost several miles east of Pedernales, where fishermen have built dwellings under a rock overhang. Las Cuevas is located at the western extremity of Parque Jaragua, not far from where Elephante sets his traps at Cabo Rojo. Fishermen have been utilizing this camp for years in order to have closer access to the fishing in the Park, and because their fish can be picked up here by buyers and transported by road to Pedernales. With the rising popularity of the remote Bahía de las Aguilas beach among tourists, the fishermen have also started to provide boat trips to the beach for both foreign and Dominican visitors; a service which I take advantage of.

Once dropped off by the fisherman on the long stretch of Bahía's beach, I meet two young Dominicans, Carlos and Edwin, who have carried their snorkeling equipment, as well as a spear, hammer, knife and lobster hook on foot over the trail from Las Cuevas. I offer to dive up a few conch for them and we swim out to sea together, over seagrass beds and then small coral heads as the depth gradually increases. As we swim away from shore we spot various conch on the seafloor, which are brought to the surface and removed from their shells by the diver in the water by puncturing the shell with a hammer and inserting a knife to sever the muscular attachment. We take every conch we see, regardless of size, even though there is a legal minimum shell size of 25cm. Scores of undersize empty conch shells lying on the seafloor attest to the fact that other fishermen are following the same practice.

Carlos manages to spear a few surgeonfish and grouper hiding in holes in the reef, adding to our growing collection of fish, which is punctured onto a long wire stringer trailed behind us as we swim. Because we are limited in our activities by how long we can hold our breath, we are not able to take advantage of every conch, lobster and fish we see on the reef below. After a

couple of hours in the water, Edwin surfaces with a jubilant shout, holding a two pound lobster aloft, which is a prized catch that sells for \$4-\$8/lb, depending on the season and market demand. At the end of the afternoon we all ride back to Las Cuevas on the fisherman's boat I had hired to ferry me to the beach earlier in the day.



Figure 5-5. A breath-hold diver holding the afternoon's catch. The fish are kept on a stringer. In his arms are fins, a mask, a speargun, and tools to catch lobster and remove conch from the shell.

The assortment of fish, octopus, conch and lobster we caught this afternoon may bring Edwin and Carlos some \$15 each; in contrast, I pay the fisherman with the boat \$50 for the combined 30 minute ride to and from the beach. This difference in earnings demonstrates vividly that possession of a boat, engine, and other equipment gives a fisherman much greater economic opportunities, in this case by catering to tourists. The primacy of technology in the fishing economy can also be seen when one compares the hundreds of conch that may be harvested in a day by compressed-air divers from a boat, compared with the modest catch of breath-hold divers swimming from shore.

As one informant said, the difference between the magnitude of production between compressed-air divers and breath-hold divers is 'like the difference between heaven and earth'; it is for this reason that recently introduced fishing technologies are having both economic and ecological effects, and have the potential to cause friction between fishermen using traditional, less-efficient techniques and those using the new equipment. I made several attempts during my fieldwork to go fishing with compressed-air divers, but there was reluctance to take me along, possibly because July corresponds to the closed seasons for both lobster and conch; there is less diving activity going on, but illegal diving activities definitely continue to some degree: on more than one occasion in July I witnessed tubs full of freshly-harvested conch in local pescaderías.

As part of his fishing business, the Pedernales patron known as Rafa maintains a small, single roomed hut and a boat at the Lanza So fishing camp in Jaragua National Park. When I expressed interest in seeing the fishing camps, Rafa laughed and said I could rough it for a few days with his hired fishermen in Lanza So. Rafa employs two fishermen, a Dominican named Jaime and a Haitian named Phillipe, who live in the house for several weeks at a time, trap fishing off Rafa's boat. I hitch a ride with Rafa the next time he goes to check on his fishermen,

first by truck to Las Cuevas, then by boat to Lanza So as there is no direct road access to the camps within the Park.

Lanza So consists of a string of shelters along an isolated beach; some resembling houses or camping shelters, and others built of fantastic jumbles of detritus. The Dominicans and Haitians who fish here are mainly locals from Pedernales and Anse-a-Pitre, but spend days or weeks here fishing between visits to town to see their families, sell their fish, and restock on basic supplies like rice and water, of which there is none in the camp. After introductions, Rafa takes me by boat to collect *burgao* or top shells (*Cittarium pica*), which cling abundantly in certain tide pools under the high, wave-battered cliffs around Cabo Falso. We pluck hundreds off of the rocks, after which the mollusks are boiled, extracted from their shells and eaten.

After night falls, the camp is dark except for a few cooking fires. A battery-powered radio crackles somewhere down the beach, and Haitians and Dominicans huddle around a dominoes board, communicating in a mixture of Spanish and Creole. Relations between the Haitians and Dominicans in the camp are apparently cordial and even friendly, an interesting contrast with the stories of tension and conflict. Aside from a few fishermen preparing to go out night fishing, the residents of the camp are getting ready for bed and an early start tomorrow. I sleep outside on top of an old fish freezer.

About a dozen camps of various sizes dot the coastline between Cabo Rojo and Juancho, as well as on Beata Island. Those that have easier access to roads (such as Las Cuevas) serve as pick-up points for fish, which is then transported to Pedernales or directly to other urban areas. With the exception of a few generators or solar power units, these camps are without electricity, fresh water, waste disposal, medical or other services; ice is carried in on boats from Pedernales, and in the absence of ice, fish are salted or sun-dried. Both Haitians and Dominicans live in

these camps on an itinerant or semi-permanent basis. The great majority of people in the camps are men, but some fishermen bring their wives and children; this is the case particularly with Haitians. But these camps are rough places, where fishing is the center of existence: during my fieldwork I met some experienced Dominican fishermen who were raised in Trudillé; never having gone to school, they were completely illiterate.

On Thursday and Friday I go out trap fishing with the Dominican Jaime and Haitian Phillipe. Because Phillipe has not invested in materials for traps, all of these traps belong to Jaime, and therefore he keeps a larger share of the earnings, referring to Phillipe as his assistant. Jaime spends part of each day constructing new traps, of which he makes two kinds: smaller two-mouthed traps of ordinary chicken wire which he uses in shallow water off the beach, and larger traps made of plastic-coated wire, which he sets in deeper water (50-60m) to try to catch the larger and more valuable grouper and snapper. He baits these deepwater traps with several roasted starfish apiece, which he believes attract the larger fish. Jaime times his fishing activities to coincide with market days, or on days when he knows that buyers will be coming through the camp; this minimizes the chance of his catch spoiling and losing value. On Thursday we pull up some large traps by the tip of Cabo Falso. We don't have much luck, which Jaime attributes to neglecting to bait these traps with starfish the last time he pulled them up. While returning to the camp that afternoon, Jaime sees a Haitian gillnet in the water and slices it up with a knife, as I related in the Introduction.

Back in camp, the day's catch is divided and sold in a specific way, which illustrates the multifaceted nature of the market, as well as the specific arrangements made between patrons and fishermen in their employ. Jaime and Phillipe catch a wide variety of bottom-dwelling fish, octopus, and lobster in the traps. By agreement with their patron Rafa, who provides them use of

the boat, 50% of their fuel, and shelter in the camp, they sell him the lobster and *rojo*, or 1<sup>st</sup> class fish such as snapper and grouper. These are the kinds of fish which Pedernales patrons are mainly interested in buying, because there is a lucrative market for them in the DR. Rafa allows Jaime to sell the smaller 3<sup>rd</sup> class fish to whomever he pleases, as long as Rafa gets 50% of the proceeds; today Jaime sells to a buyer in the camp named Pablo, who gives Jaime a receipt with which he can later settle accounts with Rafa. Of the 50% of the sale which he keeps, Jaime takes 30% (because he owns the traps) and Phillippe keeps 20%, for helping to haul the traps up and for cooking meals in camp. Pablo will then bring the 3<sup>rd</sup> class fish by boat to Anse-a-Pitre, where it will be loaded onto a market boat and brought to urban areas in Haiti.

Because we are in the middle of the *veda* or closed season for lobster, fishermen along the coast use creative tactics to save the lobsters they catch. Jaime catches a couple of lobsters in his traps, which are then placed in a special fish trap placed close to shore, known as a *vivero*. This is an ordinary trap filled with live lobsters, with the mouths of the trap wired shut so that they may not escape. Jaime feeds the lobsters with starfish and moves the *vivero* periodically so that the lobsters can find more food in each new location. By the end of the closed season on August 1, the price of lobster will be high and Jaime's lobsters will have grown larger; then he will sell the entire batch alive to Rafa for a good price. This is standard practice in the study area; lobsters are simply too valuable to set free, and enforcement too lax to discourage the practice. Other fishermen circumvent the closed season by freezing their lobster until the closed season ends, by selling in small quantities to restaurants or to other buyers so as not to attract attention; or if they have connections in government, by obtaining special licenses to sell lobster during the closed season. At any rate, in the case that the authorities catch someone with lobster or conch

out of season, a bribe is often sufficient to prevent punishment. In this manner, government inefficiency and corruption can sabotage efforts at resource management.

On my last night in camp, Jaime tells me of a cave at the eastern end of Bahía de las Aguilas where fishermen often rest on their way between the camps and the border towns. I hike along the coastal cliffs on Saturday morning, shredding my shoes on the sharp limestone rocks, encountering along the way only cactus, goat droppings and old mounds of conch shells, possibly harvested centuries ago by Taíno Indians. Hours later I arrive at the cave, known as Cueva Anjo, which is really more of a rocky overhang under a cliff; fish bones and empty cans littered around the cave hint at the frequent presence of fishermen.

Sure enough, there are two wooden Haitian fishing boats anchored by the beach, and five fishermen cooking rice and beans in the cave, who are evidently startled to see a foreigner traipsing through these parts. These Haitians have returned from fishing farther to the east earlier in the day and are resting before a night of fishing with their gillnets on their way back to Haiti. I ask if they did any fishing at Lanza So, but they say they never fish there because of a Dominican *fresco* (troublemaker) in the camp who interferes with their nets; I am left wondering whether they might be referring to my net-slashing host, Jaime. I contribute a can of sardines from my backpack and eat with them, after which everyone rests for a few hours on the cave floor. In the late afternoon as they prepare to leave, I ask if I can go fishing with them; Marc and René agree to take me along and drop me on the beach in Pedernales.

I climb into the boat and the three of us get underway, slowly. This is a typical Haitian fishing boat- built of wood with a thin coating of fiberglass over the hull to make it watertight. The tiny boat is practically overflowing with a piled-up fishing net, and is propelled by a small 15 horsepower engine. Lack of more powerful engines is one of the reasons that Haitians do not

venture far offshore as many Dominicans do, to take advantage of pelagic fish around the FADs (Dominicans often say this is because the Haitians are afraid to venture far out to sea).

I take a seat up front in the bow, where I will huddle for the next 16 hours until we reach Pedernales. The going is slow, not only because of the small engine, but because Haitians tend to motor slowly to conserve fuel. Haitian fishermen are regarded as extremely frugal by Dominicans, and able to tolerate long fishing trips with very little in the way of food or comfort. I had seen evidence of this deprivation at Lanza So; entire Haitian families live there for weeks in crude shelters built from scraps of plastic, tarps and driftwood.

We cross Bahia de las Aguilas and Las Cuevas and pass the Cabo Rojo limestone mine around sunset. Slightly to the west is a shallow sandy area where we lay our first net, parallel to the beach. The net is very long- maybe 200m in total, and takes about 15 minutes to deploy. The net is about 5m in height, and has lead weights along the bottom edge and foam floats along the top, which causes it to stay vertical in the water. Unsuspecting fish blunder into the net, and their gills become lodged through the mesh. As with fish traps, *chinchorros* or gillnets bring in a wide array of smaller fish; the smaller the mesh size, the smaller the fish that can be captured. Other animals are also frequently caught in the nets, including gastropods like conch and triton's trumpet, as well as illegal by-catch like sea turtles and dolphins.

One of the major Dominican grievances against Haitian fishermen is their continued reliance on this kind of fishing; in particular the use of nets with a small mesh size less than *dos dedos* (two fingers' width). Dominicans often attribute the depletion of the fishery to these nets but ironically, they are usually bought by Haitians in the Dominican Republic, where they continue to be sold. Although no longer commonly used among Dominicans in the study area,

for economic reasons Haitians have continued to use them to a greater degree, for reasons which will be explained later.



Figure 5-6. Haitian fishermen setting a gillnet in shallow water, Cabo Rojo, DR.

After the gillnet is in the water, we set the anchor to rest and wait while it fishes. I suggest that we sleep on the shore as it would be more comfortable. The Haitians agree to this somewhat uneasily; they had intended to sleep next to their net to make sure it wasn't stolen or vandalized, and maybe they also fear trouble with authorities on the Dominican shore. Nevertheless we anchor by the beach and lay out on the sand, but are quickly driven back to the boat again by clouds of mosquitoes. I contort myself on a plank in the damp and very fishy bow of the boat, while the Haitians lay out in the stern and sleep.

At 1 AM, we shake ourselves awake and Marc and René begin pulling the net onboard again. A wide variety of small reef fish are tangled in the net, as well as an occasional conch or trumpet shell. Each fisherman hauls on one side of the net, pausing periodically to pluck the fish out of the mesh and toss them in the bottom of the boat. Every once in a while a scorpionfish or other venomous fish is left in the net to extract later. The fish are then placed in the cooler, which still contains a dwindling chunk of ice, bought in Pedernales days ago. The net is then deployed a second time, and by 2 AM we are huddled on our planks once more, doing our best to fall asleep. The fishermen have discarded most of their clothes overboard and pulled on new ones. Even though these fishermen are poor, used American clothes from the tax-free zone in Pedernales can be bought very cheaply in the border market; this is a seemingly wasteful, but practical way for the fishermen to stay dry and comfortable.

As dawn breaks we stiffly stir ourselves awake and pull in the net for a second time. Once again there is an array of fish, followed by a gasping Hawksbill turtle, a story which I related in the Introduction section of this thesis. I offer to pay the fisherman whatever the turtle's price is, but seeing that the turtle has drawn my attention, he nervously laughs and quickly says he will let it go just because I am his friend. Very likely he is worried by the possibility of being turned into the Dominican authorities, who are feared by the Haitians. We release the turtle and motor west with the cooler full of fish. As we chat before they drop me off at Pedernales beach, I discover that both of these hardworking fishermen are only 16 years old, and dropped out of school years ago to support themselves and their families.

### **The Role of Women in Fishing**

Haitian and Dominican women play different roles with regard to fishing and marketing activities, and so will be discussed separately. During my fieldwork, I never observed a woman

of either nationality fishing; however, Haitian women in particular are often involved in processing and marketing the catch that the men bring to shore.

In terms of physical involvement, I never observed a Dominican woman doing more than buying fish at market, or cooking fish in the home. While women have an important domestic and professional role in Dominican society (many women work in local shops and the current mayor of Pedernales is a woman), fishing and the marketing of fish seem to be reserved for men, probably for traditional reasons. The sale of fish at the town market was also exclusively carried out by men in Pedernales.

The only interesting exceptions to Dominican women's lack of involvement in the fishing industry were the wives of patrons. On two occasions I interviewed patrons and their wives simultaneously, and on both occasions the wife knew the details of the business as well as her husband; during one interview the patron repeatedly deferred to his wife for information on prices of equipment. This is indicative of Dominican women having a large influence over household finance, although never involving themselves in the actual activity of fishing.

Haitian women have a much more visible role in the fishery, at least in terms of marketing. In Haiti, selling agricultural produce and handicrafts in the market is the traditional role of women, whereas men do the agricultural work. As I observed during my fieldwork, the traditional Haitian sexual division of labor applies to fishing as well. While I never observed a Haitian woman actually fishing, they are the ones who usually process and market the catch.

These Haitian market women are known as *revandez*, who buy and sell in small quantities, or *madam saras*, who are more heavily capitalized traveling intermediaries. These saleswomen are very visible at the biweekly border market, arranging their wares and haggling with customers over prices; in fact the great majority of all vendors in the border market are Haitian

women. 79% of fishermen interviewed in Anse-a-Pitre reported that their partners work as market women, selling fish, food, charcoal, liquor, used clothing, and toiletries (CROSE 2007).



Figure 5-7. A Haitian woman cutting up a stingray in Lanza So fishing camp. The meat will be salted and sold at the market.

According to fishermen who had spent time at Trudillé (the largest fishing camp in Parque Jaragua) there are numerous Haitian women there who buy fish, and preserve it in salt to carry back to Anse-a-Pitre for sale and consumption. Some of these women consort with Dominican fishermen, who are away from their wives and girlfriends for weeks or months at a time. I did not have a chance to observe these relationships in person, although it would be interesting to observe, especially if there is some economic or reciprocal dimension to these relationships.

There were no Dominican women present at Lanza So fishing camp during my three-night visit, but there were several Haitian women ranging in age from children to middle-aged women. Informants said that this is because Dominican women do not like the deprivation of the camps, whereas Haitian women are accustomed to that lifestyle. Some of these Haitian women were accompanying their husbands while they fished at the camp, while others were independent fish buyers in their own right. A number of Haitian children had come along with their parents as well. The fact that many Haitian women in Anse-a-Pitre earn some form of income, and thus can independently sustain their families at least temporarily, might facilitate their husbands making extended fishing trips along the coast.

### **Summary**

This chapter provided a glimpse of fishing as it is carried out in the study area. The next chapter focuses on management, both formal and informal.

## CHAPTER 6 RESOURCE MANAGEMENT

Now that the functioning of the fishing economy has been described, this chapter returns to the concept of management at both the state level and the community level. The description of state agencies in the DR and Haiti is more a description of how state-level management is meant to be carried out, than of how it truly is.

### **State-level Management: The Dominican Republic**

The Dominican government entity that oversees fishing activities is the Subsecretariat of Coastal and Marine Resources (SCRM), which is a branch of the Secretariat of the Environment and Natural Resources. Through the Dominican Council for Fishing and Aquaculture (or CODOPESCA), SCRM is assigned the following responsibilities: to encourage the sustainable harvest of marine life, guarantee the quality of fishery products both imported and exported, and to undertake research on aquaculture and fishing in order to enhance management of resources. Specific goals include organizing and training fishermen, as well as guaranteeing compliance with regulations such as licensing of fishermen, seasonal, size and gear restrictions.

In 2000, the Dominican government established Fisheries Stations in major fishing areas, in order to collect catch, effort and biological data. However, this initiative has not succeeded in changing the traditional system in which the fisheries inspector is responsible for both data collection and enforcement, which creates issues with reliability of data. Fisheries data collection has also been carried out independently by PROPESCAR-SUR in the Southwest of the DR.

In terms of regulations, there is a ban on fishing of lobster between April 1 and July 31, and a ban on harvesting queen conch and some other less important mollusk species between July 1 and October 31. These closed seasons are intended to protect the breeding stocks of these

species, which reproduce during those periods. Capture of endangered species such as sea turtles and manatees is prohibited year-round. In addition, there are size regulations, including a minimum size requirement of 24cm total length (12 cm tail length) for spiny lobster (*Panulirus argus*) and 25cm shell length for harvested queen conch (*Strombus gigas*). In terms of gear restrictions, there is a law against fishing with gillnets with a mesh size smaller than 25mm, a general ban on beach dragnets, as well as bans on dynamite and other destructive fishing techniques. Fishing licenses for vessels are required by law.

Enforcement of all of the aforementioned regulations is very sporadic. The Navy has administrative control over all aquatic transport in Dominican waters, including fishing, and has been involved in confiscation of illegal fishing gear and boats in the study area.

#### **State-level Management: Haiti**

The Ministry of Agriculture (MARNDR) is the agency directly responsible for fisheries management and development in Haiti. However, their efforts are greatly limited by the fact that MARNDR has only 2-3 staff for 1,771 km of coastline, and virtually no resources (Wiener 2001). There is no regular data collection program in place in Haiti: the only data regularly collected is the quantity of marine products being exported from the country. Haiti does have fishing and navigation regulations, such as a requirement for fishermen to be registered through MARNDR, but these fishing regulations in Haiti are completely unenforced by the government. On this topic, the mayor of Anse-a-Pitre frankly stated, ‘While we can say that regulations in Pedernales are enforced to some degree, here in Haiti there is zero enforcement of any fishing regulations.’

#### **Perceived Environmental Impacts of Fishing Techniques**

There is a widespread perception among fishermen (supported by biological studies) that populations of certain marine species are declining in the study area, however, the interpretation

of the causes of decline differs somewhat between Haitians and Dominicans. Among both groups, much of the blame for declining catches is attributed to the adoption of new, non-traditional fishing gear by fishermen in the area. As previously noted, until about 30 years ago the only fishing methods used on this coast were free diving, fishing with hook and line, and trap fishing, conducted from unmotorized vessels. The progressive introduction of more and more powerful boat engines, and new fishing gears has increased the incomes of some fishermen and patrons while apparently contributing to the overexploitation of lobster, conch and undersized reef fish. Thus there is an outcry against certain fishing activities, especially by those fishermen still using traditional techniques.

The gillnet, beach dragnet and trammel net have been the focus of most complaints in the study area, because they are believed to be unselective, catching virtually any fish that swims into them. Nets with small mesh sizes, less than ‘two fingers’ wide, are particularly blamed by Dominicans for the depletion of the inshore fishery, because they capture large numbers of juvenile fish before they have the ability to reproduce. According to Dominicans, use of gillnets is the primary cause of the waters in Haiti being *pelado* (plucked bare). Gillnets and trammel nets were used commonly on both sides of the border in the past three decades, but they have now been banned on the Dominican side of the border. While gillnets are now not generally used by Dominicans in Pedernales, Haitians continue to use them, even on the Dominican side of the border, which causes indignation among local Dominican fishermen.

Compressed air diving is a profitable, but potentially unsustainable activity. The more traditional technique of breath-hold diving limits a fisherman to harvesting conch and lobster from shallow areas, whereas compressed air divers can spend long periods underwater in areas with more than 40m water depth, potentially overharvesting conch and lobster. Whereas free

divers are able to harvest a modest array of fish, lobster and conch, compressed air divers can fill large tubs with conch in a single day. Haitian fishermen mentioned that there have previously been conflicts with Dominicans off the coast of Anse-a-Pitre, who had claimed they were FAD fishing far offshore, but were in fact diving with compressors for conch in front of the village. However, these activities apparently do not occur anymore.

Another topic of concern among Dominican fishermen is intriguing, and I have yet to find research to support it. Dominicans, who almost exclusively use fish traps built from chicken wire, allege that the bamboo and cane fish traps used by Haitians are harmful to the environment. According to many local Dominicans, when abandoned bamboo fish traps decompose on the seafloor, they poison the seagrass and destroy fish habitat. This is an interesting concern, particularly because it involves users of newer technologies complaining about a very traditional type of fishing gear. After all, Dominicans in the area also used bamboo fish traps before the introduction of chicken wire. A professor from the University in Santo Domingo ventured that the opposite is actually true: while disused chicken wire traps sit for years on the seafloor, potentially ghost fishing, bamboo traps quickly biodegrade and disappear. Regardless, both Haitian and Dominican fishermen generally believe that bamboo traps are more effective at catching lobster than are chicken wire traps, one reason that bamboo traps are still favored by Haitians and a few Dominicans. It would be interesting to know whether the belief that bamboo traps poison the seafloor has a basis in fact; meanwhile, this belief serves as a potential justification among Dominicans for exclusion of Haitians from trap fishing in the DR.

In summary, both Haitians and Dominicans have adopted new fishing gears and technologies, some of which are criticized for being unselective or overly efficient. The new technologies primarily adopted by Dominicans (more powerful engines, chicken-wire traps,

offshore FAD fishing, compressed air diving) tend to either exploit new resources farther offshore, or exploit traditional inshore resources (lobster and conch) in deeper waters. The technologies primarily adopted by Haitians (various arrangements of gillnets and trammel nets) exploit traditional inshore resources in a more efficient, but less selective manner, which creates greater pressure on the resources that are most threatened.

### **Community/Ethnic Group Affiliation: So Why are Haitians Allowed to Fish in the DR?**

Grumbling by Dominicans about Haitians fishing on the Dominican side of the border is very common, however, when asked why the Haitians are allowed to do this, answers varied. The most common response was that the Dominican government (i.e. Navy and Fisheries) does nothing to stop them. This seems to be a credible answer, given the apparent lack of resources at the disposal of local authorities. One informant told me that nearly a decade ago the Navy had an inflatable boat called *Tiburón* ('Shark'), with which they terrorized Haitian fishermen, especially those living in Trudillé fishing camp, and confiscated their fishing gear and belongings. However, the naval station at Cabo Rojo no longer has vessels at their disposal, nor money for fuel, and containment of the Haitians would be a difficult job indeed, given their numbers and the large area to police. To illustrate the paucity of enforcement resources, an acquaintance working with a local NGO related that a naval officer recently approached them for a donation of money for fuel, in order to drive a borrowed fishing boat to Lanza So to confiscate illegal gillnets.

Another reason for continued toleration of the Haitian presence seems to be profit-driven. Oftentimes Dominican patrons and fishermen hire Haitians as laborers and helpers, and as with other occupations, pay them less than a Dominican would receive to do the same job. Examples are the Haitians hired to lift Elefante's fish traps, and Jaime's Haitian fishing assistant in Lanza So camp. Dominican patrons and ice sellers also profit from the increased volume of fishing in

the study area, which brings them profits regardless of who is doing the fishing. For instance, if a Haitian buys ice in Pedernales or sells some lobster or fish he caught to a Dominican patron, the patron benefits economically from this transaction.

Finally, many Dominicans express a level of sympathy for the Haitians. In addition to an awareness of the grinding poverty on the other side of the border, many local Dominicans have personal or family relations with Haitians. Some Dominican fishermen consort with Haitian women in the camps. Others have Haitian or Dominico-Haitian cousins. Given the traditional view of the sea as being open to all, some Dominican fishermen feel it is unjust to restrict anyone from fishing, especially those in economic need. Finally, to strongly insist on excluding Haitians from fishing in the DR would be somewhat hypocritical, because Dominican FAD fishermen regularly fish in Haitian waters, albeit far enough offshore that it does not cause competition with Haitian fishermen. Because this border-crossing by Dominicans does not compete with Haitian fishing, it is not an issue in the same way that the Haitian border-crossing is.

The presence of Haitians fishing in the province of Pedernales mirrors migration processes on shore. Haitians are moving into remote agricultural areas, putting land to use that has been left abandoned by the urban migration of Dominican small farmers. As in fishing, this Haitian presence is usually bemoaned, but is in fact promoted by certain Dominican farmers and economic interests. The Haitian migrants are valued for the cheap labor they provide, and because they inadvertently help Dominican landowners to circumvent strict environmental laws regarding the clearing of land for pasture. According to McPherson and Schwartz (2005), Haitian squatters are encouraged by some Dominican landowners to transform forest into pasture, and to encroach in park lands. In this sense, the presence of Haitians in the DR,

including fishermen, must be seen as influenced, and encouraged, by certain Dominican economic interests.

### **Existing Norms Among Fishermen**

As described in the Literature Review, strong local norms of fishing behavior are an important component of successful community-based management. From observations and interviews with local fishermen, I noted several fishing norms in the study area.

In terms of access by nationality: Haitians are permitted to fish in the DR in a *de facto* sense, at least in the ‘no mans land’ of Jaragua National Park, which is not clearly affiliated within any Dominican community. In order to reach the Park, Haitians must pass directly in front of Pedernales, however, they do not fish in front of the town; if they do, they find that Dominicans will usually vandalize or steal their equipment. Dominicans complain about Haitians fishing on their side of the border regardless of where it is, however this norm seems to only be consistently enforced directly in front of the town, where Pedernales residents feel the greatest sense of ownership, and in logistical terms, have the greatest ability to enforce it. This treatment is apparently not reserved for Haitians; one fisherman said that a Dominican fisherman arriving uninvited from the nearby city of Barahona would be treated in the same fashion. Likewise, Dominicans may fish in Haiti, as long as this is carried out far offshore, where it does not conflict with the activities of Haitian fishermen. Therefore, allegations in the past that Dominicans were diving for conch and lobster in Haiti caused conflict, whereas the presence of Dominican FADs 30 miles off the Haitian coast is not a major point of contention. The major issue is not nationality or ethnicity, rather *competition* from outsiders in general.

In terms of gear and territoriality: among FAD fishermen, fishing around another man’s FAD is considered a form of theft, unless permission has been obtained. Among trap fishermen, fishermen tend to consistently place their traps in a certain area. While one fisherman’s traps are

in that area, it is understood that other fishermen should not place traps in the same immediate area. Traps are notoriously vulnerable to theft and vandalism, so any transgression by another fisherman is easily punishable: if a fisherman comes upon another man's traps closely interspersed with his own, he could easily steal their contents, or cut off the marker buoys. However, such wholesale vandalism is rare, because fishermen are aware of the possibility of retaliation. For Haitians fishing with gillnets, one boat will generally only carry one or two long nets which are only left in the water for a matter of hours, so the nets can much more easily be monitored by the fishermen to prevent vandalism or theft, as opposed to traps which are left unguarded for days. This is probably one of the motivations for the continued use of gillnets by Haitians fishing in the DR, where they feel their gear is more at risk from vandalism.

In terms of sustainability: while Haitian and Dominican fishermen are aware of the potential ill-effects of fishing out of season, taking undersized individuals, and the use of very efficient gear, such as diving compressors, or unselective gear, such as gillnets, there seem to be only a couple of established norms concerning sustainability: there is a general rejection of the use of gillnets, beach dragnets and trammel nets, especially those with small mesh, on the part of Dominicans. This is because they are said to catch very small fish, which damages the breeding stock. Haitians also mentioned that the nets are a problem, but the continued open use of nets by Haitians shows a lack of determination to change this.

There is also an awareness, voiced to me by several Dominicans, that very small lobsters or berried females (those with eggs attached) should not be harvested. Dominicans often claim that Haitians ignore this norm; one Dominican fish buyer stated that Dominicans are 'much more conscientious fishermen than Haitians are'. This is apparent in terms of the continued use of gillnets by Haitians, but as far as the harvesting of very small or berried lobsters, I do not have

any data to compare Haitian and Dominican practices. In the camps in Jaragua National Park, Dominicans and Haitians usually coexist and fish together peacefully. However, conflicts have occasionally erupted; these usually involve Dominican fishermen or authorities confiscating or vandalizing Haitian gear, possibly as retaliation for violation of one of the aforementioned norms, and possibly out of pure spite or to reduce competition. When I asked one Dominican fisherman in Lanza So camp if he feared retribution from Haitians, he said ‘No, the Haitians won’t do anything because if there is any trouble in the camps, the military will show up and punish them’.

An example of the conflict arising out of the accumulated effects of unregulated fishing is Trudillé fishing camp in Jaragua National Park. This area has always been one of the primary zones in the DR for trapping valuable spiny lobster. The waters around Trudillé are known to fishermen and biologists as a nursery for juvenile lobster; because of the currents and bathymetry in the area, floating spiny lobster larvae (*Panulirus argus*) tend to settle there. Therefore there are many lobster, but they are typically of a small size. Over time, the harvest of juveniles has apparently eroded the productivity of the local lobster fishing; several Dominicans mentioned that the fishing in Trudillé is far worse than it used to be. This is one of the cases where Haitians are often blamed for damaging the environment through unconscientious behavior. Whether the blame for the decline in lobster fishing lies with Haitians or Dominicans or both is unclear: in 1990 some 95% of lobsters being harvested at Trudillé were legally undersized, a figure that points to widespread violations by all fishermen (PROPESCAR 1994:8-5). In terms of my own limited observations, neither Haitians nor Dominicans follow the letter of the law when it comes to size and seasonal regulations: I consistently saw fishermen of both nationalities fishing for (undersized) conch and lobster during the closed seasons. In general, it seems that the influence

of norms among local fishermen is fragile and not very extensive, and must constantly be reinforced by the threat of informal sanctions. Not only do fishermen flaunt government regulations, but they also may violate the informal rules of fishing if they think they can get away with it.

### **Local Fishing Associations: Emerging Community-based Management?**

Both Pedernales and Anse-a-Pitres have community fishermen's associations founded in the year 2000. Members of the associations are not in agreement over what the primary goals of the associations should be, but the following are three goals which were repeatedly cited by members:

- To protect local marine resources by limiting the use of certain kinds of gear
- To provide credit to fishermen for equipment purchases
- To provide a means to solve problems between fishermen diplomatically
- To improve local infrastructure for fishing by providing docks, freezers, etc. (This is a greater concern in Anse-a-Pitre than in Pedernales)

Despite these ambitious goals, the ability of the Pedernales and Anse-a-Pitre associations to effect changes in resource management or to attract loans for equipment are hampered by a lack of financial resources and widespread pessimism among fishermen and government officials, an attitude brought about by the collapse of various associations and cooperative schemes in the past. However, the associations have encountered a degree of success through engagement with NGOs and the national governments.

Through partnership with the Pan-American Development Foundation (PADF), several meetings between the Haitian and Dominican associations have been arranged, through which the two communities of fishermen have been able to communicate their grievances and agree upon possible solutions. Through financial assistance of some \$20,000 from PADF, the

associations have also provided small-scale equipment loans to members, an initiative which apparently has not been continued due to widespread lack of repayment of the loans by the fishermen. Even though the associations have yet to produce impressive material results or improvements in resource management, they are currently the most promising attempt at cooperation and the reduction of tension between the fishermen of Anse-a-Pitre and Pedernales. Recall from the Literature Review that cooperation is a precondition for successful management of shared fish stocks.

### **The Anse-a-Pitre Fishermen's Association (APPA)**

APPA was founded in January 2000, three months before the Pedernales association. Currently APPA seems to be more of a symbolic rather than a functioning organization, at least until some funding can be obtained to support its goals, and until there is greater participation by fishermen. Of 104 respondents in a survey of Anse-a-Pitre fishermen (CROSE 2007), only 21 men claimed membership in the local fishing association. One of the founders of APPA states that the association was formed primarily in response to the damage done to the local fishery by extremely large and unselective gillnets and trammel nets, and that APPA has since been waging a campaign to eradicate the use of these nets in Anse-a-Pitre. Members of APPA, on the other hand, seem far more interested in obtaining aid for fishing infrastructure and equipment (CROSE 2007). Nevertheless, the officers of APPA claim a degree of success in their environmental efforts, particularly with very large trammel nets; however it is obvious that gillnetting is still one of the main techniques used by Anse-a-Pitre fishermen, including in Dominican waters. Every day under a tree by the beach, Haitian fishermen can be seen repairing piles of nets between fishing trips.

The eradication of gillnets and trammel nets is an uphill battle because there is little or no support by the Haitian government in enforcing a ban, and because these nets represent one of

the most economical methods of fishing for the local people, and the most practical technique for brief trips into Dominican waters. Indeed, while two of the directors of APPA cited the banning of unselective nets as a major goal, this sentiment *is not* reflected in surveys of Anse-a-Pitres fishermen: to the question ‘what is the main problem for fishermen in Anse-a-Pitre?’ only 1 out of 68 respondents mentioned that nets are a major problem. The rest of the responses overwhelmingly indicated a need to address the lack of boats, equipment and most importantly, cold storage facilities for fish in Anse-a-Pitre. Similarly, the response to the question ‘what should the goals of the fishing association be?’ was overwhelmingly to improve living conditions for fishermen, and to organize the preservation and sale of lobster, crab, and queen conch to Dominicans in order to obtain better prices (CROSE 2007). Overall, the survey responses strongly emphasize that the main concern of these Haitian fishermen is their short-term economic welfare, and understandably so- one cannot expect impoverished people to be very concerned with the future, when they must focus their concerns on survival in the present.

#### **The Pedernales Fishermen’s Association (Asociación Agustín Muñoz)**

Comparing the Anse-a-Pitre and Pedernales fishing associations, the Dominican group is better organized, more ambitious in its goals, and has greater participation; while in Pedernales, I attended a meeting of the fishermen’s association attended by over 50 members. A variety of advantages contribute to the functioning of the Dominican group: the group of directors is composed mainly of local patrons, who are socially and financially connected to many of the fishermen and thus an effective organizing force. On a broader level the Dominican government, more so than the Haitian government, is a potential source of organizational support and financial aid. The regional fisheries office in Barahona provides some low-interest loans for the purchase of boats and engines. Recently, the Pedernales association has focused its efforts on

petitioning the national government to provide a large fishing vessel (*barco madre*) which would allow for more fuel-efficient exploitation of pelagic fish offshore, but they have yet to receive it.



Figure 6-1. A meeting of the Pedernales Fishermen's Association.

On the Dominican side of the border, where the government has promoted cooperatives (with varying rates of success) in agriculture, there is some talk among fishermen about turning the fishermen's association into a full-fledged cooperative. This desire stems from the widespread perception that patrons and other private fish buyers are cheating fishermen with low prices. Ironically, while some of the fishermen desire a cooperative, the leadership of the Pedernales fishermen's association is largely made up of patrons, who would have a vested interest in preventing the formation of a cooperative. In terms of local experience with cooperatives, there was a functioning group in Barahona (Grupo Manatí) founded in 1985 (PROPESCAR 1995:6-1), which has since diminished in activity. However, more experienced fishermen in Pedernales are very doubtful about the possibility, or desirability, of a local

cooperative. They point to the failure of various cooperatives in the DR, usually due to financial scandals.

Acheson (1988) describes the formation of lobster fishermen's cooperatives in Maine in the late 20<sup>th</sup> century. Fishermen in Maine were in favor of cooperatives for the same reasons as fishermen in Pedernales- real and perceived price gouging on the part of private dealers. While many of these Maine cooperatives were successful, they were often plagued by inefficient management and high transaction costs (such as the frequent need for meetings and elections of officers). Acheson found that the cooperatives did help fishermen by raising the market price, although ironically the local fishermen that benefitted the most from the formation of cooperatives were those who didn't actually join the cooperatives, but still enjoyed the higher market prices that the cooperatives created.

### **Diplomatic Accomplishments of the Fishing Associations**

During a meeting of border organizations held June 29, 2007 in Pedernales, representatives of the Pedernales and Anse-a-Pitre fishing associations met and signed an agreement. The main points of the agreement sum up the principal goals and grievances of the Haitian and Dominican fishing communities. The following considerations were agreed upon:

- That local marine resources are shared between the two communities, and are presently being over-exploited.
- That local fishermen recognize that their techniques must change in order to protect the resource for the future.
- That for years there has been a conflict between fishermen of the two communities, which has to date cost the lives of at least 12 people. This conflict is rooted in the exploitation and sale of marine resources.

The principal grievance of the Anse-a-Pitres Association is:

- That Haitian fishermen are abused by Dominican fishermen and soldiers, who wait for them when they return from fishing in order to take their fish and their equipment.

The principal grievances of the Pedernales Association are:

- That Haitian fishermen don't respect the national boundaries while fishing (Note: many Dominicans also fish in Haitian waters, but since this is done around FADs far offshore and doesn't compete with Haitian fishermen, it is much less of an issue than the Haitians fishing in the DR.)
- That the Haitians don't control the sale of prohibited or out-of-season marine resources.
- That Haitian equipment, techniques and fishing behavior are not contributing to the necessary conservation of marine resources.

### **Challenges**

The formation of a cooperative in the DR, or at least an association which contributes to management by establishing enforceable local rules, is hampered by the poor track record of such groups in the past. The most notable local example is the cooperative formed in Barahona in 1985. This group received financial support from government and foreign donors, but has since ceased functioning in any significant sense. The widespread opinion among Pedernales fishermen is that members of a fishing cooperative will not pay their dues or debts, and that funds will be embezzled by the treasurers. This culture of mistrust is a major factor limiting the development of a fishing association in Pedernales.

In Haiti, there are even more basic challenges of infrastructure; the lack of electricity in Anse-a-Pitre prohibits any long-term storage of fish. Even worse for Haitian fishermen, the inshore species such as lobster, conch and reef fish are already depleted, so intensification of present inshore fishing activities is not desirable from an ecological standpoint. This is a dilemma: the provision of loans for existing fishing technology such as traps and gillnets, while welcomed by the Haitian fishermen, would exacerbate pressure on the inshore resources.

On the other hand, diversification of fishing activities to target offshore pelagic species would require overhauling the Anse-a-Pitre fishing fleet, introducing FADs, and acquiring larger engines and GPS units. Even if this equipment was given to them, most Haitians could not

afford the large fuel expenditures involved in that type of fishing. Because of these circumstances, Haitians fishing around the border continue to rely on traditional inshore fishing, while continually expanding their activities along the coast into Dominican territory rather than farther offshore.

Concerns which apply to the formation of associations on both sides of the border concern legitimacy and government cooperation. In order to have the necessary clout both among fishermen and authorities, an association should have the backing of the national/regional/local governments and cooperation from the government in terms of research, administration and enforcement. A further problem centers around legitimacy of leadership: if a primary goal of the fishing associations is to address fishermen's economic difficulties and the reliance on patrons, then the directors of the associations should be fishermen themselves. At present, the directors of both local associations are well-known and respected community members (and several are former fishermen), but at present they work either as patrons, in local government, etc. While they might be very capable leaders or administrators, their interests probably do not represent those of actual fishermen. In fact Gerald Murray notes that part of the NGO funds provided to the Anse-a-Pitre fishing association were used to build a local cybercafé, obviously not a decision made with fishermen's interests in mind (Verbal communication, February 12, 2007).

### **Tourism as a Source of Alternative Employment**

Other local discussions about the economic empowerment of local fishermen revolve around the developing tourist industry. Within the boundaries of Jaragua National Park lies Bahía de las Aguilas, a bay bordered by 8 km of pristine white sand beaches. This as-yet undeveloped beach has been the focus of a controversy over tourism development and environmental protection since the park's founding in 1983 (Arias et al., 2006). NGOs such as

Grupo Jaragua have been fighting to prevent the construction of large hotels on the beach, which would impact important breeding grounds for sea turtles and birds, as well as introducing harmful runoff into the marine ecosystems. The legislative battle presently concerns a proposed European hotel construction project. The key actors in this debate have been powerful interests in Santo Domingo, including the Secretaries of State for Tourism and Natural Resources, various environmental NGOs, and foreign investors, and less influential local voices are often not heard.



Figure 6-2. The as-yet undeveloped beach at Bahía de las Aguilas, DR.

Local opinions on the matter vary but the majority of people I interviewed in Pedernales were in favor of building hotels on the beach, with the hope that it will bring money and employment to the province. Tourism in Pedernales is a minor activity at present, hampered by isolation from major airports and a lack of accommodations; in 2005 there were only 5 tourist accommodations in Pedernales with a total of 58 rooms (ONE 2006). Other Pedernales residents are in favor of a more cautious approach to development, in which the environment and

community would be less impacted, and locals would have a greater stake in the benefits of tourism. Among these voices, I heard calls for the beach to remain undeveloped so that tourists would be forced to stay in the town, thus patronizing local hotels, shops and restaurants.

Not only would an influx of tourists create greater local demand and markets for fish, it would also create alternative employment opportunities for fishermen. It was suggested at a meeting of the Pedernales fishermen's association that fishermen could earn money by transporting tourists to and from the beach by boat. There is also an association of local youths (AGUINAPE) trained to give nature tours in the park; fishermen could presumably help with this based on their extensive knowledge of the area and marine fauna. On the other hand, the fishermen who live in camps in the Park could be threatened by tourist development. One Dominican fishing in Lanza So expressed fear that the government will crack down on the fishing camps once tourists are in the area, forcing the fishermen to relocate. Either way, the arrival of large amounts of tourists would have a major impact on the local community, including fishermen.

## CHAPTER 7 DISCUSSION AND CONCLUSIONS

After digesting the preceding chapters, the reader can appreciate the complex social, economic, and ecological factors which influence fishing activities on the southern Haitian/Dominican border. It is an area at once rich in cultural diversity and plagued by economic inequality. One witnesses such apparent contradictions as fishermen who play dominoes with each other in the afternoon, and vandalize each other's equipment the next morning. Local fishermen are full of awareness and concern for their future livelihood, but continue to carry on activities they know to be detrimental to marine resources. How do economic and social conditions contribute to or detract from efforts to manage marine resources? Referring back to the three questions posed in the Introduction, we can venture the following conclusions:

1. *In the context of two ethnically different groups sharing the same resource, does ethnic antagonism reinforce informal management mechanisms?*

The data collected during fieldwork all point to the fact that Haitian/Dominican ethnic antagonism in some cases does serve to reinforce informal management mechanisms. Awareness and concern over declining resources is heightened among Dominican fishermen by incorporating fishing within the traditional anti-Haitian discourse. Damage to the inshore fishery is often attributed to the more frequent use of nets by Haitians. The fact that Haitians sell and consume 'minnows' and other small, low-priced fish is taken as proof of supposed irresponsibility, rapaciousness and economic desperation. The traditional perception of Haitians as a cultural and ecological menace is used as a justification by some Dominican fishermen and authorities for mistreatment of Haitians, or vandalism and theft of their fishing gear. These abuses do seem to permanently limit Haitian fishing activities in specific areas (such as in front of the town of Pedernales), and temporarily reduce them in others. However, this is an

enforcement mechanism that relies on sporadic acts of aggression perpetrated by individuals, and does not constitute management, nor does it adequately address the economic and social conditions which perpetuate the issues in the fishery. Furthermore, while ethnic antagonism does function to limit fishing activities to an extent, heightened levels of tension ultimately would prevent effective cross-border management by making cooperation between Haitian and Dominican fishermen impossible.

2. *In the context of two economically unequal groups sharing the same resource, how does differential availability of technology and equipment among two groups of fishermen shape resource use behavior?*

Given the observations and data, the answer to this question is that economic conditions are *the* major causal factor determining fishing behavior. The everyday decisions of small-scale fishermen are shaped by economic forces at every level. On the broadest scale, economic inequalities between Haiti and the DR create a market in which smaller, inferior, and cheaper fish tend to be consumed in Haiti, whereas larger, more expensive fish and luxury species, like lobster, are sold in the DR. The price the local fisherman receives for a pound of a given fish is conditioned by demand in remote urban areas, and the share of the profits taken by a string of intermediaries.

Ultimately, the choice (or economic necessity) of a fisherman to use traps, nets, lines, GPS, engines, etc. is based on expected returns on their investment of time, money and labor in fishing. A major limitation on fishermen's options is the availability of capital. Therefore a majority of fishermen must resort to employment under a patron in order to gain access to boats and gear, entering into wage labor, contracts to sell their fish for a low price, or renting or sharing equipment.

It is these economic considerations which explain the basic difference in fishing behavior between Haitians and Dominicans. The continued use of gillnets by Haitians can be explained in these terms: a gillnet is relatively cheap, can be repaired repeatedly, and has the advantage that it can be carried by boat to a camp in the DR, and used for a few nights while being closely guarded by the fishermen against theft or vandalism. In contrast, the use of traps requires a larger investment of labor and money, and requires repeatedly returning to one area every few days, something that many Haitians are unable or unwilling to risk on the other side of the Dominican border.

Following the same economic logic, Dominicans tend to use larger engines because they extend the range of fishing and can boost earnings. Haitians tend to use smaller engines, or none at all, because engines require a large initial investment, and continual purchases of expensive fuel. Better boats, larger engines, and GPS have allowed Dominicans to extend fishing activities farther offshore, in pursuit of larger, more valuable fish, whereas Haitians are restricted to inshore fishing, creating a strong temptation to cross the border into the Dominican Republic, where inshore species are less depleted. Because the rationale for fishing decisions is largely economic, fundamental changes in fishermen's behavior must be brought about through economic incentives and disincentives. It appears that the sporadic enforcement of local fishing norms is a form of disincentive, but not sufficient to radically change the behavior of local fishermen.

3. *In the absence of effective state-level management, can a successful community-based management regime be implemented among two groups sharing a resource? Can cross-border community-based management be achieved between local fishermen's associations?*

This question remains unanswered for the moment, but there are major challenges to community-based management in the area. The three examples of successful community-based

management cited in the Literature Review- beaver trapping by James Bay Indians, Maine lobster fishing, and Fijian fishing territories, are different from the Haitian/Dominican situation in fundamental ways. These successful management outcomes occurred in places with longstanding, cohesive, relatively homogeneous communities. The communities of resource users had existed in those places for many generations, and had a long time to generate strong norms and mechanisms to enforce them. In the case of the Maine lobster fishery and in Fiji, communities jealously guarded their own fishing grounds against interlopers from other communities, but compliance with this territorial system by members of the different communities was not hampered by major cultural, linguistic, or economic inequalities as in the Haitian and Dominican case. Finally, rapid technological changes in fishing over the past three decades have complicated the emergence of local fishing norms. While community-based management may not be impossible in the study area, the communities on the Haitian/Dominican border are certainly not ideal candidates, as they are not longstanding, cohesive, or homogeneous, and lack strong norms and traditions in fishing.

Despite these challenges, what can be done to encourage a situation in which sustained-yield management is valued and enforced? As previously mentioned, there are three basic issues continue to pervade the fishing economy on the southern Haitian/Dominican border:

- The economic problems of individual fishermen, which are exacerbated by the need to resort to patrons for access to equipment.
- Antagonisms, often split along ethnic lines, concerning who should have access to fish and in which areas.
- The need for better-established ground rules over appropriate fishing gears and behaviors, and the need for better enforcement of these rules in order to protect the resource base.

Local fishermen's associations represent a possible mechanism to address these issues.

The economic problems of some local fishermen could be addressed by providing them credit for

the purchase of their own boats and gear. This would enable them to seek better prices for their catch than the prices set by a patron. Alternatively, a large fishing vessel (barco madre), shared by the members of the fishing association, could be used to exploit pelagic fish offshore with lower costs. Access to such a vessel could reduce fuel expenditures and debt among Dominican FAD fishermen, and reduce depletion of inshore stocks by focusing more fishing offshore. Obtaining such a vessel is a major goal of the Pedernales association; however, there are questions of how the use of the vessel would be shared.

The second issue of ethnic antagonism has been addressed to an extent by the diplomatic activities of the Pedernales and Anse-a-Pitre associations, which have reduced tension between Dominican and Haitian fishermen, and have clarified the issues which created conflict in the past. This at least opens the door to cooperative management, but does not address the problem of Haitians continuing to fish in the DR, and the fact that fishermen often do not abide by local norms. Issues such as the continued use of nets by Haitian fishermen could lead to a re-emergence of violent conflict.

However, the third problem of sustainability is the most daunting of all, and likely cannot be solved without first resolving the first two issues. Greater efforts must be made in terms of biological research, education of fishermen, and the strengthening of the fishermen's associations in conjunction with more consistent enforcement on the part of the Dominican and Haitian states. In order for the Pedernales and Anse-a-Pitre fishermen's associations to play a greater role in management, they will need official recognition and cooperation from local, state and national governments, as well as continuous outside advice and financial aid.

In order to change the culture of local fishing, fishermen on the individual level must be both empowered and made accountable. To incentivize self-enforcement of regulations, local

Dominicans must feel like the owners and stewards of their marine resources; this is made difficult when there is an unregulated influx of outsiders into their fishing area. Dominicans may not embrace a more extensive set of norms, or limit their own fishing behaviors, as long as Haitians can indiscriminately cross the border, often violating Dominican norms such as the ban on gillnets. Fishermen are unlikely to take greater responsibility for the situation as long as they feel economically exploited and powerless. Because patrons make many of the economic decisions, own most of the equipment, and in fact are the leaders of the fishermen's associations, fishermen are largely left out of the decision-making process.

On a more basic level, local Haitians are unlikely to embrace limitations on their fishing activities without an improvement in their living conditions. The dependence on basic goods and services from Pedernales, including jobs, healthcare and even ice for fishing forces a local Haitian to be a kind of economic refugee. More than any other factor, this economic desperation challenges the management of fishing on the southern Haitian/Dominican border for the foreseeable future.

APPENDIX A  
DESCRIPTION OF FISHING TECHNIQUES USED IN THE STUDY AREA

The following information is summarized from PROPESCAR (1994:3-4). In most cases, English terms are followed by the Dominican and Haitian terms (in that order) in parenthesis.

- *Hook and line fishing (linea de mano)*: this fishing gear consists of a monofilament synthetic fishing line of varying thickness, with one or more hooks on the end. The bait may be live or dead fish, or an artificial lure. Weights usually of lead, but also of iron or stone may be used. Fishermen in the study area release and retrieve the line by hand, using a plastic reel instead of a fishing rod. There are various fishing techniques in which hook and line are used:
- *Cordel*: a line 30-40 meters long is used, with one or two hooks and a weight at the end. This technique is used during the daytime from an anchored boat in depths less than 40m. Bait includes *Anchoa lyolepis*, *Jenkinsia lamprotaenia*, *Harengula clupeola*, and *Uca spp.* The main types of fish targeted are Scaridae, Labridae, Acanthuridae, Holocentridae and Pomadasidae.
- *Light fishing (luz)*: a line of 100-150 m length is used, with three or four hooks and a weight at the end. This type of fishing is done at night from an anchored boat, in depths from 30-40m, and sometimes up to 150m. The preferred bait is squid (*Loligo spp.*) or *Opisthonema oglinum*. A waterproof light is placed in the water by the side of the boat, powered by a car battery. The light attracts bait which is caught in a net. The targeted species vary but in general include Scombridae, Lutjanidae, and Carangidae.
- *Cala*: this technique employs a line longer than 400m, with 5 or 6 hooks and a weight at the end. Fishing is done during the day, unanchored or tied to a fishing buoy. The hooks are maintained at depths from 140-500m. Bait includes squid, piquetes, sardines, menjúa and herring. The main species targeted are snappers (*Lutjanidae spp.*).
- *Trolling (curricán)*: this technique uses a line of variable length, usually with wire leader at the end. The bait may be a synthetic lure or fish. Fishing is done during the day from a moving boat. The line is pulled at a shallow depth behind the moving boat as it passes through a school of fish; this type of fishing is also done around FADs. The target fish include Tunnidae, tuna, sailfish, swordfish, dorado, mackerel and barracuda.
- *Viveo*: this technique employs a line of variable length and a baited hook at the end. It is done during the day with the boat drifting or tied to a fishing buoy. The bait used are generally live sardines caught with a castnet. The targeted species include Tunnidae, sailfish and swordfish.
- *Longline (palangre/ palang)*: this equipment consists of a long line which extends horizontally through the water, with marker buoys at the ends. Along the length of this line, numerous shorter lines with baited hooks hang at intervals. This type of fishing is done at night; the longline is deployed progressively over the side of the boat and weighted

to maintain a depth from 25-90m over sand or mud bottoms. After waiting a few hours, the longline is retrieved and the hooks baited again. The primary fish caught include snappers (*Lutjanidae spp.*).

- *Traps (nasas/nas)*: Fish traps are basket-like cages with 1-3 entrances through which fish can enter, but not leave. The two main materials from which traps are constructed are chicken wire and sticks, or woven strips of cane or bamboo and come in a variety of sizes. The traps are dropped to the sea floor, with a line and buoy attached by which the trap can be hauled up again, generally after 1-3 days later. There are two main varieties of trap: *nasas del bajo* are used in depths from 5-80m while *nasas del hondo* are used in depths from 160-200m. The traps may be left unbaited, or baited with roasted starfish or cactus, sardines or herring, or small lobster. Fish traps capture a wide variety of demersal (bottom-dwelling) fish, which are often grouped for sale as *tercera clase*. In certain areas, lobster or snapper (*Lutjanidae spp.*) are the main targets; the species caught depend upon depth, the composition of the seafloor and bait used.
- *Diving (buceo/plonje)*: There are two diving techniques employed in the study area; free diving, where the diver holds his breath, and compressed-air diving, in which the submerged diver breathes through a regulator attached to a rubber tube, which supplies air from a compressor in the boat. Both free divers and compressed-air divers wear fins and diving masks underwater, and carry equipment including a spear to catch fish (usually *Lutjanidae* and *Serranidae*), a hooked stick (*gancho*) to capture lobster, and a hammer and knife used to remove conch from their shells. Fish, lobster and conch can be stored in a sack or put on a stringer (a long wire) until the diver returns to the boat. The depths to which a free diver can descend are limited by his need to return to the surface to breathe, whereas compressed-air divers usually descend to depths of over 40 meters, and may stay underwater up to 4 hours thus greatly increasing the extent of their activities. Many local compressed-air divers have had cases of decompression illness (the bends) from spending excessive time at great depths, and some of these are permanently crippled.
- *Gillnet (chinchorro de ahorque/ filé)*: These nets are essentially long panels of synthetic fiber netting with a weighted foot rope along the bottom, and a headline to which floats are attached. When deployed in the water column, the net hangs vertically with the weighted edge toward the seafloor. Fish swimming through the water column enter the mesh headfirst, but can not escape when the net snags behind their gills. After fishing for a period of hours, the net is brought back onto the boat and the fish removed from the mesh.
- *Beach dragnet (chinchorro de arrastre)*: this technique employs a gillnet deployed by a boat in shallow water offshore, then dragged in by fishermen on the beach.
- *Trammel net (trasmallo/ treymay)*: this type of net employs two nets of thick multifilament line, in the middle of which is sandwiched a loose gillnet of monofilament. Fish become entangled in a variety of ways, either around the gills, or between the three sandwiched nets.

- *Castnet (atarraya/ epevye)*: this is a small round net with weights around the edge. The fisherman throws it so that it spreads out and sinks to the bottom. These nets are used in other parts of the country to capture shrimp, and in the study area often to catch bait.

## APPENDIX B ECONOMICALLY IMPORTANT FISH IN THE STUDY AREA

The following is a multilingual list of fish including the Latin scientific name, the English common name, as well as the Dominican and Haitian common names that are used in the study area. The common names in English, Spanish and Creole tend to be general, and include a variety of species within a single category. For example, the family Pomasydae, known in English as grunts (bocayate in Dominican Spanish and kwokwo in Haitian Creole) comprises a group which includes some 16 locally-caught species in 4 genuses.

The English name ‘grunt’ is not used for all members of the family Pomasydae (there are also margates and porkfish within that family), and it is also possible that species of fish in other scientific classes may be known as grunts. Therefore common names for fish don’t necessarily correspond to their scientific groupings, in English, Spanish or Haitian Creole. Also, a fish known in the DR as *bocayate* must not necessarily be called a *kwokwo* in Haiti. Despite this lack of exact correspondence between scientific names and common names in various languages, there tends to be a close correspondence because the fish in a scientific family usually share many morphological and behavioral traits.

The following table is by no means complete, and only includes those classes and species which I repeatedly observed in the catches of local fishermen. In some cases I was unable to obtain the Haitian name due to difficulties of communication. Also it should be noted that species within a common grouping have common species name, such as the French grunt and bluestriped grunt. Notwithstanding these limitations, this table may prove useful to future researchers seeking information from fishermen in the border area.

Table B-1. Names of common fish families in Latin, English, Dominican and Haitian

Latin (scientific) family name	English common name	Dominican common name	Haitian common name
Acanthuridae	surgeonfish, tangs	Doctor	sirje
Balistidae	triggerfish	Puerco	bouse
Carangidae	jack, scad, pompano	conjinúa, jurel, palometa	carang
Chaetodontidae	butterflyfish	mariposa	
Coryphaenidae	dolphin, dorado, mahi	Dorado	dorad
Diodontidae	porcupinefish, burrfish	guanábana	fwoo-fwoo
Exocoetidae	flyingfish	Volador	voladó
Gerreidae	mojarra squirrelfish,	Mojarra	
Holocentridae	soldierfish	Candil	kadino
Istiophoridae	sailfish	Aguja	
Labridae	wrasse	Doncella	
Lutjanidae	snapper	pargo, chillo, colirubia	sad, grafon, kola, ajante
Monacanthidae	filefish	Chivo	kabwit
Mullidae	goatfish	Salmon	balbaren
Muraenidae	moray eel boxfish, cowfish,	morena, congo	kong
Ostraciidae	trunkfish	Cofre	kof
Pomacanthidae	angelfish	guinea, banderita	
Pomasydae	grunts	bocayate	kwokwo
Scaridae	parrotfish	jabón, loro	pawoket
Scombridae	mackerels, tunas, bonitos	carite, atún, guatapaná	tchara

## LIST OF REFERENCES

- Acheson, J.M.  
1988 *The Lobster Gangs of Maine*. Maine: University Press of New England.
- Arias, Y., Rupp, E., Mateo, J., Gomez, V. and M. Haughton  
2006 *Fishing Communities in the Jaragua National Park, Dominican Republic*. Jamaica: Ian Randle.
- Asociación Nacional de Hoteles y Restaurantes, Inc.  
2001 *Estadísticas Seleccionadas del Sector Turismo*. Santo Domingo: ASONAHORES.
- Berkes, F.  
1986 *Local-level Management and the Commons Problem: A Comparative Study of Turkish Coastal Fisheries*. *Marine Policy* 10: 215-229.
- Berkes, F., Feeny, D. McCay, B.J., and J.M. Acheson  
1989 *The Benefits of the Commons*. *Nature* 340: 91-93.
- Bromley, D.W.  
1984 *Property Rights and Economic Incentives in Resource and Environmental Systems*. Agricultural Economics Staff Paper Series, No. 231. Madison: University of Wisconsin.
- Brown, Jonathan  
1837 *The History and Present Condition of St. Domingo*. Philadelphia: William Marshall and Co.
- Bueno, R.A.  
1992 *Estudio del Prejuicio Hacia los Haitianos en Tres Escuelas Intermedias con Diferentes Niveles de Interacción Social*. Santiago: Universidad Católica de Madre y Maestra.
- Carlsson, L. and F. Berkes  
2005 *Co-Management: Concepts and Methodological Implications*. *Journal of Environmental Management* 75(1):65-76.
- Cassá, Roberto, D. Ortiz, R. González, and G. Rodríguez  
1986 *Actualidad y Perspectivas de la Cuestión Nacional en la República Dominicana*. Santo Domingo: Editora Buho.
- CEDOPEX  
2006 *Análisis de las Estadísticas de las Exportaciones Nacionales, de Zonas Francas y hacia Haiti de las República Dominicana*. Santo Domingo: D.N.
- Central Intelligence Agency  
2007 *The World Factbook*. Electronic document, <https://www.cia.gov/library/publications/the-world-factbook/>, accessed December 2007.

CODOPESCA

N.d. 2007 Landings Data for Pedernales. Unpublished Fisheries Data, CODOPESCA Barahona.

Comitas, L., ed.

1973 *Work and Family Life: West Indian Perspectives*. New York: Anchor.

Crawford, S., and E. Ostrom

1995 *A Grammar of Institutions*. *The American Political Science Review* 89(3):582-600.

CROSE Haiti

N.d. 2007 Survey Data of Fishermen in Anse-a-Pitres. Unpublished Survey Data, CROSE Jacmel.

De Dios Ventura Soriano, Juan

1998 *Los Problemas Raciales en la Republica Dominicana y el Caribe*. Santo Domingo: Editora Collado.

Dilla Alfonso, Haroldo, and Sobeidea de Jesús Cedano.

2007 *Frontera en Transición*. Santo Domingo: Yan Impresos.

Feeny, D., Hanna, S., and A.F. McEvoy

1996 *Questioning the Assumptions of the "Tragedy of the Commons" Model of Fisheries*. *Land Economics* 72(2):187-205.

Félix, Carlos Julio

2001 *Pedernales: En un Rincón del Caribe*. Dominican Republic: Editora de Colores.

Gordon, H.S.

1954 *The Economic Theory of a Common Property Resource: The Fishery*. *Journal of Political Economy* 62:124-142.

Gulland, J.A.

1984 *Control of the Amount of Fishing by Catch Limits*. FAO Fisheries Report No. 289 Supp. 2. Rome: FAO.

Hancock, D., ed.

1997 *Taking Stock: Defining and Managing Shared Resources*. Sydney: Australian Society for Fish Biology.

Hardin, G.

1968 *The Tragedy of the Commons*. *Science* 162:1243-1248.

Howard, David

2001 *Coloring the Nation: Race and Ethnicity in the Dominican Republic*. Oxford: Signal.

- Institut Haitien de Statistique et D'Informatique (IHSI)  
 2000a Recueil de Statistiques Sociales. Haiti: UNDP.
- 2000b Population Ménages et Emploi. Haiti: UNDP.
- Institut Haitien de Statistique et D'Informatique (IHSI)  
 2003 4eme Recensement General de la Population et de L'Habitat. Haiti: Aout.
- Mateo, J. and M. Haughton  
 2004 A Review of Fisheries Management in the Dominican Republic. *In Proceedings of the 55th Annual Gulf and Caribbean Fisheries Institute*. L. Creswell, ed. Fort Pierce: GFCI.
- McEvoy, A.F.  
 1986 The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980. New York: Cambridge University Press.
- McPherson, M. and T. Schwartz.  
 2005 Socioeconomic Assessment of the Jaragua, Bahoruco and Enriquillo Biosphere Reserve. Pittsburgh: International Resources Group/IPEP.
- Moya Pons, Frank  
 2007 History of the Caribbean. Princeton: Markus Wiener.
- Munro, Gordon, Van Houtte, Annick, and Rolf Willman  
 2004 The Conservation and Management of Shared Fish Stocks: Legal and Economic Aspects. Rome: UNFAO.
- Murray, G., McPherson, M. and T. Schwartz  
 1998 The Fading Frontier: An Anthropological Analysis of the Agroecology and Social Organization of the Haitian-Dominican Border. Gainesville: University of Florida Press.
- Nash, J.  
 1951 Noncooperative Games. *Annals of Mathematics* 54:289-295.
- Nolasco, Rosa  
 2000 Country Report: Dominican Republic. Paper presented at the Fisheries Management Data System Terminal Workshop, Castries, St. Lucia, November 25-28.
- OIM/FLACSO  
 2004 Encuesta sobre inmigrantes haitianos en la República Dominicana. Dominican Republic: Ediciones.
- ONAPLAN  
 2005 Focalización de la Pobreza en la República Dominicana, Santo Domingo: Julio.

ONE

2004 República Dominicana en Cifras. Santo Domingo: Oficina Nacional de Estadísticas.

ONE

2006 República Dominicana en Cifras. Santo Domingo: Oficina Nacional de Estadísticas.

Ostrom, Elinor

1990 *Governing the Commons: The Evolution of Institutions for Collective Action*.  
Cambridge: Cambridge University Press.

Ostrom, E. and Schlager, E.

1996 *The Formation of Property Rights*. In *Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment*. Hanna S., Folke, C., and K.G. Maler, eds. Pp. 127-157. Washington D.C.: Island Press.

Poggie, J.J. and R.B. Pollnac

1991 *Small-Scale Fishery Development: Sociocultural Perspectives*. Rhode Island: ICMRD.

Pomeroy, R.S. and M.B. Carlos

1997 *Community-based coastal resource management in the Phillipines: a review and evaluation of programs and projects, 1984-1994*. *Marine Policy* 21(5):445-464.

PROPESCAR

1994 *Reportes del PROPESCAR-SUR: Contribuciones al conocimiento de las pesquerías en la República Dominicana*. Vol. 1. Barahona: PROPESCAR-SUR.

PROPESCAR

1995 *Reportes del PROPESCAR-SUR: Contribuciones al conocimiento de las pesquerías en la República Dominicana*. Vol. 3. Barahona: PROPESCAR-SUR.

Rounseville, Megan

2007 *Diagnostico Comunitario de Pedernales*. Santo Domingo: United States Peace Corps.

Runge, C.F.

1986 *Common Property and Collective Action in Economic Development*. *World Development* 14(5):623-635.

Schoenrich, Otto

1918 *Santo Domingo: A Country with a Future*. New York: MacMillan.

SEA/ONAPLAN/AECI

2001 *Características de la Producción y Comercialización de los Productos Agrícolas de la Provincia de Pedernales*. Santo Domingo: SEA.

Theile, S.

2001 *Queen Conch Fisheries and Their Management in the Caribbean*. CITES Technical Report A-20 00/01. Cambridge: Traffic Europe.

Thompson, D.B.

1983 Fishermen and Fisheries Management. Paper presented at the Expert Consultation on the Regulation of Fishing Effort. Rome, January 17-26.

United Nations Food and Agriculture Organization (FAO)

2004 Report of the CFU/FAO Fisheries Statistics and Data Management Workshop 10-22 March, 2003. Barbados: University of the West Indies.

Wiener, Jean W.

2001 Marine Resource Knowledge Related to Fish Classification in Haiti: An Examination of Créole Terms, Local Knowledge, and Definitions Related to Fishing and Fish Classification in the Port-au-Prince Bay Area of Haiti. Paper presented at Putting Fishers' Knowledge to Work Workshop, Vancouver, August 27-31.

World Bank Poverty Reduction and Economic Management Unit

1998 Haiti: The Challenges of Poverty Reduction. Technical Report 17242-HA. Bretton Woods: World Bank.

Worm, B., Barbier, E.B., Beaumont, N., Duffy, J.E., Folke, C., Halpern, B.S., Jackson, J., Lotze, H.K., Micheli, F., Palumbi, S.R., Sala, E., Selkoe, K.A., Stachowicz, J.J., Watson, R.

2006 Impacts of Biodiversity Loss on Ocean Ecosystem Services. *Science* 314(3): 787-790.

Wucker, Michele

1999 *Why the Cocks Fight*. New York: Hill and Wang.

## BIOGRAPHICAL SKETCH

As a teenager living in Egypt, Ryan Peseckas spent much of his free time diving in the Red Sea. Looking for a way to support his habit, Ryan studied for his B.S. in marine science at Eckerd College in St. Petersburg, Florida. After graduating Ryan joined the Peace Corps, working for two years in Fijian fishing communities, helping to promote community-based resource management and to establish and monitor marine protected areas. Having returned to the U.S., he entered the University of Florida's Department of Anthropology in 2006 as an Alumni Fellow. Ryan continues to study anthropology in the Ph.D. program at UF.