

**EXPLORING SPIRITUALITY, INCOME GENERATION,  
AND THE USE OF COASTAL RESOURCES  
AMONG THE GARIFUNA IN SOUTHERN BELIZE**

**Final Project Report**

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Joseph O. Palacio

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## **Dedication**

**Dedicated to the memory of the late Simon Arana,  
A man fully devoted to Garifuna and Christian Spirituality**

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### **List of Abbreviations**

IDRC	International Development Research Council
CBCRM	Community Base Coastal Resource Management
BTIA	Belize Tourism Industry Association
MPA	Marine Protected Area

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**Abstract**

While the IDRC-CBCRM Programme focuses on community base management of coastal resources, it is necessary to study communities that are not participating in such management. Dangriga is such a community. It is a town, with a predominantly Garifuna population, located in the economically depressed part of the Stann Creek District in southern Belize. There is much use of traditional knowledge among the Garifuna as well as the practice of rituals in ancestral worship. Within these two sets of activities the sea has heightened significance.

This study documents the following aspects of coastal resource use taking place in Dangriga. The first is planning toward a Garifuna Village tourism project that would take place by the beach. The second is traditional knowledge about the location of fishing, specifically in patches within a range of submerged reef outcrops. The third is the re-construction of two traditional methods of fish harvesting. The fourth is the practice of group fishing to offer in a placation ceremony for the ancestors.

The findings of the study are essential to amplify our understanding of the community and its use of coastal resources, all of which are important in the ethnology of coastal communities within the Caribbean. They are also important in appreciating the socio-culture within the community, given the likelihood that the Government of Belize will impose a management regime on the use of natural resources among coastal communities.

# **Exploring Spirituality, Income Generation And the use of Coastal Resources Among the Garifuna in Southern Belize**

## **Chapter 1 Introduction**

“Our CBCRM experience is so much more than what can be presented in workshops and conferences or what may be written down.”

“CBCRM is about knowledge, skills, ideas, and transformation in the values of the people.” (Francis Perez “Reactions to Case Studies” In Hope That Takes Root, eds. Elmer Magsanac Ferrer et al. p. 241. Ottawa: CBCRM Resource Center, 2001.

### **Conceptual Framework**

Because this study falls under the International Development Research Centre (IDRC) Community Base Coastal Resource Management (CBCRM) Phase 2 Programme for the Caribbean, it is expected that it should be driven by coastal resource management practices implemented by community members. In fact, the study is not on coastal resource management implemented by community members. It is about coastal resource practices done by communities but not within a given management regime in the conventional sense. It does not highlight different types of management found in the literature, such as “adaptive management”, “ecosystem management”, or “co-management”.<sup>i</sup> This study follows what I did during 2000 and 2001 in Phase 1 of the IDRC-CBCRM Programme for the Caribbean, when I explored current and historical coastal practices within Southern Belize (Palacio 2001). The difference is that this time my focus is on one community, Dangriga, and the topics assume a more applied bias. They include attempting a community development project, identifying traditional knowledge in current fishing practices, re-constructing traditional fishing technologies, and exploring the overlap of spirituality with fishing practices.



As in my efforts in Phase 1, I continue with the belief that a description of the several ways that a community uses coastal resources is in itself useful, given the lack of awareness by scholars of such minutiae. Beyond the anecdotal level, another reason for studying them is to understand what communities did and are still doing in the absence of an imposed management regime. Community management results from a twofold action by the state – the deliberate devolution of authority and generating support within communities to take advantage of the unfolding opportunities. Having declared one-third of its national territory and almost 7% of its territorial waters<sup>ii</sup> under protected status, Belize is gradually devolving authority to communities for their management. This has been slower in the south of the country than in other parts.

Among my informants in Dangriga there was hardly any awareness of the possibility of co-managing the two marine protected areas (MPA's) within their waters, the South Water Caye Marine Reserve and the Glovers Reef Marine Reserve (Fig. 1). They are two large MPA's together measuring over 60,000 hectares (McField 2000: 22). This lack of awareness is no fault in the foresight of the Dangriga community members but in the delay that the government of Belize has taken in integrating coastal communities within the management of surrounding MPA's. As McField observed after evaluating the effectiveness of MPA management in the country, "Belize currently lags behind in the global trend towards community based management and full devolution of authority over MPA's." (2000: 1). This lag contrasts with the speed Belize has taken to declare its territorial waters within reserve status. The vast majority of the twelve MPA's were declared in the 1990s (McField 2000: 1). Not being sufficiently proactive to

include communities in management, the government will end up with paper parks, which masks their tremendous potential for community involvement.

If there is no effort to integrate the Dangriga community into MPA co-management, what is known about their use of natural resources within the socio-economy? There is more that is known about the Stann Creek District than in the town of Dangriga. Bliss' 1992 study focuses on gender in food production in the Garifuna village of Hopkins located a few miles south along the coast from Dangriga (see Fig. 1). She dedicated much attention to the role of women in producing food crops, mainly cassava and other root crops, while briefly mentioning the role of men in fishing. She found out that citrus production was "encouraging more men in Hopkins to shift from the tenuous fishing industry to the more financially lucrative business of agriculture" (1992: 171). Furthermore she elaborated how the women were affected by the growth of the citrus cash cropping in their own food production but again made no mention of the shift of men from fishing to agriculture.

Moberg's studies (1991: 16-25 and 1992: 1-20) add to the impact of structural adjustment in the 1980s on the overall food economy also of rural Dangriga. He recounts declines in the production of staple crops as farmers were encouraged to concentrate on export cash cropping. As in the case of Bliss, there was no mention of the impact on fishing and fish sales.

In a recent study on food security in the Stann Creek District, I found that there was resurgence in food production at the small farm level with assistance forthcoming from the European Union and the Government of Belize (Palacio 2004). There was, however, no such assistance given to fishermen. My study further found out that both

men and women were deliberately limiting their respective production to satisfy the local economy of Hopkins, while deliberately generating demand for more sales by selling fish and root crops to non-villagers.

This brief review shows that there is marked division of labour among rural Garifuna in food production with men doing fishing and women agriculture. Women do not do fishing but men do agriculture depending on the market. Indeed, both men and women respond to market demands, at times generating further need to be able to sell more. But there is still greater emphasis in public policy on agriculture than on fishing. When there is mention in the literature of fishing, it comes as the complaints of men about their diminished potential relative to the bias that the government is placing on MPA's (Brown 2003). This reaction underlines the lack of adequate support, including extension services being provided to the men by both the government and NGO's, that could elaborate to them the changes taking place in macro-policy and how they could benefit from them.

Using this logic, the lack of the Dangriga men's participation in the co-management of the two MPA's in their waters could be taken as a challenge by the authorities. This in turns demands a greater awareness of their coastal practices, which is the main thrust of this report. In Appendices 1 and 2 there is a brief description of the fragility of these two MPA's, together with their high potential for tourism development.

## **Overview**

A people's perspective on coastal resource practices prevails in this report. In the following section on setting I describe the natural endowment of the Stann Creek District in land and marine resources. The development of the District during the past two

decades has been led by banana, citrus, shrimp farms, and tourism, all of which have concentrated in the southern part leaving the town of Dangriga within a prevailing economic depression. As a result, younger men and women continue to migrate from the town in large numbers. Concurrently, there remains devaluation in public opinion of activities, such as fishing, traditional knowledge, and the use of marine resources.

The first report of actual fieldwork comes in the third part of this report. It describes my involvement with the community base organization Buyei Juan Lambey Institute (BJLI) in laying the groundwork of a community development project. I describe the challenge of working with BJLI to adapt a more deliberately “project-driven” perspective, while retaining their strength in Garifuna spirituality.

Fishing is a primary bias of this study. The fourth section is a description of traditional ecological knowledge in terms of the location of fishing, the types of fish caught, and the seasonality. In the second part of this section I report on a brief survey of fish sales I did in the Dangriga Market.

One of the objectives of the Project was to re-construct two traditional fishing methods – a kraal where fish breed called *wamaredu*<sup>iii</sup> in Garifuna and a weir to catch crabs called *masiwa*. There is a description of the efforts at reconstruction as well as the results.

Finally, the spotlight turns to spirituality and its overlap with fishing. There is description of *adougahani*, a fishing trip a group makes to collect seafood to be used in the *dugu* (placation ceremony for the ancestors). In *adougahani* the diversion from what is normally a mundane socio-economic activity to being overtaken completely by the spirit world shows another dimension to Garifuna use of marine resources.

## **Research Methods**

I was eclectic in the use of research methods in this report. Bibliographic research resulted in the data found in the following section entitled ‘The Setting’. Elizabeth Graham’s (1994) thorough archaeological survey of the Maya period in the District provided insight into the use of material resources, many of which are still available but unused in modern times.<sup>iv</sup> The archaeology provided a comparative framework for the patterns of exploitation within the current industrial and postindustrial era. For this latter period I relied on statistical data available in government records. Government records also gave the census figures about demographic movements between 1980 and 2000.

Open-ended interviews provided information about traditional knowledge for both current fishery practices as well as on adougahani. To arrive at data on fish sales I conducted an informal survey on daily sales that took place in the Dangriga Market during one week in October 2003.

There was a more applied method that we used in the actual reconstruction of the wamaredu and masiwa that entailed designing the structures, purchasing the materials, and installing them in the field. As in the case of any controlled experimentation, our observations were meant to improve on replicability, should there be an opportunity to re-do the exercise.

From the several interviews on adougahani, we applied a discourse narrative method, extracting from segments into one composite account. We took some literary license to have the narrative done as if the captain himself were speaking to an audience.

This method, we hoped, would give a certain amount of realism to the convergence of the mundane and spiritual influences operating simultaneously within the adougahani.

In the final section on analysis I reverted to where I started at the outset, namely amplifying a conceptual framework in the ethnology of CBCRM within a Garifuna community in Southern Belize.

## **Chapter 2**

### **The Setting**

At 2,560 square kilometers (or 1,000 sq. miles.) the Stann Creek District is one of the smallest of six districts in land area in Belize. It is also one of the least populated. The other district with the next smallest population is Toledo. Both are in the southern part of the country and are among the poorest. The coastal plain of the district extends a maximum of 17 kilometers from the coast to the Maya Mountain foothills (see Fig. 1). The Maya Mountains cover a substantial portion of the district, making Graham's (1994) referral to the district, as the "highlands of the lowlands" in the Maya area, most appropriate. The highest summit in the country, Victoria Peak, which crests at 3,630 feet, is found in the central part of the district (Furley and Crosbie 1974: 7).

From the Maya Mountain range pour down several rivers and streams that dissect the coastal plain on their way to the coast. The fertile areas in the district consist of alluvial deposits on the banks of rivers and streams, making them sites for habitation and agricultural production from the time of the Maya over 2,000 years ago (Graham 1994) to the present. The communities are found either along the riverbanks or along the coast. Indeed, the Stann Creek District has the most number of communities located along the coast.

Since 1980 the economy of the district has gone through transformations in response to the metropolitan demands for the fruits of its natural resources. Up to the 1990s the economy was driven by the banana and citrus agro-industries under subsidized market costs from the European Union. As the global market continues its shifts away from citrus and banana, shrimp farming has mushroomed, increasing by 500% from 1996

to 2001 (Prime Minister’s Budget Speech 2001/2). Simultaneously tourism, focusing on marine and riverine resources, started its own growth from the mid-1990s. The two growth industries of shrimp farming and tourism have taken root in the southern part of the district away from Dangriga.

**Table 1**  
**Percent Population by Ethnicity**  
**1980, 1991, and 2000 Censuses for the Stann Creek District**

	<b>Mestizo</b>	<b>Creole</b>	<b>Garifuna</b>	<b>K’ekchi</b>	<b>Mopan</b>	<b>East Indian</b>
<b>Dangriga</b>						
N = 6,661 1980	1.9% 125	21.6% 1,437	45.4% 4,665		0.3% 17	1.4% 90
N = 6,251 1991	3.9 244	21.5 1,343	70.3 4,397	0.1 8	0.5 30	1.6 97
N= 8,464 2000	11.9 1,006	19.7 1,661	62.8 5,289	0.2 17	0.7 59	1.4 120
<b>Stann Cr Rural</b>						
N = 7,520 1980	18.1 1,361	42.6 3,200	23.5 1,773	0.5 33	10.2 769	2.6 199
N = 11,226 1991	34.7 3,898	27.1 3,046	17.2 1,926	1.7 191	10.3 1,160	5.1 568
N = 16,019 2000	39.8 6,379	22.1 3,547	14.3 2,295	3.8 650	13.6 2,179	4.0 643

**Table 2**  
**Population of Select Communities**  
**In the Stann Creek District, 1980, 1991, and 2000 Censuses**

<b>Communities</b>	<b>Censuses</b>		
	<b>2000</b>	<b>1991</b>	<b>1980</b>
Hopkins	1027	808	749
Mango Creek & Independence	2929	1969	1474
Maya Beach	45	13	0
Placencia	501	367	334



The population shifts between 1980 and 2000 indicate where people have migrated in search of jobs. Table 1 shows that the entire district recorded growth in the three censuses from 1980. The town increased by only 2,000 indicating there was net outflow of its own born population, while the rural more than doubled between 1980 and 2000. Furthermore some communities in the rural sector grew more than others (see Table 2). In the extreme southern part of the district, the main headquarters of the banana industry, the joint communities of Mango Creek and Independence grew by 34% between 1980 and 1991 and by 49% between 1991 and 2000. Mango Creek-Independence and surrounding communities are inhabited mainly by Ladinos from the neighbouring countries of Guatemala and Honduras, who came as migrant labourers and subsequently stayed as residents. The villages of Placencia, Seine Bight, and Hopkins (see Table 2) also grew between 10% and 53% at ten-year intervals between 1980 and 2000 in response to growth in the tourism industry. Placencia and Seine Bight are beneficiaries of tourism growth along the Placencia Peninsula that they share. Hopkins has also been experiencing some growth in tourism together with its neighbouring village of Sittee.

There is further indication which ethnic groups were participating in the in and out-migration trends between 1980 and 2000 (see Table 1). The proportions of the two traditionally predominant groups – the Creole and Garifuna – have declined in both the rural area and Dangriga. The proportion of both groups has been halved in the rural area, while in the town the decrease of the Creole has been small and that of the Garifuna has fluctuated from 45% in 1980 to 70% in 1991 to 63% in 2000. If the Creole and Garifuna have been decreasing, the Mestizo (the census term used that includes the Ladinos from

the neighbouring countries) has skyrocketed, doubling between 1980 and 2000 in the rural area. Similarly, the Mopan and K'ekchi have increased mainly in the rural part of the district. The ones who have been migrating away from the district are the Creole and Garifuna. Woods et al (1997: 63-88) have analysed the significance of these marked demographic shifts at the national level.

Where does Dangriga fit within the economic and demographic shifts that have been taking place in the district? Firstly, Dangriga is the primary gateway to southern Belize. As district capital town it is the seat for government offices as well as the nucleus for banks and other arms of the private sector within the district. However, many of the cash transactions associated with the private sector are funneled to other parts of the district, with little remaining in the town itself. Only a few of the town residents work in the tourism and agro-industries. Tourists arrive by air in Dangriga, while a larger proportion arrive at Placencia. Those coming to Dangriga are in transit to their destination further away along the coast or on the cayes. The minimal participation by the townsfolk in the district formal cash economy is seen in the high rates of unemployment and the economically depressed atmosphere that hangs over the town. Cash remittances from the rest of the country and beyond, notably the United States, would seem to constitute a main proportion of the income in many households.

The economic depression is both cause and effect of social ills that beset Dangriga. Indicators of arrests for criminal activity and rates of HIV/AIDS are higher there than in other district towns (Palacio 2003). Petty cash gambling by both men and women is done openly in parts of town. Trafficking in drugs, mainly marijuana and crack cocaine, is also a major problem.

As seen in Table 1 the population of Dangriga is predominantly Garifuna but the social ills are far more prevalent among them than other ethnic groups. The socio-economic hierarchy of the community is concentrated among these groups. Traditionally the Garifuna are discriminated against on the basis of ethnicity and colour.

## Chapter 3

### The Project as Community Development

One of my primary aims in conceptualizing my involvement in Phase 2 of the IDRC-CBCRM was to collaborate with a community base organization. Having learned about past and current community efforts in Phase 1, I would concentrate some attention on a grassroots organization to become involved in the empirical application of coastal resource activities. I was able to form a close association with the Buyei Juan Lambey Institute (BJLI). The leadership of BJLI consisted of the President, a Board of Directors, and a broad membership consisting of persons, who work closely with the President in his rituals as healer. The President is Buyei John Mariano, a shaman with powers to heal through the intervention of the spirits of Garifuna ancestors. His great grandfather was another buyei, John Lambey, from whom the Institute got its name.

BJLI was founded in 1998 and registered as a non-profit organization in 2001 with the aim of combining spirituality with economic activities to accomplish two objectives. The first is to ensure continuity in Garifuna belief systems and rituals. The other is to provide a setting where young men and women could learn and practice income generating skills based on Garifuna technologies in arts and crafts, and preparing foods and herbal medicines, among other items. There would be an attempt to integrate these two objectives seamlessly so that the participants would become immersed in *Garifunaduo* (Garifunanness), where spirituality and economic activities reinforce each other.

With the rapid sociocultural changes overtaking the Garifuna community, it is becoming more difficult to perform traditional rituals. Singers are forgetting older songs;

younger men and women are reluctant to participate; and there are fewer close adherents who know the drumming, the order of ceremonies and their intricate details. All in all there is greater skepticism among the public, which raises doubt about the future of the ceremonies and of Garifuna spirituality itself.

BJLI saw itself as contributing to lessen the erosion of rituals. Furthermore, it would provide some “value-added” aspects to traditional Garifuna technologies by offering a variety of activities, such as sailing, sports fishing, traditional fishing, snorkeling, and kayaking. Additionally, there would be artistic displays in painting, sculpture, music, as well as workshops and guest lectures. Gradually, the concept of a multi-purpose Garifuna Village was taking shape. The central feature would be the *dabuyaba* (temple), which would be surrounded by structures offering ancillary economic activities, such as restaurant, display area, and ritual baths.

My role as an agent promoting community development came from assisting BJLI formulate the plan for the Garifuna Village and provide institutional capacity building together with community extension.

As my working relationship with the BJLI deepened, I observed that its President, Mr. John Mariano, in his capacity as buyei had much interaction with the community primarily through the *dabuyaba*, which is the primary and visible configuration of Garifuna spirituality in the town. The *dabuyaba* is not only the building for the holding of specific ceremonies; it is a place where persons come for counseling and support when in distress. During some ceremonies several persons – even those unrelated to the ancestors being honoured - can come to receive cooked food. Also at these ceremonies the buyei sends food to the hospital for the sick.

I further observed that the strength of President Mariano and the BJLI officers came more from coordinating ceremonies within the confines of the dabuyaba than to work on plans that integrate both spirituality and economic development at the larger community level. They needed help to identify the various themes that would be integrated into the proposed Village both conceptually as well as in practical terms. We held long discussions and workshops with them to sort out what the Village would be about, given the recently extensive spread of tourism taking place in Belize City, which is located only thirty miles northward by sea. Also helpful was a member of a local engineering firm, who offered to help draft the plan and cost it for a reduced charge. Gradually the concept and image of the Village took shape.

Simultaneously, there were efforts to acquire the land where the village would be situated. In keeping with the dual orientation of Garifuna religious ceremonies toward the sea and land, the village should be close to the beach. But within the ethnic stratification system of Dangriga, beach front is highly priced real estate and has become almost exclusively for non-Garifuna residents. How could an institution that symbolizes the very core of Garifunaduo be placed there? What would be the reaction of the non-Garifuna neighbours? Fortunately, there was a large plot near the main pier in the town that had been set aside for the local branch of the Belize Tourism Industry Association (BTIA) to use for a prospective tourism project. Would BJLI be able to acquire a piece adjoining it, since their Village would also be for tourism?

Articulating these questions to the Ministry of Lands, which has responsibility to alienate public lands, was difficult enough. Negotiating with the various levels of the bureaucracy was much harder. The process to move the request to the point of receiving

the final answer from the Minister of Lands heavily taxed the capability of the BJLI executive. Some of the resistance no doubt came from the socio-political hierarchy in Dangriga, who were against the purported use. We provided moral support to the BJLI executive, wrote recommendations, made special appeals on their behalf; and remained fully informed about all the unfolding steps. The final approval of the title to the almost two acre block was a major victory. Furthermore, it was heightened validation of the Village project, of BJLI, as well as the Garifuna nation, when the Prime Minister himself came to hand deliver the title in a public ceremony. On the part of the IDRC-CBCRM, Dr. Hugh Saul came to the ceremony.

Exhilaration on receiving the title quickly quieted as the next steps in planning the Village haunted BJLI. The first was to streamline its institutional capacity, given the new kinds of responsibilities that the Village project would demand. Transformation in the role of the President and Buye John Mariano would be difficult. As a spiritual healer, he gets instructions from his spirit mediums. He is fully in charge during the ceremonies. Everyone looks up to him, as ultimately the success of the ceremony relies on the strength of his leadership. Coordinating a community development project, however, necessitates a different style. It requires a consensus driven approach within a collective, starting with the BJLI Board of Directors, rather than the top-down, spirit-ordained procedures predominating within the religious ceremonies.

It was plain that such issues as the identification and implementation of projects, where a number of persons would be involved, were not going to be an easy process. This observation came to me after a few workshops I held with BJLI on institutional capacity building. What gradually came home to me was that leadership in one realm of

community involvement, namely traditional spirituality, could not be easily transferred to another, namely project development and execution.

Closely related to the growth of BJLI, as an institution tackling a project like the Village, would be its ability to share resources within a dedicated intersectoral environment. We observed that this was also going to be a problem, partly for the lack of such institutions in the Dangriga area but also because the tradition of such sharing also does not exist in the town. The lack of this sharing meant that BJLI was not proactively advertising itself or the Village project adequately within the community. Through the wamaredu project, I introduced BJLI to the Principal of the local high school to initiate exchange between its students and what we were doing. I also introduced the Fisheries Department to BJLI also within the context of the wamaredu project.

Finally, community extension through the mass media was another activity that was new to the BJLI executive. I assisted by holding an extended interview at the local radio station together with the President. We spoke about the Institute and the village project and invited participation by the listening public.

The main challenge for the BJLI in engaging in community development was to shift from its expertise in traditional healing with its own source of supernatural power to a community development mode that generates its own funds within a deliberately participatory environment. It was plain that more time beyond the life of this Project was needed to work with the officers to enhance this level of capacity. In the meantime the Village project has been temporarily on hold. However, there is a functioning dabuyaba on the site. It held its first dugu ceremony in June, 2004.



## Chapter 4

### Fishing and Fish Sales

#### Fishing

Part of the difficulty of planning the Garifuna Village was the novelty of engaging as a community group in any business venture, much less one that is non-traditional within the Dangriga area. Furthermore, there has not been a long standing institutional base for grassroots business mobilization in Dangriga, such as the Placencia Fishermen's Co-operative in Placencia (Palacio 2001: 28-32). Finally, a main drawing card for the Garifuna Village was traditional ecological knowledge. While there is still much of it available among older folk in Dangriga, as we shall see further below, it is not retaining its vibrancy, as it is not being passed down to the youth. Besides, channeling it into a series of commercial activities needed a level of preparation that was not available for the BJLI.

In the following segment I describe fishing practices based on information I received from three Garifuna fishermen. I also provide information on fish sales using data I collected from observations over a period of five days in October, 2003. I found out that Garifuna traditional ecological knowledge determined where to fish and what one catches; and that with respect to the volume of sales, fishers from other ethnic groups were superceding their Garifuna counterparts.

My informants on fishing practices belonged to a group of about ten "long-shore" fishermen, as they called themselves. They fish at a maximum distance of about three kilometers away from shore, each going about three to four times during the month.

Among themselves there are about two going out on any one day. They use small dories, having a maximum length of two to three meters with no outboard and no sail. They rely on other sources of main income. One runs a small grocery shop; a few do construction and whatever manual jobs that are available; and in all their households cash remittances come from younger relatives. In age they range between 40 and 70.

They have witnessed changes in fishing, starting from the time when fish were so easily available and closer to shore that men, women, and children could go out to catch a few. Then the men had to go further out to the cayes to catch, as commercialization not only by the local men but also by others from northern Belize, took over starting from the 1970's. Although there is more commercialization, there is less delivery to the town market by the Garifuna and more by resident Ladinos. There is also much poaching by fishermen from Honduras and Guatemala.

Hook and line are the basic 'tools of the trade' for the "long-shore" fishermen. They come in various sizes depending on the target anticipated. At any one time in his dory one man can have up to five lines out, being careful not to have them tangle on pulling. Only one or two still know how to use the harpoon, which had been used earlier to strike larger fish. A few of them use cast net to catch sprat to bait. The others beg bait from those who may have or cut into pieces the first few that they catch.

The relatively limited use of traditional technology is dwarfed by the large amount of the information still remaining among fishers about fish habits – where to catch them and when, their location within the stratification of the sea, their names, and seasonality. According to them, the best time to fish is between October and March, starting at the tail end of the rainy season and passing through the time of the northerlies

between November and February. During the rainy season there is much fish attracted by the ample food they find in the rushing flood waters from the hillsides. The northerlies attract more migratory species. After December and going onto March there is the spawning season for grouper and later different species of snapper. Between April and June there is the “mauga” (lean) season, where the catch is not as plentiful as the rest of the year. In Table 3 there is a list of the fish normally caught plentifully during the “good season” between October and March.

**Table 3**

**Some Fish Caught October to March**

<b>Garifuna Names</b>	<b>Creole Names</b>
Gulilawarou	Long tail jack
Haba	Tarpon
Hiawau	Black Snapper
Bagalou	Cabio
Yawarigue	Black meat jack
Gushalele	Rock Fish
Masineru	Jimmy Hind
Gawachue	Stone Bass
Galali	Snapper
Gueguru	Grunt
Crouper	Grouper

**Table 4**  
**Fish Caught By Depth**

<b>Fayatinyu (Found in Shallower Waters)</b>	<b>Guribintinyu (Found Deeper)</b>
Awawai (kingfish)	Geiriri (paggy)
Gulilawarou (jack)	Galali (snapper)
Warubi (mackerel)	Gueguru (grunt)
Bagalou (cabio)	Crouper (grouper)
Yamura (barracuda)	Bugancha (bonyfish)
Haba (tarpon)	Gushalele (rock fish)
	Enegu (jewfish)

Fishers operate in waters close to the cayes, which are surrounded by reef clusters, that normally supply ample fish feed. Alligator Head, Coco-plum, and Sand-fly Cayes are some of the better areas. In the Inner Channel<sup>v</sup> one has to know where the rocks are submerged in broken reef patches, also called *bajos* by the fishermen. Because the depth may be more than four fathoms, one may not be able to see the rocks. But there are ways of locating them. With some experience, one can feel the current that they generate on the surface. One can hear them tingling, especially by putting an end of the paddle by the ear. One can feel the resistance on the tip of the anchor as it tangles among rock fragments. Finally, one would have marked their location using triangulation, where special features of the landscape are prominent, such as hills and buildings.

In waters with depths of four and more fathoms one should know the relative location of fish within the stratification of the sea, as some are closer to the surface than others. In Table 4 there is a list of fish found according to the depth of the waters.

I was fortunate to gather some information about one of two bajos that my informants frequented. One that they rarely use is very deep, reaching up to 13 and more fathoms and is located further in the Inner Channel. It is called *Leandorugu*. The other, the one which they more often use, is *Merinerugu*. They describe it as being in the middle of the Inner Channel, going straight east from the Holy Ghost School building in the southern part of Dangriga. It is deep enough - between 7 and 10 fathoms – to allow cargo boats to go over it.

*Merinerugu* measures about one kilometer in length following a roughly north-south orientation and is 10 to 15 meters at its widest. It is broken into six discernible parts, each with its own distinctive bottom (see Fig. 2). Coming from the south the bottom of the first patch is covered with sea grass. Appropriately the name in Garifuna is *Gawamurugu* (place for sea turtles) because of the abundance of sea grass. Manatee are also found there. The second part changes to be more loose sand at the bottom. The name in Garifuna is *Imahesrugu*. The significance of this name was not known by my informant. There one catches in season *gawachu*,<sup>vi</sup> (a type of shad), stone bass, and mutton snapper.

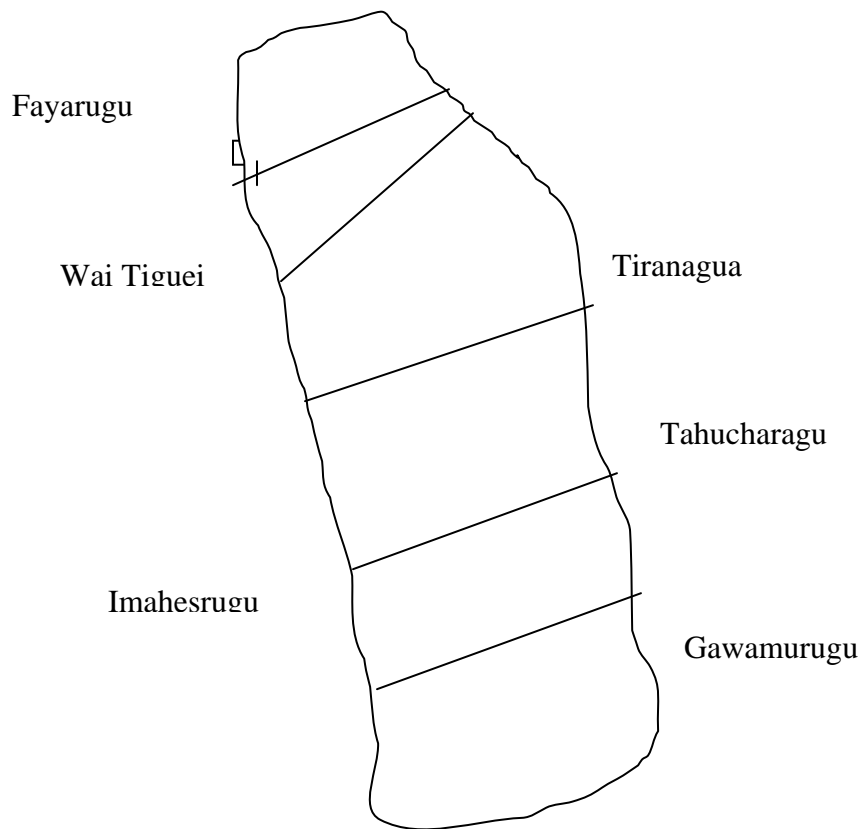


Fig. 2 Schema of the Configuration of a Bajo

There follows a third part covered mainly by mud called *Tahucharagu* (breaking apart). It is a good place for *gulilawarou* (jack) in November and December. The fourth part is *Tiranagua* (somewhere in the middle part). It is known for its jagged rocks, that provide good ‘hiding’ ground for fish. I am yet to collect information about the material at the bottom and the species normally caught there. Next there is a small area called *Wai Tiguei* (“he eats big”). The last part of Merinerugu is covered with gravel. It is called *Fayarugu*. The name came from a well known fisherman in town with the nickname

*Faya*, (Fire in English), who died some years ago.<sup>vii</sup> On any day a few fishers are found on Merinerigu. They call to each other to come to spots where fish are more plentiful.

## **Fish Sales**

I did a survey of the approximate amount of fish sold in the Dangriga Market over the period of a week during the month of October, 2003. On any one day there were about 300 to 400 pounds of fish available. The ones most often sold were snapper, grunt, mackerel, jack, snook, tarpon, and barracuda. Fishermen also sold at other parts in town, for which I could not get any estimates. There were two main types of fishermen. One consisted of the 'long-shore' fishermen, whom I have just described.

The other category of fishermen produced larger quantities. Because they used gill nets, they could time their arrival to coincide with the busiest periods in the market, usually between 7:00 and 9:00 in the morning. They sold to middle-men, who then retailed to buyers in the market. They might also sell in bulk to others to take out of town to retail. These fishers were mainly recent Ladino immigrants from the neighbouring countries of Guatemala and Honduras, who had previously come as migrant labourers in the banana fields in the southern part of the Stann Creek District. They traveled in fiber glass boats powered by outboard motors. There were about five men in this category and worked as family groups.

There was a third category of fishers, who caught mainly lobster and conch to sell to their co-operatives. Occasionally they might go out to catch scale fish using mainly gill nets. Because their main source of income came from selling to their institutions, they rarely serviced the town market. There were about ten in this group and consisted of both Garifuna and non-Garifuna men.

Apart from the above groups that sold to the market buyers, there were about ten other fishermen, who worked mainly as guides for tourists in the offshore cayes. Most of these were non-Garifuna and rarely sold to the town market.

In summary the four categories of fishers totaled about 50 for Dangriga. The amount of money earned in descending order started with tour guides and went to the co-operative members, the ones catching scale fish using gill nets, and finally the ones using hook and line. The Garifuna concentrated in the last category. It was the category with the largest number of intermittent fishers. They might go if they needed fish and/or cash. They might not go, if the weather was not promising. They were usually alone in their dories but worked in shouting distance of each other. They were friends and relatives engaging in fishing as one of several social activities among themselves.

The data about catching and selling fish adds to an understanding of the people's use of their marine resources. At one level, it can be said that the position of the "long-shore" fishermen to allow others – recently arrived in their town – to surpass their contribution to the town market is not economically justifiable. They were no doubt aware of that, although I did not ask them. In fact, they demonstrate a group of part-time fishers, who seemed satisfied with what they were doing, for fishing was not their primary means of livelihood. But they do represent a type of fisher, which cannot be ignored within the range of persons, who use marine resources.

Their part-time status, however, did not prevent them from sharing much traditional knowledge, which I was able to record and appears throughout this report. Neither did it prevent them from sharing with me their impressions about the duplicity of public policy with respect to the "small" fisherman. In a casual discussion they described the use of gill nets by the other fishers, adding that they were contributing to stock depletion, especially as fish run the risk of rotting in the net before being caught.<sup>viii</sup> They further mentioned the even



greater damage that shrimp trawlers owned by fishing co-operatives were doing to their waters in destroying much marine life. Finally, they had difficulty understanding the thrust on MPA's, which they saw as satisfying the interest of tourists, while ignoring the plight of the "small" man. To sum up one said in a gloomy mood of resignation, "Well, you know, what is happening in the sea is a repetition of what had been done to the Garifuna on land. The government has allowed those with power to take away our lands and now they are doing so to our sea." This statement offers a challenge to the government and NGO's to work along with small fishers, who still show some interest and have not yet given up completely.

## Chapter 5

### Re-construction of the Wamaredu and Maciwa

During Phase 1 together with colleagues, I collected folklore about fishing practices, including methods of traditional fishing and beliefs that affect the luck of the fisherman (Palacio 2001 and 2002). During Phase 2, I was able to collect more information about methods of fishing, including the re-construction of two traditional methods, the wamaredu and masiwa. The opportunity for such engagement came from working with the community base organization Buyei Juan Lambey Institute, which included retrieving traditional knowledge as a primary part of its aim.

Before proceeding with the details of the re-construction, it is necessary to place within the literature the spotlight on traditional knowledge, also referred to as TK, more especially its documentation and re-implementation. Starting as an aftermath of the 1960s counter-culture, the high regard for TK has become nothing short of an explosion in western social science (Ellen 2000: 1-34). The following readings provide additional information (Ellen et al. 2000, Grim 2001, Johnson 1992: 317-340, and Seitel 2001) and a compilation by Langill and Landon (1998).

Although Ruddle (1994: 28-36) mentions that a relatively small amount of research on the marine resources component of TK has taken place in Asia, it has been more than in other areas, such as the Caribbean (see Ferrer et al. 1996, and 2001, Johannes 2002: 317-340, and Ruddle 1994: 28-36). Part of the reason for the focus on Asia is the extensive continuity in the knowledge and use of marine resources up to current times. Indeed, the use of western methods has succeeded only in the penetration of traditional systems in Asia. Besides, there are moments in the renaissance of TK. For example, Johannes (2002: 317-340) describes the resurgence in marine TK in Oceania after political independence, when the new states could

re-adjust to traditional methods of marine tenure without the oversight of colonial rulers. Johannes study shows the underlining power of local communities in managing their resources, a fact that is repeated in several case studies in other parts of Asia (Ferrer et al, 2001).

The Circum-Caribbean has not experienced a similar depth of interest in marine TK, notwithstanding its continuity, as we have seen in the previous section. Part of the reason is the relatively little scholarly effort given to the tribal and indigenous peoples<sup>ix</sup>, although they consist considerable proportions of the population in some countries. The studies of Coral, Hidalgo, and Palacio in Phase 2 of the IDRC-CBCRM are adding a cross-cultural perspective to the study of TK among the indigenous peoples of Belize, Guatemala, and Panama. Already, some bits of information indicate that there is much potential. In the case of the Garifuna, Taylor's 1949 ethnography of Hopkins found that there were names for 45 seawater and 6 freshwater fish species (1951: 59-61). Besides, he was able to show that many of the names were similar to those used among the Caribs in the Eastern Caribbean, further showing that the Garifuna affinity to sea and freshwater resources clearly goes back to their times in St. Vincent.

The efforts at revitalizing the wamaredu and masiwa came from my own ethnohistoric orientation to TK as well as a developmental interest. The effort was experimental and done on a pilot basis to see whether the technologies could work and whether they could be replicated, if successful. The question of ethnohistoric origin became a starting point but I soon found that more significant for research was not where technologies started but the empirical application of ideas and hunches in response to unfolding problems or, in other words, going through the process of trial and error and finding concrete solutions to problems almost on a daily basis. The masiwa (see Fig.3) is a weir that not only the Garifuna but other Belizeans and Caribbean peoples use. Earlier the

Garifuna had used arrow-reed and wild cane as material (Taylor 1951: 59) and had targeted whatever could be caught in shallower waters. We used wire as the material and targeted crabs (*Callinectes Sapidus*).

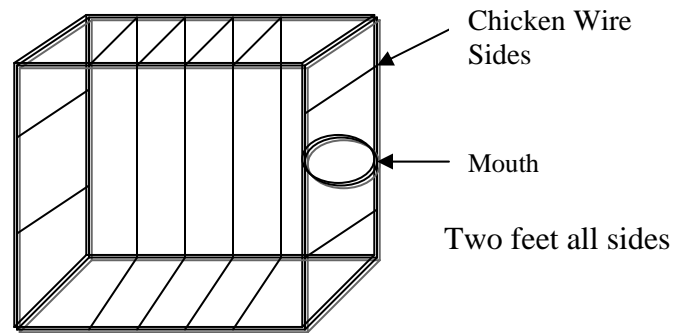


Fig. 3 The Maciwa

In terms of origin, the question for the wamaredu is moot. It falls into the category of weirs called set nets or fixed gear<sup>x</sup>. There is a description of different kinds of set nets found in Japan (Inoue et al. 2000), where they are used extensively. Set nets are also similar to bag nets used in many parts of the world (IK Worldwide April 2003:2). Our Project master-fisherman Mr. Robert Mariano did not know all of this scientific fishery information when he had mentioned the wamaredu to me while we were working in Phase 1. He told me that he remembered older men talking about it – using the Garifuna name. He described it as a rectangular crib-like structure measuring about two meters square that was planted at the mouth of rivers and creeks, using mangrove sticks to breed fish. When I asked older men about it, only a few had vague recollections. Craig (1966: 79-80) mentions two structures he found among the Mestizos in northern Belize, that are similar in structure and function to the wamaredu. They are the *rama* and a heart-shaped weir that was originally imported from Canada.

Planning the details of the masiwa and wamaredu started while drafting the project proposal for Phase 2 of the IDRC-CBCRM. According to the plan, both would generate biodiversity in an area where there was not any catching of scale fish anymore but still some catching of crabs. The area is located a short distance north of the pier in Dangriga. From the pier women and children catch crabs to sell as well as for home use. Within an hour in a morning during August, 2003 I observed one woman catching twelve crabs, using a weir made out of string. With two types of weirs – the wamaredu and masiwa – targeting different species, we assumed that there would be attractions to the area for a wider variety of biota as feed.

Secondly, according to our plan with BJLI, both would complement the Garifuna Village as a tourist attraction. Located fifty meters from the beach, the wamaredu would be accessible by a boardwalk from where visitors could watch the fish within the enclosure. Having seen them, visitors would be tempted to place orders in the diner that would be part of the Village. Visitors could do the same to the crabs being caught in the breakwater. In short, both technologies would be beneficiaries of reconstituted TK located at the juncture of the coast and the beach ecosystems, which would be converted into income generation by a community base organization.

For the wamaredu the plan called for the use of botan posts, plastic chicken wire, tying wire, and felt. The botan posts would provide the main foundation, spread at intervals to form the outer perimeter of the structure. Two layers, one of plastic chicken wire and the other of felt materials, were tied to the posts to be the walls of the wamaredu. Both allowed the seawater to permeate through the walls but the tiny pores of the felt acted as minute nests where biota could attach themselves. The biota are called

*wamurebedu* in Garifuna, hence the source of the name for the structure. The term is usually used in the household to refer to fungus that grows on food items, or for morass that grows after a few days on pieces of wood that floats in the sea.

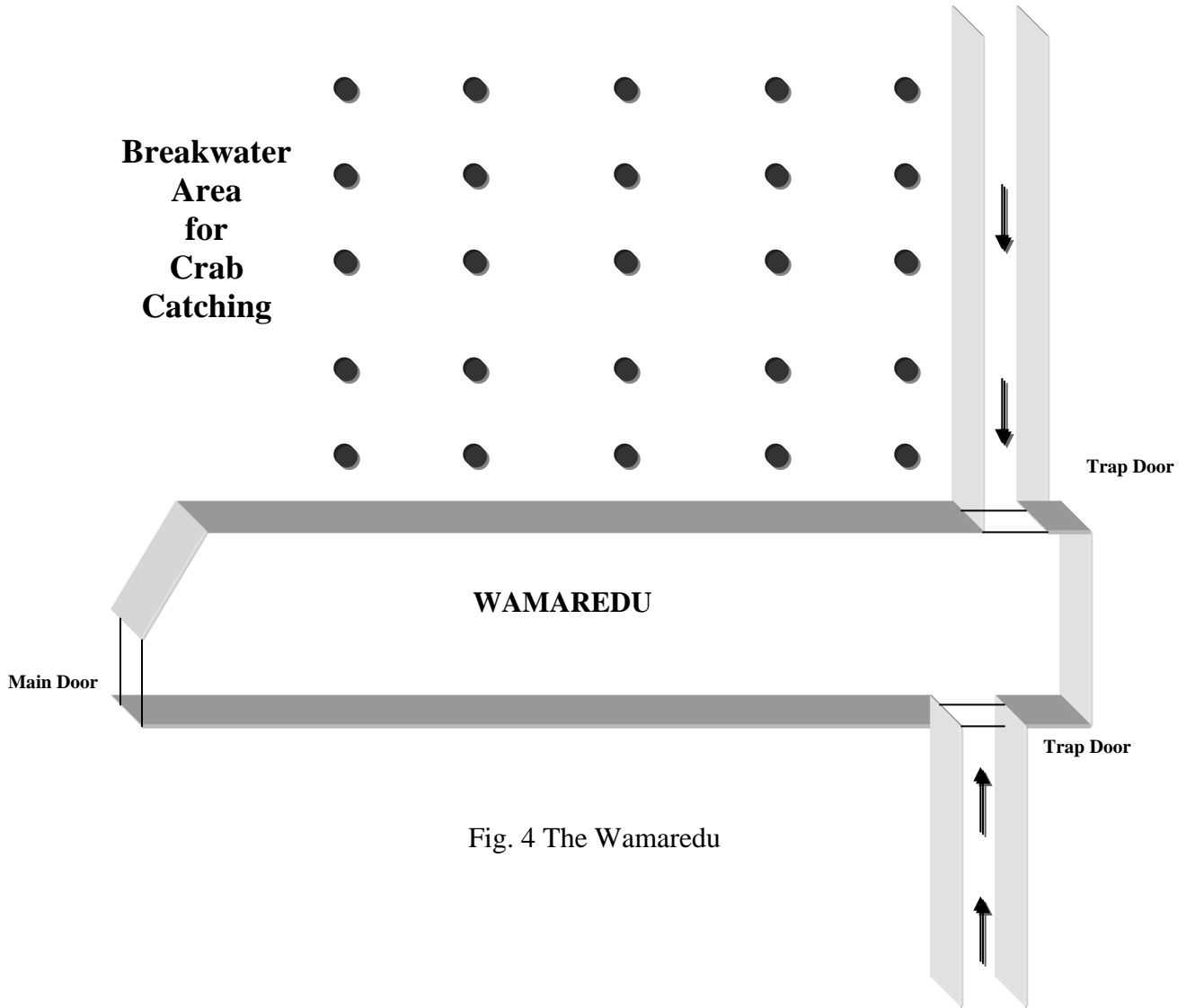


Fig. 4 The Wamaredu

The concept of the wamaredu included a breakwater to the east, which would lessen the force of the waves. It appears in Fig. 4. It consisted of botan posts spread out. Additionally, our plan had been to grow seaweed in it to increase biodiversity as well as becoming an income generating activity. We could not do the seaweed breeding because of discouragement from the strong waves and the additional time and money that would

have been needed. In the end, we found out that the breakwater limited the force of waves, that became noticeable in the lessened erosion of the beach within a few months.

Credit for intuition on the basic principle of the structure, namely facilitating nature's regenerative growth process, goes to master-fisherman Mr. Robert Mariano. Making sure that the structure remained as a friendly host for the subsequent phases leading to growth from microbes to fries to bigger fish at higher levels of the sea food chain severely tasked Mr. Mariano's adaptability. Actually, the tasks became a full blown process of trial and error together with the ingenious response to problems often food among artisanal fishers.

The first lesson that we learned was that size of the structure should not be too large. The question how large was large came even before we finished putting together the structure. The construction took place in February 2003 during the time of northerlies, which were unusually frequent and strong that year. The strong force of the waves shook our posts pulling out several. Although the area was close to the beach, it was unsheltered and received the full brunt of the waves crashing forward. We had not calculated the power of such destructive force. Actually we had driven the posts into the seabed manually, standing on a makeshift platform and hammering them into depths of a half a meter. To salvage the experiment we abbreviated the size of the structure from being 20 meters long, 10 meters wide, and two meters in height to being only 3 meters long by two meters wide. Getting mechanical help to drive the posts, which would have been most appropriate, was beyond our budget.

By March 2003 we had finished the construction of the re-designed wamaredu. Although the frequency of storms had dropped, we had to continue repairing the walls

almost on a daily basis. On the other hand, nature had already started the re-generative process. Within a period of six weeks, the biota on the posts and felt were already visible. Besides, fries were nibbling on them. After an additional six weeks the algae were reaching some three centimeters in height; a few eels were swimming around together with small snappers and grunts. The numbers steadily increased over the nine-month life of the Project.

The other necessity that we had not sufficiently factored into the planning was the intensive monitoring that the wamaredu needed. The effects of wave action were bad enough. Another problem that we had to guard against was the poaching of its content. Proximity to the beach meant that persons saw what we were doing. They became aware of the availability of fish within the structure and started helping themselves, breaking down the walls to reach the fish. Having BJLI, our counterpart community base organization, work with the neighbouring community to enable them to assume ownership of the structure was a task that we had not sufficiently planned.

By May 2003 we were prepared for the next phase of our effort to re-construct fish harvesting methods. This was placing masiwas within the breakwater east of the wamaredu. Traditionally the masiwa is part of the several basketry implements that the Garifuna make to use within the household. Strips of wild cane were used to give it support. Besides, broken pieces of plates, glass, and conch shell were placed into it so, as shiny objects, they could attract the attention of the fish. In our use of the concept we changed the traditional materials, the species, as well as the type of bait.

Again, we remain beholden to Mr. Robert Mariano for the re-designing of the masiwa. He used chicken wire for the walls, each measuring 600 cm. long, 600 cm.



wide, and 300 cm. in depth. At one end there was an opening that sloped inwards to make exit difficult for items already caught. The target was crabs and the bait included bits of poultry meat. Mr. Mariano did ten of these weirs that we placed in the breakwater, tying them to the posts for support.

As the combined sea harvesting components of the Project took shape, the monitoring took its own discernible pattern. The person doing it came twice a day, in the early morning and late afternoon. He checked the walls of the wamaredu and did minor repairs. He also observed what was within the structure. He cleared the masiwas of crabs and placed fresh bait. This went on for four months. In Appendix 3 there is a table of the catch that he recorded over a two-week period from October 14 to 31, 2003. The record cannot be taken as accurate, since there was no back-up supervision for the man doing the monitoring. He was most probably not recording all the items in the two structures. I subsequently heard that he was selling crabs in town caught from the masiwas, which he would not have recorded.

There was another aspect of the monitoring that we developed in collaboration with the Fisheries Department from Belize City and the Ecumenical High School located in Dangriga. With the support of Ms. Beverley Wade from the Fisheries Department her staff member Mr. Ramon Carcamo drafted an instrument how to study the anatomy of a fish and identify species. The Principal of Ecumenical High School Mr. Francis Humphreys together with fourth form biology teacher Ms. Jeremy Cayetano agreed to have students carry out the exercise on fish harvested from the wamaredu. Unfortunately, difficulties in coordinating the availability of the students with our on-site monitor resulted in this part of Project not being done. An opportune time to do it was in

December, when the students were busy with examinations before leaving for vacations.

There is a copy of the Fisheries Department instrument in Appendix 4.

## Chapter 6

### Spirituality

Garifuna spirituality consists of several belief systems and rituals that they practice for their well-being as well as to satisfy the *ahari* (spirits) of the ancestors. The *dugu* is the ceremony, which marks the highest form of their spiritual expression through its large scale, both in terms of the numbers of participants and the time duration it takes. In the former there could be scores of persons arriving from places as far apart as Central America and the United States of America. In the latter the actual ceremony goes over the period of two to three days but the preparation to acquire the prerequisites and secure the participation of far-flung relatives takes several months beforehand. The objective of the ceremony is to placate one or more ancestors with dancing and offerings of food and drinks.

In many rituals of the Garifuna, including the *dugu*, the sea has heightened significance. The abode of the *ahari* is *Seiri*, which is located across the deep sea, where it meets with the horizon. When a spirit possesses someone, who goes into trance<sup>xi</sup>, the person may roll up the lower part of his clothing as if he/she is arriving after a sea journey. The spirit may confirm its arrival by recounting the travails it encountered on the seas. Many of the songs in the *dugu* refer to traveling across the sea. In describing the words of *dugu* songs, the highly acclaimed Carib/Garifuna linguist Douglas Taylor remarked, "It is a striking feature of many of these songs, that they make symbolic use of a number of nautical terms, comparing the movements of the dancers to the maneuvers of a dugout canoe at sea." (1951: 121).

The symbolism reflects the importance of the sea to the daily life of the living. All their traditional communities are located literally on the beach of northwest Central America from Nicaragua to Belize (Davidson 1984: 13-36). Although no longer the case after the building of roads during the last few years, the sea had long been the virtual highway they used extensively to travel from one village to another or further afield in search of wage labour. Besides, a large part of their protein needs come from the sea, adjoining wetlands, and rivers in the form of scale-fish, shellfish, and game meat. It is not surprising, therefore, that seafood makes up a compulsory part of the food offered to the ahari during the dugu. Harvesting the seafood is an essential component of the dugu ceremony.

Those involved in the harvesting make up part of several groups of persons, who have specialized functions within the dugu complex. Others include the buyei with his *hiuraha* (spirit medium (s)); special assistants to the buyei; older men and women who can interpret the verbal messages given in archaic Garifuna by the hiuraha; women who cook the food and do other household chores; the butchers who kill the hogs and clean the carcass; the singers; and drummers.

I describe the sequence of main events that take place in the adougahani trip, as the captain himself would report in the first person. The main perspectives are the following: the use of marine resources, the knowledge of the captain, his strong belief and that of his passengers in the ahari, the social organization within the group, and the performance of rituals. I collected the information from interviews with five men and women with extended experience in several trips. The captain's account is a composite from data forthcoming from my informants.

“My name is Luis Zuniga and I am 72 years old. I have been doing dugu-related activities since I was 17 years old in Livingston, Guatemala. I first became aware that I had a calling (i.e. gift) in matters of Garifuna spirituality at the age of 17. It happened like this. There was a dugu taking place in a small community located on the beach between Livingston and Puerto Barrios. The sea was so rough that many older men could not manouver their sailing dories to reach this village. I tried and although I was much younger, I was able to land my dory on the beach without capsizing. Some older men said that it was a sign that I had the ‘calling’.

“However, it was not until I was 40 when the Dangriga based buyei Sarah Gonguez formally asked me to take up my ‘calling’ by being captain on several adougahani trips for dugus, in which she officiated. By that time I knew the coast of Dangriga and the cayes, and the fishing grounds like the palm of my hand. I found out afterwards that such knowledge would be indispensable in leading adougahani trips.

“The captain has onerous responsibilities during an adougahani. To a large extent the success of the trip – namely catching up to four and five pigtail bucket loads of fish depends on me. Apart from knowing the coast, I have to have complete belief in the instructions of the ahari. I have to know certain prayers that I have to recite at given moments. I have to use strong rum given to me by the buyei to sprinkle in the shape of a cross at given moments, such as starting to fish. The buyei provides me with two flasks of strong rum. One is to use on the sea and the other on land<sup>xii</sup>. At times the buyei will give me another flask, which I am to use as last resort, such as in moments of extreme crisis during a storm. That is why you never hear of any mishaps affecting the *adougahatinye* (the persons taking part in the adougahani), although the trips take place

during the period of stormy weather from June to November. Adougahani is a special event requested by the ancestors and they always make sure that you accomplish their mission, if you believe and follow their instructions.

“The adougahani takes place from Friday to Sunday, to return to land Monday morning in time for the *abelagdahani* (the formal entry at the beginning of the dugu), which takes place around 8:00. The numbers of persons selected to go on the trip depends on the duration of the dugu. If it is a two-day affair then there are two men and two women. If it is to last three days, there are three women and three men. The numbers, therefore, depend on the amount of work that has to be done.

“The selection who should go on the trip is made by the ahari as passed onto the buyei. One set of persons consist of men and women, who have had experience in going on such trips. These are the “regulars” and would have had the ‘calling’. The captain, the man responsible for the overall party, is included in this group. On the other hand, at least one man and a woman in each dory, has to be a lineal descendant of the ancestor in whose honour the dugu is being held. Participating in the latter group is at times problematic for many younger persons, not having had any experience with traveling on the sea nor with direct involvement in ancestral rituals. At times the buyei and the spirits have to use moral persuasion on some individuals to eventually agree to go.

“By about 7:00 p.m. on Thursday all the participants of the trip have gathered in the dabuyaba to start their preparation for the trip, which will leave very early the following morning. There is some singing, drumming, and dancing taking place not specially for the benefit of the adougahani group but they could participate. Simultaneously, women are cooking food items that the party will take on the trip.

Gradually, all the items to be taken are placed at the center of the dabuyaba. The following is a list of the food items – bread, beans, rice, sugar, pigtail, kerosene to light fire, lard, water, salt, onion and other seasoning (but not garlic as it is proscribed from all dugu rituals). One of the assistants to the buyei blows *buya* (smoke from a ritual cigar that is used in the dabuyaba) on them and also sprinkles them with some strong rum.

“By 4:00 a.m. all the participants have awakened to get last minute instructions from the buyei as well as collect their rations. There is no gender distinction as the food, rum, cigarettes, are divided. The rum is given mainly to sprinkle, although one is allowed to drink little bits medicinally, as, for example, on becoming wet and cold during a storm. The buyei reminds them one more time of the sacred nature of their mission; that they should be serious at all times; follow the instructions of the captain; that he will know at all times what the party is doing while away. He blows *buya* over them individually. As they leave to go to the dories, one or more of the women may go into trance possessed by the spirit to be honoured in the dugu. Before going out into deeper seas, the dories travel short distances in front of the town making the sign of the cross by going to the four cardinal points. Gradually they get lost in the early morning haze as they go eastward toward the cayes.

“Beforehand I would have selected on which cayes we will set up our base, from where we would go to do the harvesting. The first thing that I do is to sprinkle the spot of our landing with the rum that I received from the buyei especially for the land. The other bottle, which is for the sea, I leave to sprinkle on the sea when we go fishing. As we land, the work starts following strict division of labour by gender. The men do whatever cleaning of the site is necessary, using their machetes. They also collect firewood and set

up the fire hearth. On some cayes there are make-shift camps that can be easily rehabilitated, while at others even such rudimentary shelter may not exist, forcing the men to build something temporary. The women, on the other hand, do the unpacking and get the food ready. Shortly afterwards the men go to do the first fishing session to catch for the first lunch, as well as to be salted and stored for the return trip.

“After lunch, there may be a little siesta before the men go out for the second session of fishing, in which the women may also join. In each fishing session the same routine applies. I sprinkle the sea with rum and say some prayers. I also follow instructions where to drop anchor. The instructions come in different ways. They may be specific instructions given by the buyei before leaving. They may be dreams that I have had the night before. They may also be intuition and dreams of some members of the party. I try to navigate among these various sources of instructions, before making a final decision, for ultimately we are making the trip solely for the benefit of the spirits. I have heard of cases where adougahani parties return without catching anything. The result is the most despicable act - that the persons sponsoring the dugu have to buy fish from the market for the ceremony. This has not happened to me because of my strong belief.

“In the early part of the first night we may go out to do our third fishing session, depending on how I feel about the luck that we may have. As you know, some fish bite better in the night than during day. Then there is the matter of tide. They bite better when the tide is rising. So, all of these factors help to determine whether we will go out in the night. But if we do not go in the night, we would have done so twice during the first day; and we could have up to three bucketfuls on that first day.



“On the second day we follow the same routine as on the first, doing possibly three fishing sessions, catching enough to eat as well as to salt. Also by the second day the routine of the division of labor by gender is in full swing. The women do the usual tasks of cooking and housekeeping. They clean the fish and salt the ones to be taken back to land. Both men and women exchange information about their experiences of the day, making reference to coincidence between their intuition and actual occurrence. In the evening they chant some sacred songs before falling asleep. The men join with the singing or tell jokes about previous trips.

“The focus of attention for the third and final day of the adougahani is catching items that do not need to be salted for preservation. These are shellfish, such as *huru* (blue crab), *harouru* (ratty), *pangu* (horse conch), *giwa* (whelk), and *goosa* (hairy crab). Whelk is a special delicacy that the ahari love and which is found in every dugu. Because Columbus Caye and Long Caye are particularly good for shellfish, I usually arrange to make a long stop at either one or both. There are some differences in harvesting on land from on sea. Firstly, I sprinkle rum that the buyei had separated for the land and say prayers that are for the land. Secondly, there are hazards that one has to watch carefully. They include snakes, tarantula, scorpion, and biting insects that swarm at you as you land. Finally, catching hairy crabs can be a dangerous undertaking. One pushes one’s hand into the hole reaching up to the shoulder length, jerking out the crab quickly to drop into a bag held open by a partner. Fortunately, I have not seen anybody get hurt doing these activities, apart from getting a few nicks from crab claws.

“The ending of the third day Sunday marks the time to return to land. Depending on the weather, I may decide to return late Sunday or early Monday morning. If we

arrive Sunday, we do not enter the dabuyaba until the following morning. By the time I have decided to break camp, the women have packed all the fish as well as the left-over items that we had brought. The fish that we usually catch are the following – snapper, grunt, mackerel, kingfish, and jack.

“Before proceeding with the return trip I need to fill out some details that add some realism to the above description. An essential part of the adougahani is the exercise of full control by the ahari over both human and non-human phenomena. Earlier I explained how reluctant relatives have to join the travel party, even if they are scared to do so. A similar kind of control is cast over non-human beings. Sometime ago in a village in Honduras I saw two baboons, a wish-willy (a lizard looking animal between the size of an iguana and the ordinary lizard), and a chicken hawk enter into the dabuyaba, become tame and were easily captured. In that part of Honduras in earlier times the Garifuna had eaten those items and the ahari willed that they deliver themselves. In Belize I have heard of manatee – also a delicacy among the Garifuna in earlier times – together with sea turtles tamely deliver themselves to be caught.

“The reverse happens when fish do not allow themselves to be caught. This example came a few years ago here in Dangriga when one of the members of the party brought along a gill-net to use to catch fish. While those using hook-and-line were catching, the one with the gill-net did not catch any of the usual fish. What he caught instead were sharks. During the dugu the ahari revealed through a person-in-trance that they do not like gill-nets because they are destructive.

“The power extends to inanimate things. At one time Buyei Sarah threw a glass looking ball into the sea as we were leaving land. She remarked that we would be

meeting the ball on the cayes. Surely when we arrived at the first caye the ball came bobbing up to meet us. I mentioned this to her on our return, she said that she was aware of it, as she is about all things taking place during the adougahani, although she remains on land. She added that the ball had been helpful in protecting us from a storm that struck on the way.

“There are many other things that happen, which one cannot explain. A year ago during one such trip, all of us were awakened in the night by a loud sound and a shaking, as if the caye had been struck by an earthquake. All of us got scared. At that moment one of the women said that there was need to keep the fire burning all night. She had been warned by the spirit in whose honour the dugu was to be held that he wanted a fire lit all night so he could see where the party was. We re-lit the fire and there was calm for the rest of the night. These are the kinds of incidents that add mystery to the adougahani, as indeed to the whole dugu ceremony.

“Finally, let me say that I cannot adequately recount to you the tremendous sacrifice that an adougahani trip could be at times. The flies can be incessant in their biting and wining by the ears; there could be bad storms, when everything one does is under rain and heavy winds. Besides, there may be bad luck with the fishing. Members of the party may be miserable and difficult to get along with. Because the buyei remains informed about all that is taking place within the party, he may request certain songs to be sung at the dabuyaba on land that can uplift the sagging spirits of the group. During the entire trip there is a close association between what takes place in the dabuyaba and what takes place in the adougahani.”

## **Chapter 7**

### **Summary and Conclusion**

In its conceptual framework this report started with the statement that the findings would be on coastal resource practices not taking place within a given management regime. The report has succeeded in describing several coastal resource practices that demonstrate the extreme dedication of the Garifuna to the coast. Further comparisons, beyond the scope of this study, will show similarities with other peoples within the Circum-Caribbean and other parts of the developing world.

Despite a delay in introducing a coastal resource management regime in the Dangriga area, Belize is acquiring much expertise in different kinds of management systems (see McField 2000). Indeed, we can no longer keep our eyes closed to the inevitability of coastal resource management taking place all along the coast. In conclusion, I can show how this report has indicated possible weaknesses and strengths that will accompany the introduction of coastal resource management to the Dangriga area.

As in all cases of marine resource management, the ultimate aim is to increase productivity while mitigating damage to the physical environment. The extent to which the social environment disposes a community for coastal resource management came forward in a description of the larger social and economic backdrop existing in the Stann Creek District in the second part of this report, entitled “The Setting”. The review shows that there has been a neglect of the northern part of the District, where Dangriga is located, in contrast to the thrust to develop the southern part. The result is a prevailing

economic depression that looms over the town together with a proliferation of social ills. There is non-validation of TK, the unplanned exploitation of marine resources especially by fishers not originating within the district, the out-migration of trained youth, and ethnic discrimination against the Garifuna majority. In short, there are minimal positive incentives to encourage members of the community to include marine resources within their economic well-being, much less to do it as a community enterprise.

On the other hand, a description of the relative success of the re-application of the wamaredu and masiwa in this Project shows a potential that a community base organization could engage in, using as cultural capital its TK. A similar statement can be said about the TK that still exists about fish habits and the awareness of the underwater morphology of a bajo, in terms of the concentration of certain species. Their TK has been with the Garifuna from the time of their formation in St. Vincent and has been reinforced during their 200 years of living in coastal communities in Central America.

The depth of TK contrasts sharply with the limited involvement of the Garifuna in fish sales at the Dangriga market, as well as the difficulties BJLI had to conform to a project driven management orientation. These are not inherently production problems. They are problems in value systems that could be overcome with time, intensive training, apprenticeship of BJLI members, and the internship of select persons with BJLI.

The description of adougahani brings forward two observations about the management of coastal resource exploitation that would be appropriate for application in a community management regime. One is that Garifuna men and women can use their traditional gender-based division of labour to engage in fishing on an intensive basis for periods of up to three days. While the “long-shore” fisherman goes to fish for only a few

hours during one day and may not go again for a few days, in the adougahani men and women do sustained harvesting for more than one day. To maximize their harvesting they salt some of the fish. They also time their schedule to catch shellfish on the last day, as they do not demand salting. The returns of the harvesting are for more that what is taking place during non-adougahani.

The other contribution of the adougahani is to place fishing within the cosmology of the Garifuna. Fishing is not only an ordinary mundane activity; it may be built into the intricate web of relations between humankind and the spirits. Without accessing seafood, the dugu cannot take place and the spirits cannot be placated. If the spirits cannot be placated, the debt that the living has toward the ancestors increases to the point that they can visit ill health and misfortunes open their descendants to an unbearable degree.

The equation of the link between harvesting seafood and the well-being of the living and the dead is so vital that the spirits take away from the living full control over the adougahani process. As a result, the functions of humankind become less important than those of the supernatural. Humankind has to learn that it is only one kind of living being and that it does not have full control over the order of the world. Unlike the popular belief in western thought that man controls the physical environment, in the adougahani the spirits deliberately reverse this thinking. The transcendence from the mundane to the metaphysical makes an essential part of Garifuna cosmology. The ultimate lesson for CBCRM is for man to redouble his efforts to protect the environment, over which he does not have full control.<sup>xiii</sup>

## **Appendix 1**

## **6.5 Glover's Reef Marine Reserve**

### **6.5.1 Biodiversity and Geography of Protected Area**

The Glover's Reef Marine Reserve (GRMR) lies between 87°39'02" and 87°53'47"W and between 16°55'56" and 16°38'52"N, encompassing an area of 32,860 hectares. It lies outside of the barrier reef approximately 45 km from the mainland. GRMR is one of the largest marine protected areas under direct management of the Government of Belize's Fisheries Department. It comprises the entire Glover's Reef Atoll, one of the three atolls in the waters of Belize. The area has centuries of history interesting both for shipwreck incidents and for pre-Columbian use.

The Belize coast is stratified into northeast-southwest submarine escarpments, with Glover's Reef lying on the third shelf, heading north to south. Interestingly, the atoll has three channels on its windward side. The atoll has 700 patch reefs within the inner basin and has an outer shelf that is 2 km at its widest point. The GRMR also includes six well formed cayes in the southeastern end of the atoll: the Northeast Caye, Long Caye North, Long Caye, Middle Caye, Southwest Caye I, and Southwest Caye II. All the cayes are formed from coral rubble and sand.

The cayes are important nesting sites for the Loggerhead, Hawksbill, and Green Turtles. The area is also home to the Green Iguanas and to a nesting colony of the White-capped Brown Noddy (*Anous stolidus*), particularly in Southwest Caye II. Other birds found here are Ospreys, Yellow-crown Night Heron and Little Blue Heron. Forty species of plants have been recorded for the Glover's Reef Marine Reserve with some species remaining unidentified. Some of the commercially important fish species harvested within the Marine Reserve include the Mutton Snapper (*Lutjanus analis*), Hogfish (*Lachnolaimus maximus*), Queen Triggerfish (*Balistes vetula*), Nassau Grouper (*Epinephelus striatus*), and the Black Grouper (*Mycteroperca bonaci*). Because the area has also been identified as an important Grouper spawning ground, the Fisheries Department places it high on its list for conservation concern. Southwest Caye I is also known as an important habitat for Bone Fish.

### **6.5.2 Legal Status, Establishment and Management**

The Glovers Reef Marine Reserve was established under the Fisheries Act with the signing of Fisheries Order, Statutory Instrument No. 38 of 1993. The schedule describes the boundaries of four zones - a General Use Zone, a Conservation Zone, a Wilderness Zone, and a Seasonally Closed Zone.

### **6.5.3 Management of the Glover's Reef Marine Reserve**

The Fisheries Department is responsible for the management of the area and maintains management presence through a manager/biologist, and two rangers. The staff has been equipped with a boat to use in their capacity as enforcers of the fisheries legislation. The facilities available to the staff also include a house for the rangers and the biologist. The Fisheries Department is expected to receive funds from the GEF-UNDP/CZMAI for the management of the Marine Reserve, specifically to cover staff cost and for the purchasing of some additional equipment.

There are plans to update the management plan for the Glover's Reef Marine Reserve. The Wildlife Conservation Society maintains a research station on Middle Caye and is involved in monitoring the coral reef.

The remoteness of the area presents one of the biggest difficulties in the management of the Glover's Reef Marine Reserve. The reserve received a "minimally satisfactory" score (the lowest score) in a management assessment of the marine protected areas conducted by McField, 2000. This was attributed to the centralized structure of management for the reserve, which is based at the Fisheries Department.

There is also the need to install marker buoys to clearly delineate the area and to demarcate zones for the users of the reserve. Fisheries Department has expressed the need for greater public awareness of the reserve. It is their hope that heightened awareness will increase support for their protection efforts in the Glover's Reef Marine Reserve. After consultations with fishers who traditionally use the area, the Fisheries Department recently adjusted the Conservation Zone in an effort to accommodate the livelihoods of these fishers.

The Fisheries Department has established a working relationship with the Wildlife Conservation Society (WCS) to carry out research work primarily within the Glover's Reef Marine Reserve. The Wildlife Conservation Society owns the lease for Middle Caye and owns the facilities which house the reserve management staff on Middle Caye.

The Glover's Atoll Islanders Group has expressed interest in entering into a co-management agreement with Government of Belize. The current management plan was drafted in 1988 and currently needs to be updated.

#### **6.5.4 Resource Use and Trends**

##### **Traditional Use**

The Glover's Reef Marine Reserve has documented the existence of Mayan archaeological sites on the cayes. This area is believed to have been a fishing community and a transshipment point for trade in the pre-classic world of the Mayas. The area has been a traditional fishing ground for the Garifuna community of Hopkins. Although it is known that fishers currently visit the area during the conch and lobster seasons, there is limited information on current users of the Marine Reserve.

##### **Current Use**

The communities of Hopkins and Placencia currently use the area especially during grouper spawning season. The area is currently visited for its Bonefish and is also a popular site for sport fishing.

There are several landowners for the various cayes, including Michael Feinstein and the Belize Port Authority at Southwest Caye 2, the Usher Family at Southwest Caye 1, Fred Dodd at Long Caye North and Long Caye, Cabral/Lamott at North East Caye and the WCS at Middle Caye. These land holdings feature two resorts within the Marine Reserve and the site reportedly receives over 1,000 divers annually. Yachts that target other species for sport fishing such as Blue Marlin, Sailfish, Tarpon, and Permit also frequent the area.



### **6.5.5 Threats to the Protected Area**

Coral bleaching has been recorded at the Glover's Reef Marine reserve as a consequence of global warming and hurricanes.

Overfishing and overexploitation of marine resources continue to be among the major concerns for the area.

Management has greatly improved the regulation of resources; however, it is necessary to improve the administrative procedures in order to guarantee the enforcement of the fisheries legislation and the adequate protection of the area's natural resources. Users continue to resist the conservation activities of the reserve's management, and as a result of pressures from fishers, the Glover's Reef Marine Reserve has had to undergo rezoning. Although the new zones are being used, they have not been properly legislated.

In the past, the GRMR was reputedly used by illegal fishers from Honduras who apparently did not respect the fishing regulations of Belize.

### **6.5.6 Stakeholders**

The stakeholders who use the area or have influence in the use and conservation of the area include the Fisheries Department, the Forest Department, CZMAI, the Wildlife Conservation Society, Land Owners at Glover's Reef, Resort Owners, Glover's Atoll Islander's Group, Glover's Atoll Resort, Manta Resort, representatives from the dive boat entities, Placencia Producers Cooperative Limited, Placencia-BTIA, Belize Port Authority, and Fishers of Hopkins and Placencia. Representatives from amongst these major stakeholders make up the Glover's Reef Advisory Committee.



*(Fishermen diving for conchs)*

## Appendix 2

### 6.6 South Water Caye Marine Reserve

#### 6.6.1 Biodiversity of the South Water Caye Marine Reserve

The South Water Caye Marine Reserve (SWCMR) lies about 14 km from the mainland southern town of Dangriga. The site encompasses an area of 47,703 hectares, making it the largest World Heritage Site in the Belize Barrier Reef Reserve System, and the second largest marine protected area. This site extends parallel to the coastline from Dangriga to the Placencia Peninsula and lies directly east of three rivers: North Stann Creek, Sittee River and South Stann Creek River. The site has unique coral formations and is littered with 22 named cayes. The South Water Caye lies between 88<sup>0</sup>02'22" and 88<sup>0</sup>13'21" W and between 16<sup>0</sup>55'08" and 16<sup>0</sup>38'46"N. There are many privately owned enclaves within the reserve.

South Water Caye is known for an unbroken 9km segment of exposed reef called the Tobacco Reef. The arrangement of patch reefs and faros within the site is unique to the SWCMR. Additionally, Pelican Caye within this reserve is one of the most diverse and fragile areas in the reef system. The reserve is also dotted with numerous mangrove cayes that host a number of sponges and tunicates. These mangrove cayes are also close to an exposed part of the reef.

There are extensive sea grass beds within the reserve and these serve as a prime feeding ground for conchs. Surveys conducted at the site document about 35 species of corals along with various sea fans, sponges, anemones, urchins, annelids and crustaceans, including the Spiny Lobster. About 128 species of fish have been recorded for the site including Barracuda, Tarpon, Nassau Grouper, Jewfish, Jacks, Grunts and Snappers. The species list for SWCMR also includes the Bottlenose Dolphin and the Green Hawksbill turtle. South Water Caye has also been reported as a nesting site for Loggerhead Hawksbill Turtle. The Blue Ground Range within the reserve was once a nesting area for Ospreys, but was abandoned by the birds after the site was disturbed. The American Saltwater Crocodiles have also been recorded in the area. Wee Wee Caye within the reserve also served as nesting site for the Bridled Tern. South Water Caye Marine Reserve is thus of particular importance for its high diversity of organisms.

Of 22 named cayes, some of the prominent cayes are Tobacco Caye, Coco Plum Caye, Pelican Cayes, Twin Cayes, South Water Caye, Carrie Bow Caye and Man O' War Caye.

#### 6.6.2 Legal Status and Establishment

The Man O' War Caye within the South Water Caye Marine Reserve was designated a Crown Reserve in 1977 for the protection of nesting bird species on that caye. The entire area was designated a marine reserve in 1996 under the Fisheries Act.

#### 6.6.3 Management of the South Water Caye Marine Reserve

The Fisheries Department is responsible for the management of the South Water Caye Marine Reserve. Since there are no reserve management facilities in place, the newly established management staff operates out of the Fisheries Department headquarters in Belize City. Plans are underway to construct its headquarters at Twin Cayes. The reserve currently has a manager, a biologist and two rangers. It is also in the process of acquiring equipment for the enforcement of

regulations and management activities under the UNDP/GEF grant being implemented by CZMAI

A Draft Management Plan was prepared by Coral Cay Conservation for the Fisheries Department, Coastal Zone Management Unit in October of 1993. The plan describes and proposes a General Use Zone, Conservation Zones and Wilderness Zones. These zones, however, are yet to be legislated.

#### **6.6.4 Resource Use and Trends**

##### **Historical Use**

Various Mayan archaeological sites have been identified on the several cayes within the South Water Caye Marine Reserve, giving the area significant archaeological value. The fishers from Dangriga and Hopkins have traditionally camped on the cayes and used the area for artisanal fishing.

##### **Current Use**

The fishing industry expanded the number of fishers using the area and harvesting conch, lobster and some finfish. Fishers from Dangriga, Hopkins, and fishers from as far away as Sarteneja use a combination of sail and outboard power boats to harvest marine resources. These products are sold at the local market in Dangriga and to the Northern Fishermen Cooperative Society Limited in Belize City. The marine products are stored on ice or salted if they are to be sold outside of Belize, primarily in Honduras.

The Fisheries Department obtains most of its data from catches that are sold to the fishing cooperatives. However, a significant quantity of marine resources harvested and sold on the local market is not captured in the current data collection system. In 1999, Dangriga and Hopkins had 27 and 7 registered fishing vessels, respectively, and Sarteneja had 74 registered fishing vessels out of a total of 470 registered vessels for the entire country of Belize.

Information compiled in 1993 reported as many as 43 land proprietors, with the largest land holding being 10 acres in size. There are also eight hotels listed within the area that are not a part of the Marine Reserve. These hotels receive an estimated 4,000 guests per year and guests frequently use the reef in the South Water Caye Marine Reserve for snorkeling, scuba diving, and sport fishing. Hotels on the mainland in Dangriga also use the reef within the reserve as a primary destination for their guests interested in water based activities. Because there is no fulltime on-site management, there is no accurate data of the area's usage although there is some qualitative data on local fishers' support for the Marine Reserve. However, these fishers have not had to cope with active management presence.

Of significance is the presence of a Smithsonian Institute marine research station that has existed within the reserve since 1972. This has provided substantial data on the ecosystems in and around the site.

#### **6.6.5 Threats to the Protected Area**

The threats to South Water Caye Marine reserve come from the users of the site including the tourism operations and the commercial and artisanal fishers.

Over-fishing has drastically reduced perceived marine stocks of the area.

Uncontrolled tourist activities on the reef physically damage coral and kill the coral organisms. Tourist facilities on small cayes also release sewage waste into the waters around the cayes and further into the surrounding waters and reef.

Overflow from wastewater holding ponds of citrus processing plants have been identified as a possible threat to the reefs. The North Stann Creek River empties due west of South Water Caye Marine Reserve and this runoff is composed of organic material, oil from machinery, and chemicals from the citrus and banana farms.

Other potential threats come from agriculture, aquaculture, and resort owners along the coast.

#### **6.6.6 Stakeholders**

Stakeholders include the Dangriga Hotel Owners, Land Owners within the Reserve, Tour guides, Fishers of Dangriga, Hopkins, Seine Bight, Sarteneja, Riversdale, Sittee River and Placencia, Fisheries Department, Forest Department, CZMAI, Smithsonian Institute, Wee Wee Caye Biological Station, International Zoological Expeditions, Banana Grower's Association, Citrus Growers Association, and the dive operators.

### Appendix 3

#### Schema Showing Fish Harvest in the Fish Kraal (Wamaredu) October 14 to 31, 2003\*

July	14	6 crabs 5 eels	3 grunts	
	15	5		
	16	2		
	17	6		5
	18	6	5	
	19	-	-	-
	20	-	-	-
	21	4	-	-
	22	5	-	-
	23	5	2	-
	24	-	-	-
	25	4	2	-
	26	-	-	-
	27	-	-	-
	28	-	-	-
	29	3	-	-
	30	4	-	-
	31	4	-	-

\* The crabs were caught in the traps in the backwater and the fish in the wamaredu.

# MONITORING PROTOCOL FOR THE FISH KRAAL PROJECT

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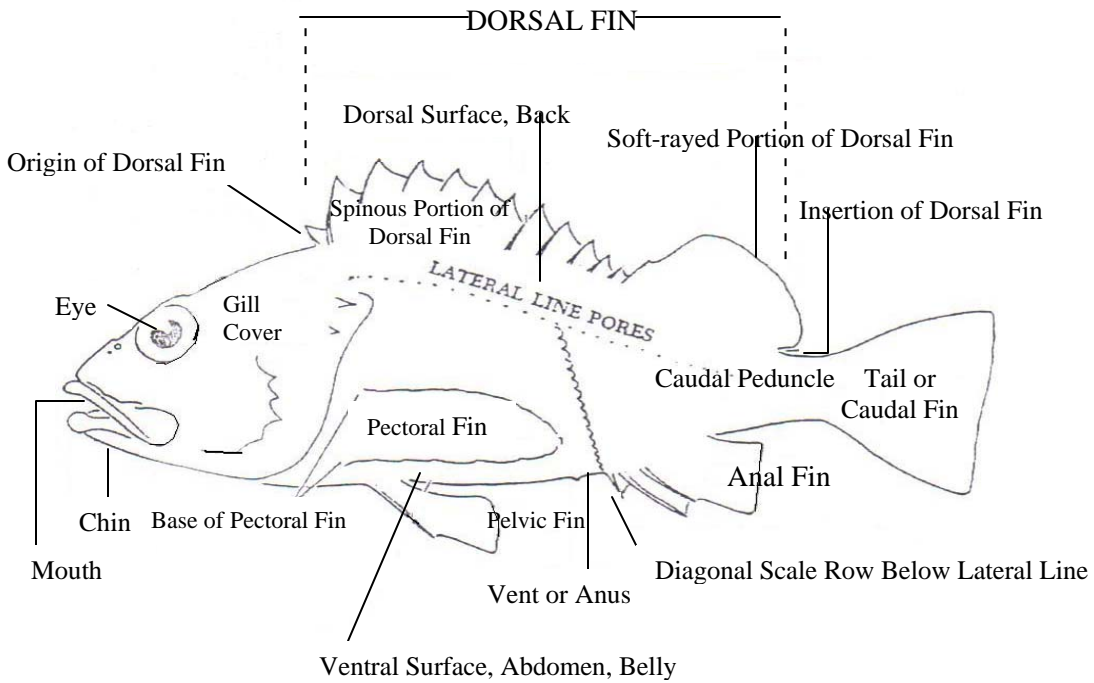
## **INTRODUCTION**

The preparation of this document resulted as a follow-up from the proposed project submitted and developed by Dr. Joseph O. Palacio under the title **“EXPLORING SPIRITUALITY, INCOME GENERATION, AND THE USE OF COASTAL RESOURCE AMONG THE GARIFUNA IN SOUTHERN BELIZE”** to IDRC-CBCRM for funding. The proposal objectives are to contribute to the alleviation of poverty in coastal communities in southern Belize. It does so by encouraging community members to engage in traditional practices as a way to increase income generation for their communities. It also introduces a marine biological investigation of the flora or fauna harvested as part of the ancestral rituals within Garifuna culture.

The Fisheries Department acts as a third partner in the project where it is charge to spearhead the natural science component of the project and maintain the Fisheries Regulations. A monitoring protocol for Tropical fishes has been developed to gather the necessary data to evaluate the performance of the Fish Kraal structure.

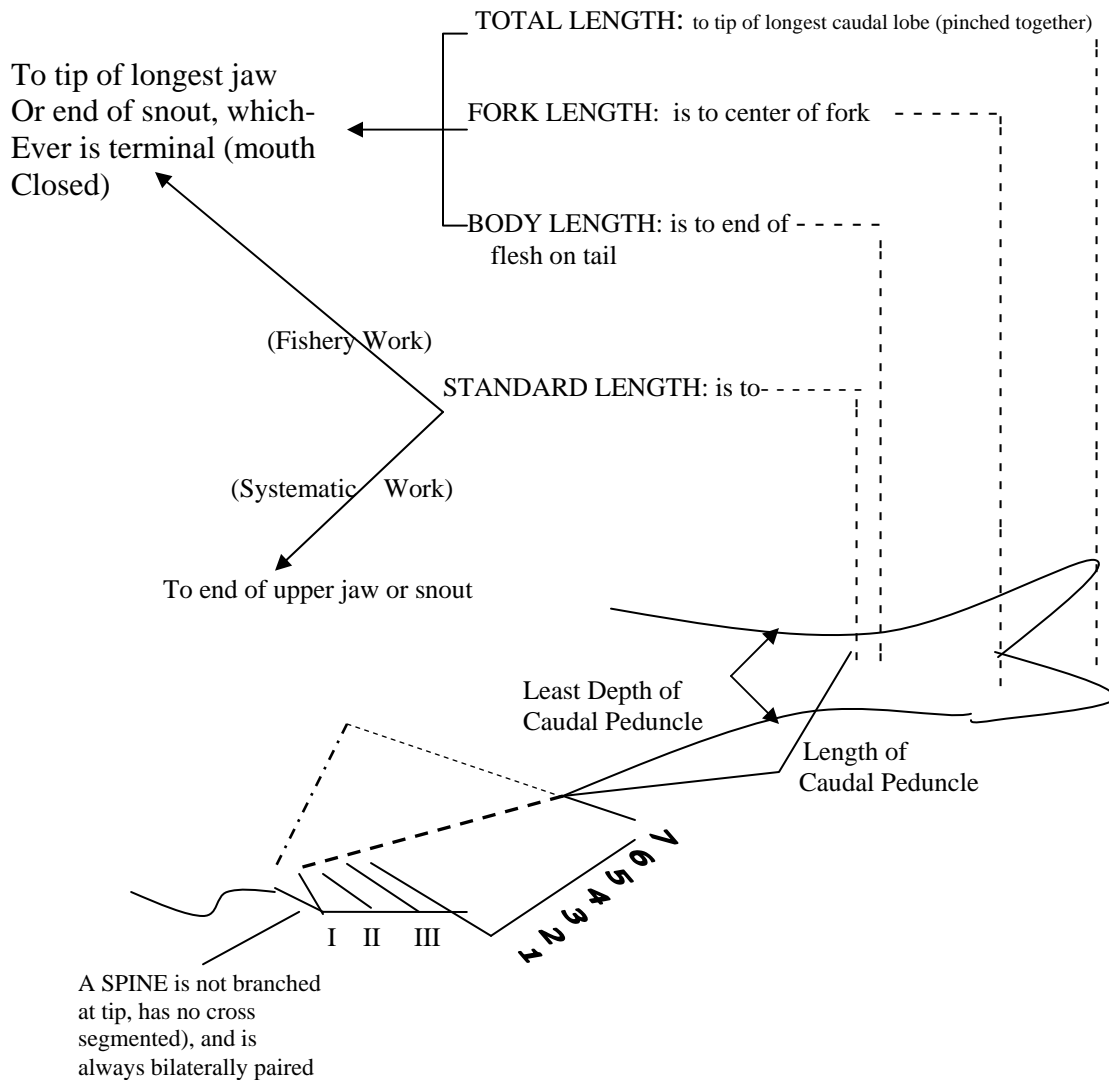
## HOW TO IDENTIFY FISH SPECIES

### THE ANATOMY OF A BONY FISH



A spiny-rayed fish, *Sebastes*, naming fins and general body areas





Tail area of a rockfish, *Sebastes*, showing lengths, fin ray construction, and other structures.

## HOW TO USE THE IDENTIFICATION GUIDES

1. Find out background on the species. Consider the following: (which gear was used to catch the fish?) (Where was the species caught)
2. Take a few moments to look closely at the fish specimen. Look at the general shape of the body, coloration and special marks or spots etc.
3. Decide whether the fish is a bony fish or is the skeleton made form cartilage.
4. Identify a family for which the species most closely resemble.  
Compare your fish specimen with the drawings listed on your guide. Select the drawing, which most closely resembles your fish. You may achieve this by the one of the following manner:
  - a) You may use the process of elimination to remove most of the families from the list of potential families by simply verifying whether the features listed on the drawing for a particular family is present on your fish specimen. If it is not present, then you should reject the family.
  - b) You may ask yourself the question “which other species does this one resemble?” Your answer should be based upon body shape, the presence of certain distinct structures such as special spines etc.
5. When you think that you have identified a family which your specimen most closely resemble, you will find a box in the top left hand corner of the drawing; this box contains the family’s scientific name. The introductory text will give you general information for the family (e.g. the maximum depth to which the members of the family generally occurs, general behavior patterns etc.) You will be referred

to the appropriate page in the text to find more details for the various members of the family.

6. Look closely at the species listed and determine which of the species has features which best describes your fish specimen.
7. After you have convinced yourself that you are looking at a specimen of the same species as noted in the text, record the species scientific name on your data collection sheet.
8. Spend a few moments to memorize the features of the species so that you will have some recollection when you see the same species on another occasion.
9. If you are unable to identify the fish it is recommended that you take a sample back to the Fisheries Department for assistance.

## **MEASUREMENT AND RECORDING OF CATCH, EFFORT, FISH LENGTH AND MASS**

### Guidelines for collecting Catch and Effort Data

1. Do not ask questions unnecessarily.
2. Obtain as much background information for the landing site.
3. Minimize your interference with the natural flow of the post harvest fishing operations.
4. Do not select fishermen to collect catch and effort data because the fishermen is friendly or he always has a large catch.
5. Try to ascertain the reasons for a fisherman not catching anything.

### Guidelines for the determination of Total Weights

- 1) Obtain an estimate of the total weight (gross weight) of the catch (i.e. all species combined). You may use one of the following methods to achieve this:
  - i) Obtain a visual estimate of the weight of the total catch.
  - ii) Summing the weights of known volumes. This method is most convenient where the fish are transferred from vessel using a standard container; the total weight of the catch is related to the number of the containers that are transferred.
- 2) Obtain an estimate of the weight of each species group that was caught by each fish gear. This maybe facilitated by using any of the following methods:
  - a. Estimate the relative proportion (or percentage composition) of each of the major species group in the total catch; an estimate of the weight for each group is then determined based upon your previous estimate of total weight.
  - b. Obtain a visual estimate for the weight of each species group.

- c. Note the weight of each species group as it is sold, then obtain totals for each species group at the end. (N.B. If you total the weights of all the species groups that were sold, you will obtain an estimate of the total weight of the catch assuming there were no portions retained for any particular reasons). This method allows you to determine estimates of both the weights of the species groups and the total weight of the catch, simultaneously.

#### GUIDELINES FOR MEASURING INDIVIDUAL WEIGHT

- 1) Record weight measurements in grams only for all species.
- 2) For cases in which the species landed are generally less than 1 kg in weight, you are required to measure the weight to the nearest 1 g.
- 3) For the cases in which the species landed are generally between 1-5 kg in weight, you are required to measure to the nearest 10 g.
- 4) For the cases in which the species landed are generally greater than 5 kg in weight you are required to take all weight measurements to the nearest 100 g.
- 5) When rounding to the nearest measurement, use the lower reading at all times.

#### THE MEASUREMENT OF INDIVIDUAL LENGTH

- 1) Use fresh specimens where possible.
- 2) Place the fish flat on the measuring board so that its snout is at the headboard.
- 3) For species with a forked tail, measure the distance from the snout to the notch in the tail fin (fork length).
- 4) For all other species, bring the both edges of the tail fin together, and then take your reading (total length).
- 5) Take all length measurement readings in cm only for all finfish species.
- 6) For the cases in which the species landed are generally less than 30 cm long you are required to measure each fish to the nearest 0.5 cm.

- 7) For the cases in which the species landed are generally greater than 30 cm long you are required to measure each fish to the nearest 1.0 cm.
- 8) Round to the nearest unit below at all times.

CATCH PER UNIT EFFORT DATA SHEET: \_\_\_\_\_

<b>DATE</b>	<b>NAME</b>	<b>No. Fishers together</b>	<b>Hours Fished</b>	<b>Hooks On line/ Other Method</b>	<b>Total Weight (kg) of fish</b>	<b>Whole or gutted</b>	<b>No. of Fish</b>	<b>By-catch Species (kg)</b>	<b>Total By-Catch(kg)</b>	<b>Total catch (kg)</b>

Morphometric Data Sheet: \_\_\_\_\_

Date	Species	Latin Name	FL (cm)	Weight (kg)	Gonad Wt (g)	Sex (M/F)	Maturity Ed/LD/RR/S	Total Length	Fishers name



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## Endnotes

<sup>i</sup> “Adaptive management” stresses experimentation and flexibility in management interventions; “ecosystem management” focuses on marine ecosystems rather than species-based management; and “co-management” is participatory management in which local community stakeholders share resource management responsibilities with regional or national bodies.” These are discussed in greater detail in Warner 1997: 29-46).

<sup>ii</sup> The information about the percentage of territorial waters comes from Panting (undated: 37)

<sup>iii</sup> The first time I use a Garifuna word I place it in italics; afterwards it is in regular typeface.

<sup>iv</sup> Graham also mentions briefly 16<sup>th</sup> century colonial Hispanic occupation of the District (1994: 324-326).

<sup>v</sup> Inner Channel is closer to the shore in contrast to the Outer Channel, which is further away. For a diagrammatic presentation see Palacio (2001: 16)

<sup>vi</sup> A type of shad, which Taylor describes as, “this fish is said to grunt like a pig when caught” (1949: 60).

<sup>vii</sup> Naming a bajo after a fisherman is a common practice also among fishers in Livingston, Guatemala (personal communication Hidalgo/Palacio), especially if he was among the first to identify it.

<sup>viii</sup> There is belief among fishermen in southern Belize that living fish do not like the smell of dead fish. Often the fish in gill nets die, driving away other fish, except sharks.

<sup>ix</sup> In the Proposed OAS Declaration of the Rights of Indigenous Populations there is allocation for tribal peoples as well as indigenous peoples. The former refers to peoples, who have maintained cultural systems in the New World that they brought from the Old World, such as the Maroons of Suriname, French Guiana, and Jamaica.

<sup>x</sup> For the description of the use of fixed gear in Vietnam see (Phap 2001: 17-28)

<sup>xi</sup> For more information on spirit possession among the Garifuna see Foster (1986).

<sup>xii</sup> There is much duality in matters related to Garifuna spirituality.

<sup>xiii</sup> I am indebted to discussions I had with Camilo Coral, who did a Phase 2 IDRC-CBCRM Project in Panama, where there is similar coincidence of the power of the supernatural over the physical environment among the Kuna.

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### Glossary

My spelling of Garifuna words is done in a free-form. I am aware that Mr. E. Roy Cayetano and others are working on a comprehensive orthography of the Garifuna language.

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4. The words in the following list exclude words already translated in Tables 3 and

Abelagdahani	the main entrance marking the start of the dugu
Adougahani	group fishing for the dugu ceremony
Adougahatinye	the group doing the adougahani
Bajo	broken reef used as fishing drop
Buyei	shaman with powers to heal given by ancestral spirits
Buya	ritual cigar used to blow smoke in the dabuyaba
Fayarugu	the northernmost part of the Merinerugu bajo, named after a man nicknamed 'Faya' (from fire in English)
Garifunaduo	Garifunanness, possessing a value of Garifuna consciousness
Gawamurugu	place for sea turtles; name given to the southernmost portion of the Merinerugu bajo
Harouru	crab
Hiuraha	spirit medium
Huru	blue crab
Giwa	whelk
Imahesrugu	a portion of the Merinerigu bajo
Leandurugu	a bajo
Masiwa	weir in this study made from wire to catch <i>harouru</i> crabs
Merinerugu	a bajo
Seiri	in Garifuna mythology, the place where souls go to repose; it is located in the horizon where the sea meets the sky
Tahucharagu	where it breaks; part of the Merinerugu bajo

Tiranagua somewhere in the middle part; name of part of the Merinerugu bajo

Wai Taingui he eats big; part of the Merinerugu bajo

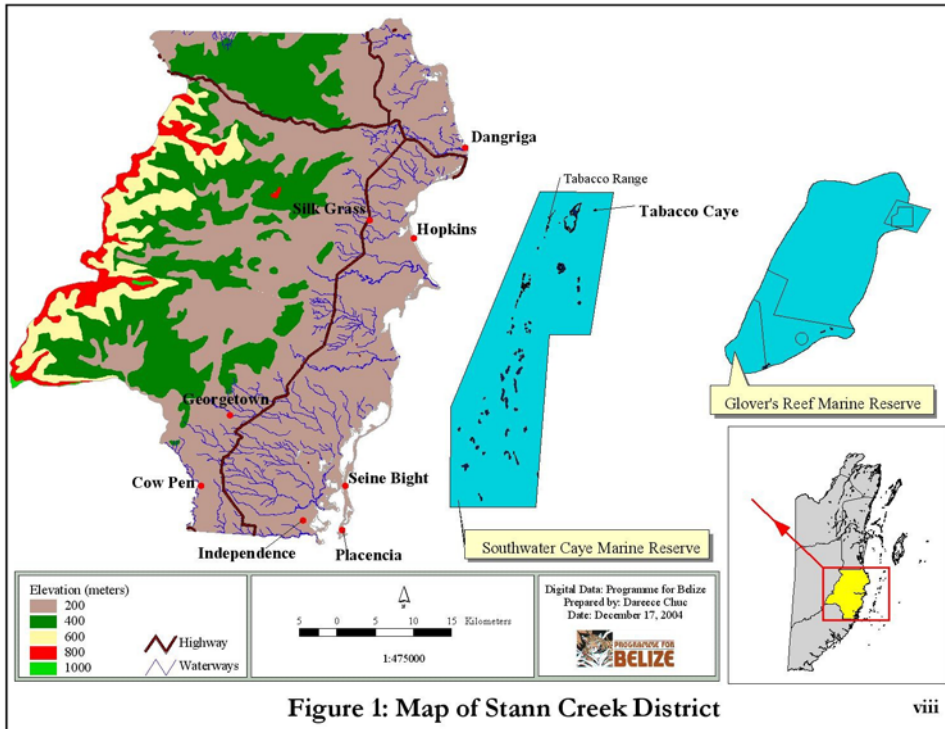


Figure 1: Map of Stann Creek District

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