



NOAA Technical Memorandum NMFS-SEFSC-597

NOAA Series on U.S. Caribbean Fishing Communities

Cruzan Fisheries: A rapid assessment of the historical, social, cultural and economic processes that shaped coastal communities' dependence and engagement in fishing in the island of St. Croix, U.S. Virgin Islands

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PREFACE

The National Oceanic and Atmospheric Administration (NOAA) Series, U.S. Caribbean Fishing Communities, is the result of the Southeast Fisheries Science Center's Caribbean Sustainable Fishing Communities Initiative, which was brought about by the recognition that the success of coral reef conservation strategies hinges on the ability to reconcile the need to protect coral reef and associated environments with the local cultural, economic, political and social requirements of coastal communities. While valuable socio-economic research had been conducted, there was no comprehensive program to collect baseline socio-economic data in place for entire U.S. Caribbean. Most of the earlier research was driven by specific management concerns and had a restricted geographic scope. Moreover, a significant share of this research is now outdated and inadequate to support management actions and meet the new legal definitions and requirements put forth by Magnuson Stevens Act (MSA), particularly National Standard 8, National Environmental Policy Act (NEPA), and Executive Orders 12898 and 12866.

To address the above challenges, the Southeast Fisheries Science Center has commissioned a number of studies to develop a comprehensive overview of the historical, cultural, economic, and social condition of fishing communities in the Commonwealth of Puerto Rico and the Territory of the U.S. Virgin Islands. This report entitled "*Cruzan Fisheries: A rapid assessment of the historical, social, cultural and economic processes that shaped coastal communities' dependence and engagement in fishing in the island of St. Croix, U.S. Virgin Islands.*" shows that there is a need to redefine the concept of 'fishing community' in light of local, regional and global realities, particularly in small-scale fisheries where fishermen engage in multiple livelihood strategies. The report also shows that there are a number of forces and processes that are gradually transforming our notion of a traditional Cruzan fishing community. Thus, the development of sound policies that seek to conserve and protect marine resources and habitats and maintain the economic and social viability of fishing communities needs to recognize the challenges and opportunities created by these transformations.

This research was financed by the Coral Reef Conservation Program. We are grateful for the support of Jim Waters, Tom Jamir, Theo Brainerd and Peter Thompson of the Southeast Fisheries Science Center, Eugenio Piñeiro-Soler, Miguel Rolón, and Garciela Garcia-Moliner of the Caribbean Fishery Management Council, Toby Tobias of the U.S. Virgin Islands' Division of Fish and Wildlife and Barbara Kojis, Roger Uwate, and Wes Toller formerly with the U.S. Virgin Islands' Division of Fish and Wildlife. Ivan Mateo, Brian M. DeAngelis, Ana Krystalliá Valdés, and Michelle T. Schärer's assistance is also acknowledged.

EXECUTIVE SUMMARY

This study contributes to the description of fishing communities in St. Croix, U.S. Virgin Islands and an understanding of their levels of engagement and dependence on fishery resources. It discusses how homesteading and gentrification limited fishing communities' access to the shore, transforming them from place-based communities to network-based communities. In addition, the manuscript describes how declining stocks, government regulations, user conflicts and habitat degradation are threatening the livelihoods of fishermen.

Drawing on our ethnographic assessment, which included both fieldwork and an extensive review of historical accounts, we describe the main social, political and cultural processes that fashioned fishing as an economic activity in St. Croix. In addition, we explore whether place-based communities exist in St. Croix or whether St. Croix is a fishing community in itself. These two key questions guide our presentation and discussions throughout this manuscript. In our attempt to conceptualize these issues we introduce a historical framework which highlights the depth and complexity of the cultural, economic, and social processes that influenced Cruzan fisheries, and discuss the impact of recent fishery management actions on fishermen and their communities. The analysis also draws from the community typology developed by Griffith *et al.* (2007) for the Commonwealth of Puerto Rico, and from the Natural Resource Community framework developed by Hall-Arber *et al.* (2001) for the New England region. This integrated approach allows us to understand communities in the present, trace their historical development, and frame them in the larger picture of regional relationships, economics and governance. Our hope is that this work will describe these processes, forces and impacts in a manner that assists fishery managers in the protection and conservation of fish resources and fishing communities.

The analysis shows that socio-economic and environmental processes played an important role in shaping the economy and social make-up of the island of St. Croix. Four centuries of slavery, intensive sugarcane agriculture, land clearing (for cattle and new crops), urban growth, industrialization and tourism development appeared to have defined fishing as a 'marginal' economic activity. Fishing, as an economic endeavor, has always been a backdrop to the plantation economy, manufacturing, tourism and service industry since it only supported a relatively small fraction of the local employment and economy. However, this overlooks the complex and multifaceted aspects of fishing. Fishing is at the core of the identity of the Cruzan population, regardless of ethnic origin. In addition, fishing has long provided subsistence to many folks from different ethnic backgrounds.

Trinidadians, ‘Continental’ from the mainland U.S., Puerto Ricans, St. Lucians and many people of West Indian origin contributed to the formation of a class of fishers who brought with them their culture and their history, and who also served as a pool of labor to other sectors of the economy. Declining economic conditions in the twentieth century contributed to the dispersal of rural folks throughout the island. Many poor in the urban areas were relocated to the housing projects, while others moved *motu proprio* to a better and different life, away from the coast.

Fishing is also an important cog in the tourism wheel, as it provides the highly coveted fresh fish to local restaurants. The historical roots of fishing in St. Croix link many groups in a sequence of nodes and networks that involve households, clients, ethnic groups, restaurants, businesses and visitors throughout the island and the region. Social capital is a mechanism and a process that allows fishers the exchange of information, goods and services, in a system charged with symbolism and cultural values. In other words, it is “key to the flow of other forms of capital, as well as central to the dynamics of governance and resource utilization” (Hall-Arber *et al.*, 2001). In our view, fishing plays a critical role in the economy, in the social relations and the local culture; always embedded in Cruzan society and economy.

The analysis also suggests that the existence of communities fully engaged in fishing is perhaps the exception rather than the rule in St. Croix. Fisher folks have been diluted and dispersed in the seascape and landscape of the many and varied occupations, chores and places of the mercantile, capitalist and post-industrial economies that shaped the archipelago. We also argue that Cruzan fishing communities are not place-based. Our work suggests that network-based communities in which fishermen and their families are dispersed throughout the island better reflect the current reality of St. Croix. Fishermen are distributed throughout the island and move their boats in trailers and pick-up trucks. We observed pick-up trucks and trailers all over the island, with the fishers moving their catch, boats and equipment. Cruzan fishermen use nearly 18 landing centers and ramps distributed throughout the islands to embark and land their fish. The three most important are: Molasses Pier (south coast), Altoona Lagoon (to the east of the old town of Christiansted) and the Frederiksted ramp, adjacent to the fish market.

The geography of fishermen’s residences provides insight into the forces that shaped their current network configuration. Only a few fishers reside in estates and neighborhoods that are close to the water or are located in coastal areas. Most are located along an imaginary diagonal line from the north to the southwest which coincides with the route of the Centerline Road. This location is mainly due to

the process of homesteading, as the government provided plots of land to farmers in an attempt to revitalize the sugarcane industry after 1936. Additionally, the location of residences represents the relocation of fishers from poor and economically depressed urban communities to public housing and other accommodations. More recently, access to the water has been curtailed by tourism development along the coast, a situation also observed in the Commonwealth of Puerto Rico.

The current location of fishermen's households shows a generalized spatial distribution throughout St. Croix, with a heavy presence in those estates running along the Central Line Road. Except for the notable exception of Gallows Bay, there are no coastal settlements proper, as land is mostly now occupied by large hotels and condos, various idle lands, SCUBA dive shops, guesthouses, seafood restaurants, historical monuments, and waterfronts built for the aesthetic and social comfort of the tourists. However, even though the effects of gentrification are apparent, fishing remains a small-scale activity that has an economic and social meaning with concrete value in an economy characterized by boom and bust cycles in their tourism, oil and commercial sectors. The fact that these fishers remain engaged in coastal and water-based activities is a remarkable feat in the 21st century.

Arguably, the only remnant of a place-based fishing community in St. Croix is Gallows Bay, located to the east of Christiansted, on the way to Altoona Lagoon. Two or three blocks of houses harbor the only coastal settlement, whose life revolves, in appearance, around the fruits of fishing. Gallows Bay is not a "fishery dependent" community, as most of the income earned is no longer from fishing. True, there is a fish landing there, right on the beach of the community, and an open-air market that operates on Wednesdays and Saturdays. But the fishermen that leave and return to the beach do not live in the community, although most did grow up there. In a way, there is a historical tie to the community's "roots" that continues from the past to the present, and it is that sense of unity that makes Gallows Bay a community.

We present a description of Gallows Bay to underscore the fact that some communities have a long history of engagement with fishing, but their trajectory leads them into another set of circumstances. As stated here, Gallows Bay has been impacted by government programs, gentrification and the geographic dispersion of its original dwellers, who are now engaged in a number of occupations. Despite these processes, Gallows Bay is adamant in presenting and representing itself as a fishing community, vis-à-vis the rest of the Cruzan population. Gallows Bay may be identified as a community dominated by a "heritage narrative" in which the coastal community is portrayed as a

fishing community when it is in fact a highly diversified settlement, dominated by other economic activities. In St. Croix placed-based fishing communities do not exist. The whole island may be classified as a fishing community based on network relations among fishers. The historical pattern of population dispersal scattered fishers and their families throughout the island. Gallows Bay is in appearance a fishing community, but the data state otherwise.

Finally, the report explores fishermen's views and perceptions on the key problems and threats facing local fisheries. Over the past fifteen years the local fishers have been straightforward in admitting that these were "fisheries in crisis" with the depletion of some resources, the increase in effort on Lang Bank, the decline in the population of the Nassau grouper, and even the reduction in the number of pelagic species. While fishermen view that there is a need for regulations, they believe that current regulations are too stringent and with no end in sight. Fishermen claim that recent initiatives like the trammel net and gillnet ban and the establishment of various seasonal closures (e.g., mutton snapper, Lang Bank) and marine reserves (e.g., East End Marine Park, the expansion of the Buck Island Reef National Monument) have not only limited their access to their traditional fishing grounds, but also encroached on their ability to support themselves and their families.

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1. Encountering Cruzan Fisheries and Communities

1.1. Research objectives

The successful management of small-scale fisheries requires detailed knowledge of how regulations might impact fishermen and their communities. In the past, failure to understand and incorporate this human dimension into management strategies often led to ineffective policies that were remiss of the local cultural, economic, political and social environment.

This study details the results of a socio-economic assessment of fishing communities in St. Croix, U.S. Virgin. This study has three main objectives: a) identify and describe the nature of fishing communities; b) understand the level of engagement and dependence on fishing activities; and c) describe the processes that shaped these communities.

1.2. National Standard 8 and Cruzan communities

Following the adoption of National Standard 8 (NS 8) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the National Marine Fisheries Service (NMFS) has made considerable efforts to identify and characterize fishing communities around the United States (Jacob and Jepson, 2009). This National Standard requires federal fishery management agencies to consider the potential impacts of the conservation and management measures on fishermen and their communities. National Standard 8 states:

Conservation and management measure shall, consistent with the conservation measures of the Magnuson-Stevens Act (including the protection of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities to:

- a) provide for the sustained participation of such communities; and*
- b) to the extent practicable, minimize adverse economic impacts on such communities.*

The MSA defines fishing community as a “*community that is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fishing processors that are based in such communities*”. In the MSA, substantially dependent implies “*that a loss of access may lead to some*

change in the character of the community, perhaps a major change, or may even threaten its existence”. On the other hand, substantially engaged entails “*a level of participation in commercial, recreational, or subsistence fisheries that includes social and economic networks that are directly and indirectly associated with these fisheries (such as the harvesting and/or processing sector)*”. Although, the MSA also specifies that fishing communities be treated as place based, many scholars have suggested alternative constructs like virtual communities that share non-place ties such as sharing the same gears and seascape (Davis, 1984; Clay and Olson, 2007).

This work contributes to the national effort which seeks to identify and describe fishing communities around the U.S. and understand their levels of engagement and dependence on fishery resources. Drawing on our own rapid assessment and published primary sources, we describe the major social, political and cultural processes that shaped the fishing sector in St. Croix, U.S. Virgin Islands. The rapid assessment allowed us to identify key issues, explore the depth and complexity of the cultural, economic and historic processes of the Cruzan fisheries, and describe them in a manner that serves the process of protecting resources and human communities. In addition, we discuss how recent fishery management regulations and actions impacted fishermen and their communities. Throughout our study we seek to understand whether place-based communities exist in St. Croix or whether St. Croix is a fishing community in itself. These two key questions guide our presentation and discussions throughout this manuscript. Given the polysemous notions of fishing communities, we conceptualize Cruzan fishing communities using a three-fold approach that integrates (1) a historical framework developed by the authors, (2) the framework developed by Griffith *et al.* (2007) for Puerto Rico, and (3) the Natural Resource Community Framework (Hall-Arber *et al.*, 2001). This integrated approach allowed us to understand communities in the present, trace their historical development, and frame them in the larger picture of regional relationships, economics and governance.

1.3. What is a fishing community in the Caribbean?

Around the world, the rise and fall of colonialism, the abolition of slavery, and the development and post-development trends after World War II changed the landscape where fishing communities once proliferated. The rapid growth of service and manufacturing sectors has slowly displaced the inhabitants of coastal settlements, who once prowled the seas to hunt cetaceans and turtles, gather mollusks and crustaceans, and catch fishes, sharks and rays. While coastal fishing communities still abound in the developing world (where they are still responsible for feeding the new markets of the industrial world), those based in industrial and post-industrial societies are dwindling because of transformations brought

about by global social and economic forces. The Caribbean, a region linked to the developed world through complex socio-economic and political arrangements, is no exception.

Fishing communities in developing Caribbean societies still play a key role in local markets by feeding local populations and maintaining a coastal and maritime culture, which is weaved in the fabric of traditional agricultural and trading activities. Throughout the colonial history of the Caribbean, fishing was, and still is, an ancillary economic activity serving many purposes: a refuge from slavery, an alternative to wage labor, a labor buffer zone, a source of proteins, a front for other activities, a cultural icon, a network of peers, and a bona-fide productive endeavor generating incomes and profits (see Price 1966, Griffith and Valdés-Pizzini 2002). However, the main source of fish for slaves and free laborers was salted fish, mostly cod (*Gadus morhua*, and other gadids), and in some cases smoked and marinated sardines and herring (as in the case of St. Croix). Arguably, the European addiction to codfish shaped the structure of the markets in Spain, Portugal, England, Holland and France. These European powers reproduced the culture of consumption of salted fish throughout the Americas (Kurlansky, 1998). Anchored in the exploitation of Newfoundland and Northeastern United States fishing grounds, these economic centers also shaped the pathways of the circulation and exchange of cod as a commodity and as a quintessential food item in the plantation system of the Caribbean. The conceptualization of fishing communities in present day Caribbean societies, including the U.S. Virgin Islands and Puerto Rico, must take into consideration these historical circumstances which are the key to understanding their present structure.

1.4. The place of fishing communities in the Caribbean

In a thin line of white sand surrounded by sugarcane fields and coastal forests and wetlands, fishing communities sprawled throughout the Caribbean archipelago. Between the shoreline and the main road, rows of huts housed fishers-laborers and their families, oftentimes in land unclaimed by plantation owners or the colonial state. Colorful boats adorned by scattered nets (beach seines, cast nets, and trammel nets and gill nets) and traps rest placidly on the sand. This image is completed by the presence of a street fish vendor, displaying the snared groups of fishes for sale. The image is an archetypical one that we all have seen, and still have in our minds as the traditional community of fishers. Richard Price, who wrote one of the earlier and key pieces on the historical importance of fishing in the Caribbean in the mid-nineties, recently wrote *The Convict and the Colonel* (Price 2005, Spanish edition), an inquisitive and profound ethnographic and historical immersion in the transformation of the littoral seascape and landscape of Martinique, a Caribbean island that is nowadays an overseas department of France. Price witnessed

almost forty years of transformation of the coastal communities of Martinique, especially Petite Anse (literally, a small beach), where he started his ethnographic field work in 1962. In a nutshell, tourism, economic development, migration (out-migration and return migration), modernization (guided by French integration policies) and globalization transformed the placid shoreline of Petite Anse into an unrecognizable cultural world where fishing is just another cultural element in a constellation of social processes triggered by modernization (2005: 203-227, *in passim*).

Fishing is not intact in Martinique. It exists, albeit fragmented and transformed, as one of the survivors of the colonial world in post-colonial Martinique. Fishing is often ‘folklorized’ in narratives exulting national culture and independence from plantation work, similar to what has been documented for Puerto Rico, and to a lesser extent in St. Croix. Fishing is an element in plays consumed by tourists and urban-modernized Martinicans. In other parts of the world, either fishers or other coastal settlers use fishing as part of a “heritage narrative” that underscores the cultural importance of fishing and the characterization of coastal communities as fishing communities (Jacobs *et al.*, 2005:376). It may be a fully gentrified settlement, such as La Parguera in Southwest Puerto Rico, but it is still visualized as “a fishing village” (Brusi, 2004). The perception of being a fishing village contributes to the commoditization of the coast.

Is Petite Anse a fishing community? Richard Price delves into the subject with apprehension. Although, he observes and records the presence of *gommiers* (traditional boats) and fishers using beach seines, he notes that these people differ from the ones he encountered in 1962. Fishermen now live in out-of-the-way places, and the coastal zone is full of tourists and restaurants (Price 2005:17). Researchers are tempted to assess traditional fishing communities as entities diluted in the liquidity (fluidity) of the post-industrial world (Clay and Olson, 2007). Fishing communities exist in a world of tourism and services, and seem to be the result of the transformation of laborers and producers into consumers of global goods (Price 2005:18). These Caribbean communities are not the traditional fishing enclaves where fishers were exclusively dependent on fishing and wage labor in the sugarcane fields, among other occupations and chores (Comitas, 1962). The existence of fishing and a culture of a *gemeinschaft* of fishers made sense in the Caribbean when sugarcane was king, women engaged in mending nets and peddling and haggling fish, and families invested time and effort in their gardens, making charcoal, and moving goods and people along the coast. Not anymore, not in the Caribbean, the U.S. Caribbean, or in most of the continental U.S. where fishing and farming are not necessarily “key functions of communities” (Jacobs *et al.*, 2005).

The National Standard 8 of the MSA defines fishing communities as settlements and networks of people substantially dependent on harvesting and/or processing fishery resources. Thus, we are driven to measure their levels of dependence and validate their existence as such. In thinking and conceptualizing fishing communities and their dependence on natural resources, as stated in the law, anthropologists and their colleagues have to realize that their present existence is the result of long-run social processes. It requires a critical assessment of the evolution of socioeconomic conditions and processes that made fishing a negligible economic endeavor in most of our coastal counties and municipalities. Fishing is a microscopic fragment of the GNP in the U.S. territories, and although it is an important source of fresh fish that sparks other economic opportunities (Griffith *et al.*, 2007 for a discussion of the key role of fresh fish), it remains a marginal component of the local economy.

1.5. A historical conceptual model

We recognize that the maritime and littoral history of the Caribbean is barely starting to uncover the complex social and demographic dynamics of peoples who straggled from urban to rural contexts, land and sea, fishing and agriculture, peasant production and wage labor, slave labor and independent production, piracy, contraband, privateering and legal commerce, work in local and incipient industries and sail the coastal seas and the oceans. That is precisely the history of many coastal peoples around the world (Balachandran, 2007). Fishers in many coastal areas of the world are diluted and dispersed in the seascape and landscape of the many and varied occupations, chores and places of the mercantile, capitalist and post-industrial economies.

For the Caribbean, and this is similar to any region of the world, it is rather cumbersome to synthesize into a model the complex processes and the temporal and spatial scales that forged fishing and coastal settlements and livelihoods. Here, we offer, not a model but, a series of processes that arguably shaped littoral communities in the region.

Figure 1 features a graphical and abridged synthesis of the historical processes that shaped coastal and fishing communities throughout the Caribbean. This historical conceptual framework allows us to engage in a more appropriate description and explanation of the present-day fishing communities of St. Croix. The sequences presented here follow a chronological order, but these processes are not universal, nor strictly sequential, nor required for all Caribbean societies. As a conceptual framework, it must serve the heuristic purpose of leading us to the understanding of the phenomenon:

(1) Fishing was an essential component of the aboriginal societies, who depended on fish and shellfish for proteins (Price, 1966).

(2) The new settlers brought with them European fishing gears that were used or adapted to the local conditions, using aboriginal knowledge, and the local species.

(3) Slaves of African origin also brought with them knowledge of fishing gears.

(4) Some slaves were allowed to fish in order to provide for their own sustenance and for the planters as well. In some instances, slaves were allowed to sell their catch in the local market, and then they would use the money to buy back their freedom. Lawaetz (1991) describes this occurrence in St. Croix.

(5) Freed slaves and mulattos (mostly artisans) often settled in the urban areas (Christiansted and Frederiksted in St. Croix) where they engaged in fishing, selling of fish, dock work, piracy, boat construction, privateering and in all forms of commerce. These settlers developed a well-structured coastal culture based on religious beliefs, social solidarity and a sense of coastal identity.

(6) The plantation system was overly dependent on salted and smoked fish produced in Northern Europe and in North America, which relegated the consumption of fresh fish to a fraction of the local diet (Kurlansky, 1998).

(7) Settlers of European origin, as well as creoles, also engaged in coastal and maritime endeavors in the countryside and urban areas.

(8) Runaway slaves formed their own communities (maroon or 'cimarrón' communities) at the margins, in the dense coastal (mangrove) forests, where fishing and farming were key economic activities (Price 1966, 1981). Runaways and free laborers of African origin used seafaring to move across islands in search for better living conditions (Chinea, 2005). This Diaspora created a regional network of people through commercial bonds, intermarriage and the circulation of things and commodities. St. Croix is an example of that.

(9) Throughout the Caribbean, laborers of different ethnic origins, including blacks were recruited into the many seafaring occupations required for the shipment of commodities in the region. This process shaped the urban culture of port cities (e.g., Charlotte Amalie, St. Thomas) that showed the presence of “maritime transients” (Cobley, 2007). The cultural impacts of those movements have not been studied in any detail, and remain as an important research question for the understanding of coastal communities in the region. In the post-emancipation period, as well as throughout the twentieth century there has been a flow of laborers throughout the region (Chinea, 2005; Griffith and Valdés-Pizzini, 2002; Faussette, 2007), people who were incorporated into coastal communities as fishers, laborers in agriculture, tourism and factories.

(10) Coastal communities depended on a number of economic activities for their survival: fishing, wage labor in the sugarcane industry, seafaring in merchant ships (Cobley, 2007), charcoal making (Price and Price, 1995). Men and women often held and handled a multiplicity of occupations and chores (Comitas, 1962, Stoffle, 1986).

(11) Those multiple activities were synchronized in time and space with seafaring and other associated activities such as boat piloting, shipbuilding, and dock work (Cobley, 2007). In coastal communities, the diversity of occupations made them more resilient to boom and bust processes, and changes in the key economic activities that tend to dominate the rural landscape, such as the production of agricultural commodities for the world markets.

(12) During the nineteenth and twentieth centuries, urban development and policies in the Caribbean displaced many traditional activities and ethnic groups from the urban landscape. Changes in the location of the fish markets and the relocation of the urban poor tend to disperse fishers throughout the insular geography.

(13) Fishers and coastal peoples settled at the margins of the large landholdings of the plantation system, in idle and unclaimed portions of land or in perceived “commons” located in the riverbanks, estuaries, mangrove forests, coastal lagoons and beaches (Price 1966). Many Caribbean countries expanded their urban areas and their economies, embracing heavy industries (e.g., refineries), industrial work and tourism as key economic activities. The state (colonial or post-colonial) and the local oligarchies reclaimed their coastal lands and shoreline properties (Valdés-Pizzini, 2006). In many countries, land on the coastal plains devoted to sugarcane production shifted to hotels and suburban development. These

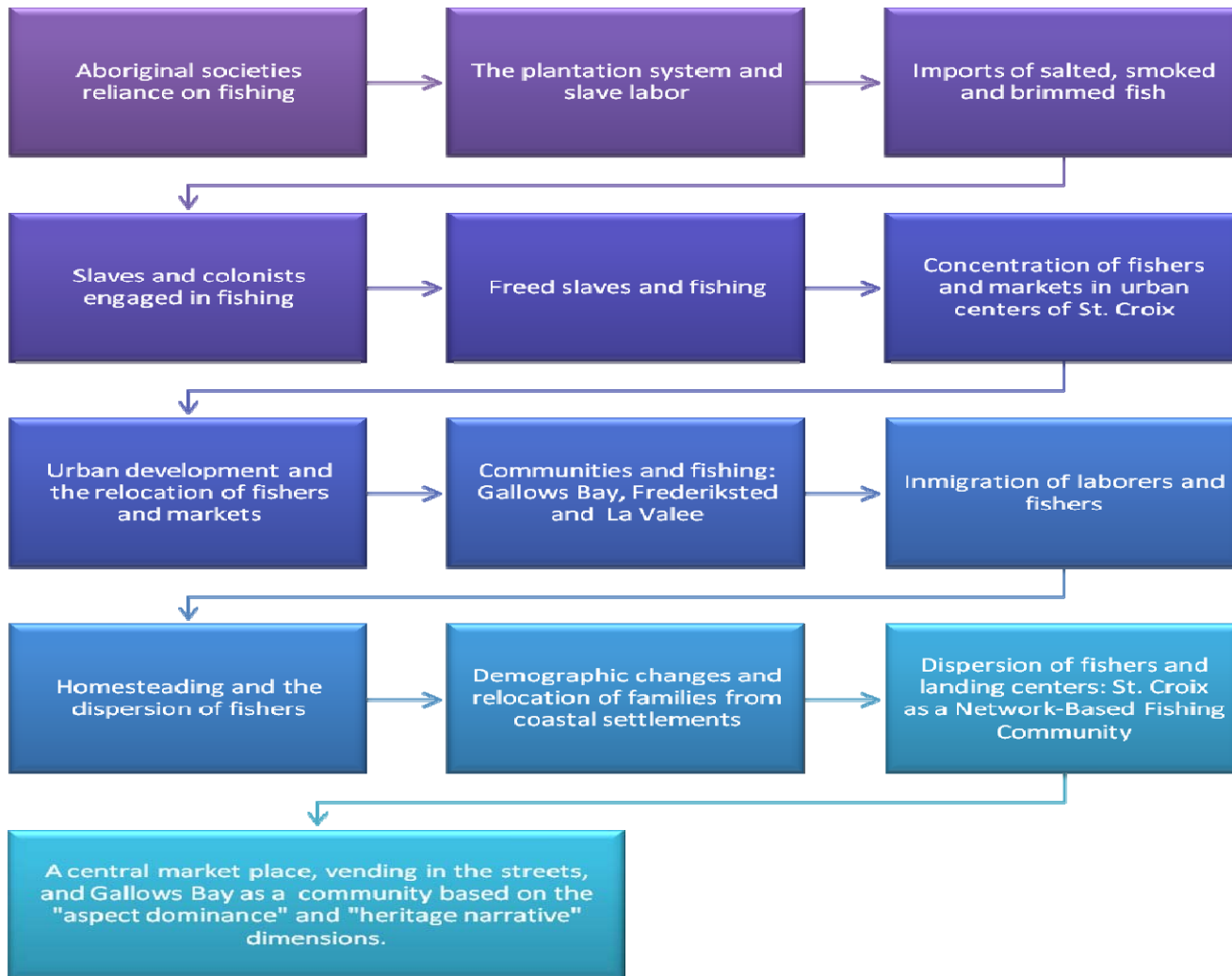
processes displaced fishers who became landless stragglers who depended on government resettlement programs in homesteads and public housing, as was the case on St. Croix (Lawaetz, 1991). Land claims, urban development and resettlement of rural communities had the effect of dispersing many fishers and their families. These factors transformed and even erased traditional fishing communities.

(14) Job opportunities in other sectors of the economy, the recruitment of women in the industrial and service sectors, and the compulsory engagement of children in the educational process reduced the pool of potential fishers, net menders, and fish peddlers. After one generation, the demography of coastal communities was transformed by an insertion of the population in other jobs, the slow abandonment of fishing as the main source of income or as the key source of livelihood, and the incorporation of new settlers who inherited properties or who bought land and houses from the local population.

(15) The Caribbean of the twentieth century accelerated the process of circulation of laborers which was stimulated by government programs that recruited agricultural workers or laborers for the heavy industries, factories and the tourism sector. There are micro-regions of the insular Caribbean that have been demographically and culturally reconstituted by the immigration of West Indians (and from the metropolitan countries as well) of diverse origins, some of which also entered the fishing sector, such as in St. Croix.

(16) Settlements and communities --both coastal and non-coastal-- received the influx of migrant-laborers, and of return migrants who help shape the form and context of those settlements by bringing new lifestyles, incomes and capital to invest.

Figure 1 Historical Framework for Fishing and Coastal Communities in the Caribbean



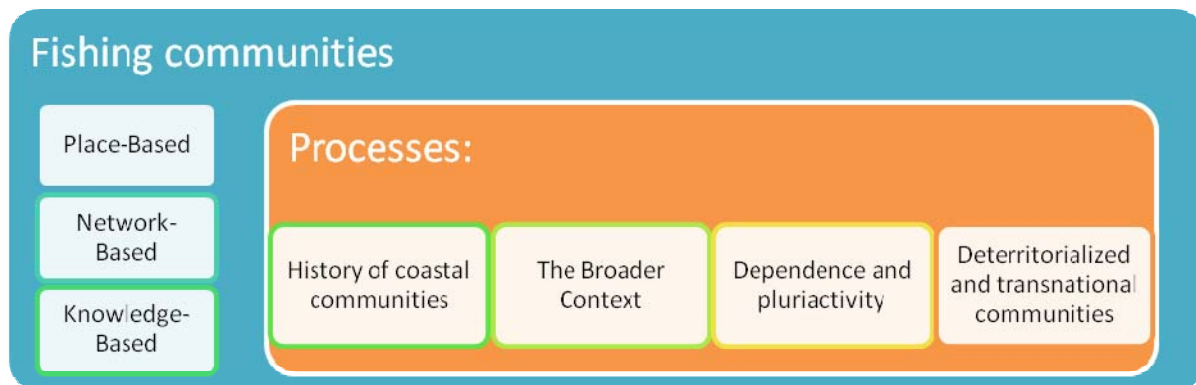
1.6. A conceptual framework for understanding and defining fishing communities

Another useful way to conceptualize, understand and describe fishing communities in the U.S. Caribbean has been provided by the Griffith *et al.* (2007) report on the socioeconomic profile of Puerto Rican fishers and their communities. Their definition of community is useful and worth reproducing here:

We define a community as a group of people living and working together, exchanging services and goods, who share some common interests while diverging at times according to different class backgrounds, where many also share a common cultural and linguistic background. Communities are social fields, comprised of overlapping networks of kin, neighbors, friends, co-workers, and others who interact with one another regularly. Communities may be place-based, network-based, knowledge-based, or may transcend specific geographic locations, although many community members usually share attachments to a specific place (Griffith et al., 2007).

This conceptual framework constructs three types of fishing communities with varying degrees of engagement and dependence on fishing: place-based, network-based and knowledge-based communities. Figure 2 depicts the conceptual framework used by Griffith *et al.* (2007).

Figure 2: Classification of community types based on Griffith *et al.* (2007).



Place-based communities are those traditional communities where social and economic life is located in a place, an identifiable settlement where kin, neighbors, and friends live their lives and are engaged in fishing activities, in tandem with other occupations and coastal activities. In these, most of the physical and social space is nucleated and concentrated on the beach (or shoreline of a haven, bay or port), with

readily available access to the water. In appearance, place-based communities tend to show more fishing infrastructure, material culture, boats, activities, invested capital and related businesses.

Network-based communities are those in which the fishers and their families are dispersed throughout the territory in different settlements, communities, neighborhoods, and the government established territorial units (cities, counties, parishes or estates, as in the case of the U.S. Virgin Islands). Thus, the fishers and their “communities” are de-territorialized. In network-based communities fishers, however, may share landing centers, piers, vending areas, and fishing areas at some specific point in time.

Knowledge-based communities are those in which the fishers and those related to them have built a knowledge based on the ecosystems, species, behaviors (for example, feeding habits, location of species and ontogeny), and the climate-weather complex. These fishers use that knowledge to share it and exchange it among themselves, or with other participants in the fishery; for example: fish dealers, state officials, scientists, fishery managers, and enforcers (Griffith *et al.*, 2007). The knowledge-based community permeates the other two forms of fishing communities, or may exist by itself.

As this study follows closely the conceptual framework of the Griffith *et al.* (2007) report, we also share the historical perspective of the framework in which fishing communities are to be understood through the historical evolution of their circumstances. For Puerto Rico, the authors explain how many communities became de-territorialized over time. Also, the authors warn about the need to place fishing communities in the broader context of state-community relations, the impact of policies (in conservation, economic development, modernization), and the pervasive process of habitat degradation by a number of root causes such as development, government policies for habitat alteration and destruction of mangrove forests, urban sprawl, landscape altering projects and industrial contamination, among others. The conceptualization and categorization of fishing communities requires the assessment of the role of transnational communities of peoples (among them, laborers) not bounded by and to the territory. In fact, many coastal communities throughout the Caribbean are part of transnational communities, and in some cases, those communities are constituted by *ethnoscapes*, landscapes of diverse and moveable peoples, stragglers perhaps, who interact with local communities at different scales (Appadurai, 1996). Also, it requires the historical assessment of the impact of seafood imports and their role in shaping, stimulating and constraining the local supply of fish and shellfish, and the dislocating processes fueled by land claims, changes in the local demography, the patterns of the real estate market, and the gentrification of coastal communities (Griffith *et al.*, 2007: 56).

1.7. Framing fishing dependence

[T]he National Standard guidelines (1 May 1998; 63 FR 24211) define a fishing community as a social or economic group whose members reside in a specific location and share a common dependence on commercial, recreational, or subsistence fishing, or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops). Sustained participation is defined to mean continued access to the fishery within the constraint of the condition of the resource... (Lucas, 2003).

Understanding the degree of dependence of communities on fishery resources remains a daunting task. One of the objectives of this study is to document the key characteristics of the fishing communities in St. Croix and to assess, in a rapid and qualitative manner, their dependence on fishing. In the U.S. Caribbean, one underlying factor in such discussions is the interest of the concerned agencies in identifying part-time versus full-time fishers. It is argued that the fishery could benefit from the separation of both groups, and the almost natural selection of the full-time fishers as representatives of the true fishermen. In St. Croix, for example, a number of full-time fishermen accused the “weekend warriors” for the depletion of some resources and juvenile fish. That argument is also at the center of discussions regarding limited entry schemes in the fishery.

The study by Hall-Arber *et al.* (2001) of the New England fishing communities argues that the assessment of dependence dwells on a thorough analysis of the history of fishing, degrees of specialization, available infrastructure, social institutions in place and the process of gentrification (Hall-Arber *et al.*, 2001). The authors also contend that the regional context is important, and argue that fishing communities ought to be understood “as contributing partners in regional networks of total capital flows and transformations associated with Natural Resource Regions”.

In discussing the profiles and characteristics of the New England communities, the authors argue that the notion of fishing-dependent communities cannot be fully applied to contemporary socio-economic contexts where such independent entities “are basically non-existent” (Hall-Arber *et al.*, 2001). In other words, industrial and post-industrial societies transformed coastal settlements into spatial contexts removed from their original link to the land and to the ocean. Arguably, these are “dislocating” processes that tend to separate and disperse coastal peoples from their traditional communities and forms of engagement (Griffith *et al.*, 2007). Coastal areas are the new frontier of real-estate, as poor settlements are becoming gentrified and suburbanized (Valdés-Pizzini, 2006). That process is also pervasive in the Caribbean region where traditional coastal communities, based on labor and history of maritime

occupations, are being replaced by up-scale residences and tourist enclaves. Gentrification is at the center of those processes that changed the configuration of fishing and coastal communities, as documented in the fishing community profile commissioned by the National Marine Fisheries Service (Griffith *et al.*, 2007).

Following Griffith and Dyer (1996), Hall-Arber *et al.* (2001) state that fishing and dependence are bounded to operate in reference to the social and cultural processes that shape the fishery (see also Lucas 2003), and more specifically, the Natural Resource Community or (NRC). NRC is defined as “a population of individuals living within a bounded area whose primary cultural existence is based on the utilization of renewable natural resources” (Dyer and McGoodwin, 1994). In her study of the Madeira Beach fishing communities in Florida, Lucas (2003) stated that the key criteria for measuring dependency are social, psychological (identity), and/or economic. Earnings from fishing, production measured in landings and labor in the sector, when compared to other activities are quintessential elements, but are not necessarily the only defining elements of fishery dependence. Fishing is intertwined with cultural identity, and with the individuals’ sense of belonging. It is part of a long tradition of coastal activities (e.g., extractive, non-extractive, consumptive, non-consumptive, recreational, political, and cultural) that entangles communities and individuals to the coastal landscape and seascape. In that context, we can understand their commitment (always contested) to the coastal areas, and the maritime culture.

Griffith and Dyer (1996) found that changes in the regulatory system such as in the case of the New England groundfish fishery forced fishermen to adapt by incorporating new technologies, moving into new fisheries, and by moving into other land-based and water-based occupations. Opportunities in other sectors of the economy, and flexibility to move across fisheries or to target other species remain as critical processes in maintaining ties with the fishery. Absolute rupture with the fishery and the abandonment of a coastal way of life as members of a NRC is not an option due to a number of factors. Fishing plays a key role in the development of cultural identities and a sense of belonging to a place that may be the coast, the waterfront, or an island such as St. Croix. Fishing is a marker of history, labor trajectories and cultural identity (Griffith and Valdés-Pizzini, 2002), as well as a platform to enter into other occupations. That is why some coastal communities, such as Gallows Bay in St. Croix, remain attached to their heritage as fishing enclaves, keep some of the material traits that give the appearance or aspect (Jacob *et al.*, 2005) and continue, sometimes purposefully, to underscore and profit from that piscatorial past.

An attractive alternative to examining issues of fishing dependence is the “*livelihoods approach*,” which underscores the importance of resilience and sensitivity as a means to bounce back from shocks and stressors, and the system’s response to disturbances (Salmi, 2005, after Allison and Ellis, 2001). Livelihood diversification is indeed one strategy used by fishermen to cope with uncertainty particularly as it relates to regulations, scarcity of fish, or variability in the stocks. Salmi’s (2005) study of Finnish fisheries documents the critical importance of *pluriactivity* (a diversity of labor and productive endeavors) among fishers. The study underscores the role of petty commodity production (independent production, such as fishing) as an endeavor that is resistant to market fluctuations, and as a “production unit ... [that] can function for long periods of time without earning revenues commensurate with the business success.” This concept is similar to the master concept of Caribbean anthropology and sociology of “occupational multiplicity” (Comitas, 1962). We use the case studied by Salmi (2005) here to provide a wider and cross-cultural perspective on fishing and dependence. Salmi’s work underscores the importance of cultural processes. In the case of fishing, she shows how it can forge a cultural identity and help preserve a ‘way of life,’ even when fishing is no longer “economically” viable for a community (yet, fishing can still instill a sense of resiliency among fishermen).

For the Finnish fishers, fishing could not be compared to an activity performed on an hourly rate. Fishing is beyond that parameter, and for fishers there are other more important aspects of their engagement in that extractive activity, since “regardless of their livelihood strategy, the fishermen emphasized the way of life, freedom and independence provided by the work,” which also included health and even therapeutic reasons (Salmi, 2005; see also Griffith and Valdés-Pizzini, 2002). Salmi’s work (2005) concluded that at the local community level, fishing remained as a fundamental and essential activity, despite the increase in leisure activities and displacement by anglers who leased “fishing grounds” for their recreational activities and also owned and rented summer homes in those “traditional” communities. Fishers are increasingly joining the ranks of the salaried laborers, and most engage in occupational multiplicity (or “pluriactivity”) while remaining as fishers. Thus, fishing is of critical importance, regardless of its diminishing economic importance, due to its role as a coping mechanism and as a welder and nurturer of local identities (Salmi 2005, see also García-Quijano 2006, for a model on fishers’ success in Puerto Rico). The seemingly distant example of Finland allows us to have a better perspective on the socioeconomic processes affecting fishing in the Caribbean region. When we compare the predicament of the Finnish fishers with their peers in the region, we conclude that the Caribbean is not unique, nor special in the global trends transforming small-scale fisheries (see Dyer and McGoodwin, 1994; Pérez, 2005).

1.8. St. Croix in perspective

This assessment of the fishing communities in St. Croix puts in perspective the environmental, labor, migration and historical processes that shaped society and economy in St. Croix. It is in that context that fishing became an important economic activity, always as a backdrop to the plantation economy, manufacturing, tourism and service work. Fishers came from different ethnic backgrounds, and brought with them their culture and history of peoples moving within the archipelago and from the Caribbean to the Continents, and vice versa. Trinidadians, Continentals from the U.S., Puerto Ricans, St. Lucians and many people of West Indian origin contributed to the formation of a class of fishers who also served as a reserve labor force to other sectors of the economy. The economic processes that shaped St. Croix in the twentieth century also contributed to the dispersal of houses and homesteads, spreading the rural folk throughout the landscape of the island. The poor in the urban areas also were relocated to the housing projects in some cases, and in others they moved *motu proprio* to a better and different life, away from the coast. Speaking in tongues, and dispersed, the fishermen became an interesting lot: fragmented, united in some pursuits, defending their traditional fishing grounds from conservation measures, and struggling in a heavily impacted environment and a gradual decline in the fishery.

The above-mentioned report on fishing communities from New England (Griffith and Dyer, 1996) brings to the table a thorough discussion of the analysis of the large context in which the fishing communities are inserted, or what they call the Regional Ecosystem Approach (NRR Model). The NRR is conceptualized as a network of natural resource communities bound together by total capital flows and dependent on the marine resources.

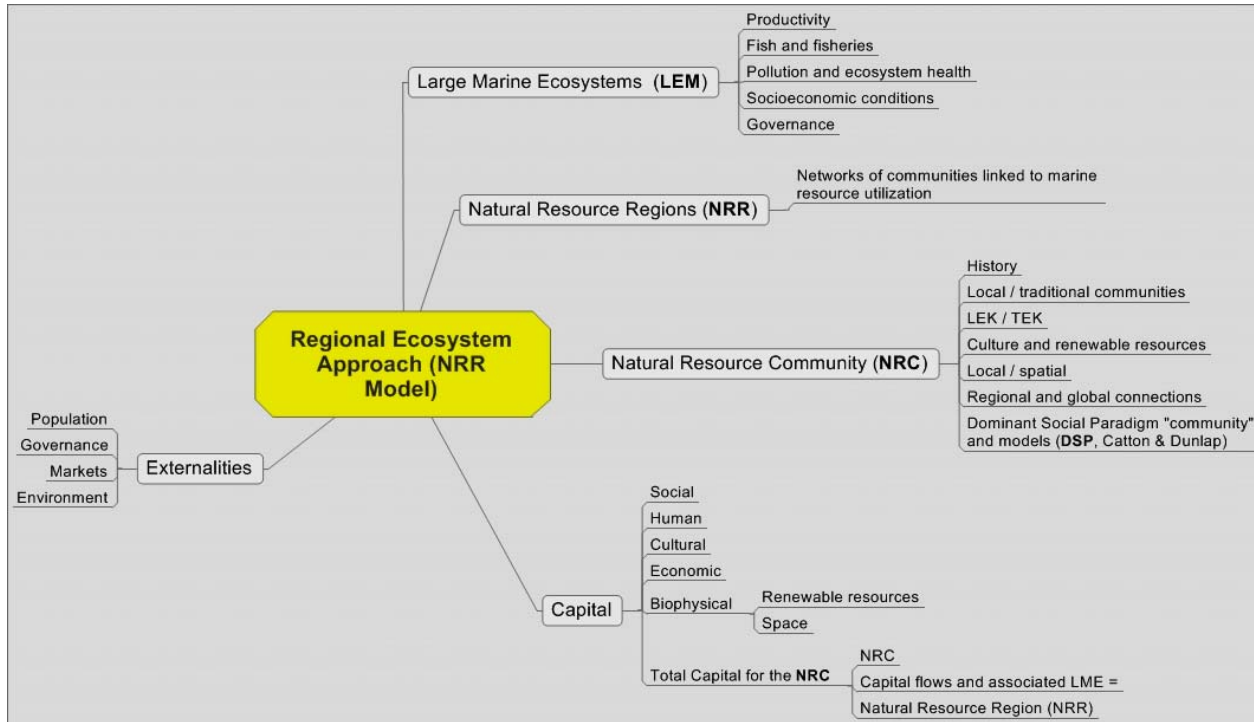
Figure 3 illustrates how the diverse components are interrelated in the island of St. Croix. One of the key aspects of the model is the discussion on the different forms of capital (social, cultural, economic and biophysical) needed for the maintenance and continuity of the Natural Resource Community (NRC). The NRC uses those forms of capital, paraphrasing Salmi, to sustain its livelihood, jointly with the key components of its socio-economic profile, including its culture, history, regional and global connections, sense of place, and forms of knowledge (traditional and local)..

In this study we argue that Cruzan fisheries and fishing communities are not place-based. Fishing is not the keystone of the economy, and only represents a small fraction of jobs and revenues. However, fishing is at the core of the identity of the Cruzan population, regardless of ethnic origin. The historical roots of fishing in St. Croix link many groups in a sequence of nodes and networks of fishers that involve

households, clients, ethnic groups, restaurants, businesses and visitors throughout the island and the region. Social capital is a mechanism and a process that allows fishers to exchange information, goods and services in a system charged with symbolism and cultural values, in a NRC. In other words, it is “key to the flow of other forms of capital, as well as central to the dynamics of governance and resource utilization” (Hall-Arber *et al.* 2001). In our view, fishing plays a critical role in the economy, in the social relations and the local culture, always understanding the general context of Cruzan society and economy.

Thus, understanding ‘fishing communities’ in St. Croix imposes an interesting conundrum: the notion of fishing community in a society characterized by high mobility of fishers, and a historical process of transformation of coastal communities that probably erased the traditional community of fishers as social scientists tend to portray them. It is in this context that we describe the pertinence of the geographical and social communities of fishermen, and the dependence of Cruzan society on fishing. It is argued in this report that there is a historical connection of the native Cruzans with the sea and fish, as well as with the imports of fish. Four centuries of slavery, intensive sugarcane agriculture, land clearing (for pastures and new crops), urban growth, and industrialization and tourism development have taken a toll on the environment and the local fisheries. Cruzan fishers operate in an environment dominated by local and (U.S.) Federal jurisdictions, an increasing number of marine protected areas and gear regulations, and threats to their livelihood in a de-territorialized landscape in which place-based fishing communities are perhaps a thing of the past.

Figure 3: The Natural Resource Community Framework.



Source: Hall-Arber *et al.*, 2001

2. A Rapid Assessment of Cruzan Fisheries

2.1. Methods

Rapid assessments are a common ethnographic technique used when social scientists do not have the time to live in a community or to develop a rapport with the various stakeholders over a long period of time (Bernard, 2006; Huang, 2003). Instead data are gathered during one or more short visits to the research site. In this project, the majority of the fieldwork was conducted by three anthropologists with various theoretical and applied backgrounds: political economy and fisheries management (Valdés-Pizzini), fisheries management and coastal communities (Kitner) and biology and cognition (García-Quijano). The core of the information presented was collected during three separate visits to St. Croix: June 2004 (Valdés-Pizzini and García-Quijano), July 2004 (Valdés-Pizzini) and August of 2004 (Kitner).¹

During the visits, the team employed a cultural mapping protocol developed in consultation with the National Marine Fisheries Service. This protocol was used to guide the systematic collection of field observations such as the presence of people, equipment and infrastructure at various sites (e.g., ramps, markets). The protocol also had a number of exploratory, semi-structured lines of inquiry about a number of key fisheries issues. Although most rapid assessments keep the number of key informants low, we followed a diversified sampling strategy. We sought to sample most, if not all, sectors of Cruzan society involved in fishing and conservation. In all, the team held exchanges with 47 individuals. The distribution of interviews were as follows: commercial fishermen (15), territorial resource managers (4), federal resource managers (3), researchers (5, but 4 were also counted as resource managers), business people and workers from the tourism sector (8), operators of water recreation businesses, including charter boat and diving operators (8), residents (5), government officials (2), and people in the seafood business (2). A number of individuals (mainly fishers and resource managers) were interviewed twice or more during our visits. From the list of the 47 individuals we spoke to, 4 were former fishers who provided us with a detached but critical outlook on the trade.

¹ Valdés Pizzini made an initial visit (unrelated to this study) to St. Croix with Ruperto Chaparro (UPR-Sea Grant), from August 12 to 14, 2002 to participate in a meeting of the Caribbean Fishery Management Council (CFMC), and to assess the ways in which Sea Grant could provide assistance to the local fishermen's cooperative. Chaparro and Valdés Pizzini interviewed various fishers and visited a number of sites throughout the island, taking photographs of the landscape and the infrastructure. This visit provided a first step into the rapid assessment, through observations, participation in events and informal interviews with the Cruzan fishermen.

Appendix A shows that the protocol allowed for the collection of observational information on the physical characteristics of fishing communities, markets and landing sites; on market structure and exchanges, and the types of vehicles and equipment used; and on the presence of supporting businesses and services. As a result, the team compiled ethnographic notes and descriptions of the following sites: Gallows Bay, Central Fish Market in La Reine, Food Market near La Reine, Frederiksted Fish Market, Fish House in Princess, road vegetable stands, Altoona Lagoon Ramp Area, Green Cay Marina, Cramer Park, Altoona Beach and Recreational Area, Villa Morales restaurant, and other local restaurants throughout the island. The team also made systematic observations throughout the island, and listened to AM radio to gauge the public sentiment on a number of social and political issues. The team also attended public events which revealed interesting aspects of Cruzan life.

The cultural mapping protocol also engaged various stakeholders with semi-structured discussions about fishing practices, such as target species, gear and vessel types, and fishing grounds; regulations such as marine protected areas and the trammel net and gillnet ban; governance structure; fishermen's organizations and social networks; seafood consumption; key issues, hurdles and perceived problems of the local fisheries; availability of alternative employment opportunities; and the future of fishing.

In addition, the team examined and analyzed a number of government documents, books and papers. For example, Valdés-Pizzini visited Whim Estate Archive to examine documents, sketches, rare and old books and documents related to fishing, use of coastal resources, coastal communities (a set of papers and documents on Gallows Bay), and photographs. Valdés-Pizzini also examined and downloaded pictures from the Library of Congress taken by Jack Delano in St. Croix in the late thirties. The Delano photographs offer a unique window to the impacts of homesteading and agricultural development under the New Deal reconstruction efforts.

This manuscript also benefited from a number of U.S.V.I. Division of Fish and Wildlife reports, such as the census of commercial fishermen and studies on fishermen's perceptions and attitudes. The results of these studies were used to compare and contrast to this team's findings and to quantify (to the extent possible) some of the qualitative findings of this rapid assessment. The team also assembled a number of studies on the fishery resources, economy, culture and history of St. Croix that allowed us to present an accurate description of the Cruzan history and society. Reports and data of fisheries landings, MPA management plans and old reports on the local fisheries were also incorporated into this manuscript.

Finally, the team also took pictures of the island's landscape, people, landing sites, markets, communities, boats and buildings. The picture database is part of the documentation we used in this report. A number of those photos are interspersed in the text of the report.

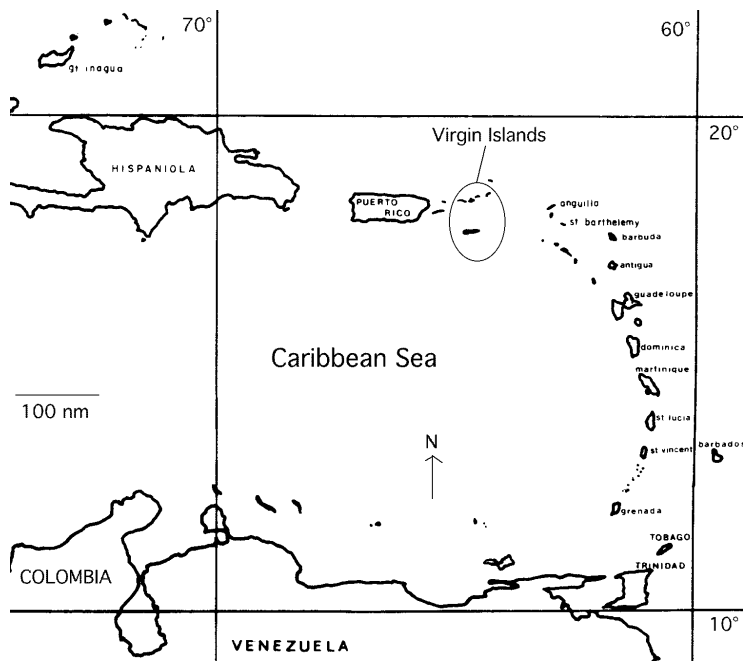
3. Portrait of Cruzan Geography, Economy, Society and Environment

3.1. U.S. Virgin Islands Geography, Economy, and Society

3.1.1. Geography

The Territory of the United States Virgin Islands (U.S.V.I.) is located in the northeastern Caribbean Sea in close proximity to the east coast of Puerto Rico (Figure 4). The islands make up the northernmost tip of a chain of Caribbean island nations collectively known as the Lesser Antilles that stretch as far south as Trinidad and Tobago. The U.S.V.I. is an archipelago consisting of the three main islands of St. Thomas, St. John, and St. Croix, along with approximately 65 other small islands and cays.

Figure 4: Map of the U.S. Virgin Islands.



The three main islands encompass a land area of 136 square miles, approximately twice the size of Washington D.C. The three main islands have over 172 miles of coastline (C.I.A., 2008; U.S.V.I. DPNR, 2005). St. Croix has the largest landmass with 84 square miles, followed by St. Thomas with 32 square miles, and finally St. John with 20 square miles (Table 1).

Table 1: Geographical information about the U.S. Virgin Islands.

| | St. Croix | St. Thomas | St. John | U.S.V.I. |
|-----------------------------------|-----------|------------|----------|----------|
| Land Area (sq. mi.) | 84 | 32 | 20 | 136 |
| Shoreline (miles) | 70.3 | 52.8 | 49.7 | 172.8 |
| Tidal/Subtidal Wetlands (sq. mi.) | 2.5 | 2.4 | 1.1 | 5.9 |
| Embayments (sq. mi.) | 1.5 | 0.9 | 0.1 | 3 |

Source: U.S.VI.DPNR, 2005

The islands lie in the middle of a mainstream of ocean currents moving from an easterly to westerly direction. These currents have influenced navigation and shipping patterns since the early days of exploration. The North Equatorial current originating in the Canary Islands region turns into the Antilles current and flows northward towards the mainland United States. The South Equatorial current originating in the Gulf of Guinea flows northward from the northern shore of South America as the Guiana current and eventually meets up with the Antilles current to form the Gulf Stream (Dookhan, 1974). The currents have allowed easy access into and out of the West Indies, which, along with the prevailing Northeast Trade winds, allowed European sailing ships to establish trade routes that endured for centuries.

The U.S. Virgin Islands occur on two separate insular shelf platforms separated by a 4,000-meter deep ocean trench. St. Thomas and St. John share the same shelf, while St. Croix occurs on a much narrower shelf to the south (CFMC, 2005). The islands of St. John and St. Thomas benefit from their wider and deeper shelf, which permits them to be a major hub for large ocean-going freight vessels and a popular destination for cruise ships. St. Thomas and St. John have very deep bays with narrow entrances, which make for good harbors since they protect vessels from rough seas and high winds (Dookhan, 1974). In contrast, St. Croix has wider bays that are open to rough weather.

The U.S. Virgin Islands are located in the belt of the northeast trade winds, which affords them a mild and uniform subtropical climate. High temperatures generally reach 95°F in the summer months while low temperatures reach 67°F in the winter months, with mild seasonal variations. The rainy season runs from September to November. The average annual rainfall is 41 inches per year. Rainfall, unlike temperature, can vary significantly, raising water conservation concerns, particularly in drier years due to a lack of naturally occurring freshwater throughout the islands (Dookhan, 1974).

The topography of the U.S. Virgin Islands is predominantly hilly with mountain peaks reaching upwards of 1,200 feet or more above sea level at points on all three islands. Its soils are generally porous and not very suitable for agriculture due to poor water-holding capacity and increased erosion. The exception to this rule is St. Croix, which contains a relatively large, flat coastal plain to the south with gentle slopes and productive soils in the central and southwestern portions of the island (Shaw, 1935; Dookhan, 1974). The low-lying coastal plains and productive soils of St. Croix favored the development of farming and livestock rearing.

3.1.2. Contemporary Economy and Society

The U.S. Virgin Islands are an “unincorporated” territory administered by the Office of Insular Affairs, U.S. Department of the Interior, with a non-voting delegate in the U.S. House of Representatives. Although U.S. Virgin Islanders have U.S. citizenship, they cannot vote in U.S. presidential elections. U.S. Virgin Islanders vote for governor and lieutenant governor every four years and for fifteen legislators every two years to form a unicameral legislature. The capital is located in Charlotte Amalie on the island of St. Thomas.

The islands have a population of 112,801 people (U.S.V.I. B.E.R., 2006). Approximately 96 percent of the population lives on the islands of St. Thomas and St. Croix, while St. John is sparsely populated (Table 2). The majority of the residents are black of West Indian descent, with English being the most common spoken language (C.I.A., 2008). Baptist and Roman Catholic are the two most prominent religious practices (C.I.A., 2008). The cultural and ethnic makeup of the islands has been shaped by the slave trade, importation of migrant workers from neighboring islands, and more recently, by the influx of U.S. ‘continentals’ (i.e., people from the mainland) and retirees settling along the coast.

U.S. Virgin Islands’ gross territorial product (GTP) was about \$3.1 billion in 2006 (U.S.V.I. B.E.R., 2006). Tourism and manufacturing are the two most important economic sectors. Of the 45,209 non-agricultural jobs in the Virgin Islands, 73% are private sector jobs, and remaining 27% are public sector jobs (both federal and territorial). In 2006, 11,462 people were employed by the territorial government (860 by the federal government), followed by 7,188 people in the leisure and hospitality sector, and 6,930 persons in the wholesale and retail trade. The construction and mining sector hired 3,095 people in 2006 (U.S.V.I. B.E.R., 2006). Table 3 offers additional economic indicators.

Table 2: Demographic profile of the U.S. Virgin Islands.

| | |
|----------------------------|---------|
| Total Population | 112,801 |
| St. Croix | 49% |
| St. Thomas | 47% |
| St. John | 4% |
| Racial Makeup | |
| Black (West Indian) | 76.2% |
| White | 13.1% |
| Asian-American | 1.1% |
| Mixed | 3.5% |
| Other | 6.1% |
| Ethnic Origin | |
| Native Born | 45% |
| West Indian (non-U.S.V.I.) | 29% |
| U.S. Mainland | 13% |
| Puerto Rican | 5% |
| Other | 8% |
| Language | |
| English | 74.7% |
| Spanish/Spanish Creole | 16.8% |
| French/French Creole | 6.6% |
| Other | 1.9% |
| Religion | |
| Baptist | 42% |
| Roman Catholic | 34% |
| Episcopalian | 17% |
| Other | 7% |

Tourism is the key driving economic engine of the islands. Expenditures from tourism were about 1.47 billion dollars, which is about 47.6% of the GTP. The islands' successful marketing campaign to attract tourists, investors, second homebuyers, and elderly retirees to migrate to the "American Paradise" yields over 2.45 million visitors per year (Table 3). Although, the islands are an important destination of the cruise ship industry, the hotel industry is responsible for most of the employment, taxes, and investment.

Despite moderate growth rates, the economy has often faced challenges in the past due to persistent government deficits and chronic unemployment and poverty. Poverty continues to be a problem in the islands, especially for young children. Government statistics at the beginning of the 21st century showed that about 28.7% of families and 32.5% of the population were below the poverty line, and that the median household income was \$24,704 compared to the U.S. average of \$46,236 for that same year (U.S. Census Bureau, 2000). In addition, the 2006 KIDS COUNT, a national effort funded by the Annie E. Casey Foundation to measure the well being of children, showed that 33% of the children in St. Croix and 26% of the children of St. Thomas were living in poverty in 2006 (C.F.V.I., 2006). The U.S.V.I. Bureau of Labor Statistics reported an unemployment rate of 6.3% for 2006 (U.S.V.I. B.L.S., 2006).²

² In July 2009, the unemployment rate rose to 8.2% (10.2% in St. Croix and 6.6% in St. Thomas and St. John, U.S.V.I.B.L.S., 2009).

Table 3: Socio-economic indicators of the U.S. Virgin Islands (2006).

| Population, Labor Force, Poverty | |
|--|---------|
| Total resident population | 112,801 |
| St. Thomas and St. John | 57,514 |
| St. Croix | 55,287 |
| Civilian labor force | 51,159 |
| Civilian employment | 48,640 |
| Unemployment rate (%) | 6.2% |
| Percent population living in poverty | 32.5%* |
| Income and Earnings | |
| Gross Territorial Product (\$ million) | 3,080 |
| Median household income (\$) | 24,704* |
| Per capita personal income (\$) | 19,211 |
| Tourism | |
| Total visitors (thousands) | 2,574.9 |
| Number of cruise ships arriving at St. Thomas and St. John | 776 |
| Number of cruise ships arriving at St. Croix | 25 |
| Total Visitor Expenditures (\$ million) | 1,465.6 |
| Percent contribution of tourism to GTP (%) | 47.6 |
| Commercial Fishing | |
| Number of Licensed Fishers † | |
| St. Thomas and St. John | 160 |
| St. Croix | 223 |
| Number of crew ** | 536 |
| Landings (millions lbs)*** | 2.06 |
| Value of landings (\$ million)*** | 8.02 |
| Percent of landings' revenue relative GTP (%) | 0.3 |
| Percent of contribution of harvesting sector to overall employment | 0.02 |
| Employment | |
| Construction and Mining | 3,095 |
| Manufacturing | 2,327 |
| Transportation, Warehouse & Utilities | 1,651 |
| Wholesale and Retail Trade | 6,930 |
| Financial Activities | 2,573 |
| Leisure and Hospitality | 7,188 |
| Information | 825 |
| Services (professional, business, education, health) | 9,268 |
| Territorial Government | 11,536 |
| Federal Government | 831 |

Sources: * U.S. Census Bureau, 2000, † Kojis, 2004, ***NMFS, 2007a, ** Assumes 1.4 helpers per fisher (Kojis, 2004)

St. Thomas and St. Croix have vastly different industrial structures. St. Thomas was, and it still is, a major harbor and shipping hub. It is the center of the political, social, and economic life of the islands. It also captures most of the tourists coming into the islands. Charlotte Amalie, the main city and harbor, is one of the most important destinations for the cruise ship industry in the Caribbean. St. Thomas has benefited over the years from its deeper channels and established shipping port structure while the ports in St. Croix remain quite rudimentary and less organized. As a result, the St. Thomas District receives about 93.4% of the total visitors to the islands as well as a majority of the nearly \$1.5 billion of tourist expenditures (Table 3). Although St. Thomas has a larger hospitality and leisure industry, St. Croix has a larger manufacturing base, largely dependent on petroleum and rum exports. The HOVENSA, a joint venture between a subsidiary of Amerada Hess and a subsidiary of Petroleos de Venezuela S.A. (PDVSA), is the largest oil refinery in the western hemisphere. In 2006, it shipped about \$11.5 billion worth of petroleum products to the U.S. mainland (HOVENSA, 2006). In the same year, St. Croix also shipped 7.6 million proof gallons of rum to the U.S mainland generating over \$100 million in excise taxes. In addition to these industries, St. Croix also has a successful watch manufacturing industry.

3.2. Forces that Shaped the Contemporary Economy and Society

Under Danish rule, St. Croix was one of the wealthiest islands in the West Indies. This affluence was largely due to sugarcane planting and processing, rum production and slave labor. St. Croix also grew minor quantities of cotton, tobacco and indigo. In the 1800's, the island's prosperity declined due to falling sugar prices brought about by the increased competition from sugar beet growers in Europe and the abolition of slavery. Following emancipation and labor revolts, the economic conditions continued to deteriorate. In 1878, failed plantations were leased out to rural families (Dookhan, 1974). The advent of World War I led to the U.S. purchase of the Virgin Islands as a defense outpost to protect the newly built Panama Canal. By this time, the local economy was in despair. The sugar industry had collapsed due to hurricanes, droughts, and foreign competition. Although residents hoped for economic improvement and political reforms under the new rule, low wages, high unemployment, and high infant mortality rates characterized the early days of the American administration. According to Lew (1950) the Red Cross often fed local families because of the precarious economic situation on the island.

In response to dismal living conditions, many families emigrated seeking better places to live elsewhere. Between 1901 and 1917, the number of islanders decreased from 30,527 to 26,051 (Dookhan, 1974). In 1922, the Prohibition Act essentially halted the local rum production, further exacerbating the island's economic woes. Along with sugar and rum, the production of cotton also declined because it could not be

exported due to the WWI (Dookhan, 1974). In 1931, the U.S. Department of the Interior took over from the U.S. Navy. Two years later, President Roosevelt's New Deal led to the creation of the U.S. Virgin Island's Corporation (VICORP). VICORP assisted in the development of the homestead program to assist families in retaining land for agricultural purposes. VICORP also provided incentives for diversifying the agricultural and business activities of the Territory.

Although VICORP improved housing and social conditions of the locals, the islands' economic situation deteriorated due to the closure of a submarine base, the end of the wartime construction boom, and the decline of wartime demand for sugar and rum. During and after World War II, the island's ethnic makeup began to change dramatically as Puerto Ricans, mainly from the island of Vieques, moved to St. Croix to work in the sugarcane industry. In the late 1960's, the severance of diplomatic relations between the U.S. and Cuba paved the way for the U.S. Virgin Islands' emergence as a major tourism destination. Following the transformation from agricultural to a hospitality-based economy, the local government stopped subsidizing VICORP's agricultural activities and sugarcane production finally ceased in 1964. After the demise of the sugar industry and the official disbanding of VICORP in 1966, St. Croix quickly evolved into a barren land with dried streams, with only remnants of the once dominant agricultural sector (Lawaetz, 1991).

To stimulate industrial development, the government started issuing tax exemptions and industrial subsidies. These incentives, along with the U.S. mainland's increased access to duty-free articles assembled in the U.S. Virgin Islands, promoted the development of heavy industries in St. Croix, such as the Harvey Alumina Company and Hess Oil. The 1960's featured a boom in construction, tourism, and manufacturing that required the importation of workers from other West Indian nations. The joint venture between the American-based Hess Oil Virgin Islands Corporation with Petroleos de Venezuela, the national oil company of Venezuela, together formed HOVENSA, which proved to be an enormous success for the island. This joint venture, coupled with increased processing of aluminum and rum, sparked the transition from an agriculturally based to a manufacturing based Cruzan economy.

Despite a booming tourism industry in St. Thomas, St. Croix has not fully tapped its potential as a tourist destination (Wedderborn, 2004). Presently, the government and private sector are seeking to market the island as a potential tourist destination as a means to increase employment and economic opportunities. Among the planned projects are the Bethlehem Sugar Factory (an agro-tourism destination similar to the Bacardi plant in Puerto Rico) and a number of hotels with beachfront condominiums.

In addition to expanding the tourism sector, St. Croix seeks to attract other industries to the island. For example, local government recently established a 1244-acre industrial park on the south coast. The St. Croix Renaissance Industrial Park not only provides competitive and high quality on-site infrastructure for electricity, steam, water, and telecommunications, but also provides direct access to a large deep-water port which is centrally located relative to international shipping lanes (St. Croix Renaissance Park, 2009). Currently, the St. Croix Renaissance Park has two major tenants: GeoNet Ethanol LLC, which operates a state-of-the-art ethanol dehydration facility, and Diageo, which is building a 20 million gallon rum distillery that will start operating in 2011. Diageo is expected to produce all of the rum used to make Captain Morgan branded products for the U.S. market (St. Croix Renaissance Park, 2009). The creation of the University of the Virgin Islands Research and Technology Park (RTPark), which seeks to foster the development of a competitive knowledge-based and network-connected economy, is another example of the island's diversification efforts.

3.3. Fisheries Sector in an Economy Dominated by Manufacturing and Tourism

The contribution of Cruzan fisheries seems minor in an economy dominated by manufacturing and tourism. However, this overlooks the complex and multifaceted aspects of fishing. Fishing not only provides local populations with food, income, and employment, but also provides them with recreational and therapeutic activities (McGoodwin, 1990; Berkes *et al.*, 2001; Griffith and Valdés-Pizzini, 2002). Fishing can also act as an employer of last resort or a buffer zone for those individuals who cannot participate in other sectors of the economy due to lack of knowledge, skills, or education; thus, mitigating the adverse effects of unemployment. Fishing continues to be an important recreational and commercial activity that is essential to the Cruzan lifestyle and identity.

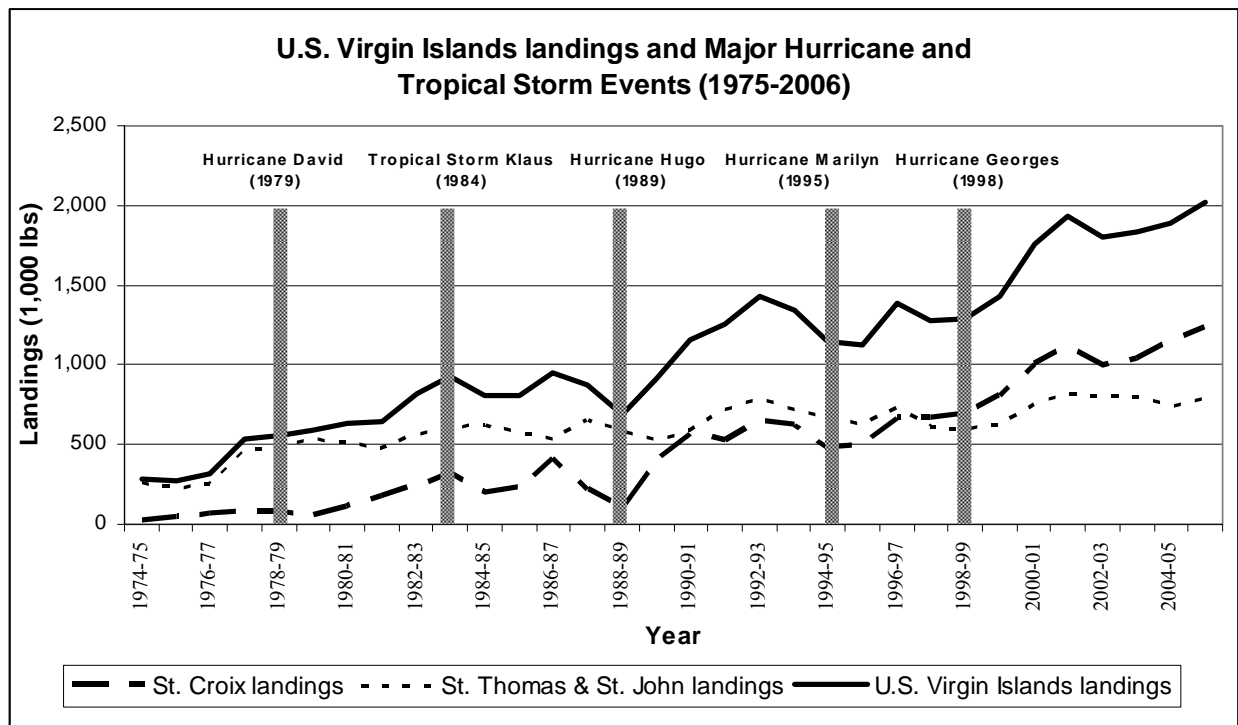
3.3.1. Commercial Fleet

The commercial fleet of the U.S. Virgin Islands is small in scale, multi-gear, and multi-species in nature. According to the Department of Fish and Wildlife statistics, there are about 383 licensed commercial fishermen and 536 helpers. These fishermen fish with small-sized vessels, averaging 21 feet in length, and a variety of fishing gears, which include traps, nets, hook and line, and scuba diving gear. They target multiple species including reef fishes, coastal pelagics, lobsters and conch (DFW, 2005).

Kojis (2004) notes that there are distinct differences across the islands as to the gear types used. In St. Thomas and St. John, commercial fishermen use over 7,500 traps to land lobster and reef-fish whereas in

St. Croix, fishermen do not commonly use traps. Instead, Cruzan fishermen use a mix of gears such as multi-hook vertical setlines, gill and trammel nets and SCUBA. In 2008, U.S.V.I. Fish and Wildlife began enforcing the 2006 gill and trammel net ban in St. Croix. Hook and line fishing is conducted by most Virgin Islands fishermen.

Figure 5: Correlation between recent landings and major storm events.



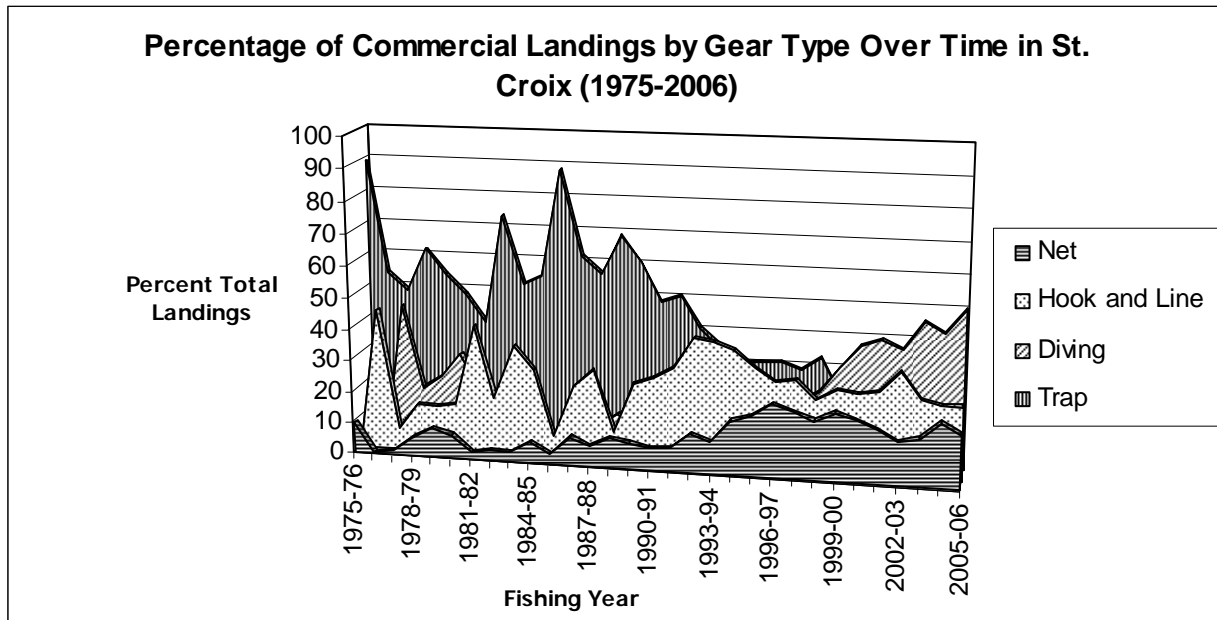
Source: NMFS, 2007a.

Hurricane Impacts and Commercial Production

Commercial fisheries have been affected by strong storm and hurricane events, which represent a continuous threat each year due to the islands' location along the Caribbean "hurricane belt" (DFW, 2005). Historical landings data show that production levels decreased following a hurricane or major tropical storm that directly impacted the islands (Figure 5). Hurricane Hugo had a particularly severe impact on the commercial fleet in St. Croix as total landings dropped from 440,944 lbs in the 1987-88 fishing season to 15,332 lbs immediately following Hugo in 1989. This represented a staggering 96 percent decrease in total landings from the previous fishing season mainly as a result of extensive damage and loss of fishing gear, especially traps, and adverse impacts on coral reefs (Tobias, 2004b; NMFS, 2007a). The sharp loss of traps prompted fishermen to increase the use of diving and gillnets over the past 15 years in St. Croix. Currently, nets account for 68 percent of the total landings (Figure 6). Between 1991 and 2003 the share of reef-fish landings taken by traps decreased from 89% to 43%, whereas the

proportion of reef-fish landings taken by nets increased from 11% to 57% (Tobias, 2004b). SCUBA is used to herd reef-fish species such as parrotfish and surgeonfish into the nets.

Figure 6: Percentages of total landings broken up by gear type (1975-2006).



Source: NMFS 2007a.

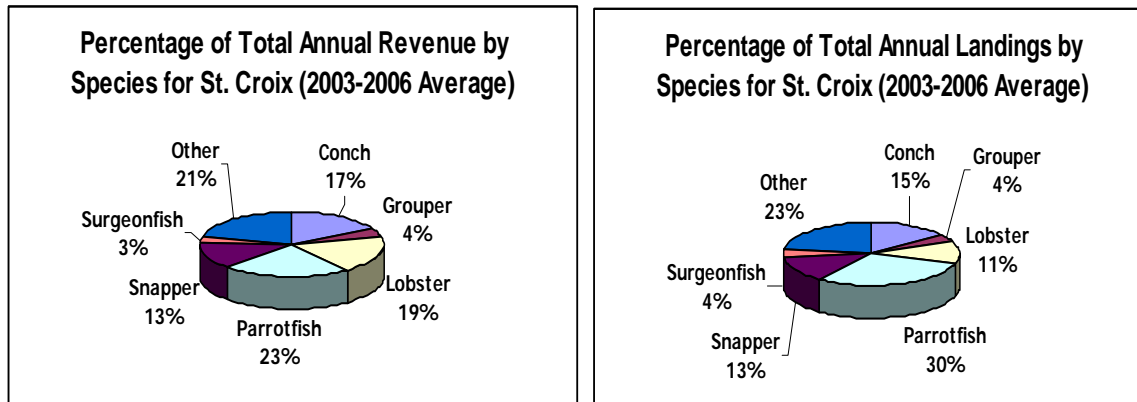
Coral reef damage from Hugo was especially detrimental to commercial fisheries since critical habitat for important reef species was reduced in many shallow areas off Buck Island in St. Croix and in Lameshur Bay off of St. John, both of which saw significant coral mortality (Jeffrey *et al.*, 2005). However, just as in other similar instances, fish landings bounced back and returned to normal levels following strong storm and hurricane events, showing the adaptability and resilience of the commercial fishing sector in the region.

Major Fisheries

Fishermen catch conch and spiny lobster as well as various reef fish species including snappers, groupers, parrotfish, and surgeonfish, among others. Data averages over the previous three fishing seasons (2003-04 to 2005-06) show that parrotfish, lobster, and conch represent the top three landed species, which on the aggregate comprise 56% of the total landings and nearly 60% of the total revenue generated by the commercial fleet (Figure 7). Parrotfish generally dominates the catch in terms of total volume landed (30%) and total revenue generated (23%) despite commanding one of the lowest ex-vessel prices (3.43

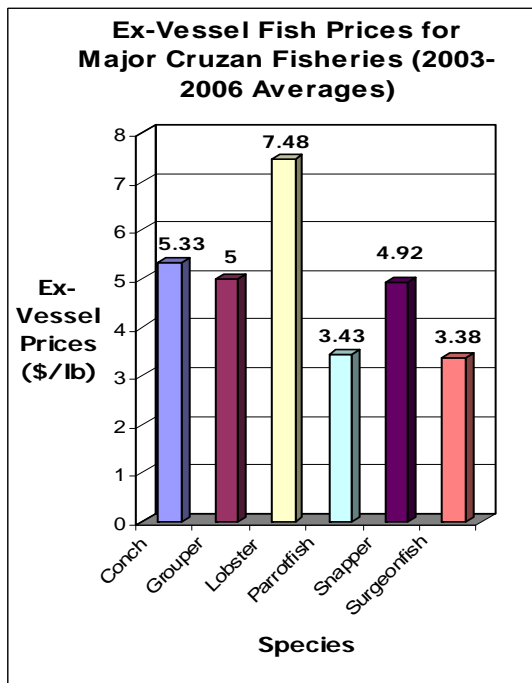
\$/lb). On the other hand, lobster and conch command about 7.48 \$/lb and 5.33 \$/lb, respectively (Figure 8).

Figure 7: Percent landings and revenue by species averaged for 3 years beginning with 2003-04.



Source: Holt and Uwate, 2004; NMFS 2007a

Figure 8: Ex-vessel seafood prices.



Parrotfish was responsible for 75% of the net (i.e., gillnet and trammel net) landings, 34% of the skin/SCUBA landings and 31% of the trap landings (NMFS, 2007a). Gillnets, in particular, are sometimes used in tandem with diving in order to “herd” schools of parrotfish into nets. Besides parrotfish, lobster, and conch, the next most landed species in St. Croix were snappers, groupers, and surgeonfish with various other reef and coastal pelagic species making up the rest of the commercial landings. Snappers and groupers are mostly caught by hook and line gear while surgeonfishes are caught by a variety of fishing gears, especially nets and traps (NMFS, 2007a).

Fishery Management

Federal and territorial governments share the responsibility of managing and conserving marine resources in the U.S. Virgin Islands. The territorial government has jurisdiction over fishery resources occurring

within the territorial sea, which extends from the shoreline out to three nautical miles, whereas the federal government jurisdiction extends from three nautical miles to two hundred nautical miles.³

The U.S.V.I. Department of Planning and Natural Resources (DPNR), which houses the Division of Fish and Wildlife (DFW) and Division of Environmental Enforcement (DEE), is responsible for the management of territorial marine resources. DFW provides management advice to the DPNR Commissioner. It conducts scientific research and implements conservation awareness programs. The DEE is responsible for enforcing fishing and environmental regulations. On August 24, 2001, the DPNR implemented a moratorium on the issuance of new commercial fishing permits. In addition to the moratorium, daily quotas for conch, area and seasonal closures, minimum size and mesh size regulations are the main management tools used in the territory.

The Caribbean Fisheries Management Council (CMFC) manages marine resources in the EEZ of the U.S. Virgin Islands and Puerto Rico (NMFS, 2007b). The Secretary of Commerce is responsible for approving and implementing fishery management plans (FMPs) developed by the Caribbean Fishery Management Council (Table 4). The U.S. Caribbean FMPs rely mainly on area and seasonal closures, minimum size and mesh size regulations for managing species occurring in these waters. Federal regulations also prohibit the harvesting of Nassau grouper, goliath grouper, queen conch, and corals in the EEZ. NMFS enforcement agents and the U.S. Coast Guard are responsible for enforcing federal fisheries laws and regulations.

Table 4: Federal fishery management plans and amendments

| <i>Managing Body</i> | <i>Fishery Management Plans (FMP)</i> |
|--------------------------------------|---|
| Caribbean Fishery Management Council | Spiny Lobster |
| | Corals and Reef-Associated Plants and Invertebrates |
| | Queen Conch |
| | Shallow Water Reef Fish |
| NMFS Headquarters* | Consolidated Highly Migratory Species (HMS) |

* Note: The Consolidated HMS FMP includes several species such as Atlantic tunas, swordfish, and sharks over their entire geographical range, not only the U.S. Virgin Islands.

³ The exception to this rule is an area of 5,650 acres of submerged lands off the coast of St. John, which fall under the jurisdiction of the National Park Service (CFMC, 2005).

3.3.2. Recreational and Sport Fishing

Recreational fishing provides a valuable leisure activity for thousands of people in the U.S. Virgin Islands (Jennings, 1992; Mateo, 1999; Mateo, 2000; Messineo and Uwate, 2004; Griffith *et al.*, 1988). It is estimated that recreational fishing activities alone contribute about \$25 million annually to the local economy (Hinkey *et al.*, 1994). Recreational and sport fishers are generally not required to obtain licenses, often making it difficult to accurately account for these and other associated activities within the fishery. Previous attempts at estimating the number of recreational fishermen have generally relied on telephone surveys. A survey conducted by Mateo in 1999 reported that approximately 11% of the U.S.V.I. population was involved in recreational fishing, which provides similar statistics to the earlier survey conducted by Jennings in 1992 (Mateo, 2000).

Recreational and sport fishermen target nearly 80 fish species, 65 of which have commercial value (U.S.V.I. Department of Planning and Natural Resources, 2005). While commercial fishermen have generally targeted reef fish and coastal pelagics exclusively, recreational fishers tend to target not only these species but also offshore pelagic game fish, including dolphin-fish, tuna, kingfish, marlin, and other billfish (Olsen and Wood, 1984; Eastern Caribbean Center, 2002). Landings from sport and recreational fishing are a source of food for the local anglers, but some of the fish caught enter into the local market as well. Recreational activities can be divided into various categories, typically that of inshore and offshore recreational fisheries. The offshore recreational category includes both fishing charters and tournaments. Inshore recreational fishing can be either shore-based or boat based.

Inshore Recreational Fishing

Shore fishing has been shown to be practiced by “thousands of U.S.V.I. residents annually” mostly close to the “urban” areas of both St. Thomas and St. Croix (DFW, 2005). It is a year-round activity practiced by all age groups and social strata making it very important in the daily lives and activities of U.S. Virgin Islanders as well as its many visitors (Griffith *et al.*, 1988; Hinckley *et al.*, 1994). Shore fishing is probably the hardest recreational group to account for since so many different groups practice it, often at irregular time intervals. Nevertheless, this group is most likely the largest recreational fishing group in the islands in terms of participation.

Boat-based recreational fishing is important in terms of expenditures and time spent on this activity (Table 5). According to the Eastern Caribbean Center (2002), a research center of the University of the Virgin Islands, there are about 2,462 registered boat owners in the U.S.V.I., of which 566 are based in St.

Croix. Earlier sources, however, indicate that the number of recreational vessels registered in the U.S.V.I. in 1997 was estimated to be 5,000, showing a possible discrepancy in the actual total numbers of recreational fishing boats currently operating in the territory (DFW, 2005). Data from the Eastern Caribbean Center (ECC) survey also show that boat-based recreational fishers' expenditures totaled close to \$5.9 million, and that a majority of the recreational fleet and activities occur in St. Thomas where there are nearly twice as many boats and total hours devoted per year to this type of fishing (ECC, 2002).

Table 5: Boat-based recreational fishing in the U.S. Virgin Islands.

| | St. Thomas & St. John | St. Croix | U.S.V.I |
|--|--------------------------|-----------|-----------|
| Total registered recreational boats | 1,896 | 566 | 2,462 |
| Number of fishers on recreational boats | 1,820 | 720 | 2,540 |
| Percentage of recreational boats fishing inshore (≤ 3 miles) | 51.6 | 55.2 | 53.3 |
| Percentage of recreational boats fishing offshore (>3 miles) | 48.4 | 44.8 | 46.7 |
| Time fished (hours) | 91,910 | 25,142 | 117,052 |
| Total expenditures (\$) | 4,801,596 | 1,135,054 | 5,936,650 |

Source: ECC, 2002

Offshore Fishing and Other Marine Recreation

Offshore charter operations and sport fishing tournaments are becoming increasingly popular, providing direct and indirect economic benefits to the local economy (Olsen and McCrain, 1979; Ditton and Stoll, 2000). Billfish anglers have been shown to spend a great deal of money when they go fishing (Mateo, 2000). Major local expenditures include charter and guide fees, food, drink and lodging. Indirect impacts include the additional purchases of goods and services resulting from wages paid directly or indirectly by affected businesses (DFW, 2005).

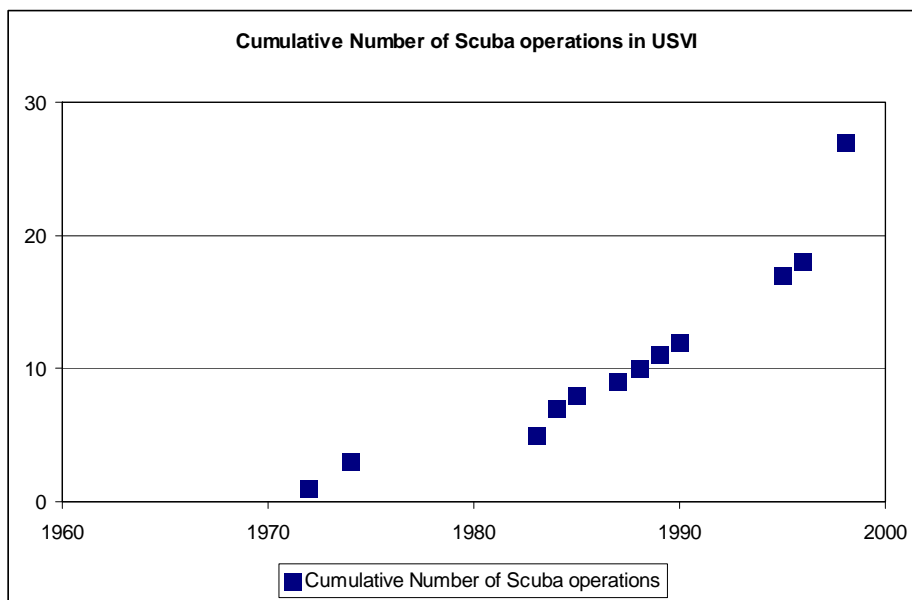
St. Croix's offshore fleet is rather modest compared to the St. Thomas one. It has about 30 fishing boats scattered around the north and east coasts (Mateo, 2000). According to our assessment, the sport-fishing sector is responsible for the growing consumption of pelagic species in local restaurants, hotels, and community at large.

In addition to the charter boat offshore fishing sector, there is a large tournament fishing community that was the focus of a survey conducted by the DFW between 2000 and 2005. The study surveyed 29

tournaments in St. Croix. The survey documented an overall catch of 889 fish, which in aggregate weighed 7,244.7 kg (DFW, 2005). The study also found that the two most commonly caught species were dolphin-fish and wahoo. The DFW study (2005) showed no clear trend between average fish size and fishing season for dolphin-fish; however, it noted that the average size of wahoo decreased as the season progressed. Although, the DFW study (2005) hypothesized that tournaments with large cash prizes could skew weight results towards larger fish, their findings did not support this contention. The study also noted that these preliminary results should be treated with caution given the small sample size and the fact that not all hooked fish were brought to the weighing stations.

Marine-related recreation in general has been a staple for attracting tourists to the area. In preparation for this rapid assessment, we did a quick inventory of the local businesses and counted 41 providers offering services in SCUBA diving, snorkeling, kayaking, sailing, and water taxi services to Buck Island. Most of these businesses were located in the northern and eastern shores of St. Croix. The number of SCUBA diving businesses in the U.S. Caribbean has grown in recent years but the environmental impacts of these operations have been hard to measure. Figure 9 shows the rise in the number of SCUBA and dive shop operators in the U.S. Caribbean over the last 30 years. The impact of sport fishing sector and ancillary businesses must not be overlooked since this sector will likely continue to grow and support the local economy.

Figure 9: Number of SCUBA diving operations in the U.S. Caribbean (1960-2000).



Source: Garcia-Moliner *et al.*, 2004.

3.3.3. Seafood Imports

Today seafood imports play a relatively minor role in the islands' economy despite its early importance. At the height of the plantation economy in the 18th century, inexpensive, salted fish was one of the main food staples for slaves working on the plantations farms. Depending on their owners, some slaves would be allowed to fish on Sundays. Slaves would usually fish with hand lines and seine nets. The catch tended to be used for personal consumption and/or sale at the local market. Despite these local fishing activities, most of the salted fish (mainly cod and herring) consumed in the islands originated in Newfoundland and North Sea waters. (Lawaetz, 1991; Kurlansky, 1998). In the 19th century, seafood imports became less important as slavery ended.

Information about seafood imports is scarce until the mid 20th century. In the 1930's, Fiedler and Jarvis (1932) characterized the state of local fish production and imports. According to these authors, seafood imports never dominated the local market; they simply supplemented the local production to meet the local demand for finfish and shellfish. In their 1932 report, Fiedler and Jarvis estimated that 362,519 lbs. of fishery products were being imported, representing 37% of the entire fish available for consumption. Most of the imports arrived through the U.S. mainland in the form of salted and smoked fish, which represented 67% of all seafood products (Fiedler and Jarvis, 1932). Almost forty years later, Dammann (1969) estimated that 1.59 million pounds of seafood were imported, representing about 46% of all fish available for consumption. Kingfish from Puerto Rico was a major fish import at the time, although salted cod from Norway and the Netherlands continued to dominate foreign imports (Dammann, 1969). The strong demand for kingfish was likely due to the large migration of Puerto Ricans from the island of Vieques in the 1940's (Ayala and Carro-Figueroa, 2006).

An Account of a Local Cruzan Restaurant Experience

Multiple species of imported salt fish is sold everywhere, and is the common fare by the end of the week. Conch, a local fare, also finds its way in the tables through the long route of the market. An undetermined amount of fish is shipped from the large wholesalers in Puerto Rico, directly into the islands. On a well-known restaurant owned by a Puerto Rican family, the owner told Valdés Pizzini, with a cynical smile: “pruébalo, que está bueno” (taste it, it is good), as she was certain about the origin of the conch. However, the actual origin of the conch turned out to be Nicaragua!

After Hurricane Hugo swept through the region, there was little conch to buy and the restaurant owners began importing fish. We have witnessed a similar process in Puerto Rico where fishers-entrepreneurs-dealers, which have had a long tradition of fishing, were also engaged in the introduction of fish from the global market to supply demand as well as to bypass management practices, curtailing the sale of local fish. Several entrepreneurial fishermen families in St. Croix have engaged in the practice of buying imported fish from local and Puerto Rican distributors who have supplied them with cheaply bought salted and frozen fish fillets as well as shellfish from other international markets.

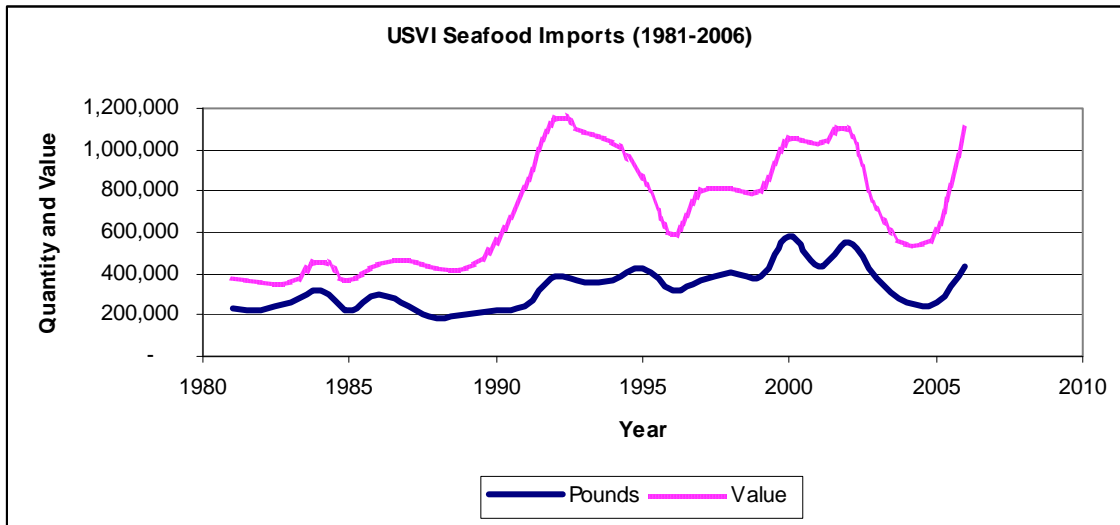
We do not know, however, if these types fall under the category of “imported” fish. This open flow of commodities makes fisheries management more difficult. The process we describe invites us to rethink fishing communities, and to challenge the view that the public and some government officials have of the fishers’ communities as purely autarkic and isolated villages. History reminds us that these communities have been tied to the world-economy not only through sugar and oil, but fish as well.

Field notes from M. Valdés Pizzini

Current Import Trends

In recent years, seafood imports remain on a roller coaster even as population steadily increases (Figure 10). In 2006, the total quantity and value of seafood imported to the U.S.V.I. was 392,678 lbs. valued at \$1.1 million (NMFS, 2007c). Figure 10 displays a time series for seafood import quantity and value over the past eighteen years. Imports remained relatively steady until 2003-2005, when they were at their lowest levels in recent history.

Figure 10: Time series of seafood imports into the U.S. Virgin Islands (1981-2006).



Source: NMFS, 2007c

Most of the recent imports originated from Norway in the form of various, non-specified, salted fish fillets. Norway also exported cod and smoked salmon fillets. These three products alone accounted for 82% of the imported product and 90% of the imported value. Canadian products (e.g., sardines, haddock, and tuna) came in a distant second with about 7% of the total import share (Table 6). In terms of value, Canadian imports only accounted for 6.5% of the imported value. Minor quantities of conch were imported from Dutch Antilles and St. Kitts-Nevis. Minor quantities of various marine frozen fish products were imported from Barbados⁴.

⁴ The number of seafood products imported under the label “non-edible” was insignificant and, therefore, not discussed exclusively.

Table 6: Value and quantity of seafood imports into the U.S. Virgin Islands (2006).

| Country of Origin | Seafood Product | Quantity (lbs) | Quantity (kg) | Value (\$) |
|---------------------------------|---|----------------|---------------|------------|
| Norway | Non-Specified Dried/Salted/Brine Fish Fillets | 250,830 | 113,755 | 598,118 |
| | Dried Non-Specified Groundfish Cod | 137,813 | 62,500 | 366,238 |
| | Smoked Salmon | 4,035 | 1,830 | 26,018 |
| Canada | Canned Sardines | 29,379 | 13,324 | 60,331 |
| | Salted Groundfish, Cusk, Haddock Fillets | 783 | 355 | 4,424 |
| | Non-Specified Tuna | 3,166 | 1,436 | 6,185 |
| Netherlands/ St. Kitts-Nevis | Live Fresh Conch | 44,188 | 20,040 | 11,700 |
| Other | Non-specified marine fish, Other products | 6,425 | 2,914 | 27,059 |
| Total | | 476,619 | 216,154 | 1,100,073 |

Source: NMFS, 2007c

3.4. The Condition of the Coral Reef Ecosystems

3.4.1. Status of U.S.V.I. Reefs

Coral reefs are widespread around the U.S. Virgin Islands. Fringing reefs, deep water reefs (wall and shelf-edge), patch reefs, and spur and groove formations are present in all islands, but only St. Croix has barrier reefs (Turgeon *et al.*, 2002; Jeffrey *et al.*, 2005). St. Croix's insular shelf has well-developed barrier reefs on the eastern end, which protect the eastern and southern shores. The Cruzan north shore has deep coral walls. Studies of the shallow benthic habitats of the U.S.V.I. (up to a depth of 30 meters) indicate that coral reef and hard bottom habitats cover 61% of these habitats with a total estimated area of 297.9 square kilometers. Major reef building corals include the genera *Acropora*, *Montastraea*, *Porites*, *Diploria*, *Siderastrea*, and *Agaricia* (DFW, 2005). In particular, star coral (*Montastraea annularis*), Elkhorn coral (*Acropora palmata*), and staghorn coral (*Acropora cervicornis*) have historically been the

most extensive reef-building species. In the 1970's these species were responsible for the 40-50% living coral coverage seen on U.S. Virgin Island reefs (Drayton *et al.*, 2004).

Today, due to diseases and human induced impacts, living coral coverage on most reefs accounts for less than 20%. Small colonies of mustard coral (*Porites astreoides*) and common brain coral (*Diploria strigosa*) are becoming more numerous relative to the traditional dominant reef communities seen in the past (Drayton *et al.*, 2004). As a result, both elkhorn and staghorn corals are under the protection of the Endangered Species Act due to declines of more than 90% in some areas. The U.S. Geological Survey (U.S.G.S.), the National Park Service (N.P.S.), and the University of the Virgin Islands (U.V.I.) are monitoring elkhorn coral stands in the Virgin Islands National Park off St. John and the Buck Island Reef National Monument off St. Croix to assess potential threats to local coral reef ecosystems.

Natural Stressors

The effects of natural disturbances such as hurricanes, loss of herbivores, disease outbreaks, and bleaching on the health of U.S.V.I. reefs have been well documented and pose a continuous threat each year (Rogers and Beets, 2001; Drayton *et al.*, 2004; Tobias, 2004b; Jeffrey *et al.*, 2005). The effects of anthropogenic stressors can worsen the adverse effects of natural disturbances.

Hurricanes and Tropical Storms

Between the months of June and November, the Virgin Islands' extensive reef system is threatened by the potential impacts of strong tropical storms and hurricanes. High winds and strong storm surges that accompany these storms are often severe enough to displace branching coral communities depending on their depth and level of exposure. Managers have recently characterized hurricanes as a "major threat" due to the level of damage of recent storms as well as the frequency of storm impacts over the last 20 years (Turgeon *et al.*, 2002, see Figure 5). Hurricanes David in 1979 and Hugo in 1989 caused extensive coral damage in many important shallow coral colonies that make up the barrier and inshore reef systems around St. Croix and St. John. Great Lameshur Bay off St. John has not seen any significant recovery of live coral coverage in nearly 12 years after the onset of Hugo (Rogers and Beets, 2001; Tobias, 2004b). Buck Island reef off St. Croix has also been slow to recover after extensive coral damage brought about Hugo and various diseases, which caused a 95% loss in live coral coverage of *Acropora palmata* in many shallow reef sites (Turgeon *et al.*, 2002; Mayor *et al.*, 2006).

Loss of Herbivores

In addition to damage from hurricanes, coral reefs were adversely impacted by a massive die-off of the black sea urchin (*Diadema antillarum*) which occurred in 1983 for reasons still unknown. This die-off removed a major grazer of algae, which in turn, caused blooms to occur and reduced overall coral settlement and larvae recruitment ever since (Rogers and Beets, 2001; Tobias, 2004b). Studies by the University of the Virgin Islands between 2001 and 2003 showed that in many affected reef sites, turf algae covering dead coral occupied nearly 50% of the bottom cover, thereby dominating the available substrate and preventing the recovery of many coral species following the damage from hurricanes and tropical storms (Jeffrey *et al.*, 2005). This situation has been further exacerbated by the reduction in the numbers of important herbivorous reef fish, such as parrotfish due to fishing pressure (Turgeon *et al.*, 2002; Tobias, 2004b).

Coral Diseases and Bleaching

Coupled with storm impacts, which caused massive mortalities from the mid-1970's to the mid 1980's, white band disease (WBD) has severely impacted patches of elkhorn and staghorn coral off Buck Island in St. Croix. Some of the reef sites in this area experienced losses of over 90% of living coral coverage after the onset of the disease (Rogers and Beets, 2001; Turgeon *et al.*, 2002). In addition, other diseases such as plague type II and black band disease have also adversely impacted corals in the U.S.V.I. but not nearly to the extent of WBD.

Coral bleaching can occur during warm water conditions caused by El Niño Southern Oscillation (ENSO) events, which puts added stress on corals during these particular years. However, bleaching events are usually either followed by a period of recovery or only partial mortality, rather than death of entire coral colonies. As such, bleaching has less of an overall impact in the U.S.V.I. compared to other areas (Rogers and Beets, 2001). Nevertheless, indications are that the effects of global warming will only increase the number of bleaching events in the future, which could further reduce the ability of reefs to recover from these and other impacts (Glynn, 1991).

Anthropogenic Stressors

A majority of the scientific literature also discusses the adverse impacts of human-induced stressors on the coastal and marine habitats of the U.S.V.I. These include over-fishing of herbivorous fish species, unregulated construction causing sediment runoff, recreational activities, and pollution, all of which are

contributing to the declining health of coral reef ecosystems throughout the U.S.V.I. (Dye, 1991; Drayton *et al.*, 2004).

Fishing Pressure

The sequential over-fishing of commercially valuable reef fish resources (i.e. groupers and snappers) has been a key problem since the late 1960's. Their decline has led to higher catches of low-value herbivores like parrotfish and surgeonfish that indirectly assist in coral recruitment through grazing (Turgeon *et al.*, 2002). Many fishery managers believe that increased fishing pressure on low-value herbivores is causing extensive proliferations of algae on the available coral substrate, which reduces the ability of corals to recover from hurricane damage and diseases.

Coastal Development and Sediment Runoff

Unregulated coastal development and sediment runoff into near-shore coastal habitats has had a profound effect on local shallow near-shore reefs. When trees and vegetation are cleared during construction activities, sediment runoff from heavy rain storms smothers near-shore coral communities and blocks the available sunlight needed for their algal symbionts to survive (Drayton *et al.*, 2004; Tobias, 2004b; Jeffrey *et al.*, 2005).

Increased construction activities along the coast have caused a number of fishers to move their fishing operations to other areas since "it is no longer profitable to fish" due to sedimentation of near-shore waters (Drayton *et al.*, 2004). Further coastal development projects in the form of hotels and beachfront condos, private homes, and business operations have the potential to cause further damage to fragile near-shore reef habitats in the U.S.V.I. in the not too distant future.

Coastal Pollution

Coastal water pollution in the form of sewage, oil slicks, and heavy metals adversely impact water quality and degrade the health of coral reefs. Work by Dorfman (2006) supports the widely held belief that direct discharges, uncontrolled runoff, vessel wastes, and a failing and overloaded municipal sewage system are the main culprits of water quality degradation in the Virgin Islands. Increased pollution may lead to decreases in overall live coral coverage, and in the case of sewage waste will also lead to increases in algal blooms which further reduce coral recruitment (Drayton *et al.*, 2004).

Pollution from manufacturing centers is particularly affecting water quality in the St. Croix district. Studies performed nearly 25 years ago showed that the reefs and associated habitats of the south shore of

St. Croix had been impacted by the dredging operations in the harbor area of the Harvey-Hess industrial complex (Swingle *et al.*, 1970). In their view, construction and operations of the refineries were causing water pollution and contributing to the loss of important fish habitat. Today this situation is exacerbated by a rum-manufacturing plant with discharges that extend for 10 miles along the coast (U.S.V.I. DPNR, 2004). The plant applies for exemption from the Clean Water Act every year and gets it, although scientists continue to debate whether or not the effluent is toxic and detrimental to coral and reef fish communities (Turgeon *et al.*, 2002). The DPNR conducts a program to monitor these and other point and non-point source pollutant discharge sites and has established areas of particular concern where pollution reduction concerns are currently a top priority (Jeffrey *et al.*, 2005).

Tourism and Recreational Activities

The adverse impacts of increasing recreation and associated tourism activities on coral reefs are evident in the islands. Physical damage of sensitive coral habitat due to anchorage and ship groundings has been a problem for many years (Tobias, 2004b; Jeffrey *et al.*, 2005). Large vessel groundings in particular have been a problem due to the regularity of occurrences (more than twice a year) in the Virgin Islands (Turgeon *et al.*, 2002). In addition to anchorage and groundings, careless diver activities such as standing on top of sensitive reef sites as well as breaking off small sections of branching corals have added to the already mounting stress on reefs in the region, especially since all three islands exhibit heavy visitor use of their reef sites (Turgeon *et al.*, 2002; Drayton *et al.*, 2004). The DFW has only recently prioritized these impacts, and current plans include a system of mooring buoys above sensitive habitats to curtail anchoring as well as educating the public about the importance of reefs to the marine ecosystem of the U.S.V.I. (DFW, 2005). However, as the tourism sector increases, it is expected that threats to reefs from tourism activities and increased development of the coastline will only add to the current stress on coral reefs in the territory.

4. Historical Overview of the Cruzan Experience

4.1. From Aboriginal to Colonial Times

Prior to the ‘discovery’ of the Virgin Islands by Christopher Columbus, the islands were inhabited by the Ciboney, the Arawak and Carib Indians. These three groups of Indians entered the Caribbean through diverse routes and at different times (Dookhan, 1974). The Ciboneys traveled from Florida and Central America to settle on the Greater Antilles around 300 to 400 B.C. Both the Arawaks and Caribs populated the Lesser Antilles after migrating northwards from South America. The Ciboneys were eventually overtaken by the Arawaks, who arrived in the Virgin Islands between 100 and 200 A.D. The Caribs did not reach the islands until 100 years prior to the arrival of Columbus (Dookhan, 1974).

While little information remains about these native people due to their displacement by the European settlers, it is known that they utilized the ocean both as a means of transportation and a source of food. Unlike the Ciboneys who relied on seafood for the majority of their diet, the Arawaks and Caribs used seafood as a supplement to their diet of land crabs, fruits and large land animals. The Arawaks and Caribs fished using nets made of cotton or fibers which were weighted down with stones. These nets were most likely used for dragging the near-shore bottom. Hooks were made out of bone and shells and spears were topped with fish bones (Dookhan, 1974).

The Caribs eventually succeeded in pushing the Arawaks out of the Virgin Islands by the time of Columbus’s second voyage to the New World in 1493. Columbus made landfall in St. Croix on November 14th, 1493 and named the island Santa Cruz (‘Holy Cross’), which was later changed to St. Croix by the French. Columbus claimed the island for the Spanish crown, but it was not settled by Europeans until 1625 when a group of Danish, English and French Protestants arrived. Initially the groups co-existed peacefully but this short-lived peace ended as these groups fought for control of the island. The French took control of the island in 1665 until 1733, when it was purchased by the Danish West Indies Company. The Danish quickly moved in, and brought slaves from other colonies and from the Gulf of Guinea (e.g., Ghana) in West Africa.

Fishing played a critical role for the survival of those slaves who were fortunate enough to be freed. Fishing skills were important because it enabled free slaves to enter the market economy not as commodities but rather as producers of commodities. In this sense, fishing had an important historical and

cultural meaning to the people of St. Croix. Freed slaves typically gained their freedom as a gift from their masters, from services rendered, or “less frequently” with “money earned from selling vegetables, chickens, fish and fruit in the market” (Lawaetz, 1991). These freed slaves were artisans, fishermen or had their own agricultural plots. Freed, but subject to the pigmentocracy of the slavery system, these laborers and artisans became part of the “urban” population of St. Croix. By law, freed slaves were confined to certain sections of the town, such as the “Neger Gotted” (Free Gut) in Christiansted.

In the eighteenth century the colonial economy of this Danish enclave was buzzing. Its prosperity was driven by the production of sugar, rum, cotton, molasses and hardwoods. Forests were cleared for timber, to give way to roads and to prepare the land for cultivation. These lush forests provided wood for shipbuilding and construction materials for houses and other infrastructure as well as providing a hiding place for runaway slaves (Lawaetz, 1991).

Figure 11: A printed map from 1754 depicting extent of agricultural production in the early 1700’s.



Until 1754, the island was owned and administered by the Danish West India and Guinea Company, a private, royally chartered joint-stock company in which the Danish crown and many well-known individuals involved in royal administration had a considerable personal interest. Figure 11 identifies land holdings by individuals with annotations added in 1767. A striking feature of the map is the complete subdivision of the island into individual land holdings and the presence of numerous wind and sugar mills covering the landscape underscoring the importance of sugarcane production to the island's economy. The map fails to show the manpower needed to support that production. In 1770 the Danish West Indies had a population of 25,000 of which 18,000 were slaves.

Although land was cultivated everywhere, the East End was considered to be the best land since it grew cotton well (Lawaetz, 1991). Windmills, which were sprouting all over the landscape, required near-shore coral to make white lime. Haaggensen, as cited in Lawaetz (1991), provided insight into the extent of this practice: "In my own estates, I used over 1,000 barrels of white lime and few times gave away some barrels to the poor people" Lawaetz's (1991) summary of this activity reads as follows:

Coral stones were found all around the island and you only had to go a few hundred feet to find all the coral you needed. When there were no stones (coral rock) near the coast you would go out to the reef with a big bateau and there you would have four, five or six slaves breaking the coral from the reef and loading it into the boats. While one boat carried it into shore, another boatload of coral would be broken loose.

From these historical accounts of colonial societies it is remarkable how the transformation of the local landscape to accommodate economic pursuits ends up damaging the surrounding environment. Deforestation (and the ensuing sedimentation and erosion of coral reefs), extraction of coral rock (for the construction of buildings, houses, sugar factories, and windmills) and channel dredging activities (e.g., Christiansted harbor) probably had a significant, yet unmeasured impact on the neighboring coastal environment.⁵

The core of the colonial enclave in St. Croix was based on the productivity of the estates and the availability of slave labor for clearing forests, planting and harvesting sugarcane, milling the cane and producing sugar and rum. Other commodities and goods were either imported or produced by small planters and freed slaves. Slaves had Sundays off and used that time for a number of activities, including work in their gardens, planting potatoes, yams, and cassava. The slaves were also provided certain

⁵ Hermmann Lawaetz (1991) describes, as one the contributions of governor Peter Von Scholten (first part of the nineteenth century), the acquisition of "a special machine to remove coral" from the channel.

supplies for their maintenance: flour, corn, cornmeal, sugar, salt beef, salted fish and herring. Salted fish (cod) and herring (salted, pickled or smoked) were the essential staple food group of this labor force throughout the Caribbean (Kurlansky, 1998). Herring, which was one of the key fisheries and commodities in the Baltic and North Sea, was an important component of the complex commercial exchanges involving salt from the Caribbean (Kurlansky, 2003).

Fresh fish was also important to European settlers and owners of beachfront properties in Christiansted who had weirs or pens to keep fish and turtles alive. Although many people engaged in fishing (including the Danish), most descriptions refer to the slaves. Fishing was done with seines and hand lines using sprat as bait. Haagensen's accounts on catching practices (as cited in Lawaetz, 1991) mention the use of poison by a team of four or five slaves. He also mentions that lobsters were caught with the use of torches at night and that land crabs were extremely abundant. A share of the land crab production was exported to St. Thomas. Unfortunately, Lawaetz's (1991) summary of Haagensen's fishing descriptions is rather cursory, but it does point at fishing's constant presence, always in close relationship with the plantation economy, the survival of slaves and former slaves. In addition, these accounts suggest that planters acquired a new taste for lobsters, crabs and mangrove oysters, even though most of their fish protein intake was derived from imported fish from Newfoundland or the North Sea.

The nineteenth century brought many hardships to this once prosperous colony: sugar prices fluctuated dramatically, slavery was abolished in 1848, droughts became more frequent and the rise of capitalism and free markets changed the rules of the game. The development of sugar from beets in Europe lowered international sugar prices causing a sharp decline in the profitability of sugarcane factories. Turmoil in the fields and slave quarters was also debilitating the economic power of the planters. Low productivity and a large number of bankruptcies characterized the 1870's (Lawaetz, 1991).

In 1874, as the price of sugar continued to fall, planters refused to raise wages of the freed slaves who remained working at their estates. Riots against the "*damm buckras*" (whites) resulted in fires, violence, plundering, and even an attack on the fort in Fredericksted.⁶ Rioters were successful in changing the practices of the colonial government and planters. Following the riots, the workers of African and slave

⁶ The term "buckra" is also used as the equivalent of "big shot". The following text from Joseph Laplace, a trap fishermen of St. Thomas, illustrates it: "I pulled ten traps, three times a week, and got thirty straps of fish each time. This made me a "Boucra" (big shot) of Hull Bay (De Graaf and Moore, editors 1987:7).

origin were able to work with those planters offering the best wages; slaves became free laborers, detached from the last chain of servitude inherited from the slavery system.

Similar to other agricultural enclaves in the region (e.g. Puerto Rico), St. Croix planters continued investing in technological advancements to enhance efficiency and economic returns (Ayala, 1999; Giusti-Cordero, 1994). The Danish West Indian Plantation Company bought several estates in 1903, dried “mosquito swamps” (i.e., mangrove areas and coastal lagoons), and continued to invest in better technologies and modern facilities. Planters modernized the mills and factories (e.g. steam fueled mills), and centralized the sugar production in a handful of mills (e.g., La Grange in 1896).

Labor unrests, fueled in part by the proliferation of rum shops, drunkenness, and diseases, became an element of the daily life of the laborers at the turn of the 20th century. New laborers were brought in from nearby islands, and by 1917, one fifth of the total population of St. Croix had been born in other islands of the archipelago (De Albuquerque and McElroy, 1999). Because of the difficult fiscal situation, the Danish government proceeded to impose a duty on almost everything except a handful of goods. Planters bought most of the duty-free commodities: wood, iron, cement, bricks and cattle (Lawaetz, 1991). Access to land by small farmers was also another issue in the colony, as more squatters intended to occupy, buy or rent productive land to make a decent living.

To improve the economic situation of the colony, planters allowed workers access to parcels of land and full ownership of the crops needed to sustain them throughout the year. The availability of housing and land turned workers into rural workers and peasants to keep the system functioning.⁷ Although there is no mention of fishing, documentation from other Caribbean islands suggest that fishing, farming, sharecropping, access to land and ownership of crops was part of a strategy to maintain low wages and subsistence to a bare minimum, while producing profits for the sugarcane industry (Giusti-Cordero, 1994; Griffith and Valdés-Pizzini, 2002). Low sugar prices, high tariffs, elimination of protective measures in the U.S. markets, strikes and social strife were factors contributing to the decision of the planters to support the sale of the islands to the United States in 1917 (Ayala, 1999).

⁷ Sugarcane production depended on the solvency of the rural workers during the “dead” season, in which most cane cutters remained “idle” in their communities, and production required less labor. Cane cutters and other rural workers had to depend on their gardens, odd jobs and fishing to maintain their families. That strategy has been documented in a number of works, including Giusti-Cordero (1994) and Griffith and Valdés Pizzini (2002).

The first half of the twentieth century was characterized by critical transformations in the society and economy of St. Croix. The most important was the change of guard in colonial powers with the purchase of the islands by the United States. In the midst of the modernization of the agricultural sector, the island had a decade of dry years (1920-1930) followed by the Great Depression, which contributed to the bankruptcy of the Danish West Indian Plantation Company. The Company liquidated some of its assets, including the Bethlehem and Central factories in 1929. Despite economic difficulties, sugarcane production in St. Croix required additional laborers. Enticed by the owners of La Grange sugar factory and other estate owners, Puerto Ricans moved to St. Croix in the late 1920's and early 1930's in search of better living conditions. Most of the Puerto Ricans arrived from the islands of Vieques and Culebra (Lawaetz, 1991). Declining sugar prices in the 1920's and 1930's proved devastating for the island of Vieques, Puerto Rico. Between 1930 and 1940, 2,749 people (26% percent of the population) moved from Vieques to St. Croix seeking employment (Ayala and Carro-Figueroa, 2006). While the Cruzan economy was also experiencing economic difficulties and population decline, conditions were far worse in Vieques. Most Viequenses were able to find seasonal employment as cane cutters in St. Croix because 1927 immigration laws prevented cane growers from employing workers from nearby British Islands. Senior (1947) notes that many Viequenses stayed permanently in St. Croix.

4.2. De Papa Dem: Boricuas in St. Croix

*De Papa dem (Puerto Ricans) are our brothers
We are from the same tree. Their roots are our roots.
They run hundred of year's deep, back to Africa.
- Rabin, 1992*

According to the U.S. Census, Hispanics make up 14.2% of the population in the U.S. Virgin Islands. In St. Croix, Hispanics constitute about 21.2% of the population. A total of 7,357 persons were identified as Hispanics of Puerto Rican descent comprising 13.8% of the total population of the island.⁸ These statistics are significant since a large proportion of the Cruzan fishers are also of Puerto Rican descent. The following excerpt from a report on the Cruzan fisheries explains the importance of this ethnic group:

⁸ The category of "Other Hispanic or Latino" constitutes the largest percentage after Puerto Ricans with 6.8%. A large number of these are from Dominican Republic. There are a number of bars, beauty parlors, stores and restaurants in Christiansted and Fredericksted owned and operated by Dominicans, and their presence in Cruzan society is noticeable.

The results of the 2003 commercial fishermen census (Kojis 2004) were compared with the findings of the previous fishermen surveys conducted in 1930 by Fiedler and Jarvis (1932) and 1968 (Swingle et al., 1970). While the population of the US Virgin Islands increased from 22,012 in 1930 (Fiedler and Jarvis 1932) to 108,612 in 2000, the number of fishers stayed nearly the same (Kojis, 2004). Therefore, as a percentage of the total U.S.V.I. population, the number of fishers declined from 1.8% in 1930 to 0.3% in 2000 (Kojis, 2004). The ethnic composition of fishers also changed. The percentage of fishers who were black and white declined between 1930 (Fiedler and Jarvis 1932) and 2003 (Kojis, 2004). There were no Hispanic fishers reported in 1930 (Fiedler and Jarvis, 1932). However, by 2003, Hispanic fishers comprised 38.5% of commercial fisher population (DFW, 2005; Kojis, 2004).

The presence of large numbers of Puerto Ricans in St. Croix, mostly coming from the island municipality of Vieques, was due to the collapse of their local economy and forced emigration due to the occupation of the island by the U.S. Navy (Barreto, 2002). As result, thousands of rural workers having sharecropping and housing arrangements with the planters suddenly became homeless and displaced (Meléndez-López, 1989). In 1927 the central mills of Arcadia, La Esperanza and Santa María in Vieques were closed.

As sugar prices dropped in the 1920's, poverty and despair dominated the landscape of the island and migration to St. Croix became the escape valve for the thousands of 'Viequenses' (Ayala and Carro-Figueroa, 2006). In 1941, the U.S. Navy expropriated three-fourths the island of Vieques for military practices and arms storage. Without a viable sugarcane industry, failed alternative agricultural initiatives (e.g., pineapple production) and the end of the military construction boom in 1943, many 'Viequenses' continued relocating to St. Croix and/or turned to fishing to sustain their families (Ayala and Carro-Figueroa, 2006). Similarly, Puerto Ricans living in the island of Culebra were also displaced by the military.

Thousands of 'Viequenses' relocated to the main island of Puerto Rico, the continental U.S., and, to a lesser extent, St. Croix. Statistics from the Virgin Islands Bilingual Education Department indicate the number of 'Viequenses' in St. Croix was about twice the number of people on the island of Vieques. In 1947, US Departments of the Interior and the Navy prepared a plan to relocate the population of Vieques to the island of St. Croix so that the Navy could take over all of Vieques for its military activities. Although this plan was not put into effect in its totality, this contributed to the substantial flow of 'Viequenses' to the island of St. Croix.

The migration of Puerto Ricans to St. Croix and St. Thomas (in the case of Culebra) perhaps contributed to a historical, cultural and economic pattern that made these Puerto Ricans part of the cultural fabric of the U.S. Virgin Islands (Cubero, 2002). The Danish made constant reference to the desirability of having (or engaging commercially) the islands of Culebra and Cangrejos (Vieques) through the main trading port of Charlotte Amalie (Lawaetz, 1991). The local lore in Culebra constructs the history of fishing as a trade that was passed to the “*Culebrenses*” by the Danish and English settlers of these Islands, and visualizes Charlotte Amalie as one of the favorite landing ports for the fishermen of Culebra since the nineteenth century, as it still is (Cubero, 2002).

The cultural and human flow worked both ways. Workers from St. Thomas and St. Croix also went to Vieques during the heyday of the sugar haciendas and the central mills. The Historical Archive of Vieques contains documents from the nineteenth century that provide evidence that men, women and children born in the Danish Virgin Islands went to Vieques to work and remained living there. A high proportion (not specified) of ‘Viequenses’ in 1910 were born or their parents were born in the Virgin Islands. In addition, port registries from Christiansted and Fredericksted document the flow of people and commodities from Vieques in the nineteenth century.

4.3. The Cruzan New Deal

During the Great Depression, the economy of St. Croix needed a boost to change its course. There was a need to develop other economic activities and alternatives to sugarcane production. In 1934 the New Deal policies of President Franklin Delano Roosevelt came to the rescue of the Cruzan economy. The Virgin Islands Corporation (VICORP) was created to provide incentives and new opportunities to revive the islands’ declining economy. Small businesses, restaurants, and tourism began to diversify the economy. VICORP took over the ailing Bethlehem and Central sugar factories and started to develop the homesteading program which provided land to the workers and the poor. This expensive program provided land and improved the economic conditions of the destitute, particularly unemployed rural workers and farmers in dire conditions.

New Deal reconstruction programs benefited both the Virgin Islands and Puerto Rico. These programs included homesteading (“*parcelas*” program in Puerto Rico), agricultural and industrial development programs, food assistance, and the popular ‘Civilian Conservation Corporation’ that was designed to offer employment opportunities to the island’s youth (Lawaetz, 1991). The homesteading program allowed people to acquire small parcels of land for economic activities designed to supplement their income. With

VICORP and the New Deal programs, cash began flowing into the local economy. The money spent on consumer goods created a small bonanza for shop and storeowners. Interest in diversifying the economy away from the sugarcane enticed VICORP and farmers to move into cattle ranching, an activity that remains in a number of estates in the island today. The removal of bushes, trees and cacti and acacia (a thorny brush) was part of the strategy to turn the land into pastures (Lawaetz, 1991).

Under the auspices of VICORP more Puerto Ricans immigrated to St. Croix in the 1930's. These new immigrants became successful farmers, even owning large estates. Many of them eventually went into other businesses, owning small shops and "cookshops". The life stories collected by Lawaetz (1991) are quite selective, primarily dwelling on those Puerto Ricans that he met and knew. Their stories read as the history of cane cutters and farmers, some of which became successful shop owners and business-people. These accounts underscore the multiplicity of occupations: boat owners (to move people and commodities to and from Vieques and Puerto Rico), shipbuilders, construction and tourism workers (Lawaetz, 1991).

Despite the impact of New Deal policies, the socioeconomic conditions of the Puerto Rican poor remained extremely grim. In 1939, the government of Puerto Rico sent a Commission to study the conditions of the people of Vieques. The Commission found that the island was about to be deserted, due to the emigration of entire families to St. Croix, "fleeing from misery" (Rabin, 1992). Poverty and hunger characterized the daily struggle of those families who had no other choice but to move to St. Croix. The Commission estimated that 3,000 people immigrated to St. Croix during that decade. Cesar Ayala describes the demographic and economic dynamics of the process in the following manner:

In the mid 1940s the majority of Puerto Ricans living in St. Croix were from Vieques. As noted earlier, between 1930 and 1940, 26% of the population of Vieques emigrated (2,749 persons), most of them to St. Croix. In 1947, there were more than 3,000 Puerto Ricans living in St. Croix, most of them from Vieques. Despite the fact that the economy of St. Croix had been experiencing a protracted contraction and long term population decline, from about 26,681 persons in 1835 to 11,413 in 1930, the residents of Vieques migrated to St. Croix because the employment situation of Vieques was even worse than that of St. Croix (Ayala and Carro-Figueroa, 2006).⁹

⁹ Clarence Senior, in his study of the migration of Puerto Rican to St. Croix describes the conundrum in the following manner: "Puerto Rican migration to an island in such depressed condition would seem like 'jumping out of the frying pan into the fire.' The answer lies partly in the fact that sugarcane continues to be the main crop of the island, and that cane needs seasonal labor. The Danes formerly brought in workers for the cutting season from the nearby British islands. This practice continued until 1927. The immigration laws of the United States were applied to the Virgin Islands in that year and the cane growers had to look elsewhere for their labor. They found the situation made-to-order for them in the depressed conditions of

In the life stories documented by Lawaetz (1991) there is no history of fishing. However, it is likely that Puerto Ricans, Trinidadians, St. Lucians, and other migrants also went into fishing, or used fishing as a means to support their families during harsh times (Figure 12). Despite the absence of references to fishing, fish is present in narratives dealing with hunger and the difficulties of keeping an even keel in those hard times. Lawaetz’s narrative on the life and times of Candido Morales, who became an important local restaurateur, describes how his father saw in St. Croix an opportunity to move away from Vieques in search for “better opportunities for prosperity” in 1920 (Lawaetz, 1991).

Figure 12: Puerto Rican fishermen and farmer in Frederiksted.



Photo: Jack Delano.

The influx of Puerto Ricans from Vieques and Culebra in the 30’s and 40’s was also made possible through Cruzan owned schooners sailing from Fajardo. From Lawaetz’s (1991) description, it seems that these early Puerto Ricans had an entrepreneurial spirit that led them into the development of businesses and engagement in social and economic relations with estate owners and business people in St. Croix. During the Great Depression, St. Croix faced a difficult economic situation that was reflected, according

the sugar industry on the island of Vieques. Sugar acreage and yield on that island of 51 square miles had been decreasing steadily since 1910 and people were looking for to chance to make a living elsewhere. Agents for the growers recruited sizable groups for transportation to St. Croix. Some of those who went on temporary jobs stayed. The tendency of Puerto Rican migration to St. Croix has been upward since that time” (Senior 1947, cited in Ayala, 1999).

to Morales' description, in meager salaries, but reasonable food prices. Fish and other items were central in the discussion:

Shop clerks were paid \$6 per month and maids -- \$5 per month, but food prices also dropped considerably. Cornmeal, flour and sugar cost 1½ cents per pound. Salmon cost 12 cents a can, pink salmon – 15 cents a can, red salmon – 18 cents a can, margarine – 10 cents a pound, and lard – 6 cents a pound. Fish was sold 'by the strap' for 17 cents, as was conch.¹⁰ A very large lobster sold for 20-25 cents. Lobsters were plentiful and one did not have to dive for them – just waded out into knee-deep water at night with a torch and pick them. Fishermen would often throw in a smaller lobster as “brata” (a little something extra) when one bought a strap of fish (Lawaetz, 1991).¹¹

While the discussion of prices and salaries are important aspects of the excerpt, noteworthy is the presence of imported and local fish in the diet of the population. Salted fish is conspicuously absent from this list, but canned fish, a major item in the local diet is present. Conch and lobster are a major surprise in the list, as we know (for the case of Puerto Rico) that lobsters were fed to the pigs or used as bait (in St. Croix as well), but were heavily consumed by the local population during hard times.¹² The “brata” may also be an unpopular fish or shellfish, used as a cultural-economic strategy in the sale of fish.¹³ The Morales family also owned a general store, and a portion of Lawaetz's description dwells on items sold and their prices. Again, fish are noted as important food items: sardines, “lots of salted fish”, fish and conch by the strap, and “big, fat, tasty herring.”¹⁴

¹⁰ A strap averages six pounds (Joseph Laplace, cited in De Graaf and Moore 1987:7).

¹¹ Lawaetz's (1991) excellent and helpful descriptions are also tainted by his own worldview that sometimes overshadows the voices of the people he interviewed. He takes authority over the narration, and it is difficult to ascertain if the narratives belong to the interviewees, or to his own recollections of the period. His wealth of knowledge, access to sources, and experiences as an entrepreneur, politician, decision-maker and personality often invades all narratives in the book. This is a major asset of his book, but also a major difficulty for the reader with a critical mind, and an interest in discerning the specific aspects of the descriptions. In the 1930's he was an active member of the Cruzan society, and even a member of the Civilian Conservation Corp. Thus, he remembers well that process, and later became involved in government, thus having a direct contact with documents and policy process that shaped St. Croix into what it is today. In that sense, Lawaetz's (1991) book is an interesting and fascinating piece for its historical value, and as a testimony from a person central to the process of development in the twentieth century, always reflecting from the standpoint of his Danish genealogy of estate owners. Indeed, it is a privileged perspective on St. Croix's history. On fishing, he also has a similar description of lobster fishing on page 398, in which he relates how he was enticing one of his interviewees to recall the process, and starts a narration on the abundance of lobsters, followed by his own tirade on fish, fishing, conservation and habitats.

¹² “For example, lobsters are becoming scarce. From my experience, twenty years ago [1967] lobsters were so plentiful that they were given away or used to bait traps. Ten years ago [1977], they were sold for about two dollars and fifty cents a pound. Today they are sold for about five dollars a pound” (Scov 1987:6).

¹³ We witnessed the use of trunkfish as “brata” at the market, with people of West Indian descent, who even refused the fish from the vendor. Trunkfish is major delicacy, and a scarce fish in Puerto Rico.

¹⁴ This may be a cultural component of Lawaetz's Danish past: the importance of herring in the diet (see Kurlansky 2003:131-132).

As discussed earlier, the homesteading program was an essential element in the development of St. Croix, following the demise of sugarcane industry. The Homestead Act of 1932 provided the mechanism for the acquisition of small parcels of land, with an average size of 7.75 acres (Dookhan, 1974). The Department of the Interior bought land from several estates, which were subsequently subdivided into subsistence plots for the homesteaders (Lawaetz, 1991). The allocation of land was not sufficient to maintain the families of the owners; thus, most of them used the land as subsistence agricultural plots, or had to engage in wage labor on a part-time basis to support their families and pay the loans on the property. VICORP encouraged small farmers and rural workers (renting land, not sharecropping) to grow sugarcane to supply the local factories.

According to Lawaetz (1991), VICORP sold land economically, which allowed locals and non-Cruzans to buy land, including prime beachfront properties. East End properties were sold at \$15 per acre. Most of the land was sold to non-Cruzans since the local population was not interested in farming anymore. The homesteads in the coastal zone had a “buffer zone” provided to them in the form of a beachfront area adjoining their properties. Locals often sold the beachfront property to non-Cruzans (Lawaetz, 1991).

Over time, many Virgin Islanders became reluctant to engage in fishing, which they viewed as another “rural” activity. A report on the business potential of the local fisheries depicts the situation by stating that “their sons [of the Virgin Islanders] are reluctant to involve themselves in the fishing business” (Hill, 1969). As a result, immigrants from the British Virgin Islands were able to engage in fishing activities in the U.S.V.I. In 1964 the islands became open to outside laborers, causing the territory to have an influx of migrants who became fishers as a way to sustain a decent livelihood. Swingle *et al.* (1970) reported that 47.7% of the fishers were foreign born. Fishing seemed to be then an activity failing to recruit the youngsters, as the territory and the region offered better remunerated opportunities in other sectors of the economy:

This [lack of youngsters in fishing] is undoubtedly related to the spectacular rise in tourism in the Caribbean area and the attendant increase in related business activity as well as to the increase in local industrial enterprises and greatly expanded government employment. The younger generation is turning to these occupations rather than to strenuous and hazardous fishing; the monetary return is much higher and little or no physical risk is involved (Swingle et al., 1969).

4.4. The New Migrants

VICORP made substantial efforts to sustain the sugarcane industry. For example, it facilitated the incorporation of 2,000 to 3,000 alien workers from the West Indian islands of St. Lucia, Antigua, Barbados, Tortola and St. Kitts to work in the harvest each year. A similar arrangement was in place to bring workers into the tourism sector as bartenders, waitresses and maids. Workers lived in camps and in time were able to apply for a “green card.” This allowed them to bring their families and become eligible for U.S. citizenship. In 1964, VICORP stopped supporting the sugarcane industry.

Following the demise of the sugarcane industry, St. Croix began to aggressively develop the manufacturing (mainly for export) and hospitality sectors as a means to diversify the local economy. To meet the demands of this rapidly expanding economy, unprecedented numbers of Eastern Caribbean workers were recruited under a non-immigrant worker program, which again changed demographic characteristics of the island. Most of these new immigrants subsequently had their statuses adjusted, and stayed on to build a new life and raise their children in the islands (De Albuquerque and McElroy, 1999). During the 1960s, real per capita income grew by 10% per year fueled by the boom in hotel construction, building-related services, and light and heavy manufacturing (McElroy, 1978).

The industrialization of St. Croix resulted in the installation of the Harvey Alumina plant and the Hess Oil refinery. These plants recruited workers from the French and British West Indies, and hired local Puerto Ricans to work in construction. These economic development policies were largely responsible for the dramatic changes in Cruzan society which contributed to the “substantial decline in the native born component of the population. The share of native born population declined from 76.2% in 1917 to 47.2 % in 1980” (De Albuquerque and McElroy, 1999).¹⁵

These changing labor market conditions had an important impact on local fisheries. For example, Puerto Ricans, who initially found a niche in the local sugar industry and marked the seascape with their traps, which they used to fish for grunts, groupers, snappers, and lobsters. In the 1960’s Hess Refinery brought laborers from the West Indies, mainly Trinidad and St. Lucia, to work in welding and other skilled occupations. These migrants also brought their own fishing techniques, such as the ‘big encircling gillnet,’ which was used as a purse seine for surgeonfish (locally called “jacks”). The “Brits” also became

¹⁵ This figure is for the entire U.S.V.I., but applicable to St. Croix.

an important group among the local fishers. Many members of these ethnic groups remained fishing primarily as “weekend warriors” (i.e., fished whenever they could).

Although tourism became an important sector in the Cruzan economy; it never experienced the dramatic growth of St. Thomas during the 1970’s and 1980’s (Johnston, 1987). However, an important number of folks from the U.S. mainland attracted by the new economic opportunities moved to St. Croix. These folks tended to be entrepreneurs, construction and service workers. Erik Lawaetz, a tourism entrepreneur, historian and statesman, views tourism as the major force thrusting St. Croix into an era of modernization:

Had it not been for tourism, all of St. Croix would be in bush. We should not forget that, prior to tourism, the population of St. Croix was down to ten thousand people and President Hoover called it “the Poor House of the United States” With the influx of tourism and other businesses, the economy has grown immensely – as has the population. Tens of thousands have benefited from tourist-related businesses and industries. Many have built beautiful homes, had their children educated, and have gone into business (Lawaetz 1991).¹⁶

Despite the growth of the tourism sector, St. Croix remained dependent on money transfers and remittances from the United States mainland. Recessions (brought about by a weak demand for locally produced goods and services) and construction slowdowns, forced the federal government to bail out the local government, which in turn had to impose additional restrictive measures on immigration (De Albuquerque and McElroy, 1999).

As more ‘continentals’ (U.S. mainland folks) ventured into this new frontier, the U.S. Virgin Islands became one of the favorite destinations of American expatriates who came to the island looking for profitable opportunities in shipping, commerce, industrial production (e.g., refineries), tourism, and real estate. Indeed, the presence of wealthy white American expatriates (or continentals) is a point of contention that has the potential to detonate during times of social crises (De Albuquerque and McElroy, 1999). For example, during the aftermath of Hugo in 1989, riots and social strife broke out in part because of the sense of vulnerability by many poor. This feeling of vulnerability (and sometimes resentment) is exacerbated by ethnic and class differences.

¹⁶ Tourism also played a key role in the growth of the local fisheries, as lobster became an important item at the tourist tables, since the 1950s (Laplace as cited in De Graaf and Moore, editors 1987). In a more recent period, the local fishers supplied the tourist oriented restaurants with pelagic fish, as well as with lobster and conch.

Fishing in St. Croix follows the same ethnic lines that configure the local society. Puerto Ricans with experience in agriculture and fishing (originally trap fishing), local blacks, and people of West Indian origin form the core of the fishing population. In St. Croix, as elsewhere in the Caribbean, fishing was tied to agriculture (mainly sugarcane production) and harbor activities as a subsidiary endeavor that allowed wage workers to obtain a decent livelihood, or to survive the bust cycles of the economy.

Government officials believe that fishing is extremely helpful in relieving social tensions generated by layoffs and unemployment. Some fishers stated that they have to fish because the Cruzan economy has failed to produce many jobs in the last decade. U.S. continentals tend to dominate the leisure and recreational niche, which includes sport-fishing and SCUBA diving operations. Both of these activities are in competition for space and resources with the local fishermen. De Albuquerque and McElroy (1999) describe this group in the following manner:

Mainlanders from the United States, commonly referred to as "continentals," constitute yet another group. Earlier (1950-1970) white continental in-migrants were usually wealthy retirees with a fondness for tropical living, refugees from the financial world, and a few Bohemians. Since 1970, continental immigrants have been mostly businessmen, professionals, technicians, craftsmen, construction, and service workers; bent on recreating the type of society they left behind.

De Albuquerque and McElroy (1999) also argue that this group makes a great effort not to be assimilated into the local culture. They retain (and even exacerbate) their archetypical and defining elements as a way to underscore their presence. Their constant reaffirmation of their cultural values is also reflected in the occupation of space and social distance with the local population.

So successful have they been that much of the U.S.V.I. that tourists come into contact with has been transformed into a Key West/California/Texas version of the Caribbean, replete with Jimmy Buffet style bands, Texas barbecues, Maine lobster nights, Sunday hoedowns, and Monday night American football at the local watering holes. The grafting of this somewhat alien tourist-oriented service culture onto the U.S.V.I. fabric has produced considerable social distance between white continentals and black and brown islanders. Whites live in the wealthier residential neighborhoods or on boats. They socialize with each other, patronize white establishments, hire whites in preference to others, and send their children to mostly white private schools (De Albuquerque and McElroy, 2000).

4.5. History of fishing: a few notes

Fishing, in the cultural and economic context of sugar producing enclaves, was not an important activity in the Caribbean. It did not deserve serious considerations by the colonial officials, nor does it have a

good representation in the historical record, except for occasional accounts. However, the importance of fishing lies in the fact that it is a subsidiary activity that serves as a labor buffer zone; that is, it absorbs the unemployed and provides supplementary livelihood opportunities to those with meager salaries in agricultural production, construction, port activities and public sector (Griffith and Valdés-Pizzini, 2002). The simultaneous transit through fishing and other jobs is called “occupational multiplicity” (Comitas, 1962). It is one of the defining aspects of fishing in the Caribbean, including the U.S. Virgin Islands and Puerto Rico.

Although photographs and paintings are not an objective and factual representation of reality, they provide a glimpse of the landscape and people in a specific moment of time through the cultural prism of the painter or the photographer. As Jack Delano saw the island as a desolated agricultural landscape during the thirties (Figure 13), other artists saw and interpreted the island as a thriving agricultural and commercial colony. For example, Henry Morton produced several paintings and sketches of the Danish West Indies from 1843 to 1844. The Danish West Indian Historical Society published Morton’s work in 1975. Figure 14 shows us a glimpse of the scale of fishing in St. Croix. In another of his drawings he offers a panoramic view of Protestant Bay in Christiansted which shows the prominent feature of the fort (nowadays a monument of the National Park Service), with the fish market to the right (to the east) of the fort. The scene presents five soldiers marching with bayonets, a man in a horse, and two women vendors, a boat and the shack of the fish market. Military power, the planter class, and the local population are represented in this painting, in which the local people are shown through the occupation of coastal lands, and by fishing, represented by the West Indian archetype of the women vendors. The fish market was, according to various sources, at the epicenter of the coastal communities surrounding the fort, and was a key element in the small urban development of Christiansted. Saturday, as stated by Morton in his own caption of the sketch, was the market day for fishing, as it is still today.

Figure 13: Sugarcane fields in Bethlehem.



Photo: Jack Delano.

Figure 14: Market place at Frederiksted.



Source: Henry Morton, 1843-44.

Close to the fort, a mile to the east lays the small community of Gallows Bay, a major recreational area and landing site for the local fishers. It is perhaps the only remnant of a place-based fishing community in

St. Croix (see the description of the ethnography of Gallows Bay in this report). In the 1980's the community was described as follows:

“Gallows Bay is a small fishing village and is most known throughout St. Croix for the bayside fish sales. The primary activity in the village occurs at the bayside and the heart of the neighborhood consists of about 20 homes primarily located on the streets forming a triangle at the bayside. Although there are no street signs, the streets most often referred to are Lobster Street Lagoon Street and Garden Street.” The village can be described as somewhat clannish, however, on fish days, Saturdays and Wednesdays the village becomes a large melting pot, where people from all over the island are brought together. (St Aubin ND: 2).

Gallows Bay is part of Mount Welcome Estate, and although it is a distinct community, it is not a political entity or a unit considered as such under tax records (St. Aubin ND:1.) But Gallows Bay has a long history of being an important coastal and maritime settlement in the midst of agricultural properties. The physical landscape of the area was subjected to dramatic changes, due to the needs of the local farmers, and the interest of the colony to increase production and the export of agricultural commodities, always more important than fishing itself:

The area surrounding the Gallows had in the past some agricultural activities, a small lagoon (identified in old maps as the Little Lagoon, perhaps to distinguish it from Altoona Lagoon), and a small salt pond that have now disappeared. This transformation of the landscape was the work of Danish farmers of the Mount Welcome Estate who increased their production by converting idle land into agricultural fields and pastures (N.D.: 68).

As stated earlier in this report, the history of fishing communities is unavailable or hidden under the figures of exported commodities. The daily life in fishing communities only becomes evident through folkloric remarks, landscape paintings, sketches, artifacts (such as items manufactured from conch and turtles shells), street names, and in the toponymy. Historian George Tyson comes to that conclusion after examining the scant documentary sources of Gallows Bay and comparing the old settlement with the present community:

The existence of a major thoroughfare named Lobster Street, connecting Christiansted proper with the bay at its southwest corner, indicates that by the 1770's, if not earlier, a respectable fishing industry, and perhaps community, had sprung up in that corner of the bay. A painting by W. Melbye (c. 1850), showing Afro west-Indians fishing by boat and by net along the eastern shore, demonstrates that fishing continued to play a notable role

during the nineteenth century. Today, Gallows Bay serves as an anchorage and staging ground for the fishing activities of approximately 30 boats (Tyson, 1998).

At Altoona Lagoon, Morton depicted a boat with two black men, one rowing and the other with a harpoon, guiding the boat into the waters of the mangrove forest in search for a prey, while a white bearded man enjoyed the adventure. Sport-fishing was indeed one activity enjoyed by a few, as Morton's own caption states: "Altoona Lagoon, where an occasional shark used to find its way in from the sea, providing sport for the local men" (Morton, 1975).

Morton also described the Fish Market in Fredericksted. The sketch and the caption provide a glimpse of the Cruzan agora, one of the key public spaces for social and commercial transactions.

"Bargaining place, social club and town meeting rolled into one, the fish market was the center of village life every morning when the sound of the conch shell horn signaled the boats were bringing the catch" (Morton, 1975).

Life History of a migrant from Trinidad

Vernon Mars says, "*I like being versatile. You have to be versatile.*"

In this age of the specialist, Mars might be one of a dying breed. He was born in Trinidad in 1938 and since then there hasn't been much that he hasn't tried his hand at. He has been a taxi cab driver, a pipe-fitter, and a fisherman. He has built two houses. He is familiar with plumbing and electrical wiring. And on the side, he became a bit of a pool shark. It could have been those early days in Trinidad that motivated him to learn and do so much. He says, "Those days were very, very hard. I was doing whatever job I could do."

His first break that pointed him toward St. Croix came in 1968. Contractors were on Trinidad looking for workers to help build the Hess Oil refinery on St. Croix. He had done some work at the Texaco refinery on Trinidad. It had only been seasonal work, but it gave him the in he needed, and he was selected as a pipe-fitter to come to St. Croix. He says, "I came alone, like I was a pioneer. It was a step-by-step process."

Later on Baby, who he married in 1960, would come. Then the seven children all born in Trinidad would come even later. Nothing at that point was definite, and after construction of the refinery was complete he was laid off.

There were concerns with the Immigration Department, trips back and forth between Trinidad and St. Croix, but then he managed to work out everything and get a job as a security officer at the refinery. After he did that for two years, he became a process operator.

Don Buchanan, May 8, 2005. www.onepaper.com/stcroixvi

4.6. Fishing and culture in the twentieth century

According to the 1917 Census, which provided a glimpse into local fisheries, blacks were engaged in fishing in St. John and St. Croix, while white men of French descent (called *Cha Chas* and *Frenchies*) were the main fishers in St. Thomas. Census takers complained then of the lack of "reliable information" on the catches, and the impossibility of knowing the amount of fish caught by the apparatus (or gear). However, they were able to appraise the extent and value of the local fisheries.

According to their assessment, most of the catch for the territory was landed at Charlotte Amalie, St. Thomas and in Christiansted and Fredericksted, St. Croix. Back then, St. Croix had about 103 folks employed in fishing, which was about 61% of the fishermen population in the Virgin Islands. These Cruzan fishermen were responsible for 52% of the total dockside value for the entire Territory. The 1917 census also reported that 56% of fishermen owned their gear, boats and sails.

Even then, census officials had similar problems to those faced by fishery officials. They struggle to quantify the levels of participation (full-time vs. part-time, crew), capital investment (boats and gear) and landings. Despite these difficulties, census officials attempted to make the appropriate distinctions among fishers, using the classification of *proprietors* for those who “*owned the boat and received a share of the catch for the boat*” while those working under them were classified as *wage earners*. Traps, nets (beach seines, cast nets, turtle nets), and hand lines were reported to be the most common gear. The total number of traps was estimated at 907. Most of the vessels were row boats (80), and the rest sailboats (18). Fish was sold in “straps” or strings of fish (1 to 2 pounds). These were sold for 10 to 18 cents in the morning and 5 to 10 cents in the afternoon. The price variation was attributed to the absence of refrigeration. The price difference may also be due to the cultural need to dispose of the fish that same day, and bring new or fresh fish the following day. The price differential, mainly at dusk, is common at the new market in St. Croix. The report states that fishers sold the catch to dealers (at a lower price), or peddled the fish house to house, or at the market place at both towns. There is no reference to the participation of women in fish haggling and peddling.

In 1932 the U.S. Government published R.H. Fiedler and N.D. Jarvis’ report titled ‘Fisheries of the Virgin Islands of the United States’. This report provides a more detailed description of the local fisheries. Similar to the work performed by Jarvis in Puerto Rico, this report is based on the authors’ observations and fieldwork, and interviews with fishers and government officials. The report describes in some detail, and in general terms for the entire territory, the different gears employed, the importance of traps (supported with an analysis of the rationale behind the large number of traps), the key role of turtle nets, and the increasing importance of lines. The report also makes fine differentiations in terms of the vessels (sailboats, yawls, and canoes), indicating that the *bateaux*, a flat bottom yawl was the most common type of vessel in St. Croix.

A total of 405 fishers were estimated for the territory distributed in the following manner: 200 in St. Croix, 127 in St. Thomas and 78 in St. John. Fiedler and Jarvis (1932) provided the first description and profile of fishing communities for these islands. For St. Croix the fishers were described as follows:

The fishermen... are concentrated in the towns Christiansted and Frederiksted, though a few are to be found at Cane Bay, Salt River, Great Pond Bay, Krausse Lagoon, Long Point, and at points scattered along the shore. The majority of those fishermen living in the two towns of the island follow fishing to the exclusion of other occupations. While the possible fishing ground around the island of St. Croix is not as great as that of the other islands as a group, this area is fished more intensively. The boats used are larger, a

greater amount of gear is carried, and the boats fish a greater portion of the available areas. Most of the fishermen at points outside Christiansted and Frederiksted follow fishing only as part-time work, to eke out other occupations (Fiedler and Jarvis, 1932)

In the 1930's the few fishing communities that could be described were circumscribed to the two main harbors. Although Fiedler and Jarvis do not go into the details, it is highly probable that they referred to the old shantytowns near both harbors. Outside the towns, fishers seem to be dispersed throughout the coast, and engaged in fishing only as a part-time endeavor.

According to Fiedler and Jarvis (1932), the fishing areas around St. Croix are limited by the closeness of the shelf drop-off from the western portion of the island and throughout the northern shore to the Long Reef in the area Christiansted. The East End of the island was appraised as the key fishing area, extending from Buck Island to the tip of Lang Bank, and to Great Pond in the south shore. The authors estimated that the shallow waters in Lang Bank could serve as a potential new fishing ground for local fishermen. Fiedler and Jarvis did not comment on the fishery resources located at the southern shore of the island. The north shore had been well fished over the years, and the area surrounding Buck Island was defined as a major fishing ground. It encompasses pelagic resources around Buck Island, reef fish and shellfish in the shallow waters, reefs and sea grass beds, and the bait-fish available in Teague Bay. Over the years, Cruzan fishermen used and exploited these waters and grounds, and slowly moved to the richer waters of Lang Bank in search for groupers, snappers and conch.

Fiedler and Jarvis (1932) observed and described the local markets, located at the two major towns. Both were similar and consisted of a cement platform, a roof and opened sides for ventilation. These structures did not have running water, and had tables in the middle for the display of the catch and for weighing the fish. The Frederiksted market was remodeled two years ago, using the same historical design. The Christiansted market was eradicated for aesthetic reasons related to the National Park Service control of the fort area. The new fish market in La Reine is no different from the old market places, except for the availability of running water. The marketplace is a simple wood and zinc structure on a cement platform, with open, unscreened sides, housing several tables for displaying the catch. A major addition is a room for cleaning the fish, and plenty of parking. It is in a location far from the waterfront, almost in the middle of the island. The St. Croix market was supplied by the local fishermen, and from boats from St. John and Tortola, usually at a lower price. Grocery stores carried then, as they do now, thousands of pounds of salted hake and pollock, sold as salted fish.

Figure 15: Waiting for fish in Frederiksted.



Photo: Jack Delano

Street peddling was almost non-existent, according to the local regulations. Fish was sold either at the market or from the boats at the wharves (Figure 15). In recent years, the local fishermen sold their fish by the side of the roads, at the parking lot of a service station, or from their boats. With the construction of the new market place, the government prohibited fish peddling in the streets.

4.7. Fisheries Development

In contrast to the Puerto Rican experience, the government of the U.S. Virgin Islands did not play an active role in the modernization of their local fisheries. The development of U.S. Virgin Islands fisheries was slow because of the prevailing belief that fishery resources have been over-exploited for several decades, the limited investment potential of local fishermen, and the minimal assistance provided by the government for purchase and upgrade of vessels and equipment (Brownell, 1972; Brownell and Rainey, 1971; Olsen and LaPlace, 1981). Nevertheless, there were a small number of research efforts geared at diversifying landings by introducing new harvesting techniques (e.g., lines) and developing new fisheries (e.g., deep-water snapper and grouper and crab fisheries) (Olsen and LaPlace, 1981). However, these attempts were unsuccessful because fishermen believed that larger fishing vessels and expensive fishing gear were required to participate in these fisheries (Brownell and Rainey, 1972). Hill (1969) also noted that local fishermen were reluctant to adopt new harvesting technologies.

5. Cruzan Commercial Fishermen

5.1. Who are they?

5.1.1. Characteristics of the Fishers and Helpers

Knowledge of the size and structure of the commercial sector is central to understanding its contribution to the local economy. Unfortunately, this information remains somewhat elusive in the case of St. Croix due to the fishers' mobility into other sectors of the economy (at the island and regional level) and the legal character of their participation in the fishery itself (Griffith and Valdés-Pizzini, 2002). Currently commercial fishers need a valid fishing license to operate in territorial waters but their "helpers" do not need a permit. Since 2001, the U.S.V.I. has had a moratorium on new entrants. This makes it difficult to accurately assess the total number of actual participants beyond the numbers recorded for fishing licenses. According to the 2003 U.S.V.I. Commercial Fishing Census conducted by Kojis (2004), there are a total of 383 registered fishermen, of which 223 (about 60%) are registered in St. Croix. However, based on interviews that were conducted for this study, the number of Cruzan fishermen was estimated to be upwards of 250, suggesting that the current total is probably higher than what was originally reported. In addition, there are an estimated 200-225 unaccounted for individuals considered to be "helpers" that provide labor and other duties in support of the registered fishermen¹⁷. Table 7 provides summary statistics on the commercial sector.

Despite registered commercial fishers making up a very small percentage of the population (0.4%) this number does not account for helpers and participants on the recreational fishing sector, suggesting that fishing as an activity is more important to the Cruzan population than the numbers alone indicate. The issue of helpers is a critical one. Helpers do basically everything: repair gear, maintain the boat, and set gear in place (mostly divers placing nets in the ocean bottom) and sell the fish at the market. We observed a large number of these helpers in the market place; however, we were able to interview only a handful of them. They seem to be the weakest link in the fishery. Prone to the shifts in the local economy, they are a fluid group who look for jobs in other sectors (including the underground economy) and do not have any of the rights and/or privileges afforded to registered fishermen such as permits, licenses, and tax

¹⁷ During our first visits, interviewees told us that there were a large number of fishers operating without a license, but we could not identify who they are. In our subsequent visits we clarified the matter: those without licenses are the "helpers" who are usually young men hired by the older fishers, as deck hands, divers, and even pilots of their boats.

exemptions. They tend to be unaccounted for in official statistics, which distorts the true contribution of the commercial fishing sector to the local economy.

Table 7: Key statistics of the census of commercial fishermen in the U.S. Virgin Islands.

| Summary of Fishing Statistics | | |
|---|------------------|----------------------------------|
| | St. Croix | St. Thomas & St. John |
| Number of fishermen | | |
| Licensed commercial fishermen | 223 | 160 |
| Estimated crew size | 312 | 224 |
| Total number of fishermen and crew | 535 | 384 |
| Ethnic Groups (%) | | |
| Hispanic | 48.4 | 3.5 |
| Black | 41.6 | 32.5 |
| Black Hispanic | 1.8 | 0 |
| French descent | 0 | 49.1 |
| Black French | 0 | 6.1 |
| White | 7.7 | 8.8 |
| Engagement (%) | | |
| Full-time (>36 hrs/week) | 61.0 | 77.3 |
| Part-time | 31.5 | 19.1 |
| Occasional | 7.5 | 2.7 |
| Income Dependence (%) | | |
| > 50% from fishing | 54 | 75 |
| ≤ 50% from fishing | 46 | 25 |
| Time Spent on Fishing Activities (%) | | |
| ≤ 20 hrs. per week | 30.5 | 35 |
| ≤ 36 hrs per week | 23.3 | 32.5 |
| >36 hrs per week | 46.2 | 32.5 |
| Fishing practices | | |
| Average number of weekly trips (trips/week) | 3.3 | 2.6 |
| Average trip duration (hrs/trip) | 6.7 | 8.3 |
| Average number of hours spent fishing (hrs/week) | 22.11 | 21.58 |
| Average annual landings (2003 data) – lbs/year | 4,615 | 5,051 |
| Average weekly landings (lbs/week) | 88.75 | 97.13 |
| Average number of hours spent selling fish (hrs/week) | 6.6 | 8.1 |

Sources: Kojis, 2004; NMFS 2007a

However, the Kojis (2004) report did attempt to recognize helpers' presence and contribution by asking fishermen to distinguish between "helpers" and "other commercial fishers" that they worked with. As a result, 188 Cruzan fishers reported fishing at least with one "helper" (the mean number of helpers was

1.4). Using the average number of helpers per licensed fishermen, we estimate that there are about 312 helpers in St. Croix. However, it is likely that many of these helpers don't work on a full-time basis.

5.1.2. Ethnic Makeup

Officially, most fishers in St. Croix belong to three racial categories: whites (7.7%), blacks (41.6%), and Hispanics (50.7%), although each category contains multiple ethnic groups depending on how the data are aggregated. During our fieldwork, we also found that the majority of fishers belonged to three major ethnic groups: Puerto Rican, West Indian ("Brits" from St. Lucia or Trinidad), and Cruzan (including whites and blacks). St. Croix is a transnational landscape. According to the 2000 U.S. Census, an important share of the population (46.3%) was not originally born on St. Croix. A closer look at the "country of birth" Census category reveals that there is a steady flow of citizens from other Caribbean countries moving to St. Croix. It receives a steady flow of West Indian workers, who find their way into the construction, manufacturing (refinery and rum processing) and service sectors (McElroy and De Albuquerque, 1998). This group also fishes to supplement their income.

The 2003 U.S.V.I. Commercial Fishermen Census classified fishers according to the following ethnic groups: Hispanics (48.4%), Black (41.6%), White (7.7%), Black Hispanic (1.8%), and East Indian (0.5%) (Kojis, 2004). In interpreting these data, the major category of "Hispanics" included Puerto Ricans born in St. Croix or hailing from the islands of Vieques, Culebra, and the townships to the east of Puerto Rico. A small number of people from Dominican Republic who are involved in the local fisheries (sometimes illegally) are also included in the Hispanics category. According to the census, many of the Hispanics indicated that their original home was Vieques, probably as a result of the large immigration of individuals during the U.S. Navy's occupation of the island during World War II as well as the steady flow of migrant workers since that time (Barreto, 2002). In the case of the black category, some of the respondents claimed to be of West Indian descent. Unfortunately, not all fishermen divulged information regarding their island origin; therefore, for the purposes of the census, all those that identified themselves as west Indian were also lumped together in the broader category of "Blacks" in order to make the data more concise (Kojis, 2004).

Each major ethnic group has its unique characteristics and idiosyncrasy.¹⁸ For example, Hispanics tend to be younger (averaging 47 years of age), when compared to whites (54 years) and blacks (56 years).

¹⁸ Data for this analysis was provided by Lisa Gundlach, from the Southeast Fisheries Science Center in Miami, NMFS.

Hispanics also tend to be less seasoned fishermen. The percentage of income derived from fishing is much less for blacks (56%) and whites (40%) than for Hispanics (68%), perhaps because blacks and whites hold more jobs outside the fishing industry, notably in the service and manufacturing sectors. Hispanics (38%) were found, on average, to have less formal education (measured as the percentage of individuals completing high school) than blacks (48%) and whites (88%) suggesting that they may not be qualified for other employment opportunities outside of the fishing sector. Based on these same parameters, Cruzan fishers have less formal education than their counterparts in St. Thomas and St. John, making it more difficult for them to obtain suitable employment outside the realm of fishing. Although they all target the same resource base, whites tend to focus more on pelagic and deep-water species using hook and line. They spend a great deal of time fishing offshore. On the other hand, Hispanics target reef fish, conch, and lobster through diving and spear fishing, and blacks prefer coastal pelagic and reef fish species.

5.1.3. Engagement in the Fishery

This section summarizes and interprets the results of the Kojis study (2004) in order to describe the level of engagement on the resource. The 2003 U.S.V.I. commercial fishermen census proxies fishing engagement using two main variables: percentage of income derived from fishing and time spent in fishing related activities (>36 hours/week was defined as full-time). When the census inquired about the percentage of income derived from fishing, Cruzan fishermen reported that, on average, they obtained 60% of their income from fishing related activities whereas St. Thomian and St. Johnian fishermen derived about 74% of their income from fishing. When we parse the income data differently and define full-time fishermen as “those that made more than 50 percent of their income fishing” we find that 54% of Cruzan fishers can be considered to be full-time fishermen compared to 75% of St. Thomas and St. John fishermen. Hispanics reported the highest percentage of their incomes coming from fishing (68%) suggesting that they are the most engaged and income dependent racial group in St. Croix followed by blacks and then whites. During our interviews, some of “part-time fishers” and “opportunistic fishers” in St. Croix hinted that they also held jobs in HOVENSA and other companies, which allowed them to fish occasionally on the weekends.

When the census used a time-based metric, 61% of the Cruzan fishers reported fishing full-time (>36 hours/week) compared to 77.3% of St. Thomas/St. John fishermen. While there are multiple reasons for Cruzan fishermen spending less time on fishing related activities, it is worthwhile noting that the census reports that most Cruzan fishers (61%) felt that fishing was “worse than 10 years ago” which suggests

that more fishermen in St. Croix are seeking employment outside of the fishing sector since they can no longer exclusively depend on fishing to make a living as they did in the past.

5.2. Fleet, Gear Types and Species Targeted, Fishing Grounds

5.2.1. Fleet Characteristics

According to the Kojis (2004) study there are 225 fishing vessels in St. Croix and 135 in St. Thomas and St. John. The size of the boats owned by Cruzan fishermen ranged from 10 to 54 feet, with an average length of 21 feet. About 43% of the fishing boats ranged between 16 and 20 feet in length (Kojis, 2004). The majority of the hulls were built with fiberglass (80.7%) and, to lesser extent, of a combination fiberglass and wood (12.5%). Most vessels had outboard motors, usually under 100 hp (75.3%). Electronic equipment on board was limited, except for cell phones (65.3%), echo-sounders (28.6%), and marine radios (21.4%). Most Cruzan boats did not have any additional operations equipment (only 7.3% reported having a winch), and only a few (10.2%) reported having electric reels for deepwater fishing (Kojis, 2004 *in passim*). The vessels are hauled in trailers and frequently transported around the island and, as a result, they are usually small in size and lack additional equipment that could increase the weight or could clutter the inside.

5.2.2. Gear types and Species targeted

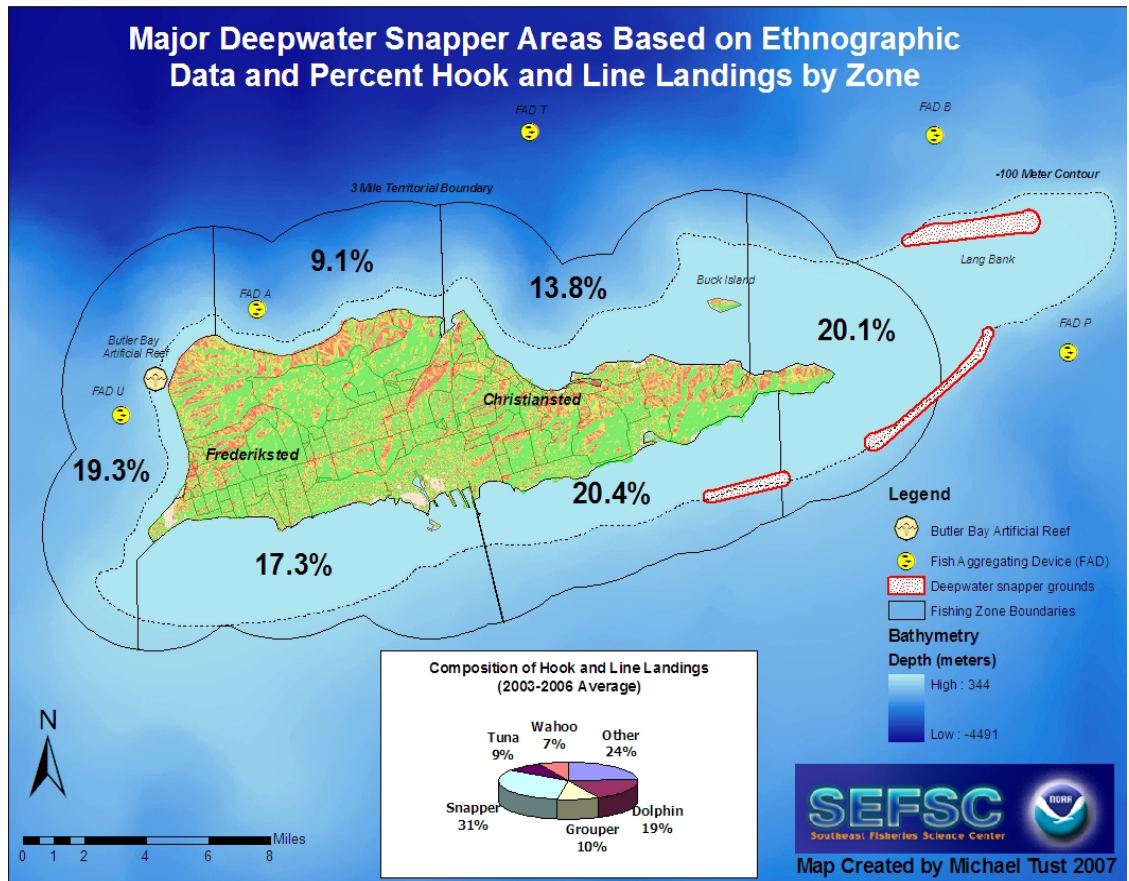
Hook and Line Fishers

Hook and line is one of the oldest gears in the U.S.V.I. This gear was not only used by the indigenous populations of Caribs and Arawaks but also by fishermen during the plantation era of the 18th century. Fishermen used this traditional gear to catch near-shore species for food and trade. On Sundays, slaves used this gear along with nets to go fishing. Their catch was often sold in the marketplace (Lawaetz, 1991). Fiedler and Jarvis (1932) observed various hand, trawl, and troll lines made of heavy twine. These were used to catch various coastal pelagic species. While similar equipment is currently used for subsistence and recreational purposes, more commercial fishers are purportedly using multi-hook vertical lines to fish (Kojis, 2004).

The majority of hook and line fishers target near shore snapper and grouper species and offshore pelagics such as dolphin and wahoo. In addition, fishermen use this gear to catch deepwater snapper species. The majority of the reported landings taken by the hook and line gear came from the east and southeast coasts (40.5%) and off the west coast (19.3%) where the drop-off is much closer to shore (Figure 16). Our

ethnographic work revealed that the major deepwater snapper grounds were off the eastern to southeastern end of the island around the 100 meter depth contour.

Figure 16: Hook and line fishing grounds and landings distribution.



Source: NMFS 2007a.

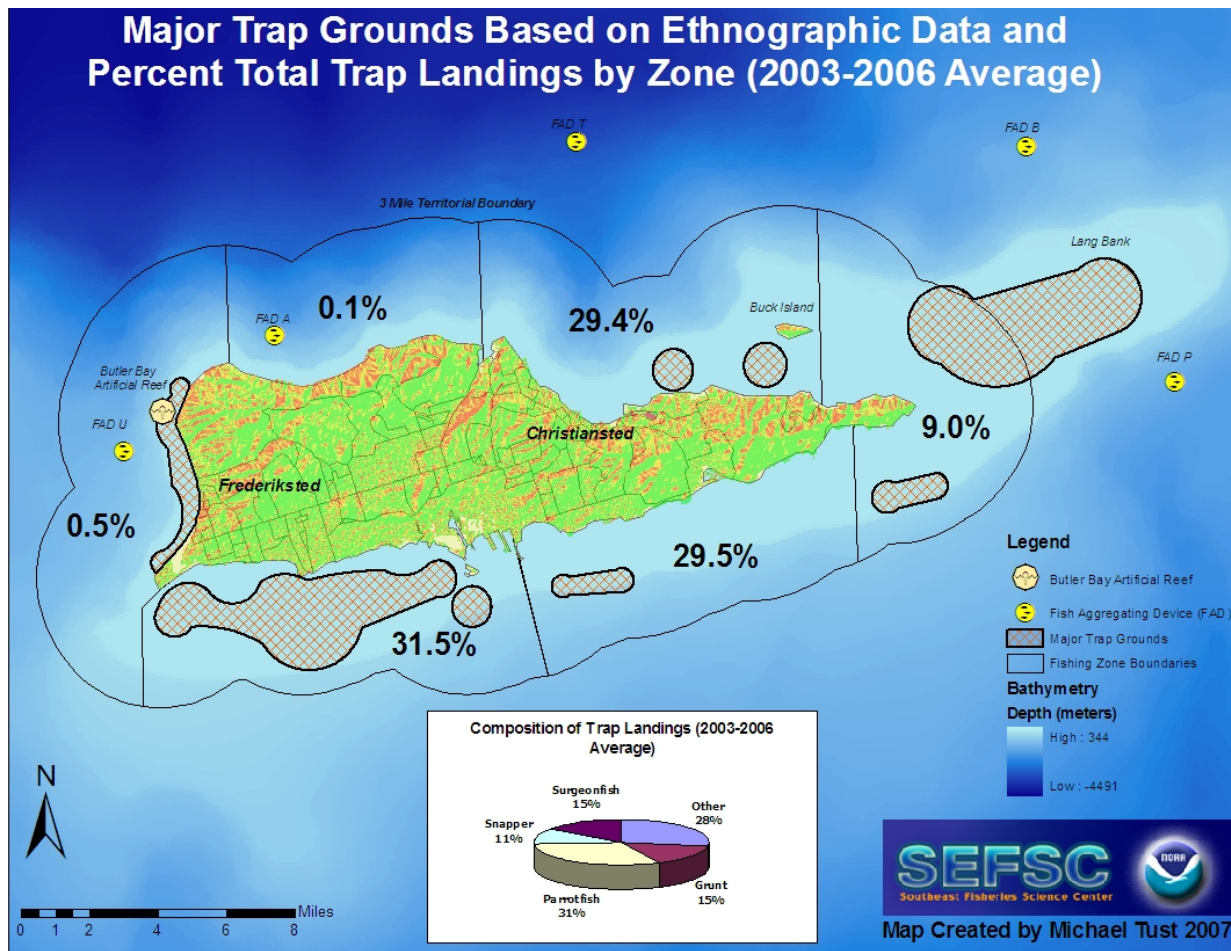
Trap Fishers

Trap or “pot” fishing was the most widely used form of fishing for many decades but has been on the decline in recent years. In their census, Fiedler and Jarvis (1932) observed that traps were the most popular fishing method in the early 20th century in the U.S. Virgin Islands. St. Croix fishermen were especially fond of traps, which, at the time of the census, accounted for nearly 80 percent of the gear in use (as opposed to using nets or lines). Fishermen preferred traps because they were low maintenance, cheaper than other gear, required less bait, could be used year round, and kept the catch relatively protected from other predatory fish (Fiedler and Jarvis, 1932).

Most Cruzan fishers used traps made of wire mesh or ordinary chicken wire and were typically 5 feet long by 3 feet wide and 16 inches deep. Usually a marker such as a buoy or other form was used to indicate the location in the water. Wood traps were weighted down with rocks to keep them from moving around on the bottom too much. Traps were used in waters 2-20 fathoms deep and traditionally targeted reef fish and spiny lobster. Current landings data show that the major species caught are reef fishes (e.g., parrotfish, grunt, surgeonfish, and snapper) followed by lobsters and other various near shore species (Figure 17).

The dominance of traps went into the latter 20th century as traps accounted for 70% of the landings by weight from 1975-1989 (Tobias, 2004a). In the late 1980's and early 1990's, a string of strong hurricanes including Hugo in 1989 and Marilyn in 1995 wiped out a large share of the traps in use at the time. It is believed that these heavy losses compounded with increasing levels of poaching led former trap fishers to adopt diving and nets as their primary gear (Tobias, 2004a). Examination of landing records shows that for 2003-2006 diving and spear fishing accounted for nearly 47% of the total landings, while traps only accounted for about 10% of the total landings, which is reversal from the trends seen for most of the 20th century (NMFS, 2007a).

Figure 17: Trap fishing grounds and landings distribution.



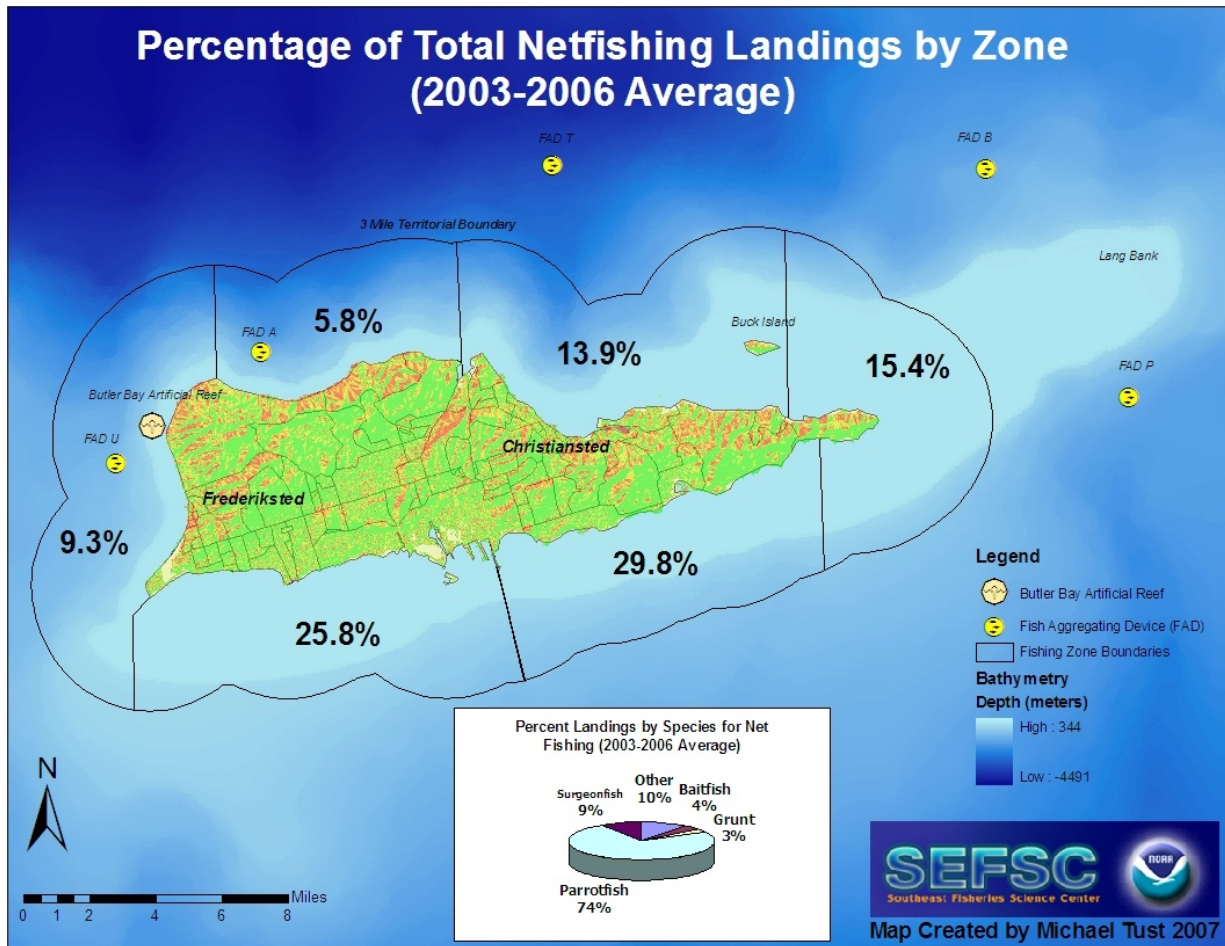
Source: NMFS 2007a.

Net Fishers

Net-fishing has always been a traditional fishing method in St. Croix dating back centuries, but it wasn't until the rise of gillnets in the 1990's that net-fishing played a dominant role in Cruzan fisheries. Fiedler and Jarvis (1932) characterized nets (including haul seine, tangle, and cast nets) as the third most important gear behind traps and hook and line. Kojis (2004) reveals that, in terms of gear ownership, cast nets and gillnets were the most owned net gear followed by trammel nets, haul seine, beach seine, and umbrella nets. The majority of net landings (55.6%) based on current data occur along the south shore from Sandy Point to the East End (Figure 18). Parrotfish continue to dominate net landings (74%) followed by surgeonfish (9%), baitfish (4%), and grunt (3%).

While traps have always caught parrotfish, the rapid rise of parrotfish landings in recent years is due to an increased use of gillnets in combination with diving gears, which are used to herd schools of parrotfish and other reef species into the nets (Tobias, 2004a). Many fishermen believe that “net-fishers were taking too many fish,” which led to the gear’s subsequent ban in 2006.

Figure 18: Net fishing grounds and landings distribution.



Source: NMFS 2007a.

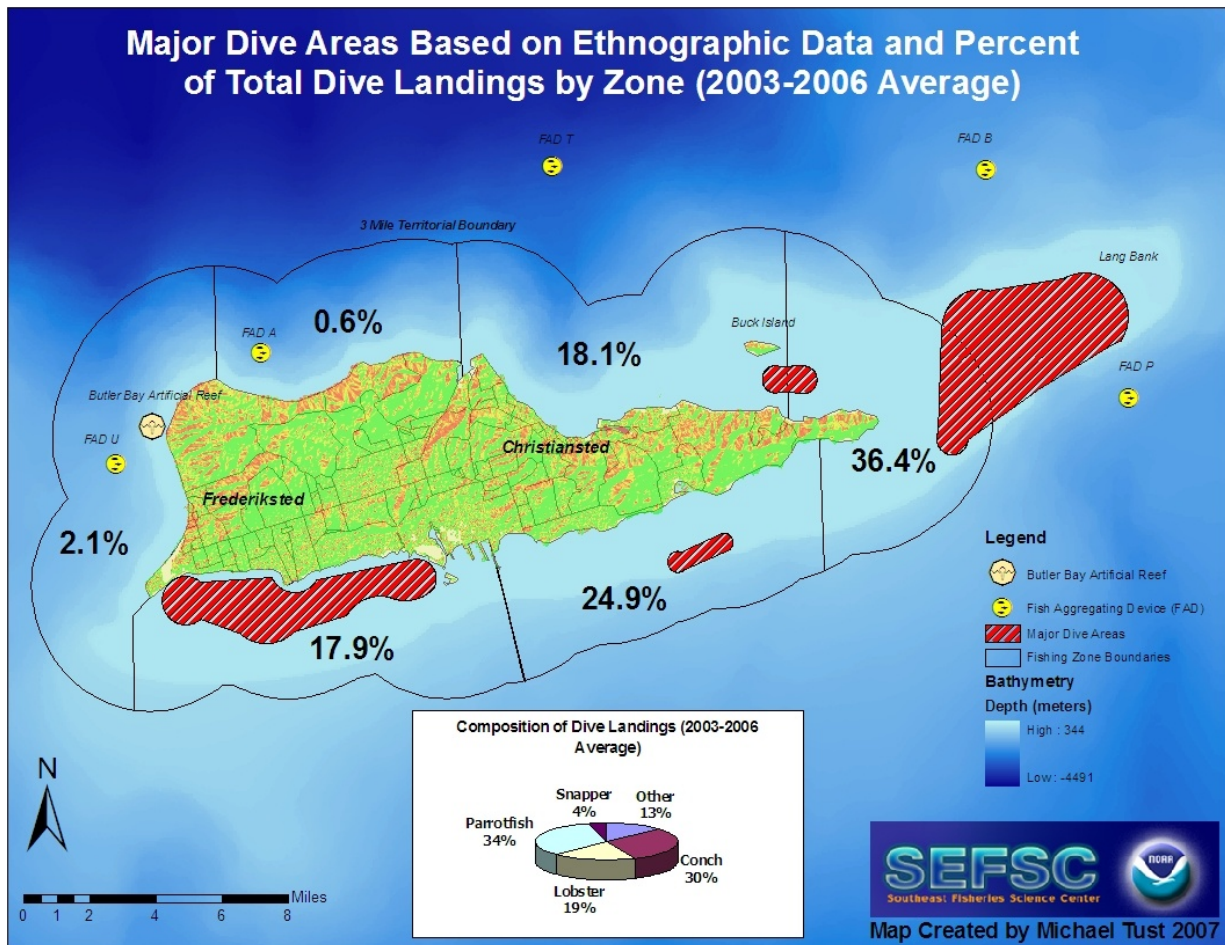
Dive Fishers

The importance of diving in the Cruzan fishery has been somewhat of a phenomenon over the last decade based on the current landings data. Fiedler and Jarvis (1932) briefly discuss the use of free or “naked” diving as a means for catching various shellfish and lobsters in shallow waters but do not go into much detail. In recent years, fishers not only skin-dive for shellfish and lobsters, but they also use SCUBA and spears to catch various reef fish and benthic species. In fact, diving is now considered the dominant

fishing method - accounting for early 47% of total landings between 2003 and 2006 (NMFS, 2007a). SCUBA is used along with nets to catch schools of parrotfish and other reef fish.

Divers are divided into three groups: “*carrucheros*” (conch fishers), “*escopeteros*” (spear-gun fishers), and “*langosteros*” (lobstermen). The majority of the dive landings occur along the East End down to the south shore (49.3%). The area off the East End out to Lang Bank represents the most important dive area according to our ethnographic interviews, while the second most important dive area reported by fishermen occurs off the southwestern coastline extending west to Sandy Point (Figure 19). The major species caught by diving gear are parrotfish (34%), conch (30%), and lobster (19%) followed by snapper and other reef fish species (NMFS, 2007a).

Figure 19: Dive fishing grounds and landings distribution.



Source: NMFS 2007a.

5.2.3. Major Fishing Grounds

East End and Lang Bank

The East End, including Lang Bank has some of the richest fishing grounds in all of St. Croix and is currently undergoing extensive changes in the form of conservation initiatives in order to protect the precious marine resources of the area. The Division of Fish and Wildlife divides the Island's jurisdictional fishing areas into 6 main fishing zones. These East End fishing grounds include zone C4 (East Point, Teague Bay to Graptree Bay) and zone C5 (Northeast, Teague Bay to Salt River Bay and Christiansted). Zone C5 includes the recently expanded Buck Island Reef National Monument which prohibits all fishing within the 19,000 or so acres of protected area that falls within the boundary. Zone C4 is completely within the newly created East End Marine Park that stretches from Buck Island to the southeast shore. While some zones within the East End Marine Park are restricted (about 8-9% is considered no-take), there is still commercial fishing allowed in the designated "open fishing zones" (DFW, 2005).

The East End and Lang Bank fishing grounds are popular among conch and lobster divers as well as netfishers looking to catch parrotfish and other reef species. The area is known for its extensive coral reef habitat and St. Croix fishers definitely take advantage of this feature. In fact, these two zones accounted for nearly 42% of the total landings from 2003-2006 including 54% of the total dive landings for the island during the same period. Traps are still extensively used in zone C5 which also accounted for a third of all trap landings in the island (Figure 17).

South Shore

The South Shore includes zone C3 (Southeast, Harvey Channel to Jacks Bay) and zone C2 (Southwest, Sandy Point to Harvey Channel). It represents the second most productive fishing grounds next to the East End and Lang Bank. In the late 1990's the South Shore reported the highest landings of any other fishing grounds, although the total landings have since shifted to the Eastern fishing grounds. At that time, fishermen reported that the waters were contaminated and included barren habitats which at one time were flourishing. Despite this, the South Shore continues to be quite productive among net-fishers, accounting for nearly 57% of their landings for 2003-2006 (Figure 18). The targeted species are similar to those in the East End with parrotfish accounting for the majority of the landings. Conch and other reef fish targeted are in this area as well.

North Shore

The North Shore is the least productive of the three major fishing grounds and includes zone C1 (West, Sandy Point to Hams Bluff including Fredericksted) and zone C6 (Northeast, Hams Bluff to Salt River Bay). One of the reasons for poor output is the fact that the major drop-off occurs so close to shore in this area compared to the other fishing grounds, meaning that the waters are very deep close to shore and are not suitable for coral reefs to proliferate. The North Shore does, however, account for a relatively high percentage of the hook and line landings for the island (nearly 30%) due to fishers targeting more deepwater snappers, tuna, and wahoo, which together make up 40-45% of the total landings occurring in these two fishing zones. Despite the relatively productive deep water species, these fishing grounds are considered a dead zone by many fishers and only account for about 10% of the total landings for the entire island.

Overall, Cruzan fishers have their origins in multiple cultures and exist in a very complex and dynamic sector. They use multiple gear types to target not just reef species, but offshore and deepwater species as well, and this paints a very complex portrait of the fishery in general. Chapter 6 will continue the discussion of Cruzan fishers by approaching the fishery from a community perspective while Chapter 7 describes the Cruzan fisher's worldview of the fishery and what needs to be done to restore the resource.

6. Cruzan Fishing Communities and Society

6.1. Defining communities

Communities provide the basic structure of human life throughout the world, however, what exactly defines a community has proven difficult to delineate. Many scholars have set out to clearly define the term community. George Hillery (1955) came up with 94 differing definitions of community. These definitions can be broken down into two schools of thought based on the concept of what makes a community, i.e., the ‘idealists’ and the ‘realists.’ The ‘realists’ view a community as a series of interactions within a concrete area while the ‘idealists’ think that a community is based on a shared set of norms and values (Breton *et al.*, 2006). Communities can also be seen as a spectrum, starting with rural communities and ending with urban communities. This approach often draws on historical influences that have shaped these communities. In the case of the Caribbean, and in particular St. Croix, this would include the impacts from slavery and immigration from neighboring islands (Breton *et al.*, 2006).

Pascual-Fernandez *et al.* (2001) described three elements that can be used when analyzing communities. These combine key components from both ‘realist’ and ‘idealist’ definitions (Pascual-Fernandez, 2004). The first component is clearly defined spatial boundaries. Many historic fishing communities can be viewed in this context. Unfortunately, globalization makes it difficult to clearly see these boundaries, and the mobility of fish stocks forces fishermen to seek different areas for exploitation. The second component for analyzing communities is homogenous social structure. The final component is that set of shared norms and values, which perhaps is the most applicable in new globalized communities. However, these values can shift with younger generations as the surrounding environment changes (Pascual-Fernandez, 2004).

Caribbean communities are often more heterogeneous than initially perceived due to the institutions that shaped these islands, most notably slavery and immigration. Slaves were brought from all over Africa and were forced to give up their previous culture for a European one. Puerto Ricans and indentured laborers from other Caribbean islands were also brought to St. Croix and later on, continentals arrived. The resultant culture is not a homogenous one, but rather a hybrid of cultures from different locations (Breton *et al.*, 2006). Any attempt to view the present state of communities that exist within the Caribbean must be done by first looking at the historical influences that affected them.

To simplify the description of fishing communities, Griffith *et al.* (2007) offered three basic categories: place-based community, network-based community and knowledge-based community. Place-based fishing communities have been described as similar to peasant communities in that there is a physical location and identifiable infrastructure within a clearly defined geographical area. In contrast, network-based fishing communities are those which may not have a clearly defined area, but rather consist of a group of fishermen that are connected through an actual physical location, such as a fish market or marina. These fishers may not all come from the same background or neighborhood, but the source of their livelihood brings them together into a community. Both place-based and network-based communities often have calendar events or ceremonies that help tie them to a community as everyone is involved. These can take the form of something as simple as market day to festivals centered around seafood and the ocean (Griffith *et al.*, 2007). A third, less tangible category is perhaps a more knowledge-based community of fishers. This can be seen by fishers exploiting the same resources or the same gear type in both a place-based or network-based community.

6.2. Today's Fishing Communities: Fact or Fiction

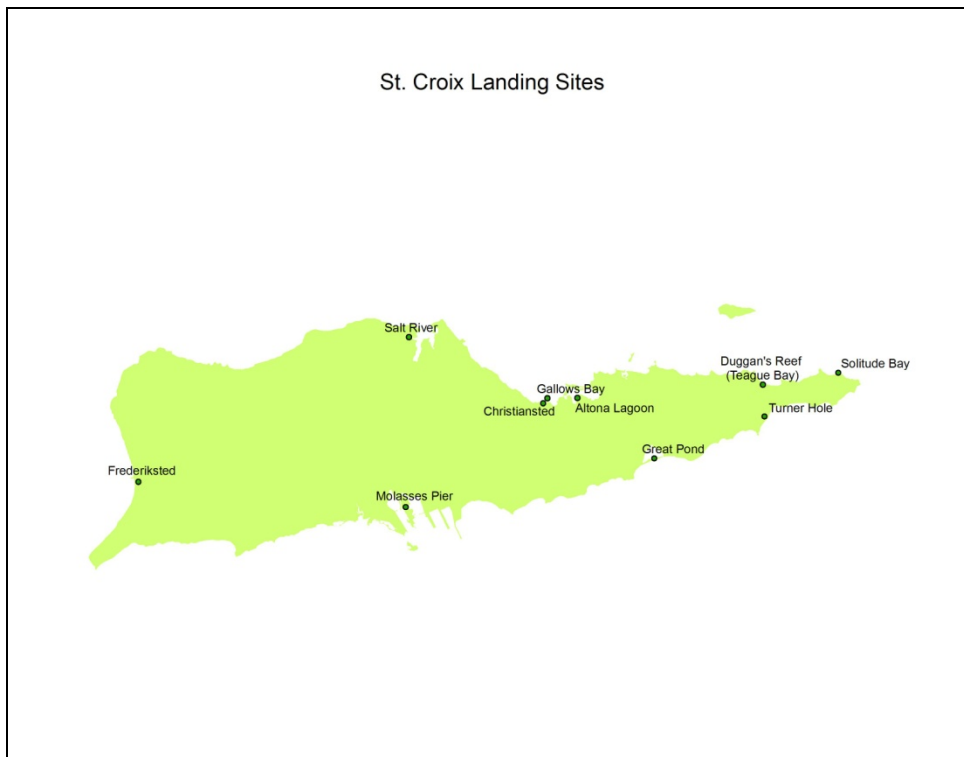
Our historic review, ethnographic work and spatial analysis of fisher's residences suggest that presently there are no place-based fishing communities in St. Croix. However, there are vestiges of place-based communities such as Gallows Bay. Homesteading and more recently gentrification dispersed fishermen throughout the Island, relocating them away from the shoreline. Traditional coastal settlements and marketplaces blended into the modern growth of the "urban" centers of the territory, and thus lost their fishing flavor. A number of fishers underscored the critical absence of formal fish markets on the shoreline, as they existed in the past. At the time of our research, Saturdays was, once again, becoming a preferred day for buying fish in a number of locations, evoking the old days.

Today, fishermen are distributed throughout the island and move their boats in trailers and pick-up trucks. We observed pick-up trucks and trailers all over the island, with the fishers moving their catches, boats and equipment. Cruzan fishermen use many landing sites and ramps distributed throughout the islands to embark and land their fish. The three most important landing sites are: Molasses Pier (south coast), Altoona Lagoon (to the east of the old town of Christiansted) and the Frederiksted ramp, adjacent to the fish market (Figure 20).

Despite this displacement and apparent loss of fishing flavor, fishers and other economic actors maintained personal, social and economic ties that crisscross the island. Fishers continued to be inextricably tied through a system of social relations based on their occupation. Thus, we believe that network-based communities better reflect the current reality of St. Croix. The structure of social relations is noticeable, for social researchers, as a social network in which information, services, and goods flow jointly with community and political support for local projects (Degenne and Forsé, 1999). The nature and intensity of circulation of “goods and services” is established by the characteristics of the network: the number of individuals and households involved, and nodes, direction and intensity of the relationships. The quantitative study of social networks is an important and interesting area of research that deserves more attention in the study of community engagement in fishing, and in the definition of a community.

Our hypothesis, based on our observations, and grounded theory, is that such a study could reveal, for St. Croix, intense networks among members of ethnic and territorial groups, and a tenuous but critical set of relationships among all the fishers in the island. For example, sociability (and open and willing interaction among members of a network) requires a special location, a place. Since place-based communities no longer exist, fishers engage in social relations at the ramps, at La Reine market place, at Gallows Bay, and other places where fish is sold and consumed, and services are exchanged, such as restaurants, stores, markets and government offices. The fishermen’ network of St. Croix also include intense relationships with government officials, mostly from the Division of Fish and Wildlife, the National Park Service, the Department of Planning and Natural Resources, and NOAA through the CFMC. Such relationships are of a formal nature, although they tend to be more casual with the years and the long-standing relations and exchange of information among the participants of the network.

Figure 20: Map of major landing sites in St. Croix.

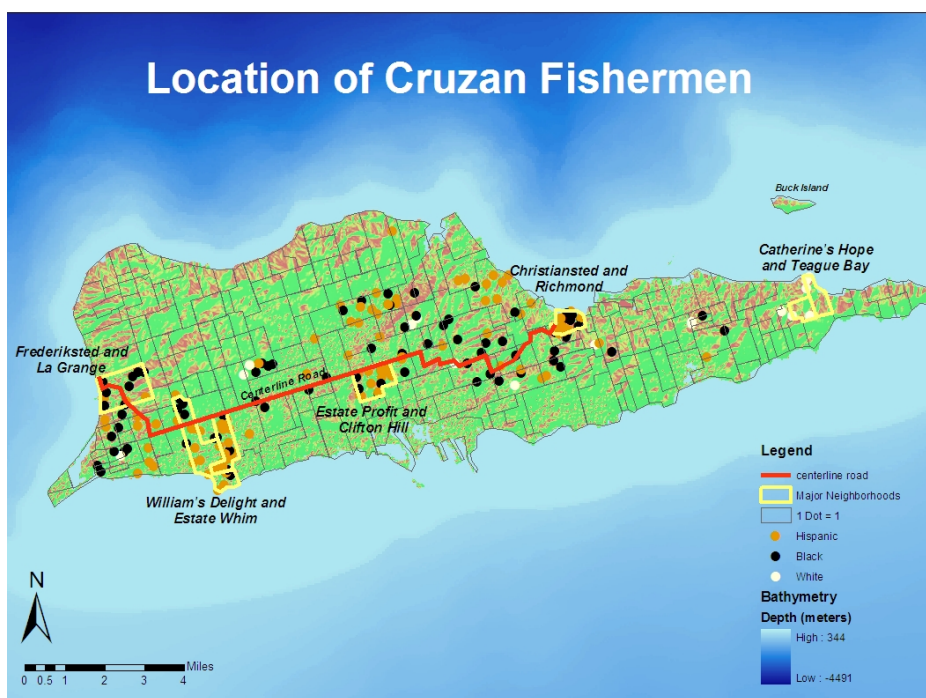


6.3. Homesteading, gentrification and fishermen's residences

In the absence of place-based fishing communities, the geography of fishermen's residences can provide insight into the forces that shaped their current network configuration.

Figure 21 shows that few fishers reside in estates and neighborhoods that are close to coastal areas. Most fishermen reside along a diagonal line that extends from the north to the southwest coinciding with Centerline Road. The residential geography is mainly due to the process of homesteading as the government provided plots of land to farmers in an attempt to revitalize the sugar industry after 1936 (Dookhan, 1974). This residential geography also captures the relocation of fishers from poor and economically depressed urban communities to public housing and other accommodations. It also responds to the actions of fishers seeking better areas and locations. Although we did not look at the historical process of land tenure, a quick examination of the map suggests that coastal lands are owned by the government (harbors, waterfronts, and other infrastructure), upper class owners, NGOs, farmers, hotels and large companies, such as HOVENSA and Cruzan Rum, leaving almost no land available to Cruzan fishermen.

Figure 21: Location of fishermen's residences.



The distribution of fishers' residences can be further examined along ethnic lines. While the majority of the fishermen are aligned around Centerline road, West Indian fishermen tend to be located near Fredericksted and Christiansted, with smaller pockets scattered between these two main towns (Figure 22). White fishermen, many from the continental US, are mostly located in the eastern end of the island in the settlements around Teague bay and Catherine's Hope (Figure 23).

Hispanic fishermen are mainly found in the southwest corner of the island, with a handful located in Christiansted and Richmond (Figure 24). Alternatively, the location of fishermen's residences can be parsed by the level of engagement: full vs. part-time. Roughly 61% of fishers work on a full-time basis. The majority of these full-time fishermen live in the south-central region and near Fredericksted and Christiansted (Figure 25).

Figure 22: Location of West Indian fishermen's residences.

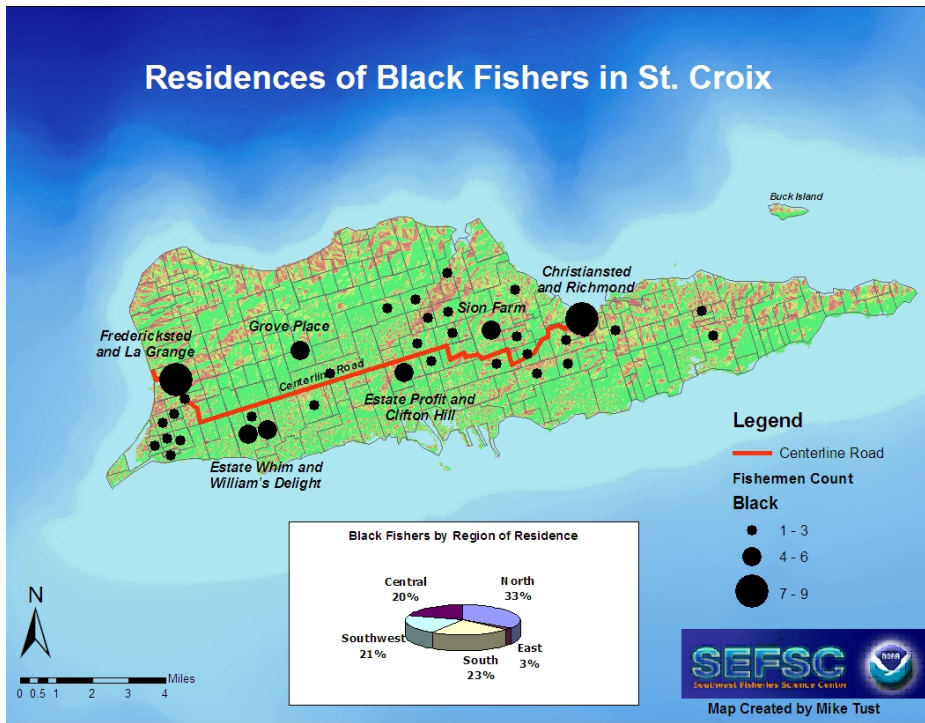


Figure 23: Location of white fishermen's residences.

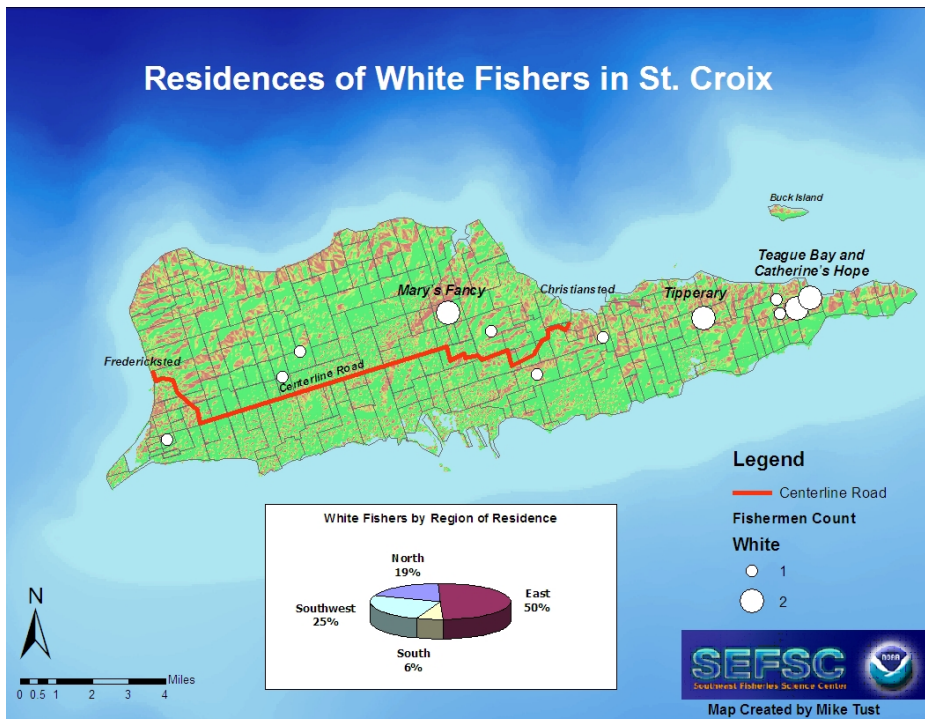


Figure 24. Location of Hispanic fishermen's residences.

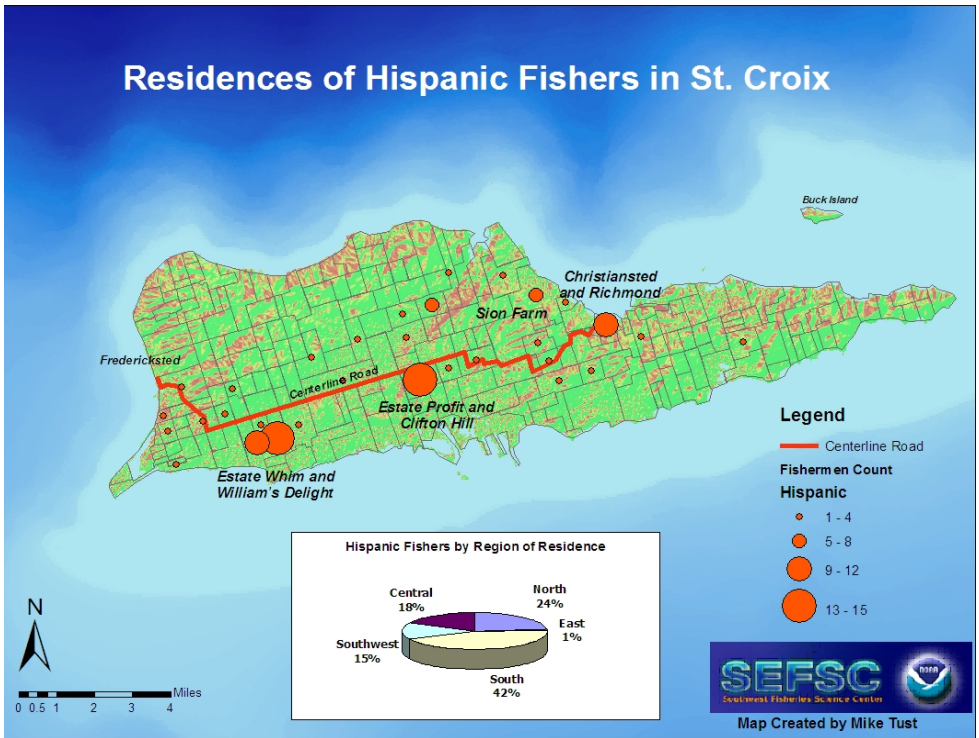
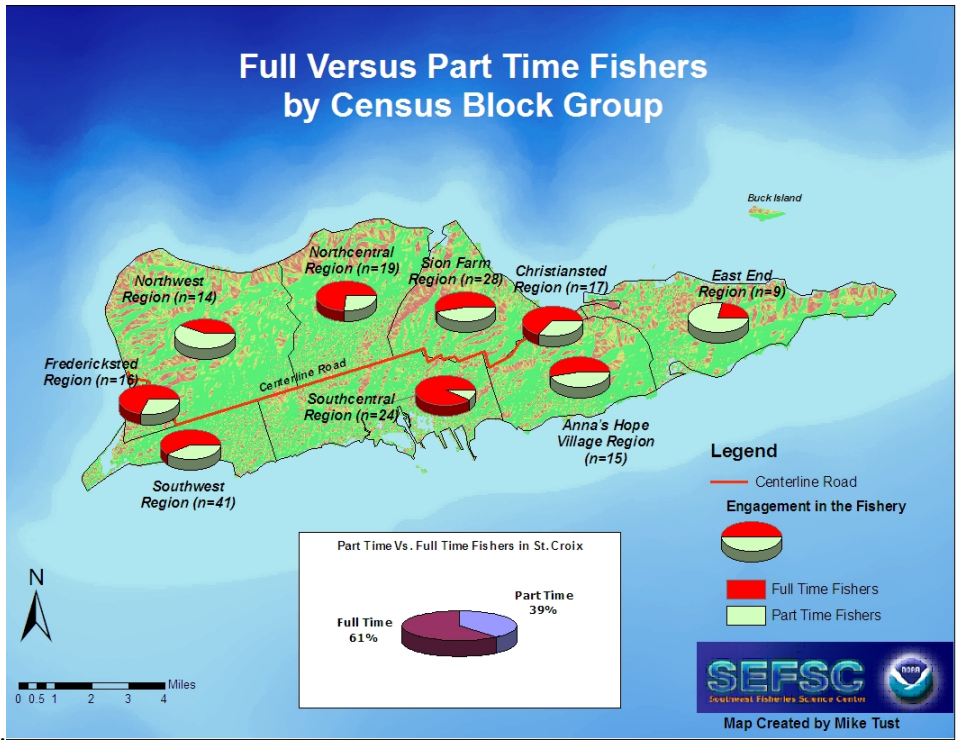


Figure 25: Percentage of full and part-time fishermen by area.



6.4. Yesterday's Fishing Communities

In the past, the settlement of Christiansted had three fish market areas: (1) the old town market; (2) one in Watergut, in the western section of the town's harbor;¹⁹ and (3) Gallows Bay, which has small market area. Gallows Bay is well kept, and fishermen use the ramp for their boats, although some have vessels in the pier. They also use the area as a gathering place. The community and houses there give the visitor "a sense" of being in a typical fishing community, as some houses have boats in their yards. There are a handful of bars and local restaurants. During our visits, we observed fishermen selling fish and conch. However, the forces of gentrification have dispersed fishermen throughout the island.

La Vallee and Frederiksted were also important fishing communities. According to an interviewee, the urban renewal process in St. Croix (evident in the number of public housing units and the growth of sub-divisions in the 70s and 80s) displaced and dislocated many fishermen who moved to other areas. As a result, the fishermen population was dispersed throughout the island. In our view, there is a strong connection between urban renewal and the revitalization and eventual gentrification of Christiansted and Frederiksted, as these urban areas became the sites for restaurants, tourist shops, bars for expatriates, dive shops and other amenities for the visitors. These processes must have moved the local population to public housing and sub-divisions, separating them from the shoreline. This dispersal may be partly responsible for the limited cohesion among fishermen. Fishers of Puerto Rican descent note that Cruzan fishermen are not united, "they do not fight to protect their rights." The topic of lack of unity came up several times, especially among the Puerto Ricans who also claim that the absence of civic unity retards their socioeconomic well being vis-à-vis other ethnic groups such as people of Lebanese and Turkish descent who own gas stations.

6.5. The Evolution of Fishing Communities in St. Croix

"We don't mind enhancement of the area, we just do not want to be uprooted. We don't want another Watergut." Jessica Tutein Moolenaar (Fisher, 1988)

The U.S. Virgin Islands have devoted a considerable amount of time, effort and funds to promote the territory as the 'American Paradise'; and thus attract a large number of tourists who come to

¹⁹ This is probably related to the Danish term *Neger Gotted*, or Free Gut, the local name for the place where the "Free Coloured" had to build their houses after the 1747 building code.

visit by plane, cruise-ships, and sailboats. To accommodate the growing number of tourists, the government stimulated the construction of hotels and resorts, while promoting the development of commercial activities and business related to tourism, such as small shops, restaurants, tour operators, bars, marinas, diving shops, and charter boats. Continentals and other non-native residents own most of the businesses linked to the hospitality sector.

Throughout the Caribbean, the coastal zone attracts a large number of visitors and investors. These people are drawn to this ‘new’ space for leisure and for its high aesthetic value. The increasing demand for this ‘coastal commodity’ tends to attract wealthy home buyers who, by sheer numbers, tend to displace traditional dwellers from their historical coastal settlements. Coastal developments focus on the construction of high-end condominiums, resorts, and houses, but the prices of the units are unattainable to the local population, who are already suffering from unemployment and poverty. Changes in the landscape highlight the diversity in architecture, social practices, lifestyles and languages. This complex process is known as coastal gentrification.

In addition to the 40 leisure-oriented businesses, large hotels, bed and breakfast and hostels, The Real Estate Magazine of the U.S. Virgin Islands (July 2004) provides the reader with a cursory look at the level of gentrification in St. Croix. Although there are a variety of houses and real-estate agents serving the general public, most of the real estate franchises and local agencies cater to the Continental retiree or the outside investor, who seeks properties on or near the coast. This business strategy contributes to the gentrification of St. Croix.

6.6. Gallows Bay: Gentrification vs. Fishing Tradition

Arguably, the only remnant of a place-based fishing community in St. Croix is Gallows Bay, located to the east of Christiansted on the way to Altoona Lagoon. Two or three blocks of houses harbor the only remaining coastal settlement where life revolves, at least in appearance, around the fruits of fishing. A number of boats are anchored near the waterfront which serves as a meeting place and fish market on Wednesdays and Saturdays. Bars, food, grills, fish, drinks, are part of the scene at Gallows Bay, as observed by the research team, and by other anthropologists (St. Aubin N.D.).

In the 1980’s, a sign welcomed visitors with the following words: “Keep Gallows Bay Afloat” displaying the residents “strong sense of community, taking extensive measures to maintain their

village and display their pride” (Fisher, 1988). During that decade, pillars of the community such as Jessica Tutein and Panchi Larsen worked together in a concerted effort to protect Gallows Bay from the force of gentrification that is transforming the coastal zone, marked by the development of high-end structures and facilities for the upper classes. The dredging of the reefs in front of Gallows Bay to allow the harboring of large cruise ships galvanized the local people of Gallows Bay to protect their community.

Nowadays, tourists and occasional visitors are able to admire Schooner Bay Condominiums and Chandler’s Wharf which are considered “an impressive and aesthetically pleasing addition to the Mount Welcome hillside” (Fisher, 1988). However, people from Gallows Bay protested these developments. Divided between modernization and tradition, the residents of Gallows Bay wanted to see St. Croix move ahead, while keeping the cultural essence of their coastal communities:

“Let them develop, but don’t let them try to squeeze us out, or they just might wake up a sleeping giant. We intend to hold to our own, a lot of tradition, a lot of culture is here, and we do not intend to let go”. Panchi Larsen (Fisher, 1988)

Antilles Investment Corporation, the developers of this project, invested in local infrastructure (e.g., pump to handle the extra sewage) and recommended the construction of a “Fish and Retail Market for the local fishermen.” The local community resisted these efforts to engulf and squeeze Gallows Bay. They formed the ‘Gallows Bay Homeowner’s Association’ to protect the physical and cultural integrity of the place.

As Gallows Bay became a prime area for real estate development in the eighties because of its excellent coastal location, ocean views and waterfront access, and proximity to the harbor and the city, many residents started to move to other parts of the island and sold their land to newcomers. Descriptions by observers and anthropologists suggest that the people from Gallows Bay moved out but remained in St. Croix. However, they tried to maintain a sense of community and a desire for coming back, at least on weekends and special occasions. St. Aubin (ND) reported that in order to maintain their heritage, the people of Gallows Bay (mainly cultural and economic entrepreneurs such as Larsen and Tutein) developed activities to “bring the people back home.” In this plan, fishing and eating seafood played a major role. St Aubin’s candid observations reveal a desire of the organizers of the events to revert to the old times, and to engage in a process of reminiscing and reenacting the past through a number of activities. The process observed and

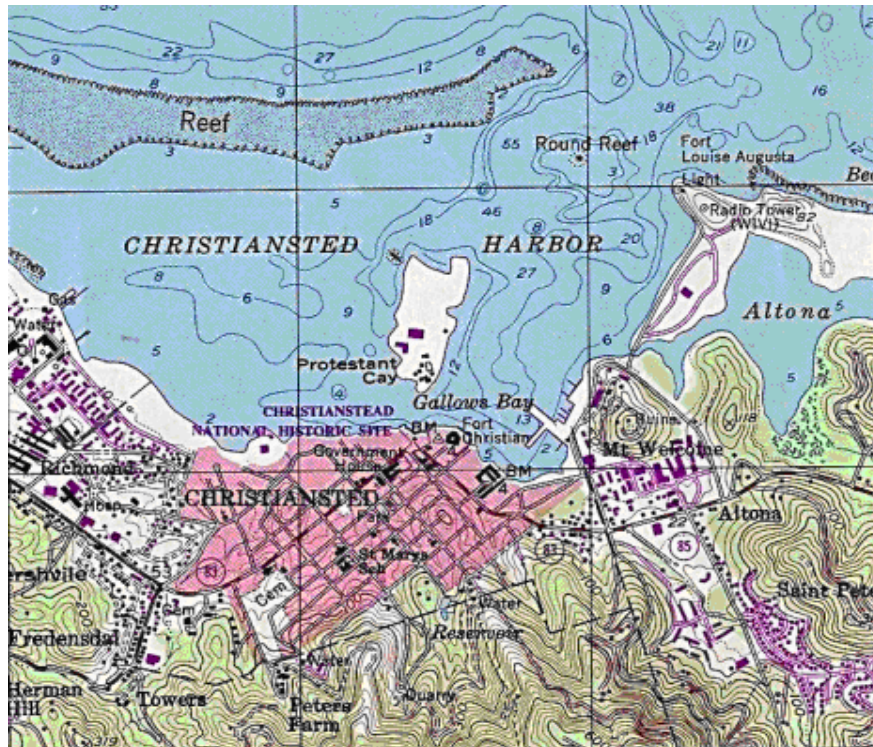
described by St. Aubin (ND) also showed the existing tensions between those who still lived in Gallows Bay and others who moved elsewhere and still participate in the process of maintaining the heritage of the community. It is the tension between those whose lives revolve around the bayside activities (fishing, fish sales, and the social life of bars and seafood), and those who engage in other sectors of the economy and live in other neighborhoods.

In our assessment, the seaside community of Gallows Bay would qualify as a remnant of a fishing community, but perhaps not in the same manner as fishing communities have been classified (if they have ever been classified in a clear way) in the past. Gallows Bay possesses both historical and current attributes of a fishing community. However, demographic and economic changes, particularly in the types of economic activities pursued by the community since the 1970s, have precipitated a decline in the self-identification of this community as residents of a fishing community. Some of these changes will be explored in more detail below.

There is historical evidence that shows human occupation in the area of Gallows Bay dates back to the 1700s (Tyson, 1998). Although not explicitly stated, there must have been at least some subsistence fishing taking place since that time period. Until the early 1960s, Gallows Bay was shallow and bordered by mangroves. Fishermen indicated that they could walk seawards more than 100 meters from shore and still be in waist-deep water. Children played freely on the beach and spent much of their time in the water: swimming and practicing fishing skills. Fishermen stated that this area was full of conch, which were easy to catch until the stocks began to decline. In the old times, fishermen would take out small wooden boats powered by oars and sails and go fishing with hand lines for reef fish or free-diving for lobsters.

Boats would leave in the early morning and come home at night. As each boat rounded the point and came into view of the community, someone would let out a shout to alert others that another boat had come in safely. This was in the time period before the introduction of outboard or inboard engines, and the color of the sails let those on shore know who was heading to port. The older fishermen I spoke to reminisced wistfully about those times.

Figure 26: Map of Christiansted, including the area of Gallows Bay.



Source: http://www.lib.utexas.edu/maps/americas/christiansted_82.jpg

Engines were introduced in the island sometime around the arrival of the U.S. Marines after WWII. The following is an excerpt from Kathi Kitner's field notes:

Chino and Fritz, otherwise called Pa Wolf, who is 84 years old and had joined us at the table on the beach, remembered how resistant fishermen were to trying engines on their boats when engines were introduced. The first engine, Pa Wolf recounted, was bought by a fisherman who was always in the forefront of trying new things. He went ahead and installed a one cylinder diesel in his fishing boat. But there was another fisherman who was certain that the engines would "mash up the boats." There was great excitement and tension in Gallows Bay to see what would happen with the engine. But the engine was installed, and after that, other fishermen saw it was a "good thing." It allowed them to come and go to the same fishing sites as before, but faster and with more reliability. Before, if there was no wind to come to port on, then they had to row their boats.

In the 1940s and 1950s, lobster was not very desirable, bringing only about 7 cents on the market, and was often caught to use as bait in fish pots. When St. Croix became a tourist destination in the 1960s, demand for lobster increased exponentially and so did the price.

From the late 1960's to the early 1980's, the economy of Gallows Bay and the rest of the island flourished. St. Croix was becoming a sought-after Caribbean vacation destination. Here the term "jet-setter" comes to mind, as the rich and beautiful flocked to the warm waters of the island. There was work and money to be made, and more than one individual told me that there was "too much work," that they held two to three jobs, and still there was a need for more labor.

Mark Sperber, owner of Mile Mark Watersports in Christiansted, came to St. Croix with his parents when he was 7 years old. After graduating from Christiansted High School, he worked in various jobs, but was always drawn to working on the water. He got his captain's license and decided to stay on the island and work on boats. He worked mostly on charter boats as a captain, and enjoyed the lifestyle. Mark commented that back in the 1970s, "things were good in St. Croix." The economy was "hot," there were a lot of tourists; there was plenty of work for everyone. According to a cab driver who has been driving in St. Croix for 40 years, St. Croix was dubbed "America's Paradise" in those days. In fact, Mark says, there was so much work that people could pick and choose. That lasted through the 1980s, and then came Hurricane Hugo in 1989.

In 1989, hurricane Hugo devastated the island with 90-95% of all buildings destroyed or severely damaged causing about \$2 billion in damages. Most islanders mark Hugo as the beginning of the island's fall from 'economic grace.' Mark Sperber stated, "Everyone here measures life as pre or post-Hugo." Since that hurricane, things have never been the same. While Hurricane Hugo meant devastation to Gallows Bay, it also meant the destruction of much of the fishing on the island, as fishermen's pots were destroyed along with damage to the coral reef system around the island (Figure 28). This had negative economic impacts on the Gallows Bay community, but other events had progressed to mitigate some of the loss.

The Hess Oil refinery (now a merged venture between Petroleos de Venezuela and Hess Oil, named HOVENSA), one of the largest in the world, had been built in the 1960s, along with the Aluminum Plant located in the same area of the island. Many islanders, including many young people from Gallows Bay, are employed at the refinery. Panchi has three sons working there, and it seemed that almost all island families have some relative working there. HOVENSA arguably is the largest employer on the island, but still the feeling is that Cruzans might be more contented if their island did not have a local heavy industry. A number of Cruzans also resent the fact that

these companies have recruited laborers from other islands, adding to the local ethnic diversity. Another source of employment for islanders is the Cruzan Rum Plant. While locally owned and operated, it still is reviled by fishermen for discharging deoxygenated sugarcane effluent into the ocean. While the company (and the EPA) claim that there is no damage to the marine environment because the discharge is “organic,” it is hard to convince locals that this dark black effluent is not impacting the marine habitat in some way.

From Kitner’s field notes comes this description:

Panchi tells me how the hurricane just devastated the island, hanging over the island for 12 hours, wobbling and dancing. When it moved on there was not a blade of green grass sticking up, everything was flat and brown, and the destruction was immense. Panchi and his family stayed in their house, and the water almost made it up to his door. A tree fell and smashed his car. After the storm, there was nothing. There was no help for a long time, as the entire island’s infrastructure was gone. People were hungry. Tom Daley showed up and went fishing. Then he came back to Gallows Bay and gave away all the fish to the people of Gallows Bay. He did this repeatedly. Panchi said that the community survived on Tom’s fish and what conch and coconuts they could get themselves. Everyone worked together, and they made it, but they went without power until Christmas and running water about the same.

Figure 27: Looking west into Gallows Bay.



Note: the unused parking lot, once intended for boat ramp traffic. Now the community wants the area to be converted to a children’s park.

Figure 28: Many houses are still abandoned and damaged due to Hurricane Hugo.



Gallows Bay

This insert presents an ethnographic description of Gallows Bay prepared by Dr. Kathi Kitner. Her anthropological description and analysis allow the reader to understand the dimensions and extent of fishing, and the culture of fishing in the only place-based fishing community in St. Croix.

Walking up from the Christiansted waterfront on Hospital Street, one enters into more of a residential area that looks slightly rundown, and even abandoned. Coming to the corner of Hospital St. and Lobster Street, there stands what once was a gas station, but is now a sort of convenience store. In front of the main structure is a small hot dog stand/cart built on top of a trailer. They sell hot dogs and cold drinks to passers-by, but the vendor looks a bit bored this morning. To one side of the convenience store is a sign announcing a limousine service and engine repair business. Two younger men stand around, chatting.

I turn down Lobster [Garden] St. and enter into a purely residential neighborhood, but one that is obviously poor. The houses on the right-hand (east) side of the street are built following the Latin style, all one front wall, each residence being distinguished by separate colors of paint. To my left, there are mostly structures that have been cobbled together with odds and ends and corrugated metal. Small courtyards sport a mango tree or two, old cars used as storage space (or garbage containers?), and laundry hung out to dry. Children are playing, and one girl rides her bicycle up and down Lobster Street, greeting me in the polite Cruzan way.

As the street draws closer to the water of the Bay – and it is a short street - the houses become more substantial, being built of concrete block and stucco. There are gates around the houses, and mature trees. Still there is a sense of disrepair, of abandonment, of times gone by. At the waterfront, there are cars parked alongside the narrow road, which take up most of the right-of-way. Now one can feel a sense of being in a place, of being in a neighborhood, not just on a street that passes through somewhere, oblivious to its surroundings.

Looking ahead on Lobster Street, to the east, one sees a large empty parking lot (Figure 27). Towards the water is a view of St. Croix Marine and behind it condominiums reaching up the hillsides. Further ahead there is a shopping area with a large modern hardware store, a bank, a post office, numerous office suites and a few fashionable boutiques and coffee shops. After this area the road snakes out around the hills and enters the vicinity of Altoona Lagoon, which does not seem to be a part of the Gallows Bay sense of place or community.

6.7. Gallows Bay as a Fishing Community Today?

So, is Gallows Bay a fishing community in the sense of being a cohesive grouping of individuals that are joined by common residence, occupation, community events, and worldview? Gallows Bay, on a day-to-day basis, appears to be just a neighborhood, with little occupational cohesion from fishing to hold it together. On most days it is just a quiet residential area, and if one were passing through, not much would suggest that fishing as an occupation even exists in that locale. Instead, one's attention is drawn to the commercial docks and marina at the east end of the Bay, or to the up-market shopping center, post office, and hardware stores close by.

Figure 29: Gathering of fishermen and buyers in Gallows Bay, St. Croix, 2004.



Gallows Bay is not a fishing dependent community, as most of the income earned is no longer from fishing. True, there is a fish landing there, right on the beach of the community, and an open-air market that operates on Wednesdays and Saturdays (Figure 29). But the fishermen that leave and return to the beach do not live in the community, although most did grow up there. In a way, there is a historical tie to the community's "roots" that continues from the past to the present, and it is that sense of unity that makes Gallows Bay a community. Observations in Gallows Bay at a Saturday market show that the first to arrive or to buy or receive fish are those that are related to fishermen and also those people who have some community connection to the fishermen, such as being the son of a friend of a fisherman, or having grown up in the

community. Other islanders show up in their cars and purchase fish through the window; some fish-buying activities seem to be long-standing arrangements, however, no scientific sampling was conducted to determine the extent of this practice.

If you directly ask residents of Gallows Bay if they live in a fishing community, they are apt to say that they did in the past, but that now things have changed. But if one observes, as we did, a Saturday fish market on Lobster Street, one would have to admit that something exists there that is not quite tangible, but nevertheless, IS. People gather, barter, gossip, eat, drink, sell and buy. They *recreate* their community in this way, and so keep their community as a living, viable entity (Figure 30).

We presented a description of Gallows Bay in this report to underscore the fact that some communities have a long history of engagement with fishing, but their trajectory leads them into another set of circumstances. As stated here, Gallows Bay has been impacted by government programs, gentrification, and the geographic dispersion of its original dwellers, who are now engaged in a number of occupations. Despite these processes, Gallows Bay is adamant in presenting and representing itself as a fishing community vis-à-vis the rest of the Cruzan population. Following Jacob *et al.* (2005), Gallows Bay may be identified as a community dominated by a “heritage narrative” in which the coastal community is portrayed as a fishing community when it is in fact a highly diversified settlement dominated by other economic activities. In our view, Gallows Bay may appear to be a fishing community, but information on fishermen’s residences suggests otherwise. Furthermore, we believe that although place-based fishing communities do not exist in St. Croix, the entire island could be classified as a fishing community based on network relations among fishers. The historical pattern of dispersal decoupled fishermen’s residences from their places of business.

Figure 30: Fishermen fraternizing.



6.8. The ‘La Reine’ Fish Market

*“They eat everything”*²⁰

*“Papi, mami, aquí, ¿quieres pescao?”*²¹

Central to a vibrant network-based community of fishers are assembly places, particularly markets, where information, goods and services are exchanged. Markets are also social arenas, conduits of social relations. In St. Croix, fish is exchanged at the La Reine (and to a lesser extent in Frederiksted) fish market, at ramps, at restaurants, and in the streets which serve as important meeting places for this dispersed group of fishermen. In this section, we describe the structure, characteristics and behaviors of these assembly places which form an important element of these social networks.

Every day of the week, from 8:30 a.m. to almost 6:00 p.m. in the summertime, the La Reine Fish Market bursts with activity. On Saturdays, the traditional fish market day, customers could also buy produce and other items at the vegetable market located by the entrance of the Fish Market. Clients approach the market area very carefully to fend themselves from the aggressive advance of the fish vendors, who are always looking to attract the largest number of buyers. “Poppy, mommy, come here, do you want to buy fish? What are you looking for? I have the best prices;

²⁰ A comment made by an expatriate involved in the diving business, in reference to the omnivorous fish diet of the Cruzan, which also includes those fishes that the tourists pay good money to see underwater.

²¹ Poppy, mommy, here, do you want to buy fish? This is the opening line one hears, either in Spanish or English, when approaching the tables at the fish market.

I'll make you a deal.” That standard phrase greets the visitors who are almost physically grabbed by the vendors. There is plenty of competition for customers and most fish vendors (some, fishermen themselves) get in your face trying to sell you fish. They even add to the number of pounds you requested, “*to give you a better price per pound.*” There is almost no way to refuse once the fish is bagged.

The market has running water and electricity, although there are still problems with the cesspool built to treat fish offal. Fishermen place a varied assortment of reef fish of all sizes in large white ice coolers filled with ice. The melted water tends to be poured in the concrete floor of the market or in the asphalted parking lot, contributing to the stench of rotten fish by midday right in the area of their booths.

The organization of the market follows, more or less the following pattern. Fishermen park their pick-up trucks with the truck bed facing the table, in order to facilitate the transfer of the ice coolers to the tables and floor. The fishermen literally watch over the transactions while staying close to their coolers or bed of their pick up trucks. From that vantage point, always in the shade, fishermen supervise the people they hired to sell their catch. An old Puerto Rican gillnet fisherman presided over one corner of the market, while one of his helpers and a relative dipped their gloved hands in the cooler, looking for fish and weighing them for the customers (Figure 31).

Sitting like a ‘pasha’ and handling a large sum of money, the fisherman gave sharp orders to his assistants. As if in an outlook post, the fisherman was quite attentive to the cars arriving and the clients strolling through the market. The fisherman always checked the weight and provided a price for each bag of fish. The helper takes the money from the customer and promptly gives it to the fisherman who exclusively handles the bulk of the monetary transactions. Other fishermen position themselves in a similar fashion, or conduct their business from the floor, moving around aggressively in search for customers. One of them, an old diver had 10 bags of conch for sale. He was expedient enough to clarify that he had a permit to sell the excess conch, 30 days after the start of the seasonal closure.

Figure 31: Fish in cooler at La Reine Market



In addition to the fishermen, fish dealers may be found at the La Reine Fish Market. These dealers buy the fish from the producers and earn a profit by selling their catch at the market. One of them, a Dominican, has three fishers to whom he buys the fish and re-sells it at the market. Opinion is divided on the worth of the La Reine Fish Market. An interviewee expressed that the market was a great idea because it provided for a safe place to sell the fish at competitive prices. Another interviewee told us that the market was a place for bitter disputes due to a lack of price controls. According to government officials, fishermen sell fresh fish caught in nets at a set price. However, if the net fishermen cannot sell their fish, they dump it, and go back to get more fresh fish. Dumping of by-catch by net fishers has been reported by government sources.

Women are an essential component of this market scene. However, their role as peddlers and hagglers has changed into a less prominent one: fish cleaners. There are seven fish cleaners who are officially registered to perform these duties. However, there are ten other people who engage in this activity (Figure 32). The sale of fish generates enough work for them. People pay \$0.75 per pound of 'cleaned' fish. According to the people we interviewed, some cleaners make \$100 to \$200 per day. One of the women cleaning the fish is also the wife of one of the Puerto Rican

fishermen. It is not a rarity to see women helping with the chores of the fishermen. Although that role has changed, the fishers we interviewed underscored the role of the wives and daughters in keeping their business running (fishing, and the sale of fish).

The public visits the Fish Market at La Reine from early morning (7:00 a.m.) to late afternoon (6:30 p.m.). During our visits we were able to observe full activities all day long for two consecutive days, throughout the day. We stopped several times during the day to talk to fishermen, to make observations or to buy fish. Seldom was the market place without any activity and this only occurred at the end of the day. As we observed in our numerous visits, the ambience at the La Reine Fish Market is quite festive despite the aggressiveness in getting customers. A Dominican woman parks her car right near the fishers' booths and begins to sell food. Salted fish and vegetables was the fare on Saturday, July 24, 2004, as the market filled with fishers and clients.²² It is common for the fish dealers and fishermen to play loud music (mostly "*bachata*") in their cars, for the enjoyment of all, especially at the end of the day.

The size and quality of the fish sold at the market were excellent. Ice coolers displayed parrotfish, surgeonfish, old wives (triggerfish), grunt, and even trunkfish.²³ First class fish ("*primera clase*") was sold at \$5.00 per pound while parrotfish (as an exclusive category) was sold at \$4.00 per pound, and the rest at \$3.00 per pound. One fisherman was selling live lobsters from a cage. Most of the fish at the La Reine Market were sold whole. However, the fishermen census revealed that Cruzan fishers sold their fish whole (39%), iced (28%) gutted (9%), and cleaned (i.e., gutted and scaled, 12%) (Kojis, 2004). The category "iced" was not explained in the report, which leads us to believe that these fish were sold whole in ice. If this is the case, then the majority of the fish were sold whole (54%). The rest of the catch was cleaned, gutted or scaled for specific clients, sometimes as an attention or bonus to the local customers (Figure 32).

²² On that day, we counted twelve ice coolers, eight women cleaning the fish, and fourteen men in the market operations (including the fishermen, owners of the fish.)

²³ On one occasion Valdés Pizzini witnessed when a Puerto Rican fisherman was giving away a trunkfish to a client, who almost refused it, because it was difficult to clean. The fisherman told Valdés Pizzini that the locals did not like the fish, when in Puerto Rico is a delicacy.

Figure 32: Helper cleaning fish at La Reine Fish Market.



Photo: J. Agar

When the fishermen census was conducted Cruzan fishers were barely adapting themselves to the new central market. The questionnaire itself did not include a ‘central market’ category, as an option to investigate marketing channels. Figure 33 shows that selling at landing sites and selling directly to customers and restaurants are the main ways fishermen dispose of their product.

Figure 33: Marketing channels.

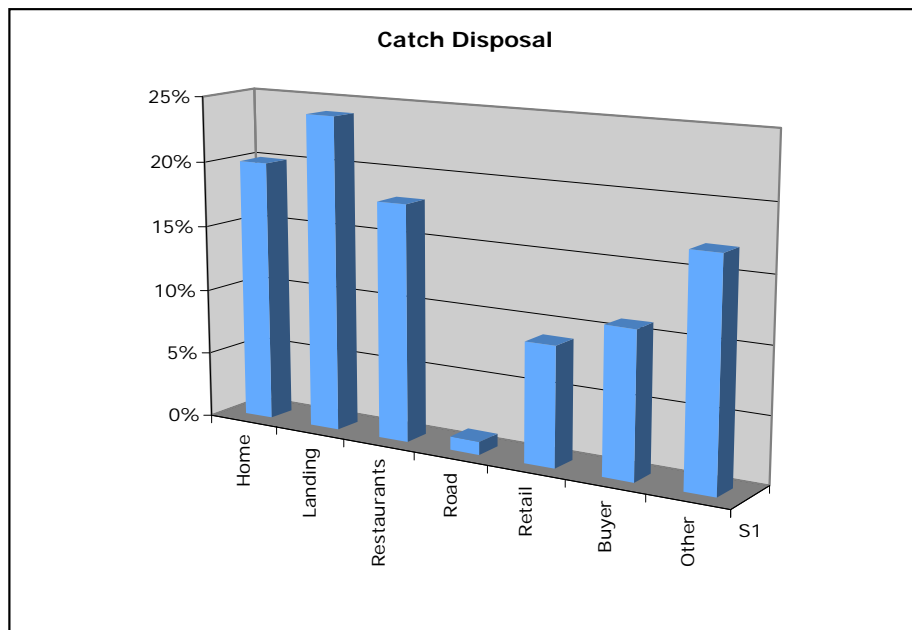


Figure 34: Market at La Reine.



Photo: J. Agar

In the La Reine market (Figure 34), the behavior among fishers, dealers and helpers is one characterized by “relajo” or joking²⁴, with aggressive verbal games and physical bluffs. Fishermen exchanges often focus on women’s anatomy and crude sexual comments. Older and retired fishers that we interviewed expressed their qualms about the new market, mainly in relation to the behavior of the participants. Cursing, drinking, fighting over clients, and smoking pot were described as the forms of behavior that they disapproved. In their view there is no order at the market (“there is no control over the situation”) and there is an open “lack of respect” among the participants.²⁵

The historical background of the La Reine Fish Market reveals the effects of the lack of place-based fishing communities in St. Croix and the continuous displacement of coastal settlements and culture. During our first visit in 2002, the fishermen sold their fish at the roadside mainly along Centerline Road. For health reasons, the government decided to concentrate the marketing and sale of seafood into a single safer venue. Interestingly, some fishers interviewed noted that fruit and vegetable vendors still sell roadside, highlighting the double standard of the situation.

²⁴ Anthropologist Anthony Lauria described in detail the polarization between “respeto” (respect) and “relajo” (joking and “roasting” each other) among Puerto Rican males. “Relajo” was the total abandonment of the respectful relations, and usually implied, crossing the line with other males.

²⁵ However, other interviewees observed that fighting among the fishers, to get clients, was also common at the plot near the Western Auto Building. Instead of getting together to set the prices, they competed against each other. “That is the way they do it, so they like it,” one veteran fisherman told us.

In our opinion, the fact that there were no fishing communities as such prompted the government to select a central geographical location for fishermen who were already accustomed to the process of dispersion. As a large percentage (34.5%) of fishers use ramps and/or landing sites to deploy their boats, it is common to see pick-up trucks with the trailers and boats traveling all over the island.

Street vendors

At strategic points, on the roadside, one can observe stands with tables where the women sell vegetables and other produce. Throughout the island, these women sell a variety of agricultural goods, at a very high price. They are usually accompanied by friends, relatives and occasionally by their husbands. They sell: queneps, mangoes, medicinal plants, eggplant, herbs, tomatoes, papayas, cucumbers.

Figure 23 shows that most fishers live in the estates along the Centerline Road, away from the coast. Thus, most fishermen live close to the La Reine market. Perhaps, the fact that there was little economic activity at the King Edwards Fishermen

Wharf at Frederiksted influenced the government's decision to create La Reine.

6.8.1. A market day

“There is no rhyme and reason for what they do; people just stop any day (to buy fish) although Saturday is becoming a market day again.”²⁶

In the past, fishermen had their spot or site along the roadside from where they sold their fish. Several sites throughout the island were leased or rented by a group of fishers to use as a market area. Fish was sold at the West End, Williams Delight, Machuchal, and at a lot adjacent to the Western Auto in La Reine - perhaps the largest gathering place for fishers to sell their catch. Other traditional areas identified by our interviewees were: Molasses Pier, Gallows Bay and Altoona Lagoon. In all three places there are people waiting for the boats to arrive and the fish to be cleaned, gutted and sold (Figure 35). Fishers also leased other lots in town, especially those located near the Catholic School.

²⁶ A fisherman's description of Saturday as the fish market day.

Figure 35: Market, landing center, gathering place at the East End.



Other producers sell the fish at home, or at a specific location separate from the market. At Teague Bay a fisherman owns a shack from where he sells fish, mostly on Saturdays. He fishes for snappers on Monday and Thursday and spends all day Friday cleaning and gutting the fish. Although the place is open as a shop, it is not. He takes orders throughout the week. On Fridays and Saturdays customers can pick up their orders.

On Saturday the ambiance in the fish market is that of a private feast. Valdés-Pizzini visited the site on a Saturday (around 1:30 p.m.) to find a large group of people with plates of food in their hands staring curiously at the visiting anthropologist. On that day, as on every Saturday, friends and customers gather to buy fish but people also bring food and drinks and have a great afternoon of camaraderie. This is one of the traditions of the local fish market, which is not necessarily mediated by the exchange of money or by impersonal transactions.²⁷

During the boom period of the Hess refinery in the 1970's and 1980's, the fish market benefited from the large number of workers (and fish consumers) coming from the West Indies. One fisherman recalled that during those times, fishermen would take their catch in front of banks, where workers went to cash their checks. We discussed dispersion as a characteristic of the fishery and this example shows the adaptive character of dispersion. Fish were abundant and sold

²⁷ Other interviews also attest to the role of giving away free food (e.g., fritters, conch, water) as a means to attract customers.

well. Other fishers established small fish markets on their personal plots and became fish dealers and restaurant owners. Although this was not explored in our interviews, studies of Caribbean fish markets suggest that a small number of fishermen (usually trap fishers) invested in infrastructure and facilities to sell or cook fish as means to add value to their catch (Valdés-Pizzini, 1985). Women and other members of the household also participated in this process. Some developed small businesses or enterprises which are supplied by friends and relatives. We found at least five cases of this in St. Croix. All of them were relatively successful, despite changes in the fishery, closures and hurricanes. Some of these operators confided that they buy imported fish from wholesalers in St. Croix and San Juan to supply their businesses.

6.8.2. The Way of the Market

“Making a living is more or less the same, there is less fish, but they pay more for it.”

At this point we have described the main characteristics of the fish market of St. Croix, with reference to the existence of communities of fishermen. Perhaps it is safe to say that the real community of fishers is not based on a place but it exists through the market as an abstract structure that links fishery participants in a meaningful way. While the emphasis of many anthropological studies of fishing dwells on productive activities, there is a lot to learn and understand by examining the exchange of commodities (i.e., the market). The market is a network of social actors embedded in a web of relationships structured by the exchange of commodities and money. It is that place where conservation practices take effect on land, and where their impact makes sense, if they do at all.

The large bags of conch hanging prominently from a tree at Gallows Bay for buyers to see during the last three days of the closure, underscore the positive and adverse impacts of these measures. The large bags of conch sold (with a permit) to dispose of the ‘excess’ conch caught prior to the last day of the season is evidence of the power of the market, a force that also prompts the importation of conch to satisfy the local demand, especially from restaurants. As one fisherman told us “there is less fish, but the prices have increased, balancing the process.”²⁸

²⁸ The way of the market and that of the regulations also affected the pelagic fishing sector. As one prominent sport fisherman noted, the U.S. government put a moratorium on marlin fishing in U.S. waters (sale and consumption). However, local restaurants kept serving marlin caught by the fleet of other countries. Since marlin populations are pelagic and migratory, the U.S. government is “not protecting the

6.9. Landing sites

“En la playa es que debe ser el fish market, no la pudrición que hay allí”²⁹

In the absence of place-based fishing communities, ramps and piers become another important node in the network. Ramps are primarily used to deploy boats, land catch and many times to sell fish. According to Kojis (2004) about a third of the fish transactions take place in these structures, but as stated before, most sell their fish directly to customers or in the fish market. Here we present a list of the top landing sites around St. Croix (Table 8). The location of these sites can be seen on Figure 20.

Table 8: Main landing sites around the island of St. Croix.

| Landing site | Location |
|---------------------|-----------------|
| Altoona Lagoon | <i>N-NE</i> |
| Molasses Pier | <i>S</i> |
| Fredericksted Pier | <i>W</i> |
| Gallows Bay | <i>N-NE</i> |
| Castle Nugent | <i>S-SE</i> |
| Salt River Bay | <i>N</i> |
| Christiansted | <i>N</i> |
| Teague Bay | <i>NE</i> |
| Green Cay Marina | <i>N</i> |
| Solitude | <i>N</i> |
| Turner Hole | <i>SE</i> |
| Duggans Reef | <i>NE</i> |
| Great Pond | <i>SE</i> |

marlin from those waters and (instead, is) giving the business to another country! They think that by stopping us from catching marlin they are going to bring the marlin back.”

²⁹ “The fish market should be on the beach, not in that rotten place” (La Reine). This statement was offered by a fisherman who complains about the stench coming from rotten fish dumped at the Fish Market and a detractor of the place.

6.9.1. Altoona Lagoon

Altoona Lagoon is the preferred landing site for many fishers (Figure 36). During our field visits, the parking lot near the ramp always had one or two pick-up trucks with trailers. On one occasion (a Thursday), we observed up to six trailers parked near the ramp area. Carlos García-Quijano, a member of the research team, spoke briefly with three fishermen returning from the sea. Around 11:00 a.m. there was a line of boats waiting to use the ramp. As reported by the interviewees, a similar scene can be witnessed after dusk. A boat comes close to the dock and drops one of the fishermen off, while the other(s) keep circling round or stalling in nearby waters. The fisherman who was dropped off goes and gets the truck with the trailer and backs down to the ramp area. The boats wait in the water for their turn with the bow facing the ramp. Once the trailer is in the ramp, the captain accelerates the boat (pretty briskly) to the ramp, and kills the motor just in time to avoid crashing into the trailer. The person in the car jumps out, hooks the boat bow up to the trailer chain, secures it with the winch, and off the water they go.

Figure 36: View of Altoona Lagoon



A group of local West Indians, mostly older ladies, were waiting at the dock to buy fish that day (Thursday, July 1, 2004). According to Garcia-Quijano’s observations, the fish was sold as “reef fish” (a miscellaneous mix of grunts, parrotfish, surgeons, old-wives, surgeonfish, red hinds, and yellowtail snappers). These fish were sold for \$5.00 a pound, whole. People would go up to the boat, already in the trailer on the road and ask for four to five pounds of “reef-fish.” The fishermen put up a makeshift weighing station beside the boat and the people formed a line. Six

people bought between \$20 to \$25 worth of fish. One fisherman reported that the prices at the dock were sometimes lower than those at the Fish Market, and that nearby people, especially older ones without cars, would intercept them at the dock.³⁰ The rest of the catch would be saved, to be sold at the La Reine Fish Market later, on Saturday. According to this fisher, the Fish Market on Saturdays is a weekly event in which all the fishing vendors go to sell and all the people go to buy fish. That is the moment in which one can really appreciate the extent of the fishing business in St. Croix, and see all the actors playing their role. He told Garcia-Quijano to look for him at the Fish Market since that is where he could always be found.

Altoona Lagoon

Another of the crewmembers, a young guy, no more than 25 years old, explained to me a little about the fishermen that set from Altoona Lagoon on trailers. They are mostly Cruzan-Rican, and usually they come from far in the Island. They all know each other. Depending on fish species and/or gear preferences, they either take off to the ocean in the morning, coming back at about 11-12noon, or they set out in the early afternoon, coming back right after dusk. According to this fisherman, each group has at any given time between 6-8 boats in the water, with 2-3 people crews in each boat. So it seems safe to say, that on a conservative estimate, 30+ people (maybe 20+ households) make their living from fishing off the boat-ramps at Altoona Lagoon.

Fieldnotes from Carlos Garcia-Quijano

Altoona Lagoon is also a recreational area used by the local population. It provides an easy and pleasant access to the water. During our visits we observed recreational fishermen with lines fishing from the pier, in the channel of the lagoon, in the shoreline, and from a barge; as well as people of different ages using cast nets in the channel. The beach area was also used, although the recreational facility (a building) was closed during our visit. The area at the shore of the channel exhibited a couple of shacks with posters and messages with information on the conservation of the species. This area was very active.

6.9.2. Fredericksted Pier

The Albert Edwards Fishermen Wharf is one of the oldest and more traditional landing sites in the island (Figure 37). It has been an important ramp and pier since the 19th century. This facility

³⁰ These observations by Garcia Quijano suggest that landing sites are a makeshift market. First class fish sell for about the same price or a bit lower than in the 'La Reine,' where prices tend to fluctuate according to the time of the day and the degree of haggling. However, we do not have enough information for a more conclusive statement. These observations also underscore the relatively recent importance of the market and the "return" of Saturday as the market day, following an old local tradition dating back to the eighteenth century.

is found in the western coast where major storm events produced major damage to the facility, which had to be re-built in 1985. Following Hugo (1989) and Marilyn (1995), funds from FEMA were provided for repairs. However, after hurricane Georges stuck in 1998, FEMA funds were not available to rebuild the ramp and pier to its pre-hurricane condition.³¹

Figure 37: Fredericksted Pier.



1.1. Fredericksted Pier

It is Saturday morning, the traditional day for selling fish. The pier shows some activity, although not what I expected. This is the first Saturday I chose to visit Fredericksted, with the objective of observing economic and social transactions involving fish.

There are a handful of women selling food, one key item in the fish market. There is one fish on a string hanging from one of the beams. There are several cars and people. I counted four pick-up trucks with trailers in the parking lot adjacent to the wharf. One pick-up truck was parked right by the market; a unique opportunity to observe people buying fish... but to no avail. The truck moved somewhere else.

Due to the lack of activity, I drove to the La Reine Fish Market. On my way, I saw the fishermen in the pick-up truck getting ice to go to get their fish to La Reine.

In 2002, there was a rebuilding plan for this facility which consisted in the removal of the remaining pier and two ramps and the construction of a new pier and a large ramp. The project also included the installation of illumination and buoys to identify the areas where swimming was not allowed (local children often swim in the area). Speakers at this event seize the opportunity to

³¹ Commissioner Plasket provided this information in his speech, August 13, 2002, during the groundbreaking ceremony to inaugurate the reconstruction of the pier. We also heard in many occasions that the government did not funnel FEMA funds to repair the facility after Georges, and the fishermen were not happy about this, accusing the government of embezzlement.

praise the value of fishing and fishermen in Cruzan history, and the difficulties in reconstructing the facilities in 1999 when funding was apparently available but were not used in this project (Figure 38). According to one legislator who spoke at the event, this project for the fishermen was not as high in the government priority list as others were (boardwalks and other facilities for tourists and visitors). He mentioned that the government needed to work for the "comfort of the people of the Virgin Islands, and not for the people in the Virgin Islands."³² Other speakers underscored the importance of the pier and dock to the local population, and spoke of Fredericksted (and St. Croix in general) as the food basket of the U.S.V.I. and the need to have a stronger commitment towards this sector. Finally, Governor Charles Turnbull stated that the project was going to "provide a state-of-the-art facility for the fishermen, a superior boating facility. We did not come from the middle earth, we came from the low earth " [he made the reference to "Lord of the Rings"]. He also offered the government commitment to end the project in the agreed period.³³

Presently, the Fredericksted pier and Fishermen wharf sell very little fish. The surrounding area is used for recreational activities and the main road coming in from the pier leads to a handful of tourist facilities located at the southwest end. The parking lot always has two or three pick-up trucks with trailers, and we observed one or two fishermen taking their boats to the ramp, but there is no functional fish market to speak of.

³² This is a major political topic in the U.S.V.I.: is the government working for the benefit of the tourists or for the benefit of the local people?

³³ A leader of the fishermen that was also present at the ceremony told me that the government did not help them at all, and that the reconstruction of the facility came only after many complaints from local fishers. He also indicated that the area needed some sort of barrier to mitigate the impact of the waves, and also to protect swimmers, especially children, from getting run-over by boats.

Figure 38: Official event to start the reconstruction of the pier



6.10. Restaurants

Fish still has an important role in local culture. Local restaurants carry local fish and fares. Conch soup, conch stew, fried kingfish, fried fish and others are quite common. Eating fish and buying fish (despite its scarcity) is a quintessential activity in St. Croix. Salted fish is served almost every day, but it is more commonly served on Fridays. Local stores do have salted fish for the local population. We visited La Montaña, a Puerto Rican owned general store (*colmado*) for an interview, and the number of West Indians buying what we call “verduras y viandas” (yams, sweet potatoes, cassava, vegetables) and salt fish was impressive. The smell of *bacalao* (or to be true to the fish, *abadejo*, or pollock) was overwhelming.

Restaurants are key markets for fish. One fifth of the local catch is directly sold to restaurants, although the percentage may be higher as some restaurants buy fish directly at landing sites or through retailers. However, most of the fishers we interviewed said that they had their list of clients to whom they sold fish on a weekly basis, and restaurants were the most prominent ones. There are large numbers of local restaurants (Cruzan, Puerto Rican, Dominican, Continental) that buy fish locally; for example, Harvey, Paulina, Villa Morales, and Amigos, among others.

At any Dominican “*fonda*”³⁴ in Christiansted one can find local fish served for lunch or dinner. Harvey’s, a local restaurant that serves fresh fish everyday, cooks fish in a variety of ways. This place is visited by locals, as well as by tourists who venture into the local culture. Conch, mackerel (both local and imported), salted fish (from Canada) are standard fares at this restaurant.

³⁴ Fonda: A small restaurant serving lunch or dinner.

At La Reine, there is a place that sells roasted chicken and fish. The fish is provided by a number of trap fishers who either fish for, or used to fish for the owner, a Puerto Rican trap fisherman. He buys “plate-size” parrotfish, the most sought after fish at this joint. He also buys lobsters, conch (nearly a hundred pounds per week) and octopus when in season. At Centerline Road, there is a restaurant-“fonda” that has good variety of meals for lunch. A former trap fisherman (now a public official) owns the place, and his family administers it. They buy fish from those fishermen and crewmembers who used to fish for him. However, he also buys imported fish from the wholesalers.

In Whim Estate there is a major restaurant called Villa Morales which caters to tourists and the local population. During one of our visits, we observed groups of Cruzans who lived in the mainland United States having lunch there. Valdés-Pizzini recalls visiting this restaurant in 1988 and eating the most delicious conch one could savor. The place is large, built as a compound with four different buildings used for different activities: a mess hall, a dance hall, eight rooms to rent, a large kitchen, a veranda, and what appeared to be an area for cleaning and preparing fish. Two women were handling the food in one of the buildings, supervised and helped by one man. A woman waited at the tables and helped with other chores.

The history of Villa Morales merits a brief description. A Puerto Rican fisherman founded the restaurant in 1962 and supplied the place with fish he caught in his traps. His father also bought fish from other Puerto Rican trappers. The current owners (descendants of the founder) keep buying fish from local fishers, although they barely know their names. After hurricane Hugo, conch became scarce, so the owners started to buy it from other countries. The conch served that day was from Nicaragua. We are confident that the presence of foreign conch was not due to scarcity in the local market, as the seasonal closure was about to start and many fishers provisioned themselves with large quantities to sell. The owners also buy conch from Honduras, and its low price and availability are important factors in their purchasing decisions. They buy local fish (e.g., dolphinfish, tuna) but they also buy them from abroad. The snapper they serve is from a Miami wholesaler but they did not have any idea of the place of origin of the fish. Most of the fish they sell, such as dolphinfish, kingfish, and snappers, is bought from merchant wholesalers. This is one of the typical (local) restaurants in St. Croix.

The restaurants that cater to the tourists also buy fresh fish. We did not delve into that particular area, but according to the fishers we interviewed, these restaurants are included in their list of

customers. In recent years, sport fishermen and charter boat owners started to supply the market with pelagic fish. This profitable fishery, carried on by the charter boat owners and the sport fishers, soon caught the eye of the local artisanal fishermen. With new technologies and an eager market, the small-scale fishermen entered in business relations with the charter boat owners and sport fishermen who bought the fish from them at a fair market price, in order to re-sell it to other dealers, or to sell it to the restaurants catering to the tourist market.³⁵ Commercial fishermen involved in this type of enterprise have their own lists of restaurants and hotels that they supply with pelagic fish.³⁶

Duggan's Reef (Radio Advertisement)

Frank Duggan, owner, has been 22 years in St. Croix because he loves the island. Duggan's Reef has live music, a Steel Band, and offers the best lobster and local fish, bought fresh. Restaurant is by the beach, at the East End.

³⁵ Following the De Albuquerque and McElroy (1999) assessment of the ethnic and social conditions of the U.S.V.I. we are inclined to argue that many local restaurants (as many others in the global market) make a concerted effort to emulate the familiar structures and foods available from the country of origin of their customers. For example, many local restaurants and bars restaurants along the East and Southeast coast provide typical "Caribbean" foods available in the mainland US and a 'Jimmy Buffet' ambiance. Pelagic fish, and reef and deep water groupers and snappers form part of that offer. Very few tourists venture into the local reef fish (e.g., parrotfish).

³⁶ Two commercial fishermen involved in the catch of pelagic fish shared with us their lists of restaurants. Another interviewee claimed to know a fisherman with a list of nearly thirty restaurants, although nowadays there are only ten to whom they sell the catch due to declining landings.

7. An Assessment of the Weltanschauung of the Cruzan Fishers

Weltanschauung, or worldview, is a set of ideas, perceptions and views that form the core of the culture, one that fishermen also share (although from different perspectives) with fishery managers and bureaucrats. Conservationists, fishery managers, government officials, law enforcers, marine recreation service providers, fish dealers, fish buyers and fishermen (commercial, recreational, subsistence) are part of this cultural system that share the historical and cultural background, fishing grounds, environs, and political system.

In developing a comprehensive view of the problems facing commercial fishermen, we integrate our ethnographic findings with the 2002 opinion survey of fishermen of the U.S. Virgin Islands developed by Gordon and Uwate and the 2003 commercial fishermen census developed by Kojis. The Gordon and Uwate (2003)³⁷ and the Kojis (2004) reports are important references since they gauge the cultural and social undertow of the U.S. Virgin Islands in relation to fishing. They are among the few formal and structured studies on commercial fishermen's perceptions and opinions available for the U.S. Virgin Islands.

7.1. Key Issues affecting the fishery.

Before discussing specific issues impacting local fisheries it is instructive to review how fishermen rated the quality of fishing in the Gordon and Uwate (2003) and Kojis (2004) studies. This question is particularly interesting because it may be construed as a request to assess fish abundance (availability) in the area. There are minor perception differences between the two main islands surveyed, but fishing quality was rated of lower quality in St. Croix relative to St. Thomas and St. John (Gordon and Uwate, 2003). As a rule of thumb (which in this case may not be culturally valid), respondents usually hesitate to answer in the lower extreme; thus, distributing their responses into the intermediate categories of the Likert scale. In Gordon and Uwate's (2003) report, the four-item scale did not allow for a "safe-face" middle category leaving the respondent with the two extremes. Most Cruzan fishermen rated quality of fishing as poor (fair to poor) by a wide margin (59.8%, Table 9). A similar result was obtained during the commercial fishermen census. According to Kojis (2004), 67.8% percent of the fishermen of St. Croix (36% of the fishermen from St. Thomas and St. John) believed that fishing was worse relative to 10 years ago.

³⁷ In St. Croix, they interviewed 147 of the 237 licensed commercial fishermen. Seventy percent of the respondents were full-time fishermen. These fishermen stated that they fished with lines (23%), traps (23%), diving equipment (24%) and nets (17%). The analysis also included folks that worked in private sector companies involved in marine recreation.

Table 9 Fishermen’s perception about the quality of fishing.

| Fishing Quality | St. Thomas and St. John | | St. Croix | | U.S. Virgin Islands | |
|-----------------|-------------------------|-------------------------|------------------|-------------------------|---------------------|-------------------------|
| | No. of responses | Percentage of responses | No. of responses | Percentage of responses | No. of responses | Percentage of responses |
| Poor | 3 | 5.7 | 24 | 16.7 | 27 | 13.7 |
| Fair | 19 | 35.8 | 62 | 43.1 | 81 | 41.1 |
| Good | 24 | 45.3 | 51 | 35.4 | 75 | 38.1 |
| Excellent | 7 | 13.2 | 7 | 4.9 | 14 | 7.1 |
| Total | 53 | 100 | 144 | 100 | 197 | 100 |

Source: Gordon and Uwate, 2003.

The Gordon and Uwate (2003) question on fishing quality was followed by an open-ended question eliciting information on the major resource problems that fishermen perceived in the different islands. Table 10 summarizes the major problems reported by fishermen. For simplicity, fishermen’s responses were aggregated into broad categories.³⁸

Table 10: Key issues affecting the health of fisheries in St. Croix.

| Main issues | Response Percentage |
|---|---------------------|
| Trammel and Gillnets | 23.0 |
| Overfishing | 9.8 |
| Pots stolen / Catch Stolen | 7.5 |
| No place to fish (too many closures) | 7.5 |
| Boat access | 5.2 |
| Pollution | 3.4 |
| Fish sales | 2.9 |
| Fishing restrictions | 2.9 |
| Illegal harvesting of conch, fish and lobster | 2.9 |

Source: Gordon and Uwate, 2003

38 For example, if fishermen cited no fish, or a decline in recruits, or scarce baitfish, these answers would be grouped into an overfishing category.

7.1.1. Trammel nets and gillnets

*“Lo que nos ha mata’o (sic) es el trasmallo”*³⁹

The West Indian trap was the main gear used in St. Croix until fishers embraced the use of trammel nets and gillnets in the early nineties (Tobias, 2004a; Agar *et al.*, 2008). Government sources point at trap losses due to hurricanes (e.g., Hugo 1989, Luis and Marilyn 1995, Bertha and Hortense 1996, Georges 1998 and Lenny 1999) as the main reason for the switching of gears (Tobias, 2004a). In St. Croix, unlike in other regions, divers “herd” fish schools into the netting making the gear extremely effective at catching reef fish species.⁴⁰ Fishery managers worry that the increased use of nets may threaten the biological viability of many schooling reef fish species, particularly parrotfish. Because parrotfish species are social and gregarious spawners, a disproportionate number of breeding adults were removed by these new nets relative to other fishing methods (Tobias, 2004a).

According to our interviews, fishermen used to operate between 50-100 traps to catch lobster and a wide variety of reef fishes.^{41,42} Trap fishermen also used hand lines to target other species, such as red hind and mutton snapper during spawning aggregations.⁴³ However, hurricane Hugo dramatically changed the fishing in St. Croix.

A Puerto Rican fisherman we interviewed stated that after Hurricane Hugo:

*La gente se salió de la pesca de nasas [después de Hugo], al pescador no se le ayudo en nada, en nada, FEMA no tomó al pescador en consideración, lo dejó abandonao y solito. Otros huracanes vinieron y le destruyeron el arte...y no le daban [el gobierno] para recuperarse.*⁴⁴

³⁹ Gillnets is ‘*what killed us*’ (metaphorically, for what killed the fishery).

⁴⁰ The participation of young fishers as divers is impressive and probably unaccounted for since they do not have licenses as “helpers”.

⁴¹ “*Se pescaba bastante variedad: colirrubia (lane snapper), sama (mutton snapper), médico (surgeonfish), meros (groupers), cotorro (parrotfish), roncós (grunts), amarilla (yellowtail snapper), olewife (peje puerco), conijuas (blue runner) por manchas.*”

⁴² Fishermen described the number of lobsters per trap as plentiful, especially because there were not too many divers (“*en aquel tiempo no había tanto buzo, se cogía mucha langosta*”).

⁴³ A couple of fishermen described the fishing frenzy during the aggregations. For example, during the mutton snapper aggregation, they fished all night long, even though their hands hurt (“*las manos se me cansaban de pescar... cuando llegaban las samas grandes [el cordel] quemaban a uno*”).

⁴⁴ “People stopped using traps after Hurricane Hugo. No one helped the fishermen, they (FEMA, the government) provided nothing, nothing at all. FEMA did not consider the fishermen at all. They abandoned

A common complaint heard during our interviews was that federal authorities (mainly FEMA) did not provide funds to replace the lost traps. After Hugo, fishermen explained “*nets were cheaper than buying wire.*”⁴⁵ The lack of federal financial support (mainly from FEMA) to replace damaged or lost traps and the availability of inexpensive trammel nets and gillnets made transition towards nets very easy.⁴⁶

Unable to obtain loans or federal grants to replace this gear and reluctant to sustain additional gear losses, many fishers abandoned traditional trap and handline gear for the higher catch rates and economic returns afforded by net fishing (Tobias, 2004a).

As stated by another interviewee, the final blow to traps came, once again, after yet another hurricane: Lenny in 1999. The lack of government help for fishers to replace their gear made it quite difficult for many of them to recuperate from their losses. As one fisherman candidly stated:

My boat sank with Lenny... but there were no loans available. I went bankrupt. After Hugo I had to borrow money for traps, but [no one wanted to lend money] I was a bad risk. Nobody provided help. After Lenny, I had to beg, borrow and steal, and I am not afraid to admit it!

Nets were very convenient since they were relatively cheap, they involved the constant use and supervision of the crew (and thus, they could not be stolen or poached like traps), and they required (according to the pattern of use in St. Croix) divers to set the gear in the bottom and “herd” the school of fish into the pocket of the net.⁴⁷ For the trapper-diver, the transition to nets was logical and uneventful.

them. Other hurricanes contributed to the destruction of the gear, and no one helped them to recuperate from the loss.”

⁴⁵ The trap fishermen were also divers. Our assessment suggests that trappers used diving as a mechanism to set the traps in appropriate areas, and thus had some knowledge of underwater habitats and behavior of fish. Although, traps were set throughout the island, the area inside the Buck Island-Teague Bay-Coakley Bay ‘triangle’ was one of the most productive grounds.

⁴⁶ Atlantic and Gulf Fishing Supply Company offered trammel and gillnets at very competitive prices because these nets were banned in the state of Florida (Tobias, 2004a)

⁴⁷ Nets are set (as in Puerto Rico) in the pathway of parrotfishes feeding movements and their return to their nightly rest. Fishers close these pathways to catch the fish. Nets set in nearby coral reefs sometimes become entangled in the reefs.

A by-product of the increased use of nets was the growing number of divers fishing for conch, lobster, and reef-fish with spear guns. Most divers were of Puerto Rican descent, mainly from Vieques. An unspecified number of them acquired "the bends" and have visited recompression chambers throughout the region. One diver (who is also a net fisherman) told us he has been to the hyperbaric chamber three times in Río Piedras, Puerto Rico.

During our fieldwork, some fishermen observed that following the adoption of nets a small number of fishermen started targeting pelagic resources that aggregated around fishing aggregation devices (FADs). Catching highly priced mahi-mahi, wahoo, and tunas [for restaurants] provided a lucrative market for these entrepreneurial fishermen and sport fishermen alike. This concerted effort (and the high prices fetched by those species) alleviated part of the pressure over the reef-fish resources. However, commercial fishermen's participation in the pelagic fishery declined as fish abundance dwindled. According to fishermen, the resource decline was due to the increased pressure by foreign longliners operating to the east of the U.S.V.I. Fishermen also noted, that federal regulations regarding highly migratory species (e.g., requiring permits) and the "incorporation" of C buoy (the most productive FAD) under the jurisdiction of the National Park Service (Buck Island Reef National Monument) increased the level of regulation in the fishery to the point where we only saw a few fishermen engaged in the fishing of pelagics during our field visits.⁴⁸

The net ban and the return of traps

Government officials, environmentalists, dive operators, and some commercial fishermen were opposed to the growing use of nets because they feared that increased fishing pressure on parrotfish and doctorfish would adversely impact coral reefs. Parrotfish contribute to the health of coral reef ecosystems by scraping and eating algae of corals. Furthermore, these groups were concerned that the large number of nets increased the risk of accidents because they could become loose and get entangled in reefs. Additionally it was noted that parrotfish, unlike other local reef fish species, are culturally important to St. Croix because they are consumed by the locals rather than tourists.

⁴⁸ "Esa pesca del atún, del dorado, se ha aflojado... ha sido terrible. Cinco años atrás uno iba y se conseguía mucho... se ha afloao en los últimos tres años".

After years of deliberations, the government of the U.S. Virgin Islands introduced a ban on the use of trammel nets and gillnets in 2006. During the deliberations, net fishermen complained that the proposed ban was going to “*take them out of business.*” Netters also argued that the socio-economic impact of the ban extended beyond them. They claimed that nets supported the livelihoods of crew, cleaners, and workers from 30 restaurants (Schuster, 2008). On the other hand, dive operators argued that the ban was necessary to protect the parrotfish and doctorfish populations and coral reef habitats.

The ban was not officially enforced until 2008, in part because of the schism between the commercial, recreational and dive operator sectors and to allow for the completion of a net buy-back financed by NOAA. Since the local government began enforcing the ban, former net fishermen complained about their dire economic situation. They noted that they are attempting to make up for their lost income by fishing with traps and SCUBA in an island with limited fishable shelf area. We found them arguing, a bit unconvincingly, that traps killed more fish than nets. Former net fishermen are lobbying to have the ban rescinded.

Since the ban several fishermen told us that the new ‘fishing frontier’ is deepwater fishing for snappers. Many fishermen are starting to use handlines and reel lines in the shelf drop-off around Lang Bank. In their view, local fishing stands as follows: Scuba diving and traps are found in the ‘polluted’ southern waters,⁴⁹ rough weather in the northwest (Hams Bluff), relatively good fishing along Long Reef near Christiansted, good fishing in Teague Bay (now under protection by the East End Marine Park, EEMP), excellent fishing grounds around Buck Island, and extremely good pelagic fishing at Buoy (FAD) C (both Buck Island and Buoy C are now either protected by the EEMP or by the National Park Service). Given the multitude of closures, fishermen note that one of the best grounds available can be found around the calm and relatively rich waters of Lang Bank.

7.1.2. Overfishing, Annual Catch Limits, and Accountability Measures.

As discussed earlier, 67.8% of the St. Croix fishermen believe that fishing is worse than 10 years ago (Kojis, 2004). When Kojis inquired about the reasons behind the resource decline, 38.9% of the fishermen stated that it was due “to the nets,” 32.9% felt that it was due to the presence of

⁴⁹ Fishermen claim that discharges from the oil refinery, rum factory and landfill pollute southern waters.

“too many fishermen,” and 36.4% believed that it was due to “overfishing.” Our interviews confirmed this pessimistic view about the health of local fish stocks. Fishermen believe that fish stocks of St. Croix are not as abundant as they were in the past. Most interviewees pointed at each other as the culprit for the decline.

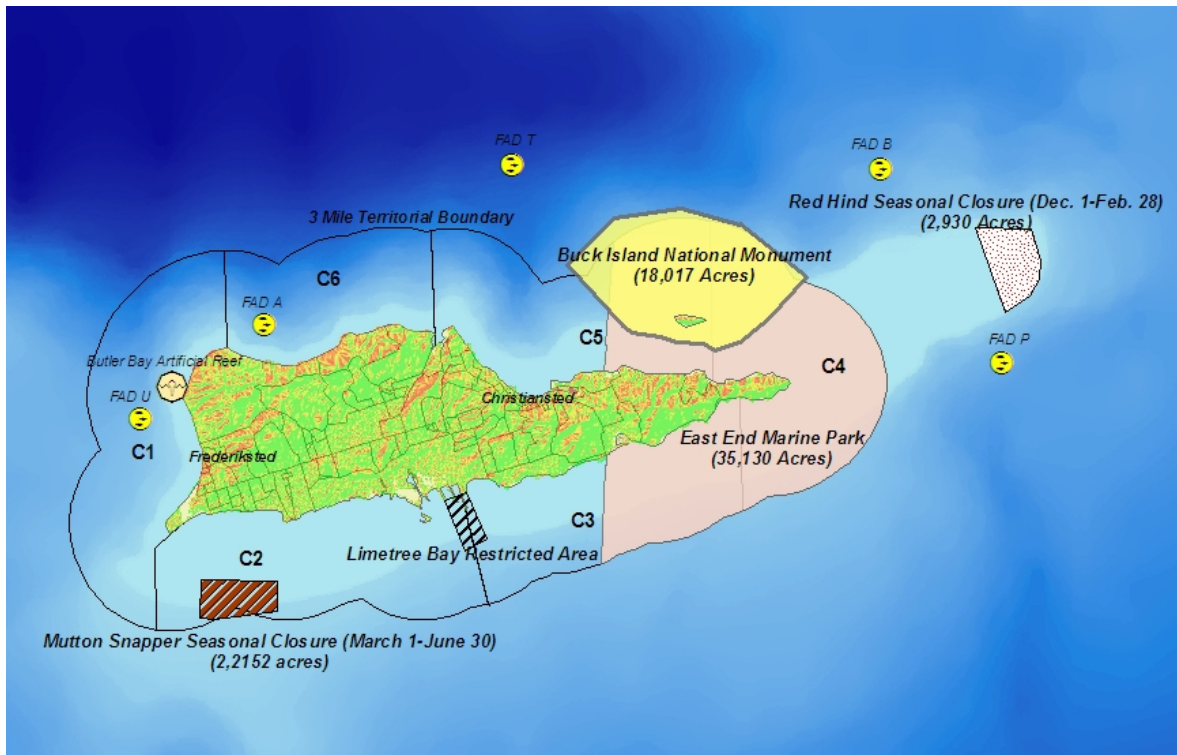
The 2006 reauthorization of the MSA is mandating the Caribbean Fishery Management Council (CFMC) to implement regulations to end or prevent overfishing by 2010. The CFMC is developing annual catch limits (ACLs) and accountability measures (AMs, if the ACLs are exceeded) to meet the 2010 deadline. Currently, the Caribbean Fishery Management Council is considering ACLs for queen conch, parrotfish, grouper unit 4 (yellowfin, red, tiger, and black), and snapper unit 1 (silk, black, blackfin, vermillion, and wenchman). The Council is also considering different accountability measures such as reducing the length of the fishing season, closing additional areas and/or reducing future ACLs if there are ACL overruns (CFMC, 2009). Because CFMC is still conducting scoping meetings, it is hard to comment and assess the impact of the proposed regulations. However, needless to say, fishermen are extremely concerned that these additional restrictions would make it harder to sustain their families in challenging economic times. St. Croix has a 10% unemployment rate. During the scoping meetings, fishermen also expressed concern over the potential loss of the Lang Bank grounds, one of remaining open areas in the island (St. Croix Avis, 2009).

7.1.3. No place to fish, too many closures

The growing number of area and seasonal closures is another key concern. Local fishers believe that there are ‘*too many areas closed and protected*’ which they claim have had significant detrimental impacts on their livelihoods and their ability to support their families (Figure 39). Furthermore, fishermen fear that the new ACL requirement will result in additional closures.

There are various seasonal and area closures off St. Croix: mutton and lane snapper seasonal closure (April 1 to June 30); red, tiger, yellowedge, black and yellowfin grouper seasonal closure (February 1 to April 30); queen conch seasonal closure (July 1 to September 30 in Lang Bank only- otherwise closed year around in federal waters); Red hind seasonal closure on Lang Bank (December 1-February 28); Buck Island Reef National Monument (BIRNM); Salt river marine and wildlife sanctuary (regulations are pending), Altoona Lagoon and Great Pond Shrimp management (seine nets, gill nets and traps are prohibited), and the East End Marine Park (EEMP).

Figure 39: Location of selected area and seasonal closures in St. Croix.



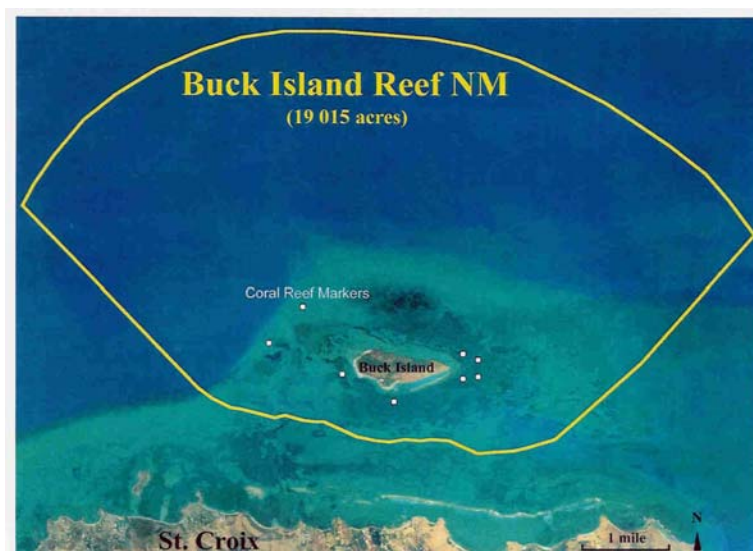
Buck Island Reef National Monument

The BIRNM is located about 1.5 miles north of the eastern side of the island of St. Croix, U.S. Virgin Islands (Figure 40). The monument, which is under the jurisdiction of the National Park Service (NPS), encompasses a small, uninhabited island surrounded by a mosaic of coral reefs, seagrasses and sand patches (NPS, 2008; Pittman *et al.*, 2008). In addition to its impressive coral reefs, BIRNM is home to a large number of protected species, including humpback whales, pilot whales, dolphins, pelicans, terns, and hawksbill, leatherback, and green sea turtles (NPS, 2008). In 1961, President John F. Kennedy declared it the first U.S. underwater national monument. The goal of the monument is ‘to preserve the island and one of the finest marine gardens in the Caribbean’ (NPS, 2008).

The original 880 acre monument consisted of a 176 acre island, 259 acre no-take marine garden area and a 445 acre restricted fishing area. On January 17, 2001 President William J. Clinton greatly expanded the monument to 19,015 acres, protecting 7.4% of the St. Croix shelf area

(Pittman *et al.*, 2008). The extended area now encompasses the “fish aggregating device” (FAD) identified in the charts with the letter C. This popular FAD was placed by the Division of Fish and Wildlife to shift effort from the reef fish fishery to the pelagic fishery. NPS believes that this FAD must be removed from the area of the monument. Although, the Clinton Presidential proclamation made the entire monument a no-take area, illegal fishing allegedly takes place in the deeper parts of the monument (Pittman *et al.*, 2008). Reportedly, compliance has improved in recent years due to greater surveillance by enforcement patrols (Pittman *et al.*, 2008).

Figure 40: Areal photograph of Buck Island Reef National Monument.



Source: National Park Service

Work by Karras and Agar (2009) reveals that large numbers of commercial fishermen believe that the BIRNM expansion effectively increases fish abundance within the monument. They report that 52% of their respondents (N=95) believed that the expansion of BIRNM increased the numbers of lobster, conch, snapper and grouper. Recent biological work by Pittman *et al.* (2008) shows that, over colonized hard bottom habitats, aggregate fish biomass (all fish combined) and herbivores biomass were higher inside the BIRNM relative to the adjacent areas.

Surprisingly, Karras and Agar (2009) found that fishermen were generally skeptical about other purported biological benefits of MPAs such as the protection of spawning aggregations, the export of additional fish biomass outside its boundaries, and the protection of fish sensitive sites. Karras and Agar (2009) report that most fishermen deemed that the recent expansion did not afford any additional protection to spawning aggregations since they were already well taken care

of by the original boundaries. In addition, fishermen questioned the size of the expansion since it extended into depths of 5000 ft. Most fishermen were frustrated by the designation because they did not understand what was being protected at those depths and felt that the designation overreached since it extended far beyond what it meant to protect (Karras and Agar, 2009).

The Karras and Agar (2009) study also examined the socio-economic impacts of the expansion of the monument. The study found that the expansion in combination with other area closures such as East End Marine Park (EEMP) is forcing fishermen to fish longer and farther away. With the closure of Buck Island, “*little by little, we get squeezed out,*” a phrase some repeated like a mantra. Buck Island was not only a traditional fishing ground but also provided shelter during storms and rough seas. With the closure of Buck Island and the EEMP, fishermen have to use more fuel and time to travel to other areas, such as Lang Bank, to catch snappers, conch and reef fish. In the view of many of the people we interviewed, the expansion of Buck Island was “*a bad idea for St. Croix.*”

The area is rich in coastal and pelagic resources and also in bottom species such as snappers. The buoy is perhaps the best site for pelagic fishing in the island. It also represents a great accomplishment by the DFW, which is well recognized by sport and commercial fishermen alike. The work by Karras and Agar (2009) found that fishermen were skeptical about the ability of the closures to generate alternative sources of employment, particularly for the island’s youth. Furthermore, they remarked that the increasing number of closures and the limited amount of shelf area had forced them to harvest in waters exposed to industrial and sewage effluent.

Mutton snapper, queen conch and the Red hind seasonal closures

These seasonal closures seek to protect the spawning aggregations of mutton snapper, queen conch and red hind to ensure their long-term survival. In our interviews we found support for these closures. Most fishermen believed that these regulations were beneficial to the sustainability of these stocks.⁵⁰ However, Karras and Agar (2009) found that only 39% of their interviewees agreed that the red hind closure adequately protected spawning aggregations. Their results seem to be consistent with recent biological assessments. For instance, Whiteman *et al.* (2005) report a decrease in the age and length of sexual maturity for red hind, suggesting that the selective

⁵⁰ At the time this manuscript was written there were no completed scientific analyses of the response of conch and mutton snapper populations to the closures.

removal of larger males has resulted in less fecund females which are maturing sooner. Similarly, Nemeth et al. (2006) argue that the slow recovery of red hind spawning aggregations is partly due to poaching, which they observed while conducting their work about spawning aggregations. Poaching is believed to take place because of the remoteness of the closure and the shape of the western boundary which complicates monitoring and enforcement. Spawning aggregations occur 600 m away from the western boundary, which makes them vulnerable to overexploitation since fishermen tend to operate along the edges of the closure. During our interviews with fishery officials and scientists, they also noted the presence of sabotage and vandalism, with marker buoys punctured at the red hind and mutton snappers seasonal closure areas.

According to statements provided by two highly regarded fishermen, the mutton snapper and red hind closures had their support. In fact, both fishers claimed that it was also their idea to have the closures. Both understand the importance of closing an area and allowing the species to reproduce during the spawning season in order for the population to recuperate:

I was the one who pushed for the mutton snapper closures. I caught two hundred pounds, [just] the catch I could sell, and left...but others attacked it as if it was the end of the world.

Unfortunately, we were not able to gather much information on the conch closure. Nevertheless, a key interviewee stated that divers agree that the closure ‘*seems to be working*’ since now there is plenty of conch in the area.

Enforcement remains the weak link in the management process. Although fishermen were not as open and forthcoming on this issue on the earlier DFW surveys, we found widespread agreement on this issue. The recreational sector is eager to point at enforcement as one of the key problems, and government officials admit that more needs to be done in order to protect fish resources and habitats. One alternative may be to incorporate the fishermen in the process of enforcement. A strong argument for their inclusion in this process is that there is a core of fishers with high conservation ethics, who fully understand the benefits of compliance. These fishers could also

play a larger role in the management process.⁵¹ Several fishermen said that enforcement not only includes detection but also should include the (public) sanctioning of offenders.⁵²

East End Marine Park

*“Now both parks overlap, there is no free area. For years they tried to get people to fish, to promote the industry, both commercial and charter. Imagine if you have been responding to this, learning how to fish, investing in equipment, for years, and suddenly you can fish no more” Local people will survive. The local fisherman is a very resourceful individual. “But there will be a big shift on how people are going to go about doing it. They will have to change modes of fishing, gears, etc.”*⁵³

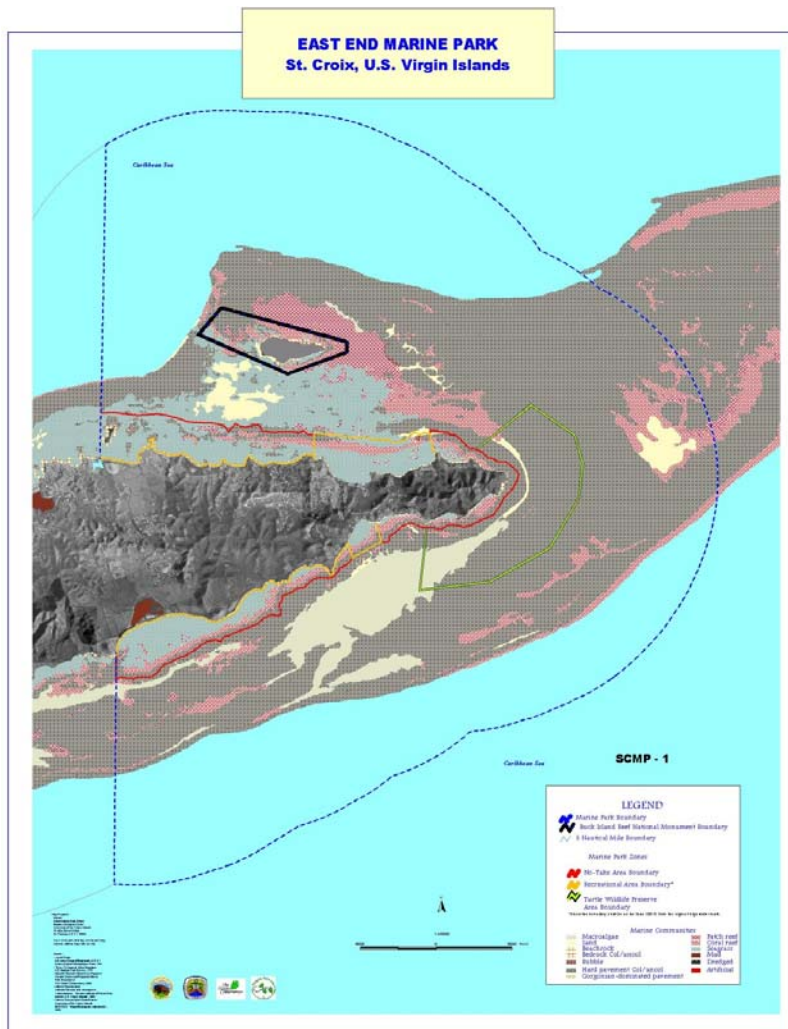
The East End Marine Park is the U.S. Virgin Islands’ first and largest marine park. The mission of the park is the protection and management of natural and cultural resources of St. Croix. The park protects the largest island barrier reef system in the Caribbean. The park which was established on January 15, 2003 encompasses a 60 square mile area (Figure 41). The East End Marine Park is a multi-use park. There are four different types of managed areas within its boundaries: no-take areas, recreation management areas (Cramer Park), turtle preservation area, and open fishing areas (St. Croix East End Marine Park, 2009).

⁵¹ The recommendation came from a fisherman who also requested that management agencies incorporate them as peers in the process of conservation.

⁵² This is a public issue, as it is discussed in radio programs and political advertisement, as documented by our team during our visits.

⁵³ Statement from a sport fisherman.

Figure 41: Map of the East End Marine Park.



The Park represents the culmination of forty years of vision and three years of collaboration to establish (St. Croix East End Marine Park, 2009). This effort involved a number of stakeholders, organizations and institutions with the goal of preserving one of the most beautiful landscapes in St. Croix, an area rich in coastal and marine resources. Contrary to our expectations, many fishermen claimed that they supported the development of the EEMP,⁵⁴ despite the fact that when it is combined with Buck Island the area becomes difficult to navigate and forces the fishers to seek new fishing grounds. One of the main reasons for their support is that the coastal areas

⁵⁴ “Fishermen participating in the community workshops identified the proposed No-Take Areas as light fishing areas and agreed that these areas would be appropriate to a No-Take Area (Pers. Comm. Thomas Daley, Gerson Martinez, Robert McAuliffe, and Jose Sanchez.) (EEMP Management Plan 2003: 15).

protected by the park have been targeted by illegal fishermen, recreational fishers, and what they call “weekend warriors”: part-timers, illegal aliens, sport fishers, and others that go after small lobsters, whelk, conch, and small fry (The Nature Conservancy 2002: 18-19).⁵⁵ In their view, weekend warriors create a lot of damage, “*sprat and fry are wiped out,*” and “*everybody dives, spears, gets conch every weekend.*” Many fishermen feel that weekend warriors place enormous pressure on the resource. As one SCUBA operator from the West End recounts “*the guy that goes fishing over a weekend and has eight to ten unidentified traps in the water.*” Below we transcribe some notes by Kathi Kitner on this phenomenon:

There also are innumerable locals that catch their own fish for their own consumption, using either hook and line or spear guns; whether this activity is defined as subsistence fishing or recreational fishing for personal consumption is unclear at this point. I did question various different people about how they obtained fish for themselves.

Some indicated that they bought at the Central Market in Sunny Isle, and others bought from fishermen they knew. Others said that they sometimes catch their own fish, or they will eat fish at restaurants. No one said that fish was too expensive to eat as is sometimes noted on the mainland United States. No one noted that fish was scarce.

I had brief interviews with two men who both fish on the weekends from their sailboats by trolling a handline; both indicated that the creation of protected areas in the U.S.V.I. had made such practice difficult as they were unsure what they were allowed to catch in what area, or if they were allowed to fish at all. One man told me he had mostly stopped fishing all together because he was too afraid of being caught doing something illegal. He was very upset about losing his access to fishing in this way, and claimed that his taking “of a few fish can’t hurt anything.”

At a seaside park frequented by locals, east of Christiansted, I observed many boys bringing in fish that they had speared offshore (Figure 42). They told me

⁵⁵ EEMP map available at http://www.viczmp.com/vi_park_map.htm

that they came almost every Saturday and caught fish for the weekend. Some of the catch was to be cooked leisurely that afternoon at a party for friends. This activity seems both a recreational event and a supplemental subsistence activity. Two other recreational divers told me that they go spearfishing as the mood strikes them, or as one said, “I go when I feel like eating fish. What’s the big deal?” This particular individual, employed fulltime as a bartender at an island resort claimed that he did not care if he broke the law about spearing fish in closed areas. He said the laws “were stupid” and besides, he felt there was so little law enforcement that being caught with illegal fish did not concern him.

Few of the fishermen in any sector complained that there was a lack of fish, or that one sector was taking more than “their fair share.” One charter boat captain complained about the longline fishery south of the island, and another stated that the gillnetters catch too much and have far too much by-catch to be considered a sustainable fishery.

Figure 42: Pictures of boys with speared fish at Cramer Park, St. Croix, August, 2004.



7.1.4. User Conflicts

The recreational SCUBA diving community promotes the use of no-take reserves and marine parks to protect marine resources. They compete with local fishermen for the same resources but they only engage in non-extractive dive tourism. They use the seascape for recreational enjoyment and appreciation of the underwater biodiversity. Some of the recreational operators interviewed reported that they witnessed the illegal catch (and sale) of small sized lobsters and berried females by commercial fishermen. They report that the enforcement of regulations is very

limited. In the view of a dive operator that we interviewed, [commercial] fishermen “*catch everything with their nets,*” and “*there will be no fish left...tourists want to see fish.*” However, tourists also want to consume local fish, which conflicts with the government’s plan to promote the island as a major dive destination. It is also at odds with a good portion of their business. Dive shops also sell equipment to the fishers and fill the tanks of commercial fishers. Another type of conflict deals with the sale of fish by charter and recreational fishermen. Commercial fishermen object that charter and recreational fishermen sell their catches when they do not have a commercial fishing license. They note that, unlike recreational fishermen, commercial fishermen “*do need to catch fish in order to make a living.*”

7.1.5. Lack of boat access

The dispersal of Cruzan fishing households underscores the need for water access, especially to ramps. Our interviewees complained that the quality of existing ramps was marginal and that the government did not invest in these types of facilities. In addition, they observed that many of the ramps were crudely-built by the local fishermen, and that water access is becoming scarce in certain locations.

Except for Fredericksted (and even in this case a caveat must be raised), the rest of the fishermen’s operations are based on makeshift or plain ramps with limited or no fish cleaning facilities. Most fishers sell their catch at different locations: some sell upon arrival directly from their boat, others sell from home, many sell directly to buyers including the restaurants who ordered the fish (this is a common practice) and others go to the fish market in La Reine to sell their catch. Gallows Bay remains a site where boats are moored, and fish is sold on shore. Fishermen returning from their fishing trips sell the fish near the ramp in Altoona Lagoon where customers wait for them. This situation may be responsible for the tendency of some fishers to sell their catch to dealers who peddle the fish in La Reine. Gordon and Uwate (2003) listed potential areas for new ramps and public jetties which may facilitate fishermen’s operations. These include Great Pond Ramp, Fredericksted Ramp and Pier, Salt River Lagoon, Old Fishermen Plot (near Divi Carina, on the southeast), and Castle Nugent.

7.1.6. Health of coral reefs

“Por nosotros tirar una anclita aquí, y romper una hoja de cal nos quieren fusilar.”⁵⁶

⁵⁶ If we throw a small anchor here, and break an elkcorn coral, they want to shoot us.

The assessment of the impact of fishing on coral reefs was not the overriding theme of this report. However, we gathered information on the importance of coral reefs. Turgeon *et al.* (2002) offers a thorough discussion of the main issues affecting the health of coral reefs in the U.S. Virgin Islands. Although there are many SCUBA dive shops throughout the island, most tend to concentrate on the west side of Christiansted and in Fredericksted. There are a number of dive sites and wrecks in the Northwest and Western portions of the island, from Salt River to Hams Bluff, in the northern shore, and south to Sprat Hall, Fredericksted, and nearby Sandy Point.

SCUBA dive operators reported that fishing for lobsters and conch is common in those areas, and that traps and gillnets also abound. For some of them, the situation is “unfortunate” since some of the traps were “placed” on top of the corals.⁵⁷ However, when information on their numbers was requested, the interviewees could not determine how many traps were impacting the reefs. Diving as a commercial fishing strategy is not common in the western portion of the island.

There is no information about the coral reefs on the south shore. However, a number of people we interviewed mentioned that the area was barren and that the dominant species, *Acropora palmata*,⁵⁸ was almost eradicated because of hurricane Hugo. The combination of natural forces, such as tropical storms and hurricanes, habitat destruction and silting due to the dredging of the piers at HOVENSA, and the pollution produced by sewage and the outfall of Cruzan Rum are major factors indicated by the fishers contributing to the deplorable conditions of the reefs.⁵⁹ However, fishing effort is also high in these areas. A handful of fishers interviewed stated that the number of fishers operating in the southern waters and residing in the West End is quite large. Indeed, all those we interviewed mentioned fishing in the south as one key activity, despite the fact that they also declared the area “barren.” Although the southern area is considered polluted due to the effluent from the rum factory and Anguilla landfill, it is a main fishing ground for gillnetters. Gordon and Uwate (2003) reported that 3.4% of the respondents identified pollution as a key problem.

⁵⁷ One interviewee reported visiting 12 to 14 sites per week, and observing traps in 75% percent of the sites. On the sites 2 or 3, out of ten traps, are located on the reefs.

⁵⁸ Puerto Rican fishers call *Acropora palmata* by the following names: “mano de ñame” and “hoja de cal” (“yam hand”, and “limestone leave” respectively.)

⁵⁹ The Swingle *et al.*, 1969 report indicates the following: “St. Croix suffered from the dredging operation along its south shore, particularly in the Harvey-Hess industrial area, so fishing was not as good there as in St. Thomas. Numerous reports from scientists have indicated it may be as long as 40 years before the effects of these dredging operations subside completely” (1969:115).

7.1.7. Displacement, drugs, and crime

In light of the enforcement of the net ban and closures, a growing number of fishermen discussed the possibility of engaging in illegal activities as a livelihood alternative. Crimes, drugs and violence were unwanted, but ever present, topics in our conversations. The following box summarizes the many faces of the discourse, as observed and described by us in the field.

Crime

The fishermen we spoke to stated that if no more fishing is allowed, they will have to move into other activities, namely, drug dealing and trafficking. The alternative of smuggling and dealing came up in various interviews. They stated that some received offers to bring shipments from St. Marteen. A couple of our interviewees mentioned that some fishers are currently involved in the trafficking and that their boats are prepared to dodge the radars (with heat blankets for the motors). The employment situation in St. Croix was described as difficult, and that there were not many options for a livelihood but to engage in robbery or drug smuggling (one showed his electronic foot shackle, as a testimony of his potential in crime). For some fishermen, the government is taking opportunities out of fishers' hands, without any redressing or restitution for income lost.

Drugs and violence are everywhere in the discourse of Cruzans. Crime and violence is a common staple in newspapers and the radio, as well as in travelers and tourists' chat rooms in the Internet. U.S. government intelligence describe the area in the following terms: "Virtually the entire territory of the U.S.V.I. serves as a maritime arrival zone for go-fast boats because of the multiple inlets, cays, and miles of lightly patrolled coastline. Private yachts and fishing vessels also are used to transport cocaine into and through Puerto Rico and the U.S.V.I., although to a lesser extent. These vessels primarily retrieve drug shipments at sea for transportation to shore" <http://www.usdoj.gov/ndic/pubs3/3950/cocaine.htm#Top>

8. Summary and Conclusions

This study summarizes the main findings of a socio-economic profile of fishing communities in St. Croix. Specifically this project sought to a) identify and describe the nature of fishing communities, b) understand the level of engagement and dependence on fishing activities, and c) describe the processes that shaped these communities. Imbedded in these objectives are two key questions: Do place-based fishing communities exist? And, is St. Croix a fishing community in itself?

Our assessment of the fishing communities in St. Croix puts in perspective the environmental, labor, migration, cultural and historical processes that shaped society and economy in St. Croix. Throughout the history of St. Croix, fishing was always an ancillary economic activity in terms of income and employment. However, focusing exclusively on economic metrics overlooks fishing's complex and multifaceted socio-cultural aspects. Fishing served many purposes: a refuge from slavery, an alternative to wage labor, a source of sustenance, a cultural icon, a network of peers, and a bona-fide income generating endeavor. The importance of fishing lies in this 'subsidiary' activity that also serves as a labor buffer zone; that is, it absorbs the unemployed and provides supplementary livelihood opportunities to those with meager salaries in agricultural production, construction, port activities and public sector. Fishing also contributed to the survival of new arrivals from Puerto Rico, Trinidad, St. Lucia and other West Indian countries, who served as a pool of labor in other sectors of the economy. The simultaneous transit through fishing and other jobs is one of the defining aspects of fishing in the U.S. Caribbean. Fishing is of vital importance due to its role as a coping mechanism and as a welder and nurturer of local identities. Today, fishing is an important cog in the tourism wheel, as it provides the highly coveted fresh fish to local restaurants and hotels.

This historical record also suggests that declining economic conditions and government policies of the twentieth century hastened the dispersal of fishermen throughout the island. They decoupled fishermen's residences from their places of business. Homesteading and gentrification transformed the configuration of fishing communities. Fishing communities went from being place-based communities, where social and economic life is located in a place, an identifiable settlement where kin, neighbors, and friends live and are engaged in fishing activities, to network communities, where fishermen and their families are dispersed throughout the territory in

different settlements, communities, neighborhoods, or (former plantation) estates as in the case of St. Croix. In a sense, fishers and their “communities” became de-territorialized.

It is in this context that we are inclined to label St. Croix as a network-based fishing community. As stated in this report, fishers are dispersed, live in non-coastal areas, and deploy their vessels from ramps dispersed throughout the island. Fishers exchange goods, services and information across ethnic lines at the main market, ramps, restaurants, fish houses, piers, dive-shops and other related businesses in St. Croix. Indeed, the La Reine Fish Market occupies now the place that other communities, settlement and fish market places had in the past. Similar to the Greek *agora*, La Reine is a place of assembly, and the space where social interactions are more intense in terms of time and the quality of the information exchanged, and the number of fishers involved at a time. For historians and anthropologists, the market is defined by the exchange of goods and services (and money), and by the social (political, economic, cultural) interactions and relationships in which the participants of the market engage on a daily basis.

We also argue that even though the Cruzan fishing sector still plays a role in local markets by feeding the local population, providing employment and recreational opportunities and maintaining a coastal and maritime culture, fishing activities are not the keystone of the St. Croix economy. As noted earlier, fishing activities only account a small fraction of jobs and revenues (less 0.5% of the island’s total revenue and employment), which suggests that the island is not ‘substantially dependent’ on fishing but may be ‘substantially engaged’ in fishing, based strictly on MSA definitions. According to the MSA, substantially dependent implies “*that a loss of access may lead to some change in the character of the community, perhaps a major change, or may even threaten its existence*”. On the other hand, substantially engaged entails “*a level of participation in commercial, recreational, or subsistence fisheries that includes social and economic networks that are directly and indirectly associated with these fisheries (such as the harvesting and/or processing sector)*”. The presence of social networks of individuals who exhibit levels of engagement in fishing suggests that it would be possible to consider the entire island of St. Croix as a fishing community, even though place-based communities no longer exist.

Finally, the manuscript describes fishermen’s views and perceptions about the main threats facing local fisheries. While fishermen recognize that reef fish and pelagic resources are declining and that there is too much fishing effort in the fishery, they believe that the recent management

initiatives such as the establishment of various seasonal closures and marine reserves and the trammel net and gillnet ban have delivered marginal (if any) conservation benefits. They feel that regulations are too stringent and with no end in sight. They are critical of the government's commitment to enforce and monitor existing regulations and its reluctance to deal with environmental issues such as controlling discharges from the oil refinery, rum factory and landfill which they claim are polluting the southern waters. Furthermore, fishermen claim that the government does not properly account for the effects of hurricanes on coral reefs and reef fish in the area when developing fishery regulations. Fishermen also expressed extreme concern over the current annual catch limit (ACL) proposals, which could significantly reduce the allowable landings of grouper, snapper, parrotfish and conch species. They fear that these additional regulations would exacerbate the financial difficulties of many fishing families who are already living in an island with high unemployment rates (over 10%) and limited occupational alternatives.

Our assessment about the future of Cruzan fishermen is bleak unless economic development policies are put in place. Declining stocks, tighter management regulations, a moderately educated labor force, and economically challenged economy make it extremely difficult to dislodge and productively reemploy the existing surplus capital and labor from the fishery. Given that the proposed ACLs will likely result in displacement and marginalization, managers should explore ways to mitigate these adverse impacts. Fishermen retraining, development of alternative livelihoods, and/or vessel, gear and permit buyback could provide a temporary means to alleviate social strife and facilitate an orderly transition to exploitation levels commensurate with the reproductive potential of the resource.

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10. Appendix A: Cultural mapping protocol

| Cultural Mapping Protocol | | |
|--|----------|---------------------------------------|
| Site Name | Location | Nature of fishing facility & activity |
| Type of site (landing center, marketing center, sportfishing location, etc.). Frequented by tourists? Natives? | | |
| Number and types of fishing vessels (include some description of condition, age, how well-maintained, how secure, etc.) | | |
| Gear present: types, numbers, etc. Are there storage facilities for gear? | | |
| Types and numbers of vehicles at the site (personal cars, trucks, vans, commercial vehicles, delivery vans, service vans, etc.) Might any of these indicate linkages to other economic sectors? | | |
| Marine Infrastructure/ type of access to marine resources (ramp, sheltered bay, beach, etc.). Note numbers of docks, number of lockers to store fishing equipment, etc. | | |
| Places people from this location fish (in-shore, off-shore, near mouth of river, etc.) | | |
| Marine or fishing-related support services present (repair services, ice, gas, air for dive tanks, etc.) | | |
| Evidence of linkages to other sectors (e.g. types of commercial vehicles doing business at site, others conducting business, alternative uses of the site such as for tourism, evidence of commercial fishers participating in alternative employment, etc.) | | |
| Alternative employment in immediate vicinity | | |