NOAA Technical Memorandum NMFS-SEFSC-557

NOAA Series on U.S. Caribbean Fishing Communities

Community Profiles and Socioeconomic Evaluation of Marine Conservation Districts: St. Thomas and St. John, U.S. Virgin Islands

By

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Edited by

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NATIONAL MARINE FISHERIES SERVICE
William T. Hogarth, Director

May 2007

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This report should be cited as follows:

Impact Assessment, Inc., 2007. Community Profiles and Socioeconomic Evaluations of Marine Conservation Districts: St. Thomas and St. John, U.S. Virgin Islands. NOAA Series on U.S. Caribbean Fishing Communities. NOAA Technical Memorandum NMFS-SEFSC-557, 123 p. Agar, J. J. and B. Stoffle (editos).

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PREFACE

The NOAA Series U.S. Caribbean Fishing Communities is the result of the Southeast Fisheries Science Center's Caribbean Sustainable Fishing Communities Initiate, 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 information 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 Moreover, a significant share of this research is now outdated and inadequate to support management actions and meet the new legal definitions and requirements put forth by Magnuson Stevens Act (MSA), particularly National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 Order 12898.

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 "*Community Profiles and Socioeconomic Evaluation of Marine Conservation Districts: St. Thomas and St. John, U.S. Virgin Islands*" crafted by Impact Assessment Inc. describes the salient characteristics of fishing communities in St. Thomas and St. John, U.S. Virgin Islands.

This research was financed by the Coral Reef Conservation Program. We are grateful for the support of Jim Waters, Theo Brainerd and Peter Thompson of the Southeast Fisheries Science Center, Eugenio Piñeiro-Soler, Miguel Rolon and Garciela Garcia Moliner from the Caribbean Fishery Management Council, and Barbara Kojis, Roger Uwate, Ruth Gomez and David Olsen from the U.S.V.I.'s Division of Fish and Wildlife, and the fishermen from St. Thomas and St. John, particularly those associated with the St. Thomas Fishermen's Association. Mike Tust's assistance assembling this report is also acknowledged.

J. J Agar and B. Stoffle

Editors

Executive Summary

Introduction

This report describes research conducted for the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) under contract WC133F-03-RQ-0159. The contract specified description of prospective fishing communities on St. Thomas and St. John in the U.S. Virgin Islands (USVI), and assessment of the effects of establishing a Marine Conservation District (MCD) in the region. The resulting report is titled "Community Profiles and Socioeconomic Evaluation of Marine Conservation Districts: St. Thomas and St. John, U.S. Virgin Islands."

Goals and Objectives

The goals of the project involved identification and description fishing communities on St. Thomas and St. John and evaluation of the economic and social effects of the Hind Bank MCD, established in 1999. The first goal was accomplished by identifying and spatially depicting fishery participants residing in and around estates and districts on St. Thomas and St. John, and by developing summary profiles of those communities by characterizing social, demographic, and other relevant dimensions of each. The second goal was achieved by characterizing fishing operations at Hind Bank and other MCDs around St. Thomas and St. John, and by assessing relationships between the user groups, communities, resources, and area closures. Fieldwork for the project was undertaken in phases during 2004 and 2006.

Research Methods

A variety of methods were used to satisfy each project objective. Data from previous work in the region were reviewed, work was undertaken with local fishery managers to acquire relevant archival data, and analysis of license data was undertaken in collaboration with local experts to identify fishery participants residing in the neighborhoods and estates. A census of commercial fishers recently completed by the U.S. Virgin Islands Division of Fish and Wildlife proved highly valuable to the effort. Observational work served to determine the coordinates of communities for purpose of developing a Geographic Information System, and to describe their physical attributes. Key informants were interviewed in various work and community settings to generate descriptive materials for use in analyzing the fisheries vis-à-vis the residence patterns of the respective participants.

Former users of the Hind Bank MCD were identified using snowball sampling methods. The fishermen were interviewed and asked to conduct resource mapping exercises so as to determine

the geographic specifics of former usage and the nature of their adaptive strategies following establishment of the MCD. The full range of archival, fisheries, mapping, and interview data were employed to analyze social and spatial reactions to establishment of the MCD and to expand the analysis to assess other MCDs and issues per NOAA Fisheries' information needs.

Challenges and Solutions

The social context of this project was one in which commercial fishery participants on St. Thomas and St. John very commonly expressed dissatisfaction with the recent trend of area closures, other resource management strategies, and announcement of plans for such actions. These included closures associated with the following federal and Territorial marine protected areas (MPAs): the Hind Bank Marine Conservation District; the U.S. Virgin Island Coral Reef National Monument south of St. John; the Grammanik Bank area closure; Compass Point Pond at Benner Bay; Cas Cay/Mangrove Lagoon; and St. James Marine Reserve and Wildlife Sanctuary.

The context was also one in which fishery participants were tiring of involvement in research being conducted by external agencies and entities. The current research followed a project undertaken to survey fishers about their perspectives on the then-pending Virgin Islands Coral Reef National Monument (2001), an examination of the St. Thomas trap fishery (2003), the above-mentioned comprehensive census of commercial fishers (2003-2004), and workshops conducted to assess prospective license limitation in the U.S. Virgin Islands (2004).

Challenges associated with conducting research in this context were solved through implementation of a minimally obtrusive approach to the community profiles and assessment work. The primary intent was to acquire the necessary information without overburdening participants by: (a) using extant data and analyses wherever possible, (b) unobtrusively documenting residence patterns of fishery participants and spatial patterns of fishing infrastructure and businesses, (c) collaborating with Territorial government agency staff to enter the communities to conduct in-depth informal interviews and mapping exercises with willing fishery participants, (d) conducting interviews with Territorial and federal government officials, (e) unobtrusively observing and conversing with participants in their home communities, harbors, and places of commerce, and (f) observing local fishery meetings.

Research Findings

Communities and Fleet

We identified five distinct areas which may potentially qualify for fishing community status under federal definitions and guidelines. These are the Northside, East End, and Southside districts of St. Thomas, and the East and West End districts of St. John. On St. Thomas, a total of 41 fishers were located in estates on the East End, 51 were located in estates on the Northside, and 53 were located throughout Southside district. Only a handful of commercial participants were residing on the West End of St. Thomas at the time of this study.

Resident Northside fishers tend to be of French ancestry and fish with a variety of gear types. Traps are very widely used, and this is the only group on the island that consistently uses net gear other than cast nets. Some Northside fishers are periodically active in the waters south of St. Thomas. There are relatively few fishing-related businesses here. Many East End fishers are of West Indian ancestry and use hook and line gear. Traps are also used. There are numerous fishing-related businesses on the East End and the island's primary charter fleet is based here. The Southside is characterized by fishermen of French ancestry who use a variety of gear types, primarily on the south side of St. Thomas. The local seafood marketplace is particularly important in social and economic terms to fishers on the Southside.

Eight commercial fishery participants were located in the Cruz Bay area of St. John (East End), and another eight were residing in the Coral Bay area (West End). With the exception of small marketing areas, there are relatively few fishing-related businesses on St. John. Artisanal and subsistence-oriented fishing are important to many residents of St. Thomas, but this is especially the case on St. John.

Extensive recreational fishing occurs from St. Thomas and in the waters around both islands. But data descriptive of the fleets and geographic distribution of the participants is sparse. One source suggests that as many as 150 local recreational fishing vessels may be moored around St. Thomas, including 40 boats used by Continentals for pursuit of coastal and offshore pelagic species. But based on interviews and observation, much of what has been termed recreational fishing as undertaken by islanders may actually be more accurately defined as non-commercial consumptive-oriented fishing. Fishing for food and seafood are critically important aspects of life for shoreline, reef, and offshore fishers and their families around the islands.

A wide range of geographic and socio-demographic information about the estates and districts was compiled during the course of the project. The demographic data clearly suggest that many householders are experiencing economic challenges. Poverty rates and other indicators are much higher than national averages. Moreover, the analysis made clear that there are significant differences in income and other economic attributes between households in the same districts. This is suggestive of ongoing socioeconomic disparity between islanders and Continentals now residing in the islands. This situation has a basis in the social and economic history of the Virgin Islands.

Tourism-related jobs and flow of commerce have long dominated the economy of the U.S. Virgin Islands. Government and public administration positions are also common. Numerous residents hold Territorial government positions and positions with the National Park Service on St. John. Less than two percent of jobs in the candidate fishing communities relate to work in the harvest sector. Fishing and seafood are important aspects of life in the U.S. Virgin Islands, and they are critically important in social and economic terms to the participants and their families. But the economic importance of commercial fishing to the larger communities is largely superfluous given issues of disproportionate scale. Dependence and engagement are most pertinent at the level of the household and individual business.

Yet, existing federal definitions of fishing communities prioritize the relative contribution of fishing-related industry above the absolute social and economic experience of the participants. Difficulties associated with defining places as fishing communities in this context should not be seen to relate to deficiencies in the behaviors of the resident fishery participants, but rather to problematic aspects of the definitions themselves.

Impacts of the Closed Area

Recent area closures have affected fishermen around the islands in different ways and to varying extents. Participants who formerly conducted extensive trap fishing operations in the closed areas appear to have been most detrimentally affected. This relates to the static and highly focused nature of trap fishing and the challenges of developing a new area focus given that trap and other fisheries are already well-established around the islands.
As for other closures, displacement associated with the year-round closure of Hind Bank in 1999 has led to crowding in other locations.

But the unexpected closure of fishing activities within the Coral Reef National Monument south of St. John in 2001 preceded the most significant effects. Many trap fishers were forced to move their gear and/or spatial focus to new (undisclosed) locations. The closure also displaced small-boat artisanal and subsistence-oriented trap fishers from an area that was renowned for productive lobster fishing. Some economic hardship was reported.

But significantly, gear conflicts and crowding resulting from both closures have been tempered by inter-group familiarity with and sensitivity to the needs and cultural and operational tendencies of others. This appears to be an important sociological aspect of life in small island settings.

The most enduring effects of the closures involve heightened tension between the fishermen and the agencies proposing and instituting the regulations. Fishers tend to conceptually link the range of regulatory effects they have experienced in recent years and anticipate that closed areas will continue to heighten fishing pressure elsewhere in a region of limited viable fishing grounds. This problem is very often blamed on the regulators.

Conclusions and Recommendations

The most significant effects of the recent closures are indeed political in nature. They are also cumulative. When fishermen combine the effects of closures and other regulatory measures with a range of other experiential factors, intense cumulative political reaction can result. These factors include: (a) identity as knowledgeable and productive fishermen who possess the capacity for self-governance, (b) ongoing struggle with challenging economic conditions that are furthered when fishing operations are interrupted, and (c) collective understanding of history and the effects of external forces on one's cultural group and/or home community.

Ironically, the most significant and lasting human effects of the area closures on St. Thomas and St. John are those that have disillusioned the very fishery participants who may benefit from

actions taken to conserve the region's fishery resources. This problem is likely to be perpetuated unless the well-being of individual fishers and user groups is prioritized in resource management decision-making processes. Consultation with the fishermen prior to a given action will enable their perspectives, needs, knowledge, experiences, and concerns to inform management strategies and reduce deleterious social effects and the cumulative political fallout that has characterized establishment of federal marine protected areas on St. Thomas and St. John. This is an important goal of NOAA Fisheries-sponsored social research in the region. Without ongoing consultation with the fishers and attention to historic and contemporary social processes affecting the fisheries, perpetuation of current problems is likely.

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Introduction

This report describes research conducted for the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) under contract WC133F-03-RQ-0159. The contract specified description of prospective fishing communities on St. Thomas and St. John in the U.S. Virgin Islands (USVI), and assessment of the effects of establishing a Marine Conservation District (MCD) in the region. The research was conducted by Impact Assessment, Inc. (IAI), a social science research firm specializing in applied social science research in maritime settings around the U.S. and abroad.

1.1 The Research Issues: Community Description and MCD Assessment

Recent research findings make clear that the shallow fringing reef ecosystems characteristic of Caribbean Islands are in a state of decline (Gardner et al. 2003). Pressures on these ecosystems are attributed to various sources, including hurricanes and other storms, changes in water temperature and salinity, coral diseases, and various anthropogenic factors such as anchor damage, dredging, pollution, and overfishing (Rogers 1985; Beets et al. 1986). A growing scientific understanding of these problems coupled with ongoing acknowledgement of the aesthetic value of coral reefs and associated species has led to extensive conservation efforts in the U.S. Virgin Islands and elsewhere in the Caribbean Basin.[1] Many such efforts have involved the establishment of various kinds of marine protected areas (MPAs).

Meanwhile, a history of direct commercial harvest, recreational and for-hire guide and charter fishing and diving activities, and various forms of subsistence fishing and gathering practices continue throughout the region. Activities associated with the harvest of seafood remain important to residents in many communities throughout the Virgin Islands and larger Caribbean region. The research described in this report is provided in response to NOAA Fisheries' need for valid information about historic and contemporary aspects of such communities, and the ways in which residents involved in fishing-related activities have responded to conservation efforts and regulatory changes over time.

The concept of community is therefore central to the research described herein, and warrants discussion. A wide range of experiences and factors contribute to various definitions of "fishing community," and these are debated among social scientists and others involved in marine fisheries management around the U.S. For sake of guidance in conducting the current research, IAI relied on definitions and factors provided in the Magnuson-Stevens Fisheries Management and Conservation Act (MSFMCA) and National Standard 8 (NS-8). These stand as the principal federal guidelines for fishing community analysis. The NS-8 definition is as follows:

> The term "fishing community" means a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish

[1] Nelson (1994 as cited in Garrison 2003) reports that some 400 reef-associated or pelagic fish species inhabit or migrate through the U.S. Virgin Islands.

> processors that are based in such communities. A fishing community is a social or economic group whose members *reside in a specific location* [our emphasis] and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops) (300.345, part 3).

Thus, the definition involves three basic categories of criteria, each pivotal on their occurrence in a specific locale: (1) fishing-specific involvement or dependence on the part of a citizenry, (2) the meeting of life needs through fishing and related activities, and (3) the presence or co-location of a fishing-involved citizenry. These elements were used as the basis for design of geographically-oriented community research on St. Thomas and St. John, as described in the following sub-sections. That is, the research team sought to identify places on the islands where fishing families reside and fishing-related activities had historically occurred or were still occurring at the time of the study. Such places and people were then subject of spatial and narrative description, and subsequent analysis of the local effects of regulatory and other sources of change, including the recent establishment of MCDs in the region.

1.2 Project Goals and Objectives

The study described in this report responds to a NMFS solicitation for valid description of fishing-associated communities on St. Thomas and St. John, and assessment of the social and economic effects of the MCD established at Hind Bank, south of St. Thomas. IAI previously conducted MCD research on St. Thomas and St. John in the late 1990s, and thus the current report naturally builds on the earlier study (IAI 1997). The current work develops in-depth community profiles which provide the socioeconomic context necessary to frame and understand the effects of previously established and more recently proposed MCDs. The overarching goals and associated objectives of the current study were as follow:

- **Goal One:** Identify/Describe Fishing Communities, St. Thomas/St. John

  Objective One: Identify and Spatially Depict Clusters of Fishery Participants Residing in or around Communities on St. Thomas and St. John;

  Objective Two: Develop Summary Profiles of those Clusters, Characterizing Social, Demographic, and other Relevant Dimensions of Each

- **Goal Two**: Evaluate Economic and Social Effects of the Hind Bank MCD

  Objective Three: Characterize Fishing Operations at Hind Bank & other MCDs around St. Thomas and St. John

  Objective Four: Assess Relationships between Communities, Resources, & MCDs

1.3 Research Methods

IAI has developed a practical methodology for identifying fishing communities as defined under the MSFMCA and NS-8, and strategies for conducting social and economic evaluations of MPAs

(Marine Protected Areas) and MCDs using our corporate experience in this realm. While our 1997 work indicates the existence of various communities on St. Thomas and St. John where numerous residents were engaged to greater and lesser degrees in fishing-related activities, the present research updates those findings and describes such places in greater detail using a highly focused and systematic human geographic approach. This approach was conducted in two phases, during 2004 and 2005, as described below. A final phase of fieldwork was conducted subsequent to delivery of a draft report so as to gather and analyze information of specific additional interest to the sponsor. This was completed early in 2006. Similar work on St. Croix has been undertaken by NOAA Fisheries personnel.

Project Phase One

The initial phase of this project involved identification and characterization of places on St. Thomas and St. John where fishery participants live and work. A variety of primary and secondary source information was collected and analyzed for this purpose. Secondary source research involved extensive review of historical materials, U.S. Census data, marine fisheries data, and extant reports useful for preliminarily characterizing the participants, the nature of their fisheries and communities, and the salient issues they face. Once communities and key informants were identified, field staff conducted interviews and observational work to update existing information and explore new topics as per the project Statement of Work. The following table summarizes the research method used to meet each of the two primary objectives involved in Phase One of the project

Table 1-1 Phase One: Identify/Describe Fishing Communities on St. Thomas and St. John

Project Objective	Approach/Research Method
Identify and Spatially Depict Clusters of Fishery Participants Residing in or around Communities on St. Thomas and St. John	Review IAI data from 1997; Work with local fishery managers to acquire relevant archival data; Analyze license data to identify clusters of fishery participants; Collaborate with local experts to identify and locate neighborhoods and estates
Use Fishing Sector and Community Data to Analyze Relationships between the Communities, Resources, and MCDs	Conduct observation to identify, locate, and determine coordinates of communities; Identify and work with key informants in work and community settings; Interview key informants and consult archival data to develop description and analysis of the fisheries

Given the importance of geographic aspects of place under the definitional parameters of NS-8 and other definitions of community, a central element of this project involved identification and mapping of the residence patterns of fishers and fishing families on St. Thomas and St. John. As noted in the table above, this was accomplished using a combination of fieldwork and analysis of fishing license data acquired from the USVI Division of Fish and Wildlife (USVI DFW). IAI staff worked closely with a long-time DFW employee who had previously conducted extensive research with fishers in neighborhoods and estates throughout St. Thomas and St. John.

The intent of the collaboration was to review the address fields in the 2004-2005 commercial license data and identify on a base map the approximate location of the residence of each fisher or fishing family across the islands. Once identified, a field team was deployed with a handheld geographic positioning system (GPS) device to determine and catalog latitude/longitude for the place of residence of each resident fisher or fishing family. While the original intent was to geo-locate each home, this was found to be problematic given that most residences are now

surrounded by walls and fences. Dogs and privacy issues also hindered the effort. Given these constraints, an approximate central point was determined for each neighborhood and estate, and its coordinates were logged. In many cases the field team registered the coordinates of the local mailbox cluster, typically located within or directly adjacent to the neighborhood in question.

Field researchers developed a general description of each neighborhood or estate through written observation and photographic records. The field profiles note the physical geography of place, types of extant businesses, and the character of the surrounding residential area. More complete description of the neighborhoods and estates was added later. This included information about the number and characteristics of resident fishery participants and their respective fisheries as determined through fishing license databases, U.S. Census Bureau data, interview data, additional observational data, and data from a survey that had then recently been conducted by USVI DFW.

Project Phase Two

Once the community profiles were near completion and field staff had become familiar with the human geographic configuration of the fisheries and communities, a second phase of research was initiated (as summarized in Table 1-2 below). This involved a series of in-depth interviews and resource mapping exercises with fishery participants. These were undertaken to answer basic questions about the operational, economic, and social effects of the MCD closure. First, we sought to understand which fishery participants had originally fished in the area that was to be closed through the establishment of the MCD and who were ultimately required to harvest elsewhere. Second, we sought to understand whether and how these persons adapted to the closure, and what affect such adaptation may have had on their lives in social and economic terms. Third, we sought to describe the relative effects of these individual changes against post-MCD closure changes occurring in the communities, as identified through the methods specified in Phase One above.

The in-depth interviews lasted from approximately 45 minutes to over an hour and one-half, depending on the observed level of comfort and interest of the informant to continue. A wide range of topics were covered per an ethnographic interview protocol that was developed for the study to sensitively address the fisher's personal history of fishing, present fishing activity and operating expenses, community attributes and relationships, environmental factors, and various other topics of relevance.

The mapping exercises were conducted with knowledgeable informants with whom research staff had developed sufficient rapport to enable a full understanding of the intent of the study. Nautical charts of the waters and bathymetric features surrounding St. Thomas and St.
John were used to stimulate discussion of spatial aspects of the various fisheries. Each fisherman was asked to identify and discuss, with as much detail as possible, the following factors: (a) fishing areas of historical and contemporary personal and island-wide importance; (b) the nature of the resources and types of gear used to pursue these over time; (c) relationships between fishing areas, fleets, and island communities; and (d) alternative areas and fisheries utilized by the respondents and fleets in reaction to historic closures. During the exercise, each fisher was also asked to elaborate on any peculiarities or special significance associated with a particular

area, and whether any areas were becoming overcrowded, and if so, why. This often led to extensive discussion. The resulting maps were analyzed and used in composite to represent historic resource use patterns and spatial effects of closures and other regulatory processes affecting the fleets over time.

Table 1-2 Phase Two: Evaluate the Economic and Social Effects of the MCD Closure

Project Objective	Approach/Research Method
Characterize Fishing Operations at Hind Bank and other MCDs around St. Thomas and St. John	Contact key informants and use snowball sample to identify former users of Hind Bank MCD; Interview former users and use resource mapping methods to determine geographic specifics of former usage and means for adaptation to establishment of MCD
Assess Relationships between the Communities, Resources, and MCDs	Use full range of archival, fisheries, mapping, and interview data to analyze social and spatial reactions to establishment of the MCD; Expand analysis to assess other MCDs and issues per NOAA Fisheries' information needs

Challenges and Methodological Solutions

Findings from previous IAI research in the USVI describe a highly politicized context surrounding establishment of the MCD then proposed for an area south of St. John (IAI 1997:35-38). In fact, fishermen on St. Thomas had been expressing dissatisfaction with fisheries management at each level of external governance since at least 1993. Various closures and regulations have since led to changes in resource use patterns, and in some cases to changes in the way historically differentiated groups of fishers interact in the contemporary context.

For example, stipulations associated with establishment of the St. John National Monument in 2001 closed certain areas to commercial fishing. This led a small group of commercial harvesters to operate in other areas where other fishermen had already established their own operations, thereby disrupting a relatively stable social system. While certain fisheries, such as those involving migratory species and mobile gear (such as troll gear), are less sensitive to such problems, fisheries involving static gear (such as traps) tend to involve directed focus on specific fishing grounds by operators who often come to perceive or exert use rights to those areas over the course of time. This is the case for many fisheries in the Virgin Islands, where various species tend to be associated with specific bathymetric features and are pursued by specific groups of fishermen. As is discussed in subsequent sections of this report, the configuration of, and interactions between those groups often relates to a combination of various historical processes, ethnicity, and spatial proximity to the features and associated resources.

As such, area closures and other resource management strategies, and announcement of plans for such actions, continue to be sources of discontent among fishers in this small island setting. There was and is widespread uncertainty among many fishers in the USVI regarding the objectives and approaches of fishery management entities active in the region, especially (and naturally) where these have resulted or may result in disruption to one's livelihood as reportedly has occurred in relation to regulatory changes associated with establishment of the U.S. Virgin Island Coral Reef National Monument south of St. John.

Such uncertainties and detrimental social and economic effects notwithstanding, local resource managers have made great strides in engaging and establishing rapport with resident fishermen and their families. The census of local fishers conducted by USVI DFW from July 2003 to January 2004 (Kojis 2004) reportedly required extensive patience, perseverance, and sensitivity to the experiences and perspectives of the resource users. Over 70 percent of licensed commercial fishers were interviewed in the St.Thomas/St. John District. The census provided information and analysis regarding a variety of factors critical to effective management of the region's fisheries. Relevant findings are provided in various sections of this report. Of particular note, one-third of St. Thomas/St. John fishermen reported that fishing had declined in the last ten years, and that area closures and too many fish traps were primary factors in the decline (Kojis 2004:2).

IAI staff understood this context both prior to and upon entry in the field. The research team thus necessarily approached the current research with due respect to the needs and experiences of both the fishermen and USVI DFW staff who had worked to gain their trust in this challenging context. Although IAI had proposed to survey fishers affected by closures associated with the Hind Bank MCD, senior USVI DFW staff strongly recommended that IAI refrain from using formal survey methods based on fears that another survey would further burden the fishermen and potentially jeopardize the rapport that had been established through great effort during the previous months.

Indeed, IAI's work was the fourth research project undertaken with fishermen in the area since 2003. This included an examination of the St. Thomas trap fishery (see Agar et al. 2005), the aforementioned census (Kojis 2004), and workshops conducted to assess prospective license limitation in the U.S. Virgin Islands (MRAG Americas, Inc. 2004). The latter project helped determine fishers' opinions of fishing capacity and effort reduction programs affecting the USVI. Many participants expressed suspicion of and/or unhappiness with prior management efforts. Results from workshops indicated that commercial participants generally support a limited entry system that would prioritize full-time operators. Recent management restrictions typically were viewed as having significant impacts upon fisher's ability to earn a living, especially given limited employment alternatives in the Virgin Islands (MRAG Americas, Inc. 2004). Yet another project had been undertaken in 2001 to survey local fishers about their perspectives on then-pending closures associated with the Virgin Islands Coral Reef National Monument south of St. John (see Uwate et al. 2001). A total of 72 fishermen in the St. Thomas/St. John District replied to the survey. Results indicated that the area had been used extensively by the fleet and thus no-take restrictions would have a significantly detrimental economic effect.

As such, the research context of the current study was one in which the fishermen had become dissatisfied with externally-imposed management of their livelihoods. It was also one in which the prospective research participants had become well-versed in, and in some cases were tiring of interaction with researchers. Indeed, many expressed uncertainty as to why another study was being conducted, and some expressed worry that the analysis would in some manner be used against them. Some informants politely agreed to be interviewed, but failed to show up at the designated time and place. In sum, direct interaction with the fishermen was more challenging than is typical of such research for various subjectively legitimate reasons.

The problems were solved through strategic implementation of the research methods proposed by IAI in response to the project Request for Proposals (RFP). That is, IAI proposed to, and ultimately did apply available resources to emphasize a minimally obtrusive approach to community profiling and assessment of the effects of area closures. In reiteration, the research design enabled acquisition of the necessary information without jeopardizing project objectives by overburdening the participants. It did so by: (a) using extant data and analyses wherever possible, (b) unobtrusively documenting residence patterns of fishery participants and spatial patterns of fishing infrastructure and businesses, (c) collaborating with USVI DFW staff to enter the communities and conduct 35 in-depth but informal interviews and 18 mapping exercises with willing fishery participants, (d) conducting numerous interviews with territorial and federal government officials, (e) unobtrusively observing and conversing with fishery participants in their home communities, harbors, and places of commerce, and (f) attending and observing local fishery meetings.

1.4 Content and Organization of the Report

The data generated through the approach described above were reviewed, compiled, and analyzed to contribute to development of this report. Following this introductory section, Section Two draws upon a review of literature to orient the reader to relevant historical aspects of life on St. Thomas and St. John. Section Three describes the study communities in some depth, as discussed above. Section Four provides brief background discussion of the recent and contemporary context of marine fisheries management in the region, and geospatial description and analysis of patterns of resource use as these have historically occurred and do presently occur among commercial fishery participants residing in the communities. Section Five provides discussion of the social effects of the MCDs as determined through ethnographic interviews and public testimony. Summary findings and recommendations for potential future research in the area are also provided. A reference section concludes the report.

Historical Context

St. Thomas and St. John are small islands in the archipelago known as the Virgin Islands. Columbus named this group during his early explorations in the Caribbean Sea. The north shores of St. Thomas and St. John face the vast North Atlantic, while the south shores face the Caribbean. St. Croix, the third main island in what is now a Territory of the United States, is entirely in the Caribbean Sea. The British Virgin Islands are located just to the north and east of the U.S. Virgin Islands, and prior to establishment of international boundaries, residents of all the Virgin Islands interacted more extensively.

Carib and Arawak peoples originally occupied the Virgin Islands. The indigenous populations were decimated by the Spanish late in the 16th century during its campaigns to secure the region for the Holy Roman Empire. A colonial period ensued, and for five centuries now, persons of European and African descent have worked and lived in small communities scattered throughout these steep, rocky islands.

This section provides a brief social history of St. Thomas and St. John. Especial focus is applied to those aspects of the past that are most relevant to characterization of the fisheries and historical events and processes that condition life in the various island communities in the present.

2.1 Plantation Era History on St. Thomas and St. John

The plantation estate system was established on St. Thomas during the late 17th century. Representatives of the Danish West Indies Company sought to establish the firm and its interests in the islands, and enterprising individuals from Britain and the Denmark arrived seeking opportunity. Indentured Danish workers provided labor during the earliest years of settlement, but as was typical in colonies throughout the New World, persons of West African heritage, forced in to slavery, provided production of goods and services.

Colonists divided parcels of cultivable land, with small areas provided for slave quarters and subsistence crops. Sugarcane and cotton were important products in the early years of colonization, particularly on St. Thomas and St. Croix. The plantation era on St. John began during the 18th century. Mountainous terrain and rocky soils made for challenging conditions, and a slave rebellion in 1733 limited production of crops throughout the area. As such, plantations were only marginally successful throughout the colonial period.

Social life on the islands during the colonial period was highly segregated. The European landowners comprised less than 20 percent of the total population and avoided public contact with the majority slave population. The latter developed a rich local culture with roots in a West African ethos, and resistance to slavery was evident long before emancipation in 1848 (Rogozinski 1994:82; Olwig 1993: 37).

Although most of a slave's time was spent working for the benefit of the plantation owner, personal crops were cultivated on "provisioning grounds" for sustenance, sale, or barter. Such plots typically were situated on land deemed unsuitable for commercial crop production.

Slaves also exploited marine resources, as time allowed. Many used hook and line methods, or lattice woven traps, both tended from dugout canoes. Crab and lobster were pursued after dark. Women fished from the shoreline and collected shellfish while men fished from boats (Olwig 1993:50).

Because slaves were in the majority in the Virgin Islands, they were successful in obtaining certain rights and freedoms uncommon among slave populations on the Continent. For instance, many were allowed to keep profits earned outside of plantation duties. This included surplus from provisioning crops and salted fish. The roots of the modern subsistence-oriented lifestyle in the islands thus extend to this early period.

2.2 Fishing in the Post-slavery Era

Following emancipation, some former slaves managed to obtain small parcels of land within or around the now failing plantations (Olwig 1993:82). In some cases, land titles were held by absentee European owners while the tenants remained, subsisting by various means, including "farming, animal husbandry, charcoal burning, fishing, basket weaving, lime burning, bay leaf picking, sailing, carpentry, wage labor on [remaining] estates, and migratory wage labor off the island" (Olwig 1993:105).

Many residents of the old estates depended on fishing and collection of nearshore resources for purposes of survival. Fish pots were often tended from rowboats. Seining later became an important method. Society was organized in large part around the activities of kin groups cooperating for purposes of subsistence.

Some former slaves gradually took advantage of labor and market opportunities in Charlotte Amalie on St. Thomas. For instance, some wage-earning opportunities were now available, including jobs for cooks, seamstresses, bakers, maids, and coal carriers. Men tended to work as cabinet makers, carpenters, blacksmiths, masons, barbers, tailors and fishermen (National Park Service 2002). Some of the fish catch was taken for sale to wealthier residents and visitors.

Social and commercial interaction between residents of St. John and St. Thomas was facilitated in part through fishing and trade and sale of seafood. Boat carpenters residing on the East End of St. John benefited as a rudimentary form of commercial fishing was initiated (Olwig 1993:113-112). Transporting fish from St. John to sell in the Charlotte Amalie marketplace reportedly was challenging given the tendency for the catch to spoil en route. It was typically the case that the catch of many St. John fishermen would be carried to the town on a single vessel. The captain would sell the seafood and make purchases for the fleet before returning home to neighboring St. John (Olwig 1993: 112-113). St. John residents also shipped charcoal and cattle for sale on St. Thomas (National Park Service 2002).

There is limited information about fishing among French settlers in the Virgin Islands during the late nineteenth century. It is believed, however, that residents of French descent began to emigrate to St. Thomas from St. Barthelemey (St. Barts) around 1850. These were descendants of French Huguenots who had left Brittany and Normandy in the 17th and 18th century.

Conditions on St. Barts were said to be challenging, and St. Thomas held promise for the prospective settlers, accomplished fishers and farmers (Boyer 1983).

In an early account of the economic geography of the U.S. Virgin Islands, Shaw (1935) describes populations of French fishing families on St. Thomas. The majority lived in the more populous port community of what was then called Carenage, now Charlotte Amalie. These fishermen tended to use traps along the south side of the island. The group gradually established a marketplace on the waterfront and resided in a quarter of town called "Cha-Cha."

Another smaller group of French settlers lived on the north side of the island around Hull Bay, where they fished in the Atlantic Ocean with nets and grew fruits and vegetables for purpose of subsistence and limited trade and sale in Charlotte Amalie. Relatively large plots were originally farmed, but these have been subdivided over the years.

Despite historic affinity and a shared *patois* (with some slight variation), there were and remain subtle cultural differences between the two populations. For instance, members of each group stridently attended different Catholic churches, socialized at different locations, and generally remained segregated. This undoubtedly related to the challenging topography of the island. Although the two populations lived in close proximity as the crow flies, prior to widespread use of automobiles, the trip up and over the island's steep central peaks was formidable and time-consuming. The voyage by sea was similarly challenging. The north side clan traveled to town for supplies as needed, but the natural tendency was toward insularity. The situation has changed somewhat, though the steep, winding curves make for a much longer trip than the few miles between the north and south shores would suggest.

The United States purchased St. Croix, St. Thomas, and St. John from Denmark in 1917 for $25 million. The transfer followed 251 years of Danish Rule and a protracted effort on the part of the U.S. to secure its interests in the region. Efforts were heightened prior to and during the initial phases of World War I when Germany began to threaten the region and U.S. interests in the Pacific, now accessible via the newly-constructed Panama Canal. Charlotte Amalie was made the new capital, and the islands were given free port status, which remains to this day. The Organic Act, instituted in 1936, provided for administration of public affairs through local governance.[2]

The Depression era was particularly challenging for fishing families in the Virgin Islands. Most of the sugar plantations were a part of history, and rum production occurred primarily on St. Croix, itself affected by the Prohibition. There was little population growth or tourism, and the fish market in the village of Carenage (now commonly called Frenchtown in Charlotte Amalie) was often oversupplied. Expansion of a commercial fishery in the region was seen as highly unlikely (Shaw 1935). Some 22,000 persons were living in the Virgin Islands in 1930, including 765 residing on St. John. The figures indicate significant decline; some 32,000 persons were said to reside in the Virgin Islands in 1830, 100 years prior. Problems in the region were similar

[2] In 1954 the Act was revised to provide for a three-branch form of Territorial government. The Virgin Islands Elective Governor Act of 1968 further empowered residents and their elected representatives. This Act allowed qualified residents to elect their own governor and lieutenant governor by majority vote.

to those on the Continent, and there appeared to be little potential for economic growth in the newly acquired U.S. territories.

It was estimated that around 400 commercial fishermen were active in the islands at the time. Most rowed or sailed small vessels to the fishing grounds. Fish traps were the predominant gear type, though some reportedly used hand lines. Subsistence-oriented fishing and farming were both common and critically important during this period. According to Fiedler and Jarvis (1932), some 88 percent of fishermen active during this era were West Indian.[3]

Members of both groups of French fishermen have successfully interacted with the West Indian (including Afro-Caribbean) fishing population over the decades. Although there are cultural differences and the groups have tended to remain somewhat segregated in terms of patterns of residence, little indication of untoward relations are mentioned in the literature. Rather, there was ongoing struggle between West Indians and European land and business owners early in the history of the islands (Olwig 1993), and more recently between long-time islanders of all backgrounds and newly-arriving Continentals (Boyer 1983:255).

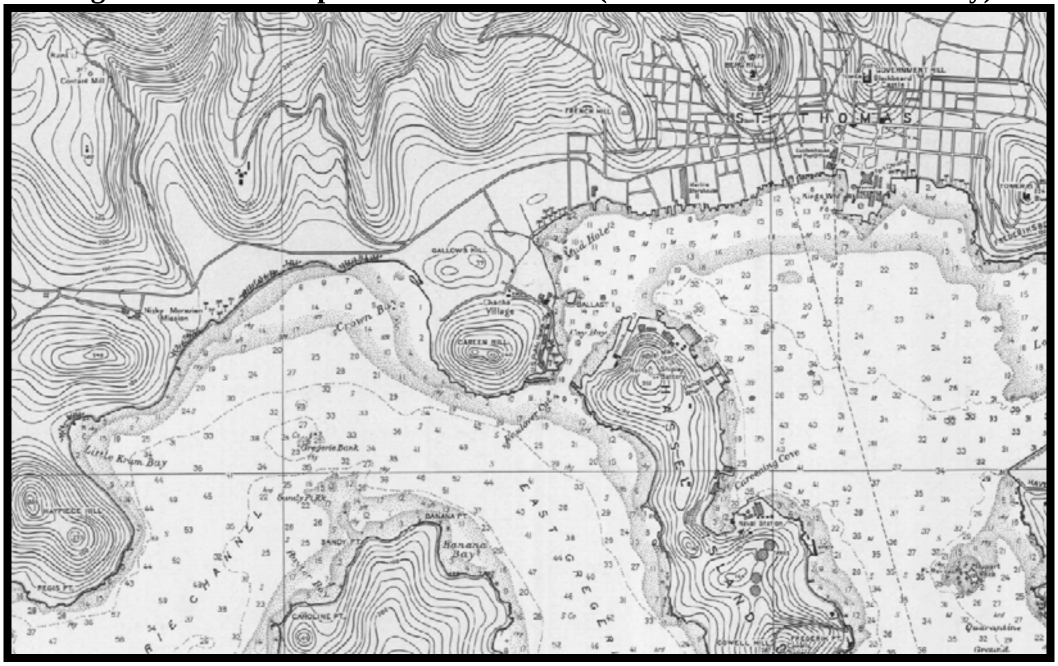
West Indians most certainly have engaged in commercial fishing over the centuries, but theirs reportedly has tended to be a more artisanal or subsistence-oriented form of fishing than that typically undertaken by the "Frenchies." On St. John, this relates in part to the fact that no large town center or busy marketplace was historically developed. Most economic interaction tended to occur in the form of trade, barter or limited cash transactions between residents on St. John and cooperating West Indians and others on St. Thomas.

2.3 Into the Modern Era

Nearly four decades after the start of the Great Depression, a survey of fishermen conducted by Swingle et al. (1969) again found approximately 400 individuals engaged in commercial fishing in the U.S. Virgin Islands. The author estimated that about 120 of those were involved on a full-time basis. Although these figures are comparable with estimates in the 1930's, the population of the island group had more than tripled by 1970. Some 75,000 residents were enumerated in the Virgin Islands in 1970.

[3] It must be noted that the ancestry of many West Indians is West African and thus many West Indians retain the genetic features of that heritage. But there has been much genetic admixture over the centuries, and thus West Indian is perhaps best used as an indication of ethnicity rather than an indication of skin color. For purposes of the current description, we use the term Afro-Caribbean to describe West Indians of African descent.

Figure 1-1 1936 Map of Charlotte Amalie (NOAA Office of Coast Survey)



Post-World War II was a period during which air travel, growing prosperity, and leisure time combined to encourage Americans to travel and tour the world. Subsequent to termination of commerce between Cuba and the United States in 1959, St. Thomas became the busiest cruise port in the Caribbean. This was augmented by customs exemptions granted to U.S. territories in 1961. With its tropical setting and climate, the Virgin Islands quickly became an attractive destination. According to Boyer (1959:254), the number of cruise ships visiting the islands increased from 126 in the early 1960s to 507 by the mid-1970s, with tourism-related expenditures increasing from $25 million in 1960 to over $100 million in 1970.

Direct air service from New York to St. Thomas was initiated in 1962, and various resorts and tourism opportunities were developed to accommodate the travelers, largely through application of offshore capital. This almost immediately led to significant social and cultural changes on St. Thomas and St. John, including various employment opportunities for residents.

Boyer cites Orlins (1969) to assert that this period was one of dramatic social and economic change in the islands, and that most of the changes related to increasing number of visitors, associated expansion of infrastructure and services, and concomitant ideological and economic effects. He lists a wide range of consequences which continue to be relevant to social and economic aspects of life in the Virgin Islands today:

> Dependence on imports for material goods; inducement of construction and some manufacturing; increasing labor and land cost and hence increasing cost of living; increasing income and standard of living; full employment and employment opportunities in excess of the insular labor supply; importation of alien workers who already constituted half the local labor force in 1966; greatly increased government revenues and expenditures and government employment of native Virgin Islanders; increasing population and changing population composition; changing economic and political power

> structures; changing land ownership; observance of more holidays; changes in the general tenor of island life; construction of transient tourism facilities and "resident tourist homes"; the growth of "suburban occupancy"; and the appearance of "certain hostility . . . between some of the island population and some service employees on the one hand and tourists on the other."

Unfortunately, relatively few residents (especially in the fisheries sectors) derived extensive and lasting benefits from the burgeoning tourism economy. Most available jobs were in low-paying construction and service positions, and the socio-cultural changes mentioned above disrupted the social conditions and forms of cultural adaptation that had developed over previous centuries. But some of the changes can be seen in a positive light. Many residents embraced improvements to infrastructure and enjoyed the new opportunities and commerce.

As regards fishing, local demand for seafood expanded significantly in order to satisfy growing resident and visiting populations, and fishermen increasingly were able to supplement their income with cash earned through other work opportunities. For better or worse, the changes may also be seen as having an effect on long-standing insularity between the ethnic groups of fishermen. The arrival of external forces and agents of change forced members of local society to coalesce in various ways and places to ensure, or seek to ensure, their collective best interests. This process continues today.

The work of Swingle et al. (1969) makes clear that fish traps, or “pots” were the principal gear used by the majority of fishers during post-World War II era, though less than half used pots exclusively. St. Thomas fishers reportedly hauled their pots more often and had the highest catch per unit of effort across the sample of fishers interviewed. Other gears included hand lines and haul seines, though lack of necessary skill and investment costs were cited as obstacles to expanded use of those particular types of gear. Average market prices for fish had increased from $0.10 per pound in 1930 to $0.50 in 1968. The overall volume of landings in the Virgin Islands increased from 616 pounds in 1930 to 1.5 million pounds in 1967.

The snapper/grouper complex of species, many species of reef fish, and coastal and offshore pelagic species have long been of primary interest to commercial fishery participants in the Virgin Islands. Conch, whelks, lobster, and other shellfish have also assumed great commercial importance here. We refer readers to the work of Kojis (2004) who exhaustively describes and depicts the types of gear traditionally used in the Virgin Islands.

There has long been a tradition of selling and buying whole, non-iced fish in the Virgin Islands (Fiedler and Jarvis 1932). During the mid-twentieth century, however, restaurateurs on the Continent increasingly valued seafood iced on board. Recognition of this trend apparently influenced the recommendations of Swingle et al. (1969) who suggested that fishers in the Virgin Islands would need to employ more modern fishing techniques and marketing strategies in future years, including icing. Although ice is commonly used among those harvesting in the far offshore waters of the Virgin Islands, many of those who fish closer to shore continue the tradition of selling whole fish in the marketplace without ice.

Some mention must also be made of the development of recreational fishing in the Virgin Islands in the Post World War II years. As was the case elsewhere in the United States, wartime advances in hull materials and design, and ongoing improvements in outboard engines and marine electronics preceded a burgeoning recreational boat fishery. Increasing numbers of citizens were finding the time and wherewithal to afford recreational vessels, and to engage in fishing for pleasure. For-hire boats became increasingly common, and pelagic species were pursued for enjoyment. This was the case for relatively affluent residents of the Virgin Islands, and the Caribbean in general has achieved a reputation for Continentals seeking good charter and private recreational fishing by boat. The region is renowned for pursuit of blue marlin (USVI DFW 1996), and the charter fleet at Redhook has served patrons from around the U.S. and abroad for many years. The Eastern Caribbean Center (2002) reports the results of a 2001 telephone survey indicating that today some 53 percent of private recreational boat fishing occurred within three miles of shore.

The nearshore "recreational" fishery has long been of great important to residents of St. Thomas and St. John. But we emphasize that care should be given to definitions in that much of what has been called "recreational" fishing in this island setting (e.g., Bohnsack 1987; Jennings 1992; and Mateo et al. 2000) may often be more accurately described as consumptive or subsistence-oriented fishing. People in the Virgin Islands undoubtedly enjoy fishing and catching fish, and some engage in fishing for purely recreational reasons. The latter are often Continentals.

But by far the most pervasive, significant, and traditional motivation for fishing on a non-commercial basis in this challenging socioeconomic context is to catch fish or collect shellfish to eat or to share, or with which to celebrate or reciprocate in social settings in which seafood and its pursuit for consumption are valued aspects of local culture. All manner of gear have historically been and continue to be used to fish on a non-commercial basis from the shoreline and in the nearshore waters of the Virgin Islands. On St. Thomas and St. John, this includes various kinds of cast, beach seine, haul seine, and ballyhoo nets; modified fish traps for lobsters; fish traps; surface and bottom longlines; vertical set lines; rod and reel and hand line sued when trolling, drifting, and at anchor; and various spears, nets, gaffs, and slings used while skin or scuba diving.

2.4 Recent Demographic and Economic Trends

The resident population of both islands has grown in recent years. The year 2000 U.S. Census enumerated 51,181 full-time residents on St. Thomas, up from 48,166 in 1990 and 46,844 in 1980. Nearly 4,200 residents were enumerated on St. John in 2000, up from 3,504 in 1990 and 2,472 in 1980.

There are ongoing indications that many residents are relatively impoverished. Year 2000 median household income on St. Thomas was $26,893, and $32,482 on St. John. The national median household income was $41,994 in 2000. Further, over 23 percent of reporting households on St. Thomas were below the poverty threshold in 2000, and 14.8 percent were operating under the threshold on St. John that year. The national percentage of households in poverty was 9.2 percent in 2000.

There is additional evidence that economic conditions at the level of the household have deteriorated in the U.S. Virgin Islands in recent years. For instance, the percentage of children in families with incomes below the poverty level increased from 37 percent to 42 percent between 1990 and 2000, and the number of households with children being maintained by single females was 46 percent in 2000, up from 37 percent in 1990, and more than doubling the year 2000 national mean of 22 percent (U.S. Census Bureau).

Select economic factors and variables specific to the U.S. Virgin Islands are depicted in Table 2-1 below. Of particular note, the building boom of the 1980s and 1990s appears to have ebbed by the turn of the new century, and economic conditions appear to be worsening. This is indicated by a relatively high unemployment rate (the nationwide unemployment rate in 2005 was 5.2 percent), and relatively low per capita personal income. But there are also indications of increasing levels of production and business activity in the region, suggestive of offshore capital investment and accrual of profit.

Table 2-1 Select Economic Indicators: All U.S. Virgin Islands

Factor/Variable	**Year**			
	1980	1990	2000	2005
Gross Territorial Product (in millions)	727.8	1,588.1	2,337.1	2,776.6
Unemployment Rate	6.0	2.8	6.8	7.1
Per Capita Personal Income as % of Nat'l Avg.	62.8	65.3	54.7	53.9
Construction Jobs	3,480	3,750	1,950	1,901
Wholesale/Retail Trade Jobs	7,460	9,660	8,950	6,938
Leisure/Hospital Information Services Jobs	6,110	9,230	11,240	7,732
Federal Government Jobs	650	880	860	873
Territorial Government Jobs	12,790	12,700	12,179	11,445
Number Business Applications	10,660	14,795	17,631	--
Number Registered Vehicles	37,889	49,416	74,280	--
Number Telephones	41,175	58,931	70,062	66,999

Source: U.S. Virgin Islands Bureau of Economic Research

We also provide Table 2-2 below, which depicts trends for select indicators in the tourism and related sectors of the economy over the last ten years. With the exception of figures for overall tourist expenditures and tourism-related employment (both of which include St. Croix), the following figures are specific to St. Thomas and St. John.

Of note in the table, there has been an apparent increase in the number of persons visiting St. Thomas and St. John by air, and increasing tourist expenditures across the islands. Home sales price figures have risen dramatically in recent years, again suggestive of increasing offshore capital being transacted in the islands.

Table 2-2 Select Tourism Indicators: St. Thomas and St. John

Variable	Year		
	1995	**2000**	**2004**
Air Visitors (in thousands)	433.4	480.8	526.4
Cruise Ship Passengers (in thousands)	1,066.5	1,719.8	1,960.9
Number of Cruise Ship Visits	807	949	922
Number of Hotels	34	30	29
Hotel Rooms	3,168	3,063	3,119
Condominium and Other Units	730	741	745
Total Rooms and Units	3,898	3,804	3,811
Number of Homes Sold	115	209	304
Average Home Sales Price	256,680	317,285	509,879
Occupancy Rates (%)	63.3	60.4	65.2
Tourism-Related Employment (jobs)	8,980	8,660	n/a
Tourist Expenditures for all U.S.V.I. ($ millions)	822.3	1,205.9	1,356.9

Source: U.S. Virgin Islands Bureau of Economic Research

With regard to participation in the commercial fishing industry in the U.S. Virgin Islands during recent years, NOAA Fisheries Southeast Regional Office (SERO) reports that 342 persons held commercial licenses in the U.S. Virgin Islands in 1998. This was down from 369 in 1997. Commercial landings totaled over 1.4 million pounds in 1997, with an ex-vessel value of over $6 million that year. The species most commonly landed for sale were snapper, grouper, and triggerfish.

By 2003, a total of 383 persons held commercial fishing licenses in the U.S. Virgin Islands; 223 on St. Croix, and 160 on St. Thomas and St. John combined (Kojis 2004). Reported landings across the islands totaled 1,900,220 pounds of fish and 451,593 pounds of shellfish that year. Fish landings were valued at $6,873,151 and shellfish landings were valued at $2,634,728, for a total landings value of $9,507,879. In 2004, reported landings totaled 1,670,057 pounds of fish and 559,063 pounds of shellfish. Fish landings were valued at $6,127,776, and shellfish landings were valued at $3,347,728, for a total landings value of $9,475,504 (NOAA Fisheries 2005a). By 2004, 173 commercial fishers were active in the St. Thomas/St. John district.

The economics of on the recreational side of the equation are now somewhat dated. Hinkey et al. (1994) asserted that recreational fishing activities contributed $25 million to the economy of the U.S. Virgin Islands. Mateo (1999) estimated that 11 percent of residents in the Territory engaged in recreational fishing. We previously reported 10 active charter vessels on St. Thomas (IAI 1997), including eight owned by Continentals and two by West Indians. Coastal and offshore pelagic species are of primary interest. The current research indicates a similarly sized and similarly focused fleet. Mateo et al. (2000) reports that about 150 recreational vessels are active in the St. Thomas/St. John District, including about 40 operated by Continentals. Additional information about this fleet is provided in subsequent section of this report.

The majority of commercial fishing in the waters around St. Thomas and St. John is now done by trap, followed in order by hook and line, net, and spear. In keeping with the objectives of this project, more detailed information about the fishers, fisheries, and fishing communities of St. Thomas and St. John is provided in the following pages.

2.5 Contemporary Implications of Historical Processes

Fishery participants on St. Thomas and St. John face a variety of challenges during the first decade of the 21st century. Many of these are common to commercial fishing fleets around the world. For instance, fishing in the waters surrounding the Virgin Islands can be dangerous, success depends in part on the availability of a finite resource for which numerous user groups in the islands compete, and as is the case throughout the United States, government agencies often manage resources by limiting who can fish when, where, and/or with what types of gear. Moreover, commercially-oriented participants operate in socioeconomic settings that require manageable incomes, but often enable only marginal return on operational investment. Finally, as discussed in the introduction to this report, marine ecosystems and resources in the Virgin Islands are increasingly subject to various stressors, including those that are affecting coral reef ecosystems throughout the Caribbean Basin.

In the case of St. Thomas and St. John, historical events and processes also contribute to challenges in the present. A long history of class struggle and difficult socioeconomic conditions associated with that history continue to affect fishermen and their families in this small island setting. Most persons currently engaged in commercial and subsistence-oriented fishing on St. Thomas and St. John are persons of French descent who arrived from Saint-Barthelemy over the past centuries, or descendants of slaves who also arrived long ago from West Africa, other islands in the Caribbean, or from the continental U.S.[4] Significantly, neither group arrived in the Virgin Islands with capital or an ethos that would support purchase and development of large tracts of land or large businesses through which to accrue extensive monies or opportunity for future generations. This was rather the situation of entrepreneurial Europeans who arrived in the Virgin Islands during the late seventeenth century with capital and plans for development of lands and commerce. Affluent individuals and corporations from elsewhere continue to invest in land and businesses in the region.

Individuals in the local French and black populations have tended to affiliate closely with their respective groups over the years, and strong social norms and cultural values have led to some degree of insularity between those groups and sub-groups. But certain affinities between local societies are also notable. Differences are acknowledged, but there is an overarching identity of being an islander, expressed through modes of language, and familiarity with place, genealogy, local history, and the unique aspects of the other's culture. This identity undoubtedly has been fostered in part through collective response to the cultural and economic incursions of the "Continentals." Many islanders have successfully aspired to economic success, but this often requires embracing the values of capitalism, entering into the business of serving tourists, or leaving the Virgin Islands for opportunity elsewhere.

Fishing and seafood have long been important aspects of family and community life in the Virgin Islands. There are a few exceptions, but as regards commercial fishing from boats, men tend to engage in the harvesting and marketing of seafood, while women tend to play supportive

[4] Kojis (2004:8) reported that some 55 percent of the commercial fishers responding to the DFW census reported their ethnicity as "French" (49.1 percent) or "Black French" (6.1 percent) ethnicity. Some 32.5 percent of respondents reported being "black," and 8.8 percent reported being "white."

roles such as transporting gear and fish, cleaning fish, completing paperwork, and so forth. These roles are often quite important, as indicated in the words of one commercial fisher: "even though my wife works another job she is involved in my fishing . . . You see, she has the education and I know how to fish …I let her do the books because she is much better at it than me." Moreover, household income often derives from a combination of employment positions, including those held by women. It is often also the case that insurance and other benefits are attained through land-based tourism-related or other jobs held by women. Income generated by the spouses of fishermen can be critical during down times, such as during stormy periods when fishing is difficult. By extension, the role of women as workers in settings other than those related to fishing can be critical in mitigating potentially deleterious effects of regulatory strategies, including area closures.

Good fishermen and mariners achieve status in their families and communities. There is extensive subsistence-oriented fishing in the islands, from the shoreline, on the reef, and with small-boats. There is also a small contingent of non-reporting artisanal fishers who work various land-based jobs and sell catch under the table through differing venues. Most licensed commercial fishers operate on a small-scale and on a near full-time basis.[5]

Issues of sensitivity precluded the USVI DFW research team from asking questions about exact dollar amounts earned through fishing and by other means during the course of the 2003-2004 census. Fishers on St. Thomas and St. John have been reluctant to divulge such information in this climate of increasing regulatory constraints in that they increasingly worry that such information could in some fashion be used against them. However, based on in-depth interview data from the current study, and from many other sources (e.g., MRAG 2004; Joy 2004; Berry 2004), we do know that many resident fishers report having to struggle to make ends meet in this island setting where the cost of living is quite challenging and where, reportedly, resource acquisition is becoming problematic due to an increasingly stringent regulatory structure. The typical non-reporting artisanal and subsistence-oriented fishers clearly operate on limited income in this setting.

Based on previous research and interviews in the recreational sector conducted for the present study, we also know that a smaller, distinct charter fishery is operated and owned primarily by white residents or persons of unknown ethnicity who reside on the Continent. Only in a few cases has vessel and gear purchasing capital been accrued locally. Some full-time operators of relatively large commercial vessels reportedly have earned considerable income through fishing in the U.S. Virgin Islands (IAI 1997:23), but again this appears the exception rather than the rule.

Historically speaking, fishing families on St. Thomas and St. John have typically focused on the requirements of getting by on limited income, through small-scale agriculture and acquisition and consumption of natural resources, and via barter and systems of reciprocity (Olwig 1993). Economic forces and influences from the Continent have increased the number and kind of non-fishing opportunities, and as in years past, cash earned from part-time employment is often put back into the fishing operation. Various full-time opportunities are available in the tourism and

[5] Kojis (2004:54) reported that, on average, 74 percent of the total income of fishers surveyed during the DFW census was derived from commercial fishing.

service sectors, but these typically have been developed through offshore capital, and well-paying positions for locals are hard to come by or attain. Continentals hold many of the best-paying jobs. In any event, while engaging in full-time, land-based work could potentially improve one's economic status, many fishers do not seek to do so because this would entail giving up the fishing way of life, a way of life that is locally highly valued in cultural terms.

For those who are dedicated to the fishing way of life, work in the tourism and service sectors often merely supplements a marginal income derived from commercial fishing. Subsistence and artisanal fishers often focus on means for getting by - in reality, on survival. The socioeconomic conditions that were characteristic of fishing families in years past are thus often reproduced in the present.

Despite the beauty of the physical surroundings that has attracted tourists and capital from around the world in recent decades, and despite the enjoyment and meaning that is derived from culturally rich local social settings across the islands, many residents continue to live in conditions of poverty. This is highly significant in this analysis in that marine resources and fishing-related income, however limited, are critically important to many local families, and when these are threatened by regulatory processes, environmental problems, or other factors, social unrest inevitably ensues.

Ethnographic Description of Candidate Fishing Communities

This section of the report characterizes select aspects of places on St. Thomas and St. John in which fishery participants are now known to reside, or in which fishing-related industry is known to be occurring. As described above, the descriptions derive from a range of primary and secondary source research methods and sources.

Commercial fishing data is the most rigorously collected and maintained type of secondary source information available for characterizing fishing operations in the Virgin Islands. Data regarding both recreational and subsistence-oriented fishing in the Virgin Islands is essentially absent. Given this, the following profiles unavoidably focus primarily on the residence patterns and characteristics of communities of commercial fishery participants. While we attempt through interviews, observation, and analysis of historical documents to augment the profiles with information about local participation in recreational and consumptive-oriented fishing, thorough attention to these factors through additional subsequent research would provide more details.

This project has served as a first-step attempt to identify places from which subsistence-oriented fishing activities are most likely to be conducted. Based on observation and discussions with residents, it is clear that extensive subsistence-oriented fishing is conducted by persons living in relatively less affluent communities throughout St. Thomas, and in the small communities throughout St. John. We provide more detail on this issue in the body of this section, as available information allows.

3.1 Island and Community Geography, Data, and Units of Analysis

Analysis of socio-demographic and economic conditions on St. Thomas and St. John is often derived from data aggregated to district, sub-district, or census-designated place (CDP) units of analysis. But data thus aggregated cannot effectively address characteristics of small places that may potentially qualify as “fishing communities” based on MSFMCA and NS-8 definitions of fishing communities. Indeed, as discussed in our earlier work (IAI 1997), data aggregated and analyzed at the larger sub-district level cannot provide the full range of detail needed to discern what may be occurring in smaller areas and places, no matter the depth or breadth of localized association with fishing activity. Thus, we have taken an approach that is capable of discerning residence patterns and other indicators of involvement in very small places.[6]

We are at the same time aware of the possibility that involvement in marine fisheries may be best observed and analytically captured through broader units of analysis. That is, it may be that fishing-related social and economic linkages occurring *across* small places such as neighborhoods and estates may supersede the importance of what is occurring in those smaller places of themselves. Moreover, some data, such as Census data, are available only at relatively broad levels of analysis.

[6] In some such cases, we are limited by the "rule of three," and in order to protect the welfare of the fishery participants and their businesses, we provide only general information when the estate in question is home to small numbers of fishers or when a small number of those participants are involved in specific kinds of fishing operations.

Our approach is to first address the potential need for fine-level description and analysis and thereby generate information for future aggregation, when factors indicate that conceptualizing communities more broadly is most logical. As noted further along in this section, this process has, in fact, proved useful for characterizing the situation on St. Thomas, where topographic conditions and historical factors give strength to arguments for conceptualizing island regions rather than estates as prospective fishing communities, and where fishing operations described by residents support the idea that estates and neighborhoods are integral parts of a larger region or district.

3.2 Description of the Communities

In this section of the report, we develop profiles of estates and neighborhoods on St. Thomas and St. John in which licensed fishers are known to reside. The descriptions are cursory in nature, intended to provide the reader with sufficient background information needed to understand: (a) the basic physical geography of the areas, (b) the nature of housing and patterns of residences, (c) the presence or absence of businesses (including those associated with the fishing industry), and most significantly, (d) patterns of distribution of commercial fishing license holders.

IAI initiated this project with prior knowledge of important socio-demographic aspects of life on St. Thomas and St. John, and a basic understanding of how the various fisheries have been conducted, by whom, when, where, and why. This was a natural outcome of the 1997 project. A critical finding of that work was that in the late 1990s, and for decades prior to that period, there tended to be discernible patterns in terms of where fishermen and fishing families resided, fished, moored their vessels, and sold their catch.

For instance, at the time of our previous research, and for years prior, most "Frenchies" living in "town" tended to moor their vessels in Charlotte Amalie, fish from the Frenchtown area in a fairly well-defined offshore zone, and sell their fish in the Frenchtown market. Meanwhile, many Northside fishermen tended to live and moor small vessels on the north side of the island, fish in the offshore waters there, and sell in markets other than those in Frenchtown (as described later in this section of the report).

Given this background, we speculated at the outset that conditions would be similar to those observed in the late 1990s - that patterns of residence would be similar, and that notable distinctions between groups of fishermen and the way they operate would still be occurring. Persons knowledgeable of the fisheries and fishing fleets on St. Thomas asserted that while basic residence patterns were indeed similar, some changes in the way participants were operating seemed to be emerging, in large part due to the establishment of area closures. Given the objectives of the study, the situation was deserving of directed examination, and thus we set out to systematically test the supposition that residence patterns were similar, and that operational changes were afoot.

Operational issues are addressed later in this report. This section provides the results of initial observation-based fieldwork in which we set out to identify and describe the small estates in which fishery participants were determined to be residing through analysis of address fields in

the 2004-2005 commercial license database (as such, total numbers are higher than reported in the 2003-2004 DWF census report).

Fieldwork was organized based on the way in which local residents perceive the political geography of the island and as indicated by our earlier research. In order to most easily detect any changes in residence patterns that might have occurred, and whether the regional designations were still empirically viable indicators of distinct groups of fishermen and fishing families, we set out to identify and describe the nature of the estates that comprised the locally-designated districts. On St. Thomas, these are: West End, Northside, East End, and Town (incorporating Frenchtown). On St. John, these are Cruz Bay on the West End, and Coral Bay on the East End.

As will be discussed later in this section, the vernacular regions also coincide with Census sub-districts, and we build evidence that in actuality three of these may most logically be conceived as candidate fishing communities under the parameters of the MSFMCA and NS-8.

The following maps are provided as an overview depiction of St. Thomas and to give the reader a visual sense of the distribution of commercial fishing license holders residing in the primary districts of St. Thomas (Figure 3-1 below), and the estates that comprise those districts (Figure 3-2 below). Description of the St. Thomas estates follows, beginning with those on the West End and moving in clockwise fashion through the Northside, East End, and Frenchtown Districts. St. John estates are described further along in the report.

Figure 3-1 Residence Patterns of Commercial Fishing License Holders on St. Thomas

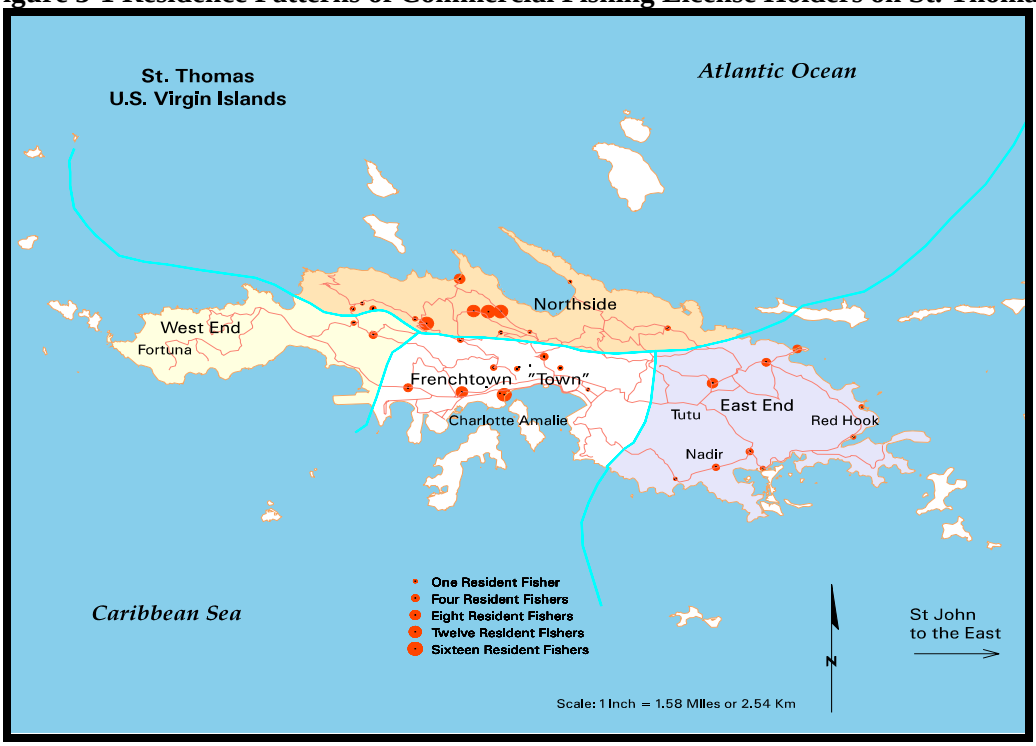


Figure 3-2 St. Thomas Sub-Districts with Estate Overlay

West End District Estates

We begin with description of estates and neighborhoods located on the relatively sparsely populated west side of the island of St. Thomas. In St. Thomas vernacular, this is known as the West Side. While most of the area is rural in nature, this also is the location of the University of the Virgin Islands, and the international airport, both of which are situated on the gentle slopes immediately above the Caribbean Sea on the south side of the island. Most of the residential areas are located on the steep mountain slopes.

The West End District encompasses 5.19 square miles of land. With 2,058 residents enumerated by the 2000 Census, the population density was at that time about 397 persons per square mile. Nearly 80 percent of residents were black, and 13.2 percent were white. About 4.5 percent of persons reported a Hispanic or Latino ethnic background.

Approximately 1,091 or 75 percent of all residents over the age of 16 were active in the workforce at the time of the Census. The unemployment rate was 3.6 percent. Only eight persons reported employment in the natural resource extraction industries. Most workers held jobs in education, health and social services (nearly 18 percent); in public administration (17 percent); and in arts, entertainment, recreation, accommodation and food services (nearly 12 percent).

Median household income in this district was $43,929. Almost 13 percent of all residents were living in conditions of poverty, and single females maintained 19 percent of families. The total number of housing units enumerated in this district was 957. The median value of occupied homes was $186,557. Their owners occupied just over 62 percent of occupied housing units, with 38 percent occupied by renters. Median monthly rent was $670.

Relatively few fishermen live in this part of St. Thomas. Moreover, patterns of residence do not indicate the presence of a contingent of fishery participants who interact closely from a particular place. Rather, the West Side is primarily a residential area with numerous seasonally absent homeowners, few local businesses, and little collective involvement in fishing. Many residents commute to work at the University and to government agencies in Charlotte Amalie.

Aerial Photo of the West Side of St. Thomas

Crown & Hawk

Crown and Hawk is a largely hidden residential area located along Highway 33 on the southwestern slope of Crown Mountain. Homes are secluded and widely dispersed along the steep slopes o either side of the highway. One commercial cast net fisher was residing in Crown and Hawk at the time of this study.

View from "Highway" 33 near Central Point of Crown & Hawk

East Caret Bay

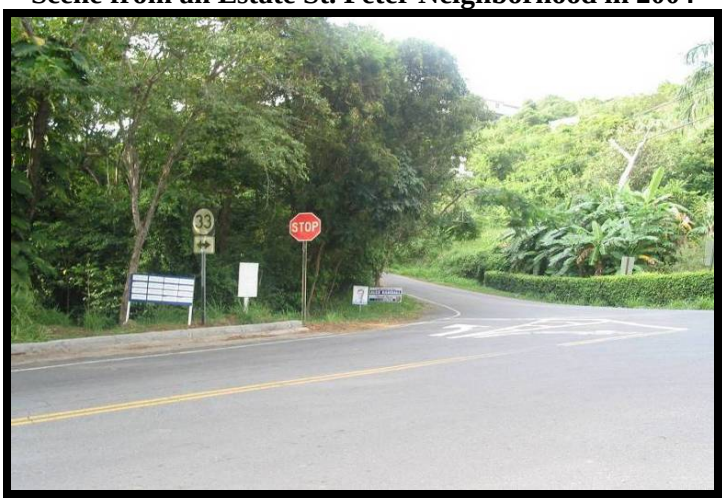
East Caret Bay is located on the northwest side of Crown Mountain. Highway 33 bisects the estate, with residences located along the winding roads and steep slopes. Elevation is around 650 feet near the main road. Single-family homes are most common, and residents have expansive views of the Atlantic Ocean to the northwest. One commercial license holder was living in the East Caret Bay area in 2003 but no longer held a license in 2004.

Narrow Highway 33 above Caret Bay

Estate Pearl

Estate Pearl is a residential area. Many well dispersed single-family gated homes line Route 33 above Caret Bay. There are also some multiple-family dwellings here. Like many areas on the western part of the island, there are no retail or service-oriented businesses visible from the main road. Extensive foliage and the red rocky soil characteristic of the island landscape are readily visible features of the area. There were three commercial fishers residing in Estate Pearl in 2003. One launched his vessel from Hull Bay, and another moored at the Coast Guard Dock in Charlotte Amalie. One individual trailered his boat to various locations, fishing traps and cast nets. Only two of the three operators were licensed in 2004. Vessel sizes ranged from 24 to 29 feet.

Scene from an Estate St. Peter Neighborhood in 2004



Fortuna

Fortuna is a small aggregation of residences located on the far western end of the island. Residents enjoy views of both the Atlantic Ocean and the Caribbean Sea. No retail or service-oriented businesses are visible along the main road. Residences are widely dispersed and most are large single-family dwellings, though a few multiple-family dwellings were noted in the area. One commercial trap fisherman was residing in Fortuna at the time of this study.

The Hills of Fortuna

Santa Maria

Santa Maria is located along Route 301 (West End Road), near its intersection with Route 33. This is a small grouping of houses situated along the northwest slope of Crown Mountain at around 850 feet above sea level. The area overlooks Santa Maria Bay. There are numerous small single-family dwellings visible, amidst various larger estates surrounded by walls and gates. The Caribbean Sea is visible where breaks in the canopy allow. There are no retail or

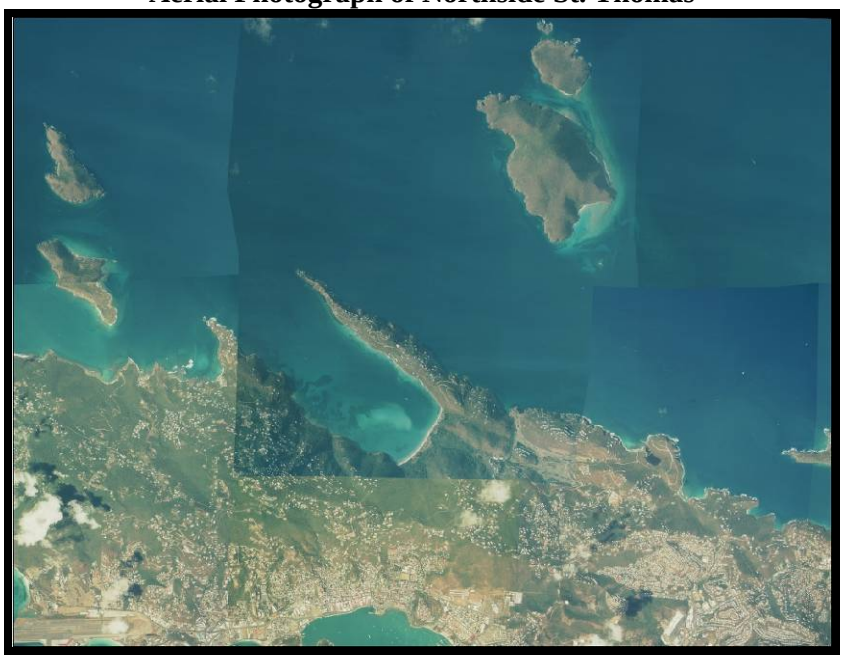
service businesses located near this estate. Two fishers were living in Santa Maria in 2003, and only one was licensed in 2004. The latter fished with beach seine gear from Hull Bay.

Ocean View from Santa Maria Area

Northside Estates

Various forms of residential development characterize the northern portion of St. Thomas Island. There are areas of small multi-family dwellings, neighborhoods of moderate-sized single-family homes, and areas where very large and ornate homes and groups of homes are surrounded by secure gates and walls. Many of the latter are owned by Continentals who reside on St. Thomas only during part of the year.

Aerial Photograph of Northside St. Thomas



The Northside District encompasses 10.74 square miles of mountainous land and rocky coastline. With 8,712 residents enumerated by the 2000 Census, the population density was at that time about 811 persons per square mile. Nearly 52 percent of residents were black, and 37 percent were white. Though not captured by the Census, many are of French ancestry. About six percent of persons reported a Hispanic or Latino ethnic background.

Approximately 4,982 or 72 percent of all residents over the age of 16 were active in the workforce at the time of the Census. The unemployment rate was quite low at 3.2 percent. Only 45 persons active in the workforce reported employment in the natural resource extraction industries. Most workers held jobs in retail trade (nearly 18 percent); in arts, entertainment, recreation, accommodation and food services (13.8 percent); and in education, health and social services (13.4 percent).

Median household income in this district was $39,088. About 16 percent of all residents were living in conditions of poverty, and single females maintained 27.5 percent of families. A total of 4,799 housing units were enumerated in this district. The median value of occupied homes was $231,101. Their owners occupied just over 49 percent of occupied housing units, with 50.6 percent occupied by renters. Median monthly rent was $720.

A small number of retail and service businesses are scattered along the main roads. While resident fishermen do buy certain supplies such as gas and ice, and limited food and drinks at such establishments, none are directly related to, or provide dedicated support services for, the local commercial or recreational fishing fleets.

Some of the more picturesque beaches on St. Thomas are located here. Caret Bay is inaccessible to non-residents, but Hull Bay and Magens Bay are readily accessible. The former is popular with resident and visiting surfers who take advantage of large north swells in winter. The latter

is more protected and a favored spot for tourists throughout the course of the year. Numerous fishing vessels are moored in, or stored around Hull Bay. Beach seines are commonly used here, though other gear is also employed during parts of the year, including a limited number of traps and hook and line gear.

This is the central meeting point of Northside fleet participants, most of who are of French ancestry. While most small vessel owners fish areas along the northern coastline, some residents maintain larger vessels in town and fish in the offshore waters south of St. Thomas. A few residents use trailers to reach various points of ocean access around the island, but this can be challenging given the steep nature of the road system.

Indeed, the mountain terrain is quite steep in this region, dominating the visual and physical landscape. While the elevations are not extremely high, the mountains rise immediately from the ocean with only small areas of flat ground at the ocean's edge. Crown Mountain reaches 1,556 feet, and Signal Hill reaches 1,480 feet. A long ridgeline connects the two, with various peaks and dips interspersed throughout. St. Peter Mountain lies slightly north of the main ridgeline, lending further complexity to the road system and patterns of residence. There is a notably steep point of demarcation between the down slopes both north and south. The entire mountain area is covered with dense foliage. This obscures many of the homes, the presence of which can be determined only by the steep driveways that intersect the winding main roads. Small areas of sandy beach interrupt the otherwise rocky shorelines at the bottom of the slopes.

Given that groups of avid resident commercial fishery participants residing throughout the Northside focus their operations in or from the small bays in the area, and reportedly interact on a regular basis to do so, we suggest that there is some reason to envision the areas as a candidate for fishing community status. Further discussion of this matter, including both supporting and countering evidence, is provided later in this report.

Estate Barrette

Estate Barrette is located on the north slope of St. Peter Mountain along Highway 40. Homes are located along small winding roads that transect both sides of the "highway." These are widely dispersed in some areas, and more closely spaced in others. Two commercial fishermen lived in Estate Barrette at the time of this research. One fished in various locations around the island with a mix of gear types.

Residential Neighborhood in Barrette

Bonne Resolution

Bonne Resolution is located on the steep north slope of Crown Mountain, along route 333. The area is not far upslope from a popular hotel and restaurant facility perched a mile or so above Hull Bay. Numerous single-family dwellings are located throughout the area, most obscured by extensive vegetation. A combination gas station-grocery store functions as a local meeting place and is one of the few retail businesses located in this primarily residential area. Two commercial license-holders were residing in this area in 2004, though one was no longer fishing at the time of this study.

Dorothea

Dorothea extends northward to Dorothea Bay down slope from a point between St. Peter and Crown Mountains. Highway 33 crosses the southern, more mountainous section, while Highway 333 heads north toward the bay and connects with Highway 404 in Estate Hull. This is primarily a residential area, although there are a few retail businesses scattered throughout the estate. These are primarily convenient stores or bar/restaurants. Residences are widely dispersed in some areas, and closely spaced and very near the roadway in others. Parking comes at a premium in many places. Two commercial fishers were living in Estate Dorothea during the course of this study. One specialized in pelagic handline methods in the offshore waters south of St. Thomas.

Estate Hull

Hull Bay is a roughly one-mile wide bay situated between Tropaco Peninsula and Dorothea Point at the center point of the north side of St. Thomas. Magens Bay lies to the west and Neltjeborg Bay to the east. Outer and Inner Brass Islands are just offshore, providing both interesting scenery for tourists and productive fishing grounds for the local fleet.

There is a relatively flat area along the shoreline. There are a few homes and businesses in this area, though most homes are widely dispersed on the steep slopes above. Many of the area's net fishers keep their boats anchored in the bay, though this is more difficult in the winter months when northerly swells make for challenging conditions. A boat ramp is located at the beach area. A popular restaurant/bar is just inland.

Fishing Boats Anchored in Hull Bay

A fuel truck visits the area roughly once a week, so that fishers can fill their tanks for the week's fishing. There is a detectable sense of community interaction here. Picnic tables and chairs line the beach and are popular gathering spots, and fishers, surfers, and other local residents often frequent the seaside bar/restaurant. A small market just to the southeast of the Hull Bay boat ramp serves as a gathering place for Northside fishers, many of whom enjoy a cold drink and discuss the day's fishing each afternoon (if weather allowed fishing to occur).

Nine commercial fishers were residing in Estate Hull at the time of this study. Five declared their homeport as Hull Bay. Vessels range in size from 11 feet to 19 feet in length. Two resident fishers home ported in Crown Bay. One maintained a 39-foot vessel, while the other has an 11-foot boat. The total number of traps used by commercial fishing license holders residing in Estate Hull in 2004 was 481.

Some resident fishers also used beach seines. DFW staff interviewed seven resident fishers during their 2003-2004 census. Three reported themselves as full-time fishers, three as part-time, and one as opportunistic. Of those responding to questions about species fished, four individuals were listed under lobster, reef fish, and bait, and three were listed as harvesting coastal pelagic species and whelks. Two individuals said they fished conch and one indicated fishing for pelagic species in the offshore waters.

It should be noted that at least 25 small boats were observed in the Hull Bay area during our field visits, suggestive of the popularity of the area for other commercial residents living Northside, and the possibility that extensive consumptive/recreational fishing is also occurring here.

Boat Ramp at Hull Bay in 2004

Lerkenlund

Lerkenlund is a small estate located from a point along the northeastern slope of St. Peter Mountain down toward Magens Bay. Highway 40 and Route 37 both transect the estate. Modest homes are scattered along the small winding roads. Dense foliage obscures many of these homes.

Dense Foliage Characteristic of Residential Areas in Lerkenlund

This area is relatively densely populated with commercial fishery participants. Fifteen fishers were resident in Estate Lerkenlund at the time of this study. Most vessels are kept in or near Hull Bay and Magens Bay, though some residents fish from Frenchtown and Seaside Marina on the south side of the island. Vessel size ranges from 14 to 34 feet in length. Captains of the larger vessels carry as many as two helpers, though many of the operations are conducted solo. A wide variety of gear types are used, including handline gear, rod and reel, and various traps. Some 1,384 traps were being used by Lerkenlund commercial fishers in various locations around the island during the 2003-2004 fishing season.

Scene from an Estate St. Peter Neighborhood in 2004

Estate St. Peter

Estate St. Peter extends northward and down slope from Mountaintop, a well-known lookout and tourist attraction atop St. Peter Mountain, to the western shore of Magens Bay. The area is primarily residential in nature. Homes located in the upper mountain neighborhoods are closely spaced along the steep slopes, while residences closer to the bay are more widely dispersed. There are few retail or service businesses in the area.

There were 14 fishers residing in St. Peter during the time of this study. Residents were using nearly 1,100 registered traps during the period. Two of the fishers worked in waters adjacent to the British Virgin Islands. Numerous fishers in this area land their fish in locations along the east and south sides of the island.

Peterborg

Estate Peterborg stretches along Peterborg Peninsula, which forms the eastern shore of Magens Bay. Although scenic Magens Bay is a popular destination for tourists, the area is sparsely populated. There are several, large gated homes near the bay front, and others are scattered along the steep winding roads that characterize the higher elevations. There are no retail

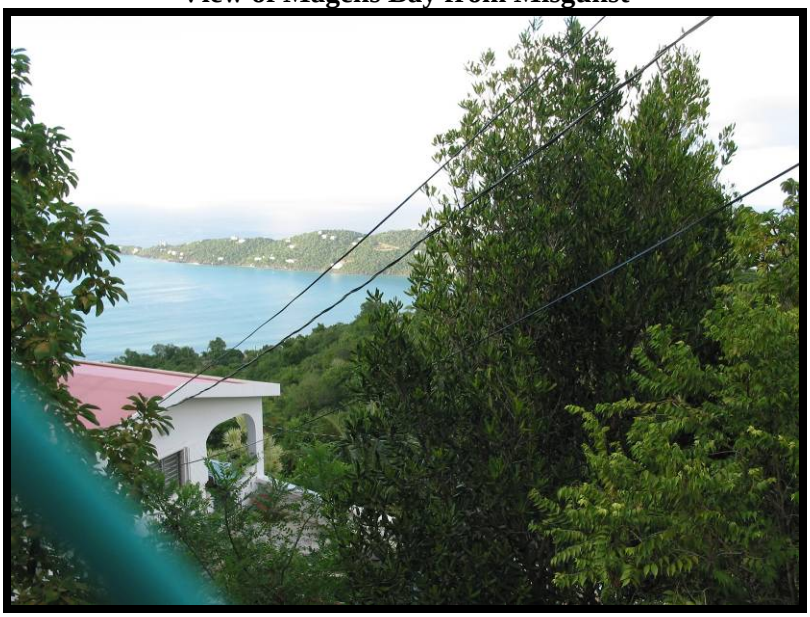
businesses in the area. There was one fisher residing in the estate of Peterborg at the time of this study.

View of Magens Bay from Peterborg

Misgunst

Misgunst is a small estate located along the shores of Magens Bay between Estate Elizabeth and Lerkenlund. Residences are widely dispersed north of Highway 40 and along Route 37. Steep terrain has limited extensive development in the area. One fisher was residing here during the course of this study.

View of Magens Bay from Misgunst

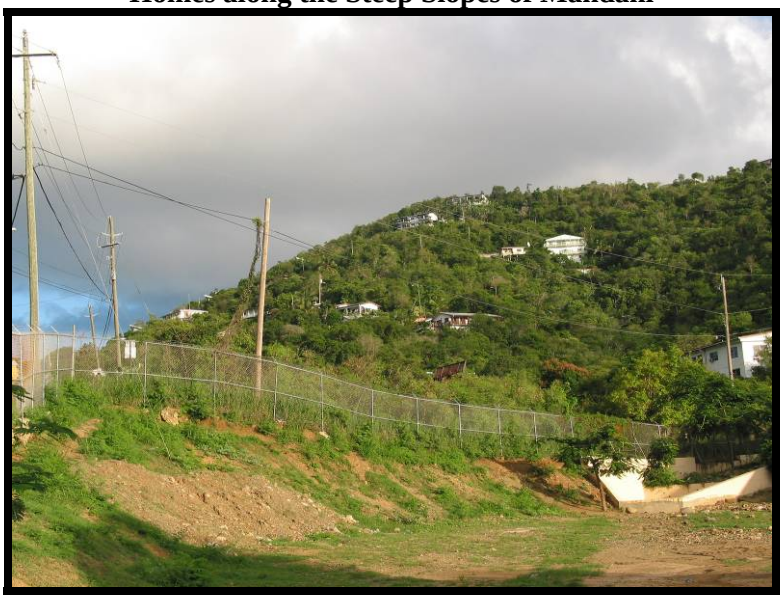


Elizabeth

Elizabeth is located high in the mountains of St. Thomas above Magens Bay. The estate essentially straddles the ridgeline west of Signal Hill and north of Charlotte Amalie. Several thoroughfares serve motorists here. Highways 40, 33 and 37 transect the estate, winding through numerous residential areas. The area is heavily populated and homes are narrowly spaced along the steep slopes. There are a few retail and service businesses scattered along the main roads. One fisher was residing in this estate at the time of the study.

View of Magens Bay from Estate Elizabeth Neighborhood

Homes along the Steep Slopes of Mandahl



Mandahl

Mandahl is a sparsely populated estate located above little Mandahl Bay, about one-half mile east of Tutu Bay. The Leeward Passage lies to the west. A small peninsula called Mandahl Hill forms the eastern shore of Mandahl Bay and a few homes are scattered throughout this area. The Peace Corps School is located along Mandahl Road (Route 42). Most neighborhoods are comprised of widely dispersed single-family dwellings. There are few businesses located in this area. Two commercial license holders were residing in Estate Mandahl during 2004. Both reported fishing very little in recent years.

East End Estates

Fieldwork conducted throughout neighborhoods and estates in the East End of St. Thomas revealed certain characteristics that in combination suggest this is a distinct part of the island. Resorts have been developed around several different bays in the area, and many residents are employed at these and associated establishments. The ferry to St. John and Tortola is also located here, and given the constant flow of commuters and tourists between islands, the roads leading to the docks are often heavily trafficked.

Moreover, the East End incorporates the small town of Redhook, which is a popular tourist destination and the base of charter fishing operations on the island. Approximately 11 charter vessels were moored here at the time of this study. Clients have the option of half-, full-day, and multi-day trips. Prices range from about $500-$700 for half-day trips and roughly twice that for full-day trips. One or two crew members are typical. Crew salaries and overall revenue tend to be confidential given competition across this small fleet.

Numerous pleasure vessels are moored at the American Yacht Harbor in Redhook. Several marinas and fishing support businesses are located along Highway 37 in Estates Frydenhoj and Nadir. These serve resident fishermen and transient boaters alike. The Department of Planning and Natural Resources maintains a research laboratory in the area.

Aerial Photograph of East End

Given the presence of relatively extensive fishing-related service and physical infrastructure, groups of resident commercial fishery participants and recreation-oriented participants, we recommend the East End be considered a candidate for fishing community status. Additional discussion and supporting evidence are provided further along in this report.

The East End District encompasses 5.40 square miles of land. With 7,672 residents enumerated by the 2000 Census, the population density was at that time quite high - about 1,420 persons per square mile. Black or African American residents comprised 79.4 percent of the population, and 14.9 percent were white. About 5.8 percent of persons reported a Hispanic or Latino ethnic background.

Approximately 3,800 or 67 percent of all residents over the age of 16 were active in the workforce at the time of the Census. The unemployment rate was 6.6 percent. Despite the fact that many fishers reside in this area, only 16 persons reported employment in the natural resource extraction industries. Most workers held jobs in arts, entertainment, recreation, accommodation and food services (23 percent); in retail trade (nearly 13 percent); and in education, health and social services (nearly 12 percent).

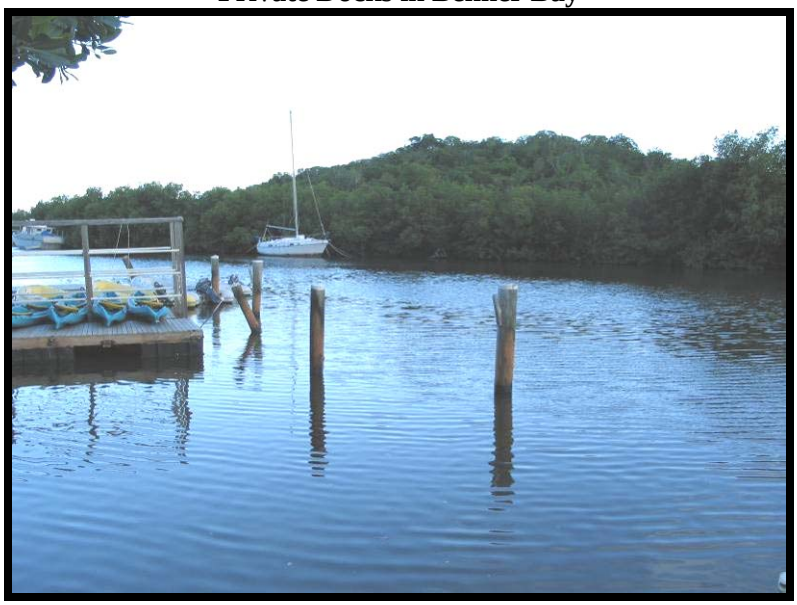
Median household income in this district was $28,875. Almost 27 percent of all residents were living in conditions of poverty, and single females maintained 39 percent of families. These figures are quite high relative to other areas on the island, and very high relative to national averages. A total of 4,026 housing units were enumerated in this district. The median value of occupied homes was $174,870. Their owners occupied just over 50 percent of occupied housing units, with 49 percent occupied by renters. Median monthly rent was $611.

Benner Bay

Benner Bay is located on the eastern end of St. Thomas, just south of Estate Frydenhoj. Redhook Road (Route 32) serves motorists passes along the northern shore of the bay. Several retail and service oriented businesses are based here, some of which are fishing-related. For instance, several marinas serve resident fishermen and visiting boaters. The marinas offer dockage, dry storage, and various maintenance services.

Most homes in the area are located along the winding roads and steep slopes above Redhook. Housing is modest and homes are situated in relatively close proximity. One commercial fishing license holder was resident in the Benner Bay in 2004.

Private Docks in Benner Bay



Estate Bolongo

Estate Bolongo is a small grouping of homes located on the southeast side of the island around little Bolongo Bay. Highway 30 transects this area, though numerous narrow roads wind their way in all directions on either side of the highway. Many of the single-family homes are closely spaced, and a few multi-family dwellings were noted in the area. Bolongo Bay resort is located on the bay front adjacent to the highway. A few additional retail businesses and restaurants are located in the area. A small pier and single dive operation are based here. One commercial fisher was residing in the area at the time of this study.

Homes Perched above Bolongo Bay

The Bolongo Bay Resort Area

Bovoni

Bovoni is a large estate located between Bolongo and Nadir along Highway 30. The highway transects the southern portion of the estate. This section of the estate is not as mountainous as other parts of the island, thereby enabling relatively extensive development.
For instance, light industrial areas with warehouses and business parks were observed in part of the estate. Estate Bovoni is also the site of the island landfill, visible just to the south of Highway 30. Residential subdivisions with modest single-family homes and larger multi-family dwellings extend primarily to the north of the highway. A high school is located not far from the highway. Most residents in this area are of Afro-Caribbean ancestry.

Multi-family Dwellings in Bovoni

Two commercial fishers were resident in Bovoni in 2004. One moored in Nadir Lagoon and the other at Seaside Marina. Their boats are both 18 feet in length.

Service Station in Bovoni along Highway 30

Coki Point

The Coki Point area is the location of a popular tourist attraction known as Coral World. The facility is located at the terminus of Route 388, which follows the narrow strip of land between Coki Bay and Water Bay. Land use in the area is mixed. Light industrial uses are noted along the main thoroughfare, but residential zones with single and multiple family dwellings were also observed in the area. There is a small condominium resort near the bay.

The beach adjacent to Coral World is a popular snorkeling destination where vendors rent diving equipment and beach accessories. Several vendors also rent various types of watercraft at nearby Water Bay.

Five commercial fishery participants were residing in the Coki Point area during 2004. Vessels ranged in size from 17 feet to 26 feet in length, but most fishers in this group were not currently fishing on a commercial basis at the time of this study. One fished pots in the Brewer Bay area. Fishers from around the East End frequent a small seafood marketplace here.

Scene at Retail Seafood Establishment near Coki Point

Frydenhoj

Frydenhoj Estate is located on the far eastern end of the island just west of Redhook. There are several marinas scattered along Highway 32 as it skirts the shoreline for several miles in the southern part of the estate. A few charter fishing boats operate from these marinas, but most slips are for private boats and tourist rentals. Dry dock storage is available here, and restaurant/bars are also located nearby. Several stores and other retail and service businesses can be found along the highway. These include several marine-oriented businesses. The residential portion of the estate is located on the steep slopes north and above the highway. There are some multi-family dwellings here, but most are single-family homes.

Marina in Frydenhoj

Six commercial fishery participants were residing in Frydenhoj in 2004. Two list the Nadir Lagoon as their homeport, while the remaining participants moor in various locations: Seaside Marina, Water Bay, Compass Point, and Frydenhoj. Vessels range in size from 19 to 45 feet in length. Four of the captains use handlines and other gear in pursuit of pelagic species in the offshore waters of St. Thomas and St. John.

Private Docks in Frydenhoj

Nazareth

Nazareth is located between Redhook and Frydenhoj on the eastern end of the island. Three roads intersect in the southern half of the estate. Smith Bay Road (Highway 38) joins Redhook Road (Highway 32) and Route 322 west Cowpet Bay. Nazareth is largely a residential area although some retail businesses area scattered throughout the estate. Modest homes are spread about on steep roads among dense foliage overlooking Nazareth Bay. Two commercial fishers were residing in Nazareth at the time of this study, though neither were respondents in the 2003-2004 DFW census.

Redhook

Redhook is located on the eastern end of Vessup Bay. St. John is visible directly across Pillsbury Sound to the east. Vessup Bay is well sheltered from wind and swell, affording ideal anchorage to the ferries serving St. John and Tortola. A small business district serves the area. The large marina here is base for numerous charter fishing operations. Bars and restaurants serve as a gathering place for charter fishing clientele and tourists.

While there are a few homes in the immediate town area, most are are scattered along the hills above. A high school is located just west of the primary business district. While there are numerous charter operations, only three commercial fishery participants claim Redhook as place of residence. All use hook and line gear and tend to pursue pelagic species in the offshore

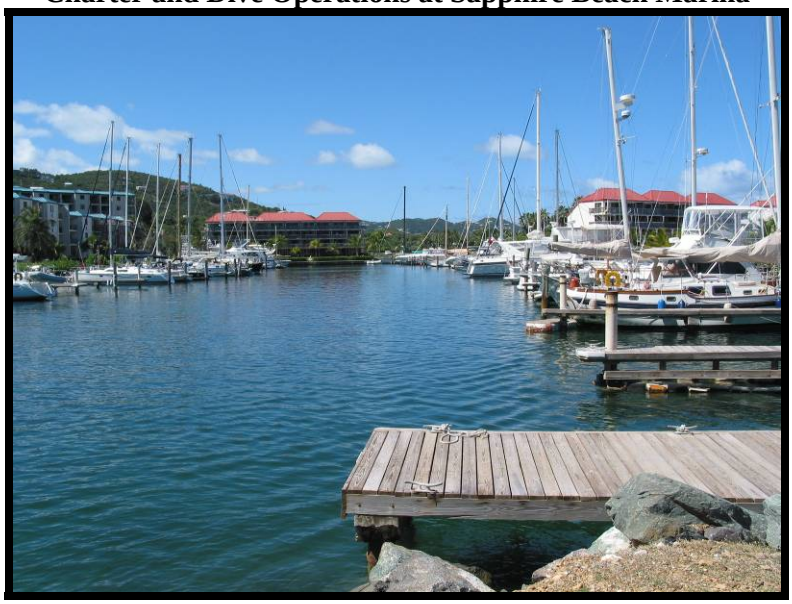
waters. Two list the Sapphire Resort Marina as their home port. Their vessels are 32 and 45 feet in length.

The American Yacht Harbor in Redhook

Sapphire Beach

Sapphire Beach is located just north of Redhook Point. A large resort, beach, and marina are located here. Several charter operations and dive boats operate from the marina. Two commercial fishers work and live at the resort, but call their place of residence Redhook Hill. This is the traditional name for this area. Neither fisher responded to the 2003-2004 DFW census.

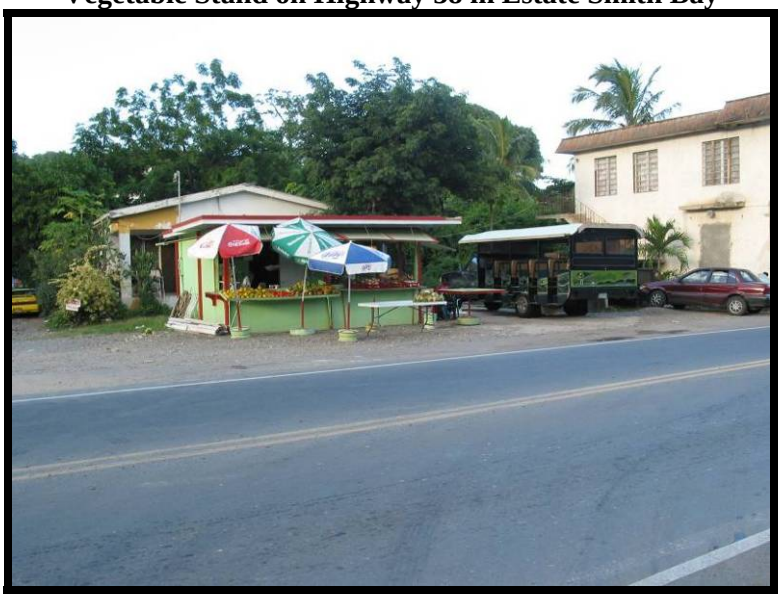
Charter and Dive Operations at Sapphire Beach Marina



Smith Bay

Smith Bay is a large estate just north of Redhook. While the area is primarily residential in nature, there are also numerous resorts along the oceanfront, and several business and light industrial areas. Smith Bay Road (Highway 38) runs the length of the estate. The intersection of Highway 38 and Route 388 is a popular market area, where both vegetable and fish dealers operate. The Smith Bay area also retains some of its former rural character and numerous tracts of undeveloped land were observed here in 2004.

Vegetable Stand on Highway 38 in Estate Smith Bay



Six commercial fishing license holders claimed Smith Bay as their place of residence in 2004. One is a hook and line fisher, while the others use trap gear. Three of these individuals list Water Bay as their homeport. Two moor at Coki Point, and one at Smith Bay. Vessels range in size from 15 to 27 feet in length. The largest operation involved four crew members in 2004. Of the four fishers who were included in the fisher census in 2003, three indicated they fished on a full-time basis. The hook and line fisher pursued coastal pelagic species; the others fished for reef fish, conch, whelk, and lobster.

Cows Grazing along Highway 38 near Smith Bay

Estate Tutu

Tutu is a densely populated area high in the hills of the eastern part of the island. It encompasses the area named Anna's Retreat. There are numerous retail and service-related businesses located along the main thoroughfares. The Tutu Mall is located here. Residences are closely spaced, along with many multi-family developments. Traffic congestion in the early mornings and late afternoons is common in this part of St. Thomas, as commuters travel to and from the area on Highways 38, 40 and 42.

Businesses at Intersection of Route 384 and Highway 38 in Tutu

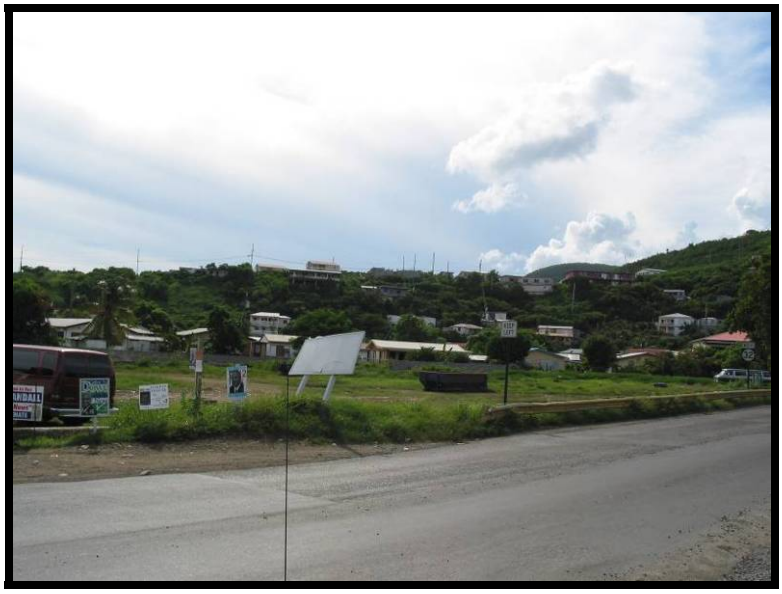
Nine commercial fishery participants were residing in Tutu during 2004. Listed homeports included Frenchtown and Coki Point. Vessels range in size from 18 to 44 feet in length. Residents were using 362 traps at the time of this study. Of the six fishers included in the 2003-

2004 DFW census, five reported full-time operations using trap gear for reef fish. Two of those fishers also used troll gear for coastal pelagics.

Nadir

Nadir is a small estate located between Frydenhoj and Bovoni along Highway 30. It is chiefly residential in nature, although a few businesses are situated along the highway. Most residents are of Afro-Caribbean ancestry.

Residential Area in Nadir



Four commercial fishers claimed Nadir as their place of residence and all listed Nadir Lagoon as their homeport. Vessels ranged from 18 to 24 feet length overall. Both of the two Nadir fishers interviewed for the fisher census reported pursuing reef fish; one also pursued lobster. Both reported full-time status.

Southside Estates and Urban Center

The Southside district incorporates parts of Charlotte Amalie, the island's main urban area and, more significantly in this context, Frenchtown, the island's center of commercial fishing-related activities. Local residents tend to call this entire area "Town."

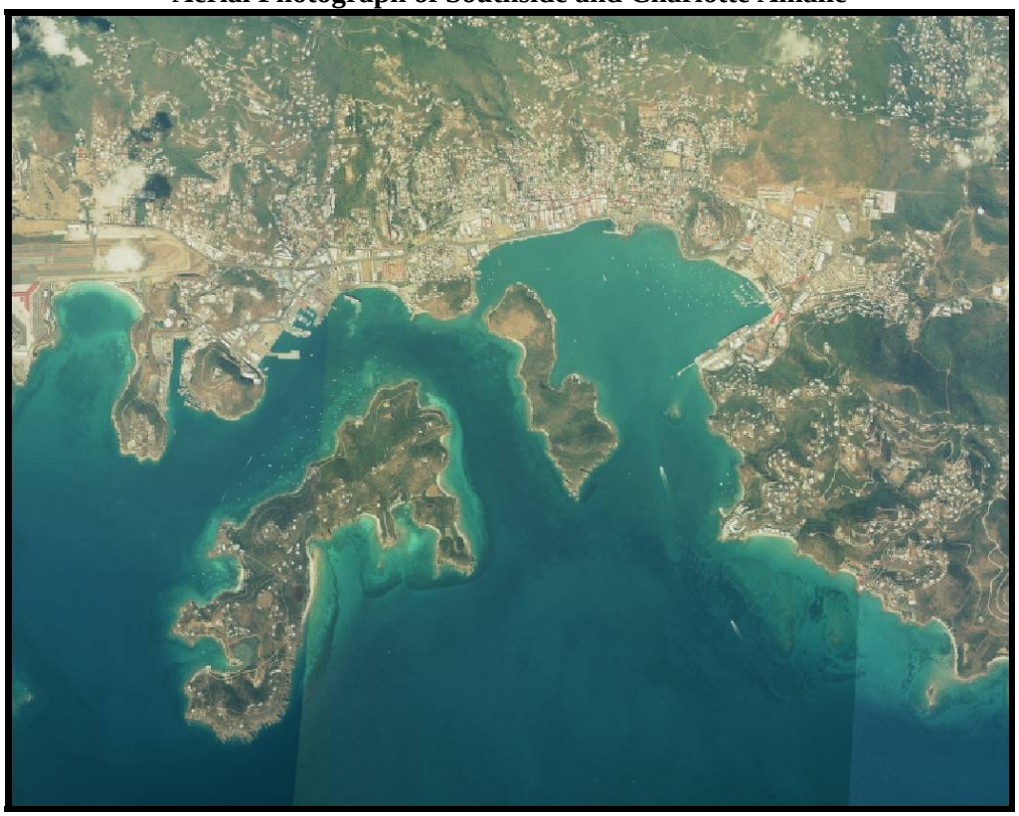
Charlotte Amalie is the site of various cruise ship terminals. Gigantic vessels carrying tourists throughout the Caribbean regularly moor at Havensight and Crown Bay. A few small charter operations are located at Crown Bay. Havensight is the larger terminal, with as many as four large cruise ships docking at one time. Passengers typically shop and dine at establishments in Charlotte Amalie, and travel to other locations on the island to sightsee and recreate. Traffic congestion is commonplace along the roadways in Charlotte Amalie, as commuters travel to and from work in the city and taxis transport cruise ship tourists around the island.

The Southside District encompasses 4.2 square miles of land. With 5,467 residents enumerated by the 2000 Census, the population density was at that time about 1,301persons per square mile. Nearly 78 percent of residents were black, and 12.4 percent were white. Most persons in the Frenchtown area are, of course, of French ancestry. About 6.5 percent of persons reported a Hispanic or Latino ethnic background.

Approximately 2,421 or 70 percent of all residents over the age of 16 were active in the workforce at the time of the Census. The unemployment rate was quite high at 8.9 percent. Only seven persons reported employment in the natural resource extraction industries. Most workers reported holding jobs in arts, entertainment, recreation, accommodation and food services (nearly 20 percent); in retail trade (18.4 percent); and in education, health and social services (nearly 13 percent). Median household income in this district was $27,184.

In 2000, 32 percent of all residents were living in conditions of poverty, and single females maintained more than 48 percent of families. A total of 2,447 housing units were enumerated in this district. The median value of occupied homes was $190,402. Their owners occupied just over 35 percent of occupied housing units, with 65 percent occupied by renters. Median monthly rent was $476.

Aerial Photograph of Southside and Charlotte Amalie



There are numerous estates in the Southside district. The Frenchtown area is home to the greatest number of commercial fishery participants, and a long history of fishing-related lifestyles continues here. But many captains and crew who fish from the Frenchtown docks actually reside in one of the many other estates in the area, or in other estates around the island.

Northside residents actually own and operate a few of the larger commercial fishing vessels moored in Frenchtown.

Given the presence of extensive fishing-related infrastructure on the Southside, and the fact that so much fishing-related activity occurs there, we recommend in the subsequent section of this report that the area be considered a viable candidate for fishing community status. But we also note that the area encompasses numerous smaller concentrations of fishery participants and fishing activity, and that these may also qualify for such status.

Agnes Fancy

Agnes Fancy is a residential area just north of the main city area of Charlotte Amalie. The Estate is most densely populated in its southern sector, south of Route 379. More widely dispersed homes are located in the hilly northern sector of the estate. Two commercial fishers were residing in the area in 2004. One fished on a full-time basis for coastal pelagics, bait, whelk, reef fish, and lobster.

Residential Area in Agnes Fancy

Altona

Altona is a residential area located just north of Frenchtown. The estate includes two sections: Wellgunst and Demerara. Observation in each area revealed numerous single-family homes and multi-family dwellings. Closely spaced homes built on sloping hills north of Highway 30 characterize much of the area. Some retail and service businesses are located along the main road.

Eleven commercial fishery participants were residing in Altona at the time of this study. Most reported Frenchtown as their homeport. This group was using 304 traps in 2004. Of those eleven participants, nine were interviewed during the fisher census of 2003-2004. Seven reported full-time status, and five of those persons indicated ongoing pursuit of reef fish with

traps, and coastal pelagic species with a variety of gear. Four individuals from this estate indicated involvement in the lobster fishery.

Contant

Contant is a densely populated area situated just east of Lindberg Bay Estate. Heavily trafficked Highway 30 is the area's primary thoroughfare, and there are numerous businesses located here. Most of the residential neighborhoods are located adjacent to Highway 33, as it climbs toward Crown Mountain. Six commercial fishermen reported Contant as their place of residence in 2004. Each of these participants used an average of 32 traps that year.

Neighborhood Scene in Altona/Wellgunst

Hillside Homes in Altona/Demerara

Frenchtown

Frenchtown has long been considered a fishing community. Immigrants from St. Barthelemey settled in small shacks near the waterfront in the 1870s, where they subsequently based their fishing operations. The French community remained distinctive through use of a French-English *patois*, adherence to Catholicism, and by maintaining ties to residents on St. Bart. The adjacent population of persons of Afro-Caribbean ancestry, meanwhile, has long spoken an English-Dutch Creole (Johnston 1987), and has tended to practice Protestantism.

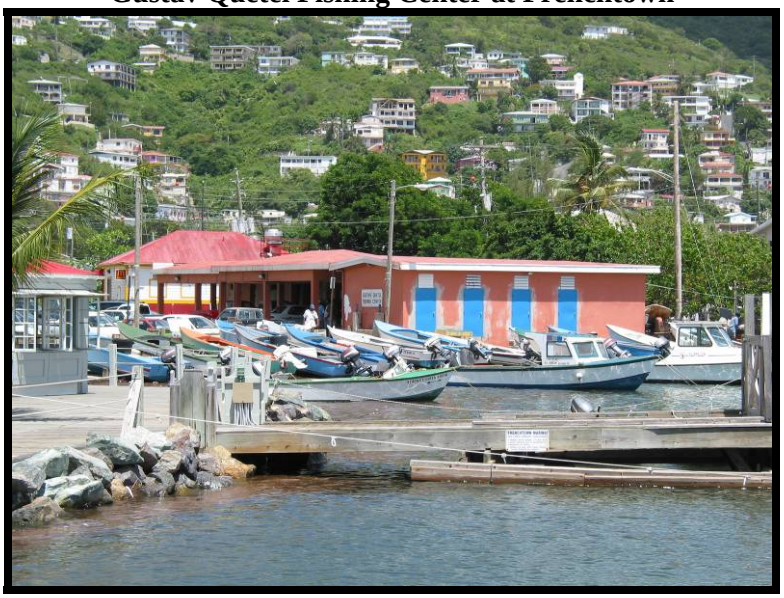
While many "Frenchies" continue a unique way of life, the population itself is increasingly scattered throughout the island, and modern influences from the Continent have gradually and unavoidably led to certain socio-cultural changes. As discussed further along in this report, many fishermen in the Frenchtown area lament regulatory changes in the region's marine fisheries, arguing that external management strategies are unnecessary given what they believe are healthy fish stocks.

Frenchtown is a major port for the island's fishing fleets. Small boats are pulled onto shore and larger vessels are anchored in the bay or along one of the various piers in the area. The Frenchtown market (Gustav Quetel Fishing Center) is the primary fish market on the island. The government-owned building in which the market is located has locking storage spaces available for lease to fishermen for storing gear. Some operators own freezers for storing seafood in the building. The large fish-cleaning area is a busy place in the mornings. The market is busiest on Friday and Saturday mornings when trade can begin as early as 4:00 am. Fishermen can often be observed socializing near the market.

The residential area east of the marketplace is where many of the French fishers were raised and continue to live. Several businesses are located in the area, including numerous restaurants, convenience stores, and other businesses serving both locals and tourists. A ballpark and historical museum are also located east of the market. The museum chronicles Frenchtown history, and displays fishing artifacts from the past.

Frenchtown is the site of several fishing-related festivals throughout the year. One of the largest is the Father's Day Fishing Tournament. Anglers from all over the island take part, and several community organizations contribute. These include Frenchtown Civic Organization and Community Betterment for Carenage. The Catholic Church, which is a few blocks to the east and up the hill from the market, also plays a central role in the community as many of the residents are Catholic. A Mother's Day fishing tournament is also held each year in Frenchtown.

Gustav Quetel Fishing Center at Frenchtown



Fifteen commercial fishery participants were living in Frenchtown at the time of this study. Twelve individuals were included in the fisher census of 2003-2004. Ten of these fishermen reported operating on a full-time basis. Only one individual from Frenchtown indicated involvement in the lobster fishery. Most fishermen residing in Frenchtown use handline gear to pursue coastal pelagic and reef fish from relatively small vessels. Two resident fishermen pursued reef fish species with traps during 2004.

Frenchtown Historical Museum

Hospital Ground

Hospital Ground is the vernacular name for an area located along Highway 35 just northeast of Charlotte Amalie. This is a densely populated residential area. An old hospital building is

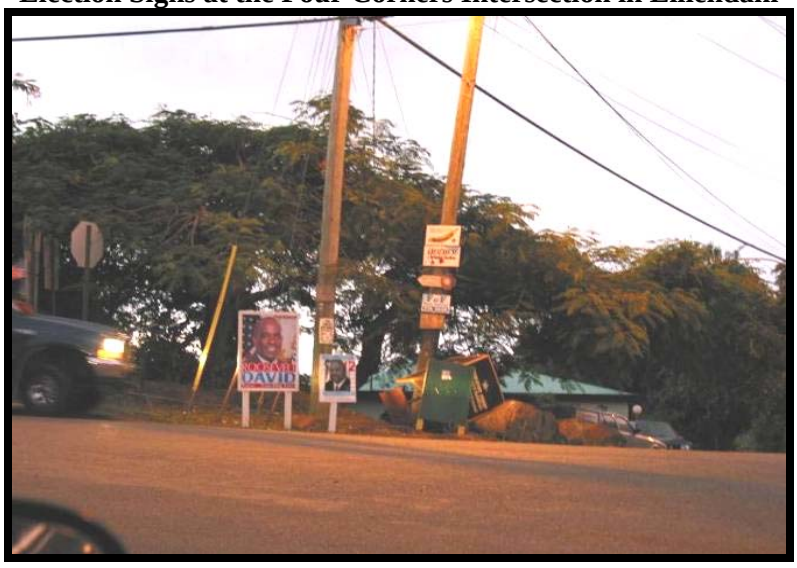
located here, though it now houses various clinics and other health-related organizations rather than an actual hospital facility. There are a number of retail facilities located in the area, including a popular vegetable market. One commercial fisherman lived in the Hospital Ground estate during the time of this research.

Vegetable Stand in Hospital Ground

Lillendahl

Lillendahl is a small estate located high in the mountains above Charlotte Amalie. The residential area is near the highly trafficked intersection of Highways 40 and 33 called "four corners." Dense vegetation often obscures the steep drives that lead to residences scattered along both the northern and southern slopes of ridgeline. There was one commercial fisherman residing in this estate in 2004.

Election Signs at the Four Corners Intersection in Lillendahl



Lindbergh Bay

Lindbergh Bay Estate is located just north of the international airport, about five miles west of Charlotte Amalie. The estate stretches from water's edge to high in the mountains above. Highway 30 runs along its southern border, while Highway 33 forms its northern boundary. The estate is residential in nature, but sparsely populated. There are numerous retail and service businesses situated along Highway 30. This is home to the University of the Virgin Islands, which overlooks Lindbergh Bay and the Caribbean Sea.

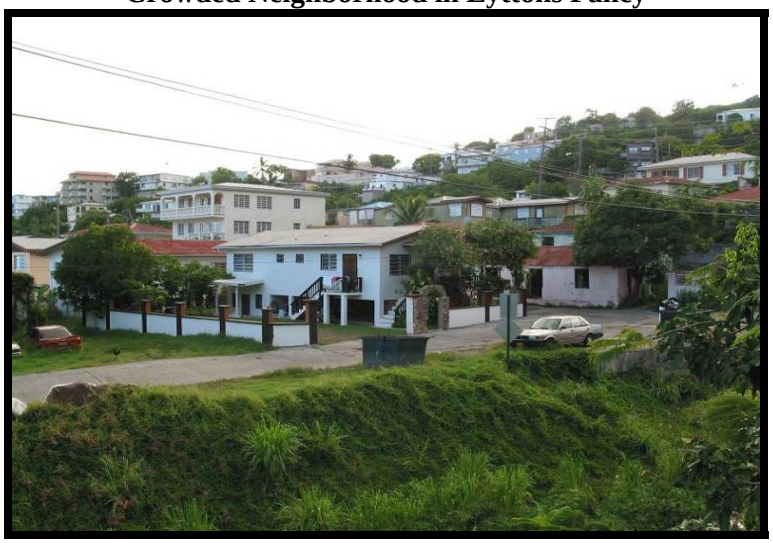
View of Residences in Lindbergh Bay from Brewers Bay Road

Five fishers were resident in the Lindbergh Bay area at the time of this study. Their vessels ranged from 16 feet to 46 feet in length. Two of these individuals moor at the Coast Guard dock, while others list Frenchtown and Villa Olga as their homeports. The captain of the largest vessel employed four crewmembers. Resident commercial fishermen used a total of 136 traps during 2004. Of those five fishers, only two were represented in the fisher census of 2003-2004, one reported full-time status, and the other part-time; both fished for reef fish and one reported pursuing coastal pelagic species.

Lyttons Fancy

Lyttons Fancy is a small but densely populated subdivision just north of Charlotte Amalie. Single-family homes and multi-family dwellings are situated in close proximity here. Highway 35 transects the estate on a north-south axis. One commercial fishing license holder was residing in this estate in 2004.

Crowded Neighborhood in Lyttons Fancy



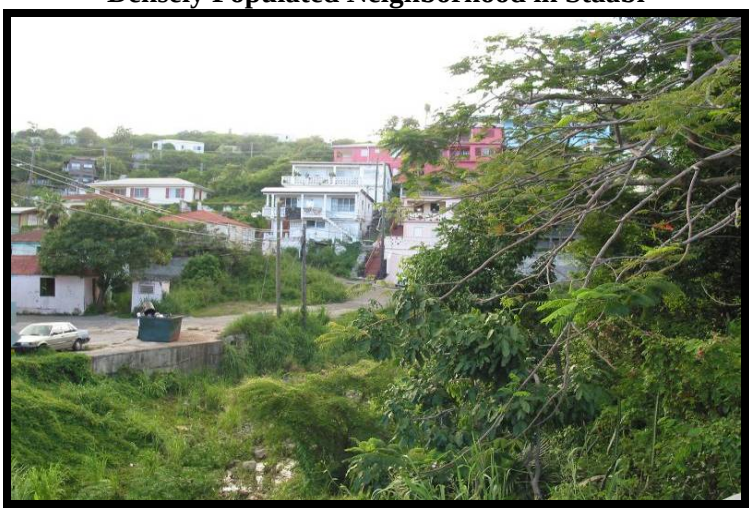
Solberg

Solberg is located high in the mountains above Frenchtown. The estate is just south of the Mountaintop area. The southern half of the estate is the more densely populated area, while homes in the northern part are relatively well dispersed along narrow mountain drives off Highway 33. Three commercial fishermen were residing in Solberg at the time of this study. Their vessels ranged in size from 13 to 32 feet in length. Captains used moorings in Frenchtown, Hull Bay, and an area called Sandfill. A lone (very busy) captain used 463 traps in 2004. Three fishers were part of the 2003-2004 census and two considered themselves to be full-time. Coastal pelagics and reef fish were the most commonly fished species by both full-time fishers.

Staabi

Staabi is a small, densely populated estate on the steep hills just northwest of Charlotte Amalie. While the area is primarily residential, there are also several hotels and other service and retail businesses here. Two commercial fishers were living in Staabi in 2004, but were not fishing by 2005.

Densely Populated Neighborhood in Staabi



Estate Thomas

Estate Thomas is a residential area located just east of Hospital Ground. The estate is sparely populated in its northern sector, with more closely spaced single and multi-homes in its southern portion. Several retail and service businesses are located along Highway 38. Two commercial fishers were residing in Estate Thomas in 2004. One uses longline gear for coastal pelagic species.

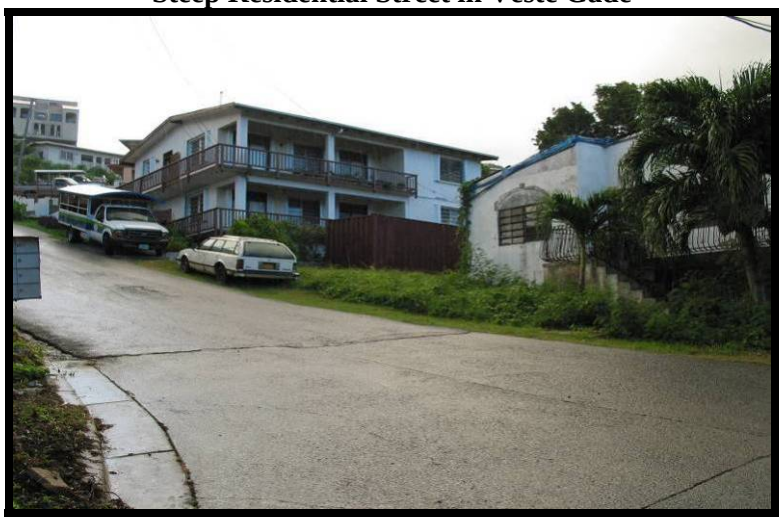
Homes in Estate Thomas

Veste Gade

Veste Gade is a densely populated area near Queens Quarter in Charlotte Amalie. Housing is both single and multi-family, and dwellings are very closely spaced along the steep, narrow

roads just to the northwest of the city. One commercial fisher resides here and moors his boat in Frenchtown.

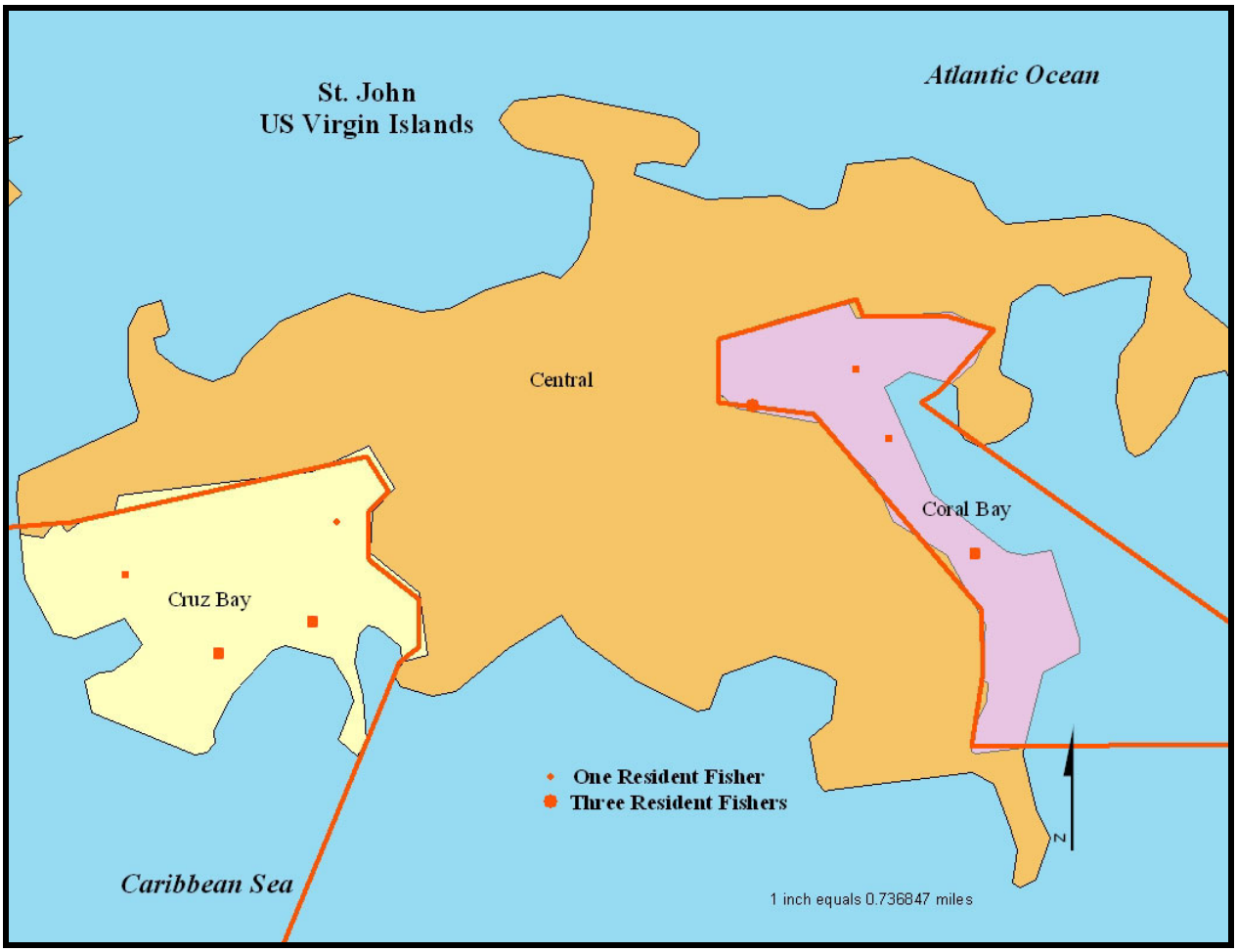
Steep Residential Street in Veste Gade



Estates on St. John

Relatively few commercial fishery participants were residing on St. John at the time of this study. Eight were residing in the Cruz Bay District on the west end of the island, and eight in the Coral Bay District, along the east end of the island Individual fishermen and fishing families are scattered throughout the island, but most engage in artisanal and subsistence-oriented fishing and are not easily identifiable. The spatial distribution of known commercial license holders residing on St. John is depicted in Figure 3-3 below.

Figure 3-3 Residence Patterns of Commercial License Holders on St. John



St. John encompasses 19.61 square miles of land. With 4,197 residents enumerated by the 2000 Census, the population density was at that time about 214 persons per square mile. The Virgin Islands National Park encompasses two-thirds of the island. Tourism is now the primary source of revenue in what formerly were plantation-dependent communities on St. John.

There is notable disparity in socioeconomic status between Continentals who have purchased land and homes on parts of St. John, and long-term residents subsisting in small communities such as those along the Cruz Bay and Coral Bay. For instance, 92 households in the Cruz Bay area reported total annual incomes of less than $5,000 during the year 2000 Census, while 167 households reported incomes of more than $75,000 in the same enumeration district.

Cultural differences between the populations are similarly notable. There is a strong West Indian presence in many of the small communities, and various cultural traditions, including nuance of language, distinct customs, and subsistence-oriented lifestyles are common. This is juxtaposed against the typical cultural patterns and social norms exhibited by often affluent members of

Continental society who have purchased second homes on St. John. Tourists from around the world add further complexity to social interactions in the communities.

Regular ferry service is available from St. Thomas; the voyage takes 20 minutes. A network of paved and unpaved roads winding through the mountainous terrain connects population centers to various bays, coves, and beaches. Cruz Bay is the main town and site of the ferry landing.

As enumerated by the year 2000 Census, 57.6 percent of St. John residents were black, and 38 percent were white. Less than one percent of residents reported Hispanic or Latino ethnic backgrounds.

Approximately 3,260 or 77 percent of all residents over the age of 16 were active in the workforce at the time of the Census. The unemployment rate was quite low at 2.8 percent. Many residents commute to jobs on St. Thomas. Only 14 persons reported employment in the natural resource extraction industries. Most workers held jobs in arts, entertainment, recreation, accommodation and food services (23.3 percent), construction (nearly 9.8 percent), and retail trade (nearly 7.7 percent). Median household income in this district was $32,482. Some 18.5 percent of all residents were living in conditions of poverty, and single females maintained 27.3 percent of families.

A total of 1,735 housing units were enumerated in this district. The median value of occupied homes was $246,311, though again, the value of what are often palatial second homes pushes the median well beyond the value of many of the small cottages typical in certain of the areas. Owners occupied just over 47.7 percent of housing units, with nearly 52 percent occupied by renters. Median monthly rent was $670. Many homes on St. John are seasonally vacant.

Cruz Bay

Sandy beaches, sea grapes, palms, and other trees and shrubs surround Cruz Bay harbor. A few commercial fishing vessels anchor just offshore. Other vessels are kept nearby, including sailing and sport/recreational vessels, workboats, and ferries near the ferry docks. The area surrounding the harbor is the primary business district for the island. The streets that climb the steep slopes are replete with businesses, including restaurants, various retail shops and other types of commercial enterprise.

There are two areas on St. John where fish are commonly sold to ‘walk up’ customers. One is located near the Customs house in Cruz Bay. A fish cleaning area is located nearby. Fishermen come in from the ocean at various times of the day, with most arriving near mid-afternoon. A second location in Cruz Bay is near the government parking lot across from the post office. A scale hangs from a tree here, and fishermen weigh and sell fish from their coolers.

Eight commercial fishermen were residing in the Cruz Bay area at the time of this study. Vessels range from 21 feet to 33 feet in length. All participants report using hook and line gear during some part of the year, though other gear types are used opportunistically. Four fishers were interviewed as part of the 2003-2004 DFW census. All reported full-time status. Coastal pelagic

species were pursued by most, and deep-sea pelagic species were pursued by two of the fishermen. One reported fishing for deep-water snapper and conch.

Fishing Vessel in Cruz Bay Harbor

Coast Guard Building at Cruz Bay Harbor

Coral Bay

The Coral Bay shoreline varies from muddy flats to grassy banks with large mangrove trees. Rocks and other bathymetric features here can challenge mariners. There are small piers near the village and at Calabash Boom on the west shore. Several small enclaves of retail businesses serve residents and visitors. These include restaurants, retail shops, and small grocery sores. The business area is far less congested than that surrounding Cruz Bay.

Fishing Vessel Moored in Coral Bay in 2004

Eight commercial fishers were residing in the Coral Bay area at the time of this study. Their vessels range from 11 feet to 34 feet in length. The operators claimed homeports in Coral Bay, Calabash Boom, Fish Bay and Johnson's Bay. The majority use hook and line gear. Of the eight, three were interviewed during the course of the DFW census. All reported full-time commercial status. Two of the fishers reported pursuing coastal pelagic species and reef fish. One fisherman was involved in the commercial lobster fishery.

Fisher's Yard in Coral Bay

3.3 The Fish Markets

According to Kojis (2004), 28 percent of harvesters residing on St. Thomas and St. John sell their fish at point of landing. The author lists 18 such locations and tabulates the number and frequency of fishers who reported using each site. Given the importance of this information vis-

à-vis our interest in geographic distribution of fishing-related activity, we reproduce the table below.

Table 3-1 Landing/Marketing Sites on St. Thomas and St. John

St. Thomas Landing/Marketing Sites	# Fishers Reporting Use	Percent Using Site
Frenchtown	31	33
Hull Bay	15	16
Benner Bay	8	8.5
Seaside Inn, Benner Bay	7	7.4
Water Bay	8	8.5
Krum Bay	6	6.4
Mandahl Pond	3	3.2
Redhook	3	3.2
Coast Guard Dock	2	2.1
Brewers Bay	2	2.1
East Gregorie Channel	2	1.1
Trailered	1	2.1
Sapphire	1	1.1
AYH	1	1.1
Tropical Marine	1	1,1
Fish Hawk Marina	1	1.1
Piccola Marina Dock	1	1.1
Coki Point	1	1.1
Magens Bay	1	1.1
Crown Point Marina	1	1.1
Cruz Bay, St. John	1	1.1
Kill Bay	1	1.1
Cuelebra, Puerto Rico	1	1.1
Total # Respondents	94	105.7
Total # Responses	99	--
St. John Landing/Marketing Sites	**# Fishers Reporting Use**	**Percent Using Site**
Cruz Bay	5	45.5
Coral Bay	4	36.4
STJ	1	9.1
Hansen Bay	1	9.1
Trailered	1	9.1
Number of Respondents	11	109.2
Total # Respondents	12	--

Source: Kojis (2004:44)

Marketing activity at most of the sites above leans toward relative informality. The fisher will set up "shop" at the boat or docks, or on the tailgate of his truck, weigh the fish on a small scale, and negotiate with the prospective buyer. Such markets tend to be accessible primarily to those who know when and where to look, and most markets are transient. On any day of the week, one may (or may not) find one or more trucks with tailgate down, and fisherman displaying goods for sale at landing sites around the island.

But some fishers distribute their catches on a somewhat more formalized basis at one of the five sites dedicated to seafood marketing on the island of St. Thomas, or at one of the two such sites on St. John. These are also regularly frequented by other vendors selling vegetables or cold drinks. These relatively fixed markets are the principal descriptive subject of this section. As

noted previously, the largest, busiest, and most fixed location on St. Thomas is the marketplace in Frenchtown.

Regardless of venue of sale, most fish are sold whole and un-iced on St. Thomas and St. John, although there will usually be someone available to clean (scale and gut) the fish for $1.00 per pound (up from $.60 cents per pound when IAI conducted its research on St. Thomas in 1996). Fish cleaning is its own sub-industry. A pier behind the Frenchtown marketplace serves as a fish cleaning station. Ten or more individuals, some women, can be observed cleaning fish on any given busy morning at the fish market.

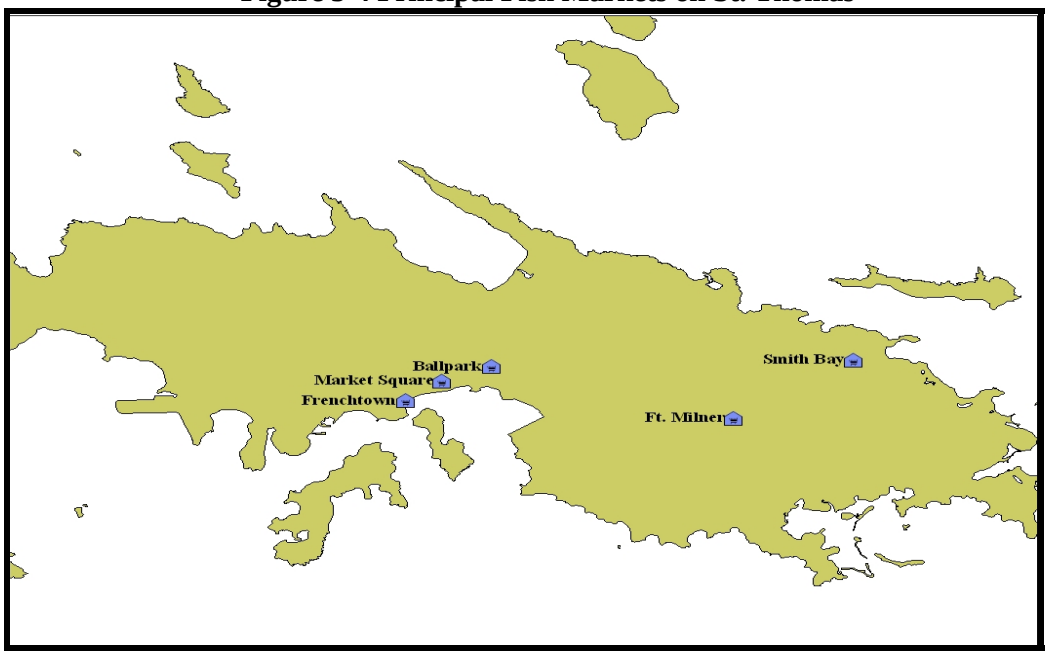
Pricing was observed to be unusually monotonic in comparison to markets in other regions of the country, where prices often vary dramatically between species. During periods of field observation in 2004, the market price for many available species was around $4.00 per pound (e.g., those in the snapper/grouper complex). Some species were slightly higher or slightly lower in cost, and one or two were significantly higher (e.g., lobster, which was around $8.00 per pound). But generally speaking, variation in prices was minimal, thereby ensuring relatively stable market conditions for those investing labor and fiscal capital in the harvest sector.

Our observation of relatively monotonic pricing can be validated through review of Holt and Uwate (2004), who analyzed market prices between St. Thomas/St. John and St. Croix for the period 1974 through 2004. Of note, prices between the island districts have tended to become increasingly similar over time.

Although seafood is often provided to a particular market by the same fisherman or group of fishermen, this can vary from day to day. Fishers who live and moor in the Frenchtown area tend to sell from the Frenchtown market. But they will send or transport fish to other marketplaces around the island if there is surplus at the Frenchtown market. Fishers from the Northside are more likely to frequent markets other than those in Frenchtown. Generally speaking, fishermen have developed some attachment to place of marketing and associated clientele, but they are also opportunistic and often exhibit much business savvy.

Some fishers enjoy ongoing business relationships with seafood buyers from local restaurants. Demand can fluctuate in relation with the arrival of tourists on the island, and the presence of cruise ships is a good indication that certain fishers and chefs are busy around the island.

Figure 3-4 Principal Fish Markets on St. Thomas



The Smith Bay Market

The Smith Bay market is located along Highway 38 at the busy intersection with Highway 384 east of Coki Point. Locals and motoring tourists frequent the area's numerous restaurants, convenience stores, and gas station. The situation can create considerable congestion here. But the traffic also makes for good business for the fishers who market their goods here. There are usually two or three trucks here, with tailgates down, their owners selling seafood or vegetables. Fish cleaners are typically at the ready nearby. Many West Indian residents purchase their seafood at this location.

Fishers Setting up Shop at the Smith Bay Market, Late Summer 2004

Fort Milner

The Fort Milner market is situated on a busy corner of Highway 38 in Estate Tutu. It is surrounded by shopping malls and retail areas, and considerable traffic occurs here throughout the day. Fishermen frequent the site, most arriving during late morning or early afternoon. Fish cleaners may or may not be available here, and though the fishermen-marketers tend to avoid cleaning the fish, if pressed they will typically accommodate the customer.

Selling Fish at Fort Milner

The Ballpark Market

The "Ballpark," as this market is commonly called, is located along Highway 35 just northeast of Charlotte Amalie. The Lionel Roberts Stadium is adjacent. Depending upon the time of year

and availability of fish, Northside fishermen will typically focus their marketing activities in this densely populated residential district.

Fish Market at the Ballpark

Market Square

Market Square is located in the central business area of Charlotte Amalie. Parking is hard to find here. Depending on availability of space, from one to three fishermen sell seafood from this area each day of the week, with the exception of Sunday. Other vendors are often nearby, selling vegetables. Traffic can become quite congested as cars enter the square from all directions, with motorists often slowing down to view market wares and prices.

Market Square in Charlotte Amalie

Frenchtown Market

As noted above, Frenchtown is the primary seafood marketplace on St. Thomas. As many as ten or more fishers sell their catch here on many mornings. Buyers come as early as 4:00 a.m. to get the best catch of the day, and vendors often stay until late in the afternoon. The Frenchtown market is busy most every day, and the fishermen-marketers tend to benefit from the fact that the general area is busy. Restaurant patrons and persons shopping at local businesses often pass through the area. The market area is usually busiest in morning, with a lull in the early afternoon. Late afternoons and early evenings once again become busy as fishermen prepare for the night's fishing or return from a long day on the water.

Frenchtown Market on a Saturday Morning

In addition to fish being sold at the various markets, fishers also sell directly to restaurants and to individuals who have a standing weekly order of fish. This is quite common in the Charlotte Amalie area. Kojis (2004:48) reports that about 20 percent of the commercial fishers responding to the census reported selling their catch to restaurants. According to some fishers, this venue is increasingly competitive.

St. John Markets

There are three principal fish markets on St. John. The most frequently used area is adjacent to the Customs house in Cruz Bay. A fish cleaning area supports the marketplace, which itself is located in a small open-air shed. Fishers set up their operations here at various times of the day, though most arrive during the mid-afternoon hours after fishing during the morning hours and/or the previous evening.

A second marketing area, also in Cruz Bay, is located in the government parking lot across the street from the Post Office. A scale hangs from a tree here, and individual fishermen tend to sell fish and shellfish stored in large coolers.

Finally, there is a small operation in Coral Bay. A few commercial and artisanal fishermen market seafood in this area from a small grocery store. St. John does not have an 'official' fish market similar to that the Frenchtown market on St. Thomas.

3.4 Toward Identifying Fishing Communities on St. Thomas and St. John

The purpose of this section of the report is to aid understanding of "community" as it is experienced by fishery participants residing in the estates and larger districts around the islands. We seek to describe aspects of commercial fishing as practiced in this region in a way that will shed light on the nature and bounds of local community life.

But this is challenging for several reasons. Perhaps most significantly, the real meaning of "fishing community" is probably best applied to groups of persons who work together on a regular basis to conduct the various aspects of commercial fishing operations. This form of interaction does not necessarily relate to an estate or district. Indeed, "community" may occur at sea or in the place of mooring or marketing. Where fishers reside, and the relative contribution fishing makes to the economies of specific estates or districts, can often be largely superfluous to the experience of community as enjoined by the actors. Further, although it is very often the case that fishing contributes relatively few jobs and little revenue to the estates and districts in question (as was noted earlier in this section), it can nevertheless be an extremely important activity in cultural and dietary terms, and in terms of the absolute subjective experience of the participants. Finally, perhaps the most significant economic aspect of fishing in this setting occurs at the level of the household, and at that level of consideration fishing and related income can be critically important.

There do appear to be some physical places where fishing-related community experiences are demonstrably important. We have discussed marketplace as a place of fishing-specific social interaction. This section of the report elaborates on those estates and districts in which fishing related activity is demonstrably important in the social experience of residents. Using data derived from observation, ethnographic interviews, and various archival data, we attempt here to initiate depiction of boundaries around those aspects of physical places that are most meaningful to fishers and fishing families on St. Thomas and St. John.

Signs of Change

Many of the St. Thomas fishers who were interviewed for this research are descendants of French immigrants arriving from St. Barthelemey or St. Kitts over the last few generations. As noted earlier, Shaw (1935) described a group of French fishers as culturally distinct within the larger Caribbean Basin. Johnston later (1987) reaffirmed that the French settlers maintained tight ethnic boundaries through various mechanisms such as religion, the specialized occupation of fishing, and marriage within French families only. Such mechanisms ostensibly maintained the cultural patterns noted on St. Thomas.

In reiteration, the "Frenchies" living in the urban areas of the Southside historically focused their activities at the main fish market in Frenchtown. Fishers of French descent living in the more rural areas of the Northside tended to fish on that side of the island, and primarily for household consumption or trade and barter with friends and neighbors. It was not until the advent of tourism in the1960s that demand began to increase and transportation improved so that fishers in rural areas (Northside) or on St. John and the British Virgin Islands (BVI) could more easily compete for a consistent share of the fresh fish market (Johnston 1987).

Older fishers interviewed during the course of this study reaffirmed that Frenchtown was originally *the* "fishing community" on St. Thomas. This center of fishing activity was augmented by market and harbor infrastructure, and a fleet of fishermen who did little else besides fish. Meanwhile, Northside fishers were portrayed as part-timers, for they were also farmers. This perception of two fishing communities persists today, and fishers often frame various problems and issues within the context of that division. Signs of such perceptual partitioning are further evinced in fishing-specific celebrations held annually on the island. A big Northside tournament is held on Bastille Day, and a Father's Day Tournament is held in Frenchtown. Although the participants report a general feeling of friendly competition, community pride is notable, and there is a strong sense of community affiliation for the victors and their supporters.

While these somewhat amorphous communities may exist in the minds and experiences of fishers and other islanders, it is difficult to draw discrete boundaries around either one. For instance, as noted previously, some Northside residents actually moor in and fish from Frenchtown, and trailering small vessels from one's home estate to point of departure at a boat ramp is not uncommon. Socio-political, economic, cultural, and demographic changes have over time produced a more complex situation than existed in the past. In the contemporary setting, for example, part-time work in the tourism or service sectors can serve to bring fishermen - once separate groups - into situations in which they wouldn't otherwise interact. Cultural differences between Continentals and islanders, and situations in which islanders benefit through coalescence can also tend to blur distinctions of the past. Observation of recent fishery meetings makes this quite clear: island fishermen of various ethnic backgrounds have tended to present a single voice in opposition to management strategies perceived to have the potential of constraining local operations. That voice is now often advanced through the St. Thomas Fishermen's Association, a group organized to protect the "natural heritage and culture" of fishers on the island.

There are other indications of change as well. Holidays were often times when people from different families would gather together and visit informally, at times playing traditional music on the accordion or other instruments. Large gatherings of extended kin or dances could last all day. Today, these types of gatherings reportedly are no longer common and have been replaced by more formal celebrations. Northside fishermen may gather to play horseshoes at Hull Bay or spend a holiday picnic on Hans Lolik Island, but these are much smaller affairs that involve only close family or friends. The larger community gatherings of days past reportedly are now a rarity.

According to some informants, many people now seem to "be out for themselves," and the larger community does not assume the importance it did in years past. It also appears that the communities of Frenchtown and the Northside are increasingly less distinct and are no longer strictly French. One Northside fisherman commented that many newcomers have moved to the Northside in recent years. A similar remark was made by a Frenchtown fisherman when he was asked how his community had changed:

> "It is still close-knit and fishermen are still passing their skills to the next generation. It is still a very peaceful community with very low crime. [But the population of] Frenchtown is more mixed now than it was in the past."

Of course, there are other fishing-oriented groups on St. Thomas and St. John as well. The West Indian population is the majority population on both St. Thomas and St. John, and the group retains distinctive characteristics that hearken back to a history of within-group cooperative interaction, mixed participation in subsistence practices and the wage economy, and small, tightly-knit societies that share intimate knowledge of an old island culture. Sharing of resources continues to be common. Distinct groups of West Indian fishers were contacted during the course of the current research along the East End of St. Thomas and on St. John. A few members are well-respected among their peers as expert commercial fishermen.

Cultural aspects of West Indian society are also changing, largely in conjunction with influences and social forces arriving from the Continent and throughout the Caribbean Basin. Some West Indians are increasingly engaging the educational system and seeking economic ascendance in this manner. But opportunities are limited and low-paying jobs in the service sector and a perennially high cost of living continue to underlay various social problems. Again, the situation relates in part both to a long history of class struggle and to contemporary cultural processes.

A distinct population of dive and charter boat operators was also contacted during the course of this study. This group is closely associated with Redhook. Many participants are Continentals who have followed charter fishing opportunities to the Caribbean. Some islanders are also involved in the charter and dive fisheries. This group is discussed in limited detail later in this report, and we refer readers to our previous work on St. Thomas for a more complete discussion of the fleet (see IAI 1997).

"Fitting" Communities Given Island Realities

Here we seek to analytically "fit" patterns of estate residence into the larger districts, and gauge the resulting composite vis-à-vis existing definitions of fishing community. But we cannot force the analysis too completely since the boundaries in question are in actuality social constructs. That is, there are no hard and fast rules regarding community affinity, and indeed, as noted above, the trend appears to be toward a blurring of historic differences.

Again, there are geographic and operational considerations as well. For instance, full-time commercial fishers on St. Thomas and St. John spend a considerable amount of their time harvesting, offloading, and marketing seafood. In addition, they must prepare, maintain, and repair their vessels and gear, sometimes all within a twenty-four hour period. Some or all of those tasks are now undertaken in several different locations on the island that do not necessarily relate to residence or fishing related business. A fisherman may reside on the Northside, market his fish near the ballpark, homeport his vessel on the East End, and purchase gear or supplies in any number of locations. Given such considerations, we attempt to assign bounds on district communities with recognition that the realities of life on small islands always implies certain social and economic connections that supersede such distinctions.

We nevertheless proceed with the exercise. Based on discussions with a highly knowledgeable informant and life-long resident of St. Thomas who is very familiar with fishing on both islands, it became apparent that the islands can be divided in cognitive terms, based on vernacular regions that correspond closely to the previously described Census districts. Using a map of the islands, the key informant divided St. Thomas into four discrete areas (West End, Northside, East End, and Southside or "Town"). He further divided St. John into two discrete areas (West End and East End, incorporating Coral Bay and Cruz Bay, respectively). Table 3-2 below depicts the distribution of the commercial license holders across these areas, as per place of residence indicated in the commercial license data files. The table essentially summarizes the previously described patterns of residence.

Table 3-2 Number of Commercial Fishers Residing within the Larger Districts: 2003-2004 License Year

Larger Community Area	Frequency	Percent
St. John		
East End	8	4.6
West End	8	4.6
St. Thomas		
East End	41	23.7
Northside	53	30.6
Southside ("Town")	53	30.6
West End	10	5.8
Total	173	100.0

Source: Kojis (2004)

It is clear in examining Table 3-2 that the commercial participants are fairly evenly distributed across the larger subdivisions, with the exception of the West End. The largest concentrations of participants are in estates throughout the Northside and Town areas of St. Thomas - reflective of

the historic settlement patterns described above. A comparable number of fishers reside on the East End. Fieldwork revealed that many East End fishermen are of Afro-Caribbean ancestry, as are most of the fishermen on St. John.

Homeport Analysis

Using data from the USVI DFW, the designated homeports of St. Thomas commercial license holders were mapped, as depicted in Figure 3-5 below. Southside homeports are distributed from Frenchtown west to Brewers Bay. East End homeports extend from near Nadir Lagoon to Smith Bay. Northside homeports extend from Mandahl to Hull Bay. As previously noted in Table 3-1, Frenchtown is the most utilized port or place of mooring. The majority of fishers from Town keep their vessels there. Northside fishers keep their vessels primarily in Hull Bay, though some are also kept in Frenchtown and Seaside Marina. East Enders use Nadir Lagoon, Water Bay, and Coki Point. Frenchtown, Hull Bay, Nadir Lagoon, and Seaside Marina are the most popular homeports on St. Thomas.

Figure 3-5 Ports Used by St. Thomas Commercial Fishers

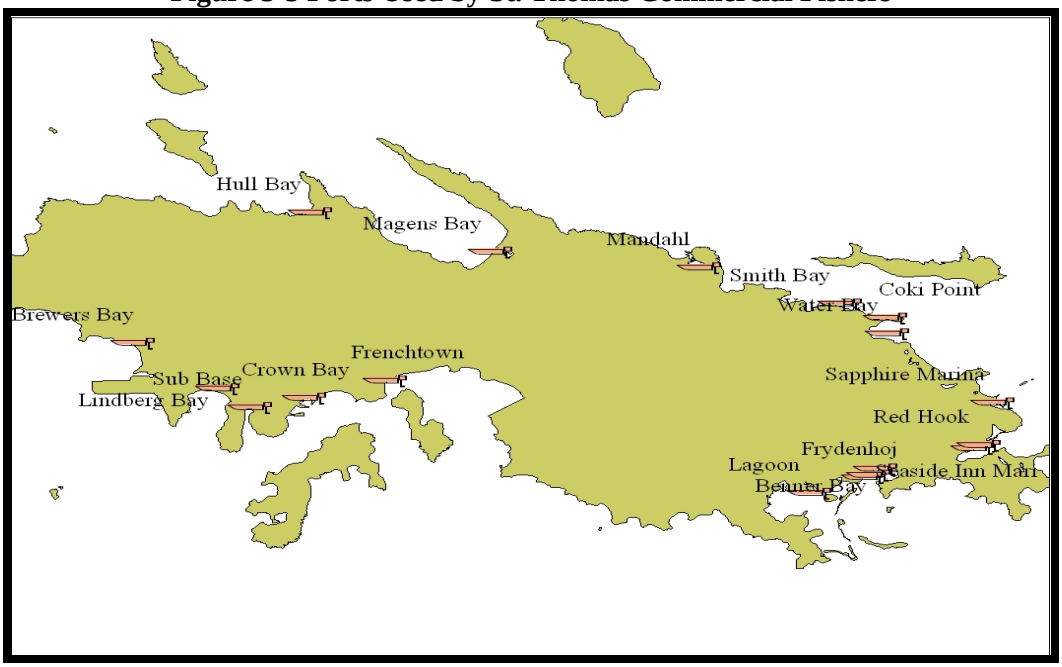


Table 3-3 Homeports by Larger Community Subdivision

Homeport	East End	Northside	West End	Town	Total
American Yacht Harbor	--	2	1	--	3
Benner Bay	--	--	--	1	1
Brewers Bay	1	--	1	--	2
Coast Guard Dock	--	1	2	3	6
Coki Point	5	--	--	--	5
Compass Point	1	--	--	--	1
Crown Bay	1	2	--	2	5
Cruz Bay	--	--	--	1	1
Frenchtown	2	8	3	28	41
Frydenhoj	1	--	--	--	1
Hull Bay	--	12	2	2	16
Kiddel Bay	--	1	--	--	1
Krum Bay	--	4	--	3	7
Lagoon	9	--	--	1	10
Lindberg Bay	--	--	--	1	1
Magens Bay	--	5	--	1	6
Mandahl	--	2	--	--	2
Redhook	1	--	--	--	1
Saga Haven Marina	--	1	--	--	1
Salt Pond	--	3	--	--	3
Sapphire Marina	--	1	--	--	1
Seaside Inn Marina	3	6	--	--	9
Smith Bay	1	--	--	--	1
Sub Base	--	--	--	2	--
Tropical Marine	--	1	--	--	1
Villa Olga	--	--	--	1	1
Water Bay	7	1	--	--	8

Gear Analysis

Given the importance of trap gear in the Caribbean, we provide the following table to depict residence pattern of those who are using such gear with the greatest frequency. Use of nets is clearly common among fishers on the Northside, but Northside fishermen also commonly use traps, with the exception of the winter months, when swells make their use more difficult. Handline gear is often used by Eastside commercial fishers, and by Frenchtown fishers. In fact, use of hand lines is common across the islands. Use of cast nets is also quite common (Kojis 2004:64). Most commercial fishers residing on St. John were using hook and line gear at the time of this study.

It is obvious, but we wish to make clear that while fishers on St. Thomas and St. John appear to exhibit affinity with use of certain gear in certain places, they are also opportunistic and switch between gear types over the course of the season as appropriate to the targeted species. Though size of vessel can limit the nature of one's operations, use of multiple gear types during a given trip is also not uncommon; for instance, some fishers will troll on their way to setting trap gear, or jig with handline gear on the way back to port. Conditions change continually and as harvesters maintain extensive knowledge of the resources and habitats, they adjust their

strategies accordingly. Finally, gear use may change over the years as per changes in interest, prices, resource availability, regulations, and so forth.

Use of traps remains a good overall indication of fishing activity by place of residence. In compiling the average number of fish and lobster traps reported for the larger districts, it was determined that Northside fishermen were using the greatest number of traps. Some 3,551 were reported in use for the fishing year 2000-2001. The Southside follows with 1,248, and the East End with 668. Westside-based fishermen used the least number of traps on average as reported for St. Thomas. Very few traps reportedly were in use for commercial purposes on St. John.

Table 3-4 Average Number of Fish and Lobster Traps Reported in Use During 2000-2001

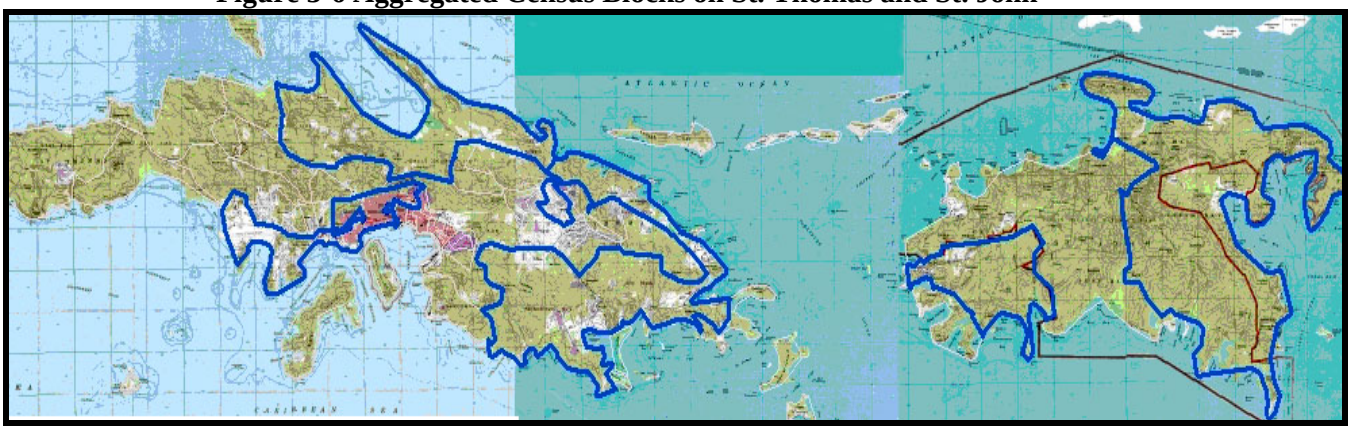
District/Region	Average Number of Traps
St. John	
East End	3
West End	--
St. Thomas	
East End	668
Northside	3,551
Town	1,248
West End	345
Total	**5,812**

Source: USVI DFW

3.5 Modeling and Bounding Fishing Activity in the Regions/Districts

We have sought to understand the distribution of fishers in the various estates, but in reality most fishery participants interact in a much larger area on a regular basis. Fishing-related activities are undertaken at one's place of residence, one's homeport, various market locations, fishing-related businesses, and other sites that in total typically encompass a larger geographic area than might be indicated by home estate. We note once again the need for flexible rather than rigid bounds in conceptualizing fishing-related activity in this island setting of limited acreage, but we also assert that patterns of activity can be (and were) observed and that these can be modeled and depicted geo-spatially.

Figure 3-6 Aggregated Census Blocks on St. Thomas and St. John



In order to conceptually bound our model of fishing-related behavior, we have aggregated census blocks to include those places that the previous analyses indicate are part of the fishers' daily routines. That is, for each island we aggregate those blocks that include residence, homeport, markets, and support industries typically used by fishers residing in the specific districts (Figure 3-6 above). We model three "communities" on St. Thomas and two on St. John. The aggregated blocks correspond to the vernacular and Census districts, but exclude sub-districts where other types of economic activity clearly obscures fishing-related activity, and areas where no fishers are resident. One benefit of using census blocks is that associated demographic data can be aggregated and used to supplement description of each community.

St. Thomas East End Candidate Fishing Community

There is a considerable amount of resort development on the East End of St. Thomas, and much economic activity here now relates to tourism. Just over 40 commercial fishers reside in the area. The East End encompasses ten of the island's home ports, and two of its marketplaces. It should be noted that fishers have been observed selling fish in the Redhook area, but this is relatively uncommon. There are several marinas in the district, including three in the Redhook area, and four near Nadir Lagoon. The Redhook area is the principal base of operations for the island's charter fleet, and quite obviously, much recreation-oriented fishing activity is supported here. Commercial fishing activity is also supported through various local businesses. These include a boat yard, engine repair service, electronics sales and repair service, and one of the principal suppliers of fishing gear - located near the American Yacht Harbor. Overall, East End fishermen reported 668 traps fished on average during the 2000-2001 fishing year.

The census data for the combined block groups along the East End suggest that this area closely resembles the island of St. Thomas in terms of its demographic profile (see Table 3-5). The population is largely African-American (Afro-Caribbean), with slightly higher indications of poverty than noted island-wide. Median income, value of owner occupied housing, and monthly contract rent are all slightly higher than for the island overall.

Figure 3-7 St. Thomas East End Candidate Community: Aggregated Block Groups

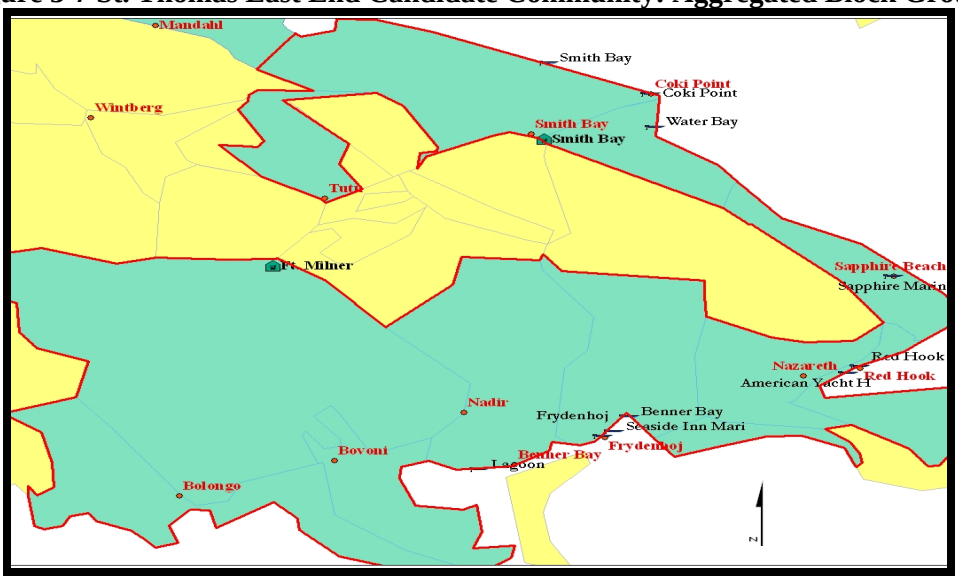


Table 3-5 East End Combined Block Group and St. Thomas Census Demographics

Factor	Eastside	St. Thomas
Total population	6,984	51,181
Gender Ratio M/F (Number)	3,420/3,564	26,819/24,362
Age (Percent of total population)		
Under 18 years of age	32	29
18 to 64 years of age	62	62
65 years and over	6	8
Ethnicity or Race (Percent of total population)		
White	13	12
Black or African American	76	77
American Indian and Alaskan Native	< 1	<1
Asian	1	1
Native Hawaiian and other Pacific Islander	< 1	<1
Some other race	1	<1
Two or more races	2	2
Hispanic or Latino (any race)	7	7
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	16	17
Percent high school graduate or higher	64	63
Percent with a Bachelor's degree or higher	18	17
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	N/A	N/A
And Percent who speak English less than very well	N/A	N/A
Household income (Median $)	30,039	26,893
Poverty Status (Percent of population with income below poverty line)	31	27
Percent female headed household	16	17
Home Ownership (Percent)		
Owner occupied	1111	41
Renter occupied	1582	59
Value Owner-occupied Housing (Median $)	220,557	176,354
Monthly Contract Rent (Median $)	632	538
Employment Status (Population 16 yrs and over)		

Percent in the labor force	71	69
Percent of civilian labor force unemployed	6	5
Occupation (Percent in workforce)**		
Management, professional, and related occupations	24	24
Service occupations	25	23
Sales and office occupations	26	30
Farming, fishing, and forestry occupations	1	1
Construction, extraction, and maintenance occupations	12	12
Production, transportation, and material moving occupations	13	11
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	<1	1
Manufacturing	2	2
Percent government workers	22	24

Source: U.S. Census Bureau 2000

Table 3-6 Factors Descriptive of Fishing Activity in the East End Candidate Community

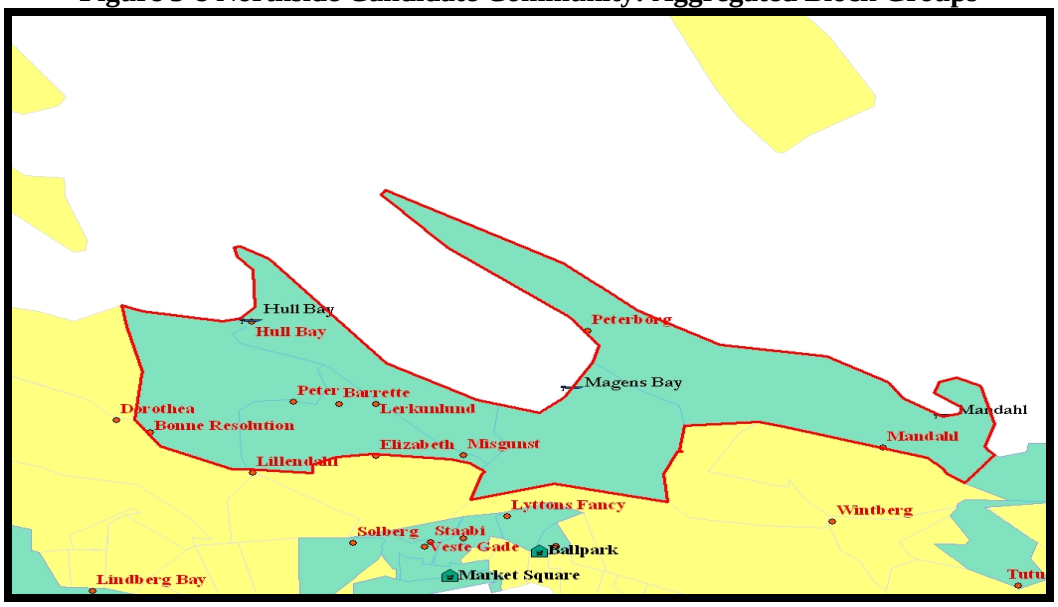
Factor	Value
Vessel Size (range in feet)	19 to 35
Number of Traps (2000-2001)	668
Markets	2
Marinas	6
Homeports	10
Related Support Businesses	4
Lobster Landings (lbs in 2001)	10,740
Reef fish Landings (lbs in 2001)	55,741
Pelagic Landings (lbs in 2001)	19,254

Of the resident East End fishers interviewed during the course of this study, almost all reported fishing both north and south of St. Thomas. Three used both traps and hook and line; two were strictly line fishers; and three fished traps only. One charter fisher resided in the area. Three of the fishers from the East End reportedly were impacted by recent MCD closures and two of those said they used to fish south of St. John in the area that is now restricted in association with the National Monument. One trap fisher indicated that he had to move his traps from the Red Hind MCD closed area (described in the following chapter). The sole charter boat operator was also affected by the Monument closure. He reported having favored the calm waters south of St. John during the winter when north seas were rough, and was now having to fish in a variety of areas he was not willing to disclose.

Northside Candidate Fishing Community

The Northside candidate community includes homeports from Mandahl to Hull Bay. Just over 50 commercial fishers were residing in the area at the time of this study. Many reported Hull Bay as their homeport, though when totaled, more reported homeports elsewhere in the district. No major support industries are located on the Northside. A few small businesses serve fishers incidentally, but the area is primarily residential. Seasonally-occupied homes tend to be interspersed with permanent residences.

Figure 3-8 Northside Candidate Community: Aggregated Block Groups



As discussed earlier, Hull Bay is the principal anchorage for many of the net fishers on the island, but traps are also widely used. Most resident fishers use small boats that can be trailered when needed, and thus there is some mobility in terms of points of departure and seasonally-visited grounds. Most large vessels owned by district residents are moored in Town or along the East End. The restaurant and bar located near the boat ramp at Hull Bay is a popular gathering place and focus of social interaction, as is the small store upslope from the Bay.

The demographic profile of the Northside candidate community (Table 3-7) is quite different from that of greater St. Thomas. Most residents here are of European ancestry, while most residents of St. Thomas are of African ancestry. Census data indicate that persons residing in the Northside estates report relatively higher levels of educational attainment and higher median household incomes. Median value of owner-occupied housing is also greater for the Northside, as is median contract rent. The percentage of persons in the labor force is greater, and unemployment lower than for St. Thomas overall. Finally, there is a slightly higher percentage of persons engaged in farming and fishing than reported for the island in general.

The majority of the Northside fishermen interviewed for purposes of the current project were married with dependents. Six of the fishermen held jobs in addition to fishing, and several indicated that rental properties supplemented their household incomes. Most of their spouses held jobs outside of the fishing enterprise, but at least two fishers said their wives assisted with fishing operations. The type of gear being used varied considerably. Eleven participants reported using traps, seven used handlines, five reported using nets, and one used longline gear. Again, gear use was also often mixed over the course of the seasons. All of the participants reported focusing their operations in the waters north of St. Thomas, but half also reported fishing south of the island. Two reported fishing south of St. John. One individual held a BVI permit and had fished those waters recently.

While most participants reported keeping their vessels on the north side of the island, several kept their boats in Frenchtown, and some docked on the East End. Conditions on the Northside are not conducive to 'homeporting' larger vessels; the bays tend to be exposed to Atlantic swells. The majority of Northside fishers interviewed indicated that they had not been heavily impacted by the MCD closure. Two individuals did, however, report being forced to move traps to an undisclosed alternative location as a result of the Monument closure south of St. John, and many expressed concern about the trend toward closed areas as an approach to managing fisheries in the region.

Fishers from the Northside tended to agree that theirs was still a cohesive community. But many also reported that the area had changed over the years as new residents, usually of non-French backgrounds, had moved into the area. Much of that change was attributed to residents of French ancestry selling some of their land to Continentals. New development has thus resulted. On the positive side, the Northside landowners have benefited as land values have increased over time, and as the island has become increasingly attractive to vacationers and other renters.

Table 3-7 Northside Combined Block Group and St. Thomas Census Demographics

Factor	Northside	St. Thomas
Total population	3344	51,181
Gender Ratio M/F (Number)	1711/1633	26,819/24,362
Age (Percent of total population)		
Under 18 years of age	20	29
18 to 64 years of age	73	62
65 years and over	6	8
Ethnicity or Race (Percent of total population)		
White	61	12
Black or African American	27	77
American Indian and Alaskan Native	< 1	<1
Asian	2	1
Native Hawaiian and other Pacific Islander	-	<1
Some other race	1	<1
Two or more races	4	2
Hispanic or Latino (any race)	6	7
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	6	17
Percent high school graduate or higher	86	63
Percent with a Bachelor's degree or higher	38	17
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	N/A	N/A
And Percent who speak English less than very well	N/A	N/A
Household income (Median $)	43,404	26,893
Poverty Status (Percent of population with income below poverty line)	14	27
Percent female headed household	20	17
Home Ownership (Percent)		
Owner occupied	50	41
Renter occupied	50	59
Value Owner-occupied Housing (Median $)	240,188	176,354
Monthly Contract Rent (Median $)	801	538
Employment Status (Population 16 yrs and over)		

Percent in the labor force	78	69
Percent of civilian labor force unemployed	2	5
Occupation (Percent in workforce)**		
Management, professional, and related occupations	39	24
Service occupations	13	23
Sales and office occupations	30	30
Farming, fishing, and forestry occupations	2	1
Construction, extraction, and maintenance occupations	10	12
Production, transportation, and material moving occupations	7	11
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	2	1
Manufacturing	2	2
Percent government workers	16	24

Source: U.S. Census Bureau 2000

Table 3-8 Factors Descriptive of Fishing Activity in the Northside Candidate Community

Factor	Value
Vessel Size (Range in feet)	12 - 39
Number of Traps (2000-2001 reporting year)	3,551
Markets	--
Marinas	--
Homeports	3
Related Support Businesses	--
Lobster Landings (lbs in 2001)	74,904
Reef fish Landings (lbs in 2001)	122,804
Pelagic Landings (lbs in 2001)	10,824

Most of those interviewed reported having other family members still living in the area and that much of their social life revolves around family and close friends. At a more general level, there was considerable pride taken in the Bastille Day fishing tournament as it reportedly is a time when the entire community comes together to organize and to celebrate. One fisherman spoke to the issue of community as follows:

> "We often mingle with others from the Northside. We will play horseshoes at Hull Bay or if someone has some concrete work to be done, we all pitch in to help."

Another Northside fisherman asserted that Hans Lolik was a popular picnic and camping site for many fishing families from the Northside. He was concerned for the future of the islet, as he had recently heard that it had been sold and was slated for new development. Because it had been used as a popular recreational area for so long, he thought the government should buy the property and preserve it.

One younger fisher commented that he liked having his family nearby, but enjoyed having the privacy of his own place. Another individual commented that many of the younger fishers of the Northside did not have the same respect for others that the older generation seemed to maintain.

They were eager to make money because they had mortgages and families to support and were not willing to cooperate with others. Thus, there are some indications that life is changing here. The same individual went on to say:

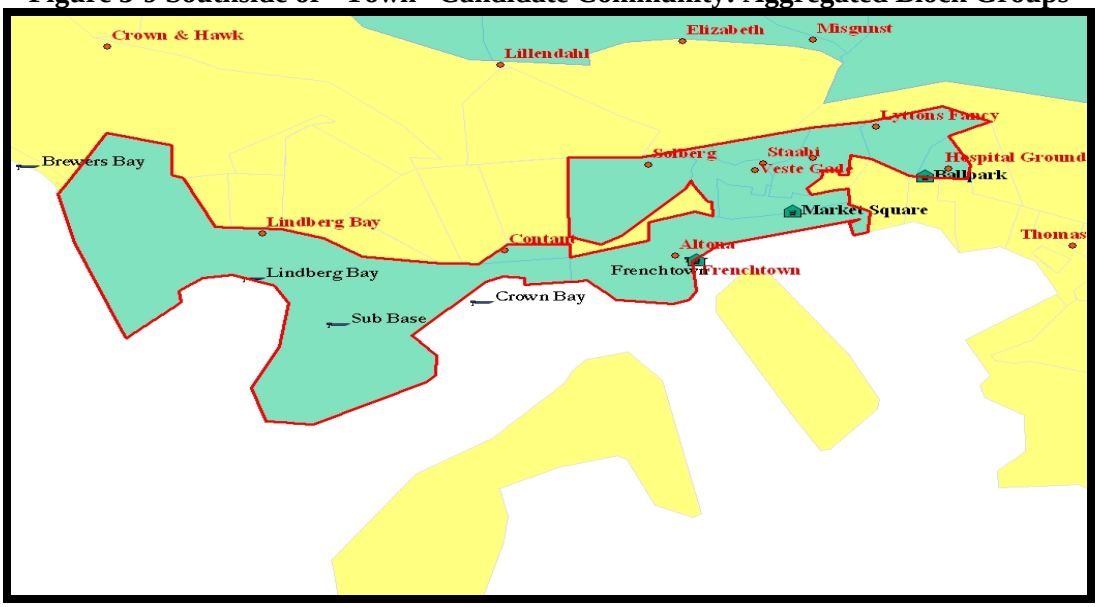
> "Fishermen never talk to each other anymore. The net fishermen do get together and talk with each other. They will share a large bunch of fish that one individual has caught. They are more family."

While most agree that their community has changed over time, residents contacted during this study asserted that they continued to see the Northside as interconnected and somewhat insulated from the rest of the island. As one individual said, "we live in peace and harmony here."

Southside or "Town" Candidate Community

The district commonly known as **"**Town" includes four of the homeport locations reported by commercial fishers, and three of the market locations. Most fishermen from the Southside homeport at Frenchtown, though a few keep their vessels to the west at Crown Bay. A few others moor at East End and Northside locations. The Southside is the most urban of the three candidate communities, and many fishers reside in and around Charlotte Amalie. There are two marinas here, and the cruise ship docks are based along the deep channels on the waterfront. Numerous retail and service related businesses are situated in that area, providing tourists with duty-free shopping, eating establishments, and so forth. There is some light industry around Crown Bay. Much of the residential area extends northward, along the steep slopes that overlook Charlotte Amalie.

Figure 3-9 Southside or "Town" Candidate Community: Aggregated Block Groups



As regards age and ethnicity, the demographic profile for the Southside area is similar to the island as a whole. But it differs with regard to other categories (Table 3-9). For instance,

Southside residents report relatively lower educational attainment, lower average household incomes, lower median value for owner-occupied housing, and lower contract rent. Moreover, a higher percentage of persons reported living in conditions of poverty, and more were living in renter-occupied housing situations. There are many more multiple-family dwellings and government subsidized housing arrangements here as well.

All but one participant interviewed from the Southside fished the waters south of St. Thomas exclusively. Three respondents reported having been affected by the Monument closure. One individual reported that political issues with the British Virgin Islands government forced him to stop fishing in those waters. The majority of those interviewed were handline fishers, though several also fished traps. Two individuals used traps exclusively. Two other informants indicated they engaged in some other form of work besides fishing. One worked in a service-related position on a full-time basis and fished during his off-time and weekends.

Table 3-9 Southside Combined Block Group and St. Thomas Census Demographics

Factor	Southside	St. Thomas
Total population	6,774	51,181
Gender Ratio M/F (Number)	3,222/3,552	26,819/24,362
Age (Percent of total population)		
Under 18 years of age	28	29
18 to 64 years of age	62	62
65 years and over	10	8
Ethnicity or Race (Percent of total population)		
White	7	12
Black or African American	80	77
American Indian and Alaskan Native	0	<1
Asian	1	1
Native Hawaiian and other Pacific Islander	0	<1
Some other race	0	<1
Two or more races	2	2
Hispanic or Latino (any race)	10	7
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	23	17
Percent high school graduate or higher	52	63
Percent with a Bachelor's degree or higher	11	17
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	N/A	N/A
And Percent who speak English less than very well	N/A	N/A
Household income (Median $)	21,525	26,893
Poverty Status (Percent of population with income below poverty line)	32	27
Percent female headed household	17	17
Home Ownership (Percent)		
Owner occupied	32	41
Renter occupied	68	59
Value Owner-occupied Housing (Median $)	152,584	176,354
Monthly Contract Rent (Median $)	487	538
Employment Status (Population 16 yrs and over)		
Percent in the labor force	66	69

Percent of civilian labor force unemployed	5	5
Occupation (Percent in workforce)**		
Management, professional, and related occupations	18	24
Service occupations	25	23
Sales and office occupations	31	30
Farming, fishing, and forestry occupations	1	1
Construction, extraction, and maintenance occupations	14	12
Production, transportation, and material moving occupations	10	11
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	1	1
Manufacturing	3	2
Percent government workers	23	24

Source: U.S. Census Bureau 2000

As is the case for other groups of fishers on the island, Frenchtown fishermen consider theirs to be a cohesive group. Yet they too discussed changes occurring during their lifetimes. Some of these are suggestive of increasing cultural homogeneity. One of the most often heard changes was that greater numbers of persons of other than French descent were now living in and around Frenchtown. One individual considered the influx of immigrants from the Dominican Republic to be partially responsible for what he asserted was increased drug and crime activity in the area. Another fisher reflected on changes that were more generational in nature:

> "As a boy, neighbors were family and we respected our elders . . It's different among today's kids. The community was very close knit. It was noted for its closeness, its bonds and ties. It has changed tremendously. This new generation doesn't have the discipline—they are rude and don't have that respect."

Even with the reported changes, all fishers interviewed considered Frenchtown one of the best places on the island to live. They considered it to be a cohesive community with many benefits, including the willingness of friends and family to help each another in times of need. The Frenchtown Community Organization, the Community for the Betterment of Carenage, and the Catholic Church were described as local organizations dedicated to the welfare of residents of Frenchtown- an additional indication of a community. Again, the annual fishing tournaments held here are important times of cooperative effort and celebration among residents.

Table 3-10 Factors Descriptive of Fishing Activity in the Southside Candidate Community

Factor	Value
Vessel Size (Range in feet)	13 to 40 feet
Number of Traps (Average reported)	1248
Markets	2
Marinas	2
Homeports	4
Related Support Businesses	3
Lobster Landings (2001)	10,899
Reef fish Landings (2001)	122,917
Pelagic Landings (2001)	2,607

Summary of St. Thomas Fishing Communities

We have identified three potential fishing communities on St. Thomas. Each varies considerably in terms of social, economic, and demographic context. Each reveals a mix of residential, retail, tourist, and service economies, and variable degrees of collective participation in commercial fishing. We cannot assert that commercial, charter, or other forms of fishing or related industries are dominant forms of industry in the districts, however. In fact, we must reiterate that the true value of fishing and fishing-related industry in this setting occurs at the level of the household and in the absolute experience and enjoyment of the fishing lifestyle by the participants.

Given that on average 74 percent of the total income of those surveyed during the 2003-2004 DFW census derived from commercial fishing (Kojis 2004:54), we cannot overstate the importance of commercial fishing to those involved. In fact, this is the best available indication of economic dependence on fishing in the region, and insofar as there is no discernible pattern in the geographic distribution of such dependent (or engaged) individuals (and families), we suggest consideration of other variables should one candidate community need to be prioritized above others. The East End is somewhat unique in economic terms in that a relatively high number of fishing-related support businesses are based here, as is the island's main charter fleet.

Each of the small groups of individuals who rely on fishing within the bounds of these candidate communities reside in areas with deep historical connections to fishing. The Northside district retains some of its historic distinctiveness, as does the Southside. The East End, too, retains strong connections with the past, with West Indian society and culture. Indeed, the latter has been difficult to penetrate in large part because that society remains intact and an important aspect of its culture is insularity or distinctiveness from the incursions and culture of the Continentals. As such, although a few West Indians operate charter vessels and relations between the groups are generally good, there are some significant cultural differences between the East End's commercial fishing contingent and the charter-fishing contingent at Redhook.

With the advent and subsequent growth of the tourism industry, each group has, in various ways, been affected by and variably responded to changing demographic conditions, economic forces, and cultural influences arriving from without. Table 3-11 below summarizes select factors examined during the course of this study as regards the nature of candidate communities on St. Thomas. Note that the scales we provide are intended as conceptual tools rather than hard and fast measures, as they are based on a qualitative and comparative assessment of relative degree of involvement across the districts, rather than on a quantitative-based absolute determination. But the scales are in fact truly straightforward: in all cases the fishers report extensive involvement in and dependence on fishing, and in only one case are there sufficient support businesses in an area to warrant a different assessment of community-wide dependence (viz., the East End).

Table 3-11 Summary Matrix of Candidate Fishing Communities on St. Thomas

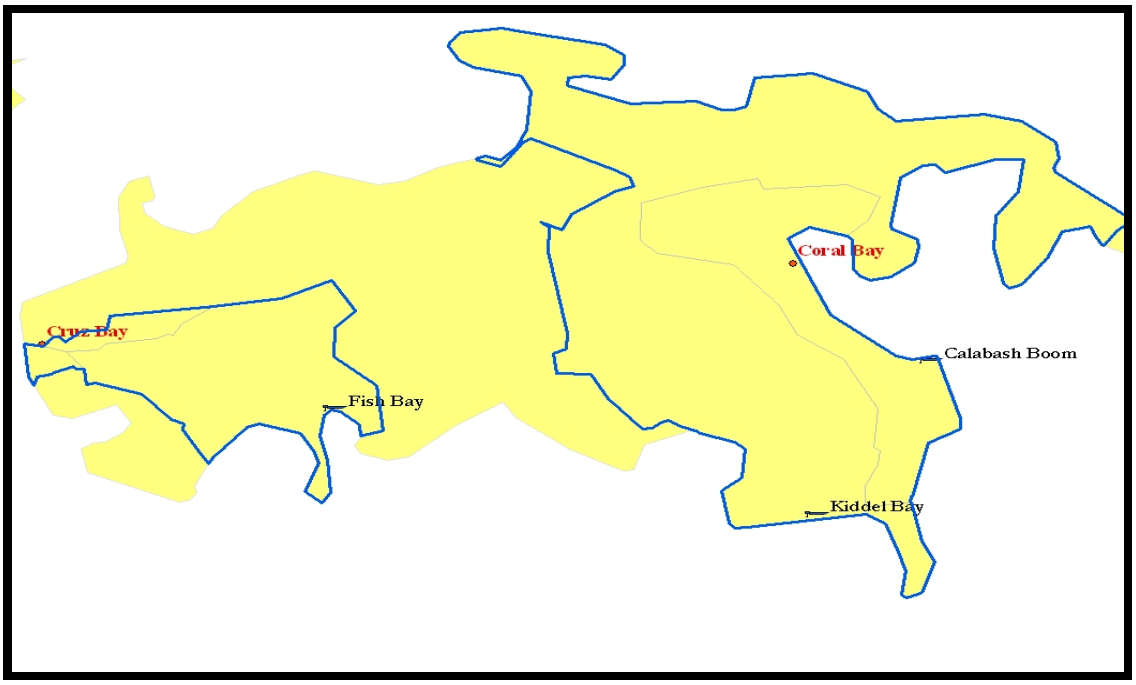
	Factor or Variable				
Community	Presence of Commercial Fishers	Fishing Support Businesses/Level of Support	Markets/ Level of Distribution	Industries/ Production Level	Degree of Economic Dependence
East End	N=41	Numerous	Two	Tourism/resort	Absolute dependence of group = High
	1% of resident population	High	Moderate	High	Community-wide Dependence = Moderate
Northside	N=51	Few	None	Tourism/resort	Absolute dependence of group = High
	2% of resident population	Low	Low	Low	Community-wide dependence = Low
Southside (Town)	N=53	Several	Three	Industrial/Urban Retail and Service	Absolute dependence of group = High
	1% of resident population	Moderate	High	High	Community-wide dependence = Low

St. John East End Candidate Fishing Community

Eight St. John commercial fishery participants reside on the East End, and three of the island's homeports are located here. The area is primarily residential in nature, although there are some retail and service oriented businesses scattered throughout the district.

One fisherman markets fish from his home near Calabash Boom. Another fisher from the East End was interviewed during this research but, due to issues of confidentiality under the rule of three, we are unable to provide a profile of his fishing activity.

Figure 3.10 East and West End Candidate Fishing Communities on St. John: Aggregated Census Blocks



As noted in Table 3-12 below, the demographic attributes of the East End candidate community of St. John are similar to those of the island as a whole. Exceptions include the ethnicity/racial background of residents, which indicates a higher percentage of persons of European ancestry than elsewhere, and median value of owner occupied housing and contract rent, both slightly lower than for St. John in general.

As can be discerned through review of Tables 3-13 and 3-14, and based on interview data, there is relatively less participation in commercial fisheries by East End residents, and the level of reported production is relatively less extensive as well. This should not diminish the expressed importance of fish and fishing in the area, however, since numerous artisanal and subsistence-oriented West Indian fishermen are active here.

Table 3-12 East End Combined Block Group and St. John Census Demographics

Factor	East End	St. John
Total population	1120	4197
Gender Ratio M/F (Number)	556/564	2050/2147
Age (Percent of total population)		
Under 18 years of age	22	25
18 to 64 years of age	70	68
65 years and over	8	7
Ethnicity or Race (Percent of total population)		
White	57	37
Black or African American	39	55
American Indian and Alaskan Native	<1	<1
Asian	<1	1
Native Hawaiian and other Pacific Islander	--	--
Some other race	<1	<1
Two or more races	2	2
Hispanic or Latino (any race)	1	5
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	8	14
Percent high school graduate or higher	65	71
Percent with a Bachelor's degree or higher	33	27
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	N/A	N/A
And Percent who speak English less than very well	N/A	N/A
Household income (Median $)	32,118	32,482
Poverty Status (Percent of population with income below poverty line)	25	19
Percent female headed household	16	17
Home Ownership (Percent)		
Owner occupied	58	48
Renter occupied	42	52
Value Owner-occupied Housing (Median $)	213,403	246,311
Monthly Contract Rent (Median $)	610	633
Employment Status (Population 16 yrs and over)		
Percent in the labor force	74	78
Percent of civilian labor force unemployed	3	2
Occupation (Percent in workforce)**		
Management, professional, and related occupations	24	20
Service occupations	26	29
Sales and office occupations	26	25
Farming, fishing, and forestry occupations	0	<1
Construction, extraction, and maintenance occupations	15	14
Production, transportation, and material moving occupations	8	11
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	1	1
Manufacturing	3	2
Percent government workers	17	16

Source: U.S. Census Bureau 2000

Table 3-13 Factors Descriptive of Fishing Activity in the East End St. John Candidate Community

Factor	Value
Vessel Size (Range in feet)	11 to 34 feet
Number of Traps (Average reported)	3
Markets	1
Marinas	--
Homeports	3
Related Support Businesses	--
Lobster Landings (lbs in 2001)	876
Reef fish Landings (lbs in 2001)	691
Pelagic Landings (lbs in 2001)	95

West End St. John Candidate Fishing Community

The West End candidate community encompasses the main business district for St. John. This is dispersed over several blocks toward the steep slopes above Cruz Bay. There were five licensed commercial fishers residing in the West End at the time of this study. All were hook and line fishers, which explains the lack of traps used by the fleet, as reported in Table 3.14. Cruz Bay was homeport for all but one participant.

There is little difference between the demographic profile of the West End community and that of St. John as a whole. Average household income is slightly below the island average, as is the value of owner occupied housing.

While St. John has only 13 resident commercial fishery participants, the number may be misleading. As we reported in 1997, and as is the case for St. Thomas as well, there may be many more resident artisanal and consumptive-oriented fishermen than can be indicated here. Nevertheless, the fishing infrastructure on St. John is far less extensive than that of St. Thomas.

Most commercial fishers residing on St. John are of Afro-Caribbean ancestry. Only three are "Continentals." In demographic terms, this is a very different population of fishermen than that residing on St. Thomas.

Table 3-14 Factors Descriptive of Fishing Activity in the West End St. John Candidate Community

Factor	Value
Vessel Size (Range in feet)	21 - 33
Number of Traps (Average reported)	--
Markets	2
Marinas	--
Homeports	2
Related Support Businesses	--
Lobster Landings (lbs in 2001)	1,441
Reef fish Landings (lbs in 2001)	3,015
Pelagics Landings (lbs in 2001)	13,989

Table 3-15 West End Combined Block Group and St. John Census Demographics

Factor	West End	St. John
Total population	2,314	4,197
Gender Ratio M/F (Number)	1,115/1,199	2,050/2,147
Age (Percent of total population)		
Under 18 years of age	26	25
18 to 64 years of age	67	68
65 years and over	7	7
Ethnicity or Race (Percent of total population)		
White	28	37
Black or African American	62	55
American Indian and Alaskan Native	<1	<1
Asian	1	1
Native Hawaiian and other Pacific Islander	--	--
Some other race	<1	<1
Two or more races	1	2
Hispanic or Latino (any race)	7	5
Educational Attainment (Population 25 and over)		
Percent with less than 9th grade	18	14
Percent high school graduate or higher	64	71
Percent with a Bachelor's degree or higher	23	27
Language Spoken at Home (Population 5 years and over)		
Percent who speak a language other than English at home	N/A	N/A
And Percent who speak English less than very well	N/A	N/A
Household income (Median $)	30,641	32,482
Poverty Status (Percent of population with income below poverty line)	16	19
Percent female headed household	19	17
Home Ownership (Percent)		
Owner occupied	43	48
Renter occupied	57	52
Value Owner-occupied Housing (Median $)	229,167	246,311
Monthly Contract Rent (Median $)	641	633
Employment Status (Population 16 yrs and over)		
Percent in the labor force	81	78
Percent of civilian labor force unemployed	2	2
Occupation (Percent in workforce)**		
Management, professional, and related occupations	18	20
Service occupations	30	29
Sales and office occupations	24	25
Farming, fishing, and forestry occupations	0	<1
Construction, extraction, and maintenance occupations	14	14
Production, transportation, and material moving occupations	13	11
Industry (Percent in workforce)**		
Agriculture, forestry, fishing and hunting	<1	1
Manufacturing	2	2
Percent government workers	15	16

Source: U.S. Census Bureau 2000

Table 3-16 Summary Matrix of Candidate Fishing Communities on St. John

	Factor or Variable				
Community	Presence of Commercial Fishing Operators	Fishing Support Businesses/Level of Support	Markets/ Level of Distribution	Other Industries/ Level of Production	Degree of Economic Dependence
East End (Coral Bay)	N=8	Few	One	Retail Sales/Service	Absolute dependence of group = Low
	<1 % of resident population	Low	Low	Moderate	Community-wide Dependence = Low
West End (Cruz Bay)	N=5	Few	Two	Retail Sales/Service	Absolute dependence of group = Low
	<1 % of resident population	Low	Moderate	High	Community-wide dependence = Low

Final Note on Constructing and Depicting Fishing Communities

The combined use of ethnographic interviews, observation, and mapping exercises has afforded an opportunity to begin drawing conceptual boundaries around subjectively experienced and subjectively defined fishing communities on St. Thomas and St. John. It has also enabled consideration of the related and similarly subjectively defined concepts of dependence on and engagement in fishing-related activities.

Because the areas we have identified as candidate communities are places wherein fishing is relatively insignificant in economic terms, but widely valued in cultural and dietary terms, and in terms of the household economics and everyday experiences of the participants, it is difficult to assert that any one place is or is not a distinct fishing community under the existing federal definitions discussed at the outset of this report. Yet we clearly have been able to identify a few places in which small groups of fishermen, fishing families, and fishing-related business owners have interacted and continue to interact to conduct historically important activities on the ocean, in harbors and marketplaces, and in shore side businesses. Analytical juxtaposition of such persons and activities against the economies and populations of larger districts has been a useful exercise, but primarily because that exercise elucidates the importance of the absolute experience of the actors who fish for a living, for purposes of consumption, for purposes of enabling culturally-based sharing, and for the purpose of providing seafood for others at the marketplace.

The MSFMCA and NS-8 definitions of fishing community tend to diminish the importance of that absolute experience by forcing description and analysis of the relative contribution of fishing-related activity to social and economic systems that are based in modes of production far more extensive in scope and effect. Thus, the difficulties inherent in defining places as fishing

communities should not be seen to relate to deficiencies in the behaviors of the fishery participants who reside there, but rather to problematic aspects of the definitions themselves.

Geographic Description of Fishing Patterns and Closures

This section of the report revisits characteristics of the fishers and fleets of St. Thomas and St. John. We begin with generalized description of use patterns and characteristics of the fleet, with special attention to spatial aspects of fishing effort as revealed through archival data and ethnographic work with the fishermen. This is followed by background description of the regulatory measures of interest, and finally by discussion of changes in established patterns of fishing occurring during recent years. This sets the context for analysis of the effects of the closures and conclusions to the report, as provided in Chapter Five.

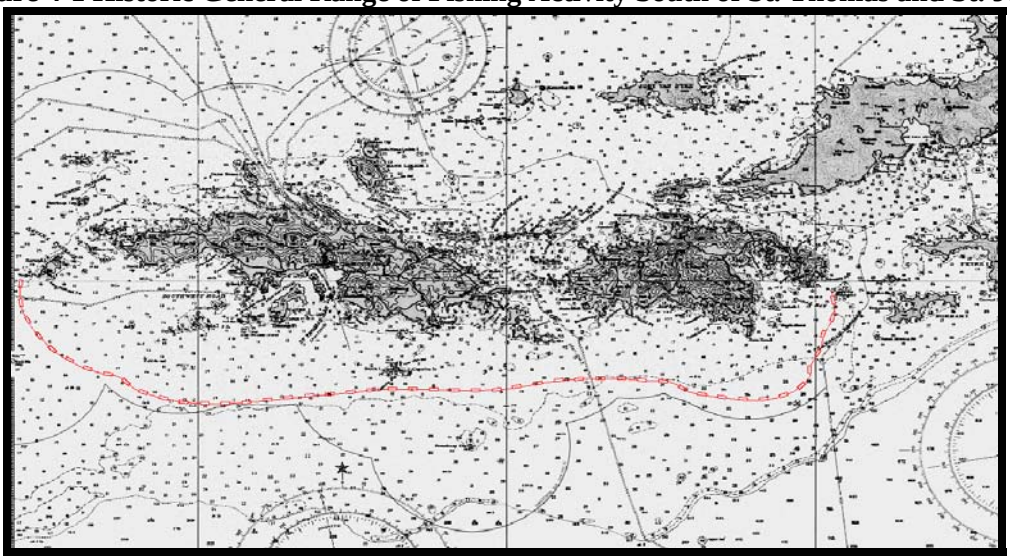
4.1 Resource Use Patterns and Characteristics of the Fleets

Generalized Historical Resource Use Patterns

Fishermen interviewed in the various estates, markets, and harbors during the course of this project discussed a long history during which fishing operations in this part of the Virgin Islands have been focused across a large expanse of ocean from the east end of St. John to the western end of St. Thomas (see Figure 4-1). In years past, when fishermen used sail and oar power, the majority of fishing activity was conducted closer to the shore. But informants also report that fishing has occurred along the southern drop-off point (South Drop) since as long as memory serves. That area is at least ten miles from Frenchtown. There is thus a long history of U.S. Virgin Island fishermen pursuing resources in distant locations around the islands.

Smaller vessels have tended to operate in the nearshore waters, while the larger commercial and charter vessels have had a much more extensive range. The northern waters and North Drop have also been important, and especially so to fishers residing on the North Side and East End of St. Thomas. Many such fishermen have over the years fished in close proximity to the British Virgin Islands.

Figure 4-1 Historic General Range of Fishing Activity South of St. Thomas and St. John



The area denoted in red in Figure 4-1 derives from a series of mapping exercises conducted with key informants during the course of this study. We asked knowledgeable and especially elderly informants to depict the general areas in which fishing with each gear type was known to occur along the south side of St. Thomas and St. John. Our intent was to conceptually bound the generalized historic range of the fleet so as to gain a basic understanding of the parameters within which regulatory effects, including those potentially related to the Hind Bank MCD would have occurred. The map derives from many different interviews and does not seek to portray the finer distinctions of specific fishing operations. We subsequently used this map as a basis for discussing general and specific fishing practices and the operational effects of the closures. The result was a more intricate map, provided later in this report.

Various bathymetric features, including the drops, have been favored fishing locations for many years. The latter are particularly important for fishers pursuing pelagic species, since upwelling and increased biomass tends to attract baitfish, which, in turn, attracts migrating pelagic species. The Hind and Grammanik Banks, both of which are located near the South Drop, have long been utilized by fishermen who are familiar with the behavior of various species in snapper/grouper complex and who favor use of traps and related gear to pursue those species. In fact, one fisherman remarked that Grammanik was a term once solely used by St. Thomas fishers, but is now commonly used across the region.

As is discussed elsewhere in this report, patterned use of different areas by groups of fishermen from distinct parts of the islands also has a basis in history. For instance, Northside fishermen were and still are likely to fish the northern waters of St. Thomas and St. John, while fishers from Frenchtown have tended to stay in waters to the south. There are always exceptions. In any event, spatial tendencies reportedly are related not only to environmental factors, but also to social and economic factors.

The economics are obvious. It is more economical to moor one's vessel near one's preferred fishing area than it is to travel back and forth by boat. While the islands are not large, passage from one side of an island to another requires navigation of many circuitous channels. As such, the trip can be consuming of time and fuel even before reaching the fishing grounds. The capability to trailer one's boat to the preferred point of departure is useful, but this is only feasible for small vessels, especially given the steep hills that characterize these Caribbean islands. In this regard, moorings on the East End are beneficial in that steaming time to either the Atlantic or Caribbean sides is somewhat reduced.

From the social perspective, local etiquette and respect for the operational tendencies of others is important in this setting. Informal rules have been developed to ensure respect for the traditional fishing areas and use rights of others. Activity on the ocean in this setting has thus tended to be regulated by a social system of navigation and fishing that was developed and enforced over the course of time in a manner internal to the actors in the respective fleets. This very fact contributes to resentment now commonly expressed toward those who seek to regulate the fisheries through external modes of governance.

According to Johnston (1987), there has also been a history of St. Thomas and St. John fishermen working the waters of the British Virgin Islands (BVI), and vice-versa. This activity reportedly has been based on informal agreements between St. Thomas and BVI fishers. But a 2004 ruling on the part of the BVI government now requires U.S. Virgin Island fishers to acquire a permit to fish in the North Drop since these fishing grounds lie completely under BVI jurisdiction. This has led to some problems for U.S. Virgin Island fishers, including some regulatory violations and fines, and disruption of long-standing relations between some fishers in both of the fleets.

Characteristics of the Operators and their Vessels

Earlier portions of this report have provided detailed description of fishery participants vis-à-vis their places of residence, shore side business activity, mooring, and fishing operations. This subsection provides additional information about the fishery participants as additional context for subsequent discussion of regulatory effects. Again, available quantitative data regarding recreational fishers is limited, and this we focus on commercial operators per Kojis (2004). We summarize select elements of the authors reported findings in Table 4-1 below.

Table 4-1 Select Characteristics of the Commercial Operators and their Vessels

Factor	Number/Percent	Respondents/Response Units
Average Age	48.6	103 respondents
Minimum Age	21	103 respondents
Maximum Age	85	103 respondents
Some High School	27.9%	29 respondents
High School Degree	41.3%	43 respondents
Some College	4.8%	5 respondents
College Degree	5.8%	6 respondents
Average Years Fished	24.8	115 respondents
Average Length of Vessel	21.4'	101 respondents
Range of Length of Vessels	6' to 48'	101 respondents
Number Vessels w/Inboard Engines	25.6	96 boats
Number Vessels w/Outboard Engines	72.9	96 boats
Mode for Outboard Horsepower	26-50 hp (33.9%)	109 boats
Mode for Inboard Horsepower	151-200 hp (45.8%)	24 boats
Vessels Owned by Fisher	94.1%	102 respondents
Use Cell Phone	53.2%	74 responses
Use Marine Radio	46.0%	64 responses
GPS	41.7%	58 responses
Echolocation Device	52.5%	73 responses
EPIRB	13.7%	19 responses
Winch	26.6	37 responses
Trips per Week (average)	2.6	106 respondents
Range for Trips per Week	.2 to 7	106 respondents
Trip Duration (average)	8.2	106 respondents
Range for Trip Duration	2 to 60	106 respondents
Fish Alone	17.0%	106 respondents
Crew Size (mean)	1.25	63 responses

Source: Kojis (2004)

As can be discerned from the table, when conceived in collective terms, the commercial fleet is: relatively aged, educated to a normative extent, and highly experienced. Vessels commonly are of a length and horsepower that is typical for nearshore fishing operations, but with a range in capacity that is suggestive of inshore operations and long-range pursuit of pelagic species and/or pursuit of bottom species with many traps in distant locations. As the captain/census respondent owns almost all vessels, it is clear that the tendency is toward relatively small locally owned businesses rather than remotely owned vertically stratified operations. Use of marine or marine capable communications is common, but EPIRBs are not, again suggestive of relatively small operations without extensive capital investment (or ostensibly, overt concern for safety). With an average of over 100 trips per year, the operators appear to be relatively avid fishers. Although most trips appear to be day trips, the modal value suggests that some component of the fleet stays at sea for considerable periods of time. Finally, while a considerable proportion of captains fish alone, most bring at least one crewmember. This is significant in that the effects of constrained fishing operations extend beyond the owner/operator and his family.

Table 4-2 below, also based on the work of Kojis (2004), depicts the principal species pursued by fishers on St. Thomas and St. John. Of note, only about 30 percent of fishers were targeting species in just one of the categories. Most captains appear to focus on species in-between two and four of the categories. This is indicative of the opportunistic and flexible nature of fishing operations throughout the region.

Table 4-2 Target Categories for Commercial Fishers on St. Thomas/St. John: 2003-2004

Category	Number	Percent
Reef Fish	87	77.7
Coastal Pelagic	60	53.6
Lobster	40	35.7
Bait Fish	33	29.5
Whelk	16	14.3
Deep Pelagic	11	9.8
Conch	10	8.9
Deepwater Snapper	5	4.5
Total Responses	262	--
Total Respondents	112	234.0

Source: Kojis (2004:12)

As noted in the table, most commercial fishers pursue reef fish, and with a variety of gear types but especially traps and nets, as discussed in Chapter Two of this report. Coastal pelagic species are also commonly pursued (e.g., hardnose, wahoo, dolphinfish), typically with hook and line or hand lines while trolling or drifting. Pursuit of lobsters with traps is also common, and relatively lucrative. Pursuit of deepwater pelagic species (large tunas and billfish), and deepwater snapper/grouper fishing are relatively specialized and requiring of a relatively large vessels to reach the grounds.

Fishing in the region can also be described in terms of depth of pursuit in the water column. Many of the mid-water fishes are caught year-round, including barracuda, bar jack, crevalle jack, and cero. Rainbow runner and hardnose season is typically from April through September, and the peak season for bonito and kingfish is from January through May. Mid-water fish are found in a variety of areas around the islands, including around reefs and schools of baitfish, inshore areas, and mid-shelf areas. Crevalle jacks are often found near the 100-fathom drop-offs, and rainbow runners are typically found near the north and south drops. Many of the deeper water species are targeted during specific times of year. Dolphinfish season typically lasts from October through January and wahoo is targeted from September through May.

While data regarding the specifics of recreational fishers is limited, a significant non-commercial fleet is indeed active around St. Thomas and St. John. Based on our observations, the operators are widely dispersed around the islands, but with numerous vessels moored at Redhook and at various private marinas elsewhere on the Southside and East End. Non-commercial operators using smaller vessels sometimes transport their vessels by trailer. Mateo et al. (2000) assert that the St. Thomas offshore recreational fleet may include as many as 150 vessels, including some 40 boats from the Continent. Many of the latter specialize in the pursuit of large billfish in the offshore zone.

Traditional use areas, systems of etiquette, and various social sanctions continue to be important elements of the commercial fisheries of St. Thomas and St. John. Recreational fishers have also come to recognize and respect such tradition (again, with exceptions). But many fishermen in both sectors are now asserting that fishing patterns are changing, in large part due to increasingly stringent fishing regulations, including area closures such as those associated with the MCDs discussed above. These are in some cases said to forcing transgression of time-honored spatial bounds between operators, and disruption of traditional manners of social interaction.

Contemporary Gear Use and Seasonal Rounds

Spatial and social patterns of fishing and use of gear have remained much the same from when IAI conducted Rapid Appraisal research on St. Thomas and St. John in 1997. There continues to be a considerable degree of heterogeneity and distinctiveness in terms of areas of focused pursuit and approaches to fishing.

As noted earlier, the primary gear types used by St. Thomas and St. John commercial fishers have been fish traps, various nets, hook and line gear (including hand lines), lobster pots, and various gear used while diving. Of these types, fishing with nets appears to be most specific to any given area; that is, it appears largely limited to the nearshore waters on the Northside of St. Thomas and to a lesser-known extent along the northern exposure of St. John. Seine fishers with whom the research team interacted during the field phase of this research indicated that they tend to work primarily around the islets and bays as far west as Savana Island. The fishermen often work in teams and use several boats if it is anticipated that a particularly good catch may be made. In such situations, the catch or value of the catch is divided equally among the participants. In some cases, fish may be released if the fishermen are unable to market them within a reasonable amount of time.

Use of handline gear is common around the islands. There is no discernible pattern north or south. Rather, season and tide tend to guide use of this gear. Use of hook and line gear for trolling, drifting, and at anchor is similarly opportunistic. Bait fishing is also undertaken in both the northern and southern waters, but primarily around the many small islands and in the bays. Cast nets with very fine mesh are used to capture blue and white minnows. These are used for chum and to create sand balls for line fishing. Sprat nets are used for larger baitfish such as menhaden, which are used on hooks for line fishing.

Charter captains and commercial captains with large vessels naturally cover the widest range of any in the fleet. Many of the larger troll vessels are used well beyond the North Drop and South Drop in search of highly migratory pelagics - bluefin, bigeye, yellowfin, albacore, and skipjack tunas; swordfish; sharks; white and blue marlin; sailfish; and longbill spearfish. Charter fishing and commercial fishing for coastal pelagic species, such as mackerels, dolphin, and wahoo, are conducted closer to the islands. Many charter captains and commercial fishers pursuing pelagic species sell their catch to local restaurants.

Finally, use of traps is common in many locations around St. Thomas and St. John. One limiting factor is swell, which can easily lift, tangle, and ruin traps and pots. As such, deployment of such gear is often judiciously timed. Many fishers will collect their trap and pot gear in advance of large storms, which can affect even deep and well-protected locations. We summarize frequency of gear use across the commercial fleet in Table 4-3

Table 4-3 Commercial Gear Use Patterns for St. Thomas and St. John: 2003-2004

Gear Category	Number of Gear Owners/Units Owned
Beach Seine	15 (16)
Ballyhoo Net	3 (3)
Haul Seine	6 (6)
Gill Net	4 (7)
Trammel Net	1 (1)
Cast Net	47 (107)
Plastic Lobster Pot	10 (204)
Modified Fish Trap for Lobster	28 (2,719)
Fish Trap	29 (2,652)
Surface Longline	1 (8)
Bottom Longline	1 (2)
Vertical Setline Multiple Hook	3 (11)
Vertical Setline Single Hook	1 (5)
Rod and Reel Troll	24 (115)
Handline Troll	12 (11)
Rod and Reel at Anchor	3 (4)
Handline at Anchor	65 (98)
Rod and Reel Drift	2 (14)
Handline Drift	28 (37)
All Dive Gear	15 (13)
All Scuba Gear	11 (69)

Source: Kojis (2004)

As per the data above, it is clear that there are some very popular and some very specialized gear types and categories of gear in use in the waters around St. Thomas and St. John. Most nets are beach seines or cast nets. Lobster and fish traps are very commonly used, as are handlines used at anchor, at a drift, and while trolling. Trolling with rod and reel is also common. Dive gear appears relatively specialized, and use of certain nets, longline gear, and setline is highly specialized.

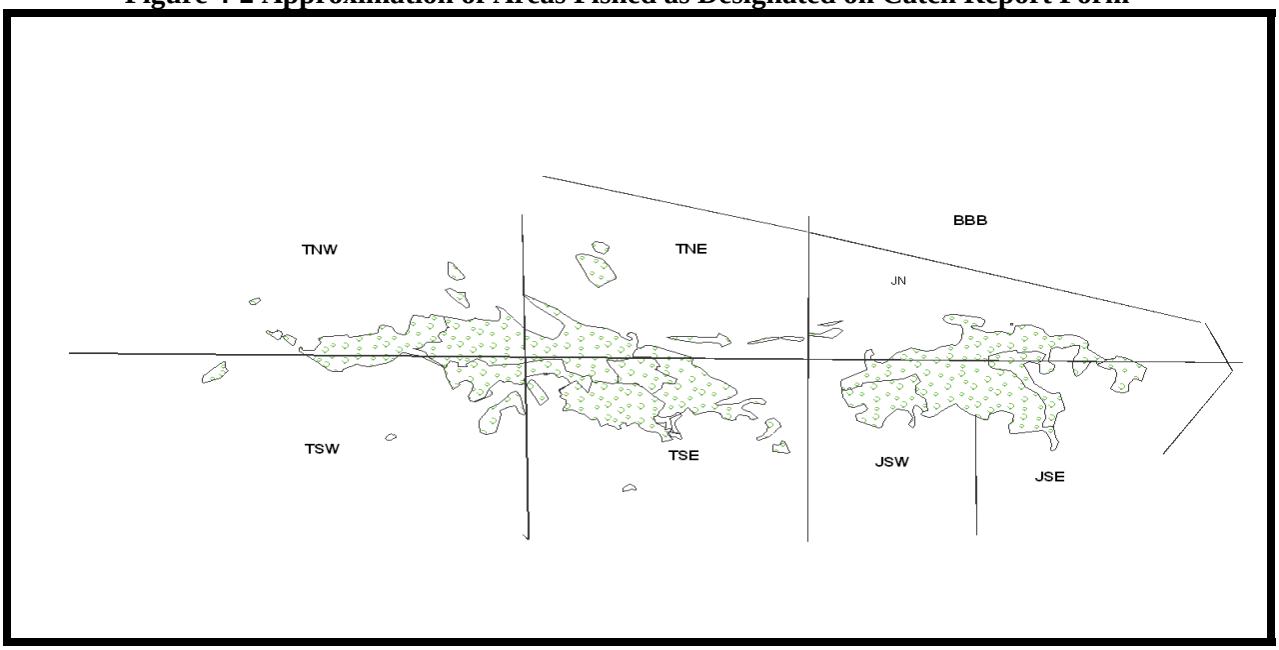
Based on interviews, observation, and the work of Mateo (1999), with the exception of traps and the more specialized gear mentioned above, it is clear that many participants in the recreational fishery on St. Thomas and St. John use the same gear commonly used by commercial participants. Use of rod and reel gear while trolling for coastal and offshore pelagic species is particularly common, as is use of handlines at anchor, drift, and while trolling. Diving methods and gear are also common among recreational participants. According to Bohnsack (1987), some 65 species are important to recreational fishers in the U.S. Virgin Islands, and according to Jennings (1992), snappers and groupers were among the most commonly harvested species among non-commercial harvester. Such fish typically were landed with handline gear. Of note,

yellowtail snapper and Red Hind were among the most frequently landed non-commercial species.

Catch Report Data

Commercial fishers in the U.S. Virgin Islands are required to file monthly catch reports. These include trip-specific information about species harvested, pounds caught, gear used, and locations fished. The form includes a map that is divided into eight distinct regions. These include: the British Virgin Islands (BBB); St. Johns North (JN); St. Johns Southeast (JSE); St. Johns Southwest (JSW); St. Thomas Southeast (TSE); St. Thomas Southwest (TSW); St. Thomas Northwest (TNW); and St. Thomas Northeast (TNE) (Figure 4-2 below).

Figure 4-2 Approximation of Areas Fished as Designated on Catch Report Form



Source: USVI DPNR

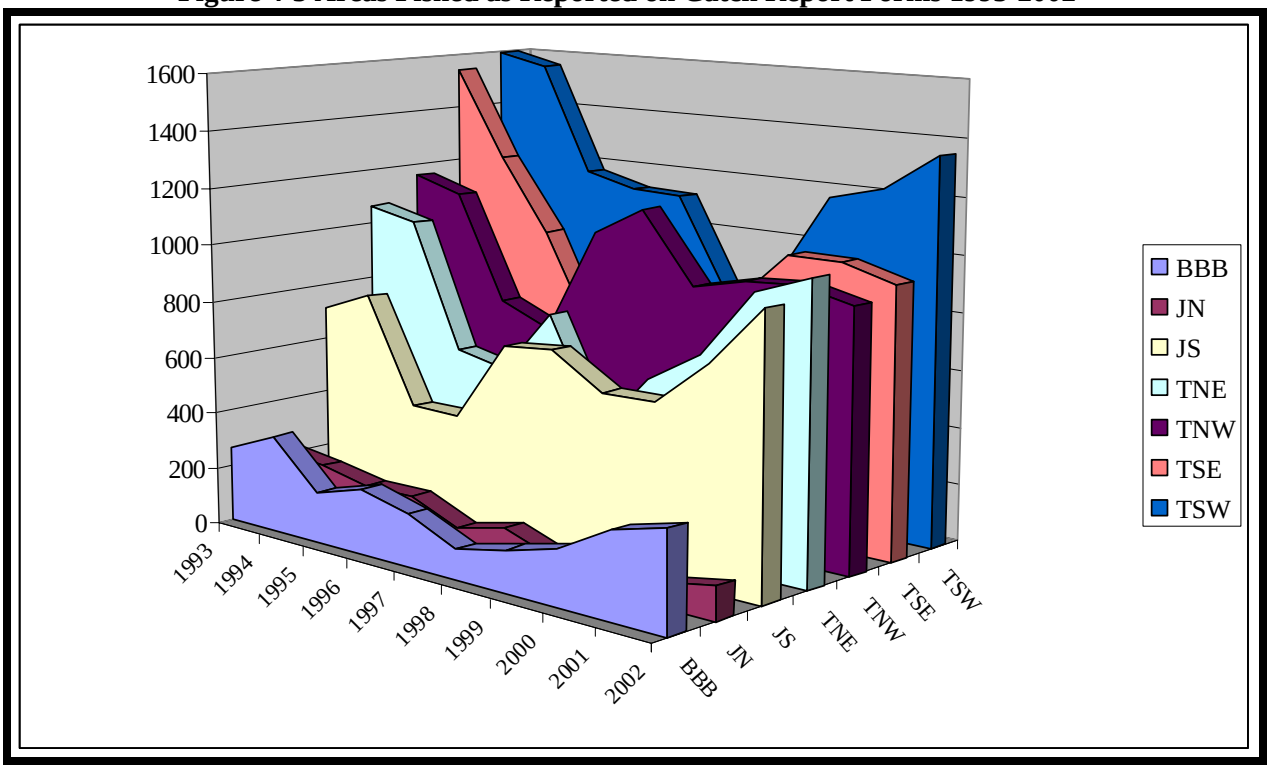
The breakdown of area fished has evolved over the years to the above mentioned-scheme. Details regarding how the map has changed over the years can be found in Amendment 1 to the region's coral reef fishery management plan (CFMC 1999).

Given the difficulty of coding trips with multiple areas fished, the data reported here include only those trips where one area was reported. While fishers may include more than one area fished in their reporting, only one area was reported per trip on the majority of catch forms. The data are for all types of fishing and are not limited to any specific gear type.

Data from 1993 to 2002 were analyzed to identify changes in fishing patterns occurring during this period. The annual number of trips is reported on the left axis. Because of changes in reporting over the years, the two areas south of St. Johns were combined into one area for

purposes of this analysis. We term this the St. Johns South (JS) area. This area was only recently divided into two categories on the catch report form.

Figure 4-3 Areas Fished as Reported on Catch Report Forms 1993-2002



Source: NOAA Fisheries

As depicted in Figure 4-3 above, there has been a gradual increase in the number of commercial trips to all areas, with the greatest number of trips occurring in the St. Thomas Southwest area. As might be expected given the disastrous passage of Hurricane Marilyn through the islands in 1995, there was a general decline in trips to all areas that year. The number of trips has been increasing in all areas since 1995, however, and in most areas, the number of trips taken has reached levels comparable to the period prior to Marilyn. Fishers who returned to or began fishing after the hurricane have been increasingly active. While this tend may seem a dramatic increase, in reality it appears to represent a return to levels of activity documented prior to the hurricane.

We also present Table 4-4, which depicts commercial landings by area for the 2001-2002 landings year. This table further illustrates the recent level of activity occurring south of St. Thomas. The St. Thomas Southwest area was a particularly important zone for landings of lobster and reef fish during the 2001-2002 season. While St. John South was slightly ahead of the St. Thomas Northeast and Northwest in terms of pelagic harvest that year, the northern waters of St. Thomas combined show a greater number of pounds landed than the southern waters combined. Overall, the waters in the southern areas were more productive for lobster and reef fish than were those in the north. While this is a snapshot of landings activity around the

islands, it is illustrative of patterns noted for numerous years and speaks to the importance of pot and trap fishing around the banks and drop on the southern side of St. Thomas and St. John, and the importance of pelagic fishing north of the island and south of St. John.

Table 4-4 Landings by Area[7] for Lobster, Reef Fish, and Pelagics for 2001-02

Area[8]	Lobster (lbs)	Reef Fish (lbs)	Pelagics (lbs)
JN	959	1,756	2,665
JS	16,224	64,777	12,676
TNE	12,864	14,399	10,497
TNW	11,675	23,732	10,117
TSE	8,279	68,733	3,464
TSW	25,595	85,467	552

Source: NOAA Fisheries

4.2 Background to Fisheries Management and MCDs on St. Thomas and St. John

Given the economic and social significance of fishing and fishing-related activities in communities around the U.S. Virgin Islands, and the sensitive nature of coral reef ecosystems and associated biota, resource managers have sought to balance conservation goals and their potential effects with the needs and interests of the various user groups. The management equation has become ever more complex in recent years, however, in conjunction with various factors including, but not limited to: (a) expanding tourism economies and associated need for and pressure on natural marine settings, (b) political pressure from environmental groups to conserve marine resources and ecosystems, (c) federal and territorial government tendencies to adopt new management regimes, and necessarily interact in doing so, and (d) fishing pressures and resistance to external fisheries management on the part of fishery participants.

The Territorial government regulates fishing and manages resources in the nearshore waters of the U.S. Virgin Islands. Extensive fishing occurs in this zone. In cooperation with the Caribbean Fishery Management Council (CFMC), NOAA Fisheries regulates fishing activity and manages marine resources in the federal jurisdiction waters of the USVI beyond three nautical miles offshore. Further, because the U.S. Department of the Interior administers the U.S. Virgin Islands as a Territory, the National Park Service (NPS), as one of its agencies, has also played an important role in the management and conservation of marine resources in the region.

Of significance to the current study, agency administrators at all levels of government, in recent years, have followed a trend toward managing marine fisheries and conserving marine resources through area closures. These are reviewed in brief below.

[7] JS combines JSE and JSW.

[8] The reef fish category here includes: groupers, grunts, jacks, surgeonfish, parrotfish, triggerfish, porgy, barracuda, goatfish, angelfish, squirrelfish, hogfish, trunkfish, and redman. The pelagic category here includes Spanish mackerel, various tuna species, wahoo, and mahi-mahi.

National Park Service MPAs

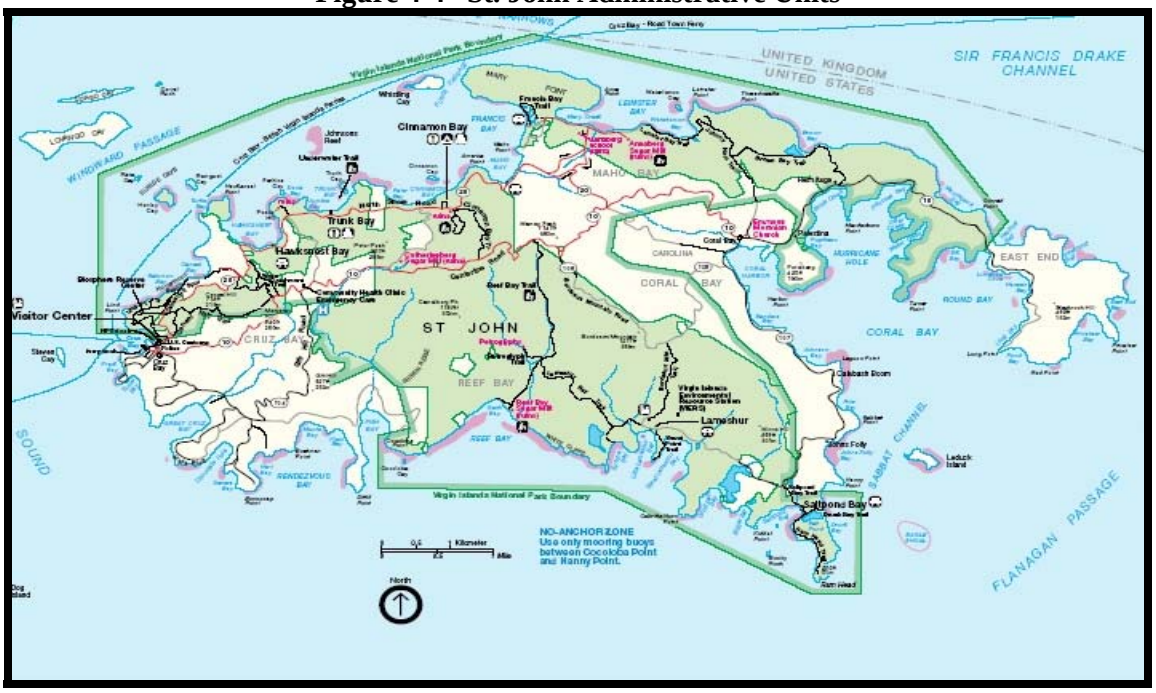
The Virgin Islands National Park (VINP) was established on St. John in 1956, in large part to preserve the island's coral and marine life (16 USC Sec. 398). More marine portions were added in 1962. Although anchoring was prohibited in the southern portion and spear fishing prohibited altogether, traditional fish trapping continued to be allowed.

NPS jurisdiction has expanded dramatically in recent years. Conservation units with offshore components in and around St. Thomas and St. John now include the Buck Island Reef National Monument, the Salt River Bay National Historical Park and Ecological Reserve, and Virgin Islands Coral Reef National Monument south of Saint John. Each of these units has significantly affected the manner in which residents and visitors can legally use marine resources.

The Virgin Islands Coral Reef National Monument was established on St. John in 1991 under Presidential Proclamation 7399. The Monument is a nearly 20 square-mile no-take and no-anchor zone, with limited exceptions. Because the closure came through Presidential Proclamation, commercial fishers had no opportunity to voice concerns and there was no requirement for assessment of its social or economic effects. Given that many had previously agreed to support an area closure for Red Hind and asked that the Monument area be left open, there was considerable local dissatisfaction with the regulatory agencies involved when it was clear that both measures would be taken.

There has been extensive public resistance to each action undertaken by or through the National Park Service that would or did disrupt traditional use of land and sea on St. John. The Virgin Islands Government (Brown 2002) has also registered strong opposition. We provide Figure 4-4 below to depict the extent to which jurisdiction of land and sea on and around St. John has been assumed by the NPS in the USVI in recent years.

Figure 4-4 St. John Administrative Units



Source: National Park Service 2003

Territorial Government MPAs

The Territorial government of the USVI proposed creation of a Virgin Islands Marine Reserve System in August 1990, and its Division of Fish and Wildlife subsequently circulated prospective rules and regulations for sites along the inshore-coastal zone of St. Thomas for public review. The habitat recovery scheme and system were not approved at that time. However, beginning in 1992, using authority granted to the Commissioner of Planning and Natural Resources to designate and manage marine reserves and wildlife sanctuaries (Chapter 1, Set .94, Title 12, Virgin Islands Code), a new strategy led to creation of three new Marine Reserve and Wildlife Sanctuaries on St. Thomas, with associated rules and regulations. These are: (1) Compass Point Pond at Benner Bay, (2) Cas Cay/Mangrove Lagoon, and (3) St. James Marine Reserve and Wildlife Sanctuary. In July of 1996, an additional reserve was established at Salt River on St. Croix.

NOAA Fisheries-Administered MPAs

Establishment of a Marine Conservation District south of St. John - the subject MPA of the aforementioned social impact assessment conducted by IAI in 1997 – never came to pass. But on recommendation of the CFMC (1999), and under the authority of the MSA and Caribbean Reef Fish Fisheries Management Plan (FMP), Amendment 1, NOAA Fisheries announced establishment of the Hind Bank MCD in late October of 1999.

The northernmost point of the reserve is some eight miles due south of Lindbergh Bay on St. Thomas, stretching southwest to roughly 12 miles due south of Mermaid's Chair on the western tip of St. Thomas (see Table 4-5 below for actual coordinates). The 16-square mile Hind Bank MCD is a deepwater reef site (generally deeper than 28 fathoms) that had previously been closed to fishing from December through February in order to protect Red Hind spawning grounds. When that closure was found to have increased the abundance and size of the species, the seasonal closure was extended to the entire year, with restrictions against all forms of fishing, anchoring, and other invasive activities in a general area that is known to be significant for various sport charter and commercial operators pursuing highly migratory species such as tuna, billfish, and sharks, as well as bottom species such as yellowtail snapper and blue runner.

Table 4-5 Location of the Hind Bank MCD

Point	North Latitude	West Longitude
A	18° 13.2'	65° 06'
B	18° 13.2'	64° 59'
C	18° 11.8'	64° 59'
D	18° 10.7'	65° 06'
A	18° 13.2'	65° 06'

Source: Code of Federal Regulations, Title 50, Volume 4, Part 622.33

In 2004, the CFMC began development of a Draft Amendment to the Sustainable Fisheries Act that would amend several fishery management plans in order to meet federal mandates set forth in the MSFCMA. The comprehensive amendment included several management alternatives that were to set parameters for biological reference points, end overfishing, and rebuild overfished stocks for numerous species, and identify and describe Essential Fish Habitat (EFH).

Several new MCDs were proposed to address overfishing of some species and to protect corals and essential fish habitat. Proposed alternatives included another Red hind closure northwest of St. Thomas, and closure of Grammanik Bank, located adjacent to the previously designated Hind Bank MCD (See Table 4-6 and Figure 4-5 below).

Table 4-6 Location of the Grammanik Bank MCD

Point	North Latitude	West Longitude
A	18° 12.40'	64° 59.00'
B	18° 10.00'	64° 59.00'
C	18° 10.00'	64° 56.10'
D	18° 12.40'	64° 56.10'
A	18° 12.40'	64° 59.00'

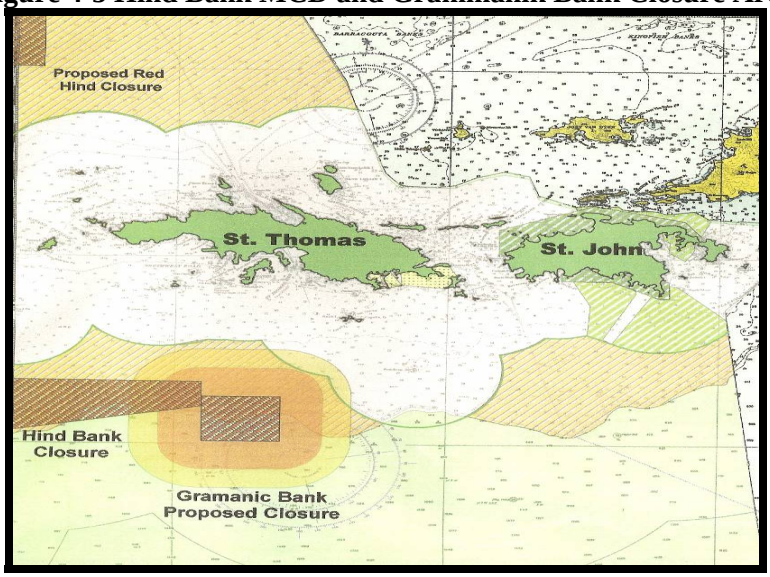
Source: NOAA Fisheries

Grammanik Bank is a spawning aggregation area for yellowfin grouper (commonly called grammanik). It has been significant to some operators in the Frenchtown fleet for some time. While the status of yellowfin grouper stocks is largely unknown, the species is considered by some scientists to be overfished given its relative paucity in landings and sampling data prior to the recently established moratorium on commercial permits (NMFS 2003). The CFMC proposed

several alternatives offering various boundaries for a Grammanik Bank closure, varying from seven to 0.4 square miles (Figure 4-5).

The CFMC scheduled six public hearings on the Draft Amendment to area Fishery Management Plans. These were initiated in November 2004 and finalized in December 2004. Public hearings were held in several locations, including six in Puerto Rico, one on St. Croix and one on St. Thomas. Upon receiving notice of public hearings and a summary of proposed actions, commercial fishers on St. Thomas quickly revitalized their local commercial fishing association to formally oppose the proposed closures and other alternatives proposed to address putative overfishing in the region.

Figure 4-5 Hind Bank MCD and Grammanik Bank Closure Area



Meanwhile, the CFMC proposed interim measures intended to protect yellowfin grouper. These were proposed in November 2004. By January of 2005, the NOAA Fisheries determined that interim measures were indeed necessary to protect the species and put into effect a temporary closure that would restrict fishing on Grammanik Bank from February 1 until April 30, 2005. The interim rule prohibited anyone from fishing or possessing any species of fish, except highly migratory species, within the Grammanik Bank closed area. The exception allows for possession various pelagic species, including: bluefin tuna, bigeye tuna, yellowfin tuna, albacore, skipjack, swordfish, sharks; white marlin, blue marlin, sailfish, and longbill spearfish.

With the assistance of a former Territorial government fisheries official and scientist who had recently returned to the island, representatives of St. Thomas Fishermen's Association presented data supporting their contention that the yellowfin grouper was not being overfished in the area. This was the principal subject of the public meeting held by the CFMC on St. Thomas in January 2005. The CFMC subsequently voted to reject several alternatives that were objectionable to

commercial fishers, but nevertheless continued to present permanent closure of the Grammanik Bank as a management alternative.

As of November 28, 2005 a portion of the bank was closed from February to April each year to protect yellowfin grouper. Use of all bottom-tending gear was prohibited year-round in the seasonally closed areas. This applied to all fisheries, including those for tuna, billfish, and shark (NOAA Fisheries 2005b).

The situation has perpetuated tensions between St. Thomas/St. John fishers and the federal management entities (CFMC and NOAA Fisheries). As such, and as discussed at the outset, the study described in this report was conducted with fishers who were increasingly expressing distrust of the federal agencies.

4.3 Changes in Fishing Patterns

Static Methods and Spatial Focus

Numerous fishers from St. Thomas and St. John report that area closures have led to displacement of fishers to other fishing areas which, in turn, have become overcrowded. In some cases, this reportedly has led to conflicts between individuals and, in some cases, between differing user groups. This was mentioned as a point of concern in our earlier study (IAI 1997), and, in fact, one participant in the current study indicated that an area south of St. Thomas that was thought likely to become overcrowded in 1996 actually has, although this resulted from the Monument closure, which was unanticipated at the time.

Trap fishing and other static methods, such as handlining at anchor over specific bathymetric features, are very important for fishers in the Virgin Islands. Pelagic trolling is more fluid and wide-ranging than is trap fishing and other static methods.

As noted above, fishermen from St. Thomas and St. John tend to be highly experienced. They have developed extensive knowledge of the resources, habitats, bottom conditions, sea states, and a variety of other critically important environmental factors. This knowledge is both learned and experiential. It is communicated across generations within families and groups of fishermen, and it is also continually garnered through direct interaction with the marine environment.

In the case of trap fishing and other static methods, knowledge relates to conditions in highly specific areas. It is important to know about bathymetric features while trolling, but only in a relatively general sense. Static trap or handline operations are significantly enhanced by knowledge of precisely the best spot on a given shelf or other feature to place or manipulate one's gear (and when and how). As knowledge about use of such gear relates especially to certain locations, once an operator, family, or group begins to use those locations, the natural tendency is to know it more fully and to use it more consistently over time. Intimate understanding of the locale and its resources is eventually gained and one may even develop and

communicate a system of ethics for treating the habitats and resources in a certain way. In this manner, fishermen gradually perceive priority rights to use specific areas.

Fishermen also tend to develop an understanding of the fishing-specific social and cultural tendencies of each other. There are indeed cultural and inter-group differences in the islands, and tendencies toward perceiving rights to use certain places and resources. But in a bounded island setting, members of each group are well aware of these differences and tendencies and, in the interest of peaceful relations, they tend to respect them. Thus, when an individual or group is displaced from an established fishing ground, there is immediate awareness of the problem confronting both the displaced and those who could be affected by transfer of fishing effort into new locations. There have been cases of perceived and actual encroachment on the fishing grounds commonly used by others, and varying degrees of tension and actual accommodation and re-ordering of established systems of use.

But actual conflict has been a rarity, and most differences have been resolved over the course of time. Insofar as islanders are knowledgeable of and sensitive to the history and socio-cultural ordering of the fishery, and often express reluctance to encroach on the operations of other fishermen, the real problem may be more accurately envisioned as political in nature. That is, one of the most significant social effects of closing established fishing areas for purposes of conservation is the resulting level of local dissatisfaction with externalized regulatory authority.

It should also be kept in mind that because many fishermen are often both highly knowledgeable of the marine environment and dependent on its resources, they may strongly disagree with those regulatory measures that have been established for purposes of conservation without what they deem to be a valid scientific rationale or sufficient public input. This was the perspective of numerous commercial fishers formerly active in the National Monument area south of St. John. Few recognized the validity of a closure here because it was widely believed that fish populations prior to the closure were sufficiently healthy and abundant to support various fisheries on an ongoing basis. Moreover, some fishers assert that closure of formerly well-established fishing grounds essentially defeats the purpose of the marine protected area in that the process merely shifts fishing pressure to adjacent areas.

Spatial Changes

While the full suite of recent closures has affected various fishermen around the islands in different ways and to varying extents, participants who formerly conducted extensive trap fishing operations in the closed areas appear to have been most detrimentally affected. Again, this relates in large part to the static and highly focused nature of trap fishing and the challenges of developing a new area focus within established fisheries. By extension, other static extractive gear and methods formerly used in the closed areas have been similarly affected.

Of all the recent closures, the National Monument closure south of St. John preceded the most significant effects. Approximately one-third of the 35 fishers interviewed during the course of this study reported having been affected in some fashion by that particular closure. Most were

trap fishers who reported moving their gear and/or spatial focus to new (undisclosed) locations. According to NPS officials and key informants on St. John, the Monument closure also displaced small-boat artisanal and subsistence-oriented trap fishers from an area that was renowned for productive lobster fishing. The participants gradually sought areas elsewhere around the island for setting their traps. This reportedly led to hardship, especially for those possessing small vessels with limited range.

There was and remains much political fallout from the Monument closure. This appears to relate not only to specific actions associated with establishment of the Monument, but also to the long history of National Park Service (NPS) presence and associated effects on West Indian culture and society on St. John. Clearly, the laudable conservation goals of government and the objectives used to meet those goals have not been consistently compatible with the interests of a local society with a long history of adaptation to challenging conditions in a small island setting with limited resources and opportunities.

A study conducted by Stern (2004) involving interviews with 175 residents and 20 government officials on St. John underscores local dissatisfaction with the closure process and with NPS activities in general. The author reports that many respondents expressed dissatisfaction with what were said to be: (a) minimal opportunities for local input in decision-making processes, (b) increasingly limited space for residents to live on the island, and (c) restrictions on use of natural resources, among others. Interviewees, including NPS staff, consistently stated that many of the problems could be solved through enhanced recognition and appreciation of the nuances of local society, through improved opportunities for local input in NPS management decisions, and through more effective means of communication between NPS and the residents of St. John.

The MCD that was the subject of IAI's 1997 assessment never came to pass. As noted previously, this was to be established in an area in the federal jurisdiction waters immediately south of St. John. The Hind Bank MCD was ultimately instituted in its stead. It was asserted at the time that the Hind Bank option was actually a more viable and socially less detrimental alternative in that fishing in the area was already prohibited during spawning season and thus year-round closure would not be overly challenging to the small groups of large and small vessel operators who reported fishing in those waters.

Establishment of the Hind Bank MCD did ultimately lead some large vessel trap fishers and small vessel handline fishermen to relocate their gear and/or operational focus to other areas. Most of the affected fishers were reluctant to disclose the precise spatial details of their altered operations and we cannot in any event make them public. But given that only a small fleet was involved, the closure and displacement did not generate detectable levels of overcrowding elsewhere.[9] But again, physical reordering effects tend to be tempered by social and cultural sensitivity to the operations of others, and while reconfiguration of fishing effort is "worked out" internally, the political implications of externalized constraints are intensified.

[9] While the large vessel contingent was homeported at Frenchtown, a couple of fishermen were residents of the Northside. All of the small boat handline operators were from Frenchtown.

In reality, some of the affected fishers expressed retrospective support for the Hind Bank MCD closure. Interviews with a biologist involved in monitoring the closure indicated that a measured increase in spawning activity was evidence that the closure was having a positive effect on Red Hind, and that this perspective was shared by some of the fishermen. Nevertheless, when the fishers in this case were asked to talk about the generalized overall effects of closed area management strategies, they tended to conceptually link the range of regulatory effects they had experienced in recent years and assert that closed areas will continue to heighten fishing pressure elsewhere as "there is only so much good bottom to fish."

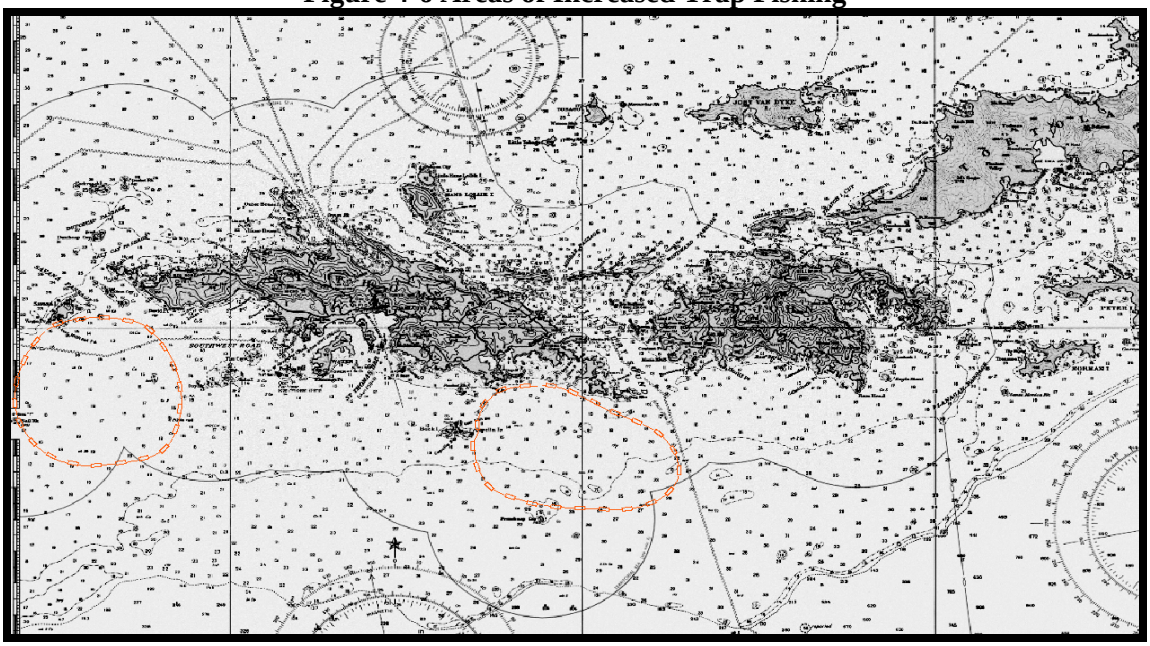
Much of that "good bottom" is, for trap fishermen for most of the year, located in the southern waters offshore St. Thomas. As many fishers told us, the northern waters of St. Thomas become quite rough in winter, and trap usage in that zone necessarily diminishes. As such, traps are often relocated to the south in winter. Thus, there appears to be a seasonal aspect to problems associated with crowding in the southern waters.

Another repeatedly mentioned issue relates to an apparent increase in the overall number of traps being used across the entire region. Fishers often commented that there are too many traps in the water. Trap limitation had been a topic of discussion at limited entry workshops recently held in the USVI (MRAG 2004), and this may have led to increased commenting on this issue. MRAG reported that fishers expressed general support for trap limitation, and this was reinforced during many of the interviews conducted during the current study.

But given that certain trap fishers reported high levels of economic dependence on this form of fishing, there is fear that limiting use of traps could detrimentally affect their livelihoods. Some informants were concerned that no distinction would be made in the regulatory process between lobster and fish traps. Many fishers indicated that they had increased the number of lobster traps so as to take advantage of a growing and increasingly lucrative market for lobsters. This situation apparently related to new opportunities to sell lobster to local restaurants. In fact, one individual suggested that the recent increase in lobster landings had saturated the market to such a degree that new outlets for sale were limited.

Numerous informants expressed the perspective that shifting spatial pressures resulting from area closures, coupled with an overall increase in the number of traps being used in the southern waters, was leading to overcrowding in certain areas. In the course of our mapping exercises with key informants, two general areas were consistently indicated as undergoing changes in patterns of use, including increasing deployment of traps (see Figure 4-6 below).

Figure 4-6 Areas of Increased Trap Fishing



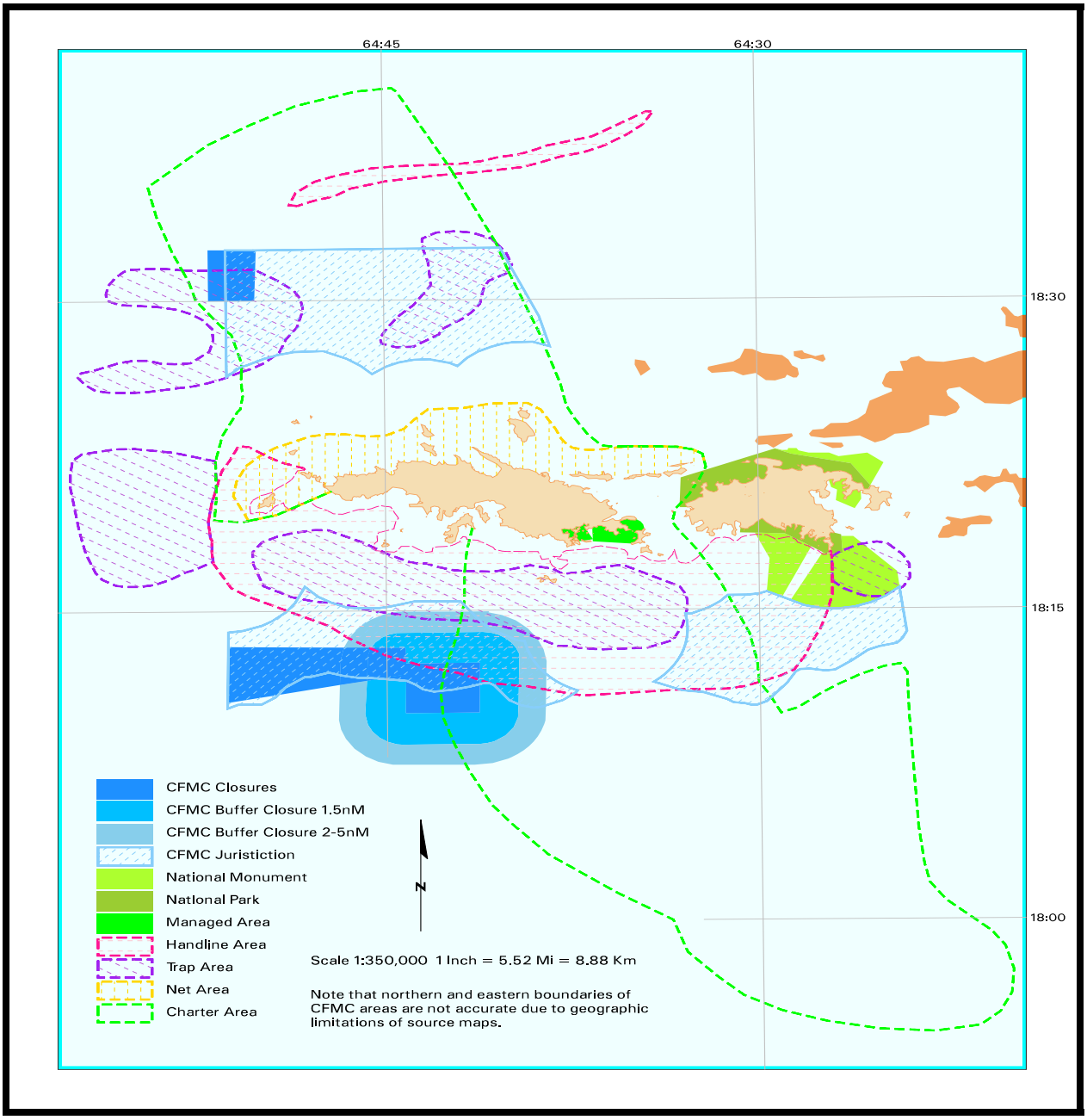
The areas denoted above were often discussed as preferred areas for trapping various fishes and lobster. The areas have gained preference because they have productive bottom conditions for reef fish and favorable currents for lobster. According to informants, lobsters tend to move with strong currents, and portions of these locations are most favorable in this regard. As there was baseline fishing activity in these areas prior to the enactment of the Monument and Hind Bank closures, we cannot attribute all present activity there to displaced operations. It is clear, however, that fishing pressure was intensified in these areas subsequent to the closures.

The area to the west reportedly has been especially crowded during recent seasons. One key informant reported that as many as 14 trap fishers deploying at least 100 traps each had at the time of the interviews been fishing in a relatively small area. Complaints of overlying trap lines and trap lines being cut were not uncommon during this time. While the conflict is said to have revived an old dispute related to differences between Southside and Northside fishermen, the situation was resolved over time. Again, social mechanisms internal to the group tend to return operations to a state of normalcy even following a period of dispute. There have been tensions in the system, but external entities are most continually blamed for the problems.

Trap fishers are not alone in complaining about recent closures and associated increases in trap usage in increasingly smaller areas. Line fishers also complain that their fishing grounds are being reduced. Handline fishers reportedly often used Red Hind Bank and Grammanik Bank, especially during spawning periods when fish were abundant. Most recently and just prior to the seasonal closure, Grammanik Bank was being fished by approximately five handline operators from the Frenchtown area. These were younger fishermen with small boats who were taking advantage of an abundance of fish during the spawning aggregation. Informants reported that

yellowtail also bite well when Grammanik grouper are spawning. Many of those interviewed were supportive of the closure, while others expected little positive effect on the stocks. The closures at Grammanik reportedly have led these small boat fishers to seek out new areas. In some cases, in so doing they have encountered conflict with trap fishers. Some reported snagging traps and trap lines as they moved through areas replete with a variety of vessels and gear users. The situation is increasingly difficult for many. We provide Figure 4-6 below to further illustrate the complexities that currently face commercial fishermen seeking to continue their operations in what is now a highly regulated ocean realm.

Figure 4-7 Increasingly Complex User Group-Regulatory Interface around St. Thomas and St. John



Impacts of the Various Closures

Establishment of the Hind Bank MCD and the associated closure implemented in 1999 has not led to widespread and enduring social effects. But the closure *has* altered historic patterns of commercial activity for two small groups of fishermen of French ancestry who formerly pursued various snapper/grouper species (including Red hind) and other species in what is now a year-round no take zone. Most of those participants were large vessel trap fishermen or small boat handline fishermen who were then residing in the Southside district of St. Thomas. A smaller number of former participants were large vessel trap fishermen who were residing in the Northside district at the time.

Given that commercial fishing and related industries are minimally significant to the economies that characterize the larger districts of interest (i.e., Southside and Northside), we cannot assert that the closure had a significant economic impact at that level of analysis. Moreover, although it is true that community-level analysis renders the relative importance of commercial fishing largely superfluous due to issues of disproportionate scale, the absolute experience of operators affected by the MCD closure reportedly has been largely offset in economic terms by their own resourcefulness. That is, the fishermen have located to alternative fishing locations with sufficient success so as to continue earning reasonable incomes. Inasmuch as the fishers overcame challenges in so doing, the process of adaptation may be seen as an impact in its own right.

Although fishing in the Hind Bank area was once a highly productive and lucrative enterprise, some of the affected fishers concede that the closure may be having a positive effect on stocks in the adjacent areas. Some loss of social interaction among participants occurred subsequent to the closure, but this has not been mentioned as an ongoing problem for participants. The ability of the federal government to enforce the MCD has been questioned by many.

As predicted by fishers contacted during IAI's work in 1997, implementation of closed area management strategies in a context of increasing effort in the commercial trap and handline fisheries of St. Thomas and St. John have reduced the amount of ocean and sub-surface area available for commercial fishery participants. Overcrowding and social conflicts have resulted in a few cases, although, once again, these have been tempered by the fact that individual fishermen are cognizant and respectful of the culture and operational patterns of other individuals and groups. The resulting problems have been and are being worked out through various social processes internal to the groups. That they must do so is in an effect in itself.

5.1. Ongoing Challenges

It is obvious that various fishers from the Southside and those with larger boats from the Northside and East End who deploy traps along the offshore areas southwest of St. Thomas are experiencing the effects of overcrowding from recent closures. The small-boat line fishers have indicated that they, too, have been affected and have moved operations to other areas in the south which, in turn, are also being used more extensively.

One of the common operational reactions to declining catch rates is to deploy more traps. Some fishers interviewed during this project indicated that catch per trap has indeed declined and that they have set more traps to maintain a level of production necessary to continue to meet financial and social obligations. With available fishing grounds shrinking, and the number of traps increasing, many fishers believe that something should be done to rectify the situation.

Although most fishery participants support a reduction in the number of traps that may be deployed, that option is preferable only where it would not require a strict limit well below the number of traps in current use. Some fishermen envision limiting entry into the fisheries as a viable mode of management. Several fishers considered eliminating fishermen who had not landed fish in the recent past, while others suggested limiting permits to full-time fishers only. But most informants also recognize the difficulties involved in implementing such measures. For instance, it was recognized that persons who had not landed fish recently may have been encountering unforeseen problems that prevented fishing, and there was empathy for such operators and situations. Fishers also recognize problems with limiting entry given the potential interest of youth in entering the fisheries in the future. Finally, defining a full-time fisher in this context was also seen as problematic.

5.2. Coalescence

An important response to the recent closures has been the revitalization of the St. Thomas Fishermen's Association. This occurred upon notification of CFMC workshops to be held for purposes of public review of new management proposals. Fishermen expressed considerable indignation at several of the proposals, and collaborated to ensure their best collective interests would be voiced. Some of the proposals called for strict limits on landings of certain species, and establishment of additional no-take MCDs around St. Thomas.

The captains and crew were particularly concerned with proposals that sought to severely limit the catch of yellowtail via seasonal closures, and with proposals for large area closures to address fish population issues on and around Grammanik Bank. Interviewees perceived that the Council and NMFS were trying to meet region-wide conservation objectives by establishing many and highly restrictive MCDs around St. Thomas and St. John. But they believed such measures would not only fail to address the problem, but would cause unnecessary conflict among the fishermen. As one fisher stated:

> They are forcing too much down our throats. I have no problem with closures. But, let's take a step back and see what's causing it. Let's scale back our traps. We've got to get to the root of our problem. The closures are limiting our area and [we are responding by] putting more traps in there. They are starting a war!

Many other fishers believe that stocks are in good shape and that there is no need for externalized management. Fishermen and supporting family members from around the island

responded quickly to the prospective management proposals by organizing a strategy for opposition. They would attend the workshops in large numbers to voice their concerns. One informant commented that the fishermen and their families needed to present a united voice in opposition to the measures. A resident former DPNR Fisheries official worked with local fishermen to examine the Council's proposals and evidence supporting the closures and other measures. Armed with data and analyses, the fishermen attended the meeting and presented their objections. The effort was largely successful in urging the council to scale back some of the more restrictive prospective measures.

Figure 5-1 Signs at Frenchtown Market Advertising Council Meeting

The St. Thomas Fishermen's organization had not been active in the recent past, yet its leaders were capable of quickly organizing the constituent groups to address this most recent round of management issues. Of those interviewed, many indicated that they had attended association meetings in the past, but had not taken part recently. Comments by others pointed to a self-acknowledged lack of ability to agree on solutions as one reason for lack of participation. Nevertheless, and significantly, the organization's representatives were able to successfully unite in opposition to several of the management alternatives.

The future for St. Thomas and St. John commercial fishers is uncertain. The fishermen will likely continue to face stringent regulations. Further closures and other management measures appear imminent at this juncture despite the fact that social and cultural processes internal to the groups may serve as the most effective and non-invasive means of regulating the fisheries. While the local fishing association has been successful in organizing and presenting substantive comments to the Council and NMFS, continued success will depend on the ability of its representatives to help develop alternative management strategies to resolve several key issues associated with trap fishing.

If means can be found to limit trap deployment, the fishermen may be able to circumvent further closures. However, if the Council's intent is to increase habitat protection through area closures, then pressures of overcrowding and conflict will certainly continue, possibly to a point where some will no longer fish, with implications for households whose members are reliant on fishing-related income. Given the importance of the fishing lifestyle and seafood in this island setting, it is likely that persons leaving commercial fisheries here will merely assume an operation that is more artisanal or consumptive-oriented in nature.

5.3. Conclusions

Commercial fishing around St. Thomas and St. John has long involved extensive cooperation between groups of fishermen residing in specifiable locations around the islands. Further, there has long been measured competition and subtle cultural differences notable between those groups and communities. However, research conducted during the course of this project suggests that various macro-level forces are beginning to diminish such differences. Popular cultural influences emanating from the Continent, increasing mobility among fishermen, and the arrival of persons with backgrounds unlike those of established residents are some of the more influential factors that appear to be gradually reducing historically significant aspects of local socio-cultural diversity.

For fishermen and fishing families specifically, new regulatory mechanisms appear to be having a more immediately noticeable and dramatic effect on social and cultural aspects of life. From a sociological perspective, those effects appear to be dualistic in nature. On one hand, evidence suggests that MCDs and other area closures are gradually forcing fishermen to cross operational bounds that were historically guarded by etiquette and custom. But given capacity for self-regulation of behavior, the primary effects have to date been political in nature, and externally imposed regulations appear to be leading those formerly distinct groups to coalesce in political opposition to existing and potential future regulation.

The most pervasive and significant effects of the Hind Bank closure are indeed political in nature. They are also cumulative. As noted above, the Hind Bank MCD closure did lead to some operational effects. More significant effects resulted from closure associated with establishment of the Coral Reef National Monument south of St. John in 2001. This too forced increased fishing effort elsewhere in the region, and also with associated crowding and tension. It also led to some cases in which former operators experienced economic problems.

But when the effects of closures and other regulatory measures are taken in total into the conceptual sphere of the fishermen and combined with a range of other experiential factors, an intense cumulative political reaction can result. These factors include: (a) self- and group identity as highly knowledgeable and productive fishers who possess the capacity for self-governance, (b) daily struggle with challenging economic conditions that can be furthered when fishing livelihoods are in some fashion interrupted, and (c) understanding of local history and the ongoing effects of external agents and processes of change on one's cultural group and/or home community.

Ironically, the most significant and long-lasting human impacts of the area closures on St. Thomas and St. John are those that have disillusioned the very fishery participants who may benefit from measures ostensibly intended to conserve the region's fishery resources. This is a basic political problem likely to be repeated in the absence of recognition that the well-being of individual fishers and user groups must be considered in great depth prior to imposition of area closures. Although establishment of the Hind Bank MCD involved social assessment (via the foresight of NOAA Fisheries), establishment of the National Monument on St. John did not. The latter occurred unexpectedly through an Executive Order that required no assessment.[10] Unfortunately, the action preceded the most dramatic effects for the fleets, and it has fueled extensive political problems and challenges including, also ironically, the readiness of local fishermen to interact with externally-sponsored researchers. Fortunately, local dissatisfaction with the Grammanik Bank and other recent proposals was ameliorated somewhat through public hearings and attention to the input of the fishermen. But it should be kept in mind that this process involved extensive outlay of energy and expression of emotion on the part of the fishers, and that this inevitably incurs socio-political costs. The U.S. Virgin Islands Division of Fish and Wildlife has clearly recognized the benefits of establishing and maintaining rapport with the commercial fleet, and its staff members are rightfully protective of that relationship.

Development of rapport and sincere consultation with fishermen and groups of fishers prior to a given action enables documentation of their perspectives, needs, knowledge, experiences, and concerns. This information can then serve to inform the decision-making process at hand and thereby reduce deleterious social effects and the cumulative political fallout that has characterized the closure process associated with planned and actual federal marine protected areas around St. Thomas and St. John. This is an important goal of NOAA Fisheries-sponsored social research in the region. The presence of a government-fishing group liaison may also be highly useful in this context. Without corresponding alternatives to obviate the potentially deleterious consequences of establishing additional marine protected areas in this region in the future, intensification of current challenges is likely.

The process of coalescence may be intrinsic to small island societies that are subject to externalized social and economic forces. While it is possible to detect important differences between groups of residents– differences rooted deep in history– invasive external forces can serve to arouse perception of unity, and power in cooperation. This appears to be the case as the region’s fisheries are increasingly regulated by various government agencies. In this case, both internal conflict and externally imposed actions are forcing once relatively discrete communities to seek mutually agreeable solutions. In this regard, it may be useful to recognize that the concept of community may be envisioned in various ways. Social problems can, for instance, be

[10] A similar situation recently occurred in Hawaii. The Executive Order establishing the Northwest Hawaiian Islands National Monument was passed without full and formal consideration of the needs or interests of the small fishing fleets that have for many years frequented the waters around that portion of the Hawaiian chain. While the Order has been championed by those who appreciate its conservation potential, participants in the harvest and marketing sectors of the affected fleets report strong dissatisfaction, and uncertainty about their future place in the region's commercial fisheries.

seen as ultimately leading to cooperation and *communitas*, and component parts can be conceived in their more powerful totality. The knowledge and social capital inherent in that totality may, in practice, offer the best solutions to the many challenges confronting marine fisheries and fisheries managers active in the region today.

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Appendix A:

Fisher's Perspectives on Coral Reef Issues

A sub-sample of fishermen was queried about the status of coral reef ecosystems in the St. Thomas/St. John District. The following summarizes those discussions.

When fishermen discuss coral reef ecosystems in this island setting, responses tend to be mixed based on personal experiences. For some fishermen, such as offshore pelagic fishermen, there is relatively little direct interaction with coral reefs, and thus their empirical understanding is limited. Others have more direct experience and offer their perspectives more readily. For instance, those who use dive gear have more first hand visual knowledge of the reef ecosystems conditions than most other fishers. On the other hand, many trap fishermen are highly knowledgeable of such systems based on long-term fishing activity and cognitive mapping of certain areas, reconnaissance with echolocation technology, and so forth.

Fishermen on St. Thomas and St. John queried about the status of coral reef ecosystems in the region attributed their state of decline to the following factors: (1) runoff; (2) pollution; (3) land development; (4) gentrification of coastal areas; (5) hurricanes; (6) too many divers; (7) too many fish traps and lobster pots in a limited space.

The connection between inshore reef systems, runoff, and outer reefs is said to be obvious. For instance, a fisherman from Hull Bay pointed out that during the rainy season the inshore reefs are often loaded with mud and silt resulting from hillside runoff. When the winter swells arrive the bays tend to get flushed out and clear. But it is generally perceived that the sediment subsequently accumulates on the outer reef systems, with detrimental effects on their health and that of associated biota.

There is little doubt that hurricane activity has a negative impact on the corals and reefs. Fishermen related numerous stories of how large boulders and coral heads were overturned during Hurricanes Hugo and Marilyn and how these storms tended to negatively affect fish populations associated with the reef ecosystems.

Diving in shallow areas reportedly also tends to have an effect on the health of corals. Tourists are known to trample on sensitive reef areas, and it is generally believed that many do not understand that live corals can be detrimentally affected with relatively little exposure to humans. Fishermen noted that corals are in a visible state of decline in areas where tourists are taken diving by tour companies. One example of this situation is visible along the north end of the Coki Point Bay, where hundreds of people dive in the area's calm waters on a daily basis.

One well known and respected fisherman stated his perspective that too many traps in the water may be detrimentally affected certain coral reef ecosystems. He blamed the current management regime, stating that area closures have forced fishermen to compete for limited space and that

people are essentially fishing "on top of each other" in increasingly smaller areas, with potentially negative impacts on the coral reef ecosystems surrounding the islands.