



The Socio-economic Importance of Fishing in St. Thomas, USVI:
An Examination of Fishing Community Designation



By

Brent Stoffle, Joseph Contillo, Cynthia A. Grace, and Derke Snodgrass

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

September 2011



The Socio-economic Importance of Fishing in St. Thomas, USVI:
An Examination of Fishing Community Designation

By

Brent Stoffle, Joseph Contillo, Cynthia A. Grace, and Derke Snodgrass

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, Florida 33149

U.S. DEPARTMENT OF COMMERCE
Rebecca Blank, Acting Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Jane Lubchenco, Under Secretary for Oceans and Atmosphere

NATIONAL MARINE FISHERIES SERVICE
Eric Schwaab, Assistant Administrator for Fisheries

September 2011

This Technical Memorandum series is used for documentation and timely communication of preliminary results, interim reports, or similar special-purpose information. Although the memoranda are not subject to complete formal review, editorial control, or detailed editing, they are expected to reflect sound professional work.

NOTICE

The National Marine Fisheries Service (NMFS) does not approve, recommend or endorse any proprietary product or material mentioned in this publication. No reference shall be made to NMFS or to this publication furnished by NMFS, in any advertising or sales promotion which would imply that NMFS approves, recommends, or endorses any proprietary product or proprietary material mentioned herein which has as its purpose any intent to cause directly or indirectly the advertised product to be used or purchased because of this NMFS publication.

This report should be cited as follows:

Stoffle, Brent, Joseph Contillo, Cynthia Grace, and Derke Snodgrass. 2011. The Socio-economic Importance of Fishing in St. Thomas, USVI: An Examination of Fishing Community Designation. NOAA Technical Memorandum NMFS-SEFSC-zzz, xxp.

This report will be posted on the SEFSC web site at URL: <http://www.sefsc.noaa.gov/>

Copies may be obtained by writing:

Brent Stoffle, Ph.D
NOAA Fisheries
75 Virginia Beach Drive
Miami, Florida 33149
Brent.Stoffle@noaa.gov

National Technical Information Center
5285 Port Royal Road
Springfield, VA 22161
(800) 553-6847 or
(703) 605-6000
<http://www.ntis.gov/numbers.htm>

Executive Summary

This report focuses on the island, people and fisheries of St. Thomas, United States Virgin Islands (USVI). In doing so it attempts to determine if the island can be considered a fishing community as defined by the Magnuson-Stevens Fishery Conservation and Management Act. In order to do this we had to determine if there were individual communities, or if the island as a whole, could be considered substantially engaged in or dependent on fishing. We focused on three main issues; 1) the historic dependence and engagement in fishing, 2) the contemporary dependence and engagement in fishing, and 3) the socio-cultural connection to fishing. To make the argument that the island as a whole could be considered a fishing community we again examined three main issues; 1) precedence (are there other islands under the National Oceanic and Atmospheric Administration's (NOAA) jurisdiction that have been designated), 2) why did previous research suggest individual places rather than the whole island, and 3) how do residence patterns build an argument for island-wide designation.

Our findings suggest that there is an active and productive commercial fishery on island in addition to an economically vibrant recreational fishery, a fishery centered around targeting big game species for pleasure and competition. The substantial engagement in and dependency on these two fisheries, in addition to a long historical relationship between island residents and fishing (and the marine environment in general), develops a strong argument in support of fishing community and island-wide designation. Focusing attention on local engagement in and dependency on the commercial and recreational sectors develops an argument in support of fishing community designation. In addition we also suggest that the precedence set in other areas under NOAA jurisdiction assists in the justification as a fishing community and for island-wide designation. The nature of the socio-economic linkages to marine resources and to fishing as a whole, develops an discussion supporting island-wide designation. Our findings suggest that the historic and contemporary connection to the resources is strong and maintains a presence throughout the island's physical and cultural landscape.

Acknowledgements

We thank all of those individuals, groups, institutions and agencies instrumental in the successful completion of this research effort. The first to thank are the people of St. Thomas, especially the fishermen and their families. To Julian Magras, Jimmy Magner, Winston Ledee, Neville Smith, and Patrick Bryan, there is no way we can thank you enough for your support and assistance throughout the research process. To Dr. Olsen we would especially like to thank you for your time and effort with this research project. Your contributions made it possible for us to address this important issue.

Personnel from the United States Virgin Islands Department of Planning and Natural Resources (DPNR) were extremely helpful during our visits. To former Director Dr. Kojis, former Acting Director Ruth Gomez and former Chief of Fisheries Dr. Uwate, thank you for all of your assistance and knowledge. Your participation was essential for the development and completion of this report.

Financial support for this research was provided by grants from the NOAA Fisheries Service's National Standard 8 research program, NOAA's Marine Fisheries Initiative (MARFIN) program, and NOAA's Coral Reef Conservation Program. We thank you for recognizing the importance of this research and making it possible for us to complete this important research project.

Table of Contents

	Page	
1.0	Introduction	1
1.1	Caribbean Region and the Development of Social Networks	2
1.2	Legislative Framework for MSA Fishing Community Designation	3
1.2.1	Magnuson-Stevens Fishery Conservation and Management Act and National Standard 8	3
1.2.2	MSA Definition of Fishing Community	4
1.3	Justification Criteria for Community and Island-wide Designation	5
1.4	Recreational Fishing	6
2.0	Historic Dependence on and Engagement in Fishing	7
2.1	Pre-Columbus	7
2.2	Slavery and Post Emancipation	8
2.3	French Whites in St. Thomas	9
2.4	Historical Importance of Fishing	10
3.0	Contemporary Dependence on and Engagement in Fishing	11
3.1	Description of Contemporary St. Thomas	11
3.2	Description of the Commercial Fishery	12
3.2.1	Gear Types and Species Targeted	13
3.2.1.1	Trap Fishing: Fish and Lobster Traps	14
3.2.1.2	Line Fishing	15
3.2.1.3	Seine Net Fishing	16
3.3	Revenue Generated	17
3.3.1	Marketing Fish	18
3.4	Community Linkages	19
3.5	Recreational Fishing	22
3.5.1	Description of the Recreational Fishery	22
3.5.2	Recreational Fishing Tournaments	24
3.5.3	Recreational Fishing Infrastructure	25
3.6	Socio-cultural Connection to Fishing	29
4.0	Justification for Island-wide Designation	34
4.1	Precedence	34
4.2	Why Did Previous Research Suggest Three Individual Areas as Fishing Communities	35
4.3	Residence Patterns of Commercial Fishermen	37
5.0	Conclusion	41
6.0	References	44

List of Figures

	Page	
Figure 1	Map of Caribbean and Virgin Islands	1
Figure 2	Lobster Catch	14
Figure 3	Handlining for Pelagics	15
Figure 4	Seine Fishing in St. Thomas	16
Figure 5	Fishery Landings and Value	17
Figure 6	Early Morning Marketing	18
Figure 7	Do You Service Your Vessel Locally	20
Figure 8	Do You Service Your Engine Locally	20
Figure 9	Do You Buy Your Fishing Gear Locally	21
Figure 10	Do You Purchase Your Electronics/Navigational Gear Locally	21
Figure 11	Do You Buy Your Bait Locally	22
Figure 12	Offshore Charterboat Located in Red Hook	23
Figure 13	Marinas and Anchorage Sites in St. Thomas	25
Figure 14	Boat Storage along the Southeast Coast of St. Thomas	26
Figure 15	Popular Red hook Grocery Market Frequented by Local Fisherman	27
Figure 16	View of Marina from Hotel Room at Sapphire Beach	27
Figure 17	Local Restaurant Advertisement	28
Figure 18	French Heritage Museum in Frenchtown	30
Figure 19	St. Thomas Fishermen's First Annual Fun Day Softball Tournaments; Northside versus Southside	31
Figure 20	Members of the St. Thomas and St. Croix Fishermen's Associations Testifying to Congress, 2010	32
Figure 21	From Sea Level (Frenchtown) Looking Up	37
Figure 22	St. Thomas From Above	38
Figure 23	Commercial Fishermen's Residence Patterns	39
Figure 24	Launching/Landing Sites	39
Figure 25	Hull Bay at Sunset	41



Figure 1: Map of Caribbean and Virgin Islands: Source: www.virginislandsmap.com/Stthomas

1.0 Introduction:

In 1996, the reauthorization of the Magnuson Stevens Act (MSA) and the creation of National Standard 8 (NS8) highlighted the importance of examining fisheries impacts at a community level. Since that time a great deal of attention has been paid to many United States (US) coastal communities engaged in commercial, recreational and subsistence fishing. In fact, within the language of NS 8 the description of what constitutes a fishing community is discussed and defined, and there within is determined to be a place based entity where people are substantially dependent on and engaged in fishing and fishing related activities such as processing. In order to assess how coastal communities fit within this classification, researchers within NOAA and contractors hired by NOAA, explored coastal communities throughout the US and US Territories, engaging in research called community profiling. Between 2005 and 2009, our research efforts in collaboration with those of Impact Assessment Inc. (IAI) addressed the role of the St. Thomas fisheries within the societal framework. It also identified the way in which people were and are socio-culturally and socio-economically tied to fishing, be it in relation to the commercial, recreational and/or subsistence sectors, or those businesses directly and indirectly impacted by the existence of the fisheries.

The purpose of our research was twofold: 1) determine if the people of St. Thomas are substantially engaged in and dependent on the local fisheries and 2) determine whether the island as a whole should be considered a fishing community. This Technical Memorandum (TM) explores the case for fishing community designation while also addressing the idea that islands in their entirety may be designated as a single fishing community. Throughout this report, research findings from iterative research projects conducted by the Southeast Fisheries Science Center (SEFSC) and IAI, a contractor tasked with the preliminary creation of a community profile of St. Thomas and its fisheries, are used to examine specific socio-cultural and socio-economic variables and document the existence of socio-cultural and socio-economic networks. This TM builds

on IAI's analysis and lays out the discussion of fishing community designation and island-wide designation. In order to address this, we examine the following: 1) the Caribbean Region and the Development of Social Networks, 2) the Legislative Framework for Community Designation, 3) the Historic Dependence and Engagement in Fishing, 4) the Contemporary Dependence and Engagement in Fishing, and 5) the Justification for Island-wide Designation.

1.1 Caribbean Region and the Development of Social Networks

Islands are unique places, socially and culturally more complex than the stereotypic perception of a place with warm crystal blue waters lapping up against white sandy beaches, palm trees swaying in gentle breezes, and foreigners arriving on large jets and ships to drink fruity concoctions brought to them by members of the local population. While every stereotype holds some truth, the reality is that these places are much more complex and are often the product of long histories of social, cultural, economic subjugation and natural resource use and exploitation (Beckles 1989, Demas 1997, Handler 1974, Mintz 1985, Mintz and Price 1985, Smith 1984). These forces are the basis for the development of past and current social structure and the creation of contemporary island societies. As a response to forces of development and social change, many island people created and maintained strong socio-cultural and socio-economic networks, be they linked by class, kinship, communality, ethnicity (race), and/or gender, that were a means of creating social and economic stability and solidarity (Barrow 1996, Clarke 1957, Smith 1984, Stoffle 2001, Williams 1970, Yelvington 1993). Many of these networks were and are part of formal organizations, visible in everyday life (e.g. fishermen's associations and organizations). Others were informal, having remained and some still remaining hidden in society (e.g. rotating savings and credit associations; Purcell 1998, B. Stoffle 2001). Many of these social networks exist even today and over time adapted to forces of change in society over generations.

The complex social relationships and socio-economic networks that exist on St. Thomas are without a doubt affected by the historical development of the island. The physical, industrial and economic development of St. Thomas, like that of many other Caribbean islands, has impacted the ecological relationship between humans and natural resources. This relationship is based on a history of interaction, use and understanding. The outcome is the creation of a fishery intertwined in the socio-cultural and socio-economic networks of the local community. The existence of this fishery has created opportunities, from a commercial, recreational and subsistence perspective. These opportunities require intelligent decision making in order to appropriately utilize resources in a manner that creates socio-economic stability as well as encourages the interface between the fisheries, its participants and other sectors of society (i.e. the economy). Both service based industries and infrastructure development are directly and indirectly tied to the harvesting of marine resources. As relationships grow and are strengthened over multiple generations they become increasingly embedded into the culture of the local residents (B. Stoffle et. al 1994, B. Stoffle and R. Stoffle 2007, 2010; R. Stoffle 1986; 2001; R. Stoffle and Minnis 2007; R. Stoffle et. al 1991). Essentially the existence of these networks and the depth of these relationships are the culmination of the

way in which local people have historically and contemporarily struggled for survival and created stability, not only through economic opportunities and the development of economies but improved health through the provision of quality sources of proteins.

1.2 Legislative Framework for MSA Fishing Community Designation

This section explores the legal and legislative framework for designating fishing communities. It provides definitions and discussions regarding what a fishing community is and the various regions where NOAA, Council and Federal individuals have already engaged in this discussion.

1.2.1 Magnuson-Stevens Fishery Conservation and Management Act and National Standard 8

In 1996, the Magnuson Fishery Conservation and Management Act was re-authorized and amended by enactment of the Sustainable Fisheries Act (SFA), which also renamed it the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA (P.L. 94-265, as amended by P.L. 109-479 in 2006) required regional fishery management councils to amend existing fishery management plans and, among other things, focus attention on fishing communities. This TM addresses this charge by focusing on the socio-economic relationships and networks that comprise the fishery based on the MSA National Standard 8 (NS 8) definition of a fishing community.¹ Specifically, this report examines whether there exists localized fishing communities distributed across St. Thomas, or if St. Thomas as an island represents the NS 8 definition of a fishing community.

Since the 1996 reauthorization of the MSA, there has been an increase in the amount of attention directed toward understanding how local fishing communities are impacted by change. This change can be associated with decisions made by fishery management and/or by the impact of natural perturbations, such as hurricanes. Much of this attention stems from the introduction of NS 8 of the 1996 MSA. NS 8 is one of ten National Standards that guide fishery management, policy and research. It is unique in that it highlights the need to understand potential forces of change at a community level, recognizing the interconnectedness of fishing with other aspects of society. In order to understand how fishing is interconnected with these other aspects it is necessary to compare communities with significant involvement in commercial, recreational, and/or subsistence fishing, harvesting and/or processing with those places where engagement may occur but the level of dependency is not the same.

¹ Impact Assessment Inc. (2007), created a report that focuses on the historical and contemporary development of St. Thomas and its fisheries. The report highlights many important factors regarding participation in the local fisheries and the subsequent importance to the community at-large. While their research findings are independent of those in this report, the research effort was collaborative and was undertaken as an attempt to collect different kinds of data at different levels of specificity. Where there findings are specifically used, reference will be given to them.

The ultimate goal of the National Standards is to guide management in the prevention of overfishing and rebuilding overfished stocks. NS 8 focuses on the social and economic components of the Nation's fisheries and along with the National Environmental Policy Act (NEPA), is the driving force behind social and economic assessments designed to evaluate the impacts of proposed management alternatives. As stated in NS 8,

(C)onservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities. 16 U.S.C. 1802 §3 (17).

The establishment of new regulations must consider the cultural and social framework relevant to the fishery and any affected fishing community. In an effort to address these social and economic concerns, the MSA requires that all fishery management plans include a fishery impact statement. The fishery impact statement assesses, specifies and describes the likely impact of management alternatives on fishermen and fishing communities involved in the fishery whose management plan is under revision.

1.2.2 MSA Definition of Fishing Community

A fishing community is defined as a community that is substantially dependent and engaged in commercial, recreational, and subsistence fishing as well as processing. However, when we read into the definition we also realize another important part of the definition and that is that MSA defines a fishing community as a place-based entity, an aspect of the definition which is problematic for many communities throughout the continental United States (US). The reason for this relates to the fact that socio-economic networks associated with fishing and processing are often not limited to the boundaries of a place-based community. These networks can extend into adjacent communities, and even cross state, regional, national and international boundaries. This definition can be problematic for continental US coastal communities because in many cases forces of gentrification and coastal development are causing many fishermen to relocate to areas outside of their traditional community boundaries, usually further inland, where housing is more affordable. So, while they may fish out of the same places they always have, many of them may no longer reside there, taking with them the revenue generated outside of their traditional community. A similar movement can be seen on islands, the difference being that if the island is of a certain size, money tends to circulate within the island community. For some island communities the cause/effect relationship of coastal redevelopment centering round tourism, causes the cost of housing to become too high for many residents. Their response is to move to other more affordable locations rather than leaving the physical boundaries of the island. In this way, the residents remain

within the boundaries of the community, unlike many continental US communities where people have left and moved to another community altogether².

Another issue that arises relates to the fact that the MSA has no quantitative or qualitative protocols or measures codified to determine whether a community is substantially dependent or substantially engaged in fishing. However, the Socio-Cultural Practitioners Manual (Abbott-Jamieson and Clay in production) identified 23 indicators that can be used to assist in the identification and evaluation of fishing communities. In the Pacific Northwest Region, Norman et al. (2007) developed a strategy to identify each community's level of dependence or engagement in commercial fishing by examining landings information. While this appears to be a functional strategy, its implementation in the USVI is currently impossible based on the fact that catch data of similar quality are not currently available, in addition to excluding important information about the recreational (including for-hire) and subsistence sectors. In St. Thomas, recreational fishing is an extremely important component of the island's fisheries and needs to be considered when discussing community designation. These sectors were not considered during the selection and identification process in the Northwest Region's fishing communities.

1.3 Justification Criteria for Community and Island-wide Designation

Throughout this TM we examine various criteria for justification of community designation and island-wide designation. The following outlines the key components of this discussion and provides a format for the dissemination of the information.

There are three criteria used for justifying fishing community designation and they are:

- 1) Historical dependence and engagement
- 2) Contemporary dependence and engagement
- 3) Socio-cultural connection to fishing

The reason for discussing historic dependence and engagement is to demonstrate the historic relationship of humans with the marine environment, ultimately demonstrating the long term reliance on these resources for survival. The discussion of contemporary dependency and engagement places the human environment relationship in context of the society at large, examining socio-economic and socio-cultural linkages.

² An example of this is Barnegat Light, New Jersey. Historically known as a fishing community with strong familial and communal ties, Barnegat Light underwent a transition where housing prices for coastal land quintupled in a few short years. Wealthy people, many of whom were said to be from New York City, bought up the land, leveled the house on it, and replaced it with a modern and very expensive beach house (many more than three stories tall with four plus bedrooms). The fishermen watched as their community changed from a blue collar beach community to a vacation and second home community. New business came catering to the new market, however, in reverse schools closed and longstanding locally owned businesses did as well. Because it became a weekend and summer vacation getaway, it was only busy at certain times during the year. The schools no longer had children and the small businesses no longer had regular customers. The residents that made up the traditional community moved across the Bay, some 45 minute drive, away from a place where many families had lived for generations.

The socio-cultural connection to fishing continues the discussion with specific variables highlighted to reinforce the assertions of dependency and engagement.

There are three main considerations when assessing island-wide designation and they are:

- 1) Precedence -- Have any other islands been designated and what was the rationale
- 2) Why did IAI conclude that only three areas were worthy of designation
- 3) Residence patterns of commercially licensed fishermen

The rationale for examining precedence assists in the discussion of justifying the distinction of island-wide designation. The argument would follow that if other islands have been designated then perhaps the criteria used in those cases may be applicable for the St. Thomas one. Examining why IAI suggested that three areas could potentially be considered fishing communities assists in building the argument that defining individual communities does not encapsulate the connection of fishing networks residing within a single community's physical boundaries. Building on their analysis and bringing new information to the discussion assists in the consideration for island-wide designation. One of the ways that we do that is by examining the residential patterns of commercial fishermen and highlighting the fact that due to infrastructural improvements fishermen are no longer confined to geographic areas/communities.

1.4 Role of Recreational Fishing

It is important to realize the role of recreational fishing in the lives and economies of St. Thomas residents. Because fishing community designation can be based on a combination of factors related to commercial, recreational and subsistence fishing it was important to work with local recreational fishermen to determine the impact and importance of these factors. Examining the combination of both the recreational and commercial fisheries makes for a stronger argument regarding the overall socio-economic and socio-cultural importance of fishing in St. Thomas.

2.0 Historic Dependence and Engagement in Fishing

When examining the history of a place it is often easy to identify those characteristics that remain constant and evident over time. And, while there have been many types of societal changes in St. Thomas, there remains one very visible constant, the symbolic and physical manifestation of local residents' connection to and use of marine resources. The commercial and subsistence harvest of marine resources has always been an important part of daily life for island residents (Williams 1970). And, with the development of the service industry and an increase in leisure time, fishing became an increasingly prevalent and an important part of the local economy (both commercially and recreationally – especially with the development of the private boat and for-hire sectors of the recreational fishery) and manifested itself in local activities and infrastructure. However, in order to understand the length and depth of this connection, it is necessary to track back to the beginning, a time before European arrival to the region to a place and time where the harvest of marine resources was embedded in the culture of island residents. From there one can chronologically trace the relationship between residents and resources to the present day.

2.1 Pre-Columbus

The connection between island residents and marine resources begins even before the arrival of Columbus to the “New World”, beginning with the various tribes of the Caribbean (Williams 1970). An examination of the archaeological records determined that St. Thomas was once home to people from the Ciboney tribes, the Taino or Arawak tribe, and the Caribs (Williams 1970). However, even before the arrival of these groups, there was said to be a “pre-Taino” group which resided in the Virgin Islands between 200 and 700 AD). The name “pre-Taino” is really not an ethnic name but more a general label to describe the time period (200 to 1200AD). From AD 600 to 1200, it is difficult to tell much of the identity of Virgin Island residents but there are changes in settlement patterns, ceramic traditions, artifacts and food remains (some of which were in the form of shell middens and remains from the consumption of marine resources).

Around AD 1000, the Arawaks (Taino) fled the brutality of the warring Carib Indians, some of whom settled in the Virgin Islands. Much of the literature on the Arawaks (Taino) describes them as a peaceful and sedentary group, extremely proficient at “agriculture, hunting and fishing” (Ferguson 1992). The Taino name became a more common classification for groups living in and around the Virgin Islands. They were described as an indigenous people with a way of life “*geared toward a sustainable interaction with the natural surroundings...it prescribed a life way that strove to feed all the people, and a spirituality that respected in ceremony most of their main animal and food sources as well as the natural forces like climate, season and weather.*” (Collazo 2004, www.fjcollazo.com). The Tainos are said to have been excellent seafarers and fishermen and were known to target multiple species of fish and turtles. Their pattern of resource distribution was as much apart of their culture as any other trait. Their catches were shared among their community members and there was a sense of cooperation and communality throughout the group (Rouse 1992)

. The Taino and Carib were present in the area up until the time of Spanish exploration, with a majority dying shortly after settlement. While explorers reported the existence of Indians as late as 1587, when settlers arrived in 1625 there were no reports of Indians on the islands (Rouse 1992).

2.2 Slavery and Post-Emancipation

In 1671, the Danish West India Company received its charter to occupy and take possession of St. Thomas, including other islands located around the area. These were places deemed to be uninhabited and suitable for the development of a plantation society and economy. Many of the first inhabitants of the islands were convicts, both men and women, and were brought by the Danish government as a means of providing labor. This type of indentured servitude was not uncommon practice in the Caribbean as developing islands, such as Barbados, brought indentured servants from Europe in their first attempt to fulfill their labor and agricultural needs. However, this strategy in St. Thomas as well as other parts of the Caribbean proved time and again to be a failed one. Because of this focus shifted to the emerging slave trade. The Danish government determined that engagement in the African slave trade was a more viable solution for labor and the creation of a profitable industry (Dookhan 1994, www.vinow.com/stthomas/History/).

Settlement was not easy and problems arose due to large losses of life and complications associated with a lack of adequate labor. The government realized that the future of St. Thomas lay in the development of the area around the natural harbour. In fact some of the first development efforts centered round the creation of a service industry for sailors (taverns). This was designed to entice seafarers to stop and spend money while docked in the St. Thomas' harbour town, known today as Charlotte Amalie.

The Caribbean region as a whole was developing rapidly as plantation societies and economies were sprouting up all over the region (Handler and Lange 1978). The early 1700's were characterized by great economic growth as sugar became a popular and economically productive crop (Mintz 1985). The growth of the slave trade coincided with the success of plantation economies and the slave trade was an important factor in the historical development of St. Thomas as African slaves comprised the main portion of the labor force and total population. St. Thomas was known as place where traders from around the Caribbean came to purchase slaves to be brought back to their own plantations. Between 1691 and 1715 the population of St. Thomas grew from 389 to 547 whites and from 555 to 3,042 people of African ancestry (<http://www.vinow.com>).

Most of a slave's time was spent working for the benefit of the plantation owner. However the plantation societies in St. Thomas, mirroring those from Jamaica and Barbados (as well as other parts of the region), were places where slaves were allowed and actually encouraged to cultivate house gardens and small farm plots for sustenance and medicinal purposes. Personal crops were cultivated on these "provisioning grounds" for sake of sustenance, sale, or barter, and were primary forces in the creation of the internal slave economies (Kiple 2007). Such plots typically were situated on land deemed unsuitable for commercial crop production. In addition to the agricultural

activities, the slaves exploited marine resources as time allowed. This practice was encouraged by plantation owners, for the more self-sufficient and healthy the slaves, the less owners would have to pay for food or the replacement of individuals due to sickness or death. The use of marine resources was another strategy employed by slaves as a means for providing sustenance and was a part of the development of small-scale commercial production. Many slaves used hook and line methods, or lattice woven traps, both tended from dugout canoes. Crab and lobster were pursued after dark. Men and women engaged in fishing and it was common for women to fish from the shoreline and collect shellfish while men fished from boats (Olwig 1993:50). Olwig highlights the fact that marine exploitation certainly occurred during slavery and appears to be a continuation of the pattern of resource harvesting dating back to the original inhabitants. This highlights the fact that marine resource use was an important aspect of the culture of the peoples who have lived in St. Thomas.

St. Thomas became a free port in 1815 and shortly after became a shipping center and distributing point for all the Caribbean. European interests in the island as an import/export industry created a time of economic prosperity as large and small importing houses became a common feature of the Charlotte Amalie landscape. A large part of all West Indian trade was channelled through the harbour. Of the 14,000 inhabitants, many of them free, only about 2,500 (mostly slaves) made their living on plantations. A substantial segment of free Blacks worked as clerks, shopkeepers and artisans. The population and atmosphere was very cosmopolitan, particularly in comparison to St. Croix (<http://www.vinow.com/stthomas/History/>).

2.3 French Whites in St. Thomas

Throughout the late 1800s and early 1900s the ethnic population of the USVI changed considerably, due in large part to a substantial migration of Puerto Ricans (including Vieques) to St. Croix and French immigrants who migrated to St. Thomas from St. Barts. Upon arrival in St. Thomas, two groups of French communities were said to form, one that settled in the southern coastal area of what is today known as Frenchtown and another that settled on the northside of the island, on the hillsides and coastal areas between Caret and Magens Bay. These two groups were initially distinct in that the southside “Frenchies” were primarily fishermen, and resided in a more coastal urban area where their landed catch was easily accessible to those from nearby Charlotte Amalie. The northside French were initially farmers, and planted fruit trees and vegetables. As time passed the northside French became increasingly interested in fishing and began to target species both for profit and subsistence. Fielder and Jarvis (1932) estimate that during the depression there were some 400 commercial fishermen active in the islands, with many of the fishermen from St. Thomas being of French or West Indian descent.

Shaw (1935) noted that even though the two groups of French shared the same *patois* there were cultural distinctions between the two groups, one that genetically/biologically

manifest itself in the size of the earlobes, as some the southsiders were called long ears by their counter parts.

Between the 1930s and the 1960s the number of fishermen in the islands remained roughly the same, approximately 400. During this period fishermen, much like today, utilized a multi-gear/multispecies approach to fishing. Not only were fish pots used as a main strategy for targeting species, but so too were hand lines and haul seines. In 1930, 616 pounds of seafood was reported caught, a number which increased to 1.5 million pounds in 1967 (IAI 2007). During this period, a relationship developed between restaurants and local fishermen, mostly because of the increase in the tourism sector. While there were initial difficulties, mostly centered round the storage and shipment of the product, the socio-economic tie to one another began. And, as tourism became increasingly popular from the mid 1950s up until today, these relationships have continued and expanded to other businesses and individuals.

2.4 Historical Importance of Fishing

Regardless of when or who, fishing has always been an activity engaged in by island residents. Ethnically distinct and separated by time, these groups all shared a common cultural feature, a relationship with the sea and its resources. For some it was more than a means of generating revenue and engaging in local economies, at its most basic level it was a means for survival. The sea was the supermarket and it provided sustenance. The reliance on these resources was so important that it became embedded in their culture and a part of their everyday life. It became a part of who they were and, as we will see, is a part of who St. Thomas residents are today. The importance of fishing and the fisheries spans both time and space, maintaining a strong presence in the past, present and future.

3.0 Contemporary Dependence and Engagement in Fishing

In order to address the level to which people are tied to the local fisheries, variables such as revenue generated by participation in the commercial fisheries are explored. This section discusses engagement and dependency by assessing the economic value of the local fisheries by examining the revenue generated in the commercial fishery itself. While this can be an extremely demonstrative variable it must be remembered that developing a picture of dependency and engagement requires examining numerous kinds of data and this should only be viewed as one part of a larger story. In addition, it is important to contextualize the role of fisheries as a part of the society at-large, and for that reason it is important to develop a description of contemporary St. Thomas. In addition, it is important to remember that designation can be assigned because of the existence of one or more types of fisheries, and in the case of St. Thomas, the existence and importance of the recreational fishery only adds to the discussion of the social and economic connection to fishing as a whole. For this reason, a discussion of the recreational fishery is included in this section. Our findings suggest that the combination of these two fisheries, commercial and recreational, demonstrates a level of dependence and engagement that warrants community designation.

3.1 Description of Contemporary St. Thomas

St. Thomas remained under Danish rule until 1917 when the United States purchased the Virgin Islands for 25 million dollars. The US bought the islands during World War I because of its geographic location in the Caribbean and as a part of a strategy to improve US military positioning. At the end of the War, the residents of the Virgin Islands were left somewhat dismayed as the citizenship they were promised did not immediately come, and the islands were left under the rule of Naval administrators and appointed officials (www.vinow.com 2000). Governance essentially remained this way until the 1936 Organic Act. From that point, the US Military and the Department of the Interior gave way to an elected Governor, under the jurisdiction of the President of the US. And, even though classified as a territory, residents were given their US citizenship.

In the 1950s prosperity returned to Charlotte Amalie and St. Thomas in the form of increased air and sea travel to the island. The tourism industry continued to grow in the years thereafter and as a result the island experienced an increase in population with immigrants from other Caribbean islands arriving in hopes of finding work in the developing tourism industry. St. Thomas has moved into the 21st century maintaining its prominence as one of the Caribbean's top vacation destinations and Charlotte Amalie became a favourite cruise ship port of call (www.vinow.com/stthomas/History/). In 2009, there were 593 ships that stopped in St. Thomas with over one and a half million tourists disembarking. In 2009, there were over half a million air passengers. Many of these people came in order to take full advantage of a vacation focused on tax free shopping, eating in local restaurants, sun bathing on local beaches and playing in and enjoying the marine environment.

Currently, tourism is the primary economic activity of the region, accounting for 80% of GDP and employment. In addition, the manufacturing sector consists of petroleum refining, rum distilling, textiles, electronics, pharmaceuticals, and watch assembly (petroleum and rum production coming exclusively from St. Croix). The agricultural sector in the region is small, with a large portion of food being imported. There are formal and informal local farmers markets that are used to feed residents, and their presence is a part of everyday life on all three islands. International business and financial services are also small but are growing components of the economy. The government is focusing on some main issues, including support for construction projects in the private sector, expansion of tourist facilities, reduction of crime, and protection of the environment (<https://www.cia.gov/library/publications/the-world-factbook/>).

Tourism is the basis for the island's economy. Job possibilities include sales, tours, bartending, wait staff, mates on sail boats and charters, hotel and resort staff, beach attendants and water sports attendants. Many of these jobs are said to be easy to find during high season (mid-November to mid-May) but can also be found at other times during the year, as visitors continue coming, however just in fewer numbers (<http://www.vimovingcenter.com/employment/>).

In 2000 the population was listed as 51,181 and in 2009 increased slightly 55,138 (factfinder.census.gov). In 2010, there were 26,859 people in the workforce, down 3.6 percent from 2009. Unemployment was 7.5 percent, up almost a percentage point from the year previous. This is not unexpected as the US and other countries around the world are experiencing the effects of a global recession.

In 2007 IAI did a population breakdown by geographic area. The following is a breakdown of population residence on the island:

- Charlotte Amalie (Town): 11,004
- Charlotte Amalie (Sub-district): 18,914
- East End: 7,672
- North Side: 8,712
- South Side: 5,467
- Tutu: 8,197
- West End: 2,058

3.2 Description of Commercial Fishery

If we are to holistically understand the impact of the local fisheries on St. Thomas it is necessary to examine specific components of the local fishery and the manner in which people are tied to these components. The following subsections examine the 1)

Gear and Species targeted, 2) Marketing Fish, and 3) Socio-cultural Variables associated with the Fishery³.

In 2003, Dr. Kojis completed a Census of the Virgin Islands commercial fishermen. From this, specific information about the St. Thomas fishermen was acquired and helped us develop a more complete understanding of the socio-demographic characteristics of commercial fishery participants. In 2003/4, it was reported that there were 160 commercially licensed fishermen in St. Thomas/St.John. The majority of these fishermen were of French descent (49.1%), with the second highest ethnic group reported as black/West Indian (32.5%). The average age of the fishermen was 48.6 years old and the most common educational attainment is a high school degree (41.3%). 77.3% of the fishermen surveyed considered themselves full-time fishermen, defined as spending more than 36 hours a week on their fishing activities. The average number of years fishing was 24.8. When asked about the number of years a fisherman expected to continue to fish, almost 75% of them stated for "life". Most fishermen, 60.2%, own one boat with 22.4% reporting that they own two. The average size of the boat is 21.4 feet in length and almost three fourths of those utilize an outboard engine. Fishermen (82.3%) stated that reef fish are the most commonly sought after species. Fishermen also report that targeting lobster is common and an economically important species as well. Unlike St. Croix there is little conch harvested by St. Thomas fishermen. Nearly 74% of fishermen's income is said to come from commercial fishing, which is an important number when considering fishermen's level of dependency on the fishery, for 77.3% of the fishermen consider themselves full time commercial fishermen. This leads us to conclude, based on these findings, that if something drastic were to happen to the fishery where commercial fishermen could no longer fish, a large number of people would be significantly impacted by the loss of income.

3.2.1 Gear Types and Species Targeted

Examining the types of species targeted emphasizes specific species sold and consumed (and preferred) by locals as opposed to those consumed (and preferred) by tourists. Making this distinction provides a better understanding of local dependency on fishery resources and this information can be incorporated into a discussion of social and economic impacts associated with any management action or activity which might affect the abundance or availability of desired species.

³ It should be noted that in Pollnac's (1998) chapter entitled Rapid Assessment of Management Parameters for Coral Reefs he mentions examining these concepts when assessing the impact of humans on coral reefs and their resources. He also makes mention that if one is to fully understand the relationship between humans and the coral environment factors such as these are important for assessing the impact of future regulatory or development activities on human populations as it relates to the coral reef ecosystem protection and use.

3.2.1.1 Trap Fishing: Fish and Lobster Traps



Figure 2: Lobster Catch. Source www.stfavi.org/files/winston.jpg

Fish and lobster trap fishing are the primary fishing methods employed in St. Thomas (Figure 2 shows a lobster trap fisherman's catch). Historically, fish traps were woven from palm fronds but are now made from 2 inch mesh wire. Lobster traps tend to be constructed of plastic and many are imported from fishing supply stores in the continental US. Most fishermen fish their traps from small (less than 25 foot) boats although several of the lobster fishermen have boats up to 35 feet due to the fact that they often travel farther from launching and landing sites. The average fish trap fisherman hauls around 85 traps per day and the lobster fishermen are said to haul over 120 traps per day. The fish are sold everyday in and around specified marketing areas on the island. However, the primary day for marketing fish is on Saturdays and from early to mid morning fishermen sell their catch at specific locales, while lobsters are generally delivered directly to restaurants and hotels (STFAVI.org). The most common fish caught in the traps are red hind, parrotfish, olewife (triggerfish), and snappers. These species are primarily consumed by locals with a small portion of these species sold to the restaurants for tourists -- especially yellowtail snappers.

3.2.1.2 Line Fishing



Figure 3: Handlining for Pelagics. Source STFA.org

Most line fishing in St. Thomas is carried out using handlines with some trolling for wahoo and kingfish occurring during the coinciding season (Figure 3). The main species targeted with handline are yellowtail snapper and “hardnose” (blue runners – a type of jack) with some bottom fishing for species such as red hind. It is a common practice for fishermen to go out at night with buckets of sand mixed with oily species such as anchovies for use as chum behind the boat. A good night’s catch is around 200 pounds total with some individual yellowtail and hardnose reported to weigh as much as eight pounds. These fish are very popular not only with local residents but also with restaurants who prepare yellowtail in many different recipes. Even though some of the fish can get rather large, most locals prefer "plate size" fish which they can fry or steam whole. Many people are accustomed to eating a whole fish, a practice common in many islands in the Caribbean. The notion of a fish filet is something more likely to be seen in high-end restaurants and among those people who are part of a financially elite class. The reason for this is that a whole fish has many desired parts that can be consumed and all one need do is work through the bones. Many locals feel that filleting fish and discarding the other portions of the fish is wasteful and unnecessary.

3.2.1.3 Seine Net Fishing



Figure 4: Seine Fishing in St. Thomas. Source STFA.org

Seine net fishing is said to have come to St. Thomas with the "Frenchie" migration from St. Barts around 1850. Seine net fishermen follow schools of yellowtail snapper, hardnose (blue runners) and carang (bar jacks) in small (under 18 ft) boats until they "understand" their feeding patterns. Then they surround the school in small coves around the shoreline, dive the net into a purse and empty the fish into the boats along with the net and the other fishermen. Figure 4 is the result of a day of seine net fishing and shows the type of boat and gear commonly used in this fishery

St. Thomas seine net fishermen fish from small 16-18 foot boats filled with 600 fathoms of nylon seine that generally reaches to around 40 feet in depth. Usually two or three fishermen are in each boat searching the shorelines and cays for schools of yellowtail, bonito, hardnose and gar (STFAVI.org). Most of the fishermen who employ this technique are said to be of French descent. These fishermen are said to be a hardy bunch as they spend their days following schools of fish until they figure out the perfect place and time to surround them with the nets. After the fish are surrounded, the fishermen free dive the nets into the shape of a "6" corralling the fish, pursing the nets and filling their small boats. Sometimes the catch is big enough that fish are left "crawled" and emptied in stages. One net catch measured during STFA's MRAG study weighed over 3,000 pounds.

3.3 Revenue generated

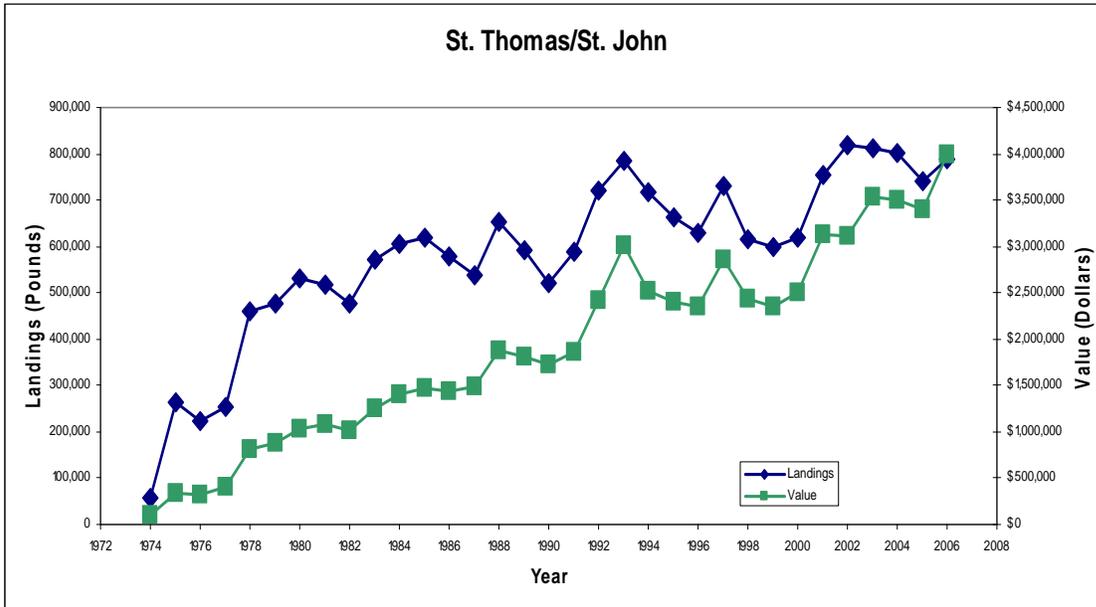


Figure 5: Fishery Landings and Value. Source: SEFSC, 2010

There is little doubt that the local fisheries generate economic benefits for local participants and the community at-large. It is reported that in 2006 approximately 787,000 pounds of marine species were landed at a value of approximately four million dollars. This is important for fishermen and their families as well as the infrastructure that supports fishing activities, the local business that rely on its existence and in many ways the community as a whole. Revenue generated by local fishermen sustains individual and familial fishery endeavors in addition to providing for non-fishery specific items, such as housing, education, transportation and entertainment. Because of fishermen's efforts, tourists and local residents are able to buy fresh seafood, with the revenue generated from these sales supporting a variety of local businesses directly and indirectly associated with the fishery, including restaurants, gas stations, marinas, mechanics and dive shops. What makes an island setting unique is that the money made and spent supports aspects of society that are primarily located within the physical boundaries of the island. In opposition to this are many cases of mainland US communities engaged in fishing where the real or imagined boundaries of a community of fishermen and their socio-economic ties often exist outside the community boundary.

3.3.1 Marketing Fish



Figure 6: Early Morning Marketing. Source <http://stfavi.org/images/RobertSmithBay.jpg>

Fish are marketed daily at a variety of locations around the island, however the majority of fish is sold on Saturdays at specific locales such as the Frenchtown market. The selling begins very early in the morning with some local residents coming out as early as 2 or 3am to ensure that they can get their desired species (Figure 6). The competition for certain species is so fierce that it is reported that by daybreak many of the more popular species are all but gone. It is common for those who handline at night to simply bring their fresh catch in around 2am where people are already waiting for the fishermen to arrive. Many of these people know exactly what type of fish they want and because of many years of loyalty to a fisherman can actually put in a request for a certain amount of a certain species. In St. Thomas, unlike many other places in the Caribbean and the continental US, fish is sold directly by the fisherman to the consumer. There are few intermediaries, making the relationship between fisherman and customer more intimate, and as Dr. Olsen suggests “some of these relationships have developed over generations.” And, with the development of the tourism industry and the desire for fresh seafood, some fishermen have “developed” relationships with restaurant owners and managers, providing certain desired species like yellowtail snappers, dolphin, tuna and wahoo, in addition of course to lobster.

Data from our research indicate that on average fishermen fished approximately eight days a month. For many this makes sense because a portion of the fishermen engage in other types of employment activities, a concept commonly referred to in the Caribbean as ‘occupational multiplicity’ (Comitas and Lowenthal1973). However, there are some fishermen who fish more than four times a week and others who go out and fish multiple days on a single trip. Based on the season, weather, moon phase or a host of other factors, fishermen will try to fish as much as they can as long as the market is responsive.

Fishermen are very astute and read the market with great care. As Dr. Olsen, chief scientist of St Thomas Fishermen’s Association, states, there are many fishermen who will throw fish back to the sea because the market is unable to handle the amount

that fishermen could bring back to land. The fishermen realize that the excess amount of fish would simply lead to wasted fish. He specifically mentioned this type activity occurring with parrotfish caught in the trap fishery. He said that fishermen realize that during a certain time of the year fishermen are much more likely to catch an abundance of parrotfish in their traps. However, because fishermen understand that a significant portion of fish is not likely to be sold it is smarter for them to return fish back to the water rather than waste them. Olsen is quick to emphasize that fishermen are readily cognizant of local market forces and so alter their behavior to fish appropriately. One can argue that this is the type of decision making that strives to create a sustainable fishery, and one that wishes to remove itself from the imagery or characterization as simply another set of participants in the tragedy of the commons (McCay and Acheson 1987). It also lends insight into the mindset of fishermen regarding their view of the future and the role they play in securing that future. Whether fighting for legislation to improve the fishery, participating in scientific research projects, or recognizing their relationship with the environment, many St. Thomas fishermen are actively engaged in trying to create a sustainable fishery for future generations to have and use.

3.4 Community Linkages⁴

This section examines the different kinds of services utilized by commercial fishermen and whether these services are provided by local entities. By looking at these variables we can glean a little more into the interconnectedness of the fishery with other businesses on island. This is an appropriate section for discussing dependency and engagement as well as an appropriate section for the discussion of island-wide designation for it highlights some of the socio-economic linkages between the commercial fishery and the community, in addition to highlighting the fact that these services exist within the boundaries of the community.

⁴ These data were collected by administering a formal survey to a sample of commercially licensed fishermen from St. Thomas. Researchers used opportunistic and intercept sampling techniques and many of the surveys were followed up with iterative interviews regarding numerous topics impacting fishing and the local fisheries. The total time in the field was a week and 39 surveys were conducted. In addition data were collected through participant observation, or the interaction in the daily lives of the fishermen and other St. Thomas residents.

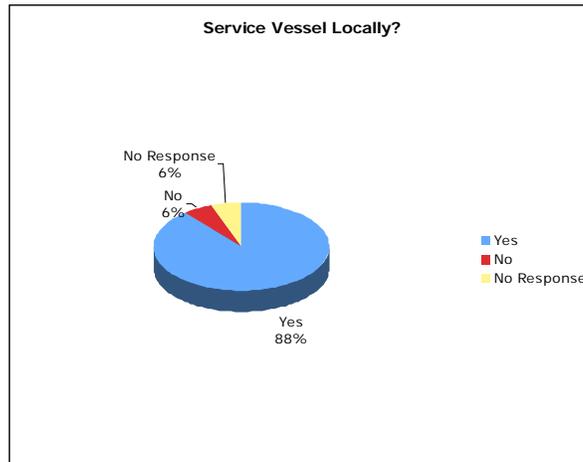


Figure 7: Do You Service Your Vessel Locally

Figure 7 shows that 88% of the fishermen surveyed responded that they service their vessels locally. Many of whom stated that they are capable of doing some repairs on their own and within reason. More complex repairs usually are done by professional mechanics located on island. Some marinas have mechanics on call while some others actually have a mechanic as a part of their local staff.

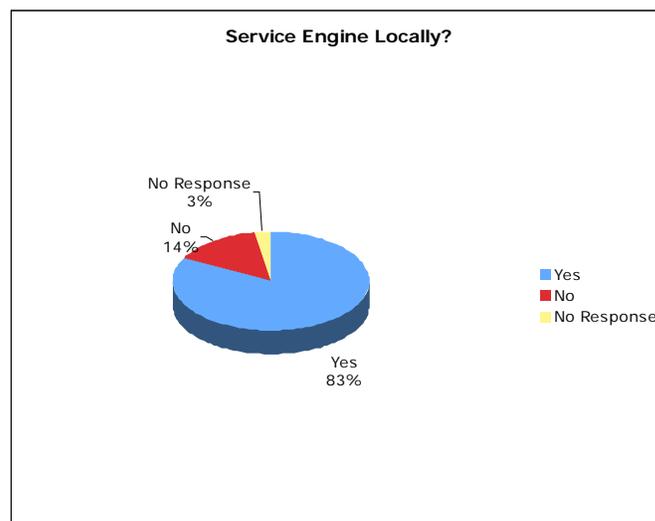


Figure 8: Do You Service Your Engine Locally

Figure 8 shows that 83% of the people surveyed stated that they service their engines locally. Again, while some are able to make the repairs on their own, there are certain larger tasks that must be handled by a specialist. In these cases people rely on locals who have that capability. This is one more example of the connection between the local fishery and a revenue generating enterprise for people outside of the fishery.

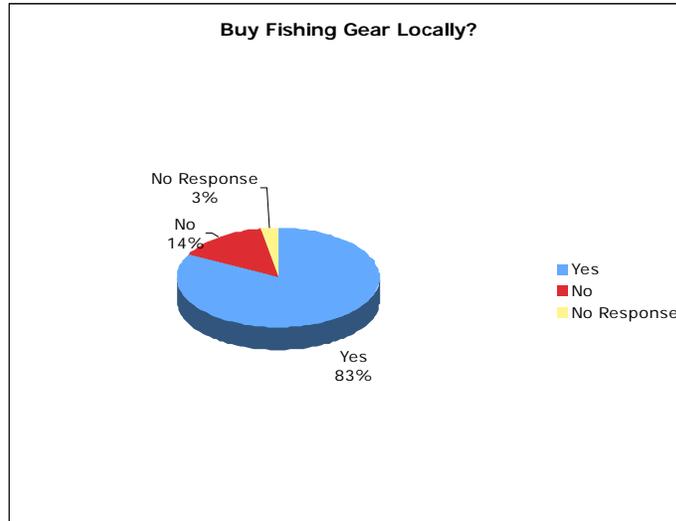


Figure 9: Do You Buy Your Fishing Gear Locally

Figure 9 shows that 83% of the people surveyed stated that they bought their fishing gear locally. This is another example of a segment of society where services are provided to the local fishermen from people on island. Even if the people import the product from off island, the end result is that because there are fishermen in need of a service or product, there is someone locally who makes a living by filling that need, in part or in whole.

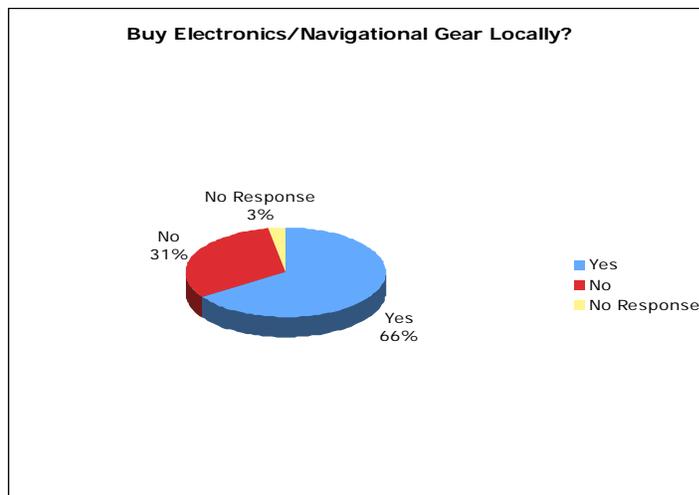


Figure 10: Do You Purchase Your Electronics/Navigational Gear Locally

Figure 10 highlights the responses of fishermen who were queried about the purchase of electronics or navigational gear, with 66% of the fishermen responding that they did in fact purchase these products locally. Again, this is an example of a connection that has a revenue generating component because of the existence of the commercial fishery. Marinas and specialized electronic stores (often marine electronic stores) supply this equipment.

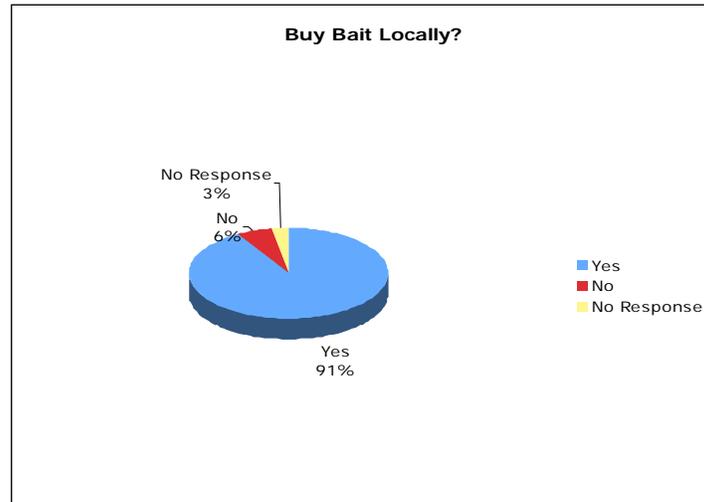


Figure 11: Do You Buy Bait Locally

The procurement of bait is an important variable to examine because many commercial fishermen fish for species that they in turn can use or sell as bait in another commercial and/or recreational fishery. For example, a trap fishermen stated that bonito was a very popular species of bait for traps. It is said to be popular because it is fairly inexpensive when bought from the local seine fishermen and is preferred because of its quality and effectiveness. Without the seine net fishermen targeting this species, trap fishermen would have to purchase other potentially less productive and potentially more expensive alternatives. This is likely one reason why fishermen overwhelmingly responded that they purchased their bait locally (Figure 11).

3.5 Recreational Fishing

Independent of commercial fishing, or viewed in conjunction with it, recreational fishing engagement and dependency can be assessed to determine fishing community designation. This section focuses on the importance of recreational fishing in St. Thomas and provides a description of the types of sectors (for-hire and private) and the importance of tournaments in relation to the economy, local businesses and infrastructure.

3.5.1 Description of the Recreational Fishery

Every summer, anglers and crews from New Jersey to Venezuela wait anxiously for news from the North Drop. No one questions whether the blues will show up - they've been coming back like clockwork for the past 30 years - it's just a matter of how many. As early as the May moon, captains and crews all along the Eastern seaboard call down to their friends on local boats to get the skinny on what's happening. A good May with plenty of dorado in the water and the early arrival of

some big girls on the edge might just signify another banner year in St. Thomas, and crews like to jump-start the boss to get the boat ready to travel. (Marlin Magazine, October 12, 2001)

St. Thomas is known as the blue marlin capital of the world, and marlin fishing is one of the primary attractions for the recreational and for-hire industry. Anglers from all over the world come to fish for the giant trophy species as well as for other popular coastal pelagics, such as dolphin and wahoo. The participation in these fisheries goes a long way to sustaining many of the local service related businesses and infrastructure through their economic contributions. Inshore fishing for smaller game fish is also popular and is mostly done by boat. There are also individuals who fish from the shoreline and some who swim from shore in order to freedive using spearfishing techniques.



Figure 12: Offshore Charterboat Located in Red Hook. Source Stoffle 2006

The Virgin Islands are perched at the edge of the six mile deep Puerto Rico Trench, an area known for having some of the most productive big-game fishing in the world. Two well known offshore fishing areas in the Virgin Islands are the North Drop and the South Drop. The North Drop, about 20 miles north of St. Thomas, is famed for marlin fishing. It is said to produce more blue marlin bites per boat than any other place in the world. Fishermen report that it is not unusual to have five, six, seven even ten strikes every day during the months of May to October. And, while these months are the optimum time for fishing marlin, the fish are also around throughout the year. The South Drop, 8 miles south of St. Thomas, is filled with warmer water from the Caribbean Sea

and reaches depths of some 12,000 feet. It is a popular area for dolphin (mahi-mahi), kingfish and wahoo. Some 21 world records in fishing have been set in recent years in the Virgin Islands (<http://www.vinow.com/stthomas/SandL/fishing.php>). The proximity of these sites makes for a vibrant charter fishery (Figure 12).

3.5.2 Recreational Fishing Tournaments

There are several fishing tournaments throughout the year. These include a Couples Valentines Tournament in February, the Dolphin Derby in April (both on St. Thomas) and a Memorial Day Weekend Tournament (on St. Croix). Kids tournaments include the July 4th Tournament. Some small boat series tournaments, like the Bastille Day Kingfish Tournament on St. Thomas, include adults and children, alike.

The Virgin Islands Game Fishing Club (VIGFC) is an active recreational fishing club which schedules annual fishing events and tournaments. Many of the members are distinguished anglers, having set numerous world records. The organization is well recognized for its conservation measures in billfish tag and release efforts. Big game fishermen from all over the world come to participate in events sponsored by the club. They often dock in Red Hook and spend their time in local condos or on their boat. Sometimes locals are hired to help crew for boats who have come in from off island for the tournaments. These boat owners and captains frequent the local bars and restaurants which cater to the tournament participants.

There is little doubt that the recreational fisheries play an important role in the economy, especially on the east and south sides of the island. Coupled with tourism, recreational fishing and tournament fishing provide an economic injection of money from people who come to compete and chase big game species. The local infrastructure relies on this sector and shops, stores and other services exist in large part due to its existence. The following discussions examine the economics and infrastructure/services available to recreational and commercial fishermen out of the Eastside and Southside areas. It also focuses on the influence of tournament fishing on the economics of the eastside of the island.

The recreational fishing sector for highly migratory species in St. Thomas is primarily based in the eastern portion of the island, in the vicinity of Red Hook. There are a few marinas that cater to this sector of the fishing industry. The principle species targeted is the billfish commonly known as the blue marlin. The best time period for this is between May and October. One marina owner and boat captain reported that during any given year there are 30 to 40 off-island boats that dock and stay at marinas in St. Thomas. The average visit duration is 60 to 120 days. Calculating that the average boat size is 60 feet (60'), dockage fees range between \$135,000 and \$486,000 per season for the group. In 2009, if each boat fished an average of 10 to 12 days per month and burn between 175 and 250 gallons of fuel per day at an average price of \$3.58 per gallon (now in 2011 closer to \$5), the amount of money spent would range between \$134,250 and \$483,300 for the fuel use per season for the group. Each of the vessels has to feed between seven and nine people per fishing day and two to four people per non-fishing

day. These people rely on local markets and restaurants for food at a cost anywhere between \$25 and \$60 per day and would generate between \$75,000 and \$2,916,000 in expenditures for the fleet for the season. In addition most of the boats hire local youths to wash down and clean their boats after each day's fishing. The cost for this ranges between \$10,000 and \$32,400 for the fleet per season. The grand total equates to a contribution to the local economy ranging between \$354,250 and \$3,917,700 per season. This does not even include lodging and road transportation for fishermen, their friends, and spouses.

The foremost fishing event for Blue Marlin in this area is the USVI Open-Atlantic Blue Marlin Tournament. It is also known as the Boy Scout Tournament because all of the net profits from the tournament go to the local Boy Scouts of America troops on St Thomas. This amount can be as much as \$75,000 per year. This tournament is said to be the single largest fund raising event for local Scouting and in keeping with the connection to the ocean, most of the money goes to education and training regarding marine environments and resources. This is one more example of the local fisheries and fishermen giving back to the local community and to enhancing knowledge about the precious and respected marine resources of the USVI.

3.5.3 Recreational Fishing Infrastructure

The following figures and subsequent discussions represent much of the infrastructure that supports private and charter fishermen on the island. The figures also illustrate the connection between fishing, marine resources and tourism, a link that cannot be ignored when considering issues of engagement and dependency.

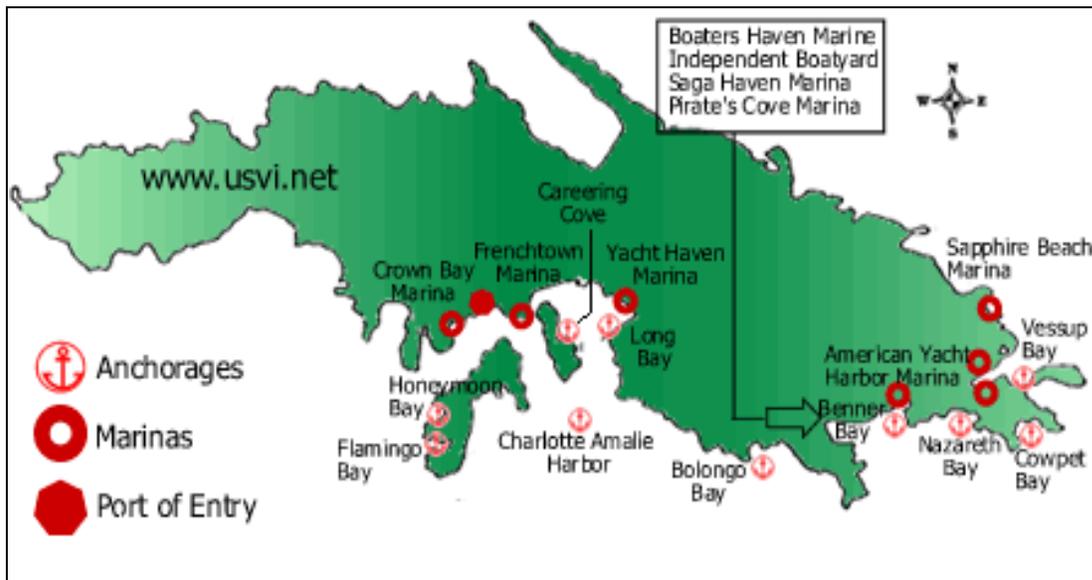


Figure 13: Marinas and Anchorage Sites in St. Thomas. Source usvi.net

There are eight marinas located on St. Thomas, four on the southside and four on the eastside (Figure 13). They are built to house and service a variety of different size vessels, with the largest running up to 400 feet. All of the marinas do repairs and have a dedicated mechanic, and one marina specifically caters to the needs of sport fishermen (the Fish Hawk Marina). Six of the eight marinas also supply fuel for their customers. St. Thomas also has 12 designated mooring and anchoring areas and these are associated with the following locations:

- BennerBay
- Charlotte Amalie Harbor
- Red Hook (American Yacht Harbor)
- Cowpet Bay
- Water Bay
- Hull Bay
- Jersey Bay
- Long Bay
- Vessup Bay
- Bolongo Bay
- Elephant Bay
- Secret Harbor



**Figure 14: Boat Storage along the Southeast Coast of St. Thomas:
Photo by: Stoffle 2006**

Figure 14 is a boat storage facility located off the main road to Red Hook from Charlotte Amalie. Located along the southeast coast are other facilities like this one in addition to boat yards used for storage. In some cases, there were mechanics who serviced the boats as well as people who were held responsible for making sure the boats were stored properly and were easily accessible if the owner called down for them.



Figure 15: Popular Red Hook Grocery Market Frequented by Local Fishermen. Source Stoffle 2006

Figure 15 shows a grocery store/market located across the street from the American Yacht Harbor, which is the largest marina in Red Hook with 106 slips accommodating vessels as big as 110 feet. The other marinas in the area also rely on the Marina Market to supply their customers who are looking to (re)fill needed supplies for the boat. In addition to resupplying the boat, people may also take a residence or a condo while they are on the island and use the Market as well as other grocery stores to get the necessary goods for their stay. This grocery store is in large part successful because of the local marinas and the desire of fishermen from around the world to come and fish out of the Red Hook area for some of the best big game fishing there is.

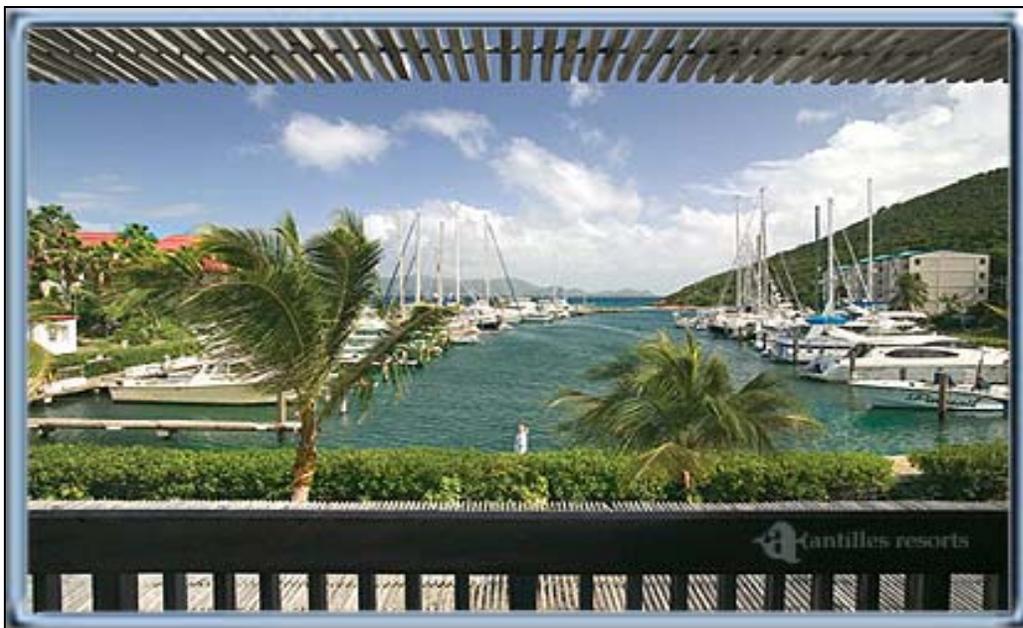


Figure 16: View of Marina from Hotel Room at Sapphire Beach. Source Antillesresourt.com

One of the resorts that cater to tourists who like to engage in water sports is the Sapphire Beach resort, located on the Eastside of the island just north of Red Hook. Located on the premises is a marina used by both commercial and recreational fishermen, and those who classify themselves as recreational fishermen but retain a commercial license. Fishermen who fish out of this dock are able to come from off island and dock their boats while selecting to stay in one of the condos or on their own vessel. As Figure 16 demonstrates those who are able to sail or ride over in their boats, can rent a room, and still be within steps of their vessels. As the manager stated, we wanted to make this place attractive to people who like the ocean, and many of those people come over on their boats. They can stay with us or stay on their boat, but regardless of what they do they generally will dine with us or with other restaurants located in and around Red Hook.

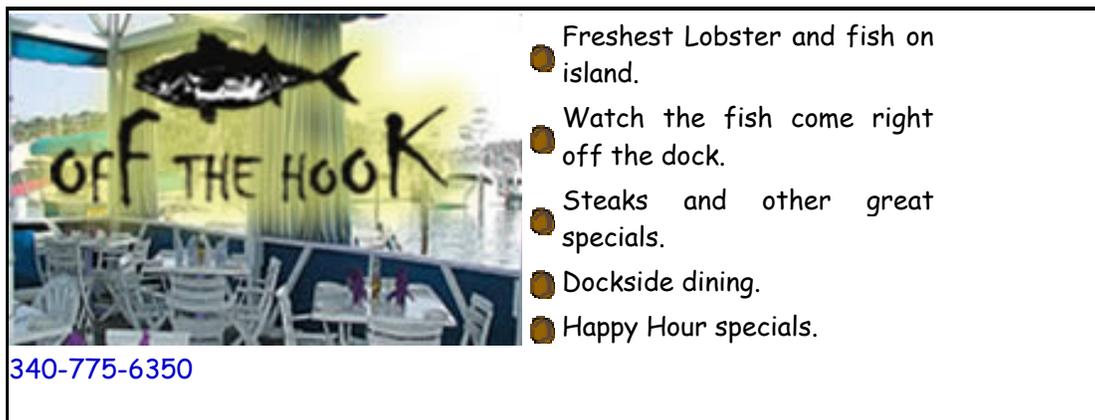


Figure 17: Local Restaurant Advertisement. Source Virginislandsmap.com

A popular Red Hook establishment regularly frequented by tourists is called Off the Hook⁵. Between the restaurant name and the menu items featured as specialties it is easy to see the common component, the local fisheries. Because of a vibrant tourist industry and a productive fishery restaurants such as Off the Hook are able to serve fresh seafood that as it states comes “right off the dock” (Figure 17). Many of the species desired by local tourists are pelagic species (such as wahoo, tuna and dolphin) and lobsters). Local recreational fishermen with commercial licenses will often be the main source of fresh fish for the chefs. In addition, one of the largest if not the largest commercial lobster enterprise is located just steps away from approximately five or six restaurants located in and around the docks and cater to tourists.

⁵ There are numerous waterfront establishments like this in Red Hook.

3.6 Socio-Cultural Connection to Fishing

“We’ve been doing this since donkey days” was a comment wailed by an outspoken Northside fisherman. His comments were directed to fellow fishermen, scientists and NOAA researchers in attendance at one of the local fishermen’s association meetings in Frenchtown. His cry was a plea for people to appreciate his perspective on their connection to the local fisheries and how fishing is so embedded in the lives of many residents. It was his assertion that anything done to prevent people from making a living fishing in essence goes against more than a hundred years of interaction between contemporary residents and the marine resources of St. Thomas. For many of the current fishermen this historic connection to fishing preceded even their own participation in the fishery, dating back to the arrival of their forefathers to the island. Current fishing practices continue to incorporate strategies and techniques brought with them when they immigrated and settled on St. Thomas more than 150 years ago. However, the individual connection to the resources is only one part of the long standing socio-economic relationships developed in the following 150 years.

The population in the USVI is largely made up of Caribbean people whose ancestors were of African and European origins. People from many different nations call the Virgin Islands home and the same can be said for the people of St. Thomas. One of the most visible ethnic groups involved in the local fisheries are the “frenchies”. Around 1850, two groups of what were said to be culturally distinct people of French ancestry arrived in St. Thomas from St. Barthelemy (or St. Barts), settling on the north and south sides of the island. This was confirmed through interviews with local fishermen who stated that they had relatives of French ancestry who had migrated from the island of St. Barts, bringing with them their knowledge of the sea and fishing. Shaw (1935) described a distinctive group of French fishermen 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 presumably maintained cultural patterns confined primarily to two geographical locales on St. Thomas. There is some evidence that even these two groups are culturally distinct, and that each has roots tracing back to ancestral ties from different geographic areas in France.

Regardless of their distant ancestry, the Town “Frenchies” historically focused their commercial activities at the main fish market in Frenchtown, while fishermen from the northside rural areas tended to fish on that side of the island, primarily for household consumption or trade and barter with friends and neighbors. It was not until the 1960’s when tourism began to increase and transportation improved to the point that fishermen in rural areas (northside) or on St. Johns and the British Virgin Islands (BVI) began to compete for a greater share of the fresh fish market (Johnston 1987).



Figure 18: French Heritage Museum in Frenchtown. Source Stoffle 2006

As Impact Assessment researchers suggest (2007) Frenchtown could be considered *the* original “fishing community” on St. Thomas. This is because the center of fishing activity was augmented by market and harbor infrastructure, and there was a fleet of fishermen who did little else besides fish. Even today, the Frenchtown museum highlights the history of fishing in Frenchtown through photos and gear salvaged from more than 100 years ago (Figure 18). On the other side of the island, Northside fishermen were portrayed as part-timers, because in the past they concentrated efforts on raising crops and animals in addition to fishing. The perception of two distinct groups persists even today. In 2004, researchers from Impact Assessment noted that there were signs of such perceptual partitioning evident in fishing-specific celebrations held annually on the island. The Northside fishing tournament is held on Bastille Day, while the Frenchtown tournament is held on Father’s Day. Fishermen report that there is a general feeling of friendly competition among competitors, and community pride is expressed by those who win the tournament. IAI suggests that while these somewhat amorphous communities may exist in the minds of fishermen and other residents, it would be difficult for any one individual to draw discrete boundaries around either one. For instance, as noted previously, some northside residents actually fish from Frenchtown and other locations throughout the island.

IAI researchers assert that 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 informal 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 are now said to be a rarity. According to IAI, the change is also felt in day to day life as well and not just manifested in a change in ceremony. They report that people perceive current St. Thomas residents as individuals “out for themselves,” and that much of their time and activities are centered around their fishing enterprise and only those who are directly connected to it. However, it appears that over time the communities of Frenchtown and the northside have both become less distinct and are no longer solely French. One northside fisherman commented that there are many newcomers moving to the northside. 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] Frenchtown is more mixed now than it was in the past.”



Figure 19: St. Thomas Fishermen’s First Annual Fun Day Softball Tournament; Northside versus Southside. Source Stoffle 2006

Perhaps IAIs analysis of the situation was simply a recognition of the dynamics of social change. For while there are examples of people becoming more fragmented and communities becoming more fluid, there are also examples of people coming together to participate in activities which highlight both cooperation and community. This can be seen in the newly developed St. Thomas Fishermen’s Association Fun Day, an annual celebration which began in 2005 (and has run consecutively for six years). This is a celebration in which all island residents are invited and is an event created to display unity and solidarity among island fishermen regardless of their gear type, ethnic background, or residence. All of the profits for the day’s events go to support the Association’s leadership and to scientific and philanthropic endeavors. These Association members engage in scientific and policy related research. The money made permits certain individuals who represent the values, ideals, concerns and perspectives of the local fishermen the ability to regularly attend Fishery Council meetings as well as attend other kinds of fishery related meetings such as the Gulf and Caribbean Fishery

Institute (GCFI) conferences and in rare instances travel to testify before the United States Congress (see Figure 20).



Figure 20: Members of St. Thomas and St Croix Fishermen's Associations Testifying to Congress, 2010. Source Olsen 2010

Beyond the revenue generated, the Fun Day still recognizes the cultural perception of a northside/southside distinction in that the annual softball tournament held on the Fun Day divides its teams based on self identification as being a northside or southside fisherman. The competition is fierce but it is all done in good fun and the winning team earns bragging rights throughout the coming year (see the STFAVI.org website for information about the celebration). The Fun Day is supported by many island residents and local businesses directly and indirectly tied to the local fishermen and the fisheries. People come out to enjoy the day's activities and food but also use this as a time to obtain important information about the state of the local fisheries, both politically and economically.

While individual and group identity is shaped and solidified by the work they do, their relationships to family, community and other island residents is equally as important a feature of society to comprehend. These relationships have fostered the creation of an infrastructure and connection to one another, a connection developed and maintained over multiple generations. With respect to this research (examining issues associated with community designation) it was necessary to identify and understand aspects of the fishery that do create, foster and maintain socio-economic networks between fishermen and island residents. These networks are not limited to fishery participants and their family members for in fact in many cases the networks extend outside of the fisheries directly and indirectly impacting other members of the community. Data collected between 2004 and 2010 support the notion that an island as a whole can be classified as a

fishing community, like those in the Western Pacific Islands Region, due to strong historic and contemporary socio-cultural and economic ties to the fishery, its participants and the people impacted by its existence.

4.0 Justification for Island-wide Designation

We argue that there are three issues to examine when considering rationale for labeling the entire island as a fishing community. The first is precedence; have any other islands under NOAA's jurisdiction been so defined and labeled? Second, we consider why IAI only suggested three areas for designation and not the whole of the island. And, third, how do the residence patterns of commercial fishermen support the island-wide label.

4.1 Precedence

The process of identifying a community as a *fishing community* can in many cases be a subjective process focusing as much on socio-cultural variables as fishery dependent variables. Allen (2009) describes the designation process in the Western Pacific Region. He notes that in 1998, the Western Pacific Regional Fishery Management Council (Council) proposed that each of the major island areas under its jurisdiction (Hawaii, Guam, American Samoa, and the Northern Mariana Islands) be identified as a *fishing community*. Their argument was:

In contrast to most US mainland residents, who have little contact with the marine environment, a large proportion of the people living in the Western Pacific region observe and interact daily with the ocean for food, income and recreation...fishing also continues to contribute to the cultural integrity and social cohesion of island communities...In each island area within the region the residential distribution of individuals who are substantially dependent on or substantially engaged in the harvest or processing of fishery resources approximates the total population distribution. These individuals are not set apart...from island populations as a whole (Western Pacific Regional Fishery Management Council 1998, 52-53).

Based on this discussion, on April 19, 1999, the National Marine Fisheries Service (NMFS) approved the identification of American Samoa, the Northern Mariana Islands, and Guam as fishing communities (64 FR 19067), recognizing that an island or group of islands that contain diverse cities and towns could be a fishing community for the purpose of NS8. At that time NMFS rejected the characterization of the State of Hawaii as a fishing community because it was overly broad and encouraged the Council to identify individual fishing communities in Hawaii at smaller scales. NMFS recognized that there are cases in which an island may be designated as a community, but said the Council needed to have provided additional background and analysis to justify the designations and that "In the case of Hawaii, a more narrow categorization needs to be developed" (Allen 2009).

In 2002, the Council, supported by NOAA's Pacific Islands Regional Office (PIRO) and the Pacific Islands Fisheries Science Center (PIFSC) proposed that each of

the major inhabited islands of Hawaii (Niihau, Kauai, Oahu, Molokai, Maui, Lanai, and Hawaii) be defined as an individual fishing community for purposes of MSA. Their argument was based on the following perspective:

These findings indicate that fishing and related services and industries are important to all of Hawaii's inhabited islands, that the social and economic cohesion of fishery participants is particularly strong at the island level, and that fishing communities are best not distinguished according to fishery or gear type. The most logical unit of analysis for describing the community setting and assessing community-level impacts is the island (Western Pacific Regional Fishery Management Council 2002).

These designations were administrative and not based on research findings. As Pooley (2003) states the Decision Memo noted that the resulting definitions of fishing communities would be broad and perhaps overly-inclusive, and he did not view that outcome as problematic primarily because information at smaller scales for planning and policy development would be available in the future through ongoing Science Center research activities (Pooley 2003). Since this decision, research on dependency and engagement in the fisheries has been conducted and two reports were developed that focus on American Samoa and Guam (see Allen and Bartram 2008; Levine and Allen 2009).

From a purely analytical standpoint, islands of a certain size are easier to discuss from an island-wide perspective. Rather than attempting to assess the impact of certain types of perturbations on small districts, it is easier to aggregate data at an island-wide level. This facilitates the policy process for it allows data to be aggregated, data which may prove troubling to disaggregate into small pockets of people.

4.2 Why Did Previous Research Suggest Three Individual Areas as Fishing Communities

The following is in no way a criticism of IAIs research or analysis and should be seen as simply building on their findings to take the analysis a step further. As mentioned earlier, IAI identified distinctions between groups of fishermen, essentially suggesting that these distinctions are so pronounced that these groups could be viewed in isolations of one another. In the past when infrastructure was not as developed and transportation was tedious, especially considering the mountainous nature of the island, it may have made more sense to consider individual places as separate. However, as times have changed so too have the nature of the relationships between these groups and geography and topography are no longer features restricting interaction or involvement with one another. As is shown in the following section, where people reside and where they fish are not necessarily the same places. In addition, looking at fishing infrastructure and services, where people reside, where they fish and where they obtain these services are also not necessarily in the same places. IAIs argument was that residence and the

existence of fishing related services and symbols were connected. However, this is not necessarily the case. For example, there are fishermen who live on the northside of the island who fish out of Frenchtown (southside) and there are some from the northside who fish out of Red Hook (eastside). In addition, many of these fishermen sell their catch in places not tied to their residence. Northside fishermen will sell in Frenchtown, or may travel to the northeast side of the island to sell over by Cokie Point. Lobster fishermen will take orders from local restaurants and hotels and drive all over the island bringing their product to their customers. These people have adapted their marketing practices and provide service for all islanders, not just those that reside in close proximity to their residences.

In addition there are fishermen from all sides of the island who are a members of the St. Thomas Fishermen's Association, or at least participate in the Association meetings. Where they reside does not exclude them from participation. And, while they do not trailer their boats like their neighbors to the south (St. Croix) utilizing any launching or landing site they choose, they do steam around the island to fish for different species, and are not limited to only fishing in certain locales.

4.3 Residence Patterns of Commercial Fishermen



Figure 21: From Sea Level (Frenchtown) Looking Up. Stoffle 2006

Figure 21 provides a common visual perspective regardless of where you are on the island; looking up from sea level at the mountainous hillsides. St. Thomas is essentially a series of connected triangular crowns with few flat areas (most are located along the coastline) and steep embankments running up from the coast to the crest of the mountain ranges. Houses are commonly built on steep hillsides and are located between the coastline and the crest of the mountain ranges. Because of this type of topography, many fishermen keep their boats in specific coastal locations rather than trailering them as is commonly done in St. Croix. This is in large part due to the tight, steep and curved roads that exist.

The crest of the mountain used to be a dividing line between two groups of French descendants who migrated from St. Barts. In the past, fishermen tended to be grouped into two categories, Northside and Southside. This was in large part based on the fact that a mountain range separated the two physically (in addition to the cultural separation that was said to exist). As infrastructure and transportation improved on the island people were able to interact much more easily, and fishermen began to disperse over the island. Figure 22 shows the more urban versus rural areas of settlement, with the lightly shaded areas indicates places of collective housing and business areas, with the greener areas representing the mountainous, rural areas.



Figure 22: St. Thomas from Above. Source Google Earth 2011

Comparing Figure 22 (above) and Figure 23 (following), it is clear that island residents and fishermen are not confined or restricted to living in one or two locations (the lighter areas show popular business and residential locations, while the darker green areas represent a steep mountainous ridge which historically separated the north and south sides of the island). The historical division between northside and southside, while still having merit based on the appearance of larger groups that reside in these areas, cannot overshadow the fact that today's commercial fishermen reportedly live and fish out of many more locations than in the past. Once again, research suggests that it is not uncommon for northside residents to fish out of Frenchtown (southside). In addition, it is common for people who reside in one location to market and sell their fish in other locations. Facilitated by infrastructure and transportation improvements, access to other areas is much easier and social interactions much more common.

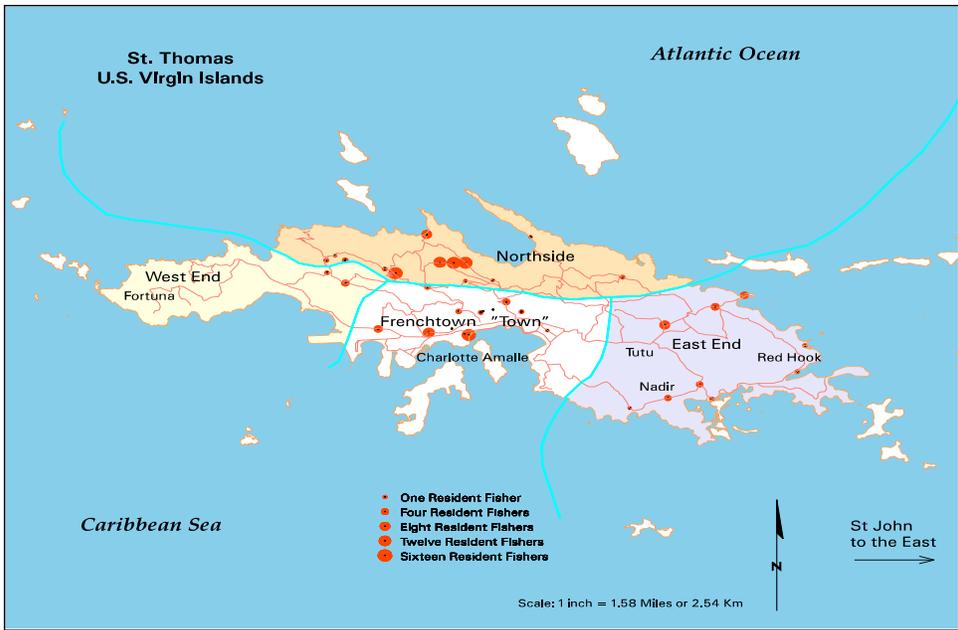


Figure 23: Commercial Fishermen's Residence Patterns. Source IAI 2007

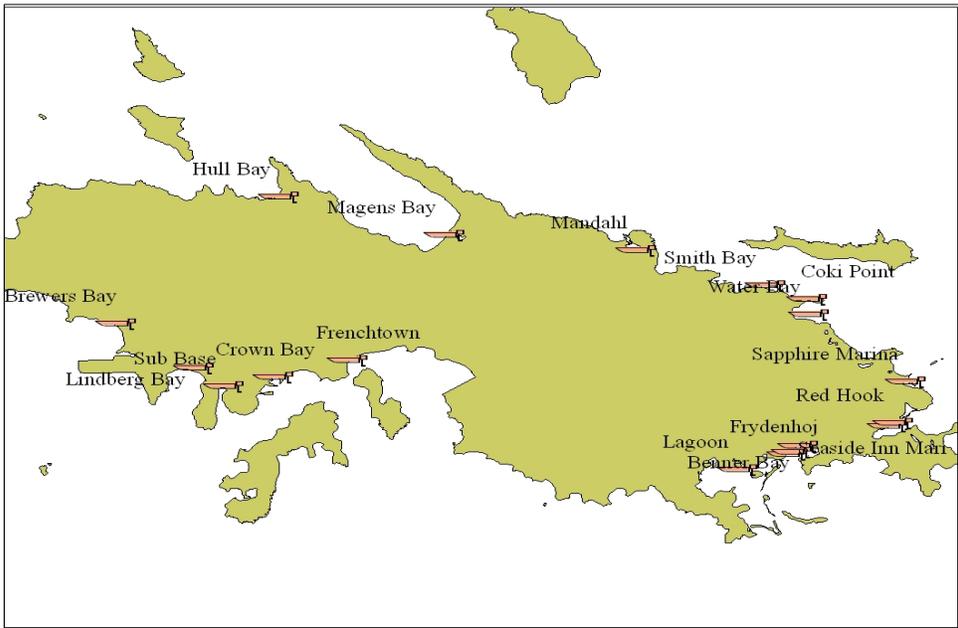


Figure 24: Launching/Landing sites. Source IAI 2007

In the past it was common for residence patterns to correspond with launching and landing sites (see Figure 24). And, while many fishermen prefer to keep their boats in areas close to their home, increasingly fishermen are not as tied to one location to fish or land fish based on where they live. For example, in 2007 fishermen were queried about their residence patterns in relation to the location of their boats and it was

discovered that some fishermen, who reside on the northside, keep their boat in areas on the south or the east coasts. The fact that there are so many sites located throughout the island suggests that fishermen utilize a variety of fishing areas and are not restricted to one location or another. However, there are also those who are still tied to the same launching and landing sites thus continuing established long-term relationships between the fisherman, local businesses (services) and the area. Either way findings suggest that landing and launching sites are being utilized throughout the island and it appears that fishermen are increasingly engaging in fishing and landing in multiple areas.

5.0 Conclusion:



Figure 25: Hull Bay at Sunset. Source <http://stfavi.org>

There is no doubt that the commercial and recreational fisheries of St. Thomas have always been and still remain important to local residents, be they the first inhabitants of the island, the Taino people of the past, or the modern day eclectic mix that is the St. Thomas population. Culturally these fisheries have always represented a lifestyle and provided a strong cultural and individual identity valued by fishermen and local people, alike. Economically the fisheries provide formal and informal employment opportunities that extend beyond the fishermen and their families and into the community in the form of infrastructure and services. To remove the St. Thomas fisheries from the landscape would likely change the cultural complexion of the island and would certainly place many individuals and families in positions of economic hardship. In addition, the marine resources harvested provide local people with low cost high protein species that replace the expensive and often lower quality imports. In addition, restaurants and hotels thrive on the fresh seafood brought to them by local fishermen. Be it fresh seafood sitting on the dinner plate or the opportunity to catch a big marlin, tourists enjoy their chance to sample this local fare and challenge their fishing skills. The money they spend directly and indirectly support aspects of the local service industry in addition to a variety of other businesses connected to the resources associated with the vibrant St. Thomas fisheries.

The fishermen of St. Thomas are not limited or solely focused on the fisheries, for there is little doubt that the fishermen maintain an important role in the politics of the island. Often outspoken about a variety of issues, their concerns regarding fishery management as well as other kinds of activities across the island such as the Haiti recovery effort, carry weight. Members of the St. Thomas Fishermen's Association have been invited to speak before Congress and are influential in disseminating information about the perceived positive and negative impacts of political and scientific undertakings. It would be difficult to argue that the fishermen of St. Thomas exist somewhere outside of or are separate from the island's contemporary culture because their presence can be felt and is visible on a daily basis. For example, shortly after the earthquake in Haiti, they organized and sponsored a fundraising event for the people of Haiti. In doing so they invited all people to attend a fundraiser sharing their values and belief that in times of crisis it is important to reach out and help. These values extend into the community and are shared by many locals, certainly a notion supported by the large outpouring of community support (social and economic) and involvement in the St. Thomas Fishermen's Association Annual Funday.

Ultimately, this research focused on aspects of the local fisheries and society at-large in order to make a determination whether data support fishing community designation. There were two main issues to work through; 1) is St. Thomas a fishing community, substantially engaged in and dependent on fishing, and 2) can an island as a whole be designated a fishing community. Our conclusion is "yes" and at the December 2010 CFMC meeting this was supported by Council members. The CFMC supported and passed the motion to have St. Thomas, as a whole, designated a fishing community.

Overall, our research suggests that there is a valid argument for the designation of the entire island of St. Thomas as a fishing community. From both an analytical perspective and a socio-cultural perspective which highlights the importance of the local fisheries in the lives of its residents, there is reasonable justification to designate the island as a whole. Remembering that fishing community designation can be determined based on commercial, recreational, and/or subsistence sectors lends even greater legitimacy to designating the whole island, for the existence of each of these fisheries in one way or another impacts the lives, economies and culture of island residents.

Lastly we would like to touch on the significance of designation. The decision to designate St. Thomas was laid out, debated and determined by the CFMC. And, while community designation was supported it is still important to clarify that NOAA and the Fishery Management Councils have not yet reached a decision on what it means to be designated. Regardless, there is a value in conducting research on fishing communities and the levels to which the communities and its people are tied to and dependent on fishery resources. The reason is that such knowledge can benefit local stakeholders as well as policy decision makers by providing information which creates a better understanding of the level to which various groups are tied to the marine environment and the manner by which they may be affected by future management actions or other types of activities/occurrences that may alter the normal fishing cycle. In the case of the St. Thomas research, we examined the fishery and its socio-economic linkages within the

society to assess the level to which the island residents, including local fishermen, are socio-economically and socio-culturally tied to marine resources. From this we can conclude that fishing, be it commercial or recreational, is important to the people and businesses of St. Thomas and must be carefully considered when management decisions are deliberated.

6.0 References Cited

Allen, S. 2009 Unpublished Report. Brief Synopsis of Fishing Community Designation in the Western Pacific Region. A report prepared for NOAA Headquarters.

Allen, S. and P. Bartram. 2008. Guam as a Fishing Community. 2008. Pacific Islands Fisheries Science Center Administrative Report H-08-01, Feb. 2008.

Barrow, C. 1996. Family in the Caribbean: Themes and Perspectives. Ian Randle Publishers, Kingston: Jamaica.

Beckles, H. McD. 1989. Natural Rebels: A Social History of Enslaved Black Women in Barbados. Rutgers University Press, New Brunswick, New Jersey.

Clarke, E. 1957. My Mother Who Fathered Me: A Study of Three Selected Communities in Jamaica. George Allen and Unwin: London.

Comitas, L. and D. Lowenthal. 1973. Work and Family Life: West Indian Perspectives. Anchor Press/Doubleday, Garden City, New York

Demas, W. 1997. Critical Issues in Caribbean Development: West Indian Development and the Deepening and Widening of the Caribbean Community. Kingston, Jamaica. Ian Randle Press

Dookhan, I. 1994. A History of the Virgin Islands of the United States. 3rd ed. Kingston, Jamaica: Canoe Press.

Ferguson, J. 1992. Beyond the Lighthouse. Latin America Bureau: London, England.

Fiedler, R.H. and N.D. Jarvis. 1932 Fisheries of the Virgin Islands of the United States. Bureau of Fisheries, Investigational Report No. 14. 32 pp.

Handler, J. 1974. The Unappropriated People: Freedmen in the Slave Society of Barbados. Johns Hopkins University Press, Baltimore, Maryland.

Handler, J. and F. Lange. 1978. Plantation Slavery in Barbados. Harvard University Press: Cambridge, MA.

Impact Assessment Inc. 2007. Community Profiles and Socio-economic Evaluations of Marine Conservation Districts: St. Thomas and St. John , US Virgin Islands. NOAA Series on U.S. Caribbean Fishing Communities, Agar, Juan and Brent Stoffle (editors). *NOAA Technical Memorandum NMFS-SEFSC-557*, 123 p.

Johnston, B.1987. The Political Economy of Development: Changing Resource Relations and the Impact of Tourism in St. Thomas, United States, Virgin Islands. Dissertation. University of Massachusetts.

Kiple, K. 2007. *The Caribbean Slave: A Biological History*. Cambridge University Press.

Kojis, B. 2004. *Census of the Marine Commercial Fishers of the US Virgin Islands*. Dept. of Planning and Natural Resources. U.S.V.I. Division of Fish and Wildlife. St. Thomas, U.S.V.I. 78 pp. Available from: <http://www.vifishandwildlife.com/Fisheries/FisheriesReports/2004/CommFisherCensus004.pdf> via the Internet. Accessed 15 January 2008.

Levine, A. and S. Allen. 2009. *American Samoa as a Fishing Community*. NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-19. Pacific Islands Fishery Science Center, Honolulu, Hawaii. Pp74.

McCay, B. and J. Acheson. 1987. *The Question of the Commons: The Culture and Ecology of Communal Resources*. The University of Arizona Press, Tucson, AZ.

Mintz, S. 1985. *Sweetness and Power: The Place of Sugar in the Modern History*. Penguin Books, Middlesex, England.

Mintz, S. and S. Price (eds). 1985 *Caribbean Contours*. Johns Hopkins Press, Baltimore, Maryland.

Norman, K., J. Sepez, H. Lazrus, N. Milne, C. Package, S. Russell, K. Grant, R. Petersen Lewis, J. Primo, E. Springer, M. Styles, B. Tilt, and I. Vaccaro. 2007. *Community Profiles for West Coast and North Pacific Fisheries*. Washington, Oregon, California, and other US States. NOAA Technical Memorandum NMFS-NWFSC-85.

Olwig, K.F. 1993 *Cultural Adaptation and Resistance on St. John: Three Centuries of Afro-Caribbean Life*. Gainesville: University Press of Florida.

Pollnac, R. 1998. *Rapid Assessment of Management Parameters for Coral Reefs*. Coastal Resources Center. University of Rhode Island.

Pooley, S.G. 2003. *Memorandum (Decision Memorandum) from Samuel Pooley, Acting Regional Administrator, NOAA Fisheries Pacific Islands Regional Office, to William T. Hogarth, Assistant Administrator for Fisheries, July 3, 2003*.

Purcell, T. 1989. *Indigenous Knowledge and Applied Anthropology: Questions of Definition and Direction*. *Human Organization* 57 (3) :258-272.

Rouse, I. 1992. *The Tainos: Rise and Decline of the People Who Greeted Columbus*. New Haven: Yale University Press.

Shaw, E. 1935 *Population Adjustments in our Virgin Islands*. *Economic Geography*: 11(3):267-279

Smith, M.G. 1984. Culture, Race and Class in the Commonwealth Caribbean. University of West Indies, Mona, Jamaica.

Stoffle, B. 2001. 'We don't put all our eggs in one basket': An examination of Meeting Turn, a rotating savings and credit association in Barbados. PhD dissertation, Department of Anthropology, University of South Florida, Tampa, FL.

Stoffle, B, D. Halmo, R. Stoffle, and C.G. Burpee. 1994. Folk Management and Conservation of Ethics among Small-Scale Fishers of Buen Hombre, Dominican Republic. In *Folk Management in the World's Fisheries: Lessons for Modern Fisheries Management* By C. Dyer and J. McGoodwin (eds.). Boulder: University Press of Colorado. Pp. 115-138.

Stoffle, B. and R. Stoffle. 2007. At the Sea's Edge: Elders and Children in The Littorals of Barbados and the Bahamas. *Human Ecology*, Volume 35, 5. Pp. 547-558.

Stoffle B. and R. Stoffle. 2010. Asu and Meeting Turn: Rotating Savings, Credit, Identity and Resilience in Barbados and the Bahamas. *Ethnology*, University of Pittsburgh, Pennsylvania.

Stoffle, R. 1986. Caribbean Fishermen Farmers: A Social Assessment of Smithsonian King Crab Mariculture. Institute for Social Research, University of Michigan.

Stoffle, R. 2001. When Fish is Water: Food Security and Fish in a Coastal Community in the Dominican Republic. In *Understanding the Cultures of Fishing Communities: A Key to Fisheries Management and Food Security*. Edited by Russ McGoodwin. Pp. 219 – 245 Rome, Italy: Food and Agricultural Organization of the United Nations; FAO Fisheries Technical Paper 401.

Stoffle, R., D. Halmo and B. Stoffle. 1991. Inappropriate Management of Appropriate Technology: A Re-study of Mithrax Crab Mariculture in the Dominican Republic. In *Small-Scale Fishery Development: Sociocultural Perspectives*. J. Poggie and R. B. Pollnac, eds. Kingston: International Center for Marine Resource Development, University of Rhode Island. Pp. 131- 157.

Stoffle, R. and J. Minnis. 2007. Marine protected areas and the coral reefs of the traditional settlement in the Exumas, Bahamas. *Coral Reefs* 26 (4): 1023-1032.

Western Pacific Regional Fishery Management Council. 1998. Magnuson-Stevens Act Definitions and Required Provisions: Identification of Fishing Communities. September, 1998. Available from the Council at 1164 Bishop St., Suite 1400, Honolulu, HI 96813.

Western Pacific Regional Fishery Management Council. 2002. Magnuson-Stevens Act Definitions and Required Provisions: Identification of Fishing Communities. Draft August 8, 2002. Available from the Council at 1164 Bishop St., Suite 1400, Honolulu, HI 96813.

Williams, E.1970. From Columbus to Castro: The History of the Caribbean 1492-1969. Andre Deutsch Ltd., London.

Yelvington, K. 1993. Trinidad Ethnicity. The University of Tennessee Press.

Websites:

Anonymous. St. Thomas Island History. www.st-thomas.caribbeanway.com/history.asp.

Anonymous. St. Thomas, Virgin Islands: Facts and History. Available at www.vinow.com/stthomas/History/

Anonymous. USVI Moving Center: Employment/Jobs. www.vimovingcenter.com/employment.

Census Bureau. American Factfinder: Virgin Islands. www.factfinder.census.gov

Center for Intelligence Agency. The World Factbook:Virgin Islands. www.cia.gov.

Collazo, F.J. History of Taino Indians. Available at www.fjcollazo.com/fjc_publishings/documents/TainoIndRpt.htm. 2004

Singer, G. The Origin of Tainos. Available at www.stjohnbeachguide.com/taino