

**Rapid Socioeconomic Evaluation  
of the Proposed Marine Conservation District  
St. John, United States Virgin Islands**

Prepared for:  
**The Caribbean Fishery Management Council**

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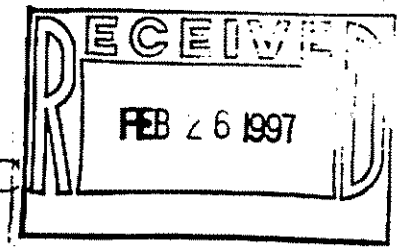
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**February 26, 1997**

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February 26, 1997

Miguel A. Rolon, Executive Director  
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Dear Mr. Rolon:

We are pleased to deliver, on schedule, the enclosed Rapid Socioeconomic Evaluation of the Proposed Marine Conservation District, St. John, United States Virgin Islands. We trust that it will meet your expectations and needs.

This has been, indeed, a challenging and interesting project. Part of the challenge, of course, derived from the very tight time frame involved. Field work had to be conducted in a brief period of time and, given the emphasis on collecting as much data as possible, few resources were allocated for report writing. In fact, in order to see the project through, to ensure that it met our own standards, and was as useful as possible to the Council, we have invested a considerable amount of our own effort (and resources) into the writing process. The enclosed report, then, represents both an investment by the Council and ourselves to ensure that resource managers and the resource users alike may benefit from our joint efforts.

I thank you again for the opportunity to work on this important project, and look forward to your comments on this submission. We are prepared to make revisions as desired.

Sincerely,

A handwritten signature in cursive script that reads "Michael A. Downs".

Michael A. Downs, Ph.D.  
Vice President, Impact Assessment, Inc.

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## Table of Contents

1.0 OVERVIEW: STUDY GOALS AND OBJECTIVES .....	1
2.0 ANALYSIS OF EXISTING CFMC DOCUMENTS FROM PUBLIC HEARINGS AND OTHER MEETINGS .....	2
3.0 ECONOMIC AND DEMOGRAPHIC BACKGROUND: SUMMARY PROFILE .....	5
3.1 OVERVIEW .....	5
3.2 SCALE OF DEMOGRAPHIC AND ECONOMIC DATA BY LOCAL AREA .....	5
3.3 THE ECONOMIC CONTEXT AND HURRICANE MARILYN (1995) .....	6
3.3 FISHING SPECIFIC ECONOMIC DATA .....	6
3.4 POPULATION AND ANNUAL ECONOMIC INDICATORS .....	7
3.5 RECOMMENDATIONS FOR FURTHER RESEARCH .....	11
4.0 SECTOR DESCRIPTION FOR COMMERCIAL FISHING .....	12
4.1 OVERVIEW OF COMMERCIAL FISHING .....	12
4.2 LANDINGS DATA AND THE USE OF THE PROPOSED MCD AREA .....	13
4.3 METHODOLOGICAL CHALLENGES AND SAMPLING .....	14
4.4 ST. THOMAS COMMERCIAL FISHERS .....	16
4.4.1 Overview: Categories of St. Thomas Commercial Fishers .....	16
Numbers of Fishers, Reported Proposed MCD Area Use, and Sample Size .....	16
Variations within the Fleet: Technology and Vessels .....	17
Employment: Full- and Part-Time Commercial Fishing .....	20
4.4.2 Geographic Distribution .....	21
4.4.3 Markets .....	22
4.4.4 Sociocultural Dimensions .....	25
4.4.5 Perceived Issues with Current Resource Use .....	28
4.4.6 Current Use of the Proposed MCD Area .....	34
4.4.7 Potential Socioeconomic Impacts to Current Users of the Proposed MCD Area: St. Thomas Commercial Fishers .....	37
4.4.8 Recommendations for Further Study .....	39
4.5 ST. JOHN COMMERCIAL FISHING .....	41
4.5.1 Overview: Categories of St. John Fishers .....	41
4.5.2 Geographic Distribution .....	43
4.5.3 Markets .....	44
4.5.4 Sociocultural Dimensions .....	46
4.5.5 Perceived Issues with the Current Resource Use .....	48
4.5.6 Current Use of the Proposed MCD Area .....	50
4.5.7 Potential Socioeconomic Impacts to Current Users of the Proposed MCD Area: St. John Commercial Fishers .....	52
4.5.8 Recommendations for Further Study .....	53

5.0 ST. THOMAS AND ST. JOHN SPORT CHARTER FISHING OPERATIONS SECTOR .....	54
5.1 OVERVIEW: CATEGORIES OF SPORT CHARTER FISHING OPERATIONS .....	54
5.5.1 Fleet Size and Organization .....	54
5.5.2 Vessel Size .....	54
5.5.3 Employment .....	55
5.2 GEOGRAPHIC DISTRIBUTION .....	56
5.3 MARKET DESCRIPTION .....	56
5.3.1 Customers .....	56
5.3.2 Sale of Catch .....	59
5.4 SOCIOCULTURAL DIMENSIONS .....	61
5.5 CURRENT EFFORT .....	62
5.5.1 Location of Effort .....	62
5.5.2 Target Species .....	64
5.5.3 Changes in the Target Species Over Time .....	65
5.6 PERCEIVED ISSUES WITH CURRENT RESOURCE USE .....	66
5.6.1 Overlap With Commercial Fishing .....	66
5.6.2 Competition with Outside Vessels .....	68
5.7 CURRENT USE OF THE PROPOSED MCD AREA .....	69
5.8 POTENTIAL SOCIOECONOMIC IMPACTS TO CURRENT USERS OF THE PROPOSED MCD AREA: SPORT CHARTER VESSEL OPERATIONS .....	70
5.9 RECOMMENDATIONS FOR FURTHER STUDY .....	72
6.0 ST. THOMAS AND ST. JOHN DIVING OPERATIONS SECTOR DESCRIPTION .....	74
6.1 OVERVIEW: CATEGORIES OF DIVE OPERATIONS .....	74
6.2 GEOGRAPHIC DISTRIBUTION .....	74
6.3 CUSTOMER BASE .....	75
6.4 SOCIOCULTURAL DIMENSIONS .....	77
6.5 PERCEIVED ISSUES WITH CURRENT RESOURCE USE .....	77
6.6 CURRENT USE OF THE PROPOSED MCD AREA .....	79
6.7 POTENTIAL SOCIOECONOMIC IMPACTS TO CURRENT USERS OF THE PROPOSED MCD AREA: DIVE OPERATIONS .....	81
6.8 RECOMMENDATIONS FOR FURTHER STUDY .....	81
7.0 OTHER SECTORS .....	82
7.1 OTHER DIRECT USERS OF THE PROPOSED MCD AREA .....	82
7.1.1 Cruise Ships .....	82
7.1.2 Recreational Fishers .....	83
7.1.3 Charter Yachts .....	84
7.1.4 Aquarists/Artists .....	85
7.2 RESEARCHERS/SCIENTISTS .....	85
7.3 MANAGERS .....	87
7.4 ENVIRONMENTALLY ATTENTIVE ORGANIZATIONS .....	88
7.4.1 Environmental Association of St. Thomas and St. John .....	89
7.4.2 Friends of the Virgin Islands National Park .....	89
7.4.3 League of Women Voters .....	90
7.4.4 Nature Conservancy .....	91
7.5 OTHER ATTENTIVE ORGANIZATIONS .....	91
7.5.1 St. Thomas, St. John Chamber of Commerce .....	91
7.5.2 St. Thomas St. John Hotel Association .....	92
7.5.3 Virgin Islands Marine Industries Association .....	92
REFERENCES CITED .....	94

Appendix A: Marine Protected Areas in the Caribbean .....	97
A.1 Context .....	98
A.2 Examples of Effective MPAs .....	99
A.3 Major Factors Affecting MPAs .....	100
A.3.1 Stakeholder Participation .....	100
A.3.2 Socioeconomic Impacts .....	101
References .....	102
Appendix B: Background of Protected Areas in the USVI .....	103
B.1 Overview .....	104
B.2 Early efforts to identify important sites .....	104
B.3 Why territorial park and reserve development lags behind other growth .....	105
B.4 Preliminary steps .....	106
B.5 Modest policy advances in resource management .....	107
B.6 First steps towards a system of parks and reserves .....	107
B.7 The Coastal Zone Management alternative: fact or fiction .....	108
B.8 Missing planning and management tools .....	108
B.9 "Winds" of change .....	108

## 1.0 OVERVIEW: STUDY GOALS AND OBJECTIVES

On September 27, 1996 a letter was issued as a request for proposals (RFP) regarding a socio-economic study for the establishing of a marine conservation district (MCD) south of St. John, U.S.V.I., consisting of the following two components:

- (1) Analysis of existing documents, tapes, etc., from public hearings and other meetings with the people of St. Thomas/St. John, U.S.V.I., on the issues relevant to the MCD and ancillary demographic data; and,
- (2) Visits to the field for related interviews and identification of focus groups.

The research represented by this report has been conceived of as being the first phase of a two phase process of comprehensive socioeconomic or social impact assessment. This phase, the Rapid Socioeconomic Evaluation (or Phase I), addresses the points raised in the CFMC's Request for Proposals. That is, using secondary and primary data, we characterize user groups, provide sector profiles, discuss issues by group and sector, and generally provide the socioeconomic context necessary to frame and understand the organization and composition of proposed MCD area users.

We are also able to provide general level information to feed into a detailed social impact assessment of the proposed MCD. A detailed social impact assessment or socioeconomic impact assessment based on the information gathered under this Rapid Socioeconomic Evaluation, linked to a series of specific options for the proposed MCD (in terms of alternate areas and options for management strategies), and subjected to additional analysis as recommended within the body of this document, would be the core of a separate Phase II segment.

In other words, this report addresses the requirements of a Rapid Socioeconomic Evaluation (Phase I), which is intended to be followed by a more specific Social Impact Assessment (Phase II). We have not developed a plan for Phase II in any detail in this report, but the general design of a Phase II has been explicitly borne in mind during the design of the Phase I approach, and recommendations for further research are provided for each of the sectors.

The objectives of this Rapid Socioeconomic Evaluation were to:

- Identify Proposed MCD Area Users
- Characterize Patterns of Use
- Identify and Analyze Concerns About Potential MCD
- Develop Summary Profiles of Potentially Affected Areas
- Develop User Group Sector Profiles

- Identify Information Gaps and Recommend Work to Address These Gaps
- Develop an Ongoing Collaborative Relationship With Potential MCD Area User Groups

This document is organized around answering the research objectives. The first section following (Section 2.0) provides an analysis of existing CFMC proposed MCD-related documents. Section 3.0 presents a summary profile of demographic and economic data. Sections 4.0 through 7.0 then discuss particular user sectors -- commercial fishers, sport charter fishing operations, diving operations, and 'others.' Appendix A provides a review of similar MCD efforts in the Caribbean, while Appendix B provides a look at earlier efforts in the U.S.V.I. specifically. Appendix C provides examples of interview protocols used in this study.

## **2.0 ANALYSIS OF EXISTING CFMC DOCUMENTS FROM PUBLIC HEARINGS AND OTHER MEETINGS**

As noted in the Request for Proposals, there was a special focus placed on analysis of existing documents, tapes, etc., specifically from public hearings and other meetings with the people of St. Thomas and St. John on the issues relevant to the Marine Conservation District.

Documents were examined include:

- Caribbean Fishery Management Council, Summary Meeting Minutes from Orientation Meeting, December 21, 1993 (St. Thomas); Discussion Meeting on MCD, June 22, 1994 (St. John); Discussion Meeting on MCD, August 30, 1994 (St. Thomas); Coral FMP Committee Meeting, August 31, 1994 (St. Thomas).
- Caribbean Fishery Management Council, Description of the Fishing Activity in the Proposed Marine Conservation District South of St. John, USVI. 1994.
- Caribbean Fishery Management Council, Transcript, Workshop on Marine Reserve. St. Thomas, USVI. March 15, 1994.

At an early stage we performed content analysis on these documents with three primary goals. These were:

- Identification of relevant groups.
- Identification of issues.
- Identification of individuals for follow-up interviews.

This objective focused on identifying issues and concerns as perceived by users of proposed MCD resources. For some user groups, relatively little was known from the existing record about issues and concerns related to the proposed MCD, or it was difficult to determine the extent to which these concerns were widely held. For commercial fishers, on the other hand, it is

relatively easy to discern some of the important issues *as seen from their perspective*. Clearly, there are different perspectives from different user groups and from different management entities, but it is precisely these differences in perspective, and the relationship of these perspectives to other data, that were explored in the research. Based on the existing information from public hearings and other meetings, concerns and critical issues expressed by at least some commercial fishers include:

- Little has been done to determine this area's effectiveness as a reserve site, and more needs to be done before action so disruptive to fishers is taken.
- An earlier report related to the proposed MCD identifies, contrary to fisher's perspective, that the proposed area as a site not used by commercial fishers. Commercial fishers counter this report with such information as:
  - The proposed MCD is a prime harvest area for hardnose and yellowtail, an important income supplement.
  - The proposed MCD is an important area for lobster and fish, and fresh fish is important for the local tourist industry.
  - Off-island prices for fish are higher, and quality lower, compared to fish caught in the proposed MCD area.
- Nothing is being done to understand actual use patterns of the proposed MCD, and especially the adverse economic impact a conservation district may have on fishers, others involved in the industry, and consumers (incomes, markets).
- Commercial fishers are being asked to give up fishing grounds, and the proposed MCD case is just part of a larger pattern (i.e., it cannot be considered in isolation from what else is happening to commercial fishing).
- The proposed MCD is a very large area -- too large.
- The stated benefit of the reserve, as a hatchery for future larger catches, is a decade away, and cannot help the immediate crisis situation that would be caused.
- Even if the number of fishers using the area is small, the amount of gear involved is great.
- The effective closure of the available fishing area is a much larger percentage of active fishing areas than boundaries imply (forcing movement of fishers to other areas that are already utilized, increasing pressure on resources and other fishers in those areas, resulting in lower catches and incomes). One person summed up the situation as: "There's not a whole hell of a lot left. Excuse me . . . [once this last area is gone] . . . we have nothing around the island." Specific points to this general point include:
  - Proposed area nearly impinges on BVI fisheries, making the effective closure area, for all intents and purposes, even larger (i.e., effectively closing the area to the east that bounds the BVI waters);
  - The area being closed is relatively productive compared to remaining alternatives -- much of the remaining area is basically sand, which further pressures Barracouta Banks (adjacent good fishing grounds);
  - The fishing area is further constrained by waters contaminated by pollution, run-off and sewage, with other areas basically dead to fishing;



- Existing or expected development is yet another cumulative factor in reducing fishing area (e.g., the Hans Lollik area, with a beautiful reef, which is expected to result in major development, so it will be out of use soon. Inner Brass also looks like it will soon be developed and out of circulation.);
- Another compromised area is the location of cruise ship transit; and,
- The area around the National Park as well as the area around Thatch Key, with all the major hotels, "is gone."
- There is, in general, increased pressure on ecosystems (increased take, reduced abundance), with the majority of waters off St. Thomas and St. John already compromised by pollution, shipping, yachting and divers, and closure of Hind Bank (for three months a year). It is too much to expect other areas to absorb the fishers and gear that currently use the proposed MCD area.

Clearly, based on the document review, there was a level of concern expressed by commercial fishers that must be assessed. Our exploration of these issues, combined with the user group profiles and analysis of existing secondary data on resource use, and supplemented by interview data, forms the main body of this report, enabling completion of this Rapid Socioeconomic Evaluation to understand the context of these concerns and the impact of changing resource management on particular user groups.

In addition to identifying concerns with the proposed MCD as expressed by various user groups, the reviewed CFMC documents suggested that current user groups have proposed or potential management solutions as well. Again, from the public record, the following proposals were made by commercial fishers:

- "first select the reserve area after studies have been made that the area contains the desirable reef for reserve to be effective and make it considerably smaller."
- Grandfather in current users.
- Enforce strict use rules, fishing rules, and pollution controls.

From the public record, commercial fishers state that they support protection of resources, which, by extension, is their livelihood. However, a major sticking point is that they seek what they feel is equal protection and distribution of the burdens of policy -- at this point, from their perspective, the most rigorous standards are applied only to fishers, and they, as a group, are bearing the brunt of policy change -- at least some feel that the only user group to be adversely affected by the proposed MCD action is the USVI commercial fishers. Clearly, they see historically and individually important local fisheries squeezed by population growth, increased sewage, runoff, and a number of other factors that dynamically interact with the proposed MCD to create a very difficult situation.

### 3.0 ECONOMIC AND DEMOGRAPHIC BACKGROUND: SUMMARY PROFILE

This section, in combination with the information provided in the individual sector profiles, provides an overview of the ancillary demographic data requested in the original RFP. Since demographic data are presented in each of the individual sector discussions, this section focusses more specifically on economic data.

#### 3.1 OVERVIEW

A Social Impact Assessment of a particular economic sector or activity (such as commercial fishing, sport charter fishing and diving operation sectors) would typically provide background or baseline information at a community (or even neighborhood) level in order to contextualize the specific activity in question within its most basic frame of reference. For the purposes of the present task, a pertinent question to answer is 'how does fishing fit into the overall community activities, and how would differential potential impacts based on the creation of proposed MCD be played out in geographic sense at both the community and larger frames of reference (e.g., by subsections of islands, and by island, etc.)?' Normally, such information is gained through available secondary literature. In the case of this Rapid Socioeconomic Evaluation, few data types were available in aggregated form to provide much stand-alone detail, for reasons described in the following subsections. Interview data, however, did provide information adequate to describe potential socioeconomic impacts by sector and subsector.

#### 3.2 SCALE OF DEMOGRAPHIC AND ECONOMIC DATA BY LOCAL AREA

Unfortunately, few data were readily available to make this contextualization as 'fine grained' as would be desirable. One of the reasons for this is the geopolitical organization of the U.S.V.I. themselves. For St. Thomas and St. John, the foci of this task, there are not the multiple incorporated communities which are often a good source for breakout data on population and economics, although census data summary reports typically break out "town" statistics for Charlotte Amalie (only), even if no other breakout data are supplied for St. Thomas or St. John. When examined on the "Island Subdistrict" level or "Census Designated Place" level (smaller areas within some subdistricts), these data still do not provide the level of detail that would be desirable for the type of localized analysis one would ideally want. Taking a few examples from St. Thomas, Red Hook is seen as the center of the sport charter fishing fleet. Red Hook data, however, are aggregated into the much larger "East End" subdistrict. In a different manner, if one wished to look at data regarding the Northside French community, which turns out to be important for commercial fishing, the area traditionally associated with this community is divided between "Northside" and "West End" subdistricts. Data for "Frenchtown," an area of high concentration of fishing effort, are normally aggregated with Charlotte Amalie subdistrict or town data.

### 3.3 THE ECONOMIC CONTEXT AND HURRICANE MARILYN (1995)

Another challenge to understanding the background information (as well as direct information on potential proposed MCD user sectors) are the changes wrought by Hurricane Marilyn. Changes in the diving, commercial fishing, and sport charter fishing sectors are discussed separately in their respective sections. Within the general island-wide frame of reference, impact of the hurricane was enormous. According to a report of the Bureau of Economic Research (BER) presented to the legislature Standing Committee of Finance in July, 1996:

Hurricane Marilyn was undoubtedly the biggest economic event of the past year. Shortly after the storm BER estimated nearly \$2 billion in damages to homes, buildings, and utilities. Perhaps \$0.5 billion more was lost in business revenue. According to the Office of the Lt. Governor storm related insurance pay-outs are expected to total \$713.4 million. Job loss was extreme as employment declined by 2,970 or 6.6 percent between August and October of 1995 . . . Federal assistance awards (as of May 1996) give further perspective as to the magnitude of the disaster and represent just a minimum level of incurred losses. More than one in five territory housing units were approved for FEMA home repair grants. More than \$50 million were disbursed in the form of either home repair grants or rental assistance. About 55 percent of the of U.S.V.I. households were awarded \$44 million in individual or family grants. Small business Administration approved disaster loans for homes total \$113 million thus far. Disaster loans for businesses now total \$96 million. For the public sector, nearly \$100 million is obligated for public assistance grants (BER 1996a:2).

As drastically as Hurricane Marilyn hit the broad spectrum of the U.S.V.I. economy, interview data from commercial fishers themselves would indicate that fishers were particularly hard hit through loss of gear. Also, a number of fishers were frank in acknowledging that some fishers underreport their catch and the amount of traps they use, and are therefore unable to claim losses for which they may have otherwise received compensation. Even some of the better record keepers among fishers during the interviews noted how little compensation they received compared to their own calculation of their losses.

### 3.3 FISHING SPECIFIC ECONOMIC DATA

Much of the regularly available time series data on the economic composition of the Virgin Islands is compiled by the BER. This Bureau does not compile information on the fisheries, and therefore those fishery data that do exist from other sources may or may not be comparable with other available economic data, depending on varying methodologies and techniques used to arrive at the data. According to a senior staff member at the BER, it would be highly desirable for the Bureau to have information about fisheries sector economy, but to date it has been an "invisible" portion of the economy, and specific efforts have not been directed at obtaining fisheries related data. This is unfortunate from a number of perspectives, and future fisheries research should seek to help remedy this situation. Some suggestive data on level of fish

consumption among the public is presented in a marketing survey by the Department of Economic Development and Agriculture (Peter 1994), but in this study data from St. John and St. Thomas were aggregated with data from St. Croix, and the sample was much more heavily biased toward St. Croix residents, rendering the findings suspect for attribution to St. Thomas and St. John.

As noted in the fisheries section discussions, one of the difficulties with available fisheries specific data from other sources (i.e., DFW), is that historically there are known difficulties in the underreporting of both catch and effort. However, recent preliminary and as yet unpublished data (Meyers 1996: personal communication) show an apparent increase in catch from the proposed MCD area for the past year, relative to other fishing areas. There are several possible explanations for this, including: (a) adjustment of catch figures to more closely approximate actual catch for that area (now that the political importance of higher catch figures for that area in the possible MCD creation is obvious, and has become so over the past couple of years); (b) intentional overreporting of catch figures for that area, given the economic stakes involved in the potential creation of the MCD for at least some fishers (i.e., there is incentive to 'shift' reporting catch from other areas to the proposed MCD area to strengthen the arguments against the creation of the MCD based on potential impacts to fishers and potential entitlement under any future limited entry regulations); or (c) there has been an actual increase in fishing effort directed at the area of the proposed MCD, consistent with interview data that suggest trapping in the proposed MCD area is strongly associated with larger St. Thomas based vessels, which have been growing in significance to the overall fishery (i.e., there are more "larger" operations now than ever before according to interview data).

### 3.4 POPULATION AND ANNUAL ECONOMIC INDICATORS

Population loss in the following table, there is an overall population loss for the U.S.V.I. of approximately 4,000 residents between 1990 and 1995. If, however, one looks at the mid-year populations statistics for 1985 (112,061) and the mid-year population statistics for 1995 (97,229), that represents a population loss of approximately 15,000 residents (data from U.S. Bureau of the Census, International Data Base, cited by Potter [1996:personal communication]). Also, as pointed out by Potter (1996:personal communication), that loss in population, when calculated at in economic terms, represents about \$120 million in lost GDP per year -- and, further, since the 1995 census data reflect mid-year population, they do not account for known additional population losses associated with Hurricane Marilyn.

In the following tables, the specific years presented for population, economic, and tourism statistics (1970, 1980, 1990-1995) represent a choice between looking at more recent or more historic data on an annual basis. As in the case of the population statistics, this has resulted in the loss of information regarding a period of growth in the mid- to late-1980s in some areas that has not been seen since. For example, under the category of tourism related employment, the subcategories of hotel and lodging and gift shop employment reached levels in the late 1980s above those in 1980 and that have not been reattained in the 1990s. These tables present an overview of the economic structure of the islands, and provide a context for later fisheries specific discussions.

U.S. Virgin Islands Annual Economic Indicators

Indicator	1970	1980	1990	1991	1992	1993	1994	1995
Resident Population								
Total USVI	75,151	96,569	101,809	--	--	--	--	97,229
STT/STJ	39,206	46,844	51,670	--	--	--	--	--
St. Thomas	37,285	44,372	48,166	--	--	--	--	--
St. John	1,921	2,472	3,504	--	--	--	--	--
Labor Information								
Civilian Labor Force	35,580	43,130	48,260	48,960	49,940	53,530	50,380	47,810
Civ. Employment	35,120	40,530	46,930	47,580	48,210	51,650	47,550	45,070
Unemployment Rate	1.3%	6.0%	2.8%	2.8%	3.5%	3.5%	5.6%	5.7%
Wage & Salary Employment (# of jobs)								
Non-agri. employment	30,450	37,320	43,410	43,840	44,810	48,650	44,620	42,260
Private Sector	21,090	23,880	29,560	30,460	30,930	34,740	30,810	28,550
Federal Government	360	650	880	770	810	820	850	1,020
Territorial Government	9,000	12,790	12,700	12,610	13,070	13,090	12,960	12,690
Wages and Salaries								
Wages & Salaries (\$mil)	--	420.6	891.1	965.8	1,023.0	1,172.7	1,001.4	--
Annual avg. gross pay (\$)	--	11,285	21,080	22,254	21,585	24,294	24,697	--

Source: BER 1996b, except for 1995 USVI population data from U.S. Bureau of the Census, International Data Base.

U.S. Virgin Islands Annual Tourism Indicators

Indicator	1970	1980	1990	1991	1992	1993	1994	1995
Visitor Arrivals (thousands)								
Total visitors, USVI	824.0	1,217.4	1,811.5	1,899.5	1,929.7	1,922.8	1,919.9	1,733.3
St. Thomas/St. John								
Air visitors (T&E)	415.5	392.7	510.5	502.6	490.5	540.8	536.8	431.1
Cruise passengers	230.3	635.1	1,117.2	1,214.9	1,272.0	1,195.3	1,226.6	1,066.5
Number of cruise ships	445	821	1,140	1,232	1,279	985	993	807
Visitor Expenditures (millions of dollars)								
Total Expenditures USVI	122.1	293.5	697.0	777.9	816.1	901.6	919.4	820.5
Tourists	103.6	221.9	498.8	496.5	519.7	615.0	621.1	534.4
Excursionists	18.5	71.6	198.2	281.4	296.5	286.5	298.3	286.1
Day-trip by air	8.0	13.5	30.6	36.5	31.7	30.9	26.7	21.5
Cruise passengers	10.5	58.1	167.6	244.8	264.7	255.7	271.5	264.6
Selected tourism related employment (# of jobs)								
Tot. tourism-related emp.	--	7,200	8,640	8,990	9,110	9,860	9,680	8,980
Hotels/lodging	2,816	3,040	3,460	3,650	3,750	4,260	4,250	3,910
Gift shops	--	1,960	2,370	2,430	2,420	2,430	2,400	2,210
Eating/Drinking establ.	--	1,550	2,380	2,430	2,360	2,520	2,420	2,290
Transportation by air	--	650	430	480	580	650	610	570

Source: BER 1996c. Abbreviations used: T&E = Tourists and Excursionists

Tourism Accommodations and Hotel Guests by Origin, USVI										
Indicator	1970	1980	1990	1991	1992	1993	1994	1995		
St. Thomas/St. John Tourist Accommodations										
Total rooms of units	2,253	3,485	3,582	3,636	3,911	4,184	4,193	3,891		
Number of hotels	--	30	41	39	39	39	37	34		
Hotel rooms	--	2,415	2,808	2,842	3,107	3,352	3,365	3,161		
Condominium/other units	--	1,070	774	794	804	833	827	739		
Occupancy rate (percent)	--	67.6	62.3	60.0	56.8	62.0	62.0	63.6		
Hotel Guests by Origin (Total USVI)										
Total hotel guests (no.)	--	263,522	398,210	403,639	409,242	469,792	462,189	397,444		
USVI residents (percent)	--	5.1	7.1	6.8	6.6	6.4	6.4	8.7		
Non-residents (percent)	--	94.9	94.0	94.3	93.3	95.4	94.8	94.6		
US mainland	--	74.4	80.6	80.2	79.1	80.6	78.2	75.7		
Puerto Rico	--	10.5	6.0	5.7	6.7	4.6	5.2	5.4		
Other West Indies	--	1.3	0.8	0.9	1.1	0.9	0.9	1.1		
Canada	--	1.3	0.8	1.0	1.0	0.9	0.7	0.8		
Europe	--	5.2	2.2	2.2	3.0	3.0	3.1	3.1		
Central or South Amer.	--	1.7	0.8	0.9	1.0	0.8	1.2	0.9		
Other areas	--	0.4	1.8	2.4	1.6	2.8	4.3	4.6		

Source: BER 1996c

There is a pronounced annual cycle in the St. Thomas-St. John economy based on fluctuations in the tourism economic sectors. When measured in terms of occupancy rates, there are distinct peaks seen in February and November (with February being the higher of the two). September marks the low point in the annual cycle (BER 1996d). If one looks at room nights occupied for 1993-1995, the peak of the year is seen in March, the valley in September, and the secondary peak is more of a plateau covering November and December (with a sharp drop in 1995 in the months following Hurricane Marilyn) (BER1996e). Similarly, cruise ship passenger arrivals for 1993-1995 peak in March, and again in December, with the lowest 'valley' occurring in September (except for 1995 when arrivals dropped to nothing in October, due to Hurricane Marilyn, before rebounding to normal levels in December). (BER 1996f).

### 3.5 RECOMMENDATIONS FOR FURTHER RESEARCH

If a full Social Impact Assessment is to be made concerning the socioeconomic impacts of the proposed MCD, there are a number of other pieces of research that could be done to help fill in the economic and demographic data against which specific impacts could be measured. One such effort would be to analyze Census data at the smaller "Island Subdivision" or "Census Designated Place" and smaller levels, as appropriate. That was beyond the scope of this Rapid Evaluation effort, but combined with the information gained from the current effort regarding geographic distribution of both fishers and vessels, this analysis could (and should) provide some further insight into the differential distribution of impacts of the proposed MCD.

Also, as noted in the discussion, the effort needed to provide accurate fishing employment and income data would be minimal relative to the value of those data to fisheries managers and other analysts. While still representing a substantial effort, this information and analysis could be included in a Social Impact Analysis.



## 4.0 SECTOR DESCRIPTION FOR COMMERCIAL FISHING

Commercial fishers represent one of the two primary groups that currently use the area of the proposed MCD for commercial purposes (with the other being sport charter fishing operations). Within the commercial fishing sector, there is a considerable amount of differentiation, based on location, vessel size, and gear type, among other factors. Commercial fishing on St. Thomas differs enough from commercial fishing on St. John, for example, that those are treated as separate subsectors within this sector description. Both purposive and snowball (networking) techniques were used to identify the types of commercial fishers and then the specific individuals within those groups to participate in the study. As a starting point, an informal estimate by the chief of the Division of Fish and Wildlife for USVI was that there were about 168 licensed fishers in the USVI, with only about 60 of them actively fishing, of which perhaps 30 fish within the proposed MCD (Meyers 1995: personal communication).

### 4.1 OVERVIEW OF COMMERCIAL FISHING

Several existing sources describe existing and historic fishing efforts as practiced around St. John. Beets (1996) provides a summary of these, while another frequently cited synthesis is to be found in Rogers and Teytaud (1988). Another recent synthesis may be found in Appeldoorn, et al. (1992) focused on the shallow water reef fish stock assessment. Garrison (1996) has recently produced a paper on the reef fishes of St. John that provides data on impacts to the environment by fishing, as well as an historical overview of fishing in the area, and includes data on rates of illegal fishing activities. Moore and deGraf (1987) produced a report on 'fisheries in crisis' that has had a local impact on the way fishers view the fishery and the management process. An important series of research reports on the Biosphere Reserve provide significant background information on regional and local fisheries, the most relevant to the current work being Goodwin's (1986) characterization of Lesser Antillean fisheries, Koester's (1986) work on the socioeconomic and cultural role of fishing and shellfishing in the Virgin Islands Biosphere Reserve, and Boulon and Clavijo's (1986) report on utilization of the Virgin Islands Biosphere Reserve by artisanal fishers. Earlier characterizations of the fishery may be found in a report on the St. Thomas-St. John Fishermen's Cooperative (Farmer Cooperative Service, USDA (1976). Olsen (1977) discusses the role of surviving lunar related strategies of fishing in the Virgin Islands. Swingle, Dammann, and Yntema (1970) provide a survey of the commercial fishery of the U.S.V.I., and an earlier report by Idyll and Randall (1959) provides a summary of the sport and commercial fisheries potential of St. John. Fiedler and Jarvis (1932) provide an early characterization of fisheries of the Virgin Islands. Synthesis of these works is beyond the scope of this Rapid Socioeconomic Evaluation. However, it is important to note that these and numerous other sources of data are available for historical and recent analysis of fisheries that could be used in a Social Impact Assessment or similar follow up study to provide a full discussion of the context, particularly in the area of changes over time, the assessment of the retention of traditional methods versus recent innovations in the fisheries, and the cultural role of fishing in the U.S.V.I. context.

## 4.2 LANDINGS DATA AND THE USE OF THE PROPOSED MCD AREA

Typically, in this type of Rapid Socioeconomic Evaluation, or a more comprehensive Social Impact Assessment, landings data as compiled by regulators are used as a starting point for analysis of an area in question and description of that effort by sector. In this case, there are known limitations to the available fisheries statistics for the area of the proposed MCD that preclude their use for a detailed examination of the use of the area. Some of these limitations include: changes in reporting areas (twice since 1992) that make historical trend analysis for the MCD area problematic (until 1992 all fishing south of St. Thomas and St. John to the east of the area of Charlotte Amalie was lumped into the reporting category 'TSE' [St. Thomas, Southeast] for the 1992-1993 reporting period, reporting area 'JS' [St. John, South] was created all waters south of St. John, subsequently 'JS' has been subdivided into 'JSW' [St. John, Southwest] and 'JSE' [St. John, Southeast] bisecting the proposed MCD area but including a much larger area in each); lack of differentiation between reported catch in Territorial and Federal waters in available data summaries; 'combined' reporting where fishers can report catch from the same trip covering more than one area with no disaggregation possible from the available summary data; lack of available summary data beyond 1992-1993; a lack of differentiation by species (except lobster) as opposed to gear type in the summary data (it was intended that the species data would be derived by 'aggregating up' from biostatistical sampling to gear type, but for a number of reasons there have been difficulties with effectively implementing this process); and, known problems in the past with captain and crew ('helpers') double reporting catch. Further, a limiting factor for the present purposes is the fact that landings data are not summarized by vessel class/length (nor are data available on number of traps per vessel to allow cluster analysis by class/length and amount of gear [and, further, number of traps per vessel are not available by itself]), nor by sector type (e.g., 'true' commercial fishers, as though of locally, versus 'sport charter fishing boats' that also hold commercial licenses). Data runs of the most recent year available (July 1, 1995- June 30, 1996 reporting year) were obtained, but these data represent an anomalous year due to the impacts of Hurricane Marilyn.

It is also important to note, when trying to use available data to determine the number of fishers that there are incentives for individuals to obtain commercial fishing licenses for immediate uses (e.g., it is a way to avoid moorage fees, and the cost is nominal [\$5]) as well as for strategic purposes (e.g., there has been talk in the past of a limited entry type of fishery management system, and maintaining a license will create a record of 'participation' in the fishery). In sum, there are known limitations in the application of existing data to describe use patterns in the area of the MCD. Given the rapid time frame of this research, and the unavailability (or relative inaccessibility) of several significant types of landings data, at the direction of CFMC staff (CFMC 1996a:personal communication), effort on this limited-scope research was not spent on reworking catch data.

It should be noted that two summary reports have been recently prepared specifically regarding the use of the proposed MCD area, and have been discussed in public hearings. A report titled "Description of the Fishing Activity in the Proposed Marine Conservation District South of St.

John, U.S. Virgin Islands" was prepared by CFMC staff (CFMC 1994). This paper provides data from a sample of fishers regarding types of gear used and species landed by quadrat. This study complements the current effort through its focus on species caught by various gear types. This type of data was not consistently obtained during the current research, and would be worthwhile to follow up under a full Social Impact Assessment effort. A report in the form of a letter to the CFMC from the Department of Planning and Natural Resources (DPNR) does provide a breakout of effort for one recent period of catch effort by zone (Territorial or Federal waters or both) and by location (using the current catch report categories), and an estimate of effort in the areas covered by the proposed MCD (DPNR 1996). This report shows a relatively minimal catch for the proposed MCD area in relation to the overall fisheries catch as a whole, and this was reacted to strongly by commercial fishers. For the purposes of this effort, the DPNR paper does not allow breakout by sector or subsector, but provides useful additional data. One drawback for the present purposes is that while percentage of total effort is presented, there is no way to back out the percentage of individual operations by vessel class or location. That is, while overall fleet effort (or 'importance') may be assigned through this method, it does not speak to the importance to subsectors or individual operations within the fleet. Further, existing relevant landings data are summarized in the 'Options Paper' of the Draft Amendment Number 1 to the Fishery Management Plan for Corals and Reef Associated Plants and Invertebrates of Puerto Rico and the United States Virgin Islands along with the results of the 1994 CFMC survey (CFMC 1996b:7-9). Those results are not recapitulated here. It should be noted that commercial fishers strongly reacted to these characterizations of levels of use, and this was one of the factors behind this current effort.

#### 4.3 METHODOLOGICAL CHALLENGES AND SAMPLING

In large part, the goal of this Rapid Socioeconomic Evaluation was to determine current use patterns of the proposed MCD area by sector. As described in the methodology section, snowball sampling was used, to a large degree, to obtain the names of potential users of the proposed MCD area. As will be discussed below, there is at present commercial use of the proposed MCD area by two primary groups, St. Thomas and St. John charter sport fishing boats and St. Thomas commercial fishers, along with lesser intensity of use by other groups included in their respective sector discussions.

One of the challenges that was apparent from previous CFMC documents, and that became obvious early on in the field research, is that the creation of the proposed MCD is now a highly politicized issue. The MCD proposal has been discussed in a number of forums over the past few years, and individuals have become entrenched in their views. This, in turn, had an impact on the interview process. This impact was greater for some sectors than others. For example, one of the purposes of the interview process was to obtain a profile of operations for commercial fishing subsectors who may be users of the proposed MCD area. Individuals being interviewed, however, would often keep returning to a discussion of the MCD proposal itself rather than providing detailed information on their own operations. This was more the case with some sectors than others, and was only particularly prominent among St. Thomas fishers.

Another challenge was presented by the snowball sampling technique itself. Every individual interviewed was asked for recommendations of other people who they thought were proposed MCD area users or who otherwise would be good to talk with. In at least some cases, the original interviewee then called these recommended persons and discussed the interview with them prior to the researcher reaching them. This had two consequences for the subsequent interviews. First, it facilitated the interview process by legitimating the researcher to the subsequent people to be interviewed by providing an introduction from a known person. Second, in at least some cases, the original interviewee communicated their views on the proposed MCD to the subsequent interviewees, influencing the content of the information provided by the subsequent interviewees. This had varying degrees of influence. In some cases, subsequent interviewees views differed sharply from those of the referring interviewee. In one instance a subsequent interviewee flatly stated that he knew the referring interviewee wanted him to say one thing, but he felt another. In any event, in all sectors, but for commercial fishers in particular, 'the circle is small' and word of the ongoing research spread quickly, similar to the case for research in any small community (with commercial fishers, to a large degree, having their own 'community' in terms of frequency of interaction with each other). It is, of course, an ethical responsibility of the researcher to spread the word widely regarding the research and its objectives, particularly in this type of Rapid Evaluation.

As a result of there being charged political atmosphere surrounding the MCD proposal, the fact that a significant number of people, particularly commercial fishers, have come to have entrenched positions, and the fact that previous meetings on the issue, it would appear, have channeled responses in a number of ways through a sort of consensus building, research was at times challenging. Given the types of interviews conducted, however, this was not seen as an insurmountable challenge. If follow-up studies are to be done, such full as a Social Impact Assessment, it would be worthwhile to add other methodological approaches to obtaining interview data from commercial fishers.

Another challenge with interviewing commercial fishers is the dilemma the fishers face regarding the sharing of information about their individual operations. If they share information with others inside the fishery, they are essentially giving valuable information to direct competitors. If they share detailed information with an outsider, they are sharing valuable information with an unknown entity and the world at large. If they share information with regulators (including the CFMC), they run the risk of that information 'being used against' them.

As noted, there are known problems associated with the existing catch data supplied to Department of Planning and Natural Resources, Division of Fish and Wildlife (DFW). For a variety of reasons some fishers, over time, have felt that they have had incentives to understate their catches (economic incentives), and perhaps misstate the locale of the catch (not sharing valuable information incentives). Commercial fishers have seen that these catch data, in part, have been used as support for the creation of the proposed MCD. In the interviews, therefore, those opposed to the creation of the MCD then have an incentive to overstate the use of the MCD. This was not considered an insurmountable problem for the purposes of this present research effort, given the variability in the information that was obtained, and consistency on the reporting from a variety of sources regarding those operations (individually and by type) that

used the area. The question of 'true' level of effort by those users, however, remains an open question.

#### 4.4 ST. THOMAS COMMERCIAL FISHERS

St. Thomas commercial fishers are among the heaviest current users of the proposed MCD area. Specifically, they are the group that most intensively uses the area for trap fishing (i.e., as discussed in the St. John commercial fishing subsector, there is only one St. John commercial fisher thought to trap in the MCD area). The trapping use of the area among St. Thomas commercial fishers is differentially distributed by two primary factors: (a) the 'home port' location of the vessel; and, (b) the size of the vessel. It is also apparent that some south-side St. Thomas commercial fishers use the area for fishing using techniques other than trapping. These issues are discussed in detail in this section.

##### 4.4.1 Overview: Categories of St. Thomas Commercial Fishers

St. Thomas fishers are not a homogenous group in terms of their vessel configurations, gear types utilized, or the areas they target for fishing. In this section, an overview is provided of St. Thomas commercial fishing operations.

##### *Numbers of Fishers, Reported Proposed MCD Area Use, and Sample Size*

Through the process of snowball sampling, 38 named individuals were identified by St. Thomas commercial fishers as potential users of the proposed MCD area (remembering that the sport charter fleet, which typically hold commercial licenses, are treated separately in their own sector discussion). Of these, a total of 22 were interviewed (with some interviews yielding richer and more comprehensive data than others, depending upon the willingness of the individual to reveal his or her fishing practices; 14 of these individuals stated that they are currently using the proposed MCD area for commercial fishing). Of the remaining 16: two were identified as fishing (as crew) with individuals already interviewed (and so interviews were not actively pursued); six were identified as individuals who do not fish the proposed MCD area (two were directly contacted by phone and stated this, and the other four were identified by particularly knowledgeable individuals as fishing elsewhere, with contact with the latter four not actively pursued); five were individuals who were reported to be users of the MCD area, but with whom interviews could not be arranged during the field schedule; and, the remaining three additional individuals who were recommended may or may not be users of the proposed MCD area, but interviews with them could not be arranged during the field schedule.

Given the very limited field time available for this Rapid Socioeconomic Evaluation, pragmatic decisions had to be made regarding how many individual interviews could be pursued in any one sector. As noted in their respective sector discussions, a 100% sample size was achieved in both the charter sport fishing fleet and dive operations sectors, due to a relatively limited number of

active participants in those sectors and relative ease of accessibility (e.g., having listed phone numbers and fixed, known locations). As noted in the immediately following discussion on St. John commercial fishers, a very high sample proportion was achieved in that subsector as well due, in large part, to a relatively small pool of fishers within a relatively small geographic area.

St. Thomas commercial fishers represent a much larger group than any of the other sectors or subsectors, and are also in some ways the relatively least accessible (e.g., the percentage having unlisted phone numbers or no phones, the amount of time spent at sea, the problems associated with individuals only being known to other fishers only by their nicknames, etc.). As noted in the introductory section of this report, given the known limitations on time and effort, statistically valid sampling of all user groups was *not* a goal of this study. Rather, this study is meant to characterize the existing sectors and their use of the proposed MCD area, to lay out in general terms the potential differential socioeconomic impacts of the proposed MCD on those sectors, and to provide recommendations for further study. Ideally, if more time and resources were available, the St. Thomas commercial fishing sector would be more heavily sampled. It is known, for example, that the sample ended up being biased more toward larger than smaller vessels, as the first priority was to try and understand the direct use of the MCD area, and the more continuous users or frequent users of the area were the larger trap vessels. For the limited purposes of this Rapid Socioeconomic Evaluation, however, more than adequate sampling was achieved to accomplish the stated goals of the research effort.

#### *Variations within the Fleet: Technology and Vessels*

As noted in a number of earlier works, the main types of fishing used by St. Thomas commercial fishers have been traps, line, net, and spearfishing, along with lobster pot and lobster diving. Of these techniques, the only reported uses of the proposed MCD area by St. Thomas commercial fishers were trapping for 'potfish' and lobster, and handlining or floatfishing, primarily for yellowtail (year round) and hardnose ([also known as 'blue runner'] seasonally, typically June through August, with most effort concentrated around the area at the near the west end of the ridge that runs along the drop-off to 'the point'). No St. Thomas commercial fishers interviewed used, or knew of anyone who used, nets to fish in the proposed MCD area. Similarly, no St. Thomas commercial fishers interviewed used, or offered knowledge of any other St. Thomas commercial fishers who used, diving for lobster or spearfishing as techniques in the proposed MCD area, with the general consensus being that the water is too deep to make such undertakings viable as a commercial activity. Trolling was reported to be used by some vessels within the proposed MCD area on their way to or from trap fishing.

As for size of vessels, those interviewed made a distinction between 'small' and 'large' vessels, if not exactly in those terms. The 'small' vessels included locally built open skiff type wooden boats, many of which are in the 16 to 19 foot range (with 17 to 19 feet often characterized as the common range), with some being somewhat larger. It would appear that beginning at around 22' boats begin to have at least partial cabins, and there are a few boats in the 28 to 30 foot range that are seen as being intermediate operations, with the 'large' vessels typically those that are 30 feet and up. In the words of one individual recognized as being particularly knowledgeable:

At the most there are eight or nine [St. Thomas commercial fishing] boats in the 30-34' range. There is one 42' boat [the largest in the fleet] . . . At the most you have eight or nine guys that own vessels in that [larger] size [range] and in the 400-500 [or greater] range of traps. All the rest are small time fishermen who basically [fish] once a week, or go out and haul 12 traps per day, like that.

Other individuals noted many of the small boats do not trap fish at all, but instead concentrate on handline or floatfishing -- or, in the instance of small boat fishers from the north side of St. Thomas, add net fishing in relatively shallow nearshore waters to the mix of fishing approaches. In the words of one commercial fisher:

The smaller wooden boats, they don't do trap fishing as much. If they do, they have maybe 20 traps. It is just a part-time thing. [Q: Do they concentrate more on the line fishing?] A lot of them, that is all that they do. Most of the smaller boats don't even have traps.

Another Frenchtown fisher discussed some of the inherent differences in trap and handlining or float fishing in the following way:

Dealing with traps is one thing. Fishing yellowtail snapper is another thing -- to come in with 5-600 lbs, the conditions have to be just right, you have to be anchored right, the moonlight has to be right, you have to do some fine tuning. Southside [fishers have] it down, northside doesn't know how to do it. The [Caribbean Fishery Management] Council in Puerto Rico doesn't know what to do with it. If you dive, you don't see them [the yellowtail]. If the conditions are right they school.

Another commercial fisher noted that during "swell season" the northside is not good for traps but it is good for line fishing. This points out one of the distinctions between handlining or float fishing and trapping -- with handlining or float fishing you can make decisions on a daily basis, but cannot do so with traps (e.g., once they are set, if the weather turns bad, you are stuck for the time being with that decision).

There was a distinct technological variation within the commercial fishing fleet based upon the size of the vessel. All of the 'large' vessels that fish the proposed MCD area use power winches (hydraulic, electric, or gasoline) to pull strings of pots. The innovation of using strings of pots to fish (that is, the transition from one pot-one line-one buoy fishing to fishing featuring a number of traps strung together and buoyed at both ends of the string) was introduced to the area by a known and remembered individual from outside of the area. Fishers also commented that the larger operations featuring hundreds of traps to well over a thousand traps in few cases are relatively recent entrants into the fishery. There is some variation use patterns among the 'large' vessels -- they vary in their relative concentration on lobster or fish trapping (and within those that fish trap, some of the trap designs are more conducive to catching lobsters as well as fish than others [whereas lobster traps tend to catch few if any fish], according to interview data). Some of the larger vessels also handline or floatfish occasionally, while others do not engage in

this activity at all. In the words of one of the larger vessel owners regarding why he does not handline or float fish "if you handline, it is all night, lots of work . . . fish traps are out catching fish while the fisherman is in port." One commercial fisher discussed the variation in trapping techniques based on the size of vessel and the type of traps used:

Per day we usually haul about 60 traps in a boat that size [intermediate] . . . Some of the bigger boats in the 30 plus foot range haul anywhere from 100 to 120 traps per day. That's about the most that these guys will haul in a day. Right now, we let the traps sit for about a week . . . I go out about three times a week. Sometimes we raise a couple of them before a week. I try to go out at least twice traps and once line fishing per week. Some of the bigger boats let them [the fish traps] sit for a week or 10 days. The lobster traps they let them sit 12 to 14 days . . . I fish only [use] fish traps [as opposed to lobster traps] right now -- for me it is just the cost of the traps. The fish traps I have, I design them, they catch lobsters sometimes, but I am not targeting lobster. The lobster traps, if they don't catch lobster, they don't catch anything. The plastic lobster traps are the ones that they use in Florida. I don't buy them. I just fish mainly the wire.

It was also noted that 'mobility' of traps varies with vessel size. In the words of one commercial fisher:

I concentrate mainly on the south of St Thomas and the south of St John. I don't put traps [over a wide area] because my boat is not big enough for me to maybe move 200 traps at a certain time of year -- it would be too labor intensive for me in my boat. But some of the bigger boats, they can run 20 or 30 traps at one time, and they run them out of that area [in the west]. I do some line fishing to the west of St Thomas, but mainly I concentrate on the south, that is what I fish.

One commercial fisher described how he moved his traps in relation to how they are producing. He described a cycle where you move farther away from town as they keep producing, then as the production begins to fall, then you move them back toward town. This makes it more economic as they become less productive, i.e., it is less far, therefore less expensive to go out and check the traps.

None of the St. Thomas commercial fishers interviewed used 'small' boats, or knew of individuals with 'small' boats, for fish trapping or lobster trapping in the area of the proposed MCD. The St. Thomas 'small' vessels that were reported to use the proposed MCD area all used handline or floatfishing techniques.

As noted earlier, there are a number of problems with deriving the number of commercial fishers on St. Thomas from existing data summaries. Similarly, data do not at present exist in summary form that allow for the differentiation by vessel size, by location of effort, and by gear type. The



scope of work required to compile and summarize data from existing records that would result in findings that could be presented with statistical confidence in their accuracy was beyond the scope of this Rapid Socioeconomic Evaluation.

### *Employment: Full- and Part-Time Commercial Fishing*

Depending on the amount of investment, in capital and in effort, commercial fishing can be a lucrative business on St. Thomas. According to interview data, low to medium six-digit annual incomes for the owners of some of the larger vessels are not unheard of. For others who may spend less time on the water, commercial fishing still represents a full-time effort, between actual fishing, marketing, and maintenance/ repair/ gear fabrication activities. Some of the larger operations have an 'extra' crew member who does nothing but market the catch, either on a steady or a rotating basis with other crew members.

Typically, income per individual is derived on a 'crew share' basis, where income is divided by equal shares after taking direct expenses off the top. When trap fishing, the most common pattern is to have one share for the boat, one share for the traps, and one share for each of the individuals working on the boat at the time. For handlining or float fishing, typically it is one share for the boat, and one share for each of the individuals working on the boat. Crew size is normally two, although some of the smaller vessels do fish with only one individual, and at least one of the larger vessels fishes with a crew of three.

Although commercial fishing is typically much less lucrative for smaller operations, the notion of fishing being part-time and therefore less important to those individuals is not shared by all of the fishers. It is not uncommon for individuals to fish part-time in order to 'make ends meet' due to the fact that they cannot adequately support a family on only the income derived from their 'primary' job. In the words of one fisher:

Salaries are not that high in the U.S.V.I. no matter where you are working -- pay is not as high as stateside. This is an expensive place -- food, rent. Most people get a second job to make ends meet. That is why a lot of people fish. Poverty is the big problem here [at the time of the 1990 census, per capita personal income was \$11,052 or 62.6% of the national average]. Part-time work, part-time fishing is essential.

Further, as one fisher commented, is it fair to characterize an individual as part-time if he fishes less than some others, but is satisfied with that lesser income? There is also a range in the 'style' of commercial fishing, from what would be considered artisanal or subsistence style fishing elsewhere to more 'industrial style' commercial fishing. Within each type there is a range of variation. According to one commercial fisher, while the larger operations have been growing in recent years, the demographics of the smaller scale fishery are changing: "There are only a few small operations left. There used to be a lot of part-time fishermen, [individuals who] combined [fishing] with other employment, but those guys are old now" (this statement was

not corroborated in other interviews). Other full-time fishers showed much less respect for part-time fishers. In the words of one full-time fisher:

The problem with part-time fishermen is they think it is going to be easy, and they get some traps . . . they have a hard time, don't make money, so they go back to their jobs. They abandon the traps sometimes and they just keep on killing fish . . . Part-time fishermen don't put biodegradable doors in the traps - - they don't care. They can walk away from it and have other income . . . Part-time fishermen cause a lot of problems. Full-time guys, if they are caught breaking regulations, they are in a lot of trouble. If the part-time guys get caught, they can plead ignorance and they get away scot-free [and they don't lose their primary employment].

It is also important to remember, and as discussed in the sociocultural dimensions subsection below, that individuals may change status in the fishery several times over the course of their lives.

#### 4.4.2 Geographic Distribution

At present, fishing effort in the proposed MCD area would appear to be dominated by individuals living on the 'northside' area around Hull Bay and individuals living in Frenchtown ('southside'), areas that correspond to the two 'traditional' fishing communities of St. Thomas, which are populated to a large degree by individuals of French descent (locally called 'Frenchies'). In the words of one St. Thomas commercial fisher "about 95% of the [commercial] fishermen are French" to this day. In terms of vessel locations, all of the vessels that use the proposed MCD area, according to interview data, are 'home ported' on the southside or east end of St. Thomas. That is, individuals who live in the Hull Bay area that fish the proposed MCD are owners of larger vessels who keep those vessels in a limited number of places on the south side of St. Thomas. During the interviews, there was no reported use of the proposed MCD area by small boats 'home ported' in Hull Bay or other northside locations -- it was typically thought that this was too long of a run to be worthwhile. The northside is also not conducive to 'home porting' larger vessels, due the relatively exposed nature of the bays there. Therefore, those northside individuals who have accumulated the capital for larger boats keep those vessels in such southside or east end locations as Crown Bay Marina, Yacht Haven, and the Red Hook and Lagoon areas. There were no instances mentioned during the interviews of 'northside' individuals keeping 'small' boats on the southside. This topic was not specifically addressed during many of the interviews, but clearly, if such cases do exist, they would be few in number. Southside residents with both 'large' and 'small' commercial vessels concentrate their 'home porting' in the Frenchtown area. There are reportedly also 'small' vessels in limited numbers kept in other southside locations.

In sum, the 'small' vessels that would be impacted by a proposed MCD area closure would be concentrated (both in terms of residence of owners and location of vessels) in the Frenchtown

area on the southside of St. Thomas. These vessels use the proposed MCD area for handline or float fishing. The 'larger' vessels that trap the proposed MCD area are located by 'home port' on the southside and east end of St. Thomas, with ownership of those vessels, as a generality, being distributed between Frenchtown and the 'northside.' The geographic distribution of ownership also to a large degree determines marketing location, as developed in the following section.

#### 4.4.3 Markets

Two of the striking characteristics of the St. Thomas commercial fishery as compared with more industrialized fisheries elsewhere are that: (a) there is no industrialized processing sector of the fishery; and, (b) all of the seafood caught locally is consumed locally. Indeed, local supply is unable to meet demand, and seafood is imported to the Virgin Islands. As for marketing of catch, there are several different ways that product is marketed. There are fixed locations for sale to the public, there are sales to the public from the back of trucks at known locations that are not market places *per se*, there are sales to restaurants and hotels, and there are sales to residential customers.

At the boat ramp in Frenchtown, one can buy fresh fish almost everyday, but there is relatively large public market every Saturday morning. Beginning as early as 4:00 a.m., fishers sell fresh caught fish to the public, from tarps laid out on the boat ramp, off the back of trucks parked adjacent to the fish house, and sometimes earlier caught frozen fish from freezers in the fish house. Frenchtown is unique on St. Thomas for having a fish house (the Gustave Quétel Fishing Center), a government owned building that has individually locking storage spaces for commercial fishers immediately adjacent to the water (which the fishers use for storing gear and for freezing catch in individually owned freezers in their spaces) and a large cleaning area for fish (on an adjacent pier), along with a ready supply of fresh water. The Saturday morning market activity, with customers being primarily West Indian locals, was characterized by several fishers as having a "carnival atmosphere," and personal observation by the Principal Investigator in the field confirmed this. In addition to the fishers selling their fish at this location, a number of vendors of other products, such as drinks and produce, show up at this time and location, further boosting the economic activities there.

At Frenchtown, fish are typically sold uncleaned. Some customers prefer their fish cleaned, and that can be arranged either through the fishers or the people who clean fish on the pier adjacent to the boat ramp and fishing center building. According to one fisher:

[The people at the cleaning station] get 60 cents a pound for cleaning. This is the only place [on St. Thomas] that cleans like this. There are some customers who want the fish cleaned, and the fishermen take the fish to the cleaners, and then to the customer; fish that is \$3.00 per pound uncleaned is sold for \$3.60 cleaned [i.e., there is no additional mark-up by the fisher] . . . other people buy the fish from the fishermen, then take it over to the cleaners themselves and pay 60 cents a pound for cleaning.

Although some of the family-based operations in Frenchtown still have family members (including fishers' wives) clean their own fish (rather than having the fish cleaners do it) this is reportedly becoming less common. One fisher noted that: "With the big guys now [the larger operations], if they did not have people to clean the fish, they would be in trouble" (i.e., their production is high enough that they could not keep up with their catch).

For fishers from the northside, an area immediately adjacent to Lionel Roberts Stadium, in the Hospital Grounds area, is a common selling outlet. Much smaller than the Frenchtown market area, it does have the advantage of a covered area for sales for at least a few individuals, and a cleaning area. It has the disadvantages of having no water supply, and no storage space. Individuals typically sell out of the backs of trucks at this location. In the words of one fisher describing this location:

. . . mainly the north side people use it, it is right around the Hospital Ground [area of Charlotte Amalie] there. They would bring it in in coolers and drive it here. Most of their fish is iced and brought down the following morning. There is no market on the north end -- the locals [West Indians] do not go there, it is mostly the local French people who live there, they go out and a lot of them have boats.

Another area where fish are sometimes sold by northside fishers is at Market Square at the bottom of Main Street. Fishers can also be frequently seen selling fish from the back of trucks at Ft. Mylner, and less frequently in Smith Bay. Other individuals have spots they frequent near intersections where they sell fish out of their trucks.

In terms of the status of the Frenchtown market and the Lionel Roberts stadium markets compared to other places on the island where fish are sold, one fisher stated:

Let me put it this way: there are two designated areas that have been set up by the government for fishermen to use to sell their products. There are maybe three other areas that fishermen have found that are good selling spots if it is overcrowded or they find that they want to sell during the week versus on a Saturday . . . Sometimes when there are too many trucks at the stadium, sometimes there are 8-10 trucks, they go over to Tutu . . . There is a place out of Tutu and out of the east end at Smith Bay. Some of the braver guys will even go into the housing projects with their truck. I've even seen a lady over in Sub Base that goes with fish in the back of her station wagon.

Different fishers place different degrees of emphasis on the various types of market outlets. In the words of one of the 'large' vessel owners:

I sell to retail customers and to the local market place . . . there is no fish that goes off-island . . . some other guys sell only to the local market, and not to

hotels and restaurants . . . [I] have about five restaurants that [I] sell lobster and fish to [and] also friends order fish weekly, I have about 30-40 people per week. [While the] northside guys [usually] sell in the stadium area, during the fall slow time they will sell here [in Frenchtown]. Fall is slow, because people have going back to school expenses.

Several other fishers also noted that fall was a slow time for sales to the local public because of both the dip in tourist related employment, but largely due to the expenses related to school (e.g., purchasing school uniforms for their children). In the words of another fisher:

Sometimes of year the demand slows down. Because we deal with the local market, just before school resumes, the market slows right down. For a lot of the people, the fish is a more expensive food. With school expenses, they cut back. That is also a slow time of year for the fish. It picks back up in the winter. In the fall their [the customers work] hours are cut, and they have shorter work weeks when the tourism is down. Because we are tied to the local market, things are down then. We have certain times around the spring carnival when you can't catch enough fish. People are begging for fish. A lot of times that is when the fish are spawning, so you don't catch as many. There is a lot of fish shipped in from outside then. But we have a pretty steady market all year long.

According to several commercial fishers, the prices are relatively stable for fish. In the words of one commercial fisher:

Right now the going price for fish is \$3/lb, except for the blue runners, they are going for \$3.50/lb. Yellowfin tuna and mahi-mahi are going for maybe \$4/lb, but we don't fish them -- that is mostly the charter boats that fish off the drop -- they are fishing for marlin and stuff like that, and they pick these fishes up [i.e., from the perspective of some commercial fishermen, the most expensive commercial fish are essentially bycatch fish for the charters -- but from interview data with charter operators themselves, they do directly target tuna, dolphin (mahi-mahi) and wahoo].

Lobster were commonly reported to be selling in the \$5.50/lb range, although this is reported to drop to \$5.00/lb during those times when there are lots of lobster coming in. A few commercial fishers noted that the cheapest prices for fish were in Frenchtown, and that "at the Ballfield and the Market, that is where the Northside guys sell their fish, it is 50 cents to \$1 more a pound than here [in Frenchtown]." (It should be noted that price checks were not independently performed during field research.)

For sales to hotels and restaurants, fishers describe these as split essentially into two separate markets. One is for 'local restaurants' that want different species of "plate fish" (referring to the size of the fish) or "pot fish" (referring to fish caught in fish traps). Plate fish are fish that are

small enough to be prepared whole (head on), and still be served on a plate cooked in the traditional local/West Indian fashion (the exception to this being those restaurants are also interested in yellowtail snapper for fillets). On the other hand, hotels and some of the restaurants that cater to local tourists want larger fish and a limited number of species that can be cut into steaks or filleted to suit the tastes of their customers. In the words of one commercial fisher: "Hotels are [interested in] red snapper, grouper, mahi-mahi, yellowfin tuna, big yellowtail [snapper], and lobsters, lots of lobsters." This sharp division between markets based on what tourists want has apparently changed somewhat recently as, in the words of one fisher: "A recent change has been that the pot fish are now getting to the tourists through the restaurants. As West Indian cooking is becoming popular with tourists, that is a way that local fish get to them." Individual fishers tend to develop working relationships with specific restaurants and hotels that then become regular customers.

Individual fishers also tend to market fish on residential 'routes.' Beyond supplying fish to extended family and friends, commercial fishers typically develop a list of families who buy fish from them. The fishers come to know the preferences of the individual customers, and when they have a supply of that species will set some aside for them, often for direct delivery.

There are reports by a number of fishers that fishers from other islands do come and sell fish occasionally in St. Thomas, hurting the local market for local fishers. Otherwise, imports do not appear to hurt the structure of the local market because demand exceeds local supply.

#### **4.4.4 Sociocultural Dimensions**

The predominant ethnic group engaged in commercial fishing on St. Thomas are people of French descent ('Frenchies'). Of the commercial fishers interviewed from snowball sampling, all but two were of French descent. Two were West Indian, at least one of whom was not originally from the Virgin Islands. It is known that there are other West Indian fishers on St. Thomas, but since the sample was biased toward potential users of the proposed MCD and the sampling frame was constructed outward from recommendations from public agencies and from individuals who had previously appeared attentive to the proposed MCD issue, there may be relative under representation of West Indian fishers in this sample. (In any event, it is clear that St. Thomas commercial fishers are socioculturally a very different population from the St. John commercial fishers, discussed in a subsection below, who are West Indian [more frequently] or 'continentals' [less frequently]). The two West Indian fishers in the St. Thomas sample have vessels based out of Frenchtown, and it is thought that there are a number of other West Indian fishers with smaller vessels dispersed around a limited number of locations on the island. (One commercial fisher interviewed suggested that West Indian fishers on St. Thomas were concentrated primarily on the East End.) This is not considered a difficulty for the limited purposes of this Rapid Socioeconomic Evaluation, but it should be taken into consideration in the design of follow-up work. According to one commercial fisher, West Indians used to participate more in the fishery, but as a group they have been differentially impacted by development of particular areas:

There used to be a lot [more] Blacks in the fishery . . . by the Coast Guard dock there used to be a fishing village . . . also by the Long Bay big dock -- they have been pushed out. Red Hook was also the site of a Black fishing village, [in an] area near the ferry terminal.

It should be noted that this individual was the only person to make this type of observation during the interviews, but it would be worth pursuing in future research.

Another ethnic/cultural group that is directly involved with the fishery are represented by the people who clean the fish in at the fishing center in Frenchtown. While direct interviews were not conducted with these individuals (due to a lesser priority in establishing proposed MCD area use for this Rapid Evaluation), several fishers reported that the 12 to 13 or so people, both male and female, who clean fish on a regular basis are from 'Down Island.' There is also a gender difference in the St. Thomas sample of commercial fishers compared to the St. John sample -- within the St. Thomas interview sample, two of the registered commercial fishers were female -- one of whom actively fishes at present and one who does not, but who is directly involved with the fishing business. No females were identified as commercial fishers on St. John, although wives may sometimes accompany their husbands on day trips.

One group that was reported by some fishers, but not contacted during field research, consisted of fishers who have at least temporarily relocated to the U.S.V.I. In the words of one commercial fisher:

There is a lot of people that are here that have relocated from other islands, such as Tortola. Their port is here, but they fish in BVI waters. They home port here, and go up there and fish a lot. The market here is a lot better. That is the only way that they can sell there fish. U.S.V.I. guys cannot fish the BVI, but BVI guys here fish here and Tortola.

This topic would require substantial additional research to understand this important component of the fishery, including perhaps field visits to the BVI to understand the dynamics involved in the lack of reciprocal relationships and the dynamics of actual use.

One fisher noted that there are a number of 'invisible' commercial fishers as well because of their immigration status. In his words, there are "illegal aliens, [who are] part-time commercial fishermen all over St Thomas. They sell the fish in the neighborhoods where they live."

It is clear, however, that the dominant group for St. Thomas fishing remains those persons of French descent. Most of the persons of French descent on St. Thomas today trace their ancestry to a French movement into the area from St. Barth. Early arrivals in this migration may have come as early as 1850, with arrival in numbers having been confirmed for the period of 1865 to 1870 (Pesme 1995:281). The French settled into two distinct communities on the island: Northside French Village (Northside) and Carenage French Village (Frenchtown). From St.

Barth they brought with them their traditional farming and fishing way of life. On St. Thomas, the Northside French focussed on agriculture as well as fishing, and today the Northside community is still a relatively dispersed population from roughly the Hull Bay area on the east to Santa Maria Bay on the west along the north shore. In contrast, the Carenage French Village, now commonly known as Frenchtown, is much more compact and urban in character as part of the larger Charlotte Amalie urban area. There apparently has always been a rivalry between the two populations, and there remain some differences in their fishing approaches as well. One difference noted by several individuals is that Northsiders, in addition to trap fishing, use net fishing as a primary technique. On the other hand, Frenchtown fishers, in addition to trap fishing, more often use handlining or float fishing as a primary technique.

Apparently interest in fishing over the years has varied with other economic opportunities or the lack thereof. According to a paper that was based on field research in 1962, while "traditionally this community [Frenchtown] engaged in fishing for market and subsistence . . . At present none of the Frenchtown people fish for market, and very few fish for personal use" (Morrill and Dyke n.d.:3). In this same study, the Northside French are characterized primarily as engaged in wage labor, supplemented by small scale farming and fishing. It was noted that land was available and cheap until the beginning of the St. Thomas tourist industry in the early 1950s, when "between 1954 and 1962 land values increased by a factor of 10 or more" (Morrill and Dyke n.d.:7). Some of the Northside French gained income by selling the land they owned; others retained it or leased it out. Even today, fishers from Frenchtown remark on the capital gained by the land held by the Northsiders, and how this capital has relatively recently been used by some to engage in large scale commercial fishing. In the words of one Frenchtown fisher:

Guys that do most of the fishing are French heritage . . . Northside fishermen [with] smaller boats that are up there do not come around to the south side . . . Guys in Frenchtown had no land, descended here, they are small time fishermen. [They] squatted here -- had no property. Northside, they were farmers, [and the] property [is] now worth more money . . . [They] sell the land, get into fishing now. Guys on the north side have the bigger boats than we do here . . . they have more of the big operations than we do, and they [the big operations] fish the south side more than the north side.

Distinctions could be drawn in the variation seen in the style of fishing pursued, such as 'industrial' or 'true commercial' versus 'artisanal' or 'subsistence,' but it is important to note that in addition to there being a continuum of fishing activities that may change over time for any one individual, fishing for market has been a cultural tradition for many generations in the French community on St. Thomas. It is part of a cultural heritage, and an activity that individuals can and do enter, leave, and re-enter over the course of time. Some individuals vary between full- and part-time fishing depending on other employment availability. One individual interviewed had fished for years while working, needing the additional income, and became a full-time fisher upon retirement from his other job.



One of the problems with establishing actual use of the proposed MCD area, and then interpreting what that use 'means' in 'sociocultural' terms or in terms of 'values,' is the problem of the importance of intermittent use. As noted, none of the St. Thomas 'small' boats are reported to fish traps in the proposed MCD area. Those who fish the area by handlining or float fishing typically fish the area on an intermittent basis by design -- that is in conjunction with the phases of the moon. This is quite a different style of use than that of trap fishers who fish at more or less fixed intervals (although these intervals may be altered by weather). The trap fishers who use the area on regular basis are at the high end of the production scale relative to the overall fishery. On the other hand, the intermittent users, represent a type of sociocultural continuity of use, employing traditional fishing methods tied, as least in part, to the phases of the moon, using very limited technology. The trap fishers of the area, on the other hand, represent relatively recent users of the area in comparison, given the fact that the larger vessels, and the technique of using trap strings, which are apparently exclusively used in the proposed MCD area, are comparatively recent arrivals on the local fishing scene. It must be remembered, however, that they are also the ones who have the largest economic investment in their operations.

#### 4.4.5 Perceived Issues with Current Resource Use

While not all fishers stated that there were problems with the fishery, quite a number of them did. What was striking, however, was the differences between the fishers' perspective of conservation of the fishery resource versus that of the CFMC in the form of the proposed MCD closure. Fishers consistently mentioned measures that did not involve area closures, with a few notable exceptions.

Typically, the fishers noted the relatively new requirement for two-inch mesh on fish traps, that was largely supported by local fishers, and how this has already been seen to make a difference. They urged consistent enforcement of this regulation. Also fishers frequently pointed to the requirement for biodegradable panels on fish traps, so that 'ghost traps' would not keep on killing fish after they were lost. Again, the recommendation here was that this requirement be consistently enforced for all vessels, as there are a number of suspected violators of this regulation.

Additionally, a number of fishers mentioned and supported implementing two new measures aimed at conservation: (a) a limitation or cap on the number of traps allowed per vessel; and (b) the institution of a 'medallion system' to limit entry into the fishery. It is important to note that these suggestions are neither area nor quota/species based, they are vessel and gear-based recommendations. The first of these two suggestions is specifically designed to limit the growth of the portion of 'large' vessels in the fleet that haul many more traps than was the case only a few years ago. Of course, not all fishers support these suggestions nor, if they do support them, agree on the details of implementation, such as the number for a cap limit on traps. In the words of one supporter:

[A] better idea than closing an area would be to stop people from coming into they fishery, and having 300 traps per boat. They way I see it is that if a guy

can't make a living off of 300 traps, a good living, they shouldn't be out there. With 150 traps I make a decent living, with a bigger boat, I think 300 traps would be a good living.

It is important to recognize that the fishers recognize, as is implicit in their recommendations for regulation, that trap fishing has become a problem. Only the 'medallion system' regulation does not relate exclusively to trap fishing. One fisher noted the differences in regulatory needs between trap and handlining or float fishing in the following way:

Technological change has changed the fishing -- hauling traps by hand, then by gas, then by hydraulic. It used to be that you hauled 30 traps in a day. Now you can haul 150 in a day, three to four times a week . . . The fishery needs regulation. It is different with line and trap fishing. With trap fishing, there is only so much it can sustain. With line fishing, you have to know what you are doing. Unless you know what you are doing, you will not catch fish -- you can go out 10 times and not catch anything. With traps, you can put them down, and they will catch fish. Guys can lose them, and they still will catch fish. You don't have to know anything, and they will catch fish. With traps, 10 years ago there weren't half as many as there are now . . . [we] should go to a medallion system.

Paradoxically, one of the primary objections to traps by some non-commercial fishers is used in defense of trap fishing by those who practice it. In the words of one commercial fisher:

We use all of the fish [we catch]. We don't catch a massive amount of grouper, or snapper. We trap everything and use everything. We have a massive market here with the tourism and the local market -- they take everything we take -- there is no waste.

In other words, commercial fishers see their traps not having the problem of waste through unusable bycatch as seen in other fisheries (with the exception of 'poison' fish -- those suspected of having ciguatera -- which may be released or used as bait). On the other hand, a non-commercial fishers often deride trap fishing as harmful *precisely because* the fishers 'kill everything' that they trap, including what they consider small fish (even though there is a market for those fish).

The proposed MCD, on the other hand, is (at its most restrictive) an area-based measure rather than a vessel or gear-based measure. The fact that it is seen as a productive area, particularly for lobsters, as well as particular species of fish, makes it difficult for some fishers to accept that this is an appropriate area for closure. That is, a number of them asked why areas that were already damaged were not being set aside for restoration if there had to be closures at all. The fact that the proposed MCD is not directed at the conservation of any particular specie(s) is problematic (i.e., it has not, so far, been communicated to the commercial fishing community what species that are currently 'in trouble' in the area would be restored by the closure -- the historic reason

for local area closures), nor are they convinced that commercial fishing in adjacent areas would improve over the long run.

Another particularly problematic aspect of the proposed MCD closure, as seen from the perspective of the St. Thomas commercial fishers, is that it is seen as a possible first step in more sweeping closure plans. That is, this closure would make it easier to close adjacent areas in the future. There were some commercial fishers who stated in individual interviews that they believe there may be some merit in the idea of rotating closures -- but individuals do not want to be on record for supporting a measure of this type, because it is unpopular in group meetings, and others feel that temporary or rotating closures could and would turn into permanent closures, based upon some past experience and interactions with regulatory agencies and personnel. One individual noted that the Virgin Islands National Park is now creating some serious problems for some fishers as you "can't net the fry that we need for bait there" anymore.

Cooperation of local fishers, aided by effective enforcement, is seen as key to the success of the proposed MCD or any similar measure. One hurdle to overcome is that the CFMC is seen very much as an outside (i.e., Puerto Rican) institution. It is very difficult for local fishers to accept 'outsiders' telling them what to do with 'their' fisheries (i.e., fisheries that are pursued by local individuals, and are controlled from afar). When the meetings are held in Puerto Rico, even on issues considered critical to local fishers, few fishers from the Virgin Islands are willing to attend. One commercial fisher stated that the 'one way' relationship (i.e., that Puerto Rico can effectively regulate U.S.V.I. fisheries but not vice-versa) is problematic, and that further, it seemed to him that the possible status change of Puerto Rico in 1998 may bring its own problems to the regulation of U.S.V.I. fisheries. This same individual noted that it may be a conflict of interest for Puerto Rico to have so much sway over (what are perceived as) U.S.V.I. fisheries because the Puerto Rico and the U.S.V.I. compete for tourists and fish, among other things.

Also as noted elsewhere, the lack of resources for enforcement of current regulations has also greatly influenced the way commercial fishermen view this issue. In the words of one commercial fisher:

Those areas -- I don't think a marine conservation area would work because of enforcement. There would be a lot of guys, you know some guys would take a chance for the catches that they would make. They would fish illegally. I guess that is a fact of life wherever you go in the world. That's my main views on the whole thing. I don't think it would work.

Another issue is the possibility of permanent closure of what is viewed as a relatively large and productive part of a limited shelf area around St. Thomas and St. John. Limitations on other areas are attributed as being due to running time, bottom compositions, seasonal closures, sea conditions that rule out some areas on a seasonal basis, and the proximity of (essentially off-limits) BVI waters. Speaking of sea conditions in one area, as St. Thomas commercial fisher noted:

The east end of St Thomas is like a dragon's lair -- every month with an 'r' in it, people do not fish there, starting in September all the way through April. [The sea condition] destroys the traps -- that is [effectively] a [seasonal] marine sanctuary in itself.

As another commercial fisher put it:

We already have an area off the south of St Thomas that they close every year for the red hind, that is closed for several months. Also west, southwest, and northwest of St Thomas, every year that is a natural reserve -- people move their traps up east of that area because of the cold fronts that move through, that is mostly a shallow area, the groundswells come up and you can't fish there that time of year. The weather is so bad, the seas are so rough, that even if the traps do catch fish, they are all dead by the time you get them . . . So all of those guys, at a certain time of the year, they move their traps out of there, and they put them all south [of St. Thomas and St. John] . . . what would happen if they close off south of St John, those guys would have to move their traps out of there, [to] the south of St Thomas, and the north of St Thomas would be so heavily fished, that I think it would only be a matter of time before those areas would be dead, free of life, because when you are talking about putting traps from both of those areas in one small area, it would be a very high concentration. I don't think it is going to work.

Regarding access to BVI waters which were historically used by U.S.V.I. commercial fishers, one fisher noted that the "BVI has thrown [U.S.V.I.] commercial fishing, dive, and sport boats out. Therefore things are piled up now. If the MCD happens, that will pile things up more." (It should be noted that based on interviews with individuals from the other sectors, and noted in those respective sector discussions, that dive and charter sport fishing boats still do actively use BVI waters, although they now pay to do so.)

In general, there is a lack of belief that fishers 'will get something out of it.' In this case, the proposed MCD area is somewhat different from the Soufriere reserve in St. Lucia, which is often held up as an example of a successful reserve in the region. In that case, there was direct conflict between user groups, and the reserve was negotiated with the user groups themselves, where all groups perceived that they lost some things and gained some other things (e.g., in the case of fishers, they received fishing priority zones). On St. Thomas it is the sport charter fishers and the commercial fishers that are somewhat in competition or disagreement over resource use in general, but it is not perceived that they are in direct competition in the sense of targeting the same species at the same time. Rather, there is resentment on the part of some of the charter fishers regarding habitat destruction believed to be caused by the commercial fishers, and there is resentment on the part of some commercial fishers that charter fishers are in competition for the market end of the business if not the harvesting end. (Although one commercial fisher did have a problem with one aspect of the sport harvest: "with the sport fishermen, there is no bag limit -- if they get onto a school of something, they can just keep working it back and forth, that isn't

right") In other words, it does not appear to be a clash of values within this specific area -- commercial fishers use traps and handline or floatfishing techniques, sport charter boats troll the area, and divers, for the most part, do not use the area. Paradoxically, this makes things easier and more difficult. There is nothing to give the fishers in a give and take negotiation between user groups. Sport charter vessels feel that they are being taken away from (if trolling is disallowed) only because another group (commercial fishers) are being taken away from.

Commercial fishers, if they do so, typically come into conflict with divers in shallower areas of common use nearer to shore (as noted in the discussion of the diving sector, below). An additional perception of some commercial fishers regarding conflict with divers, beyond the direct use of areas that would otherwise be good commercial fishing area and the trap destruction issue (discussed below), is that at least in the case of one operation, they dive charter when busy, but when things are slow they switch to commercial fishing -- similar to what is seen in the sport charter fishing sector (for at least a few of the vessels). On the other hand "commercial fishermen, when it is slow, go home" (i.e., not into someone else's primary business). One commercial fisher expressed worries regarding the dissemination of what used to be traditional knowledge to other user groups. Although he stated that spearfishing was "not a concern now, there is only one guy now [doing it commercially]," he noted that this may change as the "new GPS charts make the traditional knowledge available to everyone. Knowledge that was gained over the years with hard work, now everyone has access [to it]." Commercial fishers have also considered themselves of late to be in competition with recreational or personal-use fishers over the whelk and conch reopening. (Several individuals noted that the reopenings were so heavily publicized that there was a 'frenzy' upon reopening and whatever gains were made during the closure were set back or even reversed to some extent.) In this case of the proposed MCD, the St. Thomas commercial fishers feel that they are being asked to give up something important (a portion of their income and access to traditional fishing grounds) in exchange for what is seen as a tenuous benefit of possible improvement of productivity in adjacent areas rather than there being a give and take between sectors or between regulators and commercial fishers.

There is an acknowledged need for integrated approaches to the problem of marine resources stress -- but commercial fishers tend to feel they are being singled out for sacrifice as the most visible and therefore vulnerable group of direct resource users. As noted elsewhere, there is some local support for either rotating closures or the location of conservation areas in close to shore where it is felt they would do more good for the reef fish stock reproduction and reef recovery, but even this latter plan would shift the burden onto the small local (French and likely West Indian as well on St. Thomas, and West Indian on St. John) fishers who concentrate on inshore waters. In another vein in support of nearshore reserves, the words of one commercial fisher: "Marine reserves should be near the shore, for the tourism, not out here [in the proposed MCD area] where nobody is going to see the fish. It doesn't make any sense." Also it is strongly felt that integrated approaches such as tackling the problem of coastal run-off is only fair if fishers are going to be asked to give up concrete things. A number of commercial fishers mentioned ecosystem wide problems, but how it usually turned out they were the ones who got regulated. One commercial fisher put it this way:

The marine sanctuary that they now have -- it is a developed area, and the dump is right there, that will be leaking stuff in there. There are marinas there, and there is oil from the marinas. The problem is they will not push the big marinas out [of the sanctuary] -- they are the ones with the money -- but they will arrest the local guys for catching bait in there. It doesn't make sense. If you see the bait mob [aggregate] there, you can't go in and get them. It is the fishermen that they always put the restrictions on, they always jump on the smaller man. Look at the run-off, the rains a few weeks ago. The ocean was brown, there was mud all over, but they don't put any restrictions on that . . . They catch turtles in Tortola . . . the line with the U.S.V.I. is right there. Where do the turtles come from? Here. They allow development of the big resorts right on the beaches, so the turtles don't come there . . . where are they supposed to go? But they don't let the U.S.V.I. fishermen catch turtles. The turtles don't lay their eggs anymore because of the hotels and condos. They cannot fill the hotels they now have, yet they are allowing still others to be built.

Some of the individuals also mentioned the level of ciguatera in the proposed MCD area and questioned why the CFMC wanted to protect 'hot' fish. Further, the paradox of the fishers arose in St. Thomas as in St. John -- if this is a healthy offshore reef area, and it is a productive area for fishing (i.e., it seems to be bearing up 'just fine' from their perspective), why would the CFMC want to close that area when there are serious problems inshore? -- i.e., the precise reason the area is attractive as a proposed MCD closure area is also the precise reason that fishers oppose its closure, it is an relatively undamaged area within a larger setting that does have areas of significant damage.

A related issue here is the problem of leadership in an intensely independent 'industry.' At a basic level, there are important constraints on what individuals in leadership or representative positions can commit to as far as cooperation on management issues that are inherently divisive. There would appear to be inherent trouble with representative leadership derived from a basically unorganized group of competing enterprises. Interviews with those having served on committees in the past where decisions were made that were seen, by at least some, as unfavorable to fishers have been sharply criticized for their participation in the process; yet, at the same time, fishers want a greater say in decision making processes that impact them. As one long-time fisher put it:

[The] problem is fishermen will not go to the meetings and voice their opinion. These guys will sit down on the beach and create holy hell . . . [but] having a meeting with [CFMC] guys is like fighting a battle by myself. The first thing they [the CFMC staff] must say when they walk away from the meeting is 'the fishermen don't care, the only one that cares is [me].'

During interviews, some St. Thomas fishers suggested ideas for reserves that would encompass areas that for one reason or another are difficult to fish. A number of people raised the 'shipping lane' idea mentioned in earlier CFMC documents, where forcing the cruise ships and large cargo vessels into identified lanes would channel the problem that fishers now have with losing buoys

and traps via the buoy lines being cut by ship traffic and simultaneously create a reserve because no one would fish in these lanes (i.e., the fishers could theoretically 'come out ahead' on this idea -- potentially solving an existing problem and not lose what are seen as better fishing grounds). Other suggestions by individuals included closing areas on a year round basis that are difficult to fish because of wave and current action for at least part of the year, or close areas for the entire year that are now closed for part of the year because of regulatory restraints (e.g., the red hind bank). Clearly, not all or perhaps even a majority of fishers would agree with any one of these suggestions -- they are presented here merely as examples of problems associated with reserves that individual St. Thomas commercial fishers have been considering. Another commercial fisher suggested that the communication regarding the proposed MCD should not be limited to fishers, and that the effort be more widely publicized so that the general public can react to it.

#### 4.4.6 Current Use of the Proposed MCD Area

As stated in the above sections, there are two primary uses of the proposed MCD area by St. Thomas commercial fishers: (a) trap fishing by 'larger' vessels that are 'home ported' on the south side or east end of St. Thomas, but whose owners include northside residents as well as southside residents; and (b) 'smaller' vessels that are owned by southside residents and 'home ported' there (it should be noted that one interviewee did mention he thought some northside drift fishers do work the MCD area, but no other interviewees agreed with this statement). The vessels in category (a) include some of the highest producers in the fleet, and consider the proposed MCD area a very productive one, with intensity of use varying somewhat by season. The vessels in category (b) use the area on a regular to intermittent basis for yellowtail snapper and, seasonally, as a prime area for hardnose (other species are also caught, but these two are considered the prime species according to all of those interviewed). In the words of one small boat fisher:

In the [proposed MCD] area, line fishing is good. A lot of boats line fish there -- at least 10 [small] boats from here [Frenchtown]. June through October [it is] very good fishing there on top of the shelf.

It is known from interview data that the number of larger vessels in the fleet, or larger operations with large numbers of pots, have grown in recent years; in the most recent DFW preliminary data, not yet released, there appears to be an increase in the use of the proposed MCD area as reported via catch statistics over previous years. However, the reason for this apparent increase is not clear. In earlier information presented to the CFMC in public hearings, fishers offered the opinion that catch data that were supplied by the fishers themselves were not reliable. There are two immediate interpretations that come to mind for a recent jump in reported catch from the proposed MCD area: (a) fishers are now more accurately reporting their catch from the proposed MCD area; or, (b) for political reasons fishers are now overstating their proportion of catch that comes from the area, since those were the type of statistics that, in part, were used in arguments in support of the area closure and is also a commonly understood basis for possible future limited entry permitting.

The owner of one of the larger fishing operations estimated that "there are around six guys that are over 150 traps" in the proposed MCD area. In any event, direct observation of the site by the Principal Investigator during field research, on a half-day trip under less than ideal sea conditions (the "Christmas winds" had begun, and had rendered even going to the area infeasible for the three previous days), revealed an almost continuous placement of buoys used for trap strings along the entire edge area of the outer shelf from east of the eastern boundary of the proposed MCD through the area of "the point" within the proposed MCD. That is, seldom could one *not* see buoys while traveling along the drop off, and this was when sea conditions were much less than ideal for spotting buoys (and rendered an accurate buoy count impossible). Buoys were also seen toward the northern edge and western edge of the proposed MCD area, though in lesser concentrations than along the shelf edge. The perimeter of the east, north, and western edges of the proposed MCD area was run, along with the area along the drop-off as a southern transit. A grid was not run through the MCD due to sea conditions that would have rendered any attempt at an accurate count useless, although two commercial fishing vessels ('larger' vessels, one recognized as being from, and one assumed to be from, St. Thomas) were hauling traps on the 'interior' of the proposed MCD area.

One of the 'large' vessel commercial fisher commented on the trouble with trying to use numbers to justify trying to close an area rather than understanding the area's role in the total cycle of the commercial fishery. In his words:

The thing I am scared of when I talk to you guys [researchers] is that you are used to talking large numbers of fishermen. We might talk, 10, 15, or five maybe fishing this particular area or something like that. But when you consider that there is five fishermen, each with 100-150 traps in this area, and that is all this area can handle, we are lucky that more do not come in. When we talk numbers to you, be careful because we are talking a very small fishing grounds . . . why they [the CFMC] chose this [proposed MCD] area, and it is no one's problem but the fishermen themselves, when they turn their catch reports in, they show that there is very little fishing in this area. So they [the CFMC] figure that this is a good area to close. Then they did a survey, and it shows there are so many thousand traps there. When [fishers] turn in their reports, they are not accurate. It is nobody's fault but their own. Then it is guys like me that turn in accurate reports [who] suffer because of these stupid guys.

It should also be noted that, like other sectors, commercial fishers are still feeling the impacts of Hurricane Marilyn and current use of the MCD area may well be below what it would otherwise be. In the words of one 'large' commercial fisher who uses the proposed MCD area:

Hugo . . . wiped me out completely. After Hugo [I] got an SBA loan, went back to fishing . . . then Marilyn wiped me out again. [We] have not built back up to where we were, [I] have one day of fishing that we never went back to [i.e., he fishes one less day per week now]. After Marilyn we had to finance



ourselves. We are going a lot slower this time. [You] gotta go slow -- those two hurricanes set my life back 10 or 15 years. I don't want to get ahead of myself and find myself in financial trouble I cannot get my self out of -- we are working very slow this time.

As noted above, handline or float fishing typically represents an intermittent use of the area, whereas the trapping done in the area represents a more continual use because, among other factors, with larger boats and increase in capitalization, these vessels can harvest a larger volume, with a longer range, in worse weather conditions, and do not need to time their fishing in terms of monthly cycles. (At least some vessels also troll through the proposed MCD area on the way out to and/or in from other commercial fishing activities, but none do this as a primary activity.) Changes in efficiency with the hauling of multiple traps increases the number of traps that can be pulled per trip, and to the extent that traps result in bottom damage, multiple trap sets would logically seem to multiply that damage. (It is unknown at this point whether or not studies have been done on the relative damage created by individual traps versus multiple trap sets, but the essential point here is multiple trap sets allow more traps to be hauled in a shorter period of time, therefore allowing for the observed increase the overall number of traps used by the larger operations.) There are differences of opinion on how much damage float fishing does to the bottom. In the words of one commercial fisher:

Float fishermen do not do much harm in the area, because of the way it is fished. It is not like the bigger boats that anchor out there with danforths, or other large anchors. The float fishermen use grappling anchors -- locally made [typically out of a tube filled with concrete with curved sections of re-bar protruding from the bottom, designed to pull out straight and release if otherwise stuck] designed to release easily.

Other individuals from outside of the commercial fishing sector maintain that grappling anchors do impact the reef significantly, both through the anchoring itself, and the observation that some vessels drag the grappling anchor across the bottom, whereby the anchor serves to maintain the bow of the boat into the wind and waves, but not necessarily keep it in one position.

Level of effort within the proposed MCD area by trap fishers does vary during the year as individuals typically feel that working a single area too long results in a (temporary) drop-off in productivity. In the words of one commercial fisher:

Areas of concentration [change] . . . September through April, everybody [fishing the south side of the Islands] moves east [because of rough conditions]. When the area opens west, people move west . . . the water is deeper on the north side of the Island [and] groundswell effect is larger in the shallower water . . . [however] the north side of the island does well for lobsters [during the] rough months [as it is believed that the water movement causes the lobsters to get out and move more].

Echoing what a number of other interviewees said, one fisher stated:

If you look at the north area, there are some good areas in close, but the vast majority of the area is sand. There is a large area with very, very few traps. Mostly they target the drop. Most of the area is not fished. There are a couple of reef areas [that are] spot fished.

The differing perceptions of those in favor of and opposed to the proposed MCD, stated perhaps overly simplistically, boil down to this: For commercial fishers from St. Thomas who use the proposed MCD area, it is their perception they have limited fishing options based on their assessment of the productivity of the various shelf areas theoretically available to them; in contrast, the perception on the part of some MCD proponents that this is a relatively small area of the shelf for fishers to give up, and even commercial fishers will gain in the long run from this closure through increased productivity in adjacent areas (from resources 'leaking' from the MCD area).

#### **4.4.7 Potential Socioeconomic Impacts to Current Users of the Proposed MCD Area: St. Thomas Commercial Fishers**

As suggested in the previous sections, impacts resulting from the closure of the proposed MCD would be differentially distributed geographically (and by vessel size within this geographic distribution). 'Large' boats operated out of the south side and east end of St. Thomas focus to varying degrees on the proposed MCD area in their trapping efforts. These vessels, relatively limited in number, are owned by both northside and southside residents, and represent some of the highest producers in the fleet. Small boats owned and operated from the south side would be directly impacted to the extent they use the proposed MCD area for handline or float fishing. Small boats on the northside would not be impacted, as there is no reported use of the MCD area by those vessels.

In terms of differential distribution of impacts by ethnic group, it would appear that the French community would be more greatly impacted than any other ethnic group on St. Thomas by closure of the proposed MCD. At least one West Indian commercial fisher operates a 'large' trap boat that uses the area; the rest of the interviewed users of the area were 'Frenchies.'

Distribution of impacts would also vary seasonally. Reportedly, traps are moved in and out of this area based on the availability (or, more accurately, the lack thereof) during the winter storm seasons and the red hind bank area closure. Handline or float fishers would be most impacted during the hardnose seasonal availability.

Depending on the set of regulations decided upon for the proposed MCD area, impacts would change particularly by vessel size. If only trap fishing were banned in the area, but not handline or float fishing, no 'small' St. Thomas vessels would be directly impacted.

It should be noted that if wholesale displacement of traps from the proposed MCD area were to occur, there would likely be secondary impacts to other areas. These would include: (a) increased fishing pressures on those areas the traps were moved to (by definition); and, (b) increased competition between existing trap fishers and the newly displaced fishers, particularly if some or all of those traps were moved closer inshore. As the owner of one of the largest operations noted: "there are already a lot of traps in the Frenchcap area" so displacement to that area would be problematic as well. When interviewed (November, 1996) this fisher had one-half of all his traps in the area of the proposed MCD, with approximately one-third of these being lobster traps and two-thirds being fish traps. Another 'large' vessel commercial fisher noted:

I am fishing two out of my five days in this water right here [in the proposed MCD area]. I've got fish traps outside, and lobster traps inside. I have been fishing there for 20 years. I fish all the way from Little St. James to Flanagan Rock west of Norman Island. I rotate them east and west, and I don't fish one area all the time and I do pretty good . . . If they take that away from me, it is like taking a day of work away from me -- it is gone, there is no other place I can go with those traps. They figure they have 3,000 traps in there [in the proposed MCD area], but you can't go west with those, because inside the hind bank you have another 3,000 traps. You can't take 3,000 from each area, then you have 6,000 in the area [in between]. I tried explaining that to them [the CFMC] and I don't know if they think I was just playing with them or whatever. It is going to be a major, major problem. It is going to run the fishermen out of business. There is just nowhere for them to go, especially now that it [larger scale commercial fishing] is growing. It is going to kill the fishermen.

Also, it is important to note that other sectors could be impacted were St. Thomas traps moved inshore from the proposed MCD area (e.g., divers and St. John fishers in addition to St. Thomas 'small' vessels). Surely displacement will occur as gear exists and effort will continue -- it will just be moved.

One commercial fisher noted how entrenched St. Thomas commercial fishers had become regarding the proposed MCD closure and painted a bleak picture regarding potential compromises:

The only thing we will accept is no closure. If they had approached it right, and studied it right in the first place, they would have had that thing passed a year ago and let me tell you why -- they messed up their own selves. They brought a woman from St. Lucia, [and she] went into major detail of how they had been trying to close off areas around St. Lucia. I even went and got a chart of St. Lucia to compare it. They tried for years. They ended up taking each user group, getting in a boat, going out and saying, 'this is a good area, this is what I use' and they ended up making a reserve that was friendly to everybody, and nobody was unhappy, and they are getting the results out of it. If they had

done that in the first place, they would have been so much further ahead here. If they had moved it over to the edge of the BVI waters, put moorings in if they use it, let fishermen do whatever, if they were smart . . . Now there is no compromise, the fisherman will not compromise any more. You will not find one fisherman that is in favor of that thing. You could have reasoned with them before, [but] no more. They don't even want to waste the time talking about it anymore.

#### **4.4.8 Recommendations for Further Study**

If further work is to be done regarding the socioeconomic impacts of the proposed MCD, such as through the development of a full Social Impact Assessment, it is recommended that the sample size for St. Thomas commercial fishers be enlarged, especially to include those individuals who are known to use the proposed MCD area but with whom interviews could not be arranged during the limited field time available. If adequate time were available, a sampling size approaching 100% (assuming willingness of all individuals to be interviewed) of 'large' vessels 'home ported' on the south side or east end of St. Thomas (i.e., those vessels that trap in the proposed MCD area), could be achieved.

An additional sampling of the 'small boat' fleet on the south side of St. Thomas should also be made to ensure adequate coverage of that specific subsector which may use the proposed MCD area on an intermittent basis. This could and should include a targeted sampling of West Indian small boat fishers on St. Thomas thought to be located in a (limited number of) dispersed areas. Also, follow-up interviews with 'Down Island' fish cleaners who work in the Frenchtown fishing center area could further illuminate that aspect of the fisher/market interaction.

To round out the sociocultural aspect of the fishery in further research, it would be important to understand the role of: (a) persons from elsewhere who market their fish on St. Thomas (and St. John); (b) persons from elsewhere who fish in Territorial or Federal waters off of the U.S.V.I.; and (c) persons who have relocated, at least temporarily, to the St. Thomas in order to commercially fish for the local markets. The role of these individual groups were brought up in interviews with commercial fishers, but targeted sampling of these groups was beyond the limited scope of this Rapid Socioeconomic Evaluation. In particular, the apparently important role of BVI fishers in the local fishery is not well understood. This topic would require substantial additional research, including field visits to the BVI, to understand the dynamics involved in the lack of reciprocal relationships (access and markets) and the dynamics of actual use, but would be an important part of a full Social Impact Assessment.

For secondary data, landing statistics could be run by vessel size, using locally recognized size categories, which themselves correspond to type of effort to technique used. These would be useful in pinpointing potential impacts, as would using data runs to sort St. John and St. Thomas fishers separately. A Social Impact Assessment could also provide a focus on species caught by various gear types. This type of data was not consistently obtained during the current research,

and would help link socioeconomic impacts with biological data concerns regarding the proposed MCD area.

A follow up effort to gather information detailed operational-level data on individuals who use the MCD, perhaps in the form of profiling the economics of typical operations, by vessel class, would also be useful in describing that aspect of the economic impact of the proposed MCD closure, were such a closure to take place. At this time, costs for those operations, in terms of resulting changes in catch or in changes in expenses, are not understood.

As pointed out in the discussion above, numerous sources of data are available for historical and recent analysis of fisheries that could be used in a Social Impact Assessment or similar follow up study to provide a context, particularly in the realms of changes over time, the assessment of the retention of traditional versus recent innovations in the fisheries, and the cultural role of fishing the U.S.V.I. context. It is recommended that this be done now that the existing uses of the proposed MCD by sector and gear type are now more well known.

Further interviews with relevant managers regarding their positions if the proposed MCD closure were to come to pass would be useful for evaluating the potential for a shore to offshore closure, of which commercial fishers are very concerned, particularly given the knowledge based gained through this Rapid Socioeconomic Evaluation. This would assist in evaluating the impacts of that 'package' of closures, and the legitimacy of present fishers concerns over this possibility.

There are also several unanswered questions regarding the economic link between local commercial fishers and their markets. For example, interviews were not conducted with fishmarket customers to determine their decision making regarding the sociocultural and economic value of locally caught versus imported fish, nor were market comparisons done to get a rough estimate of price differential. Similarly, through interviews, it was reported that price varies by market location, but the dynamics of this variation are not understood, but could be followed up upon with systematic price comparisons and targeted interviews. Also, the economics of decision making in hotels and restaurants regarding the pricing and demand for local versus imported fish was not explored in this Rapid Evaluation, and would be a worthwhile undertaking for a Social Impact Assessment.

As for the problem of obtaining knowledge of 'true' fishing effort in the proposed MCD area, one follow-up sampling effort could involve observational interval sampling of vessels using the proposed MCD area from a fixed location or locations on St. John. This has obvious drawbacks based on visibility conditions. Counting buoys and charting with GPS for a sample area would also have some potential for estimating effort, but has the known difficulties of: (a) spotting buoys from the surface when sea conditions are not flat without the benefit of knowing where to look based on the 'marks' (land mark references fishers use when setting strings of traps); (b) determining how many traps a buoy or buoys represent; and, (c) not being able to deal with the problem of those fishers who do not surface buoy their traps but use GPS and 'marks' to locate traps strings and recover them via grappling hooks. In the words of one commercial fisher:

The best study you could do in that area would be to have the Coast Guard or somebody out there to see how much fishing there is. The commercial fish reports are so bogus. A lot of the guys don't know how to read and write, much less fill in those reports.

One suggestion made by a small scale commercial fisher was to modify the type of trapping allowed in the proposed MCD area as opposed to a complete closure. His suggestion was to allow trap fishing there, but only with old techniques where each trap had to be set individually -- one trap, one line, and one buoy. This suggestion pointed out the fact that there is apparently little known about the relative bottom damage caused by fishing individual traps versus strings of traps (i.e., how much damage is caused by 10 individually buoyed, separate traps versus one string of 10 traps). For example, individually set traps are apparently easier to lose, because if the only buoy marking the trap is lost, the trap is virtually certain to become a 'ghost trap' -- as, unlike trap strings, there is no second buoy for backup and there is no way to effectively grapple for an individual the trap as strings can be located relatively efficiently by grapple. Second, there have apparently been no studies of the relative movement and bottom damage assessment of single traps versus strings of traps (i.e., do currents and surface movements move individual traps more than they move lines of traps). Third, it is unknown how much retrieving a string of traps causes the traps on the bottom to slide while the others are being recovered, and if or how this varies based on position on the string and the number of traps on the string (or if this averages out to an amount different than the movement inherent in recovering a single trap). Similarly, the amount of reef damage caused by grappling anchors, and how much this varies by vessel size, sea and wind conditions, and depth remain unanswered. Answering these questions could be done in a follow-up study, but were far beyond the scope of this current project.

#### 4.5 ST. JOHN COMMERCIAL FISHING

As noted earlier, there are significant differences between commercial fishing as pursued on St. John compared to the commercial fishing sector on St. Thomas. For this reason, separate sections on commercial fishing were prepared for the two islands. This section presents information on St. John commercial fishing, following the same outline that was used for St. Thomas commercial fishing.

##### 4.5.1 Overview: Categories of St. John Fishers

As with St. Thomas based fishers, there are definitional problems with 'subsistence' or 'artisanal' fishers versus 'commercial' fishers. Legally, under U.S.V.I. law, 'commercial fishers' are those individuals who sell any portion of their catch. Pragmatically, there are a variety of ways and strategies of pursuing fishing used by those who fish on St. John that range from what would be considered 'subsistence' or 'artisanal' fishing elsewhere, to quasi-commercial or commercial fishing. For the purposes of this analysis, we attempted to identify every active fisher on St. John

(with the exception of those individuals who may occasionally sport fish, or those who fish from shore).

By the definition by the fishers themselves, there are a very limited number of individuals who are considered commercial fishers. In this case, the definition appears to rest on three criteria: (a) individuals who devote most of their work effort to fishing; (b) those who derive a substantial portion of their income from selling the fish they catch; and (c) those who fish on a regular basis. In fact, in several of the interviews, there was only one (common) individual named who was considered, without qualification, to be a full-time 'true' commercial fisher on the island. Other interviewees contended there were between two and 10 boats that fish regularly and a larger number that fish infrequently.

Among the other categories of fishers, it is common for individuals who have other jobs to fish part time. There is a range within this group as to how much effort is devoted to fishing, primarily depending on their 'other' work schedule (i.e., some individuals have work schedules that allow them to get out multiple times during the week, while others are primarily limited to weekend fishing). According to some individuals, fishing is an essential element in piecing together a living on St. John; that is, although they may not be full-time fishers, the income derived from fishing is necessary to 'make ends meet' as their wage employment is insufficient to support their families (similar to one of the patterns of St. Thomas fishers). For a number of these individuals, according to interview data, a primary goal is to provide fish to their immediate family and/or to extended family and friends that they otherwise could not afford. Others sell a portion of the catch that exceeds the amount given to family and friends, and this helps to defray the cost of and expenses associated with fishing. In the words of one long time fisher:

People who are doing fishing, even more intensely than I am doing around here, apart from maybe one or two here in St. John, to me are part time fishermen, artisanal fishermen. And I see that fishery, I see more people getting involved in it but at a lower rate of intensity of activity, maybe once a month instead of two to three times a month, with a higher level of equipment, but a lower level of skill -- we now have K-Mart and Woolworth's, they can buy lines for \$3 and gear and go out.

All told, 25 individuals were identified by St. John fishers themselves as active or potentially active participants in the fishery. Of this group, 23 were contacted, but less than complete interviews were obtained from a number of them, as some contacts took place only in group settings, and individuals varied in their level of participation. At least two of the "St. John fishermen" turned out to live on St. Thomas, but kept their vessels, worked out of, and sold their catch on St. John. (What was obtained from all of those contacted, however, was whether or not and how they used the proposed MCD area.) One known problem with any analysis of commercial fishing on St. John is the level of illegal fishing, according to interview data. As one individual put it: "the one thing you will find, and I don't know how you are going to deal with it in your study, but a lot of your top commercial fishermen are not registered commercial fishermen." This individual was unique in saying some of the top fishers were not registered, but

others did mention there were fishers who were either not registered, or misreported their catch levels. Given the number of individuals interviewed, and the span of knowledge represented by these individuals, it would appear unlikely than any of the top commercial fishers on St. John were unregistered, but it is likely that there are a number of smaller operations that are not registered. This is somewhat of a paradox, given the inexpensiveness (\$5) and the ease of obtaining a commercial license, which has tended to inflate the number of commercial fishers on paper, because of the benefits that may flow from having a license (e.g., not having to pay moorage fees).

In terms of the snowball sampling technique, a few individuals were reluctant to provide names of other fishers the interviewers should talk to, in some cases because they did not know who was registered or not. Other commercial fisher noted problems with catch data, exclusive of unregistered fishers. In the words of one fisher:

There isn't that much monitoring done. The fish tickets don't show what is going on. Many reasons, income taxes, some people feel that any information they provide may be used against them, it may be actual things that took place or what they believed happened, a while back 15-20 years ago, a lot of suspicions came up about that "Grouper Bank" where the fishermen thought that information they had provided was misused. Bad data handling. Information gathered got shared with their adversaries, not likely to trust people. Even when I am sitting in fishery meetings I get the feeling that people are pulling punches, holding back information, waiting to see what happens before they take a chance of exposing themselves or others. They tease them with information. The stuff about the grouper bank being dead is nonsense, we know where they are, but they don't say anything. I actually think that controls were needed a long, long time ago, and that they waited too long, all the very big groupers are gone now, at one time they were bringing in a glut of fish, [when] the days of the moon were right, one truck of big fish after another, much of it wasted.

In describing the typical composition of the St. John commercial/artisanal fleet over the years, one long time fisher said:

About one-third do night fishing, about one-half the fishermen on St. John do traps, many do both, and then there are people like me that just do hand lines and trolling during the day, baiting during the afternoon, catching bait.

#### **4.5.2 Geographic Distribution**

There are two main clusters of fishers on St. John. These are in Cruz Bay, at the west end of the island, and Coral Bay, at the east end of St. John. There are scattered individuals at other locations, but these two are by far the largest concentrations of fishing vessels, with Cruz Bay the center of much more fishing activity than Coral Bay. As one fisher put it:



Our fishermen in St John are primarily in Cruz Bay and Coral Bay. There are a few other fishermen that keep their boats in other places like Chocolate Hole, there are a couple of fishermen there, but primarily Cruz Bay and Coral Bay are the two areas where just about all of your local fishermen are located.

#### 4.5.3 Markets

There are two common areas where fish are sold on St. John to 'walk up' consumers. First, there is a shed by the Customs house in Cruz Bay where there is a fish cleaning area. Fishers come in at various times of the day, with a pronounced clustering around mid-afternoon, and people buy the fish from the fishers as they are being cleaned. A second place for sales is also in Cruz Bay in the government parking lot across the street from the Post Office. In this location there is a scale hanging from a tree, and individuals sell fish out of coolers. There is no 'official' fish market on St. John. This pattern is different from St. Thomas, where it is apparently more common to sell whole, uncleaned fish, and where there are government sanctioned marketing locations. In Cruz Bay there is apparently little of the 'carnival' atmosphere present in the Frenchtown (St. Thomas) market on Saturday mornings, the primary marketing day. There are also sales in Coral Bay from small store associated with one of the fishers' families.

In addition to walk-up consumers, fish are also commonly sold directly to restaurants, hotels, and residential customers (in addition to being given to extended family members and friends), similar to the pattern seen on St. Thomas. By 'residential customers' what is meant is that individual fishers develop relationships with households who are consumers of their fish, and when they have fish that they know the households on list their would like, they sell the fish directly to them.

Prices received for fish varied between interviewees. When asked about prices he got for his catch, one fishers responded

Well about \$3.00-3.50, [but] most of the regular fishermen sell theirs for 4.50 or so nowadays. Regardless of the type of fish it is, I know what the restaurants will buy, I don't try to force their hands, these are people I know well, we have known each other all of our lives, for instance, some of them are very afraid of the big kingfish, and definitely any kingfish caught anywhere but over in the north, I wouldn't even bring it in. And if it is beyond say about 11 lbs, I wouldn't even try to sell it. I sold a 25 lb fish one time from the north, where they put it out to look at it and then cut it up for the restaurant. But the average guy here running a food stand, [can't] take a chance of poisoning people, the yellowtail are safe regardless of where they are caught, I've never heard of yellowtail poisoning from anywhere, hardnose don't poisoning anyone, bonito don't poison anyone.

Another individual commented on prices as follows:

In general the price for fish and lobster has gone up little in 15 years, [but] always have supply and demand. Demand is very high, supply normally does not meet demand. When you get runs of certain fish, supply goes over demand, and price drops. For example for kingfish and dolphins, people drop the prices to \$2 a pound just to get rid of it. Most pelagics are \$3.50 a pound. Yellowtail and hardnose will go for \$4 per pound, and that price never changes . . . in general yellowtail, hard nose, deep water snapper and grouper sell for \$4 per pound. Some people sell their fish whole and some chop them up, and price will vary on that. On St. Thomas, people pretty much sell their fish whole. Here people will cut kingfish, tuna, or bonita and cut up steaks and sell it.

Another individual noted that there is often a price difference between St. John and St. Thomas. He cited an example of wahoo selling for \$3.50/lb in St. Thomas and sometimes \$6/lb in St. John. He explained this by saying that the larger operations in St. Thomas would flood the St. John market, so it doesn't work out for them to sell in St. John.

One individual described how his sales patterns had changed following Hurricane Marilyn:

[I] used to sell more to hotels and restaurants, but they have not been open that much. I have a list of residential customers -- I do not have to depend on hotels and restaurants to sell catch. [The] problem with selling to fish to hotels and restaurants is they don't pay right away, [and we] have had fishermen get ripped off. When you sell to the public you get money right away. I give people until government pay day . . . 90% of my sales are [now] to the local public.

Another concern expressed by one commercial fisher on St. John was the competition between the sport charter boats and the commercial fisher in terms of the marketplace.

sport [charter] fishermen get to sell their fish. They get \$300-\$1,000 to take people out, and then they sell the fish. That is direct competition for sales. You go to a restaurant [to sell fish] and they say, 'we already got some wahoo' from one of the sport guys. They shouldn't be able to sell their catch, it should be catch and release, or eat it themselves.

This argument, that sport charter vessels are already making money by taking people out and selling the fish is double dipping, is also heard on St. Thomas. Of course, this is seen from a different perspective from the individuals involved in chartering, who cite high overhead costs and a need to supplement income, especially during times when charters are slow.

#### 4.5.4 Sociocultural Dimensions

Essentially, there are two ethnic groups pursuing commercial fishing on St John: West Indians whose families may have been on the island for many generations and 'continentals' who are more likely to be recent arrivals. Of the 25 individuals identified as (broadly construed) commercial fishers through the snowball sampling process, 22 were West Indians, and three were 'continentals.' This is demographically a very different commercial fishing population than that of St. Thomas, where the predominant ethnic group in the commercial fishery ('Frenchies') have no representation in the commercial fishery of St. John. All identified fishers were male.

In terms of techniques and gear, 'continentals' tend to focus on trolling and other sport fishing techniques to obtain their commercial catch (with one individual also diving regularly); West Indians tend to focus on trap fishing or handlining/float fishing techniques (with one individual also longlining). This differential emphasis on technique also is consistent with a differential emphasis on target species. 'Continentals' tend to focus on pelagic sport species, such as dolphin, wahoo, and tuna, while West Indian commercial fishers tend to focus on 'pot fish' or 'plate fish' with handlining focussing primarily on hardnose and yellowtail, and secondarily on bonito, sugarfish, spotted hind, and species caught incidentally to the targeted species. One individual who uses a variety of techniques described his most popular species in the following way:

For spearfishing, number one species is flat fish -- angelfish, gray angel and french angel are the most popular I sell. Second is red hind. Third is old wife (queen trigger). After that is grunts -- french, white, blue stripe, other grunts. Next would be margates. Those are the five main ones. There are other lesser ones . . . As far as longline there are misty groupers and other types, you get queen snappers and yellow eye snappers, zulu snappers, there other types of snappers. When I go trolling it is kingfish, dolphin, wahoo, tuna, anything like that you troll for. Little tunny, which people call bonita, those are the main ones. I don't use a floating longline for swordfish anymore . . . other types -- sometimes I fish at night for sharks, sometimes I fish shallow the bays and at night for sharks and snappers. [What I do is a] unique combination, try to be flexible, for what is going on. Some guys just do pot fishing, some guys just do line fishing, some guys just do trolling.

There are also differences in rhetoric between the two ethnic groups regarding their participation in the fishery. West Indian commercial fishers often articulated in the interviews that fishing is a cultural heritage, that is West Indian island residents have always been subsistence/artisanal if not commercial fishers -- that is, fishing is seen as something that is an essential skill -- one that has provided food and income over the years, whereas 'continentals' tended to discuss commercial fishing more in business or business and recreational terms. In the words of one West Indian fisher:

Fishing is a minor supplement, I do just a little better than break even, but I am able to keep my family in fish, a daughter with children, grand children, mother . .

. If I had to go out and buy the same amount of fish for my family, I would have to pay more than I now pay for fuel and supplies and costs.

Some St. John 'continentals' also have combined sport charter and commercial fishing opportunities in a way that West Indian St. John fishers apparently have not. Two continentals have active sport charter boats, as discussed in the sport charter sector, at least one of whom aggressively commercial fishes when the charters are slow, a third is a commercial fisher who is in the process of meeting the requirements to operate a sport charter vessel, and a fourth occasionally charters as well as 'break even' commercially fishes. At this time, apparently no St. John West Indian commercial fishers rely on charter fishing.

One West Indian fisher directly expressed one cultural issue as follows:

Taking into consideration the traditional fisheries activities as kind of a holistic one, that involves [everything] from the bait catching up to the point where it [the fish] is on the plate at a restaurant or at home . . . I think that is what is being broken up, the cultural aspect is under serious menace right now, and it has to [do] with regulations because of user conflicts over the primary resource, which is the water, but peoples ability to swim without moderation, as we say, is the major thing that we are going to be guaranteeing in our waters, because we are so much tourist oriented, this is going to preclude any attention to fishermen being able to conduct their traditional fishing practices, seeing pelicans diving, knowing that there are bait fish there, and going in to net the bait, cut it up and do what they need to do to go out and catch fish. I don't think everyone is going to be as flexible as I have been in adjusting to chumming differently, the hardnose people won't be able to change, they want to offer the fish the best bait, to do things the way they have learned to do them, they won't be able to change.

Another West Indian fisher noted that his father and grandfather were commercial fishers, and there have been six generations of his family on St. John. As a user of the proposed MCD, he noted:

Now I know how Indians felt. I grew up on this beach. I was born here. I want to teach my kids here. [It is] not right for the Council to take that away . . . I strongly object, for me and future generations, to the reserve. All of the teaching that I have been giving to my children go to waste. It is hard work out there on the water. The total amount of the fisheries in the Virgin Islands is smaller than a single fishing village in Florida. A day's catch there is a season's catch here. Fishing is not that great of an impact here . . . Both fish and fishermen could work here. Erosion from the coast is doing more harm here. No one is restricting the construction guys. If they say they are going to close the area, they might as well come and arrest me. I'm going to fish it. I am an American. I have that right.

#### 4.5.5 Perceived Issues with the Current Resource Use

In terms of environmental degradation, in the words of one long-time fisher, "fishing is not as good as it used to be, the reefs are dying . . . reefs are smothered with silt, algae, and runoff." Another expressed the fall in productivity as follows:

Typically, its not what it used to be, if you have 20 lbs of fish in a trap, you are doing well, probably five fairly good fish per trap, per week. In the old days, we would come in with 2 gunny sacks full of fish, over a period of 2 times per week . . . In terms of trap fish I think there is definitely a pattern that yields have been going down, and the size of the fish has been going down. In terms of the type of fishing I have done, for yellowtail, there have been too many exceptions to the rule, although I fish with some of the best . . . and I look at what I am doing, my catches, the rate at which I am pulling them, at least where yellowtail are concerned that we are still in pretty good shape. Sometimes I am leaving the bank when the fish are still biting, so I can't complain about that.

As was the case on St. Thomas, there is some concern by those who consider themselves full-time fishers were being hurt by part-time fishers. In the words of one commercial fisher: "the weekend guys are getting paid from their other jobs . . . I can't catch enough fish" (i.e., since I am dependent upon the fish, and they are not, it is not fair for them to be catching it). Further, this individual noted "the weekend guys from St. Thomas, St. John, and St. Croix all sell fish here. St. Croix [fishers] bring their tuna here to sell. It really hurts." This point of view that 'weekend' guys (and/or sport fishing charters) hurt more through the marketplace than directly competing for resources would appear to be more commonly held on St. Thomas than St. John, at least based on the frequency of the issue being raised during interviews. Also, it should be noted that there are relatively few "full-time" commercial fishers on St. John, and the St. Thomas sample, by design, was biased more toward larger than smaller fishing operations (i.e., operations more likely to be full-time operations). Also as was the case on St. Thomas, some St. John part time fishers expressed the need for fishing in addition to 'regular' jobs:

combin[ing] fishing with other jobs [is] definitely the pattern here, and the Virgin Islands as a whole. Here in the Virgin Islands, people work at least two jobs to make ends meet. For myself, [I] have been a commercial fishermen since I moved here, but have always had another job . . . at one point all I did was fishing, until Hugo hit. Hugo wiped the boats out, [and I] had to go back to [a] government job.

Another commercial fisher expressed concern over the availability of bait as areas inconsistent with fishing activities expand: "where do we catch bait if you keep expanding the swimming areas?" Another expressed concern over pricing and ghost traps:

They say fishing is going down. I don't know if its overfishing. But its going down here. Prices are going down. It's just going down hill. Cost of maintaining vessels, costs of traps . . . No [it is] not really [profitable], I am always a loser. Maybe I'll go on food stamps. But food stamps isn't as good for feeding family.

I mostly lose . . . I am concerned about these traps that are out there in the water continuing to fish. The ghost traps, lost traps, lost by hurricanes, by boats cutting their lines, a lot of traps out there. They should go find them, put a bounty on finding them. The fish go in and die, then other fish go in after them, and they die, they say a single trap can kill a thousand fish. That's bad.

Another had a specific plan for getting rid of the ghost traps:

I have made recommendations that they should have a bounty on those ghost traps. I was diving this weekend, and I saw six or seven traps that there is no line to them, they are laying on the bottom, I think they should have some kind of a bounty on those traps to remove them from the water. Put \$50 on a trap. You have to make it so that people are willing to go out. I know several divers who would remove those traps from the water. Traps are supposed to be marked now with identification and all that so, they could institute a program to return the traps to the fishermen, or if they are not marked, there are fisherman who would probably buy the traps, or you could use them for research, but at least you got them out of the water.

One fisher also expressed concern regarding the impact from the most recent two hurricanes to pass through the area:

We have had extensive damage from the last two storms. I dove a couple of areas this weekend that I haven't dove in a couple of years, and they look like wastelands. One of the areas used to be full of fish and lobsters, and [now] it is just total habitat destruction . . . habitat is being reduced, and the fish population is being reduced.

One fisher noted inshore changes:

I used to live in Coral Bay. Every Sunday [we would] go out and free diving catch 75-100 lbs of fish and 20 lbs of lobster . . . would take a tank and get hard to get lobsters . . . used to be able to take an 8 lb lobster in 8-10' of water. It is not like that any more. There are different opinions for it, habitat destruction, there [are] still damages [you can] see from Hugo when diving. The other thing is trap fishing. It has not been regulated. Some trap fishermen are very responsible, some are not in what they bring in . . . [on the] south side of St. John the shallow water reefs have been nailed by the storms. The [proposed] MCD area still looks pristine. [I have been] exploring the whole edge of the drop off. That edge looks like inshore waters did 20 years ago. You see fish out there that you used to see inshore -- the midnight parrots, the big green parrots, 20-30 pounds, have not seen them inshore for years. Big groupers have not been seen inshore for years. All those things are still present on the drop off. That is the way it is.

#### 4.5.6 Current Use of the Proposed MCD Area

There would appear to be two fishing operations from St. John that use the MCD area on a regular and ongoing basis, with a number of others using the area on an intermittent basis. Of the two that use the area on a more or less continuous basis, their use patterns are quite different. One is an individual who focusses his work efforts exclusively on fishing but employs a wide range of gear and techniques; the other is an individual who splits his time between fishing and other employment, but still considers himself a 'full time' fisher, given his level of effort. At the time of field work (late 1996) the latter individual was fishing off of a much smaller boat than would have otherwise been the case due to damage to this "primary commercial fishing vessel" from Hurricane Marilyn. This use of a smaller craft has dictated a change in techniques over the use of a larger vessel -- at present he primarily uses diving, spearfishing, diving for lobsters, trolling, and bottom line fishing as his primary approaches, with a focus on the proposed MCD area. He noted that:

the problem is now most of the inshore areas have been pretty much fished out and that is why now I am out here diving the drop off looking for lobsters and exploring out there, just because inshore [is no longer good] . . . you have different reasons -- habitat destruction, extensive use of trap fishing that a lot of people feel have depleted the resource . . .

The other 'continuous' user of the area has two boats at present, with one vessel used for traps and handlining, and the other used for longlining for swordfish and tuna. This individual uses both the shelf (for traps and handlining) and the deep water past the drop-off (for longlining) of the proposed MCD area. This individual lost all of his traps in Hurricane Marilyn, and is currently working less than 15% of the number of traps he was before the hurricane. Of these two 'continuous' users, one is based in Coral Bay and the other in Cruz Bay.

No other St. John fishers interviewed asserted that they used the proposed MCD area for trap fishing. Three additional individuals in their interviews reported that they used the proposed MCD area for handlining, and that the proposed area was one of the most productive for yellowtail and hardnose.

There are also two other St. John vessels that report using the proposed MCD area for other than handlining. One is a vessel based in Coral Bay that occasionally trolls and sport charter fishes the area. This individual has a full time job, and at the time of fieldwork (late 1996) his vessel was not operating. He has described his recent level of effort as a "paying hobby" to cover some of the costs of the vessel, and plans to charter more actively when he retires from current employment. The other vessel is also based in Coral Bay, and uses the area for trolling off of the edge of the shelf (i.e., 'the drop off'), with his only methods being trolling (more frequent) and live baiting (less frequent). His activities center on "fishing for pelagics using sport fishing gear." When he fishes the drop, however, he typically concentrates effort to the east of the proposed MCD area, although he may sometimes use small portion of the eastern end of the proposed MCD area as well. This individual is going through the regulatory process of becoming capable of taking paid charter passengers, and intends to pursue that in the future.

(These two vessels were not included in sport charter category for the purposes of this analysis because: [a] neither were mentioned by other sport charter fishers as being charter operators; and, [b] they were mentioned as commercial fishers by other commercial fishers. Their operations may be described as a sort of 'hybrid' commercial/sport charter operations. It is likely that they were being referred to when some of the sport charter fishers noted that there were a few other vessels that chartered once in a while.) One individual expressed frustration at the possible exclusion of trolling from the proposed MCD as follows:

Here's what ticks me off about including trolling in the regulated uses. If someone could explain it to me I would be happy to go along with it. [You're] not fishing on the reef, not dropping an anchor, not fishing down low, fishing in 250 feet when you get too close to the edge to 2,000 feet of water just off the edge, 100 yards off. No one has explained that to me, but what they are doing is making sure they don't let some people fish there while others are excluded, but there is no real reason to exclude the trollers.

This same individual, when asked about the future of fishing in the area, said it "depends on where this [MCD] plan goes. It either puts me dead in the water or turns me illegal. Simple as that. Either illegal in BVI waters or here, catch me, fine me."

As noted in the sport charter fishing section, there are a couple of St. John-based charter operations (Cruz Bay area) that are classified as 'sport charter vessels' for the purposes of this report, but at least one of which actively pursues commercial fishing when the charter business is slow. In fact, this individual is recognized as one of the highest producing fishers in the area.

There are also a number of individuals contacted who while not fishing the proposed MCD area now, either fished the MCD area in the past or planned/hoped to do so in the future. In this case, it is not clear the extent to which individuals had concrete plans to do so, or rather were simply opposing the permanent closure of an area that others currently use and that they may or may not end up using in the future. This, of course, gets back to the issue of the politicization of the MCD creation process, where individual fishers who now use the area have become concerned about the potential closure of the area, and have been communicating their concerns to other fishers.

Also, as in the case of St. Thomas fishers' perceptions, the proposed MCD area is seen by a number of St. John fishers as relatively pristine and therefore productive. This is the paradox: the very attributes that make it an attractive area for proponents of the MCD make it unattractive for closure for some fishers. That is, several individuals noted that they would be more in favor of at least limited closures closer to shore where there is already serious habitat damage in order that those areas may experience some regrowth.



#### **4.5.7 Potential Socioeconomic Impacts to Current Users of the Proposed MCD Area: St. John Commercial Fishers**

In terms of direct use, interview data would suggest only one currently trapping commercial fisher from St. John would be directly impacted by a ban on traps in the proposed MCD. In terms of indirect impacts of a trap ban, a number of St. John commercial fishers expressed concern about the potential displacement of all of the traps (set by St. Thomas fishers) from the proposed MCD area to waters closer inshore, both directly competing with their efforts, and introducing the potential for increased habitat degradation and overfishing.

Interview data would suggest that a ban on handline, float fishing, or anchoring in the area would impact a minimum of three additional St. John fishers who use the area on at least an intermittent basis for handlining, and one who uses the area for commercial fishing both using dive gear and line gear.

Interview data would also suggest that if there were a ban on trolling in the area, in addition to the St. John vessels noted under the charter fishing sector discussion, there would be two more St. John based vessels (the 'hybrid' commercial fishing/charter vessels noted above) that would be directly impacted by the creation of the proposed MCD, as these vessels use sport fishing techniques to commercially fish a portion of the area (with one of these vessel's use of the area being minimal). One of these two vessels also charter fishes the area (but is not active at present) and the other is planning to begin charter fishing in the immediate future.

In terms of differential distribution of potential impacts on current direct users, in ethnic terms, the potential impacts are nearly equally split between West Indians (4) and 'continentals' (3); in geographic terms the directly impacted operations are split between Cruz Bay (4) and Coral Bay (3). Coral Bay-based operations could be expected to be harder hit, given their proximity to the area, and relative lack of easily accessible USVI waters compared to Cruz Bay operations.

Individuals from all of the different subsectors of St. John commercial fishing expressed concern over the squeeze the proposed MCD would put on their potential fishing areas (while there were also individuals in nearly all subsectors who voiced support of the idea). In the words of one individual:

When I was in the fisheries meetings, and we have been tossing this around with the Council for a couple of years, we were trying to get the area moved over, and connect up with the BVI. Or try to break it into smaller areas just because it is so much utilized. In general, the commercial fishermen of St. John and St. Thomas just feel that they have been shrunk down more and more into what area they can fish. We have had a reciprocal agreement with the BVI since 1976 that we can fish their waters and they can fish our waters. We allow them to fish our waters, but they do not allow us to fish their waters. So we don't have those waters available to us.

It should be noted that among St. John fishers who did not currently use the proposed MCD area, there was a range of support and opposition to the idea of the MCD creation. There were two common reasons given by individual fishers who did not assert that they used the proposed MCD area, but still opposed it in concept: (1) they were opposed to permanently closing off an area that may become more important in the future for any number of reasons; and, (2) they were of the opinion that the closure of the proposed MCD area would lead to proposals to close down the area between the proposed MCD area and St. John shoreline or VINP waters. These proposals, in the opinion of these individuals, would have much more chance of succeeding if the proposed MCD were closed first. Results of a closure from shore to past the drop-off to the south of St. John area area seen in catastrophic terms by the St. John fishers. Further, access to alternative fishing waters is seen as very limited for St. John fishers. St. Thomas fishers are already fishing the area, both inside the proposed MCD area (where they are exerting a much greater effort, particularly in regards to trapping, than St. John fishers) and in Territorial waters. If the proposed MCD closure were to take place, the displacement St. Thomas fishers would likely impact St. John fishing efforts as the St. Thomas fishers' traps may be moved closer to shore, and the closeness of the BVI line otherwise severely limits the options of St. John fishers.

In sum, relatively few commercial fishers from St. John currently use the proposed MCD area. If displacement of effort by those currently using the proposed MCD area toward more inshore areas were not a problem, it would appear that the creation of the MCD may actually benefit St. John trap fishers (with one exception, and assuming that current operations did not grow in scale over time as has happened on St. Thomas) if the fish from the proposed MCD 'leaked' into adjacent Territorial waters as hoped. In terms of handlining or float fishing fishers, interview data suggest that only four current users from among the St. John fishers would be directly impacted; a no-anchor clause would add an additional commercial fisher to the directly affected group. Were trolling not permitted, an additional two vessels would be impacted (in addition to the two St. John based vessels discussed under the sport charter sector).

#### **4.5.8 Recommendations for Further Study**

In addition to the recommendations given under the St. Thomas fishing subsector, one recommendation for a follow-up study on the potential impacts of the creation of the proposed MCD, such as a Social Impact Assessment, would be to gather and process the information that would allow for an analysis of the role of locally caught fish in the St. John economy, both in terms of supply to local restaurants and individual consumers. Exploration of this topic was beyond the scope of the current research, and would be fruitful to pursue to round out some of the findings of this initial effort which, by design, concentrated on impacts to current direct users of the resources in the proposed MCD area.

Another recommendation would be to explore the links between tourism based businesses and the proposed MCD. It may turn out to be particularly important to the resort industry in marketing terms as part of the package of environmental conservation on St. John; on the other hand, it may be somewhat limiting in the availability of locally caught fresh fish. How important these links are was not explored during the current project.

## **5.0 ST. THOMAS AND ST. JOHN SPORT CHARTER FISHING OPERATIONS SECTOR**

### **5.1 OVERVIEW: CATEGORIES OF SPORT CHARTER FISHING OPERATIONS**

Sport charter fishing operations may be categorized several different ways. In this section, information on fleet size, vessel size, and employment is presented. Variation by effort and technique as a function of vessel size are characterized, and further developed in later sections.

#### **5.5.1 Fleet Size and Organization**

Through snowball sampling, a total of 10 charter fishing businesses were identified in St. Thomas and St. John. The captains (who were either owner-operators [more frequent] or non-owner operators [less frequent]) of all of these vessels were interviewed (i.e., a 100% sample size was achieved). Of these 10 operations, two have vessels based on St. John and eight have vessels based on St. Thomas. One of the St. Thomas-based charter businesses operates two vessels; all others on both St. John and St. Thomas are single vessel operations. According to several of the captains, the number of regular charter vessels has remained relatively stable, at least for the past few years. In addition to these vessels that were consistently identified by other interviewees, there are reportedly a few other vessels that are chartered out on a very infrequent basis (e.g., two of the vessels mentioned in the St. John commercial fishing sector discussion, among others). At the time of the field research (late 1996), the charter fleet, like virtually all aspects of the tourism-linked economy, was still feeling a marked impact from Hurricane Marilyn. The pool of customers was down, and at least one vessel that chartered regularly remained out of commission (although that operator is at present still chartering using a smaller vessel), while another owner lost two of his three vessels in the storm.

At the time of the field research, there was no active fishing charter association. In the recent past, there have been attempts to organize the independent charter operators as a fishing fleet with a central referral service. This was at least in part in response to the problem of hotels not putting people together for charters, but different captains noted different problems with this organization. According to some, it was disrupted by Hurricane Marilyn, to others, getting independent, competing fishers to organize was just too difficult, and to others, the organization was not seen as able to equitably distribute business between the various operations that were members and, as a result, frictions between individuals disrupted the organization.

#### **5.5.2 Vessel Size**

Sport charter vessels range in size from 25 to 48 feet. There are two more-or-less distinct clusters of vessels by size. Four of the vessels fall in the 25' to 31' range; the remaining seven vessels fall in the 40' to 48' range (with five of the seven being either 44' or 45' in length). The larger vessels also vary in their amenities (e.g., some are air conditioned and relatively luxurious; others are more 'no-frills' operations). In other words, the fleet varies from basic, small, open

vessels to relatively large vessels with luxuriously appointed cabins. Two of the currently operating 'large' vessels were built entirely or partially locally; all of the others were brought to the U.S.V.I. from elsewhere.

According to interview data, none of the vessels currently working as sport charter fishing boats are licensed for more than six passengers (i.e., they are "six-pack" vessels). According to one of the captains, "very rarely do we have six people though. Mostly it is couples, or two couples. In the winter time, we get more families have may have five or six people, but not that much."

There are differences in fishing technique that vary by vessel size. Two of the smaller vessels successfully live bait fish on a regular basis, which is the cause for some controversy on the part of some other vessel owners who do not believe this method is in the best long-term interests of the fishery. The owner of the largest of the smaller boats stated that he "pulls downriggers" consistently as a fishing technique and that his was the only boat that does. He further stated that his vessel "fill[s] the void between the live bait and the big boats." Some of the smaller vessels target customers for the light tackle market, but most vessels carry a range of gear in order to cater to the varying desires of customers and to be prepared for the variety of fishing opportunities that may present themselves. One of the captains of a smaller vessel noted: "As far as clientele goes, you get people who like to get on a small boat and fish light tackle, and you get people who like to get on a big boat and in the air conditioning and sit back and wait."

### 5.5.3 Employment

Employment varies by vessel size. For the larger boats, the crew typically consists of a captain and mate, whereas the smaller vessels typically are run by a single individual. In the words of one captain, "If you have a flying bridge, you want a mate because you can't be running up and down, it is just too hard. Smaller boats just do it themselves." Typically, vessels are owned by the individuals who captain them, but not always. At least two of the vessels have hired captains. One of these vessels uses a total of three crew, and this exception to the crew size generalization is attributed to the personal preference of the owner.

Whereas crew shares are the common arrangement for hands on commercial fishing vessels, for charter boats the typical employment arrangement for mates was described as follows:

The mate is like contract labor. They [the customers] pay me [the captain], and it is split between me and him -- they hand it to me, and I hand him his share. In the charter industry it is like contract labor, not like he is my employee. He doesn't work for me, he works for himself. That is how it works for most boats. There are some of the boats, if it is a corporation boat or if it belongs to a hotel, there are a couple of boats . . . where they put their people on salary -- the mate is an employee, and if there are days off [i.e., there are no charter customers to take out], he is waxing the boat or doing whatever needs to be done.

## 5.2 GEOGRAPHIC DISTRIBUTION

The St. Thomas boats are concentrated in or near the Red Hook area, at the east end of the island. Of these, two are located at Sapphire Beach Marina to the east of Red Hook, and one is located at a private dock to the west of Red Hook. The remaining five vessels are based out of the American Yacht Harbor Marina in Red Hook itself. When asked about this concentration, one captain replied:

Everything is on the east end . . . There will occasionally be a boat out of Charlotte Amalie, [they will] try to fish out of Yacht Haven Marina, but you can only fish the south side then. Here you can go either way [north or south] - - if you are on the east end -- depending on the winds and what the weather. That's why the charter business stays on this end. It is just too far to run otherwise.

In the words of another captain:

sometimes someone will come in and work out of a hotel or something elsewhere, or come in and think they will make a killing, and they last a season . . . maybe there is a couple that pop out of Yacht Haven or Crown Bay, but they are not the serious type of operation.

The St. John based boats operate out of Cruz Bay at the west end of the island. As noted in the St. John commercial fishing sector discussion, there are at least a couple of vessels that charter on an occasional basis out of Coral Bay (at the east end of St. John).

## 5.3 MARKET DESCRIPTION

There are essentially two separate markets for the sport charter vessels. That is, most, if not all, sport charter vessels derive income from (a) taking charter customers out fishing and (b) selling fish. The relative importance of these two activities varies widely by vessel, and these 'markets' are discussed in turn in this section.

### 5.3.1 Customers

Charter fishing customers vary by season in their interests and 'dedication' to fishing, and this has an impact on the amount of repeat customers. Several of the captains noted that there are few repeat customers. One noted that one source of repeat customers were those individuals who own condos on the island but only stay for parts of the year. Another stated that: "Every year there are all new people. Where they come from nobody knows. I'd say three-quarters of the people have never been fishing before -- it is amazing."

Many of the customers are obtained through referrals once individuals get to the Virgin Islands. One captain observed the growing role of the hotels in booking of the charters.

[The charter business] has changed in the sense that we used to get a lot of trips from people walking down the docks and looking [at the boats] and people would book their own trips. Nowadays, it all comes from hotels -- nobody seems too interested in coming out and looking and booking their own trip. Guests go to the desk at the hotel, say 'I want to go fishing,' and the hotel calls us -- that's how most of the trips are done. In that sense, it has changed a lot.

Other captains noted problems with the hotels in terms of the economics of the relationship, where the hotels receive a percentage of the charter fee for referrals:

It costs a lot to operate [a vessel]. It is a constant battle with the hotels. We were willing to do [a] 10% [referral commission] to the hotels. Some want 15-20%, and that is impossible . . . if we can operate with the hotels, you would see more operators make it locally.

Another captain stated that:

Boats get tied in with the hotels. Hotels want to charge everybody a commission. They want you to put in a \$1 million liability [insurance policy], and include them on your insurance. They ask for the moon, then they want to take a 20% commission -- well, I don't need a partner in my business. I will pay 10% -- to anybody that sends business, but no more. That is just about how everybody gets their business

Similar to the dive operations, as discussed in that sector description, many of the people who charter fish in St. Thomas and St. John are doing it as one of many other activities. That is, with the exception of 'hard core' marlin fishers in the summertime, most customers do not come to the Virgin Islands for the fishing. Some charter businesses do advertise outside of the U.S.V.I. in order to attract business, but one captain offered the following assessment of the limits of it:

[I] advertise a couple of places too, but it is expensive. [It is] such a small area, if you want to go fishing, [you can just] look for the boats. [I put ads in] St. Thomas This Week newspaper, and advertise in Saltwater Sportsman (a world wide publication); other guys advertise in different magazines. [But with hurricane damaged] hotels closed, this was the most disastrous year I have ever had.

A captain of one of the smaller charter boats noted a difference in clientele between the smaller and larger boats:

The larger charter boats target fishermen -- advertise in outside publications to specifically attract fishermen. [I] get families with kids, get people at the end of

their trip who have laid on the beach all they can, they have spent all of the time on the beach they can. Or they are sunburned, or it is raining, or it is their last day here, and they want something to do.

In addition to the fluctuations caused by the peaks and valleys of the tourism seasons, there are distinctly different customer bases during different parts of the year. Marlin fishers come specifically for the fishing (i.e., the U.S.V.I. is then a fishing 'destination') whereas other times of the year, it is an 'add on'-- or but one of the activities that are part of the cluster of activities that interest vacationers in the Virgin Islands (i.e., during most of the year, the U.S.V.I. is not a fishing 'destination' similar to the pattern discussed for dive operations where the U.S.V.I. is not a dive 'destination'). All of the captains noted that the clientele varied by season. In the words of one captain:

[It is] mixed. In the peak time in the summer, St Thomas is known world-wide for blue marlin, so people come here for that, they look for reputation [of specific vessels], for [a specific] name. They come direct -- you get very few [who] walk in and go to an agent. The blue marlin fishermen in the summer, they know what they are doing, and they target their boats and the [charter] fishermen, and recommendation goes a long way. In the winter months [you] get a different kind of customer, first time fishermen. People are here [as tourists], look at the water, want to do things.

Another captain expressed the same idea in a slightly different way:

In the summertime the people come for the fishing -- marlin. Otherwise it is people down here on vacation. They say, 'ok it is beautiful, now what are we going to do?' So they go snorkeling, or fishing, or whatever.

Another captain noted that repeat clients are not uncommon for marlin fishing (as opposed to other charter fishing), if they have good experiences. No matter how good the service, there is turnover none-the-less, as according to one captain even among the most loyal clients:

[you] do get different clients within 10 year period . . . you always drop off and pick up clients, and very seldom have a client longer than 10 years -- whether family, divorce, business, or whatever get in the way, people try different things. You always have to pay attention to your business . . .

Some of the longer term captains have noticed changes in the client base over the years. According to one captain:

[In the late 1960s] there was only a couple of [charter fishing] boats here then. The fishing was real good. As time has gone on, it has gotten tougher and tougher and tougher . . . there were spenders then, the people who came down. There were a whole lot less people, but their money didn't mean too much to

them. Used to be that people would say, 'hey let's go fishing.' Now, it is 'I want to go fishing, and you have to find me five more' [people to come along to split the cost].

Another captain attributed changes in the charter fishing experience to changes in the physical layout of the newer marinas that harbor the fleet, and increased competition between operators.

St. Thomas fishing is not like it was in the '60s through early '80s. [It] used to be like a family sport . . . the marinas changed that. Folks used to sit around after the charter and have a drink. Now there is too much competition between the boats. Used to be if you fished on anyone's boat, I could walk up and shake their hand -- now it is 'are you trying to steal my party?' That is imported here, bad mouthing people . . . [a] fisherman goes fishing for fun, he would like to sit around and feel good about his catch. There are no surroundings like that here, [it is] walk on the boat, fish, walk off the boat and go home. [We] need a common area for social gatherings. [A named marina] has that, but they chop it up . . . need something to bring people back, need to create atmosphere.

Very few customers come from cruise ships. In the words of one captain:

We don't get a lot of business off cruise ships because the people are herded around like cattle, rushed around in groups. Unless somebody insists that they want to go fishing and breaks away from the group you don't see them. We don't get many of them, and we don't get advance calls on them.

### 5.3.2 Sale of Catch

A number of the vessels retain and sell the catch, which provides another source of income for both the captain and crew. Different vessels divide this income differently, but most commonly it is based on a crew share approach. One captain reported that of the fish they bring back:

[We] eat some. It depends on what we catch. [We] sell some to the local restaurants -- most of the guys [the other boats] sell some. Sport boats don't catch that many. It is different now. More and more places [where customers stay] have kitchens in the hotels, so people want to keep their fish. Years ago, we ended up with all the fish, nowadays, everybody that goes out wants to keep the fish. We used to get the rich people down here, now we don't, and people want to keep their fish and eat their fish. Fish that we would sell once upon a time, they will keep and eat fish the whole time that they are here. All of the time share places, which is bigger and bigger all over the island, and a lot of the hotels now have kitchens.



One captain offered the opinion that letting customers take fish back to hotels does not really work out as they have planned.

I let people take enough fish to eat if they have a place to take it back to. If they say, 'I'm going to take it back to the hotel and have the chef cook it up for me', well, the chef won't do that. They may tell you they are going to do that, but they will just take your fish home and eat it themselves, and serve you the fish they already have at the place. They won't fix it for you, [for example] they like that kingfish a lot more than you do.

Another captain described the seasonal variation in the way catch from sport charter vessels is sold as follows:

[Sometimes the] fish aren't worth anything. In the winter time they are, the tunas and wahoos, fish that we can sell. [We have] shares then, boat, self, and mate -- [divide it into] thirds. In summer the fish aren't worth 50 cents, and you can't keep them anyway.

Where and to whom fish are sold varies by species. One captain noted that while some fish were sold from the dock area,

[We] sell to restaurants too -- they buy the bigger fish, the tuna, wahoo, and dolphins. Local natives buy the bonitas, kingfish, and the smaller fish -- not everybody can come up with 75 or a 100 bucks for a fish.

During the interviews, it became obvious that there was a great deal of variability among charter operations as to the economic importance of the fish they catch (as opposed to the money earned through the charters themselves). At least one of the charter operations has freezer capacity in a building near where his vessel is docked and sells fish from there. Others may not have the facilities, but are more aggressive in sales.

Another pattern seen is that there are two of the smaller vessels that commercially fish on a regular basis when charters are not available. That is, as a regular part of their income strategy, they aggressively commercially fish whenever there are no paying clients. Additionally, one of the larger vessels occasionally commercially fishes when there are no paying clients. As for other large vessels, this is not a particularly economic option, as they report that the costs of going out without customers in relation to the income derived from commercially fishing using sport techniques do not make the effort worthwhile. In the words of one captain "most of the other boats don't because you burn so much fuel." According to one of the captains who does commercially fish to supplement charter income, the tourism derived charters have been so slow in the wake of Hurricane Marilyn, that commercial fishing "is what paid the rent for us." This variation -- whether it is worthwhile or not -- depends not only on absolute costs, which vary considerably by vessel size, but on ownership structure of the vessel as well.

For at least some operations, the value of the fish taken by customers is seen as critical to the operation. In the words of one captain:

If people want to take fish, I don't mind, they paid a lot of money to go fishing. [But] I am not going to let some guy take 25 dolphin home with him. Because I sell that. I make 'fish money' off that fish. I get \$3.50 a pound for those fish. So I would be hard pressed to let some guy take 25 fish home with him. Two of those fish is worth more than he paid for the whole trip . . . [I] sell to local restaurants, and to local people. Whatever I catch, these people like dolphin, these people like wahoo, whatever I catch I don't have any trouble selling.

One of the individuals who does sell a relatively high volume of fish noted that:

If you catch a bunch of blackfin tuna, it is kind of tough . . . bonitas, [are] kind of hard to get rid of, you have to catch so many of them to make a hundred pounds of tuna. [But with the return of] tourism, demand for tuna, wahoo, dolphin are up. Those are very local fish. When they come here, people want fresh local fish. They [the restaurants and hotels] have salmon and stuff like that they import, but when people come down here, they want to try a nice local fish.

As noted in the discussion of the commercial fishing sector, species generally known as sport fish are generally more popular with the hotels and other establishments that cater to tourists than are 'plate fish' such as commercial fishers typically catch. As noted elsewhere, however, in recent years local cuisine, including fish, has become increasingly popular for visitors according to some of the interview data.

#### 5.4 SOCIOCULTURAL DIMENSIONS

Sport charter fishing is not viewed as a traditional activity or part of a cultural heritage in the same way as is at least some of the small scale commercial fishing. Most of the charter operations are definitely oriented toward being money making enterprises (the exceptions being those vessels that are manned by professional crew and whose owners do not necessarily expect to make money, but who use the charter business to at least partially, if not totally, offset the cost of owning such a boat). In addition to monetary rewards, however, a number of the captains noted that they became charter fishers because they value the lifestyle that it offers (e.g., being a business owner rather than an employee, fishing and the interaction with other fishers, etc.). In ethnic terms, of the 10 identified captains, seven are 'continentals,' two are West Indians, and one is from elsewhere in the Caribbean. In terms of ownership patterns, all of the vessels are apparently owner operated, except for the two vessels captained by West Indians, according to interview data.

## 5.5 CURRENT EFFORT

In this section, the current effort of the sport charter fleet is discussed in terms of location of effort, target species, and changes in target species over time.

### 5.5.1 Location of Effort

The location of effort by the sport charter fleet varies by season and also by weather. As one captain put it:

in the winter months, when the cold fronts come in and we get the heavy rollers, we cannot operate on the north side at all. Sometimes the ground swells can last for a week. Then we 'climb up the ladder'. Even when winds are 18 knots, we cannot turn around.

This captain explained that 'climbing the ladder' was to transit Pillsbury Sound between St. Thomas and St. John, pass northeast through Windward Passage on the northwest of St. John, then east through The Narrows north of St. John before coming out in the more protected BVI waters. (It should be noted that, unlike the commercial fishing sector, U.S.V.I. charter sport fishing boats typically use BVI waters. BVI licenses for sport boats are relatively inexpensive and easily obtainable, unlike commercial fishing licenses.) The drop-off is then picked up and run southwest and west (i.e., through the proposed MCD area) to somewhere around Frenchcap Cay, and from there, "beam right in" back to Red Hook. To adjust for the time of the charter while working down swell, the vessel can make larger or smaller turns while working the drop-off.

There is some variation by size of vessel as to the areas where effort is concentrated. Depending on the species being targeted, the smaller vessels can and do fish the same areas as the larger vessels in good weather. In rougher conditions, the smaller vessels will tend to fish more inshore. In the words of the owner of one of the smaller vessels:

Bigger boats and smaller boats work the same areas depending on weather conditions. Bigger boats can take rougher seas -- [although my type of vessel] can take anything -- but when it is rough I usually fish inshore. People when they are light tackle fishing, they don't want to go in rough water and they don't want to get beat up, that is basically why they are going light tackle fishing, plus it is cheaper. [We] target the same species as the bigger boats when offshore. When inshore [we are] targeting kingfish, bonitas, mackerels, that sort of fish; when outside, depending on the time of season, you are always targeting wahoo, dolphins and tuna.

Fishing location varies during the year. In the words of one charter boat captain,

We fish everywhere. In the winter months, a lot of it, for the half-day trips especially, [we] fish the south side, fish the drop off mainly; we troll across some of the bank area going in and out because we don't want to burn all the fuel to run all the way to the drop off, but the main fishing is at the drop off. That would be all the way from Norman Island down to Frenchcap normally.

In other words, for a portion of the year, the proposed MCD area is used on a regular basis by virtually all of the sport charter fleet (depending on weather conditions). As one captain put it, for half-day charters, it is typical to:

range along south drop from Frenchcap up to the BVI, all along the edge, just off the edge. If we don't do that on half days, then we fish right around the small islands (close) on the north side. The north drop, we fish whenever we can, just on a half-day you can't get out there -- it is 20 miles roughly to the north drop, and then you are going 10-15 miles along the edge, so for a half-day, there is just no way [that it is worth it]. Half days [are] either [spent at] the south drop [for wahoo, dolphin, tuna, or the like] or the small islands on the north [side], fishing for barracuda, bonita, kingfish or whatever, right next to the rocks.

Another captain expressed the idea as follows:

Very seldom do you go to the north side on half day trips. You can get to deeper water and bigger fish on the south side on half day trips. You can't go to the north drop off on a four hour trip -- several guys have tried, but you can't do it. When the wind is blowing hard, [we] do go north closer to St Thomas. On the south side the drop is 2.5 miles from Frenchcap. We will run that edge . . . and fish the drop (either way, depending on conditions), fish the edge until it is time to come home, then we will troll back across the banks . . . everybody [in the sport charter fleet] fishes to "the point" [the end of the drop-off ridge in the proposed MCD area]. Everybody fishes that on the half-day south side trips.

It is a different pattern in the summertime, when full-day charters are more common. There the north side is more heavily used, and the fishing is more marlin oriented. According to several captains, there are more half-day than full-day charters overall, but in the summer months, "you have a lot more day trips because you are fishing strictly the north side for marlin." One captain summarized the concentration of effort for marlin as follows:

[It is an area] ½ mile wide by eight miles long. [It's a] very small area we are fishing . . . the drop -- all of the charters fish the same area. It is like a superhighway, all of the boats fish the same little area. Up and back, up and back, [it is a] very steep drop, and that is where all of the effort is.

Seasonality of level of effort is largely a function of the tourism seasons, with the exception of marlin fishers timing their visits somewhat differently than other tourists. As one captain stated:

[The business] is way seasonal. Right now [November] it is the dead time of the year -- that is why you see the boats at the dock. During the winter season, it starts December 15, that is what we call Christmas week, that is the busiest week of the entire year for fishing. [We] stay busy through March. The summer months are busy again with marlin, depending on the moons. The dark side of the moon is not very good, but we still get trips through there [but] not like on the moons. [It will] stay busy until September, [then it] dies 'til December again.

Like some in the dive industry, some of the sport charter begun to diversify their activities. For example, some of the trips combine activities. In the words of one captain:

Sometimes [we] take trolling-sightseeing trips up to Virgin Gorda. Check in with Customs, then they [the customers] will go swimming at Virgin Gorda, and then troll back down. Trolling-sightseeing is something we do, but we don't really push it, maybe we should.

Another captain related that after Hurricane Marilyn, he was seeking business anywhere -- "island tours, snorkel trips, whatever I can that pays."

### 5.5.2 Target Species

The species targeted by the sport charter fishing fleet varies by the time of the year, and the preferences of the customers. As one captain stated:

They [the customers] are after anything, they just want to catch fish. Everyone wants a big fish. If you ask them, they will tell you they want to catch a blue marlin -- but after you are out there an hour, and you are not catching anything, they say 'well, we'll be happy with anything.' Even barracudas -- we catch barracudas and let them go, same with the kingfish, mackerel, any of the fish we are worried about with that ciguatera fish poisoning, we catch and release them all. Some of the other fish, the wahoo, the tuna, especially the decent sized ones, we bring in; there is a lot of dolphin in the spring.

Another captain when speaking of customer preferences noted:

We have people that just want to go catch sharks. That pays the rent . . . make them happy, and they will come back next year. Some people don't want to catch sharks, you just have to figure out what they want.

One captain described the changes during a typical annual cycle as follows:

Like anywhere else, the fish are migratory, they come and they go. In the summer [you have] marlins, May through October. You can catch them year round if you want to fish for them, but in the summertime you don't have to put as much effort in it. During the other times, you have dolphin, kingfish, wahoo, bonitas, barracudas, tunas, rainbow runners -- there is all kinds of fishing. For those kind of fish, they don't bite in the summer time. You can catch a marlin just as easy as you can catch a bonita. There are a tremendous amount of tuna on the north drop, and skip jacks, but sometimes you would never even know there is a fish out there. Mostly skip jacks, yellowfins too, black fins, bonitas along the edge in shallow water -- that's where the marlins are too . . . In the spring everything is on the south, that where the dolphins are. They start migrating to the north in March, April and May. [They] have white marlins and blue marlins right with them, and the skip jacks and everything else. You just have to go more or less with the seasons [and in the] spring concentrate on the Caribbean.

As for those vessels that commercially fish, consistent with information from other interviews, one captain stated: "The commercial targets are tuna, wahoo, dolphin. Those are the big three. fish that we don't have any problem getting rid of."

### 5.5.3 Changes in the Target Species Over Time

Several captains noted that although marlin fishing has held up well, inshore fishing has changed for the worse over the years. According to one captain, "it is like night and day over what it used to be." In the words of another captain:

[As for the charter part of the] overall fishery, marlin doesn't seem to change. Inshore fishing [has changed], the kingfish for one seems to be that the size is much smaller than it used to be. [But] it can't be from pressure here. It used to be a ten-pounder was a normal fish, now it is five pounders . . . used to get 20 and 30 pounders. The tuna varies by year. In close [to the islands we] don't catch anywhere near the amount of fish we used to. Yellowfin tuna used to catch in close -- right off Jost Van Dyke and the Tobagos, same thing with the bonitas, and that has all disappeared . . . also the sailfish, we used to have in close all winter long up until 1980. Big balls of bait used to come through [and] now you don't see that. [We] just don't catch things inshore like we used to.

Another captain did attribute a drop in kingfish to local fishing pressure, specifically to the not widely used technique of chumming with live bait. One captain had a different assessment of the marlin fishing.

The marlin are getting smaller and smaller. Years ago the average fish was 225-450 pounds. [We] don't catch many 300 pound fish anymore. Some are between 100 and 200 pounds; some are less than 100 pounds.

Another captain noted: "fishing is way off of what it used to be . . . you can still catch enough fish to make the charter people happy, but you've got to work a lot harder to do it, cover more ground, troll a little faster."

## 5.6 PERCEIVED ISSUES WITH CURRENT RESOURCE USE

There are a number of issues that concern sport charter fishers regarding current resource use. As noted earlier, there is concern within the sport charter fleet over the technique of live bait fishing (at least by some of those who do not use it). Other concerns regard the overlap with commercial fishing, and the competition caused by 'outside' vessels. These latter two issues are developed in this section.

### 5.6.1 Overlap With Commercial Fishing

In the available secondary catch data, there is no distinction between the sport charter fleet and the commercial fishing fleet. According to several sources, the issue of charter personnel selling their catch resulted in complaints in recent years by at least some individuals in the commercial fishing sector. At least partially as a result of this complaint, charter personnel now routinely become licensed as commercial fishers, confounding the landing statistics, although they are not what are typically 'thought of' as commercial fishers locally.

As discussed above, at least a portion of the sport charter fleet has two sets of clientele for their products: the clientele who fish (and who are primarily non-residents); and, the clientele who buy the fish (residents and businesses that are somewhat different from the clientele who buy from commercial fishers). The perceived conflict on the part of some commercial fishers is not in competition for the catch as much as it is in competition for the market. Some other commercial fishers minimize this conflict, due to the fact that the sport charter fleet largely targets species they do not, using different techniques. According to one charter captain,

as far as people [commercial fishers] just going out to commercial fish for some of the game fish, wahoo or tuna, I don't know anybody that does that -- there just isn't the money there. It is a big area, the tuna aren't there all the time, they move too. Wahoo is unpredictable . . .

Another sport charter captain stated the opinion that there is no competition between the sport charter boats and the commercial fishing fleet because:

commercial [fishing] is [primarily] trapping and yellowtail snapper night drift with line out. [It is] not the same as charters. They get into our business at times -- [they] see a school of dolphins going by, they will try and catch them. We don't complain about them; some of them complain about us selling dolphins and wahoos -- and they don't even catch them unless they see them swimming by the boat. Most of the [commercial] boats are small. It is only in the last couple of years that you see more 30-35 footers. Most of them are outboards, 18-22 footers, very small boats -- they [don't have the capacity to] do too much more fishing anyway.

Others observed that there was a difference in the geography of marketing between the charter and commercial catch as well. Whereas the sport charter vessels typically sell their smaller fish at the dock, and others to restaurants around the area, "commercial fishermen don't sell their fish around here [Red Hook] because they have no market. They have smaller fish; [these primarily tourist-oriented] restaurants want bigger fish so they can fillet them."

In the words of another sport charter captain,

[There is] no competition between commercial and sport fleet. I respect them, give them low wake, wide berth . . . we have bigger boats, but we are not taking ourselves out, we are taking tourists.

Other captains have less favorable impressions of the interactions of the charter business and commercial fishing, based on the techniques used by commercial fishers. Several of the charter captains expressed concern over bottom damage caused by traps. In the words of one of the captains:

Commercial guys here mostly fish with pots, they fish for bottom species. The only thing that hurts us with the commercial guys is the big steel cages that they drop on the bottom. In my opinion, every time they drop this six foot square cage on the bottom they kill 36 square feet of bottom, reefs, whatever it lands on. If it drags 6 feet, that is 72 square feet of bottom killed. They have been doing this for years and years. People ask me why there is no bottom fishing here, and that is what I tell them. They have killed it here. Kingfish banks, that used to be kingfish paradise. Trolling you could catch 15 kingfish there. I dove there last year, and the whole thing is dead, broken coral. That is all from trap fishing, and they do the same thing over here [in the proposed MCD area]. There is no decent bottomfishing here until you get out in the deep water you can still catch snappers and groupers out here on the deep part, but you have to have electric reels, and a long line to get down there to it.



Another captain noted that his fishing patterns have changed because of commercial trapping:

There is a huge concentration of the traps in that [proposed MCD] area. I dislike the traps very much myself. We don't bottomfish around there because it has been cleaned out. I come from [a specific place elsewhere], and if you go and fish the grounds like this, you are going to catch a bunch of snapper and grouper. Here you don't catch them. It is completely wiped out.

### 5.6.2 Competition with Outside Vessels

There were varying opinions on the influence of vessels from outside of the area chartering sportfishing locally. The following represents a captain's view from one end of the continuum:

The charter business is going down. What is happening is in the summer time, you get these million dollar boats down from Florida. They put a lot of hours in, [they are] experienced anglers -- there is no way they we can compete with them. They are killing us. They say they are private boats, but they are chartered before they leave up there. (Or [they are out of] Texas or New Jersey, but leave out of Florida.) These same boats go down to Venezuela, Cozumel, Hatteras, it doesn't matter. Have gun will travel. They have a lot of money, and they are going to go where the fish are . . . If you look in the magazines, they will say they are in St Thomas July, August, September. People fly down and catch the boat. Years ago, they used to charter with us. Our government does not care, they don't help us at all. You'd think they would be interested in keeping us going, because we are the ones they make the taxes off of, not these Florida boats.

Another captain observed how the outside vessels have forced changes in the way that local vessels operate in addition to direct economic competition:

You see outside boats mainly in the summer. [They are a] big boost to the economy, [but they] hurt the local [charter] operators a lot. They hurt our operations here as they got bigger vessels, corporate boats, [and they're] faster . . . a normal day for us used to be 8:00 [a.m.] to 5:00 [p.m.]. Those boats fish to 6:00 or 7:00 at night. Those extended hours forced the home town guys -- if you ever want to compete you have to leave the dock at 6:30 [a.m.] and come back at 7:30 or 8 o'clock [p.m.]. They really put the pressure on.

## 5.7 CURRENT USE OF THE PROPOSED MCD AREA

As discussed in previous sections, the proposed MCD area is used on a regular basis for trolling by the charter fishing fleet. It receives the most concentrated effort during the winter months when all of the sport charter vessels report using the area. More specifically, the shelf drop-off area or edge is the focus of the effort by this sector.

We fish on the edge . . . 90% of the time . . . on the way out, we may fish across the shelf area. Very rarely do we target [effort] on the shelf [itself] unless see a school of bonita or something, or if we catch something [we] may circle back . . . when transiting the area, [we] do have lines out [to] try and save fuel. Especially on half-days [we] fish out and fish back. Other charter boats do the same thing -- fish come up on the bank [drop-off] -- it is a superhighway.

According to another captain, the drop-off that transits the proposed MCD area "makes a world of difference to charter boats . . . if you need to do something in that area, make it catch and release, make it workable." In the words of another captain:

This is a corridor, it is important not to close off the corridor, everything seems to come through this area, all the fish. It is like closing down an intersection, so to speak, for everyone to fish through. People go from Norman [Island] to Frenchcap -- this is in the middle of where everyone is fishing. For sport fishing, it is right in the center of things.

Another captain noted:

We use the whole area. We troll out, most of us do, and fish for kingfish, barracudas, bonitas and stuff like that. You save fuel, and people are still fishing. Then you get out and spend a hour and a half in the deep water for the bigger species, and then you troll back across. That way you can take people to the south drop and it doesn't kill you in fuel. Fuel is the biggest thing that hurts.

The section of the south drop off targeted by the charter boats typically runs from BVI waters down (southwesterly) to 'the point' the end of the defined ridge on the edge of the shelf south of St. John and on to Frenchcap Cay, depending on conditions.

A number of captains spoke to the issue of a total closure in the proposed MCD. Two of the points often raised were the opinion that pelagics moving through the area were not the problem in terms of fish or reef conservation and second, that if trolling for pelagics was not doing any harm to the system, then closing the area to trolling as a political move to appease those groups that would be excluded is not appropriate. In the words of one captain:

If MCD were a total closure, [I] could live with that, but it would be ridiculous. It doesn't make sense to have a no take zone for pelagics, that is not the problem in the area. No one has shown any reason why it is not OK to take pelagics. If they are closing it to all fishing because the traps are the problem, but they are worried about allowing some kinds of fishing but not others because of what people's reaction will be -- that is not a good enough reason.

#### 5.8 POTENTIAL SOCIOECONOMIC IMPACTS TO CURRENT USERS OF THE PROPOSED MCD AREA: SPORT CHARTER VESSEL OPERATIONS

The potential socioeconomic impacts to the sport charter fleet of a total closure of the proposed MCD could be significant, based on existing use of the area. It would impact the entire fleet, in one way or another, as all of the vessels use the MCD area at least seasonally.

Opinions of charter captains regarding the potential impacts of the proposed MCD to their individual operations varied widely, based on the potential restrictions enforced in the area. Those sport charter captains who opposed at least some form of the proposed MCD were opposed to restrictions on trolling through it, though a number saw a need for limiting other types of fishing there. In the words of one captain:

[I] don't want to see it [the proposed MCD] off limits to trolling. There are only eight charter boats [on St. Thomas] -- there is a couple out there a day maybe. We don't put the pressure on it. I can see blocking it off to traps. I guess that is pretty typical -- the sport fisherman thinking the commercial fishermen are catching all the fish. With the amount of bottom fish, I think that fish traps ought to be just outlawed. I don't think there is much left out there to catch anyway. I can't see that trolling does damage to the fish stocks. In Florida where you have a million boats [it is different], everybody has a boat . . . [there is little other fishing by locals whether West Indian or 'continentals'] . . . Stateside people that are down here that have boats, they are sailboats [not fishing boats].

Referring to the section of the drop-off that runs through the proposed MCD, one captain noted that:

The [proposed] Marine Conservation District would not serve the purpose that we are looking for . . . we need this area for an effective charter operation . . . the fish we target move through the Caribbean. The biggest danger here is the heavy outside commercial effort . . . [we are] not talking about reef fish, [we're] talking about the sport fish. [It would be a] costly program for us to try and do this . . . From Trinidad down to St. Martin, there is no conservation whatsoever . . . that is what is dangerous -- no limits, we will pay dearly for that, we are paying for it now.

Another noted the importance of communication regarding the purpose of the MCD. He stated that:

“if we could develop the right approach, [you would] have half the battle”

Several captains noted the seasonal differences the proposed MCD would make. In the words of one captain, winter charters would be particularly difficult due to the swells that are common during the season. As opposed to the common pattern described earlier of running southwest and west from the vicinity of the BVI to Frenchcap, “if [you] block off the [MCD] area, we would have to go down to Sail Rock [to the southwest of St. Thomas], then would have six- to eight-foot seas for the way back up”

One captain suggested that FADs may be at least a partial offset to area closure.

[The] fish we catch are moving, they are the pelagics, they are moving all the time. If we can't fish the area, then we would try and put FADs outside. It would be a lot better, we would catch a lot more fish -- we need to get FADs out into deeper water . . . FADs would kind of compensate for [the MCD area] closure.

One captain offered a rather dire assessment of the consequences of a total closure of the proposed MCD area to the fleet as a whole, and specifically those based in Red Hook: “Winter half day trips [are] very important because they are not fishing north. [The charter boats] come out of Red Hook and run the edge. If they lose that, that is huge revenue that they will lose.”

At the end of a continuum of opinion, one of the charter captains offered the following in support of rotating closures:

It wouldn't affect my business at all. I just wouldn't fish there. There is plenty of other places to fish. I think this is long overdue in happening here. It is the only way we are going to preserve the fishing industry here -- make areas like that and shut them off. I feel it needs to be done 100%. Make no exceptions [for] trolling, bottom fishing, net fishing, however it is done. If you designate an area as a preserve, so be it. Establish the boundaries. Shut it down for a period of time. And then open it up and close another section.

Another captain flatly stated that: “[the proposed MCD] would not affect [my] business at all. I would mark on the GPS, troll around it, avoid it . . . I am all for having an MCD, I am raising a family here.”

As earlier stated, the amount that individual charter vessels depend on selling their catch varies from vessel to vessel. To the extent that the ‘south drop’ that runs through the MCD is responsible for a disproportionate amount of the catch of desirable fish these operations sell, there is the potential for significant economic impact to individual operations if economically

feasible (in terms of expense of access and comparable productivity) alternative fishing areas cannot be found. In the words of one captain:

The [proposed MCD] area is used a lot on half day trips. It would impact business, but [would be] very hard to enforce . . . you fish the edge. If it came down to it, [I] would fish it anyway if saw a bunch of birds working the area.

As for differential distribution of potential impacts to the sport charter fleet, in geographic terms the direct impacts would be concentrated in two areas: in and around Red Hook on St. Thomas, and in and around Cruz Bay on St. John, based on vessel locations. How these impacts would 'spread' geographically if indirect impacts were considered, such as impacts to (apparently localized) markets and (wider spread) tourism, is unknown at this time. In terms of ethnicity, a closure would appear to disproportionately impact 'continentals' in this sector, but again, that only accounts for direct ownership/direct use concerns.

If restrictions on trolling were not part of the proposed MCD package of regulations, then there would apparently be no direct impacts to the sport charter fleet (if the other consequences of closure do not positively or negatively impact the pelagic species targeted in this area).

## 5.9 RECOMMENDATIONS FOR FURTHER STUDY

As this study, by design, focussed on direct use of the area of the proposed MCD, there remain key questions that remain unanswered regarding indirect impacts and the sport charter fleet. To a greater extent than commercial fishing, the sport charter fleet is tied directly to tourism (i.e., for their base clientele, if not for their catch for sales). The connections of negative impacts on the sport charter fleet to negative impacts on tourism were not explored, but could be followed up upon in a Social Impact Assessment or similar study.

As noted earlier, the differential geographic distribution of direct potential impacts to the sport charter fleet would be felt most strongly in Red Hook and Cruz Bay, based on vessel locations. Whether the proposed MCD closure would 'spread' indirect impacts to wider geographic areas is unknown -- both in terms of markets for caught fish and tourism. In the words of an individual from another fisheries related sector:

[charter boats area] a tremendous economic boost to the Islands . . . [they] make a huge difference in the economy especially here on the East end [of St. Thomas] . . . [but] it spreads over whole island. The nice thing about that is that it comes [in part] when then tourist season has slowed down.

Further, if full closure were implemented, there may be consequences for vessel location decisions, but this topic was not explored during this rapid evaluation. Both of these topics could be explored in a Social Impact Assessment.

It was also noted that the sport charter fleet relies on the proposed MCD differentially by season, with the winter months being key, but some use occurring year round. A full Social Impact Assessment should follow up on this variation in cycle to determine the relative impacts by season, perhaps by preparing case studies of individual operations. In these case studies, the question of proportions of income and effort related to southside half-day trips compared to overall effort could be answered more definitively.

Another key question that remains to be answered is the impact of the use of planers by sport charter vessels on the reef community. If the contention that sport charter vessels take pelagics that do not impact the reef communities is accepted, the issue of the use of planers is still not resolved. While some commercial fishers contend that planer strikes on the reefs are common, the sport charter captains contended that this was not the case, particularly in the proposed MCD area where the edge of the drop-off is most commonly fished. To follow up on the actual rate of incidence of strikes and their impact to the reef system would require an investigative effort that was beyond the scope of the present rapid evaluation.

It is also important to note that scope of this rapid evaluation did not permit a targeted effort focussed on individual sport fishing use of the proposed MCD area, as opposed to sport charter use of the area. (This is similar to the case of the dive sector discussion, which focussed on dive operations rather than individual sport divers.) Several of the sport charter captains offered the opinion that there are relatively few avid sport fishers with their own boats who would use the proposed MCD area, but this was not corroborated through independent interviews. If a Social Impact Assessment is to be done, this would be an area that should be followed up upon.

## 6.0 ST. THOMAS AND ST. JOHN DIVING OPERATIONS SECTOR DESCRIPTION

Dive operations were identified in earlier CFMC documents as a potential stakeholder group (i.e., as current users) of proposed MCD area. Based on the results of interviews conducted for this rapid evaluation, however, it does not appear that any dive operation uses the proposed MCD area for commercial purposes.

### 6.1 OVERVIEW: CATEGORIES OF DIVE OPERATIONS

Snowball sampling beginning with known operations revealed that there are three basic types or categories of dive businesses on St. Thomas and St. John. These are: (a) diving operations that are partially boat-based, that is, that derive part of their income from taking customers out diving in boats (and a number of which have multiple vessels); (b) diving operations that are exclusively shore-based, that is, they take individuals out diving, but only from the shore and do not use boats; and (c) dive sales and service operations that do not take customers out diving at all.

Dive operations in category (a) were considered potential users of the MCD area, and efforts were made to interview the owners and/or senior staff of all of these businesses. In this case, a 100% interview sample was obtained, with only one of the interviews having to be done by phone. As for category (b), there were two operations in this 'shore dive' category. Both were contacted by phone to confirm that they in fact did *not* take divers out in boats. One of these businesses is at a fixed location that has historically been known for good shore diving (i.e., customers come to the location); the other business caters, to a large extent, to cruise ship passengers, and transports the customers by land vehicle to a shore diving destination away from the cruise ship berthing area. There was only one business identified in category (c), the 'no dive' category, and it was confirmed by phone contact that they do not take any dives out from shore or via vessel -- they are strictly a sales and repair facility.

The rest of this sector profile concentrates on category (a) operations -- those business that because of the mobility afforded by their vessels are potential direct users of the proposed MCD area. Within this category, there are a range of types of operations, as discussed below. Complete information was not obtained from all operations, because some individuals were less interested in discussing their businesses once they recognized the focus of the interview on an area they do not use (the proposed MCD area), and their lack of intention to use it in the future.

### 6.2 GEOGRAPHIC DISTRIBUTION

On St. Thomas, a total of 11 diving operations were identified. Of these, one was a sales and service facility only, two were exclusively shore based operations, and the remaining eight were at least potential users of the proposed MCD area through boat-based operations. Of the eight operations that used boats to take customers out diving, there were three types of operations in terms of geographic 'spread.' First, three of the businesses are single site operations and are

located at resorts. Second, two of the businesses are single site operations, but not located at a resort. Of these, one is located along a heavily traveled road, and has come to rely more on sales and service than taking customers out diving, while the other is located in a relatively busy marina. Third, the remaining three operations were multi-site businesses, with at least one of the locations being at a resort complex, and at least one location being a "dive store" away from any individual resort.

The advantages of being located at a resort, according to interview data, is that the resort provides a readily accessible supply of customers. The disadvantages are having relatively little walk-up trade at that location (other than the resort guests), the rent charged by the resort, the percentage of the business that the resort wants, and the costs associated with the typical proviso that the dive business provide free snorkeling gear to resort guests. The advantages of having multiple locations is increased walk-up trade at the non-resort location, combined with the (hopefully) steady customer base supplied by the resort.

On St John, a total of four dive operations were identified, and all were interviewed. There are more locales that offer dive services, but it would appear that all other entities contract through these four operations for boat diving services. Of these four operations, two are 'headquartered' in Cruz Bay, one at Caneel Bay, and one in Coral Bay. At least three of the four are multi-boat operations, and at least two of the four have more than one location.

There is no currently active association of dive operations on either St. John or St. Thomas. Individuals cited the problems of getting independent, competing businesses to work together. In the words of one operator: "I personally tried to start one twice. It never worked out. Divers are like fishermen, they are too independent for associations." One association did form and last long enough to get moorings at popular dive sites installed, but has not been active since that project (and Hurricane Marilyn), although at least some individual shops apparently continue to maintain the moorings for which they were initially responsible. (At least one shop declined to officially continue participating in the association sponsored mooring program, as the issue of individual liability arose if there were a dive accident at the site where that operation sponsored and maintained a mooring.)

### 6.3 CUSTOMER BASE

According to all of the interviews where the subject arose, dive operators noted that the Virgin Islands are typically not a diving destination *per se*. That is, those visitors who dive typically have come to the Virgin Islands for a variety of activities, of which diving is only one. Several dive operations noted candidly that there are other destinations in the region that are more or less exclusive dive destinations, where the cost of vacationing is cheaper and the diving is as good or better than in the U.S.V.I. In the words of one owner:

This is a good introductory destination . . . shallow reefs, small fish. Better [more experienced] divers will go elsewhere, where there are more abundant



and larger fish. The average diver that comes here has less than 15 dives . . . [they] have not developed specific interests. Otherwise, they would choose someplace else.

One the other hand, what the U.S.V.I. does offer divers (and their travel companions, whether they are divers or non-divers) is a number of non-diving attractions not found in the more diving-focussed destinations. As one dive owner put it:

Diving [here] is 'on the side' tourism. People are here to do other things, and they go diving too . . . This place is nothing like the Caymans underwater, but the things to do above the water make up for it.

The level of dive activity traditionally follows the level of tourism in general, with pronounced peaks and valleys during the typical year (as noted in the discussion on tourism and economic indicators). In the words of one dive operator:

Tourism is at its peak in mid-February and that is when the most diving is. [However] the best diving is in the summer. Traditionally, February was the high month for tourism, and September was the bottom. Things have not been the same in the last few years. It took four years to recover from [Hurricane] Hugo, and then we got nailed by [Hurricane] Marilyn.

Dive operators varied in their estimation of how much of their tourist business was repeat customers. When this topic arose, some stated that most of their business consisted of repeat customers, while others stated that the majority of their customer base were first time customers. Some of the dive operations advertise in local publications and through the local distribution of brochures, particularly in rental homes/condos, some advertise in national or international dive magazines, and at least one of the operations has a web site on the Internet. Several operations noted that over the past year, their customer base has changed because of Hurricane Marilyn. There has been a marked increase in the importance of 'locals' as customers with the drop-off in tourism.

Before the hurricane [Marilyn], 95% of the business was tourists. Now that the tourists are not here, [we're] promoting diving for locals. [We] have to, and do fun dives on the weekends . . . a lot of the local divers are now regulars . . . there is not that much to do here in terms of recreation [for residents].

Different operations have approached the marketing of services to locals in different ways. In the words of another owner: "Sunday afternoons [we] reserve for local divers . . . 95% of the business is tourism, but we have cultivated local customers too, especially when things are slow."

Hurricane Marilyn heavily impacted the dive businesses in St. John and St. Thomas, just like all other tourism oriented businesses. In the words of one owner: "We just lost [laid off] employees. We hung on for 13 or 14 months after Marilyn, paying people, but the pocketbook is drained." At another dive store, the owner noted that they were personally covering shifts that would normally have been covered by employees because business has been so slow since Marilyn. One operator noted: "The diving industry was growing before Marilyn. It will take years to recover -- but it will grow again."

One owner noted that he has tried to diversify his activities, especially since Hurricane Marilyn caused a drop off in diving specifically:

[We're] into other activities [and] do whatever it takes to pay the rent. [I] take people trolling, do a fishing charter every other month or so -- cover that with a commercial license. For the last two years we have done harbor tours, snorkel tours, charters . . . [I'd] rather be out there doing something that pays some bills than sitting in [the shop] here.

Another dive owner has commercially fished lobsters, including in the proposed MCD area, both as an activity alone and as a way to obtain income when dive business is slow.

#### 6.4 SOCIOCULTURAL DIMENSIONS

In terms of values, the importance of a healthy underwater environment was noted by a number of the dive operators as being key to the success of their business. For several of the dive operations, the conservation ethic was a central interest issue regarding the proposed MCD rather than issues of dive operations direct use of the area. In the words of one dive operator: "Fish are worth a lot more in the water than dead. When are people going to realize that?"

In terms of the ethnic composition of those dive operations that are at least partially boat-based, and interviewed in person, none of the business owners were West Indians. Even without 100% knowledge of the sector, it is safe to state that the dive operations on St. John and St. Thomas are owned exclusively or nearly exclusively by 'continentals,' although other ethnic groups are represented in the workforce.

#### 6.5 PERCEIVED ISSUES WITH CURRENT RESOURCE USE

In general, dive operators expressed concern over various impacts on the reef community, a portion of which they acknowledge had been caused by dive operations in the past. They have reported an increased awareness in general of the customers regarding the potential for individual divers damaging living corals (through general ecological awareness and industry wide 'ecodiver' education campaigns), and they also report that they now attempt to educate customers to stay off of the reef through proper buoyancy control. Also, the local dive operators have tried

to minimize damage by anchors in the more popular dive destinations through the installation of moorings at popular dive sites. Reportedly, the installation of moorings was opposed for a number of years by commercial fishers, moorings have been cut away, and moorings do theoretically have the potential for concentrating damage done by the divers themselves. However, the mooring system also lends predictability for those commercial fishers who wish to avoid areas heavily used by divers.

In terms of interaction with other sectors, there is some overlap between diving and commercial fishing to the extent that some of the same areas are used. For the most part, fishers who were interviewed did not believe the divers were in direct competition for extractive use of resources, but the dive operations do vary in their consumptive take, particularly for lobsters. Just as some commercial fishers have criticized sport charter operations as "double dipping" for both charging charter customers and then keeping and selling their catch, they have criticized a few of the dive operations for doing the same thing with lobsters -- making money for taking divers out, then keeping lobsters for sale. One operation in particular has been criticized both by the commercial fishers and some of the other dive operations for the volume of lobsters taken. In general, however, consumptive take of resources is not a focus of the dive operations. As one dive operator put it:

We do have lobster diving . . . [but] people come here to dive for the fun, comraderie, and to get wet. There is a minimum of photography. We don't take people spearfishing, it is too dangerous to the other divers. I don't have anything against it, and if a group of just spearfishermen wanted to charter, we would do that, but it has never happened here [at my business].

Another owner stated: "[I] think we need to have a no-take zone. We grab our two lobsters [i.e., the local limit] sometimes, but [I am] not opposed to a no-take zone.

One owner noted the differences in trips when they are taking tourists or locals:

We have a small boat that is fast, so [we] have a wide range for taking locals out. Charters for tourists are in close. For locals [we] range from Dutchcap to Frenchcap. Locals have helped during the drop in business from the hurricane. When the tourists are on board, it is no take diving. With the locals, [we] do collect game, [they're] allowed two lobsters per day.

As for spearfishing, in those interviews where the topic came up, no dive operation asserted that they took customers out spearfishing. (It should be remembered that not all interviews covered all topics, so this was not a complete sample.) One individual stated that he never has permitted spearfishing on his commercial charters due to safety considerations. Another stated that:

People that come here are a mix of abilities and desires. Many of the people are just certified, or ready (or think they are ready) to be certified. [I] seem to get people from Texas, West Florida, and California that are interested in

spearfishing. I have never taken anyone spearfishing. [I] sell spearfishing gear in the shop, but would not sell it if the other shops did not -- if [I] was the only shop that was selling spearfishing gear, [I] would not sell it. I wish we could stop all spearfishing here. Guys just kill things that they don't really want.

There is also some level of conflict between divers and commercial fishers over the commercial fishers' use of fish traps. Interview data would suggest that a number of commercial fishers believe that divers are predisposed to damage traps, but the general impression is that relations are getting better than they were in the past. Several dive operators expressed general dissatisfaction with trap fishing in terms of impact on the environment, and specific dissatisfaction with 'ghost traps' that are neither buoyed nor attached to a string of other traps (i.e., there is virtually no possibility the trap can be recovered by a fishing vessel). Some of the operators have expressed the opinion that they have nothing against the commercial fishers -- "everyone has got to make a living" is how one dive operator put it -- indeed, they would help to locate lost traps if asked. In the words of another owner:

If fishermen say to us, 'we lost some traps, will you keep your eye out', we cooperate with them . . . there is already enough tension -- the fishermen . . . think we are out to get their traps, and we are not.

There is also some tension between dive operations and commercial fishers because at least some commercial fishers feel that dive operations render some areas that would otherwise be productive fishing areas less productive (i.e., it is thought by some that in areas used in common between divers and commercial fishers, the dive operations tend to scare the fish).

## 6.6 CURRENT USE OF THE PROPOSED MCD AREA

There is no current commercial dive use of the proposed MCD area, according to interview data. There is very limited use by individuals who may or may not be associated with dive operations. One of the dive operations occasionally takes out a group of persons they consider skilled divers, mainly their own staff and the staff of other operations, but does not announce these trips to the general public. In the owner's words:

We dive the drop [in the proposed MCD area] about once per year [but] only do it with locals. We send out a memo or a newsletter . . . [and] call it a Sunday Local Diver dive -- [we] don't really advertise it. It is for people from other dive operations and employees . . . the drop off is too deep for customers . . . everything out there is huge, pretty, untouched, healthy. There are big turtles, sharks . . . it has been a long time since we have dove out there -- not since [Hurricane] Marilyn . . . it is out of the sport diving realm.

Another dive business owner put it this way: "We never take clients to the area [of the proposed MCD]. [One of the owners] sometimes dives the drop off area with another

instructor. They do it with scooters and hang tanks . . . [they] dive there less than 10 times per year." Another owner stated: "[The] only people who would dive that [proposed MCD] area are extremists and local instructors -- that is the only use."

The primary reasons for no commercial dive use of the proposed MCD area include: (a) it is relatively deep, therefore divers have only a short bottom time (and greater potential for difficulties associated with nitrogen narcosis, decompression illness liability, and difficulties with too-fast ascents); (b) it is more difficult to keep groups together than at more popular shallower sites; (c) it is a long run offshore (i.e., resulting increased time and expense) when there are good locations closer; and (d) it is considered an advanced dive location due to all of the above reasons plus currents, the increased chance for rough water, and the pragmatic observation that the client base is comprised primarily of less experienced divers.

In the process of constructing the sampling frame, a total of three operations were recommended by other dive operators as possible users of the area. Each of these three when interviewed reported no use of the area with customers. One reported no personal use, one reported occasional personal use of the area, and one reported taking groups of very experienced individuals out to the proposed MCD area infrequently, but not as part of regular commercial operations. All reported more concern with areas closer to the islands, as those are the primary diving destinations. One individual owner was mentioned by several others as being particularly interested in the proposed MCD issue, and was thought to be probably against it. Although this individual when interviewed reported personally diving the area "12 to 15 times a year" he stated that he was in favor the proposed MCD. One dive operator characterized the current use of the proposed MCD area as follows:

Trap fishermen would be the most impacted by the [proposed MCD]. The ones who use the area are not the artesanal fishermen, the little boats with outboards, they are the heavy duty Frenchies from St. Thomas . . . [I] personally dive the [proposed MCD] area now and again for excitement or to kill something. There are mounds up on the shelf with lots of gorgonia and some hard corals. The area is frequently flushed with water from Pillsbury and Flanagan sounds . . . [the] area is thick with traps . . . the ridge on the drop off is fissured and there are a lot of cracks that hold baitfish -- pelagics are in close there [and] there are healthy stocks of grouper and snapper.

It also should be noted that the topic of diving use of the proposed MCD area by divers other than commercial operations was also explored through interviews. In one interview, a particularly knowledgeable individual (an avid sport spearfisher recommended by several others) estimated by that "only three or four" people dive the seamounts as far out as the proposed MCD area, and that he himself did not spearfish those waters "but [has] talked with some other guys about getting out there on the right day and going after pelagics." Another individual recommended by several others to speak with, who in his own words "straddles the line" between being a "recreational and commercial diver" does not often spearfish the proposed MCD area due to concern over ciguatera from a number of larger south side species. (Also, as noted in

the St. John commercial fishing discussion, there is another individual who does commercially spearfish the proposed MCD area, but who is not affiliated with any commercial dive operation.)

One owner also stated that he does not use the proposed MCD area now for the types of reasons noted above, and will not use it or any other area more outside of Territorial waters in the future because of new laws requiring EPIRBs. In this words: "If you are going to be taking people out more than three miles from landfall, you [now] have to have an EPIRB. [I] decided I do not want to spend the three or four hundred dollars for the unit, therefore that area is ruled out for this operation anyway." It should also be noted that, unlike some other sectors, particularly commercial fishing, at least some dive operations actively use BVI waters. This was confirmed in interviews, and by personal observation by the Principal Investigator during the field research. These dive boats now have to clear BVI Customs and pay a fee, but access is not a problem.

#### 6.7 POTENTIAL SOCIOECONOMIC IMPACTS TO CURRENT USERS OF THE PROPOSED MCD AREA: DIVE OPERATIONS

Impacts to dive operations as businesses would appear to be insignificant. Impacts on a few individual divers would we felt, but the general attitude conveyed through the interviews was that closure of specific areas, at least on a rotating basis, would be in the dive industry's best interest.

#### 6.8 RECOMMENDATIONS FOR FURTHER STUDY

For the diving sector, the scope of this project did not permit establishing the extent of personal use diving by individuals rather than dive operations, similar to the case of individual sport fishers. If a Social Impact Assessment is to be conducted, this would be an area worth pursuing.

## 7.0 OTHER SECTORS

As noted in the introduction, the primary sectors at present that utilize the MCD area are (a) commercial fishers and (b) sport charter fishing vessels. These sectors have been described in earlier sections, along with the diving operations sector. In this section, information is presented on other sectors that use the proposed MCD area in some other manner, or are particularly attentive to issues related to the proposed MCD.

### 7.1 OTHER DIRECT USERS OF THE PROPOSED MCD AREA

Four other potential direct user groups of the proposed MCD area are covered in this section: (a) cruise ships; (b) recreational fishers; (c) charter yachts; and (d) aquarists/artists. Of these groups, all but one (charter yachts) were identified in earlier CFMC documents as potential users of the proposed MCD area.

#### 7.1.1 Cruise Ships

As noted in earlier CFMC documents, cruise ships are users of the proposed MCD area to the extent that they transit the area. In one pattern commonly reported by commercial fishers and others, the cruise ships spend time at night off of the Virgin Islands while they wait for appropriate times for morning arrivals at the berthing area. During this time, they are either more-or-less drifting or performing slow maneuvers (e.g. 'doing donuts') while waiting for dawn (and as long as they are in federal waters, such as the proposed MCD area, they can keep their gambling casinos open). During waiting times, and other times when they are on a distinct course inbound for, or outbound from, St. Thomas or St. John they may transit the proposed MCD area. On these transits, according to the commercial fishers, cruise ships sometimes cause the dragging or severing of buoyed trap lines. This is the only reported interaction of cruise ships with other users of the proposed MCD area. No night fishers interviewed discussed the topic of negative interactions with cruise ships, but this was not a specific area of inquiry. One recommendation for follow up studies would be to develop information in this area.

In any event, cruise ships have free navigation passage and are not regulated by CFMC. This being the case, no socioeconomic impacts to cruise ships are expected to result from the creation of the proposed MCD, as no alteration in their current patterns of transit use could or would be required by changes in CFMC regulatory practices for the area. The only potential impact for cruise ship passengers would appear to be via impacts upon the sport charter fishing fleet, as some passengers take advantage of the opportunity to charter fish during their stay in St. Thomas, but indications from the interviews with sport charter fleet captains indicate these individuals are few in number.

### 7.1.2 Recreational Fishers

To a degree, recreational fishing use has already been discussed in the other fishing sector-descriptions. However, recreational fishers proved difficult to specifically target during the limited field time available, particularly given the overall priorities of the research. There is at least one organization, the Virgin Islands Game Fishing Club (GFC), that is attentive to recreational fishing issues, and according to an interview with a senior staff member of that organization, the proposed MCD area is "very popular for both charter boats and recreational fishermen . . . recreational fishermen who fish the drop [off]." The GFC is a "35 or 36 year old organization. It is the oldest fishing organization in the Virgin Islands, and one of the oldest in the Caribbean." At present, the organization has approximately 100 dues-paying members and, of those, "some are resident, some are from Puerto Rico, and some are from the mainland U.S. There are some charter boat captains, as well as some individuals [among the local members]." The GFC sponsors four tournaments per year: a dolphin tournament in April; a Memorial Day tournament; a 'July Open' tournament, and a Wahoo tournament held in November. These tournaments encompass both "offshore" and "inshore" boats, and at least one of the tournaments incorporates a tournament for kids. Several of these activities include a focus (trolling) on the south drop in the area of the proposed MCD. While several of these tournaments typically include over 100 anglers, the biggest tournament in terms of fishers turnout would be a tournament held on Bastille Day sponsored by locals ('Frenchies') who fish out of Hull Bay. Reportedly, participants in this tournament also focus considerable effort on the south drop in the area of the proposed MCD. This tournament reportedly "will commonly have 100+ boats for the tournament, and 400-500 anglers." As the senior GFC staff member put it,

while that is a big tournament activity, it is probably not over half of the recreational boats or the number of recreational anglers. In addition to that, a lot of those people will rent boats here and go out to recreational fish on their day off. To figure the number of boats would be extraordinarily difficult.

The GFC has not taken a formal stance on the proposed MCD. This, in the words of a senior staff member is because of the status of the organization, and its basic purposes:

The club as an organization has not endorsed marine reserves. . . [but] individual [members are] involved in conservation efforts. The club as an organization has tried to avoid politically sensitive issues. We are a non profit organization of sports and recreational fishermen. For us as a body to try and greatly influence a specific issue with regard to conservation that may have significant effect on others -- that we have no way of knowing about -- would really bother our membership. Maybe not as much as a few years ago, but it certainly has some effect.

The GFC as a group has been active in promoting 'catch and release' among recreational fishers, and the marlin tagging (i.e., tag and release) program.



The preliminary information gained on the (non-charter) sport fishing sector from the GFC and a few interviews with recreational fishers suggest that this is a sector that would be worth following up on in a Social Impact Assessment, or similar additional research efforts. For example, if the proposed MCD represented a total closure including a ban on trolling, how closure would impact the local recreational fishing tournaments, and the money they bring into the local economy (and how this ties to the sport charter fleet) is not well understood. Further, it would appear that some follow-up interviews with sport boat rental businesses may be worthwhile to determine if there are any direct or indirect impacts that may accrue to that sector. Based on preliminary information, however, it would appear that there would be no significant socioeconomic impacts to the recreational fishing community if trolling were allowed to continue in the proposed MCD (with the notation that the 'use of planers' issue is unresolved, as discussed in the sport charter fishing sector discussion).

### 7.1.3 Charter Yachts

During the course of field research, it was determined that there was another potential set of direct users of the proposed MCD area not mentioned in earlier CFMC documents. These are the charter yacht businesses. Locally, the Virgin Islands Charter Yacht League (League) is a trade association of crewed charter (primarily sail) yachts. According to a senior staff member of the League, the League puts on an annual boat show, acts as a liaison with government, does some promotion, assists with the fleet insurance, and acts as a buyers cooperative. All of the yacht charters are individually owned as separate businesses. (Two other organizations on St. Thomas -- Flagship and Charter Services -- are two companies that actually book the charters and keep the calendars for the individual yachts; Caribbean Connections in Tortola, BVI also provides this service.) Membership is approximately 80 vessels, plus there are another approximately 30 day sail boats that are associate members.

It is the impression of League staff that people using chartered yachts do not use the proposed MCD area much, and if there is any use of the area other than for transit between destinations, such as making the transit from St. Croix, "there may be some trolling through the [proposed MCD] area on the way through." As for the most popular routes for locally based charters, "people generally book week-long charters -- go up and around the BVI. [This is at least in part] due to increasing regulations in the U.S.V.I. waters -- particularly the Coast Guard and the 'six-pack' regulations."

It would appear that for this user group, there would not be any significant socioeconomic impacts resulting from the creation of the proposed MCD. Further, it would appear that if trolling were allowed, there would be no impacts whatsoever as this is the only reported use. If more in-depth studies are to be done, such as a Social Impact Assessment, one recommendation in this area would be to do follow-up interviews with the charter booking companies to confirm the information provided by the League.

#### 7.1.4 Aquarists/Artists

Aquarist collectors or aquarists/artists (those who collect fish for aquarium use, or those who collect marine materials for artistic endeavors, such as jewelry making) are mentioned in earlier CFMC documents as possible user groups of the proposed MCD area. According to local DFW staff, there is no aquarium or artistic related collecting in the proposed MCD area at present. While these are not illegal activities, there are no current (required) permits that have been issued for these activities. There is no evidence that this type of collecting is taking place in the area on a non-permit basis either (i.e., this subject was brought up with individuals from several other sectors, and no one offered that they knew of any such activity in that area).

Therefore, given that there is no current use of the proposed MCD area by aquarists/artists, no present socioeconomic impacts to this potential user sector are expected to result from the creation of the proposed MCD.

#### 7.2 RESEARCHERS/SCIENTISTS

As noted in earlier CFMC documents, researchers or scientists represent another potential user group of the proposed MCD. This sector is somewhat different than the other sectors, in that they would be *anticipated* users of the proposed MCD rather than current users of the proposed MCD area. In the words of one local scientist, "the [proposed MCD] would be a valuable tool . . . [and provide] habitats for study" regarding the efficacy of marine conservation districts in general, and in the U.S.V.I. specifically. This individual also noted that the University of the Virgin Islands (UVI) has a field station in Lameshure Bay on the south side of St. John, and it is the only development in the bay, which would mean that the proposed MCD would provide a sort of 'double bonus' to researchers as being offshore of an area that is relatively undeveloped and close to an existing research station. One of the UVI staff members is specifically interested in working on the problem of benefits of reserves and maximizing adjacent fisheries benefits. Again, however, scientists/researchers are not specific users of this area at present. The potential socioeconomic benefits to derive from the proposed MCD would primarily derive from the knowledge gained by this sector and disseminated both within and outside of the sector. It should also be noted, however, that one of the problems that some commercial fishers have with present closures that they have 'agreed' to, such as the red hind bank seasonal closure, have been terribly frustrating for them because there have been no follow-up studies done nor information disseminated back to users. It was the understanding of at least some commercial fishers that the red hind bank closure was a limited-time measure, and that studies would be done concerning its impact on fish stocks and the fishery, and reports would then be given back to the community that would lay out results over time, and a plan formulated for continuation or discontinuation of the closure. That, according to interview data, has not been done, and the closure is now considered permanent (on a seasonal basis). In the words of one commercial fisher:

What really, really made me mad was when they closed the hind bank. [I] volunteered [my] boat and services. [An individual formerly in charge of the project] says they are going to close it for five years, they are going to do studies on it. [So we] stay at home and wait for them to do studies. They have never done them. It is past the five years, and now they say it will never be open again. We tried to work with them, and we got hurt big time . . . [he went on to relate several personally revealing disappointments] . . . I was at the meeting when they closed the conch [it likewise was to be for] five years. We were assured that they were going to do studies, they were going to reseed banks, they got \$30,000 check, but they couldn't find it. I don't trust them. After Hugo, I tried to call an emergency meeting to help the fishermen. [The response of the regulator in charge] was 'we are thinking of having a moratorium on fishing because the ocean was so damaged.' [As for] lost gear, they were going to pull a submarine behind a boat to try and find them [the lost traps], this was another thing that never happened . . . same thing with the turtle. It has been closed for 20 years, [and we asked] what about opening it for one month a year? The response was, 'son, you are never going to eat a legal piece of turtle in your life again.' We were under the impression that they wanted to work with us, but so far we have only gotten screwed. They have not done anything that they have promised to do.

Other fishers now express great support of the hind bank closure, based on their observation of the results of the hind bank closure. For example, one fisher stated: "the hind bank closure has been an extreme asset to the fishers. More hind have moved into the inner banks." Nevertheless, lingering animosity remains over the way it was implemented.

In the case of the proposed MCD, some current users have pointed to the existing lack of (or lack of dissemination of) scientific knowledge (e.g., the impacts of pelagics on reef systems) as a reason they cannot support the proposed MCD (e.g., some sport charter vessels' opposition to the discontinuation of trolling under a reef management plan). This would seem critical in getting support for the proposed MCD, at least among some members of some user groups.

One recommendation for further study/community relations would be to synthesize existing data regarding the efficacy of MCDs, with the resulting information written up in layman's terms, and distributed to the existing user groups and the general public and attentive organizations (see below). Further, it is recommended that, if expanded existing user group support of the proposed MCD is a goal, a series of studies be proposed (and sources of funding secured to support those studies) of the results of the proposed MCD closure were it to occur, with results to be delivered at specific times. Additionally, if there is merit to the idea of rotating closures (i.e., closing down one area for a specific period of time, and the opening that area up and closing another), there would be greater current user group support. The scientific/research community could undertake such studies which could prove essential for existing user support because, as noted in several earlier discussions, it is the idea of a

*permanent* closure of a particular area that has led to at least a portion of the resistance from the commercial fishing sector.

Finally, it could safely be stated that implementation of the proposed MCD could prove beneficial to the research/scientific community in the process of studying the efficacy of closures on habitats within the designated area, and on the impacts to commercial fisheries and other uses adjacent to the closed area. A recent paper by a UVI staff member (Nowlis n.d.) represents a step in this direction, but in order for those data to make a difference in the acceptability of proposed MCD to existing users of that area, they must be communicated effectively to those users. The product of this group (researchers/scientists) of potential users could further the development, and act as a model for the evaluation of, additional MCDs in other areas managed by other Fisheries Councils. However, if sources of funding are not in some way linked to the creation of the proposed MCD, there is likely to be less general support of the proposed MCD.

### 7.3 MANAGERS

Managers (local and federal) are mentioned in previous CFMC documents as a sector or group that may be impacted by the creation of the proposed MCD. While not direct 'users' of the proposed MCD area, in the same way some other sectors area, there are likely to be impacts to managers and their agencies if the proposed MCD were created. It would appear from interviews that three of the primary impacts to managers with the creation of the proposed MCD would be the imposition of: (a) an education requirement; (b) a research requirement; and (c) an enforcement requirement.

Interview data from the various sectors of direct users, and primarily the commercial fishing and sport charter fishing sectors, indicate that the idea of the proposed MCD has not been communicated in such a way as to engender support. Part of this problem is the fact that the CFMC does not have a continuous presence (e.g., in the form of a paid staff member) in the Virgin Islands, and therefore the CFMC is seen as an 'outside' organization. In the words of one manager, regarding the "MCD controversy -- [I] feel that it is not so much about the location as it is the way [fishers feel] it was crammed down their throat." Educational challenges for cooperation among several sectors (e.g. sport charter fishers, some commercial fishers, and recreational fishers) would be required if trolling is not allowed in the proposed MCD (i.e., they will bear the brunt of at least some socioeconomic impacts, and at present are not convinced of any link between trolling for pelagics and harm to the reef community -- or efficacy of a MCD closure on conservation on pelagic stocks that are 'passing through,' particularly as the drop-off in the proposed MCD area concentrates those stocks in a way as to make fishing for them from the U.S.V.I. relatively efficient in terms of time and economics). Another educational challenge will be presented if trolling is allowed but other types of fishing are not within the proposed MCD (i.e., why some types of fishing are allowed but others are not), particularly given the fact these various techniques are, to a large degree, differentially pursued by groups or sectors that are ethnically and culturally quite distinct.

In terms of research, this issue has been discussed under the topic of 'researchers/scientists' immediately above, but it will fall to the managers, in part, to see that research programs are adequately designed and funded to meet their needs. This will impose additional burdens on existing staff.

In terms of enforcement, managers during interviews were quite candid regarding the difficulties encountered at present with existing local enforcement, given staffing and funding levels. Fishers also noted that the proposed MCD would be essentially meaningless if it were not more strongly enforced than some of the already existing regulations. Whether there are existing or available personnel and resources to enforce the proposed MCD -- particularly if relatively 'short use' activities such as trolling were not permitted -- is a question that must be answered. The locally (St. Thomas) based Coast Guard unit is a Marine Safety Detachment and is concerned with two primary missions -- inspection of passenger vessels and pollution response (i.e., missions that are more regulatory in nature and oriented toward safety and civil enforcement). Law enforcement (along with search and rescue) for federal waters in the area is handled by the USCG through San Juan.

Establishing costs and other constraints on consistent and effective management and enforcement of the proposed MCD were beyond the scope of this Rapid Evaluation, but it is recommended that this be a follow-up topic if further impact assessment work is to be done. Enforcement plans should also be clearly communicated to the current users of the proposed MCD area, as within at least the commercial fishing and sport charter fishing sectors there were individuals who stated that they would continue to fish the proposed MCD area even if it were established as it is economically important to them and, in their opinion, given the absence of effective enforcement of existing regulations, they do not see how the proposed MCD would be different.

#### 7.4 ENVIRONMENTALLY ATTENTIVE ORGANIZATIONS

Given that the proposed MCD is, at this point, a very political issue, there are a number of locally based (or locally represented) environmental organizations that may bear inclusion in the focus group or other research processes that would accompany a full Social Impact Assessment effort. These groups were all contacted and leadership interviewed for the purposes of this Rapid Socioeconomic Evaluation, but interviews primarily took the form of making this leadership aware of the proposed MCD and obtaining some reading of their level of interest in the participation in the process. Four such groups were identified during fieldwork: (a) The Environmental Association of St. Thomas and St. John; (b) Friends of the Virgin Islands National Park; (c) The League of Women Voters; and (d) The Nature Conservancy. These are each sketched in this section.

#### **7.4.1 Environmental Association of St. Thomas and St. John**

The Environmental Association of St. Thomas and St. John (EAST) is a non-profit organization that grew out of the earlier established Virgin Islands Conservation Society (VICS). VICS was a single organization for all three Virgin Islands, but as is apparently common with volunteer organizations that span all three islands, VICS ended up breaking into two organizations, the St Croix Environmental Association (SEA) and EAST. At present, EAST has an estimated 200+ members, with the large majority of those being from St. Thomas. EAST obtained funding in the recent past for an executive director position, and which has enabled it to grow, perhaps as much as tripling in size over the two to three year period since hiring the executive director.

There are two main thrusts of EAST, according to interview data: (1) public education, which includes activities such as leading trail hikes, and taking out boat trips; and, (2) advocacy, which includes following Coastal Zone Management activities, studying Environmental Assessment reports, and going to the public hearings. EAST also will provide information to the Daily News to keep people informed, such as notifying them about upcoming hearings, and they will also directly contribute to the paper by writing articles of interest to the organization, including marine management issues. To date, EAST has not taken a public stand on the proposed MCD. According to one long-time member, the proposed MCD is the type of thing that the group would typically support, but in this case it would be very difficult to do so as the organization does "not want to stir up people with whom we have cooperative arrangements." In other words, part of the environmental politics in the Virgin Islands, as elsewhere, is forming working relationship with directly impacted groups, and respecting the fact that in the long run, there are some issues it is not worth jeopardizing important working relationships to pursue. Part of the equation for EAST is that most of its membership consists of 'continentals' and they are sensitive to the fact that a number of local direct user groups are very sensitive about having 'outsiders' tell them what they can and cannot do.

As a recommendation for follow-up work on the proposed MCD, EAST has 'happy hour get-togethers' and invites guest speakers to address the membership. This would be one forum for disseminating information to the public, and a specifically attentive public, regarding proposed MCD issues.

#### **7.4.2 Friends of the Virgin Islands National Park**

The Friends of the Virgin Islands National Park (FVINP) is characterized as a 'grass roots' organization comprised of citizens on the Islands as well as people in the States who have a special interest in the park. It is not unique in its organizational structure, as there are an estimated 100 groups similar to the FVINP around the States at the different parks. FVINP currently has approximately 700 members, with about 300 people in the Islands, mostly on St. John, and about 400 people in the States who pay dues every year and are more or less active in the organization as volunteers, or simply support the organization financially. Although FVINP

is focussed exclusively on the VINP itself, they have acted as advocates for the park on issues such as marine reserves. As in other National Parks, there is often an inherent tension between the Park Service and local communities, as when the Park Service implements regulations to protect natural resources under their stewardship, the local communities feel like they are being asked to give up something.

Some of the recent research sponsored by the FVINP has to do with declining fish populations. The organization has a firm belief in marine conservation, and has made a strong recommendation to Park management that they establish a marine reserve in Park waters. FVINP has published position papers about marine reserves in the local paper, and are "trying to educate the public that it really makes sense to establish a no take zone so there will be fish for future generations of St. John fishermen" (who, as noted in the St. John commercial fishery sector discussion, tend to fish inshore). According to a staff member: "Marine reserves work. Certain populations of the species here are on the verge of collapse -- certain of the snappers and groupers. They are the primary food fishes [and] they are almost gone. Every month and year that we wait makes it worse. Time is of the essence, we are pushing like crazy." The FVINP put together a video recently (1996) titled "Reserve the Future" for educating managers and the public why it is important to "turn things around . . . not just overfishing but run-off, sediment, pollution -- things that are destroying the reefs and fish populations."

While the FVINP are not concerned directly with the area of the proposed MCD, it is recommended as an attentive organization they be kept apprised of the issue. They have dealt with the public in general, and fishers specifically, on the issue of marine reserves near St. John. As a relatively large organization, they would be one more means of effectively communicating information to the public in general, and a specifically interested public in particular.

#### **7.4.3 League of Women Voters**

The League of Women Voters is another locally represented organization that has been attentive to environmental issues over the years. Membership has fluctuated over the years, and it is estimated that the League has less than 100 members at present (late 1996), which is down from the recent past. Although the League has not taken a formal stand on the proposed MCD, they have been attentive to marine issues in general, and supported the existing marine sanctuary (St. Thomas) when it was in the planning stages. They have also worked on lagoon issues and, like EAST, they have been fighting the Port Authority on the extensive fill and development of the Red Hook area. The League has been active in Coastal Zone Management issues in the past.

As for public information dissemination, the League at present mainly does press releases and guest editorials for the local newspaper. According to one long time member, "fishermen here have begun to realize that they are going to have to bite the bullet, but at the same time they feel if we comment . . . [the] League is butting in, so I attend the meetings and hearings [to keep abreast of developments], but usually don't say anything."

Like the EAST, the League of Women Voters is an organization that is attentive to the issues of the proposed MCD. It is recommended that the League be kept informed of developments regarding the proposed MCD as yet another outlet for the dissemination of information to an interested group and the general public.

#### **7.4.4 Nature Conservancy**

The Nature Conservancy (TNC) is "a classic land trust organization" and is "not an advocate" organization on specific environmental oriented proposals. On the other hand, TNC has done ecoregional surveys and is interested in the issue of marine reserves. For the proposed MCD they are "interested in being involved with conducting research." The local organization typically works through the Marine Science Center (Florida) and have been involved with the Caribbean coral reef initiative. While St. Croix is currently their focus in this area, where they are looking at spawning habitats in the process of prioritizing areas for fisheries and marine reserves, they "would be especially interested in the proposed MCD area if that is what it is [i.e., a spawning habitat]." TNC has been involved with the University of Miami in the ecoregional mapping program, and they are interested in linking coastal with marine biodiversity, where "there is a real need to think at least subregionally in projects."

Like the other environmentally oriented groups, TNC would be an organization to keep apprised of proposed MCD developments as they could be one more conduit to a particularly interested public outside of the current user groups of the area.

### **7.5 OTHER ATTENTIVE ORGANIZATIONS**

In addition to environmentally oriented organizations, there are other locally represented organizations that have a potential stake in the potential impacts of the proposed MCD. These include industry and business organizations, and those are sketched in this section.

#### **7.5.1 St. Thomas, St. John Chamber of Commerce**

The St. Thomas, St. John Chamber of Commerce (Chamber) did not prove to be a source of economic data as anticipated, as they funnel their information through the Bureau of Economic Research. However, as an organization, they are interested in the potential economic impacts of the proposed MCD. Specifically, in the words of a senior staff member, "if it were the bottomfish at issue, there would be no economic impact [to the people the Chamber represents]. If there were regulation of the sport charter fleet, that would be a negative economic impact [to Chamber constituents]."

The Chamber is interested in seeing the final proposed MCD regulation package, and "then the Chamber might take a stand -- yes, no, or take no stand." Essentially, the Chamber is interested in keeping abreast of the proposed MCD as it is more closely specified. The Chamber also



represents a good source of entry into the business community should further economic impact work be done under a Social Impact Assessment or similar effort. Senior staff offered to provide introductions to specific member businesses that may feel direct or indirect economic impacts beyond the direct area users, were such follow-up work to be done.

### **7.5.2 St. Thomas St. John Hotel Association**

According to senior staff, primary objective of the St. Thomas St. John Hotel Association (Association) is lobbying for its members with all three branches of government. They also do extensive marketing and tourism education and involvement. The Association "represents 95% of all properties on the Islands, and members range in from four bedrooms up to the Marriott." Membership also includes condos, and all sorts of other properties. There is also a category of "allied members." These businesses are the "subsidiary base for tourism. There are direct tourism related businesses, like the shops, and indirect[ly] related [enterprises], like food service, business supplies, and so on."

The Association holds a monthly membership meeting for the general membership, and it was suggested by staff that this may be a good forum to present information on and discuss the proposed MCD and its potential impacts with members. Association staff offered to facilitate this presentation. If a Social Impact Assessment effort is to be conducted, it is recommended that this be followed up upon and, if this is not feasible, use the Association membership rolls to help construct a sampling frame for the assessment of direct and indirect economic impacts on tourism oriented businesses.

### **7.5.3 Virgin Islands Marine Industries Association**

The Virgin Islands Marine Industries Association (VIMI) consists of land based businesses that are marine oriented. VIMI itself typically deals with legislation that may impact its members. Members include businesses that are directly marine related, such as repair facilities, brokers, etc., but it also includes businesses that are less directly associated with marine activities, such as cell phones, advertising and insurance (i.e., businesses that have a marine component). There are currently approximately 100 members of VIMI, and it was suggested by VIMI staff that the creation of the proposed MCD may directly impact two categories of VIMI members -- dive boats and sport fishing charters (which are detailed in their own sector descriptions above).

Like a number of other sectors, the marine industries were hard hit by Hurricane Marilyn. According to a senior staff member, "we used to say that we were responsible for 3,000 employees. That is down to [about] 1,500 now." Other difficulties in the U.S.V.I. business environment were cited for the decline as well, and specifically in the charter boat industry. According to staff, a number of member charter boats have moved to Tortola because of a less complex and expensive regulatory environment and "when you figure that the local multiplier for money coming in for the charter boats and similar businesses is seven -- that is a huge amount, plus the 4% gross receipts tax that is paid."

VIMI represents another entre into the business community (primarily other than direct area users) that may be impacted directly or indirectly by the creation of the proposed MCD. It is recommended that if further work such as a full Social Impact Assessment is done, this would be a good starting point to profile the various aspects of the marine industries that may feel direct or indirect socioeconomic impacts.

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## **Appendix A:**

### **Marine Protected Areas in the Caribbean**

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## A.0 Marine Protected Areas in the Caribbean

This appendix provides an overview of marine protected areas in the Caribbean. The following appendix provides a review of conservation issues in the U.S.V.I. in particular.

### A.1 Context

Marine and coastal resource management in the Caribbean has traditionally largely been on an *ad hoc* basis through a sectoral government structure in which activities were managed by a range of agencies. This system is exemplified in the case of coastal management in Antigua where activities are managed by the Antigua and Barbuda Government through a fragmented network of legislation and a sectoral government structure consisting of ten government agencies within five separate ministries (Bunce in press). The management system for Antigua's coastal resources are not unique in the Caribbean, where development pressures have expanded faster than conservation interests. Within the Eastern Caribbean, less than 21% of the nations have comprehensive coastal management programs (Nicholas and Siirila 1994).

As marine resource conditions have deteriorated, there has been growing interest in establishing comprehensive management programs for ensuring long-term sustainable use and conservation of these resources. During the past twenty years there has been an increasing interest in establishing marine protected areas as a means of conserving particularly valuable ecosystems. The increase in MPAs is also a reflection of increasing focus on developing "integrated coastal zone management" programs, which are based on interagency and intersectoral coordination and public participation. This comprehensive, integrated approach is exemplified in Barbados where a Coastal Conservation Unit was established to design and implement an effective, comprehensive Coastal Zone Management Plan for the island. In doing so the Unit coordinates with the various government agencies responsible for managing activities affecting the coastal environment, such as coastal development and fisheries, and works closely with the relevant stakeholder groups seeking advice and collaborative assistance.

Largely as a result of the increased interest in marine conservation and sustainable use, there are currently 96 marine protected areas and 58 coastal protected areas (that lack a subtidal component) in the Caribbean (OAS/NPS 1988). Yet, despite this increased interest and legislation to establish management programs, these efforts have met with varying success and failures resulting in a large number of paper parks and continued fragmented, *ad hoc* coastal management efforts throughout the region. Of the 154 marine and/or coastal protected areas, two-thirds are not achieving full management capacity (OAS/NPS 1988).

The question then arises, "Why have some programs succeeded while others failed?" In order to address this question, this review first briefly highlights a few well known and respected programs that illustrate the diversity of goals, institutional frameworks and management approaches that have been used to effectively manage MPAs. This review then considers the major factors affecting their success.

## A.2 Examples of Effective MPAs

Perhaps the MPA most illustrative of the concept of a truly integrated management process is the Soufriere Marine Management Area (SMMA) which was established through a process of participatory planning and conflict resolution with the objectives of compatible development and conservation. All stakeholders were involved in the planning process, including the dive operators, hotel owners, fishermen and yachtsmen, a local nongovernmental organization (the Soufriere Regional Development Foundation) and the St. Lucia Fisheries Department. Legally mandated in 1995, the SMMA is managed by the Soufriere Regional Development Foundation, acting under the authority of the Department of Fisheries of the Ministry of Agriculture.

Similar to the SMMA, the Saba Marine Park and the British Virgin Islands National Parks are managed by nongovernmental organizations, the Netherlands Antilles Parks Foundation (STINAPA) and BVI National Parks Trust, respectively. Established in 1987, the Saba Marine Park objectives are designed "to preserve and manage Saba's marine resources for the benefit and enjoyment of the people, in perpetuity." The Park boundaries extend around the entire 10 sq mi island from the high water mark to 200 ft depth and include anchorage, multiple use (fishing and diving), recreational diving (no fishing, no anchoring) and all-purpose recreational zones. In contrast to the Saba Marine Park, the BVI National Trust (BVINT) manages 15 national parks, only 2 of which are marine. The BVINT was established in 1961 "to conserve, manage and promote natural and cultural areas in ways that will contribute to the improvement in the quality of life in the British Virgin Islands." The BVINT is well known for having worked closely with local dive operators to install and monitor mooring systems at the marine parks. Although both STINAPA and BVINT are nongovernmental organizations, they are financially supported in part by the Saba and British Virgin Islands governments, respectively.

In contrast to the aforementioned MPAs, Hol Chan Marine Reserve and the U.S. Virgin Islands National Park are managed by the Belize and United States governments, respectively. Hol Chan, which was established in 1987, is managed by the Belize Fisheries Department. Although managed by the government, the establishment of the reserve was strongly facilitated by the support and involvement of surrounding community members of San Pedro, agreements with the fishermen cooperative and local tour guides, and funding from several international organizations. The U.S. Virgin Islands National Park is part of the U.S. National Park Service and supports multiple, controlled usage within its terrestrial and marine park boundaries, including hotel development, fishing and boating. The USVINP has one of the most extensive management programs in the Caribbean, including a management body and a research facility. Due to its proximity to the United States mainland and its U.S. territorial status, St. John is under intense visitor usage (please refer to Appendix B for a more detailed discussion of U.S.V.I. management history).



### A.3 Major Factors Affecting MPAs

Review of MPAs in the Caribbean indicates that there are several major factors affecting the success of MPAs. The major factors often cited in assessments of marine management programs include lack of information, training and funding and the low priority of marine conservation issues relative to other development concerns (Kelleher 1995; van't Hoff 1994; Knausenberger and Fleming 1986). Two factors critical to MPA success that are particularly relevant in the case of the MCD are stakeholder participation in the management process and consideration of the socioeconomic impacts of management strategies.

#### A.3.1 Stakeholder Participation

One of the most important and common factors affecting MPAs is involvement of those organizations and individuals who will be affected by the MPA management program strategies (including regulations, education and monitoring efforts) in the decision-making process. As Kenchington and Crawford (1993) noted, successful marine and coastal management requires, "above all, political, administrative, and stakeholder will and commitment to implement the strategy," emphasizing the critical role of all stakeholders, including non-government organizations and individuals in the management process. More specifically, stakeholder participation is important because, as described in a recent World Resources Institute publication on environmental policy-making:

1. It brings into decision-making more information and a wider range of experiences - both of which contribute to the elaboration of more realistic policies and projects;
2. It helps gather political support for and reduce opposition to policy proposals, projects, and other decisions by building in stakeholders; and,
3. It builds local capacities and makes implementation easier (Zazueta 1995).

Stakeholder involvement in MPA management ranges from participation in environmental education programs to cooperative efforts with the government. Environmental education efforts are relatively straightforward and included in virtually all protected area management programs. For example, the USVINP has educational programs that range from educational brochures for tourists to elaborate puppet shows for the community children. This component is important in developing awareness and support for management programs, however, it does not take advantage of the stakeholders resources by directly involving them in the management process.

Cooperative management efforts between stakeholders and the government exist at some level in most countries. These efforts include: 1) providing input at public hearings; 2) participating on advisory panels; 3) providing direct input in management decisions; and 4) assisting in the implementation phase. In some countries, stakeholders have the opportunity to voice their concerns and raise questions at public hearings. For example, VINP holds public hearings regarding its proposed management plans. Representation on advisory bodies is a more

continuous means of involvement. For example, Saba Marine Park is directed by an advisory board with representatives from relevant stakeholder groups. Direct input in management decisions is less common and exemplified by the wide range of stakeholders who worked together to establish the Soufriere zoning plan. Finally, stakeholders can assist in implementing management programs, as illustrated by the Dive Operators Association which assisted in installing, monitoring and maintaining the moorings in the BVINPs. The various means of stakeholder involvement demonstrate that stakeholders can play a critical role in developing fair, well informed management programs.

### A.3.2 Socioeconomic Impacts

Another important factor involved in the success of MPAs is the socioeconomic impacts of management strategies. The management process is strongly affected by social, economic and political processes indicating that the socioeconomic conditions and potential impacts are important considerations in the management process (Orbach and Johnson 1989). As Cerena (1985: 323) commented, "Not only does a failure to consider the social or cultural context of a project invite inappropriate design at best (and user hostility at worst), but . . . it usually leads to projects that are ultimately ineffective, wanted neither by their supposed beneficiaries nor by the investing public agencies". Further, a comprehensive understanding of the socioeconomic basis of stakeholder groups facilitates incorporation of these groups' concerns and interests into the management process. The importance of considering socioeconomic impacts was demonstrated in an ex post examination of 68 World Bank projects in which Kottak (1985: 350) found that 32 projects deemed socioculturally compatible had an economic rate of return twice that of the projects deficient in sociocultural compatibility. As theorists and practitioners have come to appreciate that management plans based on sound biological data are not sufficient for developing effective reef conservation efforts, there has been a growing recognition of the important role of stakeholder demographics, perceptions, and resource use patterns in determining effective management strategies (White 1989; White et al. 1994).

Despite this recognition of the importance of considering socioeconomics in developing marine management programs, the specific impacts of management strategies on socioeconomic conditions (particularly social systems) have not been well documented. However, there is a widespread belief that the existence of national parks promotes tourism and that protection of marine species and habitats can provide other economic benefits such as higher fisheries yields. Many of the new national parks in the region are being developed to promote tourism and stimulate the local economy by providing new options for local communities. The Saba Marine Park was established in large part because the Saba government was interested in promoting diving tourism, the economic benefits of which were considered to outweigh the loss of fishing territories to the few fishermen who used the area. Similarly, the Curacao Underwater Park was developed in part to stimulate dive tourism on the island, on the premise that the existence of an underwater park would attract North American divers, who expect dive destinations to be pristine, beautiful, and well managed (Knausenberger and Fleming 1986).

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## **Appendix B:**

### **Background of Protected Areas in the USVI**

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## B.0 Background of Protected Areas in the USVI: Overview

### B.1 Overview

The idea of a Virgin Islands territorial system of parks and reserves is not a new one as it goes back for its beginnings to the years immediately after the end of World War II. On the other hand it has never been a vastly popular notion amongst the resident citizenry. Perhaps this arises as a cultural residual out of the colonial estate system of land ownership where historically very little land was in public hands. This made it more difficult to convert unique natural landscape features and wildlife habitat into protected areas of one kind or another. Most land is privately owned. And many land owning Virgin Islanders (including traditional resource users with presumed proprietary rights) are uniformly skeptical about any prospective constraint to private development that would diminish appreciating land values or restrict free access.

Many other residents, especially on the larger islands of St. Thomas and St. Croix, have in recent decades remained passively neutral while more vocal "conservation-literate" newcomers, or "expats" have become increasingly outspoken about their concern over the cumulative impacts of accelerating development on the environment and landscape. This group, in the best tradition of sound land use planning, has seen a continuing need to select, set aside and protect the very best from among the special natural scenic areas and historic sites. Of particular concern has been those coastal areas with unique or remarkable aesthetic, educational and recreational value.

Unfortunately most of these areas are in private ownership and subject to the vagaries of both the market in land and the Virgin Island's flexible rezoning procedures.

### B.2 Early efforts to identify important sites

Over the past forty years or so there have been at least ten attempts in the Territory to identify, list, publicize and gain public approval for setting aside "valuable," ecologically important or otherwise remarkable landscape and later seascape and even submerged land features as high priority candidates for inclusion in a territorial system of parks, recreation areas or reserves of one kind or another. All more or less failed to get much beyond the list state. The few exceptions are described in the following section. Initially the conservation focus was on historic sites, but especially after NEPA and the CZM Act in the early 1970's, which included the Territory within their jurisdiction, the emphasis switched to endangered species habitats, special natural areas (SNA's), wetlands, beaches, mangrove lagoons and singular or clustered offshore picturesque islets or cays including their surrounding marine environments. Admittedly, however, the local driving force was less on saving a valuable site and more on heading off an impending ill-advised or worse planned development scheme under the guise of landscape integrity or coastal water quality. It was a principally reactive process in the face of policy driven, investment financed, accelerated development.

### B.3 Why territorial park and reserve development lags behind other growth

But well intended resource inventories, plans and conservation initiatives, some by different U.S. government agencies, some by units of the local government, some by private environmental organizations have mostly come to naught, perceived by the political leadership and the electorate as a nice but naive idea and hardly a workable and fundable agenda. In fact, for over forty years this has been a nearly uniform failed facet of the Virgin Islands' otherwise extraordinary record of growth since the early 1950's. Why is this the case?

In brief, part of the problem arises from the real or perceived anti-development stance taken by many early advocates of protected areas. Their conservation concerns about the adverse impacts of rapid growth, urban sprawl, and their hostility towards many marginal, hastily concocted and environmentally risky development projects were seen as quite unrealistic. While intrinsically legitimate and defensible they were also, especially in the 1950's and 1960's, oblivious of the demonstration effects of tourism and television given an anemic local economy and a depressed, impoverished working class.

Anti-development environmentalism was often perceived as obstructionist, elitist and insensitive to the real interests of native Virgin Islanders, landowners, and the need of the poor. Working people with fresh memories of long periods of marginal existence, unemployment and underemployment, often with genuine hardship and little prospect of a job are not likely to embrace the arguments of those who appear to favor no growth and who want to impose a host of new regulations closing off traditional access to *de facto* "common property" landscape features.

It is noteworthy that the first two protected areas of any significance in the Virgin Islands were conceived and created by wealthy outsiders who purchased the properties in question--Arthur S. Fairchild's gift of Magens Bay in 1945 and Laurance S. Rockefeller's gift of the St. John National Park a decade or so later in 1956. Both areas later were to include marine features.

But, in retrospect, it is even more significant that the philanthropic precedent of Laurance Rockefeller's purchase of over half the land area of St. John in the early 1950's in the Virgin Islands actually had an unanticipated negative effect within the territory. The size of the area and the scale of the gift provided an excuse to those in and out of government who thereafter saw little need for setting aside any additional "park" land. Worse still Rockefeller's windfall generosity gave false encouragement to those who thereafter saw no need to invest any public funds whatsoever in land protection schemes, preferring to wait for other private sector philanthropist donors to appear on the horizon, checkbook in hand.

And over the years a few donors did, in fact, come along and give land to the government to be kept as open space or used for the public good. The community is indebted to Fairleigh Dickensen for the large parcel north of Isaac's Bay on St. Croix's East End and to David Violet for his gift of Cass Cay at the False Entrance to the St. Thomas Mangrove Lagoon. There were a few others like Henry Reichold who twice gave land for educational use and Warren Corning at Botany Bay who cared about sea bird nesting sites. And on St. Thomas, the Paiwonsky brothers.

Ralph and Isadore, were later to donate most of Hassel Island for inclusion in the Virgin Island National Park.

But such special purpose private sector gifts of land came only on a very irregular basis and mostly in bits and pieces. They seldom addressed what was really needed, however, for the prevention of misuse of the provision recreational space or the protection of unique natural systems and features in the territory and which were rapidly being diminished in scope and quality by the pace and adverse impact of development. Some observers say there would have been many more donations if even a semblance of a proper management system had been put in place by the local government. This was not even discussed until the mid 1970's.

#### B.4 Preliminary steps

For these and other reasons the grand idea of designing and establishing a "Territorial" version of the North American state or county park system model has consistently proven to be both difficult and elusive in the Territory. What was repeatedly discussed openly and publicly as desirable had continued to be politically beyond reach. The concept, historically speaking, has, in the past twenty years, had only a few bona fide patrons in the political arena. One of these was Governor John Merwin who assisted the Department of Interior in the late 1950's with the first serious resource assessment of potential sites for a system of natural recreation areas. The federally funded, well researched and well illustrated officially published report describing sites warranting inclusion in a territorial park system is virtually a rare book and known by only a few.

Eight years later another Department of Interior sponsored study, entitled The Islands - Selected Resources of the United States Virgin Islands was developed by a visiting landscape architect, Dr. Irv Zube, who paid special attention to the islands' coastal features. And within the three years the previously ignored marine environment rapidly caught the fancy as a subject of concern of the new College of the Virgin Islands, of the Legislature, of the Department of the Interior and the local National Park.

- In 1969 the Legislature lent support to a pair of Interior Sponsored "Man in the Sea" research projects on St. John called Tektite which concluded that coral reefs and other living species "underwater" were some of the island's most important assets.
- A citizen based study group based at the local College produced "The Virgin Islands and the Sea" (1970) which contained a variety of policy recommendations concerning the use and improved management including conservation of marine and coastal resources within the Territory. This included a call for coastal area management.
- The Governor proclaimed 1970 the "Virgin Islands Year of Ocean Resource Development," forming a Marine Resources Council that later faded away.

## B.5 Modest policy advances in resource management

The next four years (1970-1974) saw various seemingly successful initiatives dealing with natural resources in the islands, some of which were subsequently undone by events and three of which became a more or less permanent part of the political landscape.

- Governor Ralph Paiwonsky had previously taken the lead with searching for ways to obtain more land for public use and open space. With the help of Stanley Cain (Interior) he set up the ingenious but short lived and now defunct Hess Oil Conservation Fund to purchase potential park land and open space before further development drove up prices and key sites were lost. This was funded by a small royalty paid by Hess on each barrel of crude oil imported by the refinery on St. Croix. However, Paiwonsky, an appointed Democrat, was shortly thereafter forced from office by the Nixon Republicans, the arrangement with Hess abandoned and the fund dismantled. No significant park lands were ever purchased under its provisions. Its appointed advisory board never met!
- Act 3330, Commercial Fishing Promotion was passed in 1972 and survives to this day, with some amendments and revised regulation. The act recognized the importance of the marine habitats, of fishing and the need for a fishery management program.
- Almost out of the blue, the 1972 Senate Act No. 3190 established a "Territorial Park System". The objectives of the Act, sponsored by then Senator Virdin Brown, were to "preserve and enhance landscapes and seascapes typical of the Virgin Islands, the habitats of wildlife and sea life and historical and archaeological sites." Unfortunately, this Act also reorganized the relatively new Department of Conservation and Cultural Affairs (predecessor to the current Department of Planning and Natural Resources). But the administration of Governor Melvin Evans was not interested in the suggested administrative reorganization of DCCA and, apart from some serious planning, nothing happened. It was, in retrospect, a capital idea whose time had not yet come.
- Submerged lands within the three mile boundary limit were transferred by the Federal Government to the Territorial Government (Act No. 3667 entitled Trustlands Occupancy and Alteration Control Act). One objective of this act was to place in-shore dredging activity under local monitoring and regulatory control. Federal oversight had proven insufficient.
- In 1974 the Federal Coastal Zone Management Act was modified just prior to passage to include the Territory of the Virgin Islands. [the local Coastal Zone Management Act was to be four years in the making--see below under 1978]

## B.6 First steps towards a system of parks and reserves

Two years later, however, the prospects of implementing Act No. 3190 looked much better when Virdin Brown was appointed Commissioner of Conservation under the newly elected ICM



Governor Cyril E. King. By 1976 Commissioner Brown, assisted by two of his staff, Bob Mathes, who headed Planning and Development and Tim Still, a park planner, prepared and circulated a full fledged work plan for implementing the long awaited territorial park system. The work program anticipated

. . . planning and developing the park system in an environment of scarce resources and a climate of cooperation. A first class, multi-faceted park system is the goal, comprehending conservationist, recreational, educational and managerial roles. (Brown Memo 22 Nov. 1976)

In early 1977 additional plans were developed for a network of marine reserve sites within the territorial park system and for a formal in house DCCA staff training program to be run by the National Park Service under a cooperative MOU.

#### B.7 The Coastal Zone Management alternative: fact or fiction

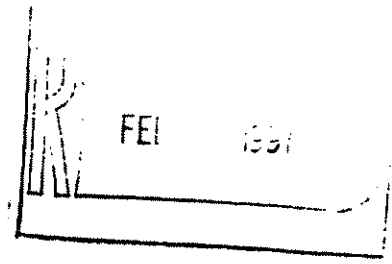
All of DCCA's carefully laid plans were first delayed and then aborted by the sudden illness and untimely death of Governor King. His successor, Juan Luis was not seriously interested in the territorial park system concept and the focus shifted to implementing the relatively new Federally sponsored and funded Virgin Island Coastal Zone management program. For those worried about prospective park sites believed to be at risk, the CZM planning initiative appeared to offer some hope of improved management strategies for selected coastal "areas of particular concern" (APC's) and "special natural areas" (SNA's).

#### B.8 Missing planning and management tools

But for various reasons, DCCA was unsuccessful in moving forward with the idea of developing systemic elements of potential parks and protected areas in the Territory and none of the draft APC and SNA management plans developed between 1978 and 1980 were completed at the time. A decade would pass before the subject would be approached a second time. In the meanwhile, fisheries, wetlands, beaches, historic sites, and harbors and salt ponds etc. would do without the policy guidance, management standards and protection programs normally associated with coastal resource management programs.

#### B.9 "Winds" of change

But times and priorities do change. In more recent years, now a decade and a half later, the collective impacts of continuing development, overfishing, sediment discharge from the land, and marine pollution have begun to raise new management questions. Among resource managers and some government leaders there is a new focus on the need to protect some aspects of islands coastal and marine resource base so the remainder may prosper.



February 27, 1997

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Caribbean Fishery Management Council  
268 Avenue Munoz Rivera, Suite 1108  
San Juan, Puerto Rico 00918-2577  
*via facsimile transmission to (787) 766-6239 (one page follows)*

Dear Mr. Rolon:

Today I discovered that the last page of the report (i.e., the last page of Dr. Towle's Appendix B) had inadvertently been left out of the full copy of the report you received yesterday. The page that follows is a facsimile of the missing page (page 109), and I am sending you an original copy of the page via regular mail.

I apologize for any inconvenience that this will cause you.

Sincerely,

Michael A. Downs, Ph.D.  
Vice President, Impact Assessment, Inc.

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E-File

The decade of the 1980s saw the beginning of a change in perspective among some Virgin Islanders regarding the efficacy of landscape and coastal resource conservation. Some of the high points which led up to more formal mechanisms of protection -- especially marine reserves -- are listed here without comment, as it is premature to weigh their individual significance:

- A. Although no action had been taken on the 1972 Territorial Parks Act, a staff member of the DCAA, John Alexander, completed preparation of a policies and standards document for a Virgin Islands Park System. One noteworthy feature was that the water areas of the proposed parks like Magens Bay, the Mangrove Lagoon and Salt River were clearly included within official "Park" boundaries.
- B. Under the US Marine Sanctuaries Act, and following up on a previous study, descriptions and boundaries of four proposed VI sanctuaries were circulated for local comments on four sites: Salt River and East End. (St. Croix), and Hersey Bay and Saba Island/Perseverance Bay. (St. Thomas). Hearings and an impact assessment were followed by opposition from selected fishermen. The project was aborted.
- C. In 1983, DCCA circulated a much expanded and improved earlier draft of "Proposed Rules and Regulations For Territorial Marine Parks and Reserves." They were filed.
- D. September, 1989 brought Hurricane Hugo and severe damage to many coastal ecosystems and the fishing industry. The trauma of the storm had enormous impact and led to serious discussion about recovery and mitigation strategies as well as new management options. Only two months after Hugo, the Division of Fish and Wildlife and the VI Senate's Natural Resources Committee discussed major changes in the fishery law and simultaneous closure of nine reef and thirteen sea grass areas to accelerate recovery. These discussions were carried over to the new decade.

#### B.10 Marine Reserves and Wildlife Sanctuaries Become a Reality

By August of 1990, new Rules and Regulations for a new Virgin Islands Marine Reserve System were circulated by the Division of Fish and Wildlife. The protected sites were mostly coastal inshore areas drawn only from St. Thomas which, in retrospect, was a tactical error. The recovery scheme and proposed reserve system was not approved.

But beginning in 1992, using authority granted to the Commissioner of Planning and Natural Resources to designate and manage marine reserves and wildlife sanctuaries (Chapter 1, Set .94, Title 12, VI Code), a new strategy effected three new Marine Reserve and Wildlife Sanctuaries on St. Thomas (with Rules and Regulation):

- Compass Point Pond at Benner Bay;
- Cas Cay/Mangrove Lagoon; and,
- St. James Marine Reserve and Wildlife Sanctuary.

In July, 1996 an additional Virgin Islands Marine Reserve and Wildlife Reserve was established at Salt River on St. Croix.