

St. Thomas Fishermen's Association: Protecting St. Thomas & St. John Natural Heritage and Culture through Participatory Management

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ABSTRACT

This article summarizes the genesis of the St. Thomas Fishermen's Association (STFA) and its efforts to become involved in actively managing the commercial fisheries in the U.S. Virgin Islands. In January of 2005 the Caribbean Fisheries Management Council (CFMC) Sustainable Fisheries Act Amendment, proposed management measures which included closure of 240 square kilometers (93 square miles) of Virgin Islands shelf to fishing and seasonal closures for a number of species. The STFA came into being in order to oppose these measures which its members felt were not justified on the basis of the state of Virgin Islands fishery resources. The STFA was largely successful in negotiating with the CFMC to reduce closed areas and postpone species closures until further research is conducted. At the same time they came to recognize that information necessary to properly manage Virgin Islands fishery resources was insufficient and that continued ignorance could lead to further restrictive management proposals. Rather than wait for the territorial government to conduct this research, the organization established committees to gather information from its members necessary to develop sound fishery management proposals for local fisheries. The STFA has developed research programs and secured NOAA and other sources to study the fisheries on their own. This scientific information, along with the historical knowledge from generations of fishing, puts the STFA in a unique position to participate in fisheries resource management. Further, the STFA has now been included in the decision-making councils, the St. Thomas/St. John Fishery Advisory Council and the Caribbean Fisheries Management Council. This article will detail how fisheries management in St. Thomas/St. John is changing because of the efforts of the STFA and benefits of participatory management.

KEY WORDS: Fisheries, Participatory Management, US Caribbean

La Asociación de Pescadores de St. Thomas: protegiendo la herencia natural y cultura de St. Thomas y St. John por medio de manejo participativo

Este artículo resume el la evolución/formación de la Asociación de Pescadores de St. Thomas (STFA) y sus esfuerzos por ocupar un rol activo en el manejo de la pesca comercial en Las Islas Vírgenes de los EEUU. En enero de 2005 a través de una Enmienda al Acto de Pesca Sostenible, el Consejo de Manejo de la Pesquería del Caribe (CFMC) propuso medidas de manejo que incluyen el cierre de 240 kilómetros cuadrados (93 millas cuadradas) de plataforma de Las Islas Vírgenes, para la pesca y cierres estacionales para varias especies. La STFA fue formada con el objetivo de oponer estas medidas, ya que sus miembros no las consideraban justificadas dado el estado de los recursos pesqueros de Las Islas Vírgenes. La STFA fue exitosa en negociar con la CFMC para reducir áreas cerradas y posponer los cierres de pesca de especies particulares hasta que se realice más investigación. Al mismo tiempo, reconoció que la información necesaria para manejar apropiadamente los recursos pesqueros de Las Islas Vírgenes era insuficiente y que continuar con tal ignorancia puede llevar más propuestas de manejo restrictivo. Antesque esperar a que el gobierno territorial condujera la investigación necesaria, la organización estableció comités para juntar información de sus miembros, y recopilar los datos necesarios para desarrollar las propuestas robustas de manejo de la pesca local. La STFA ha desarrollado programas de investigación y obtuvo fondos de la Administración Nacional de Oceanos y Atmósfera de los EEUU (NOAA) y otras fuentes para estudiar la pesca independientemente. Esta información científica, junto con el conocimiento histórico de generaciones de pescadores, pone a la STFA en una posición única para participar en la administración de recursos pesqueros. Además, la STFA ha sido incluida en organismos oficiales de toma de decisiones, en el Consejo de St. Thomas/St. John y el Consejo de Manejo de las Pesquerías del Caribe. Este artículo detalla cómo el manejo de pesquería en St. Thomas/St. John está cambiando a través del esfuerzo de la STFA y los beneficios del manejo participativo.

PALABRAS CLAVES: las pesquerías, manejo participatório, Caribe de EEUU

INTRODUCTION

Background

In late 2004, St. Thomas fishermen were faced with proposals by the Caribbean Fishery Management Council (CFMC) for closure of up to 93 square miles of shelf area to fishing as well as a number of species-specific closures

for key elements of the landings. In addition, the CFMC had proposals for elimination of trap and net fishing from landings for that species. This very specific instance of overfishing has been repeatedly used to infer that the entire shelf fishing is subjected to similar pressure. Such references continue to appear to this day (Agar, et al., 2005).

Federal waters (CFMC, 2005). These proposals were contained in an extensive 700 page amendment to CFMC management plans which incorporated additional restrictions in other lengthy documents by reference (CFMC, 2004). The given reasons for these extreme measures were serious or “suspected” overfishing which, although entirely undocumented, was referenced 533 times in the primary document.

Faced with the elimination of a traditional lifestyle and important food production industry, St. Thomas fishermen came together to dispute the information upon which the Council decisions were being made and to involve themselves more directly in fishery management activities which affected their livelihoods. The resulting St. Thomas Fishermen’s Association (STFA) has rallied not only fishermen themselves but also the Virgin Islands community to defend a traditional way of life and important traditional element of the local diet.

As a result of STFA activities, an absence of data in the CFMC document, and questionable compliance with National Standards for Fishery Management Plans, the STFA and CFMC negotiated revisions to the original plan which focused more on traditional fishery management tools rather than elimination of fishing.

The STFA has recognized that simple opposition to fishery management is not likely to be a successful strategy to insure future livelihoods. Instead, the organization has actively involved itself at every level of the management process to ensure both resource sustainability and economic needs are met. For example:

- Three STFA members have been appointed to the CFMC Advisory Panel
- One STFA member has been appointed to the CFMC Scientific and Statistical Panel.
- STFA President, Jimmy Magner has been appointed as Chairman of the newly appointed CFMC Industry Panel.
- Three STFA members have been appointed to the Territorial Fishery Advisory Committee which contained no commercial fishermen prior to the appointment.
- STFA has received NOAA funding under the Marine Fisheries Initiative to study by catch from local fisheries.
- STFA, in conjunction with MRAG Americas has completed a detailed study of landings and by catch in St. Thomas.
- STFA currently has proposals submitted to the Cooperative Research Program and Marine Fisheries Initiative:

- ◊ Yellowtail snapper (*Ocyurus chrysurus*) tag and recapture studies.
- ◊ Size-Frequency studies of CFMC recently regulated species.
- ◊ Socio-economic impacts of closures upon fishermen and fishing effort.
- ◊ Development of management alternatives by STFA members.
- ◊ Outreach including a web page and continued publication of the “Olewife” newsletter.
- ◊ Publication of a Quarterly newsletter.

STFA has carried out three fund raising events attended by 5,000 participants and which raised \$12,000 to support STFA attendance at CFMC meetings.

STFA AND THE MYTH OF VIRGIN ISLANDS OVERFISHING

As can be seen from this brief synopsis of STFA activities, the organization is nothing if not engaged in the process of managing Virgin Islands fishery resources. What is also apparent is that there is a major philosophical difference between the STFA and Territorial and Federal officials responsible for fishery management. That difference is, quite succinctly, **Virgin Islands fishermen support sustainable fishery management through proactive management actions.** From their actions, it seems that Territorial and Federal resource managers’ answer to fishery management is based solely on restriction of access to fishery resources.

The CFMC Sustainable Fishing Act Amendment document used the term “overfishing” 533 times in its 700 pages. In the terms of the Magnusan-Stevens Act, “overfishing and overfished are defined as “a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis” (16 U.S.C. 1802(29)).

The idea of Virgin Islands overfishing originated with Olsen and LaPlace’s 1974-75 study of a Nassau grouper breeding aggregation that was fished to extinction between 1972 and 1978. (Olsen and LaPlace, 1978). When fishermen were apprised of the overfishing situation by the authors, they initiated a request to the local government for enforced closure. This request went un-answered and the fishery disappeared over the next several years. In 1974, the breeding aggregation accounted for 85% of the annual landings for that species. This very specific instance of overfishing has been repeatedly used to infer that the entire shelf fishing is subjected to similar pressure. Such references continue to appear to this day (Agar, et al., 2005).

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³A petition of support for STFA’s activities was signed by over 6000 local citizens. The 26th Legislature of the Virgin Islands has passed motions of support and the Delegate to the US Congress has introduced legislation to increase the Virgin Islands Territorial Sea (and consequently reduce Federal jurisdiction). STFA Fun Day fund raisers in 2005 and 2006 have been attended by nearly 5000 total supporters.

Following this instance of actual overfishing, a series of Territorial fishery managers have not carried out studies necessary to understand the actual status of the resource and the fishery. These individuals diverted priority to protection of the resource rather than management. Efforts like the 1987 conference on “Fisheries in Crisis” (deGraaf and Moore, Ed, 1987) provided a forum for subjective opinions memory and created a literature of overfishing. For example, Garrison, et al. (2004), state that “Despite an increase in number of traps and areas fishing in the USVI over the past three decades, landings of commercially preferred species, size at first capture and size at first maturity all have decreased from otherwise respectable scientists which went unverified in the information vacuum created by this diversion of focus. These scientists have continued this program of selective over time.”

Without evidence of overfishing, these statements have found their way through to the Caribbean Fishery Management Council fishery management planning. According to the CFMC “Landings peaked in the Caribbean region in 1979 and have been declining steadily ever since. In addition, according to the Council “Maximum species size has also declined substantially, and the composition of catch has changed over time, such that fish not utilized in the past are currently being sold at the market.”

Such statements are not supported by available data. For example, as can be seen in figure 1 catch records show nearly three decades of consistently increasing landings. These catch records have been required from Virgin Islands fishermen since 1974 (Bennet, 2004) and are turned in to assist in the understanding of the status of VI fisheries. Clearly, if Virgin Islands fisheries were in “crisis” in 1987, the collapse would be evident in the landings data, and not show the consistent increase these data support.

The STFA recognizes that the CFMC must walk a difficult path, compromising its responsibilities for fishery management in accordance with National Standards for Fishery Management Plans against pressures by conservation organizations to substantially reduce fishing effort.

Pressure from conservation organizations may drive Federal decision makers, but these fail to understand the cultural relationship between Virgin Islanders, their fishermen and the product provided by them. These organizations also do not seem to consider that local resource status might vary from global or regional norms.

Since 67% of the CFMC jurisdiction lies in USVI waters^(CFMC, 2005) there is an inherent geographically based discrimination against Virgin Islands fishermen. Given this, one would expect that CFMC regulations would affect Virgin Islands fishermen on a ration of two to one. The area of proposed closures contained in the SFA Amendment measures affected Virgin Islands fishermen five times (in terms of area per fisherman) more heavily than Puerto Rican fishermen. This creates an inherent violation of National Standard 4 which states that “*Conservation and management measures shall not discriminate between residents of different States*”.

Much of the pressure to regulate and restrict arises from environmental groups who seem to be unable to actually examine local resource status but rather generalize from other areas. Efforts by STFA to collaborate with The Nature and Ocean Conservancies in production of a video about Virgin Islands spawning aggregations and the role of indigenous conservation in their preservation ended badly when the two Conservancies reedited a draft which local fishermen found acceptable into a virulent anti-fishermen propaganda exercise. Such experiences, coupled with the failure of conservationists to participate in local processes do not bode well for future collaboration.

Confronted with the Federal and conservation groups’ efforts to redefine resource status without proper data, the STFA has attempted to assemble existing information and to undertake studies which will indicate the status of local resources through sound, scientific data. As previously stated, the STFA goal is **sustainable** utilization not simply continuance of current practices.

⁴By Catch Studies of Reef Fish in Support of Caribbean Fishery Management Council Preferred Options for Fishery Management in St. Thomas, U.S. Virgin Islands. Award No.:NA06NMF4330052 to the STFA under the Marine Fisheries Initiative.

⁵A pilot program to assess methods of collecting by-catch, discard, and biological data in the commercial fisheries of St. Thomas, U.S. Caribbean. Award Number NA05NMF4540042 to MRAGAmericas under the NMFS Cooperative Research Program.

⁶Virgin Islands fishermen submit monthly catch records. This program has been underway since 1974 but the Territorial Division of Fish and Wildlife only processed the data into digital form in 2004-05.

⁷Shown in Section 301 of the MSFMCA.

⁸The CFMC’s Essential Fish Habitat document was subsequently challenged by a coalition of environmental groups and fishing associations on the grounds that it did not comply with the requirements of the MSFCMA and NEPA (American Oceans Campaign et al. v. Daley et al., Civ. No. 99-982 [D.D.C.]). The federal court opinion upheld the plaintiffs’ claim that the Generic EFH Amendment with an EIA was in violation of NEPA, but determined that the amendment was in accordance with the MSFCMA.

⁹Magnusson-Stevens Fishery Conservation and management Act Public Law 94-265..

¹⁰Virgin Islands Division of Fish and Wildlife data provided to SEDAR, 2005.

BEST AVAILABLE INFORMATION ON STATUS OF VIRGIN ISLANDS FISHERY RESOURCES.

The theory that Virgin Islands resources are overfished can be stated in a limited number of testable null hypotheses:

1. Landings have been continually declining.

1. Declining landings.

As can be seen from figure 1, landings have been consistently increasing over the past three decades. Clearly, this contradicts one of the basic premises of the overfishing myth.

2. Maximum Species Size has declined

Results are presented below for the three most highly targeted species in the St. Thomas fishery, spiny lobsters, yellowtail snappers and olewife. If fishing pressure were to have caused a decrease in maximum size, it would be most visible in these species.

Study Results

Data come from a recently completed study of bycatch and landings. The second STFA survey was carried out under funding from NOAA’s Cooperative Research Program to MRAG Americas. In this study landings and bycatch were measured on trips with observers on board and when fishermen returned the by catch to shore. In all, nearly 9000 fish of 84 species were counted and measured. Another 1200 bycatch individuals were “sub-sampled” by the fishermen or recorded and not returned to shore during Captain’s trips.

The results provided useful information regarding:

- Whether or not on-board observers were required in order to obtain accurate information (Note: there was significant correlation between the results of observer trips and Captain’s trips).
- Species composition of landings and bycatch.
- Size frequency of landings and bycatch.
- Differences of species between fishing methods.
- Weight/length relationships of landed species.
- Reasons for discard.
- Size at entry into fishery.
- Compliance with size regulations for spiny lobster.

Table 2 summarizes the trips sampled in the study by fishing method, number of species and individual fish sampled. Initially, fishermen objected to “killing” fish that they would normally release at sea. Consequently, the study design was expanded to allow for sub-sampling of particularly numerous species. There were approximately 1200 individuals involved in sub-sampling or which were not returned to shore and are not included in Table 1.

Results are presented for queen triggerfish (known locally as Olewife), yellowtail snapper and spiny lobster. These species were selected because they are the most highly targeted species in the St. Thomas fishery and, if overfishing were present; would show indicator signs such as fishing pre-reproductive sizes, limited size classes and low discard of small individuals.

RESULTS

Results for *Panulirus argus*.

Spiny lobsters (*Panulirus argus*) are perhaps the second most important species in the St. Thomas landings.

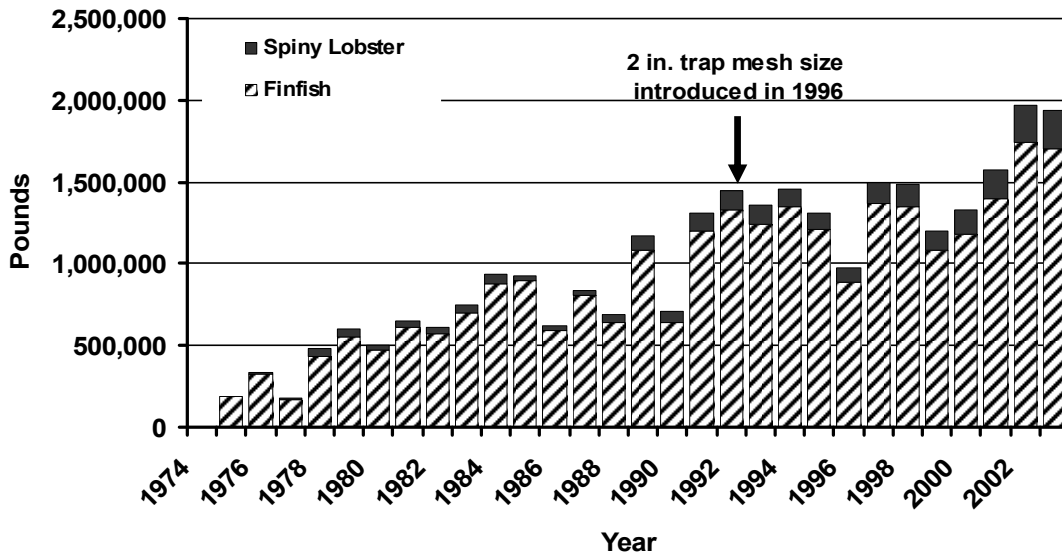


Figure 1. Total Virgin Islands Landings (1974-2004)¹⁰

Table 1. Summary of By Catch Study Results.

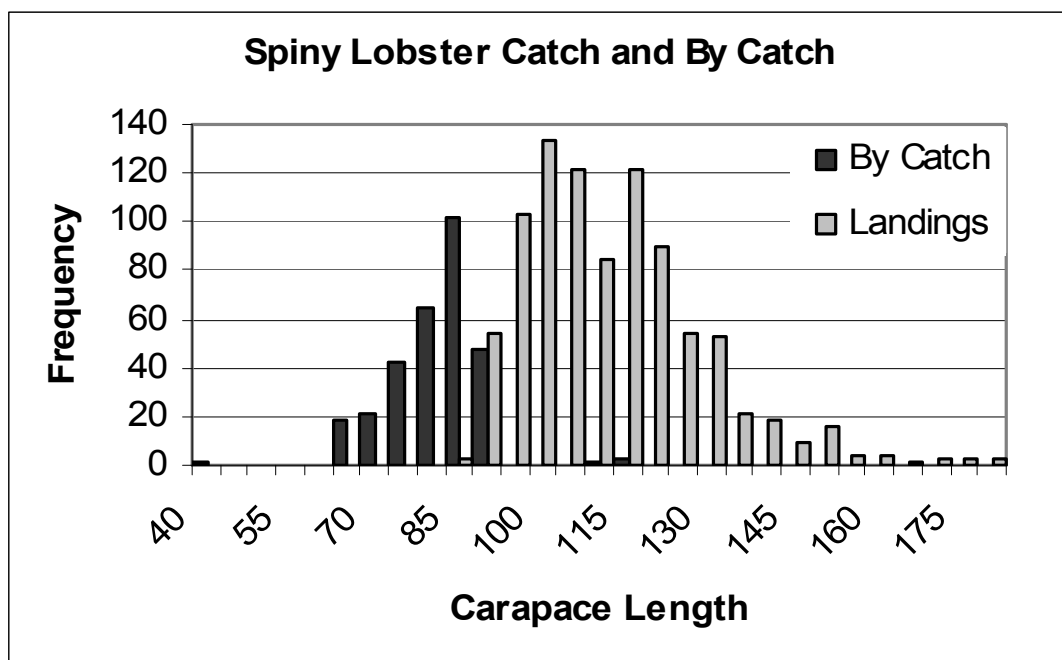
Fishing Method	# Trips	Catch Sample		Bycatch Sample	
		# Species	# Fish	# Species	# Fish
Fish Traps	26	46	2,987	39	1,360
Lobster Traps	15	36	1,275	26	596
Hand Line	20	33	1,787	18	123
Seine Net	10	21	762	10	17
Long Line	2	8	44		
Total for Study	73	84	6,786	69	2,249

Less than 6% of the landings come from fish traps and the remainder (in our sample) was taken in plastic lobster traps. They are a major feature on the menus of local restaurants and hotels which prefer the whole lobster and larger sizes available in the local catch to imported tails.

The average size of all lobsters (bycatch and landed catch) was 104.6 mm. This is 5 mm more than the average for Olsen and Koblic's 1971-72 samples of 923 lobsters around St. John which was 99.0 mm CL. The two studies were not exactly comparable. The 1971-72 study was a fishery-independent study in which a considerable amount of the average size of all lobsters (bycatch and landed catch) was 104.6 mm. This is 5 mm more than the average for Olsen and Koblic's 1971-72 samples of 923 lobsters around St. John which was 99.0 mm CL. The two studies were not exactly comparable. The 1971-72 study was a

The smallest female with eggs in our sample was 47mm carapace length which we consider to be size at first maturity. A 1971 study of spiny lobsters was undertaken as part of the TEKTITE undersea habitat program (Olsen, D.A. and I.G. Koblic. 1975). In that study, tag-recapture techniques were used to obtain an estimate of L_{∞} of 154 mm and a growth rate of $k=0.432$. These results were then compared to size class means which closely fit the tag-recapture results. The 1971 sample contained a 190 mm individual. Three 180 mm individuals were present in the current sample.

Only 2 of the 896 lobsters landed as catch were less than the 89mm minimum legal size, indicating a high degree of compliance with size regulations. No berried females were landed in the actual landed catch.

**Figure 2.** Comparison of catch and by catch size frequency data for *Panulirus argus*

fishery-independent study in which a considerable amount of effort was spent sampling in juvenile habitats in mangrove lagoons. Most of the lobsters were captured inside of the Virgin Islands National Park where Park rangers discouraged fishing activities. The 2006 study is entirely made up of catch and bycatch from commercial landings from throughout the St. Thomas/St. John shelf.

When lobsters above 89 mm CL were compared, the 1971 average value was 121 mm carapace length and the 2006 average was 111 mm carapace length, a difference of 1 cm. A comparison to the size classes from the two studies is shown below in Figure 3.

There are similarities between the two samples for the pre-recruit size classes, which have largely departed from the juvenile habitat but not yet reached legal size. Following entry into the extensive directed lobster trap fishery which has developed primarily in the last 20 years, there is a general trend for lower frequency among the larger size classes although all of the classes observed in 1971 are present in 2006.

In a heavily exploited population such as Florida's trap fishery, intense fishing pressure removes individuals from the population before they have a chance to grow to the sizes present in the St. Thomas example (Figure 4). In Florida, 96% of the lobsters are harvested prior to reaching the average Carapace Length of the 2006 St. Thomas landings.

The comparison in figure 3 shows that:

- The directed lobster trap fishery does not capture many small lobsters until they reach around 80 cm carapace

length, when they begin to depart from the juvenile habitat.

- There is 99.8% compliance with the 89 mm size limit.
- When the lobsters leave the juvenile in shore habitat and migrate out to the reef (from 70 cm and 89 cm, the results from 1971 and 2006 provide very similar results.
- Following entry into the fishery, the 2006 results begin to depart from the 1971 size class values. The resulting picture is one where, even though large lobsters are still caught regularly in 2006, in 1971 larger lobsters constituted a larger proportion of the population.
- Although older size classes are less abundant, they are still present in much greater abundance than the heavily exploited Florida trap fishery. smaller than the 600 mm
- While these data do indeed indicate a reduction in the proportion of large lobsters, fishing effort has risen from near unexploited levels in 1971 to a high level directed fishery and large lobsters are still to be found at sizes which were present in the 1971 sample.

RESULTS FOR YELLOWTAIL SNAPPER AND OLEWIFE

Yellowtail snapper and Olewife are the two most prevalent fin fish in St. Thomas landings.

One of the first actions taken by the STFA to dispute CFMC claims of overfishing was to undertake a size-frequency study of two of the main species which the CFMC identified as "showing signs of overfishing". These

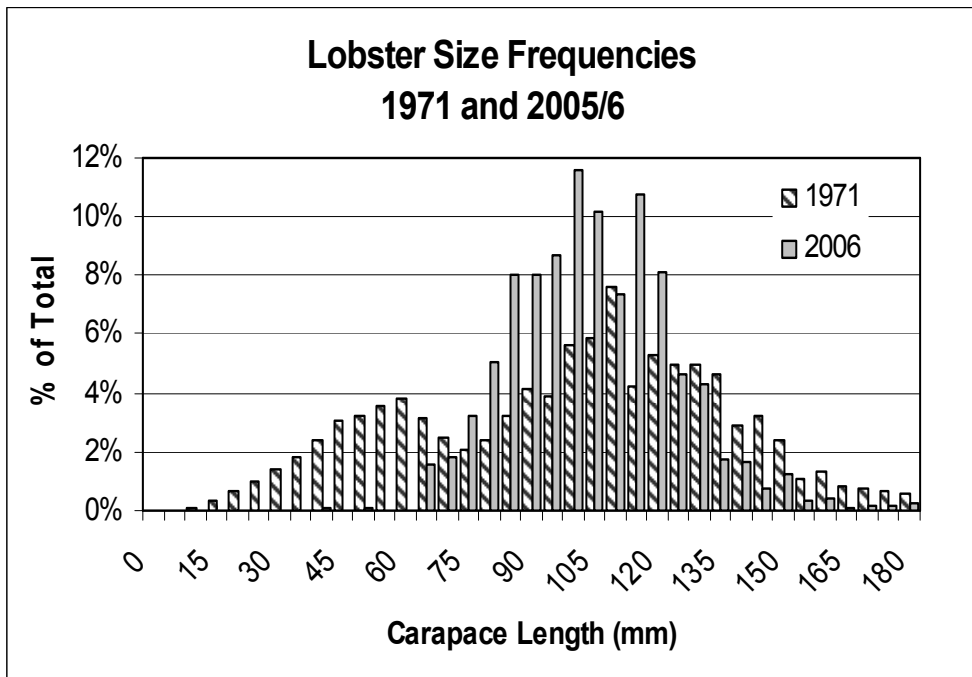


Figure 3. Comparison of size frequency data for *Panulirus argus* samples from 1971-72 and 2005-6.

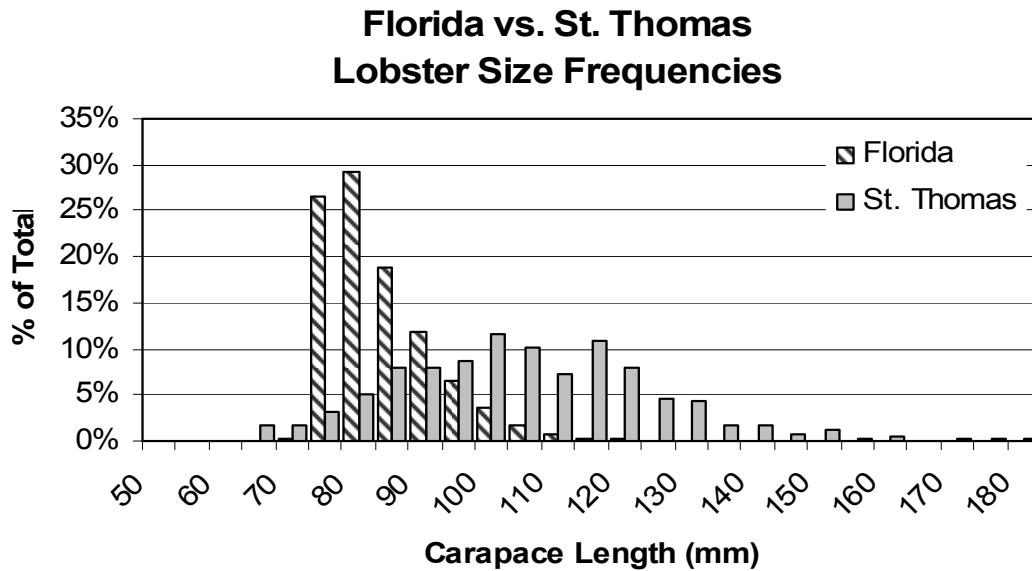


Figure 4. Comparison of Florida and St. Thomas size/frequency distributions.

were the Yellowtail snapper (*Ocyurus chrysurus*) which makes up 22% of total St. Thomas landings and Olewife (*Balistes vetula*) which is the dominant species in the fish trap landings at 15%. The size-frequency data were analyzed using the FAO FISHBASE length-frequency tool¹⁵.

The results, shown in Table 2, indicate that, far from showing “signs of overfishing” these two, heavily targeted species were fished well above the age of first reproduction and, in fact, very close to the “optimum” harvest age derived from the FISHBASE analysis tool.

This snapshot of resource status made a point but creation of a “best available scientific information” benchmark would require a more detailed effort. This is presented in the following sections with data from the STFA/MRAG study.

Results for *Balistes vetula*.

Landings for Olewife contained approximately 9% of fish that were smaller than the 230 mm minimum reproductive size shown in FISHBASE. Fish smaller than this size were generally discarded as 100% of the bycatch of this species were less than 230 mm FL. There may be between 8 or 9 size classes in the sample (one of pre-reproductive size fish) indicating that fishing pressure is not sufficient to eliminate older age classes. The maximum size in our sample, at 480 mm FL was substantially smaller than the 600 mm maximum size listed in FISHBASE.

Results for *Ocyurus chrysurus*.

Yellowtail snappers (*Ocyurus chrysurus*) are perhaps the most important species in the St. Thomas landings. They are taken by traps (1.2% of the total) seine nets (23% of total landings) and hand line (70% of total landings). They are the only snapper species that is

Table 2. Results of initial STFA size-frequency study compared to FISHBASE.

	Olewife	Yellowtail
Maximum Length (FL)	57 cm	60 cm
Length at First Maturity	23.5 cm	25.0 cm
% Mature Fish in Sample	100%	97.4%
Length at Optimum Yield	37.4 cm	39.4 cm
Average Length of Catch	34.4 cm	38.4 cm
% with Optimum FL	67.9%	62.5%

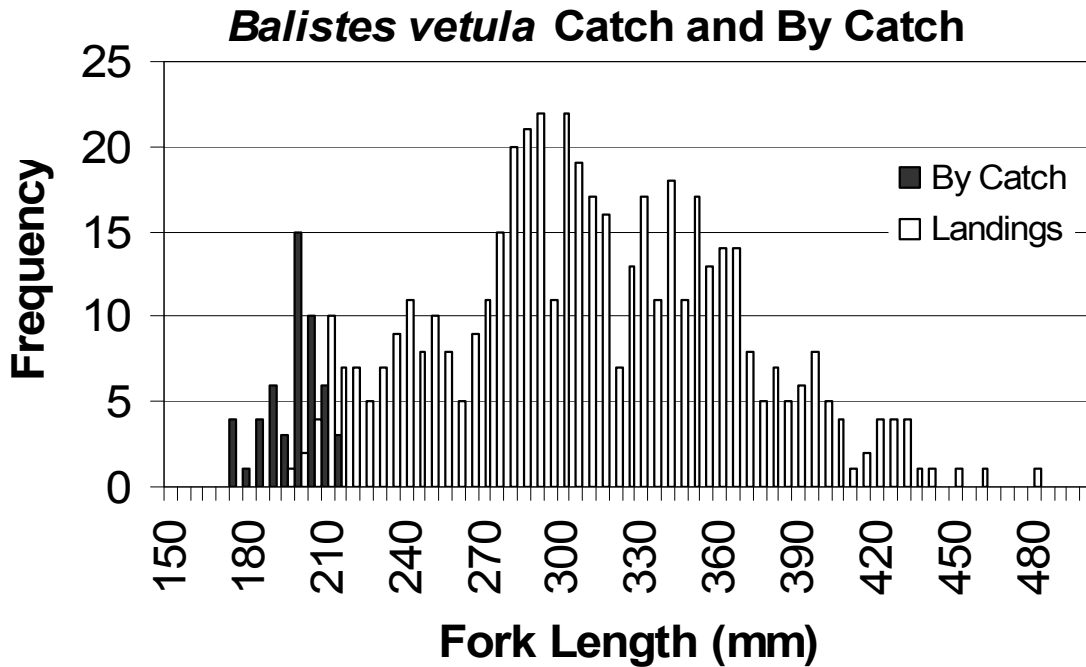


Figure 5. Comparison of catch and by catch size frequency data for *Balistes vetula*.

almost completely free of Ciguatera fish poisoning (Olsen, 1988) and are a major contribution to restaurant menus. FISHBASE indicates that the size at first maturity is 240mm and that the maximum size is 502 mm. Only 1.2% of the landed catch was less than the length at first maturity. The current sample contained 37 individuals (2.5% of the total) that were larger than the maximum reported in FISHBASE. The largest individual in our sample was 690 mm. Bycatch of small individuals was a minor portion of the landings. The size frequency distribution appears to show numerous modes which would indicate a diverse age structure and a long lived fish as evidenced by the low growth rate value ($k=0.139$) shown in FISHBASE.

SUMMARY AND CONCLUSIONS

The results of this study present a very different picture of Virgin Islands resources than that used by the

CFMC and conservation organizations which claim to present a picture of Virgin Islands resources in crisis.

1. Landings in the Virgin Islands have been increasing over the 1974 to 2003 period for which landings data have been provided by fishermen (Figure 1).
2. All of the populations sampled in this study contain multiple age classes indicating that fishing mortality allows for growth to maximum sizes.
3. Current fishing practices appear to be adequate to protect pre-reproductive individuals which do not appear in the landings in any significant numbers.
4. There are numerous large individuals present in the landings for all species, which constitute a pool of "superspawners" in the population.\

¹¹Award Number NA05NMF4540042

¹²Captain's trips and Observer trips were highly correlated ($p<0.01$)

¹³In 1971 the minimum legal size was 76mm Carapace length. The size limit was changed in 1981 to 89 mm Carapace length.

¹⁴Data from 2003 Florida trap fishery in SEDAR 08. Southeast Data Assessment and Review: Assessment of spiny lobster, *Panulirus argus*, in the Southeast United States. Prepared by SEDAR 08 U.S. Stock Assessment Panel. 29-Apr-05.

¹⁵http://www.fishbase.org/report/LFAnalysis_step01.cfm?speccode=34

SUMMARY OF FINDINGS

1. Decline in landings.

As can be seen in Figure 1, Virgin Islands landings have consistently increased since 1974 when reporting was first required. These data, which fishermen submit on a monthly basis, were only processed by the Territorial Government in 2004-05. This indicates the low priority of fishery resource management by USVI resource management agencies. Thus the assertion of declining landings is clearly contradicted by actual data which has not been available to the CFMC in drafting its management plans and by scientists claiming that resources are overfished.

2. Decline in Maximum Size.

The yellowtail snapper (*Ocyurus chrysurus*) and Olewife (*Balistes vetula*) are the two most highly targeted species in the St. Thomas fishery. As can be seen in figures 2 and 3, both of these species size-frequency distributions contain many large individuals. The yellowtail sample contained 2.5% individuals that were larger than the reported maximum size for the species. Both species contain numerous "Superspawners" which, in conjunction with the lack of pre-reproductive harvest, protect the resource.

In the case of spiny lobster, in the period from 1971 to 2006 there has been a 9mm decrease in average carapace length of legal sized lobsters over the 35 year period which saw the market for lobster rise from next to nothing to a major directed fishery supplying local hotels and restaurants. This change is insignificant in view of the fact that current size-frequency distributions contain all of the size

classes which existed in 1971. When contrasted to the intensively harvested Florida fishery, the St. Thomas lobster fishery size/frequency patterns are little changed despite the development of an extensive targeted lobster fishery during the past 35 years. The small change exhibited over this period (1cm in Carapace Length) is relatively insignificant as the population still contains large spawning individuals and there is an apparent total compliance with protection of berried females.

The same cases can be made for all of the 84 species in the study.

3. Catch composition has changed.

At the present time, detailed examination of past port sampling data have not been made. However, with the exception of Nassau grouper (now prohibited), species which were common in the 1980s (Olsen, 1988) continue to be common. Highly targeted species are still dominant. This would not be expected if there was a major species shift or if fishing pressure was causing reduced abundance. Fishermen do subjectively state, that after the hurricanes of the 1990s, that some changes in abundance did occur but these are subjective impressions.

4. Reproductive capacity of the stocks is threatened by current fishing practices.

One clear fact coming out of the current study is that current fishing practices protect rather than exploit pre-reproductive sizes and preserve large individuals which

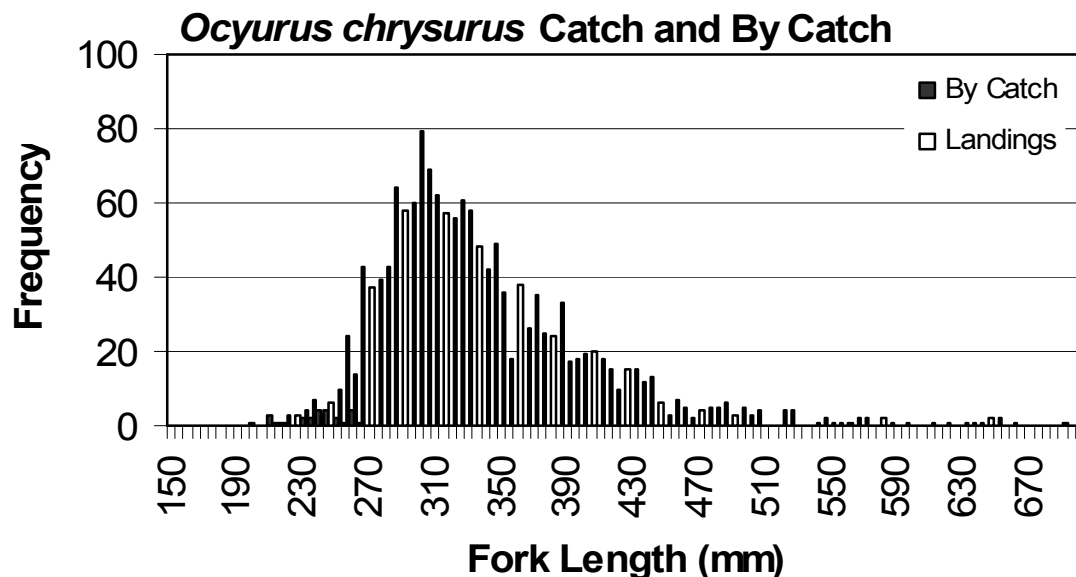


Figure 6. Comparison of catch and by catch size frequency data for *Ocyurus chrysurus*.

serve as “Superspawners”. Bycatch discards of all species are normally below reproductive size. Quantifying survivability will be the focus of a future STFA research proposal. In the case of spiny lobster, only 2 out of 900 landed individuals were under legal size and that size is over 40 mm larger than the smallest individual with eggs. In addition to protection of pre-reproductive lobsters, this observation also indicates a high degree of compliance with fishing regulations.

This is but one further indication that Virgin Islands fishermen have taken on the lessons of past overfishing of the Nassau grouper bank and have assumed responsibility for their actions. Currently fishermen tend to fish to market capacity rather than harvest capacity and cease fishing operations when they feel that they have captured all that they can sell.

FUTURE STFA MANAGEMENT INITIATIVES

The STFA is engaged in developing sustainable management alternatives that are pre-vetted by the actual fishermen involved in the fishery. The Association believes that only the fishermen themselves can develop effort and gear alternatives that are realistic, enforceable and reasonable to all parties. It is our contention that rather than undertaking closure of access, sustainable goals are best met by proactive conventional fishery management tools which are implemented by government in partnership with the industry. It is the basis of STFA efforts to engage the fishery management process to accomplish these ends.

The STFA does not support closures as a tool for fishery management. It is our contention that closures have not been effective in the Virgin Islands. The Virgin Islands National Park on St. John has provided protection and limitations on fishing access for half a century. Despite these protections, the Park’s own scientists admit that “The national park is not a refuge for reef fishes. Relative abundance, species richness, and biomass of fishes in visual samples, and the species composition and number of fishes in traps are similar inside and outside VINP. Lobsters and conchs have decreased in abundance and/or size (in the park), and conch density is no greater within VINP than outside” (Beets and Rogers, 2000)

Following a 1990 agreement by St. Thomas fishermen to protect a Red Hind Spawning aggregation for 5 years, conservationists succeeded in having an expanded version of the aggregation area permanently declared as a Marine Conservation District and off-limits to all fishing year round. Nemeth (2005) has carried out extensive research on the aggregation and reports that the average FL has increased from 33cm TL in 1976 (Olsen and La Place, 1978) to 39 in 2000. The population size of the spawning aggregation has been reported to have reached 84,000 fish in 2003, up from 26,000 in 2000. Despite these results, Red Hind landings in 2005-2006 constituted only 4.9% of the total (current study) when compared to 8.7% during the early 1980s (Olsen, 1986). Admittedly the earlier figure

included landings from the spawning aggregation but the claim that protection of the spawning aggregation would inherently lead to improved landings of the protected species is not necessarily supported by this study which is frequently cited as an example of the positive impacts upon fisheries resulting from closed access to spawning aggregations.

In addition, in 2001 President Clinton designated large National Coral Reef Monuments on the St. Croix and St. Thomas shelves, usurping Territorial sovereignty. NOAA surveys of these two monument areas revealed that there were greater numbers and larger individuals of all species outside of the monument areas when compared to within the boundaries, despite 5 years of protection.

It is our contention that the main impact of closures is to relocate fishing effort to the remaining shelf where it must compete with existing effort. In order to maintain income levels the remaining fishermen end up increasing investment in traps, decreasing profitability and creating a likelihood of overfishing in the remaining areas that did not exist before the closures.

Some evidence for our claim can be found from the trap fishery. In the 1970s and 80s, unbaited fish traps averaged 5.06 lbs/trap (Olsen and La Place, 1981). In 1996, the average haul was between 5.04 and 5.14 lbs. /trap haul (Beets, 1997). Following the 1990 closure of the Red Hind Bank and designation as the Hind Bank MCD in 1999 in conjunction with the 2001 designation of the Coral Reef National Monument (which together removed 44 sq Nm of shelf area from the St. Thomas fishery), the catch rate dropped to around 2.5 lbs/trap haul (Current MARFIN study) as fishermen began increasing the number of traps fished in order to maintain their income levels. Thus, “protection” of the resources resulted in increased pressure outside of the closed areas and drastically decreased the economic efficiency of the fishery.

Given the fact that the closure advocates in the Virgin Islands cannot demonstrate benefits, the closures seem counterproductive. A current STFA proposal to undertake a socio-economic evaluation of the impacts on closures will hopefully supply a quantitative assessment of these issues.

The main problem facing the STFA at this point is to influence the local political process so that Territorial officials (who also represent the Virgin Islands on the CFMC) are appointed that will pursue goals of sustainable fishery management rather than pure resource protection and restriction of fishing activities.

CONCLUSION

In conclusion, fishermen in the St. Thomas Fishermen’s Association appear to have taken the lessons of the Grouper Bank overfishing to heart. None of the specific symptoms of overfishing appear to exist in the local fishery. The current fisherman seldom lands more than he can

expect to sell and avoids unnecessary mortality of bycatch species. The picture presented by conservation organizations of fishermen as rapacious predators is disingenuous to say the least. Current fishermen are involved in resource management and understand that sustainable management is the only way that they can pass the resource on to their children and guarantee a continuing supply of local seafood to the local populace.

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