

# QUEEN CONCH CPUE ASSESSMENT IN PR & USVI'S: PRELIMINARY REPORT

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## INTRODUCTION

The Southeast Fisheries Center has provided a total of \$15K to fund a Queen Conch CPUE Assessment Pilot study for FY99. The funding became available in February 1999. Five port sampling agents from PR and four port agents from the USVI's have been contracted to interview and obtain biometry, CPUE and catch location information. A total of 222 interviews have been accomplished in PR, 14 interviews were conducted in the USVI's. Data has been compiled in an Excel spreadsheet (see Appendix 1 for questionnaire used). Data was collected until June 1999, when the queen conch close season begins. Data collection in PR began in February 1999, in the USVI's data collection started in April 1999.

## OBJECTIVES

The objective of this data collection effort is to find out the size and composition of the queen conch commercial fishermen population in PR and the USVI as accurately as possible. We also want to know where the fishermen are harvesting the queen conch and the size composition, weight and sex of the conch landed. This information will be studied by the CFMC to evaluate changing the daily catch quota as mandated by the queen conch FMP.

## METHODS

The strategy used was to interview as many conch fishermen as possible. Once agreed to, the port agent would then obtain size frequency and other biometry information from conch brought ashore by the fisherman. The biometry information consisted of: shell length and lip thickness at its widest point measured with calipers to the nearest tenth of a centimeter. The conch total weight with and without meat was measured by digital calibrated balance to the nearest tenth of a gram. The conch meat weight once clean was also recorded. The conch sex was determined by visual inspection of gonads. See Appendix 1 for a look at the questionnaire used to collect all biometry information. The goal was to obtain approximately 20-60 whole conch specimens at a minimum to obtain the biometry data. If more or less specimens were available from a particular fisherman, these were accepted regardless. Port agents were encouraged to take a trip or two to the fishing grounds with the fisherman to understand the harvesting technique and help collect the conch being measured (see Figure 1). The port agent can also verify the position and the bottom type at which the conch is being collected when cooperating with the fisherman.

Data entry of all questionnaires submitted by the port agents into the Excel spreadsheet was performed by a data entry specialist located at the PR-DNER, Fisheries Research Laboratory using a laptop computer. Data edit and verification from questionnaires was performed by the author directly on the digital spreadsheet with written annotations of any changes made on the original questionnaires. See Appendix 1 for the legend to each of the questionnaires response options.

Analysis of data for presentation and summary was accomplished using Excel for Windows 95 version 7.0a statistical functions.

## RESULTS & DISCUSSION

### NUMBER OF FISHERMEN & FISHING EFFORT:

#### St. Thomas and St. Johns:

No full time conch fishermen were found. A total of twenty fishermen fish for conch in St. Thomas on a part-time basis. A total of three conch fishermen were found in St. John's, they also fish for conch on a part-time basis.

The names of the fishermen for St. Thomas were obtained by initially scanning the USVI-DPNR commercial catch database for conch landings. Upon further inspection of the database, five fishermen ID numbers were found. These five fishermen were interviewed and the names of the other fifteen fishermen were obtained from the first five interviews. The port sampler interviewed eight fishermen and obtained data from five of them out of the total conch fishermen population of twenty (see Table 1).

At St. John's, the names of the three conch fishermen were obtained from one fisherman who was interviewed by the port sampler. The interviewed fisherman is the main conch fisherman on St. John's. We were unable to obtain conch landing or biometry data from him.

At both islands, conch is incidental to the main fish catch or complements the fish catch. Fishermen will spend time fishing for conch if the catch has been requested previously by a customer. Fishermen will sell the conch (clean) in five pound plastic bags for \$20. The usual conch catch for two fishermen is 50-100 conch in two hours of fishing effort, if lucky. As depicted on Table 2, ninety percent of the catch is under the 22.86 cm size limit.

Conch is being imported on demand from the island of Anguilla for sale on St. Thomas. Illegal aliens are also fishing for the conch as a source of income. Landing statistics from illegal fishermen is very hard to collect. During this study we were not able to obtain data from illegal alien fishermen although we attempted to do so various times.

#### St. Croix:

There are 16 full time and 12 part time conch fishermen in St. Croix. The total number of conch fishermen is 28. The strategy used to identify these fishermen was by inspection of the USVI-DPNR commercial fishermen license records. When applying for a commercial fishing license, a query of type of main catch is made by the DPNR personnel. This information is then verified with the port sampling agents for accuracy by cross checking the fishermen landing statistics.

The conch is collected using SCUBA. No illegal alien fishermen were reported working in St. Croix. If some do exist, they are probably working in collaboration with licensed fishermen in order for them to sell their catch. The fishing routine begins with an early departure around 5 am and returning to the pier by 10 - 11 am, at the latest 1 pm.

#### Puerto Rico:

Five port samplers and one data entry clerk were contracted to obtain and compile the conch fishermen data. Port samplers are assigned to specific fishing port areas and are very familiar with the fishermen population for their area. The sampling strategy used was to obtain personal history information from the entire conch fishermen population in each port samplers area. All fishermen were asked to cooperate with the conch biometry survey by landing live conch in the shell. The port sampler, upon previous arrangement would meet the fisherman at the pier and obtain the biometry information from the specimens. CPUE and position information were also ascertained for the specific trip.

A total of 209 conch fishermen were found in Puerto Rico. Table 3 shows the distribution of fishermen by fishing port center. Over half (108) of all conch fishermen in Puerto Rico are located between Penuelas and Cabo Rojo, on the south and southwest coasts. The second largest (52) group of conch fishermen is located between Naguabo, Ceiba, Fajardo and Vieques Island on the southeast coast. Conch fishermen are reported in smaller amounts on the north coast. No conch fishermen were reported between the coastal towns of Yabucoa and Santa Isabel on the south coast. The coastal towns of Aguada and Aguadilla on the northwest coast also did not report conch fishermen.

Conch fishermen on the west coast of Puerto Rico usually leave the pier around 6 -7 am and return by 11 am - 1 pm. On average, conch fishermen fish in pairs, one fisherman dives while the second tends the diver and handles the boat. SCUBA tanks is the main source of air for the diver, usually taking 4 - 6 tanks per trip.

See Figure 2 for a summary of fishing effort statistics in a histogram format.

#### **DISTANCE FROM COAST TO FISH QUEEN CONCH:**

Most (92%; 178 out of 194) queen conch fishermen fish within 9 nm off the coast of Puerto Rico and the USVI (see Table 4). Only 8% of the queen conch fishermen interviewed fish for conch further than 9 nm. Sixty percent (108 out of 194) of the queen conch fishermen fish for conch within 3 nm off the coast.

#### **QUEEN CONCH TRIP MEAT CATCH:**

Sixty percent (53 out of 91) of the clean catch is between 100-150 pounds (see Table 5). Only 28% of the clean catch is between 25-50 pounds. Twelve percent of the clean catch is over 150 pounds. In Puerto Rico the average trip catch hovers around 95 pounds (see Table 6).

#### **QUEEN CONCH BIOMETRY:**

A total of 855 queen conch specimens were measured or weighed for the entire study area (see Figure 3). Not all biometry data were collected for each one. The legal size above which one can collect queen conch in federal jurisdiction waters is 22.86 cm. Most (91%) queen conch collected in St. Thomas and St. John is undersized according to this criteria. In Puerto Rico and St. Croix, this percentage drops to 24% and 21% respectively. See Table 2 for a summary of the data.

Queen conch from St. Thomas and St. Johns tend to be heavier and have a smaller range of sizes than queen conch from St. Croix and Puerto Rico (see Figure 3). Lip widths also seem to be larger for queen conch from St. Thomas, St. John and St. Croix than for Puerto Rico after inspection of Figure 4. The legal size above which one can collect queen conch in federal jurisdiction waters is .94 cm.

### **CONCLUSIONS**

The largest populations of queen conch fishermen are located in Cabo Rojo, Naguabo, Ceiba and Vieques island. The use of SCUBA continues to be the main method of fishing for queen conch. Most of the queen conch fishery resides in territorial waters of Puerto Rico and the USVI's and not in the areas of federal jurisdiction. The total number of queen conch fishermen in the U. S. Caribbean is 257.

The size of queen conch being fished in territorial waters is mostly (>76%) of legal size by queen conch FMP standards. Queen conch fished in St. Thomas and St. John's is mostly undersized (>90%).

Queen conch from St. Thomas and St. John's tend to be heavier and have a smaller range of sizes than conch from St. Croix and Puerto Rico. Lip widths also seem to be larger for queen conch from St. Thomas, St. John and St. Croix than for Puerto Rico.

On average, queen conch fishermen are spending four hours a day fishing for conch. Sixty percent of the clean catch reported is between 100-150 pounds. In Puerto Rico, the average trip catch hovers around 95 pounds.

### RECOMMENDATIONS

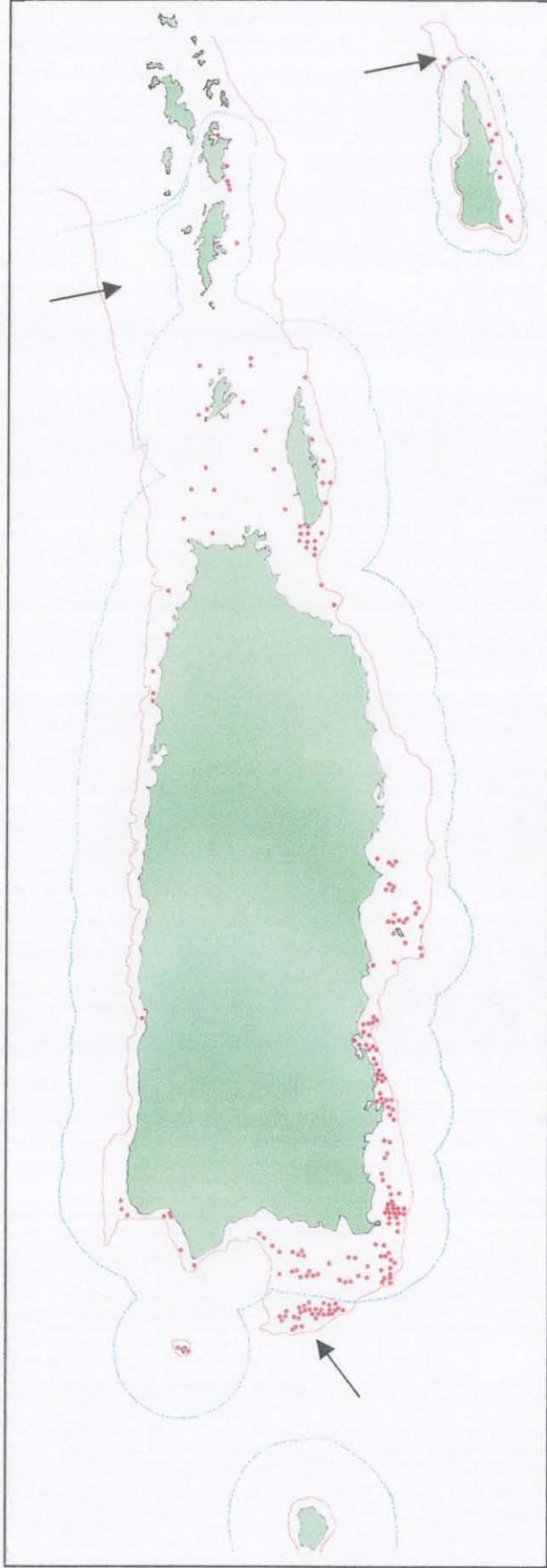
The management of queen conch populations in the U. S. Caribbean needs to be addressed by the local government agencies responsible in Puerto Rico and the USVI's since most of the resource is fished in their territorial waters.

Federal jurisdiction areas over queen conch resources is small in the U. S. Caribbean and the FMP strategy should be aligned to protecting this resource as a source of future queen conch seed locally and to other regions of the Caribbean. To reach this goal, such areas could be banned from conch fishing for periods of time or totally. Alternatively, SCUBA could be banned as a fishing method for queen conch for periods of time or totally.

Assessment of recreational fishing effort on queen conch needs to be addressed. Very little information is known as to what effect on the resource recreational fishers have. I believe their impact is significant due to the little regulation and enforcement for queen conch in territorial waters. The funding of a Pilot Study similar to this one that addresses the lack of information of recreational fishing of queen conch would provide a good and timely start.

### REFERENCES

1. CFMC. 1994. Queen Conch Management Plan. CFMC Report. 76 pgs.
2. Marshall, L. S. 1998. Determining the Effectiveness of Size Limits and Other Regulations in the Queen Conch (*Strombus gigas*) Fishery in Federal Waters of Puerto Rico. Report submitted to NOAA/NMFS SEFC. 14 pgs.



- Federal Jurisdiction areas
- 100 Fathom isobath
- - - Federal Jurisdiction begins and extends seaward
- Sites fished for conch

April-June/99 Survey

Figure 1. Sites fished for queen conch in Puerto Rico and the US Virgin Islands.

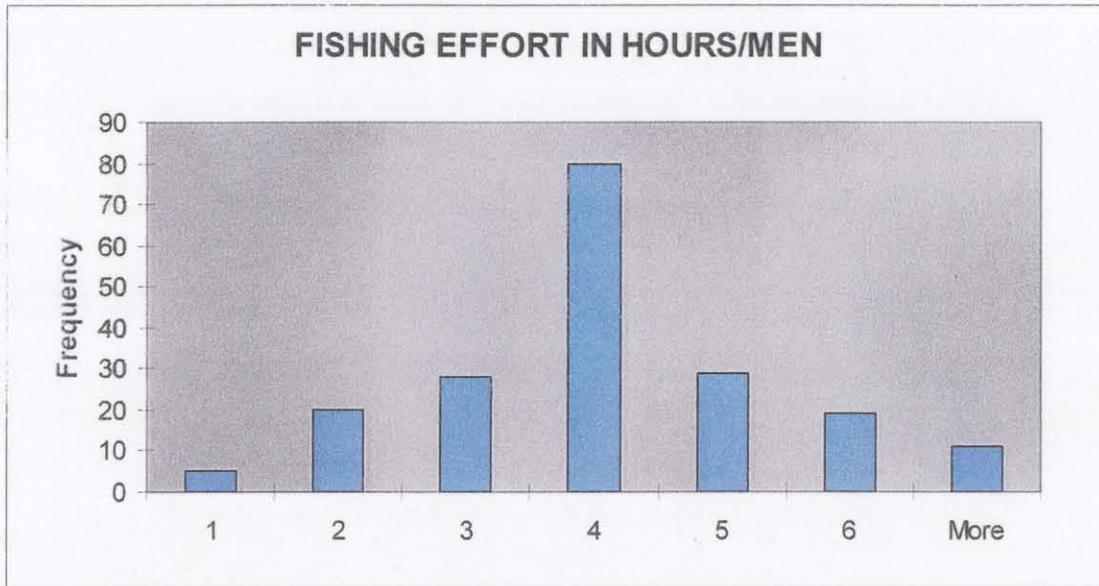


Figure 2. A summary of fishing effort for all conch fishermen in Puerto Rico and the USVI.

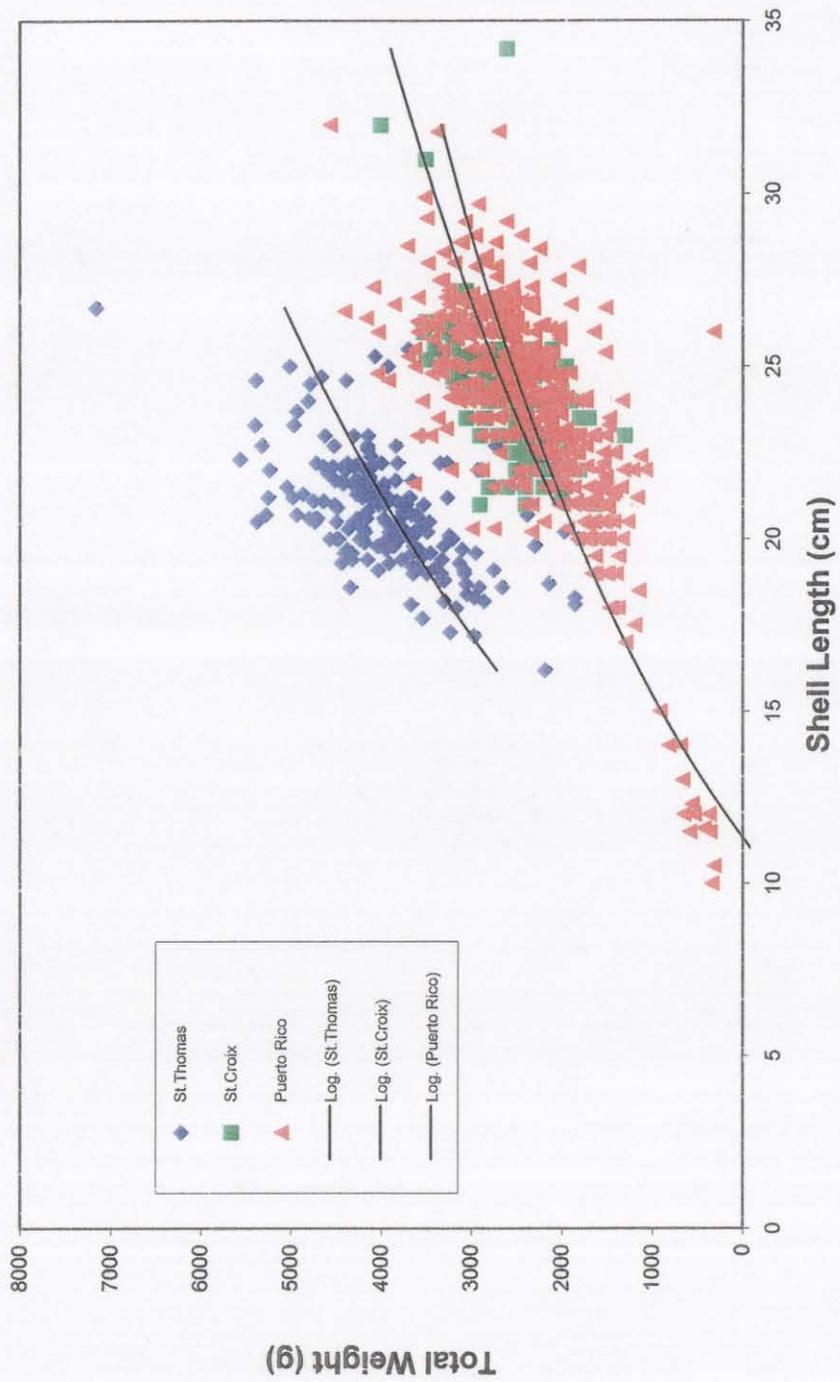


Figure 3. Queen conch total weight versus shell length for all specimens collected in St. Thomas, St. Croix and Puerto Rico.

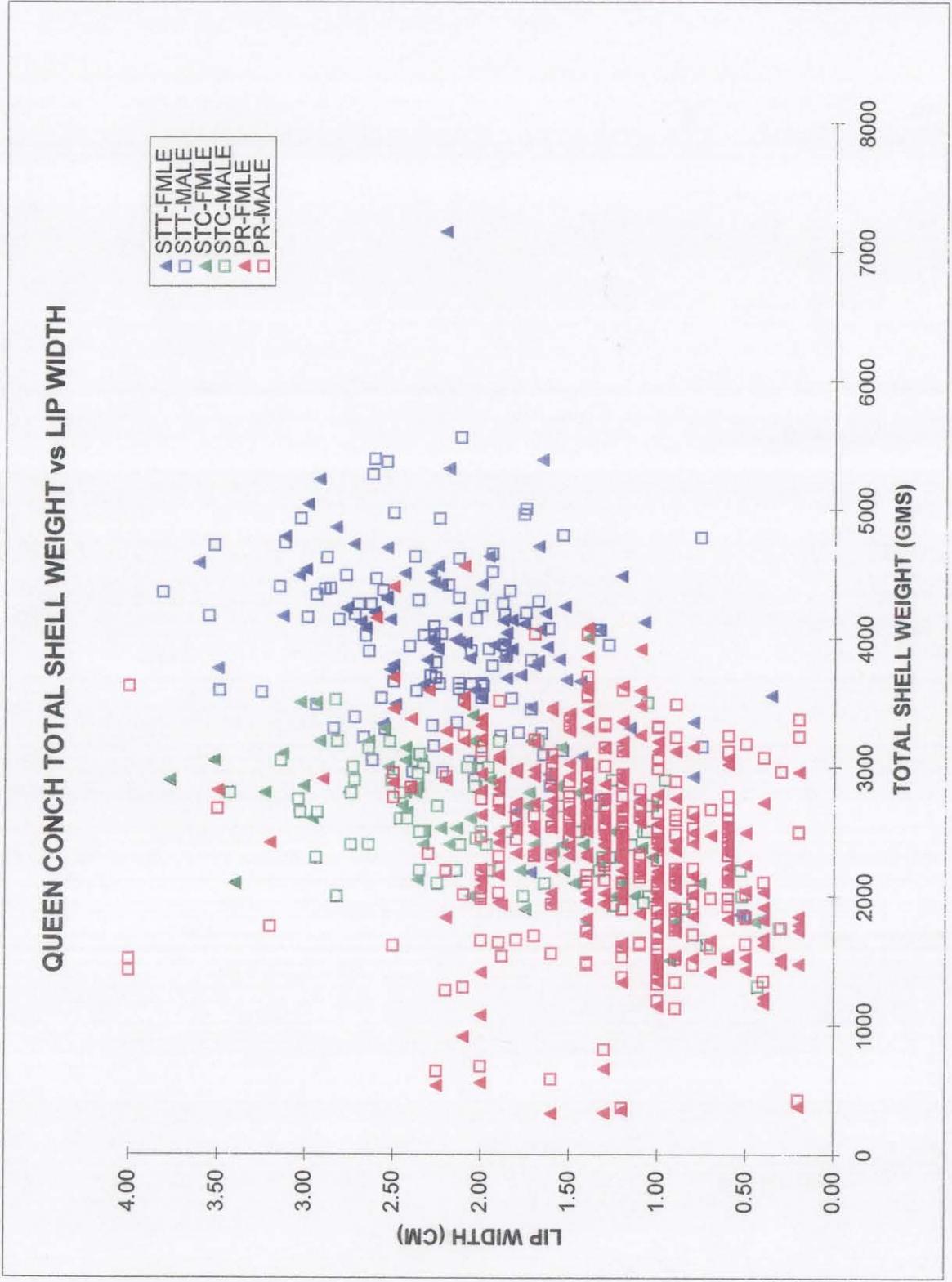


Figure 4. Queen conch total shell weight versus lip width for PR and USVI.

Table 1. Number of conch fishermen by island.

FISHERMEN	TERRITORIAL	FEDERAL	TOTAL
ST. THOMAS & ST. JOHN	20	0	20
ST. CROIX	26	2	28
PUERTO RICO	194	16	209

Table 2. Number of undersize conch by island.

ISLAND	n	% <22.86 cm	
ST. THOMAS & ST. JOHN	222	90.5	(201)
ST. CROIX	133	21	(28)
PUERTO RICO	499	24	(120)
TOTAL	854		

Table 4. Distance offshore to fish for queen conch.

DISTANCE FROM COAST (nm)	FREQUENCY
<1	0
1	40
2	53
3	15
4	2
6	30
9	38
12	16
more	0

Table 3. Distribution of fishermen by fishing port in Puerto Rico.

<b>FISHING CENTER NAME</b>	<b># OF FISHERMEN</b>
Isabela, Bajura	6
Arecibo, Jarealito	2
Manati, Pta. Manati	4
Dorado, Mameyal	3
San Juan, La Puntilla	1
San Juan, La Coal	6
Carolina, Torrecilla	1
Loiza, Ancones	7
Rio Grande, Mosquito	1
Fajardo, Las Croabas	2
Fajardo, Pto. Real	3
Fajardo, Maternillo	5
Ceiba, Los Machos	9
Naguabo, Hucares	20
Humacao, Punta Santiago	3
Vieques, Esperanza	2
Vieques, Morropo	11
Juana Diaz, Pastillo	1
Penuelas, Tallaboa	15
Guayanilla, Playa	12
Guanica, Bahia	6
Guanica, Salinas	10
Lajas, La Parguera	3
Lajas, Papayo	3
Cabo Rojo, Pitahaya	2
Cabo Rojo, Bahia Sucia	2
Cabo Rojo, El Combate	20
Cabo Rojo, Boqueron	7
Cabo Rojo, Puerto Real	33
Mayaguez, El Seco	8
Anasco, Tres Hermanos	1
<b>TOTAL</b>	<b>209</b>

Table 5. Total conch clean meat catch for Puerto Rico.

TOTAL CLEAN CATCH lbs	FREQUENCY
25	12
50	13
100	30
150	23
200	9
250	4
more	0

Table 6. Total daily conch average landings in pounds for Puerto Rico.

TOTAL DAILY WEIGHT	CLEAN (lbs)	UNCLEAN (lbs)	UNCLASSIFIED (lbs)
Mean	93.93	105.76	99.27
Standard Error	13.19	7.09	9.89
n	19	46	35

## **APPENDIX 1**

QUEEN CONCH MONITORING PROGRAM  
JANUARY - JUNE, 1999

A. Personal Information

Date \_\_\_\_\_  
Fisher's Name \_\_\_\_\_ Telephone \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_

Boat Size and make; wood \_\_\_ fiberglass \_\_\_ aluminum \_\_\_ steel \_\_\_ Other \_\_\_  
Sail \_\_\_ Power \_\_\_; size (ft) \_\_\_  
Boat Engine type and HP; inboard \_\_\_ outboard \_\_\_ HP \_\_\_ gas \_\_\_ diesel \_\_\_  
Boat Name \_\_\_\_\_ Registration number \_\_\_\_\_  
Fishing Port; PR \_\_\_ USVI, ST. Croix \_\_\_ Town \_\_\_\_\_ Fishing Center \_\_\_\_\_  
\_\_\_\_\_

B. Effort

Gear; SCUBA \_\_\_ Free diving \_\_\_ Hookah \_\_\_ Other \_\_\_\_\_  
Number of Fisher's; 1 \_\_\_ 2 \_\_\_ 3 \_\_\_ Other \_\_\_, please specify \_\_\_\_\_  
Number of tanks per Fisher; 1 \_\_\_ 2 \_\_\_ 3 \_\_\_ 4 \_\_\_ 5 \_\_\_ 6 \_\_\_ Other \_\_\_\_\_  
Type and size of SCUBA Tank; 50 \_\_\_ 72 \_\_\_ 80 \_\_\_ 90 \_\_\_ 100 \_\_\_ Single \_\_\_ Doubles \_\_\_  
Hours fishing; Leave pier at \_\_\_ am/pm, Arrive pier at \_\_\_ am/pm  
Depth of fishing; Please provide depth range (Ft) \_\_\_\_\_  
Hours in water fishing; \_\_\_\_\_  
Fishing Area (mark chart) \_\_\_\_\_ name of area or areas \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GPS Positions; \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Bottom Type; grass \_\_\_ sand \_\_\_ hardbottom with algae \_\_\_ mud \_\_\_ Other \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Total catch clean/unclean queen conch (lbs); \_\_\_\_\_ n \_\_\_\_\_  
Total catch other species of conch (lbs); \_\_\_\_\_ n \_\_\_\_\_  
Total catch other shellfish (lbs); \_\_\_\_\_ n \_\_\_\_\_  
Any other type of bycatch (lbs); \_\_\_\_\_ n \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

How far offshore do you usually fish conch? Less than 1nm \_\_\_ 1nm \_\_\_ 2nm \_\_\_ 3nm \_\_\_ 4-6nm \_\_\_ 6-9nm \_\_\_ 9-12nm \_\_\_ over 12nm \_\_\_

C. Comments

\_\_\_\_\_





**LEGEND FOR QUEEN CONCH QUESTIONNAIRE USED FOR PR & USVI'S DURING APRIL-JUNE, 1999.**

USE CAPITAL LETTERS ONLY

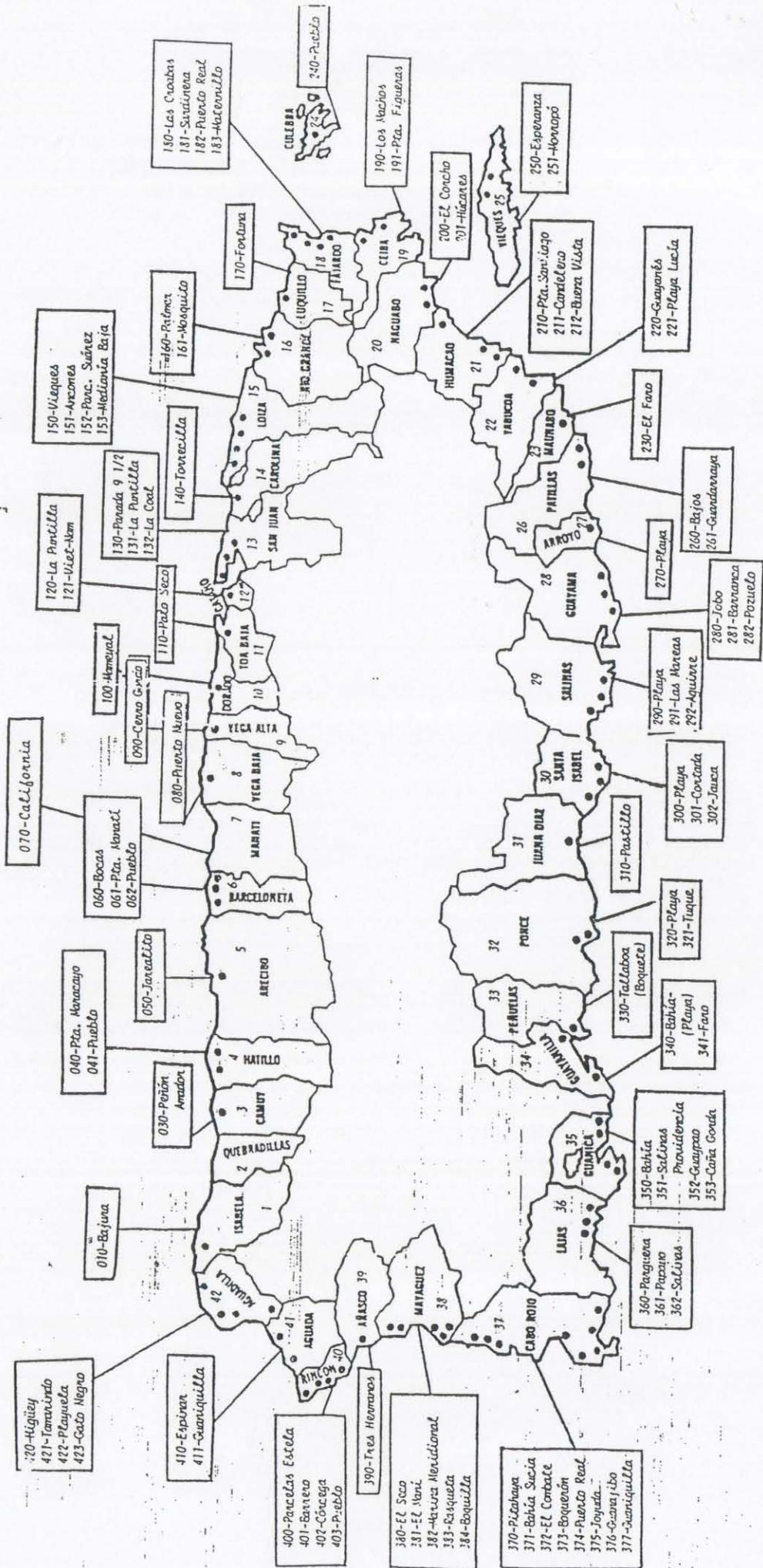
SURVEY NUMBER: 99-001-500- PUERTO RICO  
99-501-700- USVI 99-5XX- ST. CROIX  
99-6XX- ST. THOMAS & ST. JOHN

THE SURVEY NUMBER IS UNIQUE TO EACH PERSON. THE SURVEY NUMBER CODES BIOMETRY OF QUEEN CONCH INDIVIDUAL TO EACH FISHERMAN.

---

DATE: DAY-MONTH-YEAR; 00-MAR-99; 3 LETTER MONTH NAME  
NAME: TEXT  
TELEPHONE: AREA CODE NUMBER; DO NOT ENTER ( )  
ADDRESS: ROAD #, HOUSE # TOWN OR BARRIO OR PO BOX  
ZIPCODE: 9 DIGIT NUMBER  
BOATMAKE: WOOD FIBERGLASS ALUMINUM STEEL OTHER  
BOAT PROPULSION: POWER SAIL  
BOAT SIZE: SIZE IN FEET  
ENGINE TYPE: OUTBOARD INBOARD  
ENGINE HP: HORSE POWER RATING  
ENGINE FUEL: GAS DIESEL  
BOAT NAME: TEXT  
REGISTRATION NUMBER: TEXT  
FISHING PORT: P FOR PUERTO RICO; U FOR USVI  
TOWN CODE: SEE MAPS OF PR & USVI FOR CODES  
FISHING CENTER CODES: SEE MAPS OF PR & USVI  
GEAR: SCUBA FREEDIVING HOOKAH OTHER  
NUM FISHERS: NUMBER OF FISHERMAN PER BOAT  
NUM TANKS: NUMBER PER FISHERMAN  
TYPE OF TANK: SINGLE DOBLES  
SIZE OF TANK: IN CUBIC FEET  
LEAVE PIER: 00:00; USE 24 HOUR CLOCK; HOURS FOLLOWED BY MINUTES  
ARR PIER: 00:00; USE 24 HOUR CLOCK; HOURS FOLLOWED BY MINUTES  
FISHING DEPTH: DEPTH IN FEET  
HOURS IN WATER FISHING: 00:00; HOURS IN WATER FISHING  
FISHING LOCATION LATITUDE: 00 00.0N; DEGREES, MINUTES & TENTHS OF MINUTES  
FISHING LOCAT. LONGITUDE: 00 00.0W; DEGREES, MINUTES & TENTHS OF MINUTES  
RADIUS: 0.0 NM; VALUE IN NAUTICAL MILES  
BOTTOM TYPE: GRASS SAND HARD BOTTOM WITH ALGAE MUD OTHER  
TOTAL CATCH CLEAN: 000.0 LBS; VALUE IN POUNDS  
N CLEAN: NUMBER OF CONCH MEATS  
TOTAL CATCH UNCLEAR: 000.0 LBS; VALUE IN POUNDS  
NUNCLEAN: NUMBER OF CONCH MEATS  
TOTAL CATCH OTHER CONCH SPECIES: 000.0 LBS; VALUE IN POUNDS  
N OTHER CONCH SPECIES: NUMBER OF OTHER CONCH SPECIES MEATS  
TOTAL CATCH OTHER SHELLFISH: 000.0 LBS OF OTHER SHELLFISH  
N OTHER SHELLFISH: NUMBER OF OTHER SHELLFISH SPECIES MEATS  
OTHER BYCATCH: 000.0 LBS OF BYCATCH IN LBS  
N BYCATCH: NUMBER OF BYCATCH INDIVIDUALS  
BY CATCH SPECIES NAME AND NUMBERS: NAME & NUMBER SEPARATED BY COMAS  
DISTANCE OFFSHORE: <1NM 0, 1NM 1, 2NM 2, 3NM 3, 4-6NM 4, 6-9NM 6, 9-12NM 9,  
>12NM 12  
COMMENTS: LBS BY SPECIES OF BYCATCH SEPARATED BY COMAS(USE SAME ORDER  
OF ENTRY AS FOR SPP NAMES BYCATCH WHICH IS COLUMN AO)

CODIFICACION DE PUEBLOS Y BARRIOS



# Catch Report Forms, revised

for the Commercial Fishermen of the U.S. Virgin Islands

July 1998 - June 1999

