

## **Puerto Rico's Small Scale Commercial Fisheries Statistics during, 2004 - 2006**

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### **ABSTRACT**

The Fisheries Research Laboratory (FRL) of the Puerto Rico Department of Natural and Environmental Resources (DNER) monitors the commercial landings of fish and shellfish in Puerto Rico. The Commercial Fisheries Statistics Program (CFSP) was implemented in 1967 under the Commercial Fisheries Research and Development Act of 1964 (PL 88-309) to collect data on the commercial fishery. Currently, this project is funded by the NOAA/National Marine Fisheries Service (NMFS) through the State/Federal Cooperative Fisheries Program, Interjurisdictional Fisheries Programs and the DNER. The CFSP includes the following objectives: commercial fisheries landings reports, collection of biostatistics data, enter the collected data in computer format and estimate catch per unit effort (CPUE). The CFSP reached all the objectives during 2004 - 2006.

A total of 1.86 millions pounds were reported in 2004, 1.57 millions pounds in reported in 2005, and 1.34 millions reported pounds were reported in 2006. The CFSP determined a correction factor to estimate the non reported landings. Using the correction factor of 61% for 2004 has been estimated that a total of 3.06 millions of pounds were landed in Puerto Rico. In 2005, the correction factor was 50%, a total of 3.1 millions pounds landed. In 2006, a correction factor was 52%, a total of 2.6 millions pounds were landed.

Biostatistics data of fish and lobster were collected. Biostatistics data were obtained from a total of 54,685 organisms during 2004 - 2006. All data were entered in computers and sent to NOAA/Southeast Fisheries Science Center, at Miami, FL. The CPUE for landings and biostatistics data were estimated and are presented in this report. Also the paper shows data from landings by species, by coast and by municipality. Comments about the implementation of the new Fishing Regulation to conserve fishery resources and the impact in commercial fishers and their behavior are also presented in this paper.

KEY WORDS: Fishery statistics, Puerto Rico, management, landings, biostatistics

## **Estadísticas Pesqueras Comerciales en Pequeña Escala en Puerto Rico, durante 2004 - 2006**

El Laboratorio de Investigaciones Pesqueras (LIP) del Departamento de Recursos Naturales y Ambientales de Puerto Rico (DRNA) monitorea los desembarcos de pesca comercial de pescado y marisco en Puerto Rico. El Programa de Estadísticas Pesqueras Comerciales (PEPC) fue implementado en 1967 bajo el "Commercial Fisheries Research and Development Act of 1964 (PL 88-309)", para recolectar los datos de pesca comercial. Actualmente el programa recibe fondos de "NOAA/National Marine Fisheries Service (NMFS)" a través de "State/Federal Cooperative Fisheries Program", "Interjurisdictional Fisheries Program" y el DRNA. El PEPC incluye los siguientes objetivos: recolectar los reportes de los desembarcos de pesquería comercial, coleccionar datos de bioestadísticas, entrar los datos recolectados en computadora, y estimar el esfuerzo por unidad de esfuerzo (CPUE). El CFSP alcanzó todos los objetivos mencionados durante 2004-06.

Un total de 1.86 millones de libras fueron reportadas en el 2004, 1.57 millones de libras reportadas en el 2005, y 1.34 millones de libras reportadas fueron reportadas en el 2006. El PEPC determinó un factor de corrección para estimar los desembarcos no reportados. Utilizando el factor de corrección de 61% para el 2004, ha sido estimado un total de 3.06 millones de libras desembarcadas en Puerto Rico. En el 2005, el factor de corrección fue de 50%, un total de 3.1 millones de libras desembarcadas. En el 2006, el factor de corrección fue de 52%, un total de 2.6 millones de libras fueron estimadas desembarcadas.

Fueron recolectados datos de bioestadísticas de peces y langostas. Durante 2004-06, se obtuvieron datos de bioestadísticas de un total 54,685 organismos. Todos los datos se entraron en computadora y se enviaron a "NOAA/Southeast Fisheries Science Center", en Miami, FL. El CPUE para desembarcos y bioestadísticas fueron estimados y se presentan en este reporte. También se presentan datos de desembarcos por especie, por costa, por municipio. Comentarios sobre la implementación del nuevo reglamento de Pesca de Puerto Rico y su impacto en Pescadores así como el comportamiento de ellos son presentados en este reporte.

PALABRAS CLAVES: Estadísticas pesqueras, Puerto Rico, manejo, desembarcos, bioestadísticas

### **INTRODUCTION**

The objective of the Puerto Rico/NMFS Interjurisdictional Program, Commercial Fisheries Statistics Program, NA04NMF4070184 is to maintain reporting services on the commercial finfish and shellfish resources of Puerto Rico, as well as manage and disseminate the fisheries statistics through coordination of activities between NMFS and the Commercial Fishery Statistics Program (CFSP) of the Department of Natural and Environmental Resources (DNER). This includes the processing and summary of

monthly landings (by species or species group, weight, value, numbers of trips, hours fishing, gear type, etc.), which is needed to manage marine resources effectively. Close cooperation in these activities will avoid duplication and promote efficiency of operations.

This paper includes data from January 1<sup>st</sup> 2004 – December 31<sup>st</sup> 2006. Raw data form, have been submitted by e-mail to Joshua Bennett, and Steve Turner, Technical Monitor of the Research Management Division, NOAA/NMFS Southeast Fisheries Science Center, Miami, Florida.

The Puerto Rico/NMFS CSP -has seven principal goals:

- i) Collect landing data from the island of Puerto Rico ensuring coverage of all coastal municipalities and their major fishing centers,
- ii) Determine the total weight of principal finfish and shellfish landed in Puerto Rico each month,
- iii) Determine the ex-vessel value of principal finfish and shellfish species landed in Puerto Rico each month,
- iv) Collect biostatics data (individuals landed length in fork length, weight in grams),
- v) Manage, correct, evaluate, summarize data and prepare semiannual and annual performance reports, and
- vi) Disseminate data thru the NOAA/NMFS/Fisheries Information Network..

Commercial fishery landing data were collected from fishers, fish buyers and fishing associations from around Puerto Rico. Commercial fishery statistics has be submitted to DNER/CFSP as a compulsory requirement of Law Number 278 of November 29, 1998 and the PR Fishing Regulations of March 11, 2004. Four port agents and the principal investigator visited the 88 identified fishing centers at the 42 coastal municipalities including the islands of Vieques and Culebra (Figure 1). The data collection covered from January 1<sup>st</sup> 2004 to December 31<sup>st</sup>, 2006. Data were collected using a landing trip ticket system on a monthly basis during the project duration. The Trip Ticket System (only one trip reported by one ticket) was established by the CFSP starting in 2003. Efforts were made to collect the following data: fishing date; name of fish buyer, fisherman and/or helper (to avoid data duplica-

tion); fishing license number; munici-pali-ty; fishing center (munici-pality landing area); number of trips; gear type; fishing effort (hours spent fishing); weight in pounds by species or taxonomic family; market value to the fisherman (price in U.S. dollars/pound); maximum and minimum fishing depth; and fishing area. Trip tickets were completed using species common names and identifi-cation was possible by using an amended version of the bilingual technical report "Common Names of Fishes in Puerto Rico" (Erdman 1987). A numerical system of species identification was developed to correspond with species codes used in Erdman's publication. Species reported not included in the mentioned publication are added and numbered by CFSP's principal investigator. Fishers usually landed fishes in the round (not eviscerated), except the deepwater snapper and large grouper that they usually landed gilled and gutted. Lobster, oyster, and octopus were also landed in the round, and conch weights included meat only. Land crab statistics were reported in number of dozens with each dozen assumed to produce 1 lb. of meat. Some landings were reported as one of four classes of fish (first, second, third and "trash" fish) reflect-ing their market value: "trash" fish are perceived to have little or no market value. Classification varied somewhat by region but the following descriptions were used to characterize each class broadly: first class fish included large snappers, grouper, grunt, trunkfish and hogfish; second class included small snapper and grouper, parrotfish, goatfish, and trigger-fish; third class included smaller individuals of second class fish and large squirrel-fish. The "trashfish" category included butterfly-fish, angelfish, surgeonfi-sh, small squirrelfish and small fishes of a large number of species (Matos-Caraballo and Sadovy 1990).

Catch per unit of effort (CPUE) was determined as the



Figure 1. Map of Puerto Rico

total pounds per trip for landings data. Landings data were entered in MS-DOS computers, using Microsoft FoxPro, checked against the original landing trip tickets; corrected and analyzed using Microsoft FoxPro and Microsoft Excel. All data presented in this report are raw data. As in previous years (1988 - 2004) a correction factor was used in calculations to correct for under-reporting. During 2004 - 2006, the correction factor was determined by port samplers visiting the most active fishing centers per coast, for five days in a row (when possible). The port samplers collect data of all landings occurred during those five days visits. Later these data was compared the landings data obtained by port samplers during these visits with data submitted by commercial fishers. This process is repeated two times per year, the difference between both data permitted to estimate the under reported data. For 2004 the correction factor was 61%, for 2005 was 50% and for 2006, it was estimated as 52%. Historical correction factors methods and results are shown in previous CFSP publications and reports as Matos-Caraballo and Sadovy (1990, 1991) and Matos-Caraballo (1992, 1993, 1995, 1998, 2001A, 2001B, 2004A, 2004B).

Biostatistics data from finfish and spiny lobster were collected by port agents three days per week and principal investigator helped three days per month. Each individual was identified by species to determine catch composition. Finfishes were measured in fork length (FL) and spiny lobster in carapace length (CL), both in millimeters (mm), and weighed in grams. Data were recorded on the field and copied in the biostatistics data sheets. The form was designed to facilitate entry and processing of effort data. Biostatistics data were entered in Trip Interview Program (TIP) developed by NOAA/NMFS Southeast Science Center. Later, the data stored in TIP was converted to .dbf format and analyzed using Microsoft FoxPro and Microsoft Excel. The data collected include date, name of fisherman, fishing area, depth, gear, species, length, weight and effort by gear type. When possible, the whole catch was identified at species level, weight in grams (g), identified by sex visual gonad stage and fork length measured in millimeters (mm). When measuring the whole catch was not possible (incomplete sample), port agents tried to identify the species level, and tried to sample at least 50 randomly selected individuals measured and weighed. However, sometimes fishers or fish buyers did not allow the port agents to sample 50 individuals and/or the landing includes less than 50 individuals and fish buyers remove the landing before data was collected.

***A very important note - Historical event that affected the commercial fisheries landings reported in Puerto Rico during 2004 - 2007.***

In March 12, 2004, Honorable Luis E. Rodríguez Rivera, DNER Secretary, offered a conference press to announce the establishment of Puerto Rico Fishing

Regulation Number 6768. This document includes many important regulations to protect and improve the Puerto Rico's over fished resources. Closed seasons, permits for species of high value in the fisheries, and size limits were established to manage the fishery resources. On the other hand, under the previous Puerto Rico' Fishing Law, dated in May 1936, very few regulations were developed and implemented. The new fishing regulations were a drastic change for what fishers were used to, therefore making them very angry. The commercial fisher leaders decided that a protest to DNER was in order. Under the former fishing law they were not required to submit their catch data, being cooperation with the Statistic Program. Therefore, they were used to make pressure stopping their cooperation of supplying the commercial trip tickets landings data. Thus many fishers followed the instructions from their leaders and stopped the submission of the trip tickets to the CFSP/DNER. Although the regulations were developed to conserve the fishery resources and keep the commercial fishery, most fishers felt that the regulations were to eliminate the commercial fishery. Many fishers also were hostile to the port samplers and principal investigator. Many fishers that were very friendly to CFSP personnel before the Fishing Regulation 6768, stopped the cooperation with the biostatistics data collection. The DNER started educational meetings around Puerto Rico to explain them the need of the regulations and the importance of the trip ticket information. It was also explained to them that they were affecting their status as fishing license holder, since by law to maintain their license they are required to submit their catch information to DNER. These meetings help commercial fishers to understand the true meaning of the regulations and they started to comply with the Fishing Regulations.

Two other events occurred in Puerto Rico that affects the landings fishery program. During the spring of 2005, in approximately four to five weeks the cost of the gasoline increased from \$1.40/gallon to a record of \$3.20/gallon. Over 90% of fishers use gasoline motor in their fishing vessels, thus this price increase translated in a reduction in fishing trips frequency and increasing fishing time. The last event that affected the commercial fishery occurred in October 1<sup>st</sup>, 2006, when the Puerto Rico's government implemented the tax sales. Although, the fishers were exempt from the state tax sale, they have to report monthly municipality sales tax. After the occurrence of this third event, the CFSP personnel observed that many part time commercial fishers retired from fisheries, and some of them have become illegal fishers (no license, no sale tax, no reports to DNER).

Although these three mentioned events affected the fishery and the CFSP, port samplers, and the principal investigator were able to collect biostatistics data and many fisher associations and fish stores keep submitting the trip ticket landings data.

## RESULTS

A total of 1.86 millions pounds were reported in 2004, 1.57 million pounds in 2005, and 1.34 millions in 2006 (Table 1A, 1B and 1C). During January - June, 2007, a total of 611,346 pounds were reported, although data entry process continues and this number of pounds would increase. A total catch for calendar year 2007 corresponds to a different project period, and therefore will be reported with the corresponding report. A correction factor was estimate for the non reported landings. The correction factor for 2004 was estimated as 61%, a total of 3.06 millions of pounds were estimated being landed in Puerto Rico applying this factor. In 2005, the correction factor was 50% and a total of 3.1 millions pounds landed. In 2006 the correction factor was 52%, for a total of 2.6 million pounds landed.

A total of 32,639, trip tickets were collected during 2004; 27,404 during 2005, 23,607 during 2006; and 11,552 during January - June 2007. Landings were principally comprised by six species of shellfish and 43 categories of species, or families of finfish, although a total of 76 finfish groups and/or species and 10 shellfish species were reported by fishers. The most important fish, in terms of percentage of total pounds landed (fish and shellfish), for 2004 - 2006, were the yellow-tail snapper (*Ocyurus chrysurus*) 7.5%; queen snapper (*Etelis oculatus*) 7.1%; silk snapper (mainly *Lutjanus vivanus*) 6.6%; lane snapper (*Lutjanus synagris*); 5.8%, various species of tuna 5.2%; white grunt (mainly *Haemulon plumieri*), 4.1%; dolphin-fish (*Coryphaena hippurus*) 3.5%; king mackerel (*Scomberomorus cavalla*) 2.9%; various species of parrotfish 2.4%; various species of trunkfish 2.9%; red hinds (*Epinephelus guttatus*) reported 2.0%; and cero (*Scomberomorus regalis*) 1.5%; and (Table 1A, 1B and 1C). The most important of the shellfish species were the queen conch (*Strombus gigas*) 11.8% and the spiny lobster (*Panulirus argus*) 11.6% of the reported landings, and (Table 1A, 1B and 1C).

Matos-Caraballo (1998; 2001A; 2001B; 2004A; 2004B) mentioned that several fish and shellfish species, usually discarded by fishers in the past, have now become commercial species. These species did not have market value years ago, but are now sold at reasonable prices. The Table 1A, 1B and 1C shows that the squirrel-fish (e.g. *Holocentrus ascensionis* and *H. rufus*) were sold in 2004-06 at an average price of \$1.33 per pound. Shellfish species in the same situation are *Carpilius corallinus* and *Mythrax spp.* On the other hand, *Acanthurus spp.*, *Holocanthus ciliaris*, *Pomacanthus arcuatus*, and *P. paru* are fished in the municipality island of Vieques, to be sold in the market of Saint Thomas and Saint Croix, USVI.

During 2004 - 2006, prices varied markedly by species (Tables 1A, 1B and 1C) and municipality (Table 2). For example, the lowest average price per pound for fish and shellfish was obtained on the east coast, in the

municipality of -Yabucoa at \$1.23 during 2004 (Table 2), and the highest average price was obtained in the North Coast, in the municipality of Luquillo at \$5.40, however only 43 pounds were reported (Table 2). The highest fish price value during 2004 - 2006, was the deep water snappers silk snapper and queen snapper, \$3.46 and \$3.42 per pound in 2006, respectively (Table 2). The most valued shellfish during 2004 - 2006, were the land crab \$11.2 per pound during 2004 (Table 1A), and the spiny lobsters, \$6.07 per pound during 2006 (Table 1C). However, port sampler observed that the land crab landings reported were too low in number of pounds and the price. The port samplers mentioned that land crab fishers are mostly opportunistic, did not have permit, thus they did not report to CFSP. The price of land crab ranged between \$30.00 to \$40.00 per dozen (approximately one pound of meat). The most productive of the 42 municipalities during 2004 - 2006, was Cabo Rojo accounting for 25.2% of the total landings, by weight (Table 4). The west coast reported 51.1% of the total weight, being the most productive; followed by the south coast that reported 25.1%. The east coast reported 16.5% and the north coast was the lowest with 7.3% (Tables 1A, 1B and 1C).

The gear types are defined in Matos and Torres, 1989. The highest percentage of landing, by weight during 2004 - 2006, were lines (hand line, troll line, long line and rod and line together) capturing 43.9.0% (2,097,080 pounds) of the total catch (Table 5A, 5B and 5C). Lines were followed by divers (skin and SCUBA) that caught 24.8% (1,181,641 pounds), followed by traps (fish trap and lobster trap) with 18.6% (888,156 pounds) of total catch. Traps were followed by nets 12.7% (608,468 pounds) of the total reported catch (Table 3A, 3B and 3C).

Some species were reported in greater quantities in some months of the year. The dolphinfish were caught mostly during January to April, which corresponds to the months when they migrate close to Puerto Rico. The tunas (Scombridae) were caught in greater quantities during May - September, reflecting their migration. Yellowtail snappers were caught in great quantities year round, showing peaks during January-April and August-September. Fishing activity was affected during the hurricane season, especially during August and September. In August and September 2004 - 2006, many hurricanes and storms passed close to Puerto Rico, affecting the whole coastal areas with surge wave action, winds and rain that produced flooded areas. These conditions resulted in a decrease in commercial fishing effort.

**Table 1A.** Landings reported by species and by coast in Puerto Rico During 2004

SPECIES	NORTH		EAST		SOUTH		WEST		TOTAL	
	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P	POUNDS	*P/P
<b>FISH</b>										
Tunas										
Blackfin tuna	530	1.93	317	1.73	216	1.53	27,940	1.60	29,003	1.17
Little tunny	652	1.81	25	2.00	827	0.94	11,948	0.90	13,452	1.03
Skipjack tuna	346	2.02	569	2.74	487	1.54	20,994	0.84	22,396	1.07
Yellowfin tuna	562	2.05	503	2.84	98	1.57	14,390	1.11	15,553	1.35
Tuna category	883	2.15	1,154	1.64	239	1.59	6,698	0.99	8,974	1.29
Ballyhoo	2,138	1.29	5,872	1.33	13,692	1.15	5,087	1.05	26,789	1.19
White Grunt	3,469	1.71	16,662	1.42	34,118	1.65	35,064	0.85	89,313	1.40
Hogfish	277	2.89	17,057	2.19	12,065	2.74	10,477	2.48	39,876	2.51
Trunkfish	471	2.89	11,580	1.53	16,200	1.67	24,076	2.00	52,327	1.80
Dolphinfish	10,176	2.66	2,417	2.38	12,786	1.96	50,948	1.47	76,327	1.71
Squirrelfishes	1,291	1.09	1,100	1.61	4,361	1.31	360	1.22	7,112	1.33
Mulletts	7,604	1.25	1,555	1.43	10,184	1.19	7,550	0.92	26,893	1.15
Jacks										
Bar jack	4,403	1.92	5,805	1.41	8,880	1.61	14,715	1.08	33,803	1.44
Horse-eye jack	701	1.73	85	1.92	126	1.32	988	1.05	1,900	1.43
Yellow jack	8	3.00	30	1.13	142	1.41	526	1.44	706	1.44
Jack Category	6,741	1.73	953	1.80	1,311	1.16	7,537	1.13	16,542	1.51
Parrotfishes	1,404	1.97	5,644	1.67	31,256	1.64	13,375	0.91	51,679	1.55
Groupers										
Coney	725	2.12	1,817	2.08	2,292	2.09	3,024	1.84	7,858	1.99
Red hind	3,158	2.72	8,733	2.23	10,473	2.31	20,720	1.93	43,084	2.17
Misty grouper	138	3.33	485	2.02	299	2.55	3,864	2.24	4,786	2.22
Nassau grouper	313	1.98	1,539	2.31	285	1.52	2,093	1.51	4,230	1.85
Yellowfin grouper	66	2.21	608	2.04	81	2.61	1,433	1.86	2,188	2.04
Grouper category	2,264	2.57	6,262	2.23	10,034	2.31	7,377	1.92	25,937	2.18
Mojarras	3,435	1.76	1,004	1.54	921	1.53	1,012	1.05	6,372	1.55
Snappers										
Lane snapper	3,954	2.61	11,690	2.26	55,174	2.16	28,371	2.02	99,189	2.14
Yellowtail snapper	36,374	2.52	44,235	2.31	37,542	2.15	32,475	1.86	150,626	2.19
Silk snapper	17,133	3.13	8,701	3.01	9,799	3.44	83,233	2.98	118,866	3.06
Mutton snapper	2,764	2.63	11,680	2.33	16,478	2.18	16,136	2.11	47,058	2.22
Queen snapper	3,490	3.40	1,359	2.88	2,855	3.62	71,840	3.21	79,544	3.25
Vermillion snapper	4,715	2.45	3,887	2.11	432	2.60	515	2.52	9,549	2.36
Wenchman	473	3.12	709	1.89	619	3.53	4,476	3.25	6,277	2.97
Blackfin snapper	446	3.33	697	3.15	664	3.49	1,586	2.68	3,393	3.12
Snapper category	3,580	2.75	4,326	2.35	11,563	2.24	10,089	2.39	29,558	2.43
Triggerfishes	2,309	2.02	8,790	1.45	14,009	1.79	18,002	1.22	43,110	1.46
Barracudas	1,352	1.65	517	1.66	3,228	1.59	2,265	1.18	7,362	1.50
Porgies	435	1.61	4,974	1.58	9,747	1.69	2,746	1.33	17,902	1.58
Snooks	6,911	1.96	2,774	1.78	3,129	1.56	5,825	1.51	18,639	1.72
Tarpon	564	1.07	0	0.00	8	1.00	180	1.70	752	1.18
Goatfishes	292	1.82	3,921	2.04	3,183	2.04	868	1.12	8,264	1.85
Sardines	11,067	1.02	476	1.13	478	1.00	2,263	1.13	14,284	1.05
Mackerel	6,075	1.89	13,429	2.34	6,185	1.96	26,940	1.79	52,629	1.98
Cero	2,501	2.15	5,023	2.34	7,921	2.01	4,301	1.96	19,746	2.10
Sharks	3,397	1.83	6,130	1.90	1,732	1.79	3,826	1.29	15,085	1.68
Wahoo	25	2.00	447	3.48	185	1.78	3,879	1.59	4,536	1.77
<b>CLASSIFIED</b>										
First Class	33	2.00	11,711	2.05	1,922	2.02	8,289	2.00	21,955	2.02
Second Class	0	0.00	2,102	1.69	3,396	1.28	6,529	0.94	12,027	1.05
Third Class	8	1.00	8,026	1.15	215	1.50	0	0.00	8,249	1.15
Trash	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Other fishes	2,943	2.10	924	2.09	2,684	2.02	6,590	1.83	13,141	1.93
<b>Total Fishes</b>	<b>162,596</b>	<b>1.90</b>	<b>248,304</b>	<b>1.60</b>	<b>364,521</b>	<b>1.56</b>	<b>633,420</b>	<b>1.43</b>	<b>1,408,841</b>	<b>1.95</b>
<b>SHELLFISH</b>										
Conch	60	3.50	57,772	2.50	25,679	3.31	132,529	2.13	216,040	2.42
Land crab	194	13.80	884	15.00	86	9.43	237	2.59	1,401	11.20
Lobster	3,734	6.61	47,796	5.96	70,085	5.96	90,611	5.31	212,226	5.58
Octopus	608	2.46	841	2.87	16,934	2.59	1,789	2.09	20,172	2.52
Other shellfish	856	2.10	586	2.09	2,523	2.02	2,035	1.83	6,000	1.93
<b>Total Shellfish</b>	<b>5,452</b>	<b>5.90</b>	<b>107,879</b>	<b>5.04</b>	<b>115,307</b>	<b>4.61</b>	<b>227,201</b>	<b>3.98</b>	<b>455,839</b>	<b>4.40</b>
<b>TOTAL</b>	<b>168,048</b>	<b>2.03</b>	<b>356,183</b>	<b>2.16</b>	<b>479,828</b>	<b>2.09</b>	<b>860,621</b>	<b>1.96</b>	<b>1,864,680</b>	<b>2.46</b>

\* P/P = Average Price Per Pound in U.S. Dollar.

Table 1B. Landings reported by species and by coast in Puerto Rico during 2005.

SPECIES	NORTH		EAST		SOUTH		WEST		TOTAL	
	Pounds	*P/P	Pounds	*P/P	Pounds	*P/P	Pounds	*P/P	Pounds	*P/P
FISH										
Tunas										
Blackfin tuna	840	1.37	692	1.62	438	1.73	20,069	1.06	22,039	1.45
Little tunny	2,345	1.19	0	0.00	37	2.75	5,714	1.03	8,096	1.24
Skipjack tuna	456	1.62	327	1.96	246	2.08	24,820	0.83	25,849	1.62
Yellowfin tuna	518	1.91	517	1.54	284	2.07	19,915	1.11	21,234	1.66
Tuna category	927	2.16	1,554	1.70	12	1.50	3,222	1.15	5,715	1.63
Ballyhoo	1,312	1.39	436	1.55	6,293	1.10	9,091	0.60	17,132	1.16
White Grunt	1,791	1.76	13,060	1.58	21,955	1.68	16,869	0.94	53,675	1.49
Hogfish	155	3.22	5,506	2.30	9,359	2.58	10,871	2.67	25,891	2.69
Trunkfish	90	2.63	7,626	1.60	13,949	1.57	22,931	2.05	44,596	1.96
Dolphinfish	4,956	2.52	1,086	2.10	7,888	1.97	28,883	1.58	42,813	2.04
Squirrelfishes	803	1.07	1,102	1.69	3,444	1.35	534	0.97	5,883	1.27
Mullets	3,533	1.29	1,000	1.65	7,757	1.25	3,233	1.05	15,523	1.31
Jacks										
Bar jack	2,894	1.96	5,201	1.67	7,951	1.51	6,598	1.31	22,644	1.61
Horse-eye jack	755	1.54	183	1.89	129	1.43	658	1.11	1,725	1.49
Yellow jack	30	1.75	28	2.00	25	1.72	444	1.07	527	1.64
Jack Category	1,114	1.77	2,959	1.72	906	1.48	2,734	1.29	7,713	1.57
Parrotfishes	1,160	1.86	3,974	1.80	15,543	1.68	10,455	0.94	31,132	1.57
Groupers										
Coney	206	2.18	479	2.09	1,295	2.13	2,226	1.94	4,206	2.09
Red hind	1,766	2.47	4,102	2.39	3,957	2.41	19,235	1.96	29,060	2.31
Misty grouper	93	2.60	436	2.00	85	2.57	6,781	2.39	7,395	2.39
Nassau grouper	98	2.23	469	1.87	172	1.59	1,258	1.41	1,997	1.78
Yellowfin grouper	4	3.00	514	2.02	83	2.30	151	2.00	752	2.33
Grouper category	2,366	2.60	1,214	2.37	6,204	2.36	5,797	2.10	15,581	2.36
Mojarras	1,327	2.01	977	2.03	792	1.52	516	1.55	3,612	1.78
Snappers										
Lane snapper	2,020	2.54	9,713	2.30	51,574	2.20	24,882	2.12	88,189	2.29
Yellowtail snapper	24,722	2.51	37,462	2.47	29,740	2.23	23,032	2.02	114,956	2.31
Silk snapper	11,493	3.16	9,433	3.76	6,668	3.62	82,863	2.93	110,457	3.37
Mutton snapper	3,214	2.55	3,480	2.46	12,038	2.22	14,737	2.24	33,469	2.37
Queen snapper	2,047	3.69	2,380	2.91	2,348	3.70	149,973	2.89	156,748	3.30
Vermillion snapper	1,886	2.35	2,942	1.95	363	3.29	654	2.54	5,845	2.53
Wenchman	324	2.98	436	1.66	1,151	3.51	9,462	2.70	11,373	2.71
Blackfin snapper	88	2.63	626	3.07	762	3.50	1,421	2.18	2,897	2.85
Snapper category	3,052	2.50	4,668	2.33	9,553	2.12	8,285	2.03	25,558	2.25
Triggerfishes	1,161	1.97	3,505	1.66	10,932	1.72	16,562	1.27	32,160	1.66
Barracudas	759	1.85	330	2.21	2,322	1.68	1,716	1.43	5,127	1.79
Porgies	138	2.19	3,585	1.50	6,897	1.72	1,420	1.59	12,040	1.75
Snooks	1,136	1.89	1,386	2.03	2,080	1.83	3,523	1.66	8,125	1.85
Tarpon	28	0.88	0	0.00	0	0.00	0	0.00	28	0.22
Goatfishes	25	1.83	2,773	2.10	2,576	1.71	544	1.21	5,918	1.71
Sardines	8,042	1.04	369	1.19	727	1.27	1,678	1.85	10,816	1.34
King mackarel	13,114	2.06	3,337	2.44	9,693	1.82	20,782	1.86	46,926	2.05
Cero	3,707	2.12	6,306	2.15	16,394	1.68	3,684	1.97	30,091	1.98
Sharks	6,018	1.82	5,307	2.08	2,533	1.73	3,538	1.17	17,396	1.70
Wahoo	21	3.50	19	2.75	185	1.42	2,920	1.54	3,145	2.30
CLASSIFIED										
First Class	0	0.00	3,677	2.05	2,115	1.75	4,077	1.94	9,869	1.44
Second Class	0	0.00	1,917	1.00	455	1.00	1,837	0.94	4,209	0.74
Third Class	2	3.00	1,363	1.21	0	0.00	3	0.75	1,368	1.24
Trash	0	0.00	0	0.00	32	0.75	40	0.90	72	0.41
Other fishes	60	2.25	11,096	2.46	3,029	2.73	10,850	1.62	25,035	2.27
Total Fishes	112,596	1.79	169,552	1.81	282,971	1.58	611,488	1.47	1,176,607	1.66
SHELLFISH										
Conch	397	3.94	35,935	2.76	18,595	3.62	140,626	2.22	195,553	3.14
Land crab	308	7.29	1,069	6.05	1,094	3.06	1,805	6.54	4,276	5.74
Lobster	3,834	6.58	29,975	5.54	56,128	5.62	83,036	5.30	172,973	5.76
Octopus	39	2.92	231	2.89	7,739	2.68	1,591	2.00	9,600	2.62
Other shellfish	816	3.15	1,078	3.14	2,396	4.07	5,736	2.05	10,026	3.10
Total Shellfish	5,394	5.99	68,288	4.61	85,952	4.74	232,794	3.98	392,428	4.83
<b>TOTAL</b>	<b>117,990</b>	<b>1.95</b>	<b>237,840</b>	<b>2.19</b>	<b>368,923</b>	<b>2.14</b>	<b>844,282</b>	<b>2.06</b>	<b>1,569,035</b>	<b>2.09</b>

\* P/P = Average Price Per Pound in U.S. Dollar

**Table 1C.** Landings reported by species and by coast in Puerto Rico during 2006.

SPECIES	NORTH POUNDS	*P/P	EAST POUNDS	*P/P	SOUTH POUNDS	*P/P
<b>FISH</b>						
Tunas						
Blackfin tuna	93	2.11	263	2.16	219	1.58
Little tunny	1,232	1.15	0	0.00	600	1.46
Skipjack tuna	61	1.03	36	2.38	233	2.29
Yellowfin tuna	370	1.89	508	2.25	1,700	2.04
Tuna category	1,902	1.42	1,248	2.24	588	2.04
Ballyhoo	54	1.75	740	1.51	3,763	1.39
White Grunt	936	1.93	10,849	1.65	15,548	1.80
Hogfish	121	3.50	7,367	2.27	9,701	2.83
Trunkfish	13	2.00	5,776	1.74	11,240	1.76
Dolphinfish	6,122	2.27	966	2.08	7,169	3.27
Squirrelfishes	458	1.18	761	1.72	2,998	1.38
Mulletts	770	1.28	548	1.55	7,966	1.24
Jacks						
Bar jack	810	1.88	3,284	1.49	3,922	1.45
Horse-eye jack	260	1.75	29	2.00	15	0.78
Yellow jack	27	2.00	0	0.00	147	1.82
Jack Category	1,753	1.79	565	1.57	842	1.37
Parrotfishes	318	1.88	2,725	1.83	19,861	1.71
Groupers						
Coney	22	2.60	161	2.18	911	2.10
Red hind	360	2.49	2,161	2.46	2,468	2.52
Misty grouper	12	2.67	522	2.00	582	3.17
Nassau grouper	6	2.00	169	2.71	28	2.20
Yellowfin grouper	0	0.00	604	2.04	134	1.63
Grouper category	709	2.53	3,664	2.26	2,639	2.51
Mojarras	518	1.60	329	2.02	922	1.45
Snappers						
Lane snapper	1,037	2.33	13,205	2.33	47,886	2.28
Yellowtail snapper	13,520	2.51	27,721	2.45	24,864	2.32
Silk snapper	5,886	3.14	9,843	3.75	9,100	3.87
Mutton snapper	1,035	2.48	3,030	2.49	7,300	2.33
Queen snapper	1,338	3.82	828	2.60	2,590	3.89
Vermillion snapper	1,396	2.51	869	1.82	350	2.59
Wenchman	277	3.09	396	1.72	440	4.37
Blackfin snapper	112	2.68	429	2.77	540	3.93
Snapper category	1,907	2.66	4,715	2.29	7,029	2.16
Triggerfishes	466	1.62	3,321	1.68	10,261	1.90
Barracudas	578	1.81	184	2.07	2,257	1.67
Porgies	47	2.50	3,092	1.56	5,057	1.93
Snooks	1,581	2.11	1,028	1.78	2,414	1.73
Tarpon	0	0.00	0	0.00	0	0.00
Goatfishes	34	1.71	1,737	2.08	2,669	2.16
Sardines	2,134	1.22	216	1.06	1,369	1.33
Mackerel	2,917	2.01	9,605	2.53	4,243	1.82
Cero	2,105	2.09	1,573	2.36	16,122	1.71
Sharks	4,574	1.69	4,200	2.08	3,614	1.71
Wahoo	97	1.92	0	0.00	267	2.18
<b>CLASSIFIED</b>						
First Class	0	0.00	2,220	2.11	10	2.00
Second Class	0	0.00	1,624	1.30	19	1.00
Third Class	0	0.00	343	1.24	0	0.00
Trash	0	0.00	0	0.00	0	0.00
Other fishes	2,051		75		6,794	
Total Fishes	60,019	1.87	133,529	1.86	249,391	1.77
			0		0	
<b>SHELLFISH</b>						
Conch	126	3.50	32,170	3.14	15,734	4.51
Land crab	216	6.02	102	8.03	4,457	6.06
Lobster	1,620	6.76	27,060	6.05	57,149	5.81
Octopus	0	0.00	692	4.29	16,818	3.03
Other shellfish	140	3.00	621	2.83	2,840	4.29
Total Shellfish	2,102	6.14	60,645	5.02	96,998	5.11
<b>TOTAL</b>	<b>62,121</b>	<b>2.02</b>	<b>194,174</b>	<b>2.34</b>	<b>346,389</b>	<b>2.66</b>

\* P/P = Average Price Per Pound in U.S. Dollar

**Table 2.** Landings reported by municipality and by coast in Puerto Rico during 2004

LOCATION	2004			2005			2006	
	POUNDS	VALUE	P/P*	POUNDS	VALUE	P/P*	POUNDS	VALUE
<b>NORTH</b>	<b>168,048</b>	<b>390,451</b>	<b>2.03</b>	<b>117,990</b>	<b>269,202</b>	<b>1.95</b>	<b>62,121</b>	<b>149,102</b>
Isabela	854	2,781	3.08	968	3,928	3.73	928	4,058
Quebradillas	0	0	0.00	0	0	0.00	0	0
Camuy	4,070	7,822	1.88	7,237	20,480	2.36	1,639	4,018
Hatillo	993	2,964	1.27	0	0	0.00	55	193
Arecibo	20,771	54,172	2.37	22,091	47,701	1.61	9,657	21,292
Barceloneta	5,435	14,003	1.94	4,423	11,715	1.75	3,821	7,255
Manatí	0	0	0.00	1,565	2,821	1.96	0	0
Vega Baja	5,518	16,459	2.48	1,899	5,662	2.43	773	2,436
Vega Alta	5,962	14,482	2.05	5,144	10,635	1.69	1,995	4,025
Dorado	5,938	14,241	2.21	4,679	10,473	2.03	3,650	6,634
Toa Baja	766	3,099	2.50	0	0	0.00	0	0
Cataño	19,407	47,379	2.34	12,330	29,938	2.33	8,113	20,754
San Juan	55,475	126,592	2.13	35,858	77,842	2.16	22,882	54,222
Carolina	0	0	0.00	748	748	0.50	1,326	3,396
Loíza	20,381	37,560	1.31	10,357	21,574	1.37	2,011	6,165
Río Grande	19,976	43,277	1.55	10,321	24,633	1.72	5,228	14,390
Luquillo	2,502	5,622	2.04	370	1,052	2.48	43	264
<b>EAST</b>	<b>356,183</b>	<b>927,459</b>	<b>2.16</b>	<b>237,840</b>	<b>658,324</b>	<b>2.19</b>	<b>194,174</b>	<b>566,311</b>
Fajardo	92,087	275,993	2.06	77,691	244,036	2.12	54,425	177,326
Ceiba	43,386	102,706	1.94	25,086	70,978	1.90	15,930	45,604
Naguabo	66,529	168,206	2.52	44,422	119,865	2.49	18,756	52,604
Humacao	57,314	140,524	2.39	35,290	97,755	2.42	41,300	119,821
Yabucoa	7,995	16,093	1.23	18,756	36,533	1.84	20,682	46,261
Maunabo	5,116	13,495	2.72	3,925	8,981	2.27	3,788	10,887
Culebra	6,833	19,773	2.78	425	1,256	2.55	1,437	5,297
Vieques	76,923	190,669	1.88	32,245	78,920	1.86	37,856	108,511
<b>SOUTH</b>	<b>479,828</b>	<b>1,243,362</b>	<b>2.11</b>	<b>368,923</b>	<b>1,010,151</b>	<b>2.15</b>	<b>346,389</b>	<b>1,049,970</b>
Patillas	19,438	59,638	2.80	10,016	28,452	2.43	789	4,064
Arroyo	42,530	103,717	1.89	9,697	19,267	1.65	9,019	19,554
Guayama	80,128	226,130	2.19	50,127	154,795	2.29	59,417	190,095
Salinas	57,482	168,769	2.38	51,031	164,295	2.55	47,449	166,307
Santa Isabel	17,428	49,981	2.53	21,055	68,409	2.44	9,557	31,039
Juana Díaz	64,785	169,379	1.88	50,969	141,381	2.02	35,700	93,779
Ponce	45,079	101,013	1.82	71,734	170,518	1.92	56,112	137,378
Peñuelas	49,456	172,846	2.48	32,630	122,011	2.59	68,366	256,656
Guayanilla	16,087	28,273	1.38	13,874	30,587	1.78	16,406	49,792
Guánica	22,121	47,094	2.02	8,368	20,443	1.91	22,307	58,050
Lajas	65,294	116,522	1.68	49,422	89,993	1.71	21,267	43,256
<b>WEST</b>	<b>860,621</b>	<b>1,956,347</b>	<b>1.96</b>	<b>844,282</b>	<b>2,167,618</b>	<b>2.06</b>	<b>736,240</b>	<b>2,008,144</b>
Cabo Rojo	440,399	1,072,261	2.09	404,978	1,103,676	2.25	358,517	1,123,916
Mayaguez	84,606	193,260	2.04	88,283	214,866	2.21	71,210	160,571
Añasco	17,736	56,194	1.89	18,489	58,295	1.52	4,735	13,318
Rincón	113,719	339,463	1.96	185,312	561,048	1.92	139,381	458,924
Aguada	87,595	122,303	1.52	31,301	53,660	1.73	56,210	85,099
Aguadilla	116,566	172,867	1.34	115,919	176,073	1.28	106,187	166,316
<b>TOTAL</b>	<b>1,864,680</b>	<b>4,517,619</b>	<b>2.05</b>	<b>1,569,035</b>	<b>4,105,295</b>	<b>2.10</b>	<b>1,338,924</b>	<b>3,773,527</b>



Table 3A. Landings reported by species and by gear in Puerto Rico during 2004

SPECIES	Beach Stene (lbs)	Fish Trap (lbs)	Lobster Trap (lbs)	Gill Net (lbs)	Bottom Line (lbs)	Troll Line (lbs)	Long Line (lbs)	Land crab Trap (lbs)	Cast Net (lbs)	Rod and Line (lbs)	Skin Diving (lbs)	Scuba Diving (lbs)	Tramme; Net (lbs)	TOTAL (lbs)
FISH														
Tunas														
Blackfin tuna	896	0	0	229	4,922	22,870	0	0	0	2	0	84	0	29,003
Little tunny	7,102	0	0	347	1,057	4,891	0	0	12	0	0	35	8	13,452
Skipjack tuna	624	50	0	550	4,020	17,111	0	0	0	10	0	31	0	22,396
Yellowfin tuna	40	0	0	122	3,709	11,632	0	0	0	0	0	50	0	15,553
Tuna category	51	100	0	72	2,157	6,523	0	0	0	20	0	51	0	8,974
Ballyhoo	4,557	146	0	20,09	142	232	126	0	39	0	0	960	489	26,789
White grunt	10,773	36,41	6	13,24	6,720	43	444	0	0	0	4	432	21,220	89,313
Hogfish	213	12,16	8	674	1,225	112	0	0	0	0	264	24,420	668	39,876
Trunkfish	1,217	2	1,371	2,414	947	16	10	0	8	0	11	11,329	2,652	52,327
Dolphinfish	190	0	0	203	16,481	58,271	0	0	0	532	0	650	0	76,327
Squirrelfishes	43	4,269	4	608	1,731	0	13	0	0	3	0	326	115	7,112
Mulletts	1,661	404	61	21,15	1,095	10	0	0	745	0	0	71	1,689	26,893
Jacks														
Bar jack	6,758	2,455	0	12,11	10,216	40	253	0	0	10	0	235	1,721	33,803
Horse-eye jack	298	18	0	339	1,126	69	10	0	0	0	0	28	12	1,900
Yellow jack	3	63	0	376	178	0	0	0	0	0	0	86	0	706
Jack Category	5,326	255	0	3,123	6,917	643	22	0	21	22	0	149	64	16,542
Parrotfishes	4,331	14,89	9	9,977	1,149	0	35	0	0	0	143	5,708	15,437	51,679
Groupers														
Coney	14	3,492	0	516	3,507	0	59	0	0	0	56	72	142	7,858
Red hind	70	10,87	9	438	19,647	0	339	0	0	0	21	11,310	245	43,084
Misty grouper	0	377	0	129	4,045	0	133	0	0	0	0	102	0	4,786
Nassau grouper	0	244	0	127	2,576	0	0	0	0	0	0	1,283	0	4,230
Yellowfin grouper	0	433	0	34	935	0	0	0	0	0	0	786	0	2,188
Groupers category	280	5,314	0	838	6,619	132	69	0	0	0	69	12,478	138	25,937
Mojarras	202	341	0	4,611	648	0	28	0	210	0	0	306	26	6,372

Table 3A. (continued)

SPECIES	Beach Seine (lbs)	Fish Trap (lbs)	Lobster Trap (lbs)	Gill Net (lbs)	Bottom Line (lbs)	Troll Line (lbs)	Long Line (lbs)	Land crab Trap (lbs)	Cast Net (lbs)	Rod and Line (lbs)	Skin Diving (lbs)	Scuba Diving (lbs)	Trammel Net (lbs)	TOTAL (lbs)
<b>Snappers</b>														
Lane snapper	1,113	34,152	133	14,621	31,875	128	15,707	0	28	0	8	894	530	99,189
Yellowtail snapper	7,235	14,089	0	5,485	118,977	646	833	0	0	86	3	1,563	1,709	150,626
Silk snapper	0	21,081	0	146	97,435	0	204	0	0	0	0	0	0	118,866
Mutton snapper	1,321	13,826	96	4,550	18,860	277	1,382	0	0	0	42	6,022	682	47,058
Queen snapper	0	350	0	44	78,924	0	226	0	0	0	0	0	0	79,544
Vermillion snapper	0	2,067	0	61	7,322	0	99	0	0	0	0	0	0	9,549
Wenchman	0	71	0	640	5,454	0	112	0	0	0	0	0	0	6,277
Blackfin snap- per	0	1,048	0	25	2,320	0	0	0	0	0	0	0	0	3,393
Snapper category	446	6,660	0	5,881	7,566	140	64	0	5	36	69	7,364	1,327	29,558
Triggerfish	418	22,271	50	289	6,647	210	73	0	6	7	72	12,669	398	43,110
Barracudas	1,864	234	0	1,571	3,125	381	2	0	73	0	0	64	48	7,362
Porgies	326	9,127	0	4,800	1,564	2	73	0	0	0	0	1,002	1,008	17,902
Snooks	3,410	745	0	10,752	1,975	61	80	0	309	0	30	1,076	201	18,639
Tarpon	111	0	0	469	138	0	0	0	34	0	0	0	0	752
Goatfishes	269	6,384	45	826	535	49	0	0	0	0	0	102	54	8,264
Sardines	224	0	0	479	820	0	0	0	12,758	0	0	3	0	14,284
King Mackerels	1,810	750	0	3,925	30,717	14,559	88	0	92	76	0	565	47	52,629
Cero	108	210	42	3,393	10,834	4,731	12	0	20	247	0	146	3	19,746
Sharks	183	218	0	2,645	7,151	224	4,004	0	33	102	0	160	365	15,085
Wahoo	40	15	0	0	480	3,904	0	0	0	50	0	47	0	4,536
<b>CLASSIFIED</b>														
First Class	0	10,371	0	739	1,822	52	0	0	0	0	0	8,811	160	21,955
Second Class	5	8,337	0	2,471	298	0	0	0	0	0	0	844	72	12,027
Third Class	0	5,376	0	0	600	23	0	0	0	0	0	2,250	0	8,249
Trash	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other fishes	778	1,306	0	3,579	4,061	482	1	0	1,280	0	1	1,599	54	13,141
Total Fishes	64,310	283,363	2,088	159,773	541,269	148,464	24,501	0	15,673	1,203	793	116,163	51,284	1,408,841
<b>SHELLFISH</b>														
Conch	10	1,475	0	227	0	0	0	0	0	0	7,526	206,732	70	216,040
Land crab	0	0	0	0	0	0	0	1,401	0	0	0	0	0	1,401
Lobster	364	64,655	28,889	3,236	301	0	0	0	0	0	2,705	101,169	10,907	212,226
Octopus	16	788	6	29	189	18	0	0	0	0	8,016	11,098	12	20,172
Other shellfish	0	1,660	0	385	96	186	0	0	182	0	522	2,394	575	6,000
Total Shellfish	390	68,578	28,895	3,877	586	204	0	1,401	182	0	18,769	321,393	11,564	455,839
<b>TOTAL</b>	<b>64,700</b>	<b>351,941</b>	<b>30,983</b>	<b>163,607</b>	<b>541,855</b>	<b>148,668</b>	<b>24,501</b>	<b>1,401</b>	<b>15,855</b>	<b>1,203</b>	<b>19,562</b>	<b>437,556</b>	<b>62,848</b>	<b>1,864,680</b>

Table 3B. Landings reported by species and by gear in Puerto Rico during 2005

SPECIES	Beach	Fish	Lobster	Gill	Bottom	Troll	Long	Land crab	Cast	Rod and	Skin	Scuba	Trammel	TOTAL
	Siene (lbs)	Trap (lbs)	Trap (lbs)	Net (lbs)	Line (lbs)	Line (lbs)	Line (lbs)	Trap (lbs)	Net (lbs)	Line (lbs)	Diving (lbs)	Diving (lbs)	Net (lbs)	(lbs)
FISH														
Tunas														
Blackfin tuna	462	291	0	593	7,427	12,618	107	12	0	21	0	508	0	22,039
Little tunny	727	278	0	30	3,351	3,591	0	0	32	87	0	0	0	8,096
Skipjack tuna	164	222	0	131	6,310	18,866	0	17	0	10	0	129	0	25,849
Yellowfin tuna	209	19	0	8	6,402	14,304	20	0	0	0	23	249	0	21,234
Tuna category	11	50	0	26	2,134	3,478	0	0	0	0	0	0	16	5,715
Ballyhoo	3,507	181	0	10,410	1,579	778	0	0	28	0	0	639	10	17,132
White grunt	787	24,792	166	8,910	5,529	469	251	0	37	60	8	554	12,112	53,675
Hogfish	0	4,936	348	226	2,923	300	0	0	0	0	92	16,727	339	25,891
Trunkfish	247	24,156	3,347	1,614	2,142	301	0	0	0	0	17	10,447	2,325	44,596
Dolphinfish	0	486	27	121	13,800	27,622	0	0	0	0	0	757	0	42,813
Squirrelfishes	266	3,453	49	360	1,620	40	54	0	0	0	0	8	33	5,883
Mulletts	927	386	0	12,381	902	443	0	0	343	0	0	112	29	15,523
Jacks														
Bar jack	1,067	1,018	0	8,323	9,855	325	282	0	707	12	0	357	698	22,644
Horse-eye jack	57	0	0	228	1,342	53	31	0	0	14	0	0	0	1,725
Yellow jack	72	16	0	0	368	32	0	0	0	0	0	39	0	527
Jack Category	598	227	0	1,455	4,961	213	50	0	10	69	0	130	0	7,713
Parrotfishes	1,083	12,537	141	5,098	1,411	15	9	0	0	0	56	2,160	8,622	31,132
Groupers														
Coney	2,014	0	0	96	1,562	162	0	0	0	0	0	372	0	4,206
Red hind	4,586	0	0	216	14,663	674	20	0	0	0	0	8,861	40	29,060
Misty grouper	0	469	0	0	5,057	1,865	4	0	0	0	0	0	0	7,395
Nassau grouper	45	342	7	10	1,062	334	9	0	0	0	0	188	0	1,997
Yellowfin grouper	0	494	0	8	129	0	0	0	0	0	0	121	0	752
Grouper category	154	1,185	12	144	5,914	644	22	0	0	50	67	7,370	19	15,581
Mojarras	70	297	0	2,237	827	33	25	0	93	0	0	30	0	3,612

Table 3B. (continued)

SPECIES	Beach Seine (lbs)	Fish Trap (lbs)	Lobster Trap (lbs)	Gill Net (lbs)	Bottom Line (lbs)	Troll Line (lbs)	Long Line (lbs)	Land crab Trap (lbs)	Cast Net (lbs)	Rod and Line (lbs)	Skin Diving (lbs)	Scuba Diving (lbs)	Trammel Net (lbs)	TOTAL (lbs)
<b>Snappers</b>														
Lane snapper														
Yellowtail snapper	382	30,842	413	7,380	34,494	868	11,642	0	3	49	0	1,979	137	88,189
Silk snapper	2,214	7,778	26	3,292	96,776	2,688	889	0	0	96	14	613	570	114,956
Mutton snapper	0	10,643	0	92	99,415	0	172	0	0	0	0	0	135	110,457
Queen snapper	231	8,610	174	2,357	14,839	1,181	958	0	0	0	3	5,046	70	33,469
Vermillion snapper	0	194	0	0	156,485	0	69	0	0	0	0	0	0	156,748
Wenchman	0	628	0	160	4,891	0	94	0	0	0	0	72	0	5,845
Blackfin snapper	0	108	0	734	10,466	0	65	0	0	0	0	0	0	11,373
Snapper category	0	456	0	16	2,403	0	22	0	0	0	0	0	0	2,897
Triggenfish	103	4,529	10	3,927	8,472	379	112	0	3	0	83	7,522	418	25,558
Barracudas	149	14,774	425	190	4,791	435	0	0	0	180	50	11,128	218	32,160
Porgies	1,569	214	0	444	2,304	233	0	0	0	0	0	138	45	5,127
Snooks	163	7,390	140	2,887	1,051	9	64	0	15	0	0	137	184	12,040
Tarpon	1,110	0	0	5,569	1,264	42	30	0	2	0	0	108	0	8,125
Goatfishes	0	0	0	28	0	0	0	0	0	0	0	0	0	28
Sardines	0	5,736	0	182	0	0	0	0	0	0	0	0	0	5,918
King Mackerels	214	19	0	26	835	0	35	0	9,687	0	0	0	0	10,816
Cero	654	755	0	1,242	25,565	16,438	0	0	15	73	3	2,163	18	46,926
Sharks	151	70	0	997	19,883	8,311	35	0	33	232	0	359	20	30,091
Wahoo	75	0	0	2,386	7,661	394	5,949	0	0	0	0	613	318	17,396
CLASSIFIED	90	0	0	0	1,824	1,231	0	0	0	0	0	0	0	3,145
First Class														
Second Class	0	3,616	0	94	2,802	0	0	0	0	0	0	3,283	74	9,869
Third Class	0	3,167	0	117	689	4	0	0	0	0	0	146	86	4,209
Trash	0	606	0	46	0	0	0	0	0	0	0	716	0	1,368
Other fishes	0	21	0	0	49	0	0	0	0	0	0	2	0	72
Total Fishes	1,192	1,025	376	1,382	12,724	3,013	543	29	943	987	456	1,497	897	25,035
	25,350	177,016	5,661	86,173	610,953	122,386	21,563	29	11,951	1,940	872	85,280	27,433	1,176,607
<b>SHELLFISH</b>														
Conch														
Land crab	0	454	30	25	14	0	0	0	10	0	1,098	193,670	252	195,553
Lobster	0	0	0	0	0	0	0	4,276	0	0	0	0	0	4,276
Octopus	34	49,223	27,930	178	2,075	136	0	30	22	0	578	86,540	6,227	172,973
Other shellfish	0	480	0	31	87	11	0	0	22	0	3,429	5,530	10	9,600
Total Shellfish	689	4,082	0	1,643	502	10	0	21	535	0	57	2,193	294	10,026
TOTAL	26,073	231,255	33,621	88,050	613,631	122,543	21,563	4,356	12,540	1,940	6,034	373,213	34,216	1,569,035

Table 3C. Landings reported by species and by gear in Puerto Rico during 2006

SPECIES	Beach Seine (lbs)	Fish Trap (lbs)	Lobster Trap (lbs)	Gill Net (lbs)	Bottom Line (lbs)	Troll Line (lbs)	Long Line (lbs)	Land crab Trap (lbs)	Cast Net (lbs)	Rod and Line (lbs)	Skin Diving (lbs)	Scuba Diving (lbs)	Trammel Net (lbs)	TOTAL (lbs)
FISH														
Tunas														
Blackfin tuna	1,611	25	0	45	9,702	9,038	0	0	0	0	0	66	0	20,487
Little tunny	3,220	142	0	110	3,226	1,913	0	0	0	0	0	0	0	8,611
Skipjack tuna	298	124	0	39	11,039	10,937	0	0	0	0	0	50	0	22,487
Yellowfin tuna	161	0	0	0	10,921	9,518	0	0	0	0	0	140	0	20,740
Tuna category	112	0	0	250	1,003	4,090	14	0	0	0	0	266	0	5,735
Ballyhoo	2,083	1,011	0	8,591	1,676	2,367	0	0	0	0	0	456	40	16,224
White grunt	567	18,59												
Hogfish	4	4,164	243	4,930	9,946	186	99	0	0	0	28	1,419	15,702	51,713
		19,00	395	64	953	1,372	20	0	0	0	287	20,178	764	28,201
Trunkfish	200	9	1,557	1,193	2,426	136	0	0	0	0	103	9,552	5,782	39,958
Dolphinfish	176	0	0	10	12,551	32,164	0	0	0	0	0	2,481	2	47,384
Squirrelfishes	88	2,986	0	499	766	117	61	0	0	0	2	0	4	4,523
Mulletts	3,070	87	0	8,078	910	62	0	0	541	0	0	60	0	12,808
Jacks														0
Bar jack	1,739	1,941	10	2,299	8,272	396	199	0	18	0	0	105	1,708	16,687
Horse-eye jack	12	91	0	9	803	81	0	0	0	0	0	0	0	996
Yellow jack	7	105	0	21	116	0	0	0	0	0	0	1	0	250
Jack Category	2,463	80	0	1,481	2,565	61	25	0	0	0	30	77	0	6,782
Parrotfishes	604	9,782	2	7,296	1,190	0	2	0	0	0	259	3,382	9,496	32,013
Groupers														
Coney	0	2,840	0	296	1,426	246	0	0	0	0	5	137	24	4,974
Red hind	0	5,669	0	121	6,622	3,036	69	0	0	0	325	6,401	45	22,288
Misty grouper	0	510	0	0	4,319	0	0	0	0	0	0	764	0	5,593
Nassau grouper	21	38	0	0	1,316	239	0	0	0	0	0	136	0	1,750
Yellowfin grouper	0	513	0	53	161	19	0	0	0	0	4	225	0	975
Grouper category	44	1,808	54	142	3,935	0	27	0	0	0	25	8,584	0	14,619
Mojarras	9	186	0	1,311	362	0	55	0	32	0	0	2	0	1,957

Table 3c. (continued)

SPECIES	Beach Seine (lbs)	Fish Trap (lbs)	Lobster Trap (lbs)	Gill Net (lbs)	Bottom Line (lbs)	Troll Line (lbs)	Long Line (lbs)	Land crab Trap (lbs)	Cast Net (lbs)	ROD				TOTAL (lbs)
										AND LINE (lbs)	Skin Diving (lbs)	Scuba Diving (lbs)	Tramme; Net (lbs)	
<b>Snappers</b>														
Lane snapper														0
Yellowtail snapper	360	28,840	696	3,101	37,979	1,867	11,305	0	29	0	118	2,559	352	87,206
Silk snapper	280	6,779	121	2,322	81,117	39	801	0	7	0	48	1,670	710	93,894
Mutton snapper	0	7,981	0	40	75,259	0	31	0	0	0	0	0	0	83,311
Queen snapper	429	5,792	61	1,901	12,574	130	558	0	3	0	54	3,886	95	25,483
Vermillion snapper	0	419	0	0	102,463	0	0	0	0	0	0	0	0	102,882
Wenchman	0	1,030	0	17	2,021	0	13	0	0	0	0	70	0	3,151
Blackfin snapper	0	0	0	297	3,591	0	0	0	0	0	0	0	0	3,888
Snapper category	0	1,204	0	12	2,202	0	42	0	0	0	0	0	0	3,460
Triggerfish	140	5,971	0	2,237	6,027	0	0	0	0	0	119	5,158	556	20,208
Barracudas	131	12,866	243	59	3,770	1,030	128	0	0	0	138	8,464	679	27,508
Porgies	1,679	100	0	398	2,593	183	22	0	28	0	0	38	13	5,054
Snooks	223	6,549	0	1,457	460	34	20	0	0	0	4	40	188	8,975
Tarpon	1,814	174	0	4,329	1,469	395	28	0	4	0	0	598	40	8,851
Goatfishes	24	0	0	0	0	0	0	0	0	0	0	8	0	32
Sardines	112	4,251	0	210	71	62	0	0	0	0	0	20	0	4,726
King Mackerels	0	71	0	11	884	507	25	0	4,244	0	0	0	0	5,742
Cero	678	106	0	1,426	28,581	4,990	154	0	24	0	0	735	0	36,694
Sharks	440	65	0	735	16,063	6,276	226	0	15	22	0	206	0	24,048
Wahoo	55	0	0	974	9,249	2,641	6,617	0	0	0	29	1,845	953	22,363
<b>CLASSIFIED</b>														
First Class	287	0	0	0	642	3,384	0	0	0	0	0	71	0	4,384
Second Class	0	2,916	0	23	1,234	0	0	0	0	0	0	661	0	4,834
Third Class	0	2,548	0	0	22	0	0	0	0	0	0	95	0	2,665
Trash	0	262	0	0	0	0	0	0	0	0	0	81	0	343
Other fishes	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Fishes	411	5,623	385	3,629	3,057	302	456	0	489	22	297	1,561	72	16,304
	23,552	163,251	3,767	60,016	487,534	97,818	20,997	0	5,434	44	1,875	82,248	37,225	983,761
<b>SHELLFISH</b>														
Conch														
Land crab	0	367	0	163	0	0	0	0	0	0	1,375	148,732	2,824	153,461
Lobster	0	0	0	0	0	0	0	5,077	0	0	0	0	0	5,077
Octopus	509	47,548	22,954	988	775	250	0	0	0	0	637	87,474	7,963	169,098
Other shellfish	3	421	66	19	42	122	0	0	0	0	3,374	15,885	99	20,031
Total Shellfish	40	1,982	0	1,036	14	24	16	0	266	0	667	3,009	442	7,496
<b>TOTAL</b>	552	50,318	23,020	2,206	831	396	16	5,077	266	0	6,053	255,100	11,328	355,163

Fishing trips are generally of half-day duration. The CPUE average for landings/trip during 2004-06, was reported in Table 4A, 4B, 4C. In 2004, the average CPUE was 62.23 pounds per trip; in 2005, the average CPUE was 61.06 pounds per trip; and for 2006, was 59.04 pounds per trip. The months of February, March and April have higher average CPUE landings per trip (Table 4A, 4B and 4C), probably due to the Lent, this tradition involve an increase in human fish consumption. Table 4D shows the CPUE average landings per trip by coast during the 2004-06. The results show that the east coast obtained the highest CPUE during this period.

A total of 54,685 individuals were measured during 2004-06. A total of 5,752 spiny lobsters and 48,928 was finfish. Most of the mentioned individuals were weighed. Sex determination of fishes in the field has been difficult because of the reluctance of fishers to permit this activity, and the general limitation in available time for measuring samples, and difficulties in assessing any but the ripest individuals, for sex. The species most frequently measured from 2004-06 were *Ocyurus chrysurus*, *Haemulon plumieri*, *Lutjanus vivanus*, *L. Synagris*, *Etelis oculatus*, *Sparisoma viride*, *Panulirus argus*, *Sparisoma chrysoterum*, *Epinephelus guttatus*, *Scomberomorus cavalla*, and *Lutjanus synagris*.

## DISCUSSION

Commercial landings reported data have been around two millions pounds from 1987 - 1994 (Matos-Caraballo *In press*, a). Throughout 1997 - 2000, it was observed that fishers cooperated more with the Statistics Program, resulting in 3.8, 3.5 and 3.3 millions pounds reported. One possible reason to explain the increased landings would be the increases of 500 more active commercial fishers that cooperated with FSP during 1987 - 1994 (Matos-Caraballo 1996; 2004A). Also, the increase in participation occurred because --the PRDNER and the Puerto Rico Department of Agriculture provided economical help to fishers who regularly cooperated with the FSP (Matos-Caraballo, 2004A). When we compare the landings reported in late 1970s and early 1980s (around five million to seven million pounds), with the reported landings of 1987-96, an indication of overfishing is observed. During 2001 - 2002 it was observed that 86% of the active commercial fishers cooperated with the CFSP. This resulted in over 3 millions pounds reported. However, in 2003, a drastic reduction in landings was reported to 2.38 millions of pounds. Two reasons were observed that explain this reduction. First, the fishers cooperation decreased from 2001 - 2002 of 86% to 56% in 2003 (Matos-Caraballo, 2004A). The mentioned reduction occurred because the CFSP required a trip ticket system and many fishers prefers to report the whole month in a single trip ticket. Many did not report for the mentioned reason. However, many fishers that initially resisted the change at the end of the 2003 started to cooperate with CFSP. Second, since 1996 to 2002, commercial fishery

had a reduction of approximately 600 active commercial fishers (Matos-Caraballo *et. al.* 2005). Due to limited fishery resources many commercial fishers change to work on construction, agriculture or migrate to work in the continental USA (Matos-Caraballo *et. al.* 2005).

During 2004 - 2006, reported a decreased in landings to 1.8-1.3 million pounds. The Puerto Rico's Fishing Regulation 6768 was implemented in March 12<sup>th</sup>, 2004, affecting significantly the cooperation of the commercial fishers. The commercial fisher's leaders ordered fishers to stop report to the DNER/CFSP. The result was that 61% of the landings were reported in 2004, 50% in 2005 and 52% in 2006. Figure 2 shows the landings reported historically since 1971 - 2006 and Figure 3 shows the estimated landings using the correction factor for the same period. Both figures showed a decrease since 2001 - 2006. The decrease observed occurred probably due to two factors. First, the over fished resources might be responsible for a reduction of 600 commercial fishers during 1996 - 2002 (Matos-Caraballo 2005). Second, the Fishing Regulation 6768, establishes close seasons for mutton snapper, red hind, silk snapper and minimum size limits to several important commercial species, resulting in more commercial fishers out of the fishery and reduce the number of pounds landed. If the regulations will be enforced it is expected a significant improve in the Puerto Rico fishery stocks in the future.

Landings reported by species for 2004-2006, showed that snappers, grunts, groupers, tunas, parrotfishes, mackerels, dolphinfish and trunkfishes were the most reported groups by weight in the commercial fisheries. This CFSP has been successful to educate commercial fishers to report by species the group of deep water snappers, instead of silk snapper. In previous reports four species were reported as silk snapper. In those reports it was mentioned that 90% of the silk snapper landed were juveniles (below 420mm FL). The Fishing Regulation 6768 established a minimum legal size for silk snapper of 420 mm FL, as a result of this regulation many commercial fishers stopped catching this species. This fact explains why the queen snapper was the deep water snapper most landed in pounds during 2004 and 2005. On the other hand, the fishers requested the DNER's Secretary to change the silk snapper minimum size of 420mm FL for a closed season during October-December. The DNER Secretary accepted the recommendation and is in effect since April 2007.

Snappers (Lutjanidae) is the main fish category in pounds landed and price per pound caught in Puerto Rico's in the commercial fishery during 2001 - 2004. The lobster and queen conch were the most important shellfish in pounds landed and price per pound. CFSP personnel observed a reduction in landing of illegal spiny lobster under the legal size of 3.5 inches carapace length. SCUBA divers reported to CFSP that they were diving at 60 - 120 feet to catch queen conch. The shallow water population

of this specie has been over exploited. DNER has a close season for queen conch (July 1<sup>st</sup>- September 30<sup>th</sup>) and a quota (150 queen conch per fisher or 450 queen conch per vessel per day). The Caribbean Fishery Management Council close the queen conch fishery in federal waters in 2006.

CFSP personnel observed that all closed season (queen conch, land crab, red hind and mutton snapper) should be enforced more frequently because many fishers continue to catch close season species.

The fish market of Saint Croix and Saint Thomas USVI, purchase the Vieques landings of *Acanthusrus spp.*, *Holocanthus ciliaris*, *Pomacanthus arcuatus*, *Pomacanthus paru* and many juvenile reef fish species. The mentioned species are subject to severe fishing pressure. Thus, the CFSP must continue to monitor the exploitation of these resources.

Since 1968 - 99, the municipality of Cabo Rojo and the West coast had been the most productive municipality and coast respectively (Weiler and Suárez-Caabro 1980, Collazo and Calderón 1988, Matos-Caraballo and Sadovy 1990 and 1991, Matos-Caraballo 1993, 1998, and 2001 a,b). In 2000, the south coast reported 268,923 more pounds than the west coast. This result can be associated with the silk snapper fishery and the over fished resources of the west coast. During 2001 - 2003, the west coast reported 31.0% and the south coast reported 30.6% (Matos-Caraballo 2004a). During 2004 - 2006, the west coast and Cabo Rojo returned to be the most productive municipality and coast, respectively. The CFSP personnel observed that Cabo Rojo and the municipalities of the west coast have more full time fishers that produce more fish trips than other coasts.

Various storms and hurricanes passed close to Puerto Rico during August and September 2004-06. The mentioned storms caused ocean surge action affecting negatively the fishing activity. However thanks to the good Lord, no hurricane has impacted directly Puerto Rico since 1998, thus the negative factor has not been as with Hurricane Georges (Matos-Caraballo 2004a, 2004b).

Traps catches accounted for 22.4% of the total landings during 1997 - 1999 (Matos-Caraballo 2001a,b). During 2000, traps catches reported 19.6%, exceeded by lines (40.0%), nets (19.7%) and diving (20.5). During 2001-04 traps reported 22.1% (Matos-Caraballo 2004a). During 2004 - 2006, the fish trap accounted for only 18.6%. That means this gear landings decreased during this project. CFSP's personnel observed that no new commercial fisher enter in the fish trap fishery and most of the fish trappers are over 50 years old. Another possible explanation is the low catch of this gear and the high cost of the traps. The fishers entering the fishery are using SCUBA diving gear. However, during 1982 fish traps alone caught 71.2% of the total pounds reported (Collazo and Calderón 1988), decreasing during the late 1980's to 22% - 25% during the last 10 years. On the other hand, an

increasing trend was observed in the percentage of reported landings taken by all lines combined, when compared with year 1982, in which the percentage was 12.4% (Collazo and Calderón, 1988) to 40.0% during 2000 - 2004 (Matos-Caraballo 2004a). During 2004 - 2006, the lines increased to 43.9%. The gill nets and trammel nets caught 2.7% in 1982 (Collazo and Calderón 1988), while in 1997 - 1999 they caught 21.9%, although decreased to 18.3 during 2001 - 2003 (Matos-Caraballo 2004b). During 2004 - 2006, nets catch shown a decrease to only 12.7% of total catch. This decrease occurred for two main reasons. First, port samplers and principal investigator reported that many trammel net and gill net fishers retired from the commercial fishery, probably because the over fished resource did not produce the expected profit and the enactment of the Fishing Regulation 6768. Second, the Fishing Regulation 6768, forbidden the use of beach seine three years after the establishment of the fishing regulations (March 12<sup>th</sup>, 2007). Diving shows a trend to increase. Principal Investigator and port agents observed that approximately 90% of the new and young commercial fishers are divers. This observation resulted in the fact that diving was the third most productive gear category in landings reported during 2001 - 2003 (Matos-Caraballo 2004b), During 2004 - 2006 continue increasing to be the second more productive gear reporting 24.8% of total landings. It is expected that the percentage of divers will increase in the following years. On the other hand, many young divers are not certified and many accidents had been reported, unfortunately some accidents were fatal.

During 2001 - 2003, the CPUE in pounds reported by trip was steady, 71 pounds/trip in 2001, 63 in 2002 and 61 in 2003 (Matos-Caraballo 2004a). In 1995 the annual average pounds per trip was 80. In 1996, the annual average pounds per trip were 63. In 1997, the annual average pounds per trip were 72 (Matos-Caraballo 1998). On the other hand, the result for 1998 was 54 pounds annual average pounds per trip and 53 for 1999 (Matos-Caraballo 2004b). In 2000, the annual average pound per trip was 71. During 2004 - 2006, the CPUE decrease from 62.23 pounds/trip in 2004, to 59.04 pounds /trip in 2006. Commercial fishers mentioned that due to the increase in gasoline cost they decrease the number of trips and increase the fishing hours to capitalize the fishing expenses. This fact might explain the decrease in the observed CPUE. The CFSP will continue to monitor this trend in CPUE in the future.

All the biostatistics data collected in this project during 2001-04 is available in NMFS/SEFSC in Miami, Florida and in CFSP at Cabo Rojo, Puerto Rico. The CFSP principal investigator and personnel from CFMC, and NMFS/SEFSC, and NOAA/SEDAR personnel will study and analyzed the collected data to provide knowledge to fishery managers from NOAA and DNER. The fishery managers will take decisions that address the wise use of the over fished resources of Puerto Rico.



**Table 4A.** Average pound per trip in Puerto Rico by month during 2004.

Month	Number of trips	Average Pounds Landed by Trip	Standard Deviation
January	3,611	66.57	231.32
February	3,049	59.45	206.46
March	2,950	56.91	186.86
April	3,057	58.11	154.25
May	2,737	55.43	184.49
June	2,591	58.03	399.98
July	2,513	55.37	120.36
August	2,598	60.10	162.65
September	2,193	74.43	159.17
October	2,875	71.69	225.30
November	2,223	61.11	175.47
December	2,280	71.21	146.57
Total	32,677	62.23	222.52

**Table 4C.** Average pound per trip in Puerto Rico by month during 2006

Month	Number of trips	Average Pounds Landed by Trip	Standard Deviation
January	2,460	59.42	236.66
February	2,539	67.08	172.21
March	2,491	61.52	170.91
April	1,974	57.55	136.03
May	2,298	57.77	151.49
June	2,155	59.38	142.23
July	1,996	51.84	160.15
August	2,192	57.04	243.17
September	2,192	64.71	175.51
October	2,144	61.71	251.26
November	1,919	57.81	95.02
December	1,624	50.31	119.47
Total	25,984	59.04	178.79

**Table 4B.** Average pound per trip in Puerto Rico by month during 2005.

Month	Number of trips	Average Pounds Landed by Trip	Standard Deviation
January	1,513	75.97	212.40
February	1,633	60.08	177.21
March	2,996	70.66	182.66
April	3,158	60.98	221.02
May	2,914	55.81	164.22
June	2,922	59.25	174.65
July	2,669	60.28	185.08
August	3,009	56.15	197.23
September	2,522	56.55	149.05
October	2,059	56.89	128.43
November	1,594	62.70	117.85
December	927	59.62	206.96
Total	27,916	61.06	178.20

**Table 4D.** Average pound per trip in Puerto Rico by coast during 2004 – 2006.

Coast	Number of trips	Average Pounds Landed by Trip	Standard Deviation
2004 North	3,414	59.14	257.61
East	5,319	68.93	153.88
South	8,965	61.85	229.54
West	14,977	60.03	226.46
2005 North	2,502	51.20	132.41
East	3,790	74.45	129.52
South	7,281	57.68	150.82
West	14,320	63.00	244.69
2006 North	1,537	45.42	72.00
East	2,923	69.63	152.27
South	8,075	54.54	155.93
West	13,461	65.42	242.98

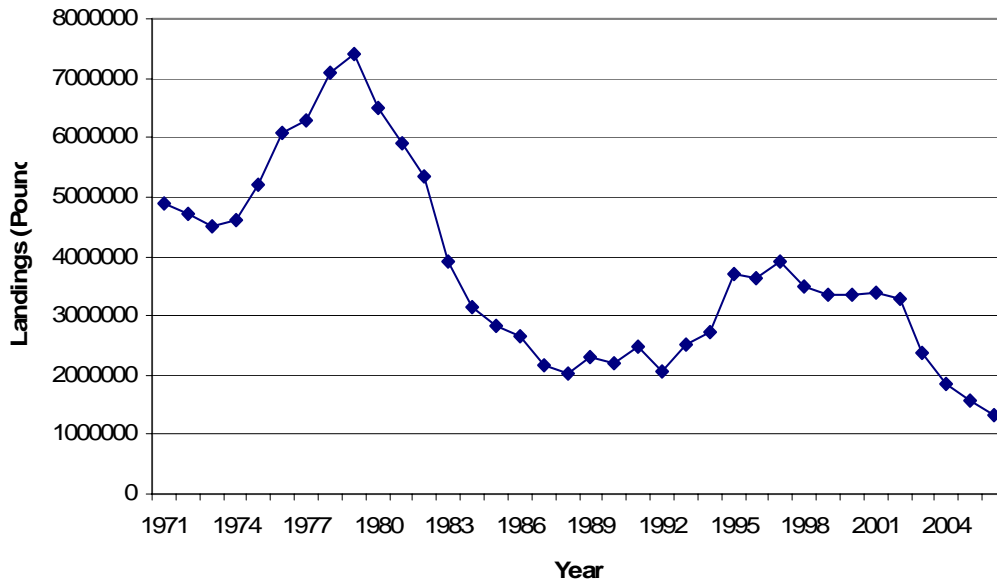


Figure 2. Commercial Landings Reported in Puerto Rico during 1971-2006.

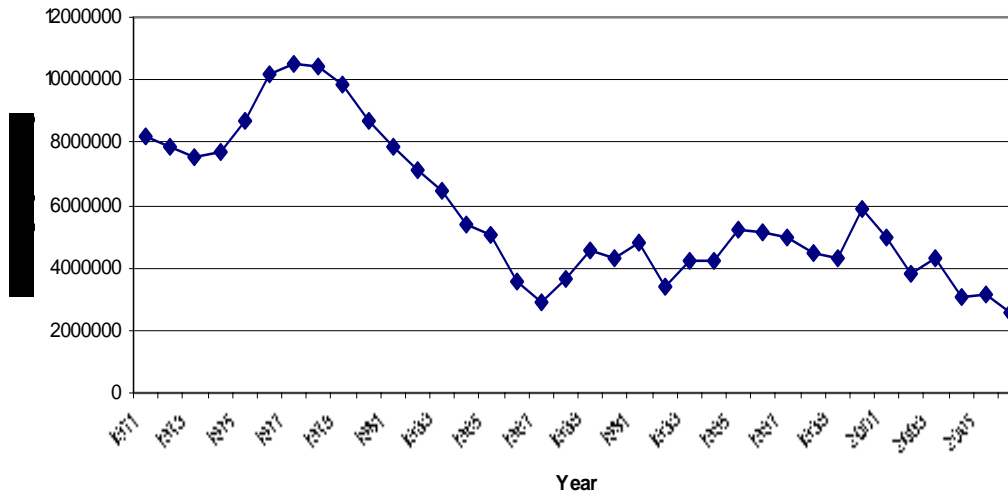


Figure 3. Estimates of Commercial Landings Using Correction Factors in Puerto Rico during 1971-2006.

**CONCLUSION**

Since 1987, Puerto Rico's reported landings of fish and shellfish have continued to be in the vicinity of 2 - 3 million pounds. In 1979, reports of landings in Puerto Rico recorded 7,212,000 pounds of fish and shellfish. During the decade of the eighties, landings decreased consistently. During 1995 - 2002, reported landings ranged between 3,617,039 to 3,895,980 pounds of fish and shellfish. In 2003, a decrease in landings reported occurred mainly due to the CFSP change to trip ticket system. During 2004 - 2006, a decrease was observed, probably due to the decrease in active commercial fishers and the enactment of the PR Fishing Regulations 6768, which established close

seasons and minimum legal size for many species. The mentioned regulations and the establishment of the sales tax resulted in the retirement of many active commercial fishers. On the other hand, if the fishing regulations are properly enforced, it is expected a recuperation of the over fished resources of Puerto Rico. The landings show a steady decreased since 1997 - 2006.

During the 1970s the traps were the most productive gear. During 2004 - 2006, the traps were the third more productive gear with 18.61% of the total pounds reported. Lines and divers were the most productive gears during 2004 - 2006. SCUBA diver was the fishing gear that recruits more young fishers. A definite change from

passive to actives gears has been observed 1997.

The DNER needs to increase the surveillance during the close seasons for the queen conch, red hind, mutton snapper, and land crab.

After the analysis of these facts, it is concluded that during 2004 - 2006, Puerto Rico's fishery resources received less fishing pressure due to the establishment of the Fishing Regulation 6768. These regulations resulted in a decrease in active commercial fishers. The CFSP will conduct a fishery census to determine the number of active commercial fishers at the present time. Also, the CFSP will continue to collect landings, biostatistics, effort data of the Puerto Rico's fishery to help DNER and NOAA to do a responsible management of the fishery resources.

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