The commercial reef fish fishery in Puerto Rico with emphasis on yellowtail snapper, *Ocyurus chrysurus*: landings and catch per unit of effort from 1983 through 2003

by

Nancie J. Cummings[1]
and
Daniel Matos-Caraballo[2]

[1]U.S. Department of Commerce
National Oceanic and Atmospheric Administration (NOAA)
National Marine Fisheries Service (NMFS)
Southeast Fisheries Science Center (SFSC)

Sustainable Fisheries Division (SFD)
75 Virginia Beach Drive
Miami, Florida 33149

[2]Fisheries Research Laboratory
Puerto Rico Department Natural and Environmental Resources (DNER)
Mayaguez, Puerto Rico

Final Draft Report December 1 2004

Sustainable Fisheries Division Contribution No. SFD-2004-046

And

SEDAR-8 Data Workshop Report No 8

Introduction and Fishery Background

Information on the historical fisheries off Puerto Rico was reviewed by Cummings and Matos-Caraballo (2003a). Accounts of commercial fishing exist as far back as the 1930s. Most of the early reports indicate that although fishing occurred in Puerto Rico during the late 1800's, prior to about 1900's it was mainly for subsistence purposes (see Wilcox 1899, 1900, Jarvis 1932 as cited in Cummings and Matos-Caraballo 2003a). This is further supported by Jarvis's work (1932), who under the sponsorship of the U.S. Department of Commerce, Bureau of Fisheries, conducted a detailed survey in 1931 of the marketing and economic aspects of the fisheries and was one of the earliest researchers to document Puerto Rico's commercial fishery. Jarvis described fishing methods, number of fishermen and number of boats operating, number of different gear being used (nets, pots, lines, etc.) and provided comprehensive descriptions on the regional differences of Puerto Rico's fisheries

More recent studies since the late 1990s of the Puerto Rico commercial fisheries have raised concern as to the condition of several species or species groups commonly reported in these fisheries including several snappers and groupers (see Matos-Caraballo 2002). Declining landings in some fisheries off Puerto Rico (i.e. pot fisheries) and increasing landings in other gears (i.e., hand lines, gill nets, and diver operations) have been reported. Matos-Caraballo (2002) also reported declines in total landings from the west coast of Puerto Rico and, for the first time since 1972 a trend of increasing landings from the south coast of Puerto Rico. Matos-Caraballo (1998, 2004) reported that several species including shellfish, previously considered as trash fish and discarded by most commercial fishers in Puerto Rico are now being landed and sold. These included the squirrel fish species *Holocentrus ascensionis* and *H. rufus* and also *Carpilius corallinus* and *Mythrax spp.*. In fact these species brought up to $1.25 per pound in the market in 2001-2002 according to Matos-Caraballo (2004). Matos-Caraballo (2002) also reported that a number of species including members of the Acanthurid and Pomacentrid families, are being fished off of the island of Vieques to be sold in St. Thomas and St. Croix, US VI. In addition, Matos-Carabollo (2004) reported a decline in the number of active fishermen in recent years as well as the number of vessels participating in the deep water snapper fishery.

The yellowtail snapper, *Ocyurus* chrysurus, has historically been an important component of the Puerto Rico commercial landings, on average contributing about 5% of the total combined shellfish and finfish landings by weight and about 10% of the annual landings of reef fish (Matos-Caraballo 2004, 2002, 2001, 1998).

The primary focus of this report is to present detailed information on the yellowtail snapper for the commercial fisheries off Puerto Rico including landings statistics from 1983 through 2003 and information on catch per unit of effort. This information is needed to address the status or condition of the population. Information is also presented on the value of the yellowtail snapper fishery and on landings and value of all fish and shellfish sold in Puerto Rico.

Data Sources and Methods

Commercial Landings

Statistics for the commercial fisheries of Puerto Rico were collected by the Fisheries Research Laboratory (FRL) of the Puerto Rico Department of Natural and Environmental Resources (DNER). Since 1967, the Puerto Rico Fisheries Statistics Program (FSP) has collected data on the commercial fishery through primarily cooperative agreements. The FSP was administered through the Department of Agriculture of Puerto Rico from 1966 to 1979. The Commercial Fisheries Statistics Program (CFSP) was implemented in 1967 under the Commercial Fisheries Research and Development Act of 1964 (PL 88-309) (see Matos-Caraballo 2004, Collazo and Calderon 1988). From 1979 through the late 1980's, the FSP program was administered by the Corporation for the Development and Administration of the Marine, Lacustrine and Fluvial Resources of Puerto Rico (CODREMAR) and during this period, the CFSP statistics program was supported contractually by NOAA. Since the early 1990's the CFSP, FSP has been supported through a cooperative agreement with NOAA, NMFS through the State/Federal (SF) Cooperative and Interjurisdictional Fisheries Program (IJ). Through the SF/CSP/IJ program, commercial fishery landings data were collected form Puerto Rico's fishers, fish buyers and fishing associations, whom voluntarily cooperate with the FSP. However, not all participants in the fisheries (i.e., fishers, dealers, cooperatives, fisher helpers) always cooperate in all years.

In addition to collecting data on landings, fisheries port samplers in Puerto Rico routinely visited the coastal municipalities (n=42) including the islands of Vieques and Culebra, and the fishing centers (n=88, Figure 1). Matos-Caraballo (2002) presented details of the data collection program in Puerto Rico. Briefly, information is recorded for each fisher sale as to the date of sale, name of fish buyer, fisherman identification, information on fisher helper identification, the municipality and the fishing center of sale, the number of trips (ntrips) that were made for this sale, gear type used, amount of fishing effort (e.g., hours fishing, number of gear, number of traps, number of hours soaked, number of lines), weight in pounds of the species sold, taxonomic identification (species or family), and market value (dollars). Sometimes information is recorded on the minimum and maximum depth of the fishing area that resulted in this catch but not always. Not all data records contained information on gear quantity or effort and for many records the 'ntrips' data variable exceeded one, indicating that some fishers perhaps retained their catch over several trips and were later sold. In Puerto Rico's commercial fisheries, the majority of the finfish are landed in the round except for the deep water snappers which are usually gutted. Lobster, oyster and octopus were also landed in the round, and according to Matos-Carabollo (2002) conch landings include the meat only. For some sales in nearly all years, finfish were classified as to first, second, or third class fish, or trash fish as defined by Matos-Caraballo and Sadovy (1990). According to Matos-Caraballo and Sadovy, the definitions of these four categories varied somewhat by region but in general were broadly defined as: "first class fish included large snappers, grouper, grunt, trunkfish and hogfish; second class fish included small snapper and grouper, parrotfish, goatfish, and triggerfish; third class fish included smaller individuals of second class fish and large squirrelfish. The "trash fish" category included

butterfly fish, angelfish, surgeonfish, small squirrelfish and small fishes of a number of other species."

It was not possible for this report to identify individual fishing trips in the total commercial landings dataset with complete accuracy since unique trip identification was not maintained at the time of computer processing by the PR FRL, CFSP, FSP for the data collected from 1983-2002. Beginning in 2003, the CFSP FSP implemented the addition of a unique trip identification number on each separate fishing trip. Efforts are underway by the senior author to develop logic for assigning unique trip id codes to the data before 2003 for use in future analyses of the commercial sales records in Puerto Rico.

The Puerto Rico commercial landings records represent only a portion of the total commercial removals as noted by Matos-Caraballo (2002). Not all active fishermen in Puerto Rico report their sales as discussed in that report. Matos-Caraballo (2004) provided updated information on the number of active commercial fishers in Puerto Rico, the number of full time or part time fishers, and the number and size (length) of active commercial vessels. Information from Matos-Caraballo (2004) and from Cummings and Matos-Caraballo (2003) is provided here for purposes of calculating total expanded commercial landings in Puerto Rico. In 2004, a fisherman licensing system was implemented in Puerto Rico.

The economic value, measured in U.S. dollars ($), of yellowtail snapper by year, month, and gear was calculated using the reported data from the commercial fishing sales records from 1983-2003. Information is presented in this report on total annual value of yellowtail snapper for all fisheries combined and also for the two primary gears used to catch yellowtail snapper, lines and pots. Value for all fish and shellfish landed in Puerto Rico was also calculated and is presented by year, month, and gear. The average value, price per pound ($), was also calculated by year and by fishery and is presented for all yellowtail snapper.

Catch Per Unit of Effort (CPUE) of Yellowtail Snapper

Nominal CPUE

The raw commercial sales records were used to calculate unadjusted nominal catch per unit of effort (CPUE) for yellowtail snapper for future consideration as possible stock status measures. CPUE was computed using the fisher sales trip as the basic measure of effort as previously done for these data in Matos-Caraballo (2002). For yellowtail snapper, two sets of observations were constructed for yellowtail snapper. First, a dataset containing only observations where the 'number of trips' data variable was recorded as 'ntrips' = 1 and a second data set was constructed of the sales records in which the 'ntrips' data variable was less than or equal to seven. Additional information for selection of a value of seven or less as a cutoff value for 'ntrips' is given in the results section. In Puerto Rico many fishers do not apply ice to the day's catch thus it seemed impractical to assume that more than a weeks catch would be retained and later sold and still receive a reasonable price per pound. The measure of CPUE was total pounds sold per trip. CPUE for each sale was computed as total pounds divided by number of trips.

For each yellowtail snapper CPUE observation data set ('ntrips' = 1 and 'ntrips' ≤ 7) nominal unadjusted CPUE, were calculated for each year in the data, 1983-2003 combining the data across all possible classifications of municipalities of sale (i.e., gears used, month of sale, municipality of sale, and fisherman id). Next, nominal CPUE was computed by year for each major fishing gear used to capture yellowtail snapper (hook and line, pot, net, seines and other) again where the number of trips variable, ntrips, was equal to one and ntrips≤ 7.

Standardized CPUE

After calculating nominal CPUE of yellowtail snapper the individual landings data records were used to calculate standardized CPUE for use as abundance indices using general linear modeling (GLM) methods (Robson 1966). For the standardization analyses three data sets were constructed for yellowtail snapper. The first set contained only observations where the 'ntrips' variable was equal to one as done earlier in calculating nominal unadjusted CPUE. Then a second data set was formed by only including observations from sales in which the 'ntrips' data variable equaled seven or less. Finally, a third data set of all the yellowtail snapper CPUE observations was formed. For each data set a GLM model was fit which contained auxiliary terms for several independent variables traditionally considered statistically important in explaining the variation in fisheries CPUE data. The auxiliary data collected by the FSP on each sale considered in these analyses were year, month of sale, municipality as a proxy for general area of catch, and gear used in the capture. Some sales records also included information on depth of fishing however this information was incomplete in most cases. Incorporating auxiliary information into the calculation of CPUE is considered important in explaining the total variation in CPUE.

Results

Commercial Sales of Yellowtail Snapper in Puerto Rico

Computerized data documenting levels of commercial sales of fish and shellfish in Puerto Rico were available through the PR DNER, CFSP, FSP for 1983 through 2003. Computerized data documenting species specific sales of yellowtail snapper in Puerto Rico are not currently available prior to 1983 although this information was collected by the CFSP since 1966. Annual pounds of yellowtail snapper sold in Puerto Rico from 1983 through 2003 ranged from 77,232 pounds (1988) to 363,037 pounds (2000) (Table 1, Figure 2a, 2b). The information for 2003 calendar year should be considered as preliminary. The number of individual fisher sales of yellowtail snapper varied over the 21 year period from 2,024 (1984) sales to 7,694 (2001) sales over the same period. Peak years in the total pounds of yellowtail snapper sold and the number of individual fisher sales were 2000 and 2001 respectively. The statistics on commercial sales from the FRL CFSP indicates an increasing trend of fisher sales of yellowtail snapper pounds in Puerto Rico from 1984 continuing through 1995 (Figures 2a, 2b). From 1995 through 2000 fisher sales of this species varied without trend and after 2000, the data do not reveal a strong declining or increasing trend in yellowtail snapper fisher sales through 2002. The 2003 data should be considered as preliminary in all of the discussions below.

Trends in Sales of Yellowtail Snapper in Puerto Rico by Major Gear Category

The individual commercial sales records of yellowtail snapper were summarized by reported fishing gear, as recorded on the fisher sales ticket, and by calendar year to identify the primary gears used to catch yellowtail snapper off Puerto Rico over the 21 year time series and also to identify possible trends in fisher sales by gear over time. The Puerto Rico commercial sales records indicate that yellowtail snapper were caught mainly by fishers using some type of line (e.g., rod and reel, hand line, bottom line, silk haul) or were caught with pots (Tables 2 and 3, Figures 3a). These two capture gears are referred to in this report as the "major" gears involved in the capture of yellowtail snapper off Puerto Rico. In general 'lines' referred to in this document, as 'rod and reel' in data categorizations, contributed from about 50% to 85% by weight of the total annual sales of this species from 1983-2003 (Table 3, Figures 3b, 3c). On average, the percentage by weight that pots contributed ranged from about 8% to 30% (Table 3). The annual percentage contribution of yellowtail sales by pot gear declined from 1983 to 1992 and remained stable thereafter as did total landings. Other gears that were reported to catch yellowtail snapper off Puerto Rico were: cast nets, seines, vertical lines, and diving (scuba, skin diving, spear) however on average these gears contributed less than ten percent of the annual total weight landed of yellowtail snapper. Seines, followed by nets of various types were the main gears in the "minor" gears involved in capture of this species.

The reported commercial statistics can be used to evaluate general patterns regarding changes in the yellowtail snapper fishery across the 21 year period, 1983-2003, within these gear categories. Sales of yellowtail snapper from rod and reel gear show an increase from about 1987 through 2000 (Table 2). Although the percentage of yellowtail taken by rod and reel remains about the same overall since 2000, at around 75%, total annual landings from this gear declined each year since 2001 (Table 3). Prior to 1988 the percentage of yellowtail caught with rod and reel gear was about 55%. Before 1988 pots were reported catching more yellowtail snapper than since 1988 at about 25% annually by weight (Table 3). Sales from fishers reportedly using the minor gears (cast nets, and vertical lines) have for the most part remained stable over the entire 21 year time series. The single exception to this trend was landings from seines which have varied from 1 % to 10 % by weight (Table 3). The complete data series suggest that over this period, 1983-2003, in Puerto Rico line gear has remained the most important gear for yellowtail snapper, contributing currently about 75% of the total removals. Since the late 1980's pots have become less important to the total landings of yellowtail, contributing currently about 10% by weight of the total removals. Sales of landings from pot gear have shown an overall decline from about 30% to 10% over the period while rod and reel gear contributions have increased from about 55% to 75% by weight. It is important to note that although the percentage of the yellowtail snapper landings from pots declined from the early part of the time series, that landings from pot gear remained stable since about 1994 while landings from lines increased steadily over the entire 21 year time period. As in earlier discussions of these data 2003 should be considered preliminary.

Temporal Trends in Yellowtail Snapper Sold in Puerto Rico

The data were also explored to identify temporal trends in the commercial sales of yellowtail snapper (Table 4). Sales of yellowtail snapper in Puerto Rico by month ranged from about 7 to 11% in general not revealing any strong seasonality across the entire period from 1983 through 2003 (Table 5 and Figures 4a, 4b). For some years a small increase in sales was evident around February-March and also around August – September (Table 5 and Figures 4b, 4c) however this was not consistently observed in all years. Some researchers have reported increases in observations of ripe fishes during this same time. These type observations were reported on in more detail in the review of the biology of this species by Cummings (2004).

Spatial Trends in Yellowtail Snapper Sold in Puerto Rico

The commercial sales of yellowtail snapper were summarized by major fishing reporting center and calendar year to identify the primary municipalities of sale for yellowtail snapper in Puerto Rico. The tabled summary data were organized beginning from the most northeast located municipality (Isabela) moving eastward along the north coast to the municipality of Ceiba, then along the east coast of Puerto Rico to Humaco off the southeast coast, then southwest to Cabo Rojo and finally to the last municipality at the northwest coast of Aquadilla (Figure 1). Unfortunately, the PR, DNER, CFSP, FRL does not request exact information on the capture location on the sales ticket (e.g., latitude/longitude of fishing location). In this study, municipality was considered as a very general proxy for approximate fishing location.

The 21 year time series of fisher sales statistics from 1983-2003, indicates that yellowtail snapper have been caught and landed in all of the major island municipalities in Puerto Rico in nearly all years (Tables 6a, 6b). Historically, only six of the municipalities have contributed five percent or more of the landings over all years and the remaining municipalities on average contributed about 1-2% of the annual sales (Table 6b). These major fishing centers were located in the municipalities of San Juan (northeast), Fajardo and Humacao (east and southeast coast) and in Guanica, Cabo Rojo, and Mayaguez) off the southwest and west coasts of Puerto Rico (see Figure 1). Of these six municipalities, those from the northeast and east coast (San Juan, Fajardo), and the southwest coast (Guanica) contributed more than 10% of the long term landings. Interestingly the municipality of Cabo Rojo showed a decline in sales of yellowtail from a steady 20% in 1983 to about 5% in 1993, that trend not varying since then. Similarly the municipality of San Juan in the northeast contributed about 20% annually from 1983-1990 declining thereafter to about 10% of the annual yellowtail sales. It is important to note when reviewing the summarized data in Tables 6a, 6b that the trend comparisons references refer to the "All Years Combined" column.

The distribution of fisher sales of yellowtail snapper by municipality was also evaluated for the two primary gears which caught this species (i.e., lines and pots) (Tables 7-8). In general, the data when partitioned by gear indicate a similar distribution as to all gears combined. There are a few differences however including the following. Sales of yellowtail snapper from lines (rod and reel gear) were mainly from four municipalities representing three regions of the coasts. These were the San Juan district

on the northeast, Fajardo on the east coast, and Guanica and Mayaguez on the southwest coast (Table 7a, 7b). The remaining municipalities contributed 3% or less, usually to the total annual sales of yellowtail snapper by lines. Yellowtail snapper were caught by pots and sold in numerous municipalities within these same regions (northeast, east, southeast and southwest coast). In general there were many municipalities which contribute 3-5% or more of the annual pot landings of yellowtail snapper (Tables 8a, 8b). Sales from pots also showed more inter-year variability than did sales of yellowtail from lines. As noted, above trend comparisons across municipalities mainly refer to the 'All Years' column.

Commercial Removals of All Fish and Shellfish Sold in Puerto Rico

Total sales of all fish and shellfish ranged from about 2.0 million to 3.8 million pounds over the 21 year period (Table 9, Figures 5a, b). An increase in total sales (in pounds) was reported from around 1985 through 1997 followed by a declining trend from 1997 through 2002. The 2003 data are preliminary. Matos-Caraballo (2004) noted that during the middle 1990's there was increased fisher cooperation in reporting sales of fish and shellfish throughout Puerto Rico and suggested the increase in fisher cooperation could explain some of the observed increase in landings. This increase in reporting cooperation through 2002 is evident from the annual census data presented by Matos-Caraballo (2000) and Matos-Caraballo et al. (2004). Matos-Caraballo (2004) also reported a decline in fisher cooperation from 2002 to 2003 from 86% to 56% and also a decline in the total number of fishing tickets submitted for all fish and shellfish combined.

Trends in Sales of Commercial Fish and Shellfish by Gear and by Family

Sales of all fish and shellfish varied very little throughout the year varying from about 6 % to 11 % by month across the entire time period, 1983-2003 (Table 10 and Figure 6). As with sales of yellowtail snapper, line and pot gear were the major gears used for all fish and shellfish fisheries in Puerto Rico (Tables 11a, 11b and, Figure 7). The trend of declining percentage of total landings, from pot gear observed with the yellowtail commercial sales was also evident in the combined all species fishery sales data. Over the 21 year time series, pots declined from about 40% to 28% of the total annual contribution to commercial sales of all fish and shellfish, while rod and reel gear landings increased from about 20% to nearly 40% after 1994. The percentage increase in landings by lines was not as large as observed for yellowtail snapper nor was the percentage decrease as large for pots however a similar trend of increasing total landings by lines was evident (Table 11a). Increasing landings by line gear began in 1985 and continued through 1997. Landings by line gear have continued to decline since 1998. Commercial sales of all fish and shellfish, from nets increased from about 10% between 1983 and 1989, and thereafter increased to about 16% of the annual commercial sales contribution (Table 11b, Figure 7). The annual percentage contribution by the dive gear fisheries to the total landings ranged from 21 % in the early 1980's to a low of 11 % in the early 1990's and since around 1992 has increased each year. The contribution of the dive fishery to total landings in 2002 was 17% (Table 11b). Annual landings by dive gear showed large increases since the early 1990's while landings by rod and reel (line) gear of all species (fish and shellfish) showed declines. While the 'all species' landings

from line (rod & reel) fisheries declined after the late 1990's, landings of yellowtail only showed continued increases through 2002 (see Table 2).

The commercial landings sales statistics for each individual species on each fish ticket were summarized for each year in the time series and are presented in Table 12 by year and individual common name. The data were also re-summed by common scientific family name (e.g., snappers, groupers, wrasses, etc.) and are presented here in Table 13 for landings and Table 14 for percentage of landings by year. Table 14 provides the annual commercial sales of all fish and shellfish by year and by family in terms of percentage composition within the year to the total fishery yield (across all fish and shellfish species, all months, all gears, all municipalities). Graphics presentations of the total annual sales of all fish and shellfish are presented in Figures 6 and 7 by month and gear category respectively.

Across the 21 year time series, 1983-2003, some 323 individual species were landed and sold in Puerto Rico. These species represented about 103 families of marine fish and shellfish. Snappers dominated the overall species composition and contributed on average about 26 % annually of the total reef fish and shellfish landed and sold in Puerto Rico (Table 14). Snappers were followed by tunas (9.9%), conch (7.3%), seabasses-including groupers (5.9%), grunts (5.7%), and dolphin fishes (Table 14). There were no obvious patterns in percentage sales across years for any individual family. However, these data summaries deserve more comprehensive review and possible re-grouping into like families depending on area (location) in addition to stratifying by fishery (i.e., gear of capture) for further evaluations. As in earlier discussion, data from 2003 should be considered as preliminary.

Trends in Reporting of the Sales of Un-Identified Species

Historically in Puerto Rico some fish have not always been identified on the commercial sales catch record by the fisher or the dealer, although species codes were available in the CFSP, FSP reporting system for nearly all species observed in the catch. Such species were frequently separated into first, second, third class fish and also a category for trash fish was often included. According to the literature (see Matos-Caraballo and Sadovy, 1990), "First class fish included large snappers, grouper, grunt, trunkfish and hogfish; Second class fish included small snapper and grouper, parrotfish, goatfish, and triggerfish; Third class fish included smaller individuals of second class fish and large squirrelfish. The "Trash Fish" category included butterfly fish, angelfish, surgeonfish, small squirrelfish and small fishes of a number of other species". The amount of First, Second, Third and Trash Fish were summarized for this report and is presented in Tables 12 and 13 as well as the percentage of the total annual landings in Table 14. The statistics here indicate that current levels of fish reported as First Class fish are probably about 40-50% (by weight) below that of between 1986 and 1995. In 2002, the amount of First Class fish reported was 2.3% (4.2%=average across all years by weight) of the total annual sales (all fish and shellfish combined). The amount of landings classified as Second Class fish has varied without trend from about 1% to 6.8% of the total combined fish and shellfish landings. Current reported levels of this group are about 1.4% for 2002 (3.2%=average across all years by weight). The amount of

Third Class fish reported throughout the time series, 1983-2003, ranged from 1% to 2.7% and in 2002 was 0.9% (1.5%=average by weight). Fish were apparently classified as Trash fish only until 1997. From 1983-1997 the percentage contribution the 'Trash Fish" category, comprised on average was about 0.2% of the total combined fish and shellfish weight.

Value *of Yellowtail Snapper Sold in Puerto Rico*

The annual total revenue in dollars that sales of yellowtail snapper received was calculated, to identify possible temporal changes in the value of this species to the commercial fishery in Puerto Rico. The reported total value of the landings and sales of yellowtail snapper ranged from $ 119,351 in 1988 to $ 699,582 in 2000 (Table 15 and Figure 8). The average price of yellowtail caught and sold in Puerto Rico by all gears varied from $1.26 per pound (1983) to $2.20 per pound (2002) over the period (Table 16 and Figure 9). In general, total annual revenue of yellowtail snapper in Puerto Rico has increased along with increases in landings and increases in price per pound particularly between 1984 and 2000**.** Yellowtail snapper caught by rod and reel gear received a higher price per pound than fish caught on pots or other gears. Yellowtail snapper caught by rod and reel gear ranged in value from $1.45 per pound (1983) to $2.25 per pound (2003) while yellowtail snapper landed from pot gear received $1.05 per pound to $2.25 per pound for the same years (Tables 16-18, Figures 10a, 10b). As observed in total landings, line gear and pots contributed most to the total value of yellowtail snapper sold in Puerto Rico however fish landed on lines received more value per pound with the exception of fish apparently landed with cast nets (Table 18, Figure 10a, 10b). The average price per pound of cast net landed yellowtail snapper showed large variation over the 21 year period, ranging from about $1.1 per pound (1984) to $2.42 per pound. It was not possible to determine the validity of these prices nor the accuracy of the gear recorded for these sales records for this report. Since the primary 'major' gears involved in the yellowtail snapper landings are lines and pots and the primary 'minor' gears are nets, followed by seines, total value and price variation for these gears should be given most attention.

Value of All Fish and Shellfish Sold in Puerto Rico

Between 1983 and 2003 the total value of all fish and shellfish sold in Puerto Rico ranged from 3.0 million dollars (1988) to 7.6 million dollars (2001) (Table 19 and Figure 11). The monthly total sales of all fish and shellfish in Puerto Rico have remained for the most part stable across all years in the time series (Table 20, Figures 12a, b). Lines, pots, and dive gear contributed most to the value of the Puerto Rico commercial fishery contributing on average annually 33%, 29%, and 22% respectively of the total value of all fish and shellfish combined (Tables 21 and 22). The significant dive component in the total value is not surprising as this gear is the main gear used to obtain conch and the percentage contribution of the conch fishery to the overall value was about 7% of the total combined fish and shellfish landings (see Table 14). Within the 21 year time series however there appeared to be a declining trend in value from the dive fishery beginning around 1984 (35% contribution) and continuing through 1992 (16% contribution) (Table 22). Since 1992, total value from the dive fishery increased to about 20% and has remained stable. Patterns in percentage contributions in total value are similarly difficult

to interpret as in landings percentage contributions because of increasing landings (and thus total value) of landings from the rod and reel fisheries for some species (e.g., yellowtail snapper, see Tables 2 and 11a). Similarly, value (all fish and shellfish combined) in the pot fishery declined from about 40% in the early 1980's to about 25 % by 1993 (Table 22). Percentage contribution by the pot fisheries to total value has remained stable since 1993 at about 25% as has total landings of all fish and shellfish by pots (see Table 11a). Total value ($) in the line fishery appeared to vary without strong trend over the 21 year period

Catch Per Unit of Effort of Yellowtail Snapper Sold in Puerto Rico

Nominal CPUE of Yellowtail Snapper

The individual fisher reported sales of yellowtail snapper were used to calculate nominal catch per unit of effort (CPUE). As discussed earlier in the data methods section information recorded on each fisher sales record included the identification of the fisher making the sale, date of sale, municipality and fishing center where the sale was made, gear used in the capture, total weight sold, and information on price, and the number of fishing trips making up this sale. However, not all variables were always recorded on each sales record. The number of fishing trips variable, 'ntrips', was used in selection of data to include in the yellowtail snapper CPUE analyses. Although, the CFFSP, FSP data collection program was intended to collect trip specific sales records often fishers recorded as many as up to 95 trips. In total, there were some 99,668 individual fisher sales records identified as yellowtail snapper from the 1983-2003 Puerto Rico landings data. Of these observations, the 'ntrips' variable was coded as zero ('0') for 17% (16,990) of the records; these records were excluded from subsequent calculations of CPUE. 82,687 data records remained for use in evaluating CPUE for yellowtail snapper. The remaining data records were further reviewed in order to determine an appropriate cutoff value for the 'ntrips' variable for use in CPUE analyses. Mean CPUE, calculated as total pounds per trip divided by the number of trips (i.e., 'ntrips'), was computed, the standard deviation of mean CPUE (stddev) along with several other univariate statistics were also computed and these are presented here in Table 23 and Figure 14. The stddev variable plotted in Figure 14 describes the between sale variation in nominal CPUE.

The CPUE summaries indicate that the majority of fishers (71%) landing yellowtail snapper, reported only having made a single trip ('ntrip' = 1) on the sales form. Ninety-five percent (n = 78,112) of all of the fisher sales observations recorded ntrips = 9 or less while the standard deviation (stddev) of mean CPUE increased nearly five fold for sales records indicating that the total weight represented ten or more trips (see Figure 14). One would expect the stddev to decline as 'ntrips' increases. It seemed illogical that fishers in Puerto Rico would conduct repeated fishing trips, especially more than a weeks worth, in sequence and retain that catch prior to processing. Most fishing trips are conducted during a single day. Retaining multiple day catches and having to maintain the freshness of the catch over several days prior to sale in order secure a reasonable price for the catch, would be difficult and burdensome to the fisheries operation. Therefore, the cutoff value of 'ntrips' ≤ 7 (i.e., one week) was adopted in forming the second CPUE data set. One data set was formed 1) of only observations indicating the 'ntrips' variable equal to one and 2) another of observations in which the 'ntrips' variable was coded as

seven. For each data set nominal un-adjusted CPUE of yellowtail snapper was calculated and is presented by year and each major (rod and reel, pot) and minor (nets, seines, dive, cast nets, other) gear in Tables 24 and 25 and Figures15 and 16.

Calculations of CPUE for yellowtail snapper for the two separate data series ('ntrips'=1 and 'ntrips' 7) for each major and minor gear (rod and reel, pot, net, seines, dive, cast net) used to capture this species over the 21 year period are presented in Tables 24 and 25 and Figures 15-17. CPUE calculations were made and presented for all the gears capturing this species however the reader is reminded that the major gears responsible for the majority of yellowtail snapper landings in Puerto Rico are lines (coded as rod and reel here) and pots, followed by nets and seines. The major gears represented some 88 and 87 % of the total sales observations in the two data sets respectively (Tables 24b and 25b).

The tabled CPUE calculations from the 'ntrips' = 1 data set indicated that yellowtail snapper commercial CPUE from lines (rod and reel) varied without trend from 1985-2003 from about 31 to 54 pounds per trip and was 34 pounds per trip in 2003 (Table 24a, Figures 15a, c). The very high CPUE calculation in 1984 observed in the rod and reel nominal CPUE was evident in all gear categories. Pot CPUE of yellowtail snapper varied from about 15 pounds per trip to 31 pounds per trip over the 21 year period and was 13 pounds per trip in 2003 (Table 24a, Figures 15a, c). CPUE observations from pots and line gear contributed 88 % to the total all gear CPUE data set (Table 24b). CPUE from all gears combined varied from 25 pounds per trip to 45 pounds per trip over the 21 year period and was 28 pounds per trip in 2003 (Table 25a and Figures 15a,c). The 1984 data points are excluded from this discussion as it appears to be aberrant in all gear and closer inspection of all the data for 1984 is recommended for future analyses.

For the 'ntrips'$\leq$ 7 CPUE data set, yellowtail snapper CPUE from line gear varied from about 21 pounds per trip to 42 pounds per trip and was 34 pounds per trip in 2003, again varying without strong trend over the 21 year period (Table 25a and Figures 16a, b). Pot CPUE of yellowtail from the 'ntrips' $\leq$ 7 data set varied from around 10 pounds per trip to 18 pounds per trip and was 14 pounds per trip in 2003. The lower mean value from pot fishers in the 'ntrips $\leq$ 7' data set could indicate pot fishermen are checking their gear more than once per day and counting each trap set haul as a trip. Yellowtail snapper CPUE from all gears combined ranged from 17 pounds per trip to 38 pounds per trip over the 21 year period and was 8 pounds per trip in 2003 (Table 25a, Figure 16a).

Over the 21 year time series from 1983-2003, yellowtail snapper CPUE varied without major trend in nearly all fisheries. Graphical comparisons of line and pot CPUE for yellowtail snapper are shown in Figure 17. The reader is cautioned to view the 1984 data points as questionable as CPUE in this year was nearly three to four fold that of neighboring years for all gear categories.

Standardized CPUE of Yellowtail Snapper

In addition to calculating nominal unadjusted estimates of CPUE, estimates of CPUE adjusted for variation due to the year, month, fishing center (as a proxy for catch location), and gear, were computed. Simple general linear models were used for these calculations. Similarly to unadjusted CPUE two data sets were formed: 1) one containing all landings observations in which the 'ntrips' data variable was equal to one and 2) a set containing observations in which the 'ntrips' data variable equaled 7 or less. In addition separate models were fit to all the data and also separate models were calculated for the two primary gears, lines and pots, for yellowtail snapper. The same general linear model was fit to each data set and contained auxiliary terms for year, month, gear, and fishing center. CPUE was calculated as total pounds per trip. The purpose of fitting these preliminary standardization models was mainly to evaluate temporal trends in commercial CPUE for yellowtail snapper in Puerto Rico and also to evaluate appropriate choices for data inclusion for future work.

Temporal patterns in the standardized CPUE results are in general very similar to those observed in the unadjusted yellowtail snapper CPUE data. Similarly to the unadjusted CPUE values, CPUE estimates for 1984 appear somewhat out of line with surrounding years and all comparisons are made from the 1985 year and later (Tables 26-30, Figures 18a-e). Standardized CPUE of yellowtail snapper across all gears from the 'ntrips=1' dataset varied from about 12 pounds per trip to 18 pounds per trip (Table 26, Figure 18a). Current CPUE was 14 pounds in 2003. The total percent of variation in the data explained with this model was 30%. Standardized CPUE of yellowtail across all gears form the 'ntrips<=7 trips' varied from 10 pounds to 14 pounds per trip and current CPUE in 2003 for this data set was 14 pounds per trip (Table 27, Figure 18b). The total percent of variation in the data explained with this model was 29%. Standardized CPUE of yellowtail snapper from the 'all fishing trips' data set ranged from 10 pounds to 14 pounds per trip over the 21 year period. Current CPUE in 2003 was 14 pounds per trip (Table 28, Figure 18c). The total percent of variation in the data explained with this model for the 'all observations data set' was 30%. Estimates of 95% Upper and Lower confidence intervals were very narrow for all three data sets. Calculations of standardized CPUE were also made for the two major gears catching this species, lines and pots (Tables 29 and 30). CPUE ranged from 9 pounds per trip to 16 pounds per trip for lines and from 7 pounds to 16 pounds per trip for pots (Tables 29 and 30). Current CPUE in 2003 was 16 and 11 pounds per trip respectively. The total percent of variation in the data explained with the model for these two data sets was 25% and 19% respectively. The detailed results for these CPUE GLM model fits are available from the senior author regarding number of observations in the model, individual parameter estimates, and importance of each parameter to the model fit.

Important References

Cummings, N. J. The biology of yellowtail snapper, *Ocyurus chrysurus,*with emphasis on populations in the Caribbean. U.S. DOC, NOAA, NMFS, SFSC, SFD SFD 2004-045, 10 pp. SEDAR8 DW Doc-4. 28 p.

Cummings, N.J. and D. Matos-Caraballo. 2003a. Summary information on commercial flishing operations in Puerto Rico from 1969-2001 and reporting rates needed to adjust commercial landings. U.S. DOC, NOAA, NMFS, SFSC, SFD SFD, 2003-0023, 14 pp. SEDAR 4 Doc-5.

Cummings, N.J. and D. Matos-Caraballo. 2003b. Summarized reported commercial landing in Puerto Riuco from 1969-2001 with specific notes on the silk snapper landings category. U.S. DOC, NOAA, NMFS, SFSC, SFD SFD, 2003-0023, 10 pp. SEDAR 4 Doc-4.

Collazo, J. and J.A. Calderon, 1988. Status of the fisheries in Puerto Rico 1979-1982. Technical Report. CODREMAR, 1(2):1-30.

Jarvis,Norman D. 1932. The fisheries of Puerto Rico. U.S. Dep. Commerce, Bureau of Fisheries Invest. Rpt. 13:41pp.

Matos-Caraballo, Daniel. 2004. Collection of Puerto Rico commercial landings data, April 2001-2004. Job 1 and 2. [In: Puerto Rico/NMFS Cooperative Fisheries Statistics Program April 2001-March 2004. Puerto Rico, DNER, Mayaguez Puerto Rico, Contract Report No. NA17FT1006], 50 pg.

Matos-Caraballo, Daniel. 2004. Comprehensive census of the marine fishery of Puerto Rico, 2002. Job 3 [In: Puerto Rico/NMFS Cooperative Fisheries Statistics Program April 2001-March 2004. Puerto Rico, DNER, Mayaguez Puerto Rico, Contract Report No. NA17FT1006] pg 51-85..

Matos-Caraballo, Daniel. 2002. Overview of Puerto Rico's small-scale fisheries statistics 1998-2001. Proceedings of the 55th Gulf and Caribbean Fisheries Research Institute Meeting. Cancun, Mexico. 17pp

Matos-Caraballo, Daniel. 2001. Overview of Puerto Rico's small-scale fisheries statistics 1998-2001. Proceedings of the 52th Gulf and Caribbean Fisheries Research Institute Meeting. 52: 197-203.

Matos-Caraballo, 2000. A Puerto Rico census 1995-1996. Proceedings of the 51th Gulf and Caribbean Fisheries Research Institute Meeting. 51: 258-270.

Matos-Caraballo, Daniel. 1998. Commercial fisheries statistics: Puerto Rico/NMFS Cooperative Fisheries Statistics Program 1997-2000. PR, DNER, Final Report to the NMFS. 73 pp.

Matos-Caraballo, Daniel, and Y. Sadovy. 1990. Overview of Puerto Rico small scale fisheries statistics 1988-90. Technical Report. CODREMAR. 1(4): 1-17.

Matos-Caraballo, Daniel, M. Cartagena-Haddock, and N. Pena-Alvarado. 2004. Determination of the correction factor for landings data and catch per unit effort (CPUE)

for a single trip, 2002-2003. Job 6 [In: Puerto Rico/NMFS Cooperative Fisheries Statistics Program April 2001-March 2004. Puerto Rico, DNER, Mayaguez, Puerto Rico, Contract Report No. NA17FT1006)]: pg 207-229.

Robson, A.D. 1966. Estimation of the relative fishing power of individual ships. ICNAF Res. Bull. No. 3: 15 pp.

Wilcox, William A. 1899. Notes on the foreign fishery trade and local fisheries of Porto Rico. [In Investigations of the Aquatic resources and Fisheries of Porto Rico by the U.S. Fish Comm. Steamer Fish Hawk in 1899]: pg 1-34..

Wilcox, William A. 1900. The fisheries and fish trade of Porto Rico. [In Investigations of the Aquatic resources and Fisheries of Porto Rico by the U.S. Fish Comm. Steamer Fish Hawk in 1899]: pg 27-48.

Table 1. Summary of commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus*, in Puerto Rico, 1983 and 2003 by year. 2003 Preliminary data.

Calendar Year	Total # Sales	Pounds Sold
1983	3685	167867
1984	2024	134184
1985	2403	140451
1986	2487	93804
1987	2704	92319
1988	2202	77232
1989	2530	91028
1990	2801	106978
1991	3622	148564
1992	3280	149058
1993	4091	183079
1994	3849	186350
1995	6645	291769
1996	7084	273702
1997	6934	272999
1998	5759	252015
1999	5964	279391
2000	7624	363037
2001	7694	317185
2002	7219	291024
2003	6340	176567
All Years	96941	4088602

Table 2. Commercial yellowtail snapper, *Ocyurus chrysurus*, sales (pounds) in Puerto Rico by major gear category from 1983-2003. 2003 Preliminary data.

					GEAR				
Year	Cast Net	Dive	Net	Other Gears	Pot	Rod & Reel	Seines	Vertical Lines	All Gears
1983	116	570	7014		52395	90220	15842	1710	167867
1984	111	646	6052		34219	77165	15375	616	134184
1985	342	89	12464		39492	80770	6919	375	140451
1986	542	571	21619		19339	47301	4081	351	93804
1987	85	1751	15702		18417	54314	1397	653	92319
1988	555	995	10759	350	11947	50352	1429	846	77232
1989	61	287	9026	60	11761	61461	6675	1698	91028
1990	40	284	5685		12057	79649	7915	1348	106978
1991	329	345	7716		19577	113728	5849	1021	148564
1992	260	318	11980		16712	112787	6093	909	149058
1993	420	1423	10125		18149	140986	10990	986	183079
1994	1023	1185	10853		21713	136997	12576	2003	186350
1995	1336	1514	10647		21694	246683	6029	3866	291769
1996	496	1504	26675		28144	208646	3669	4570	273702
1997	52	1093	23930		26605	213660	4284	3376	272999
1998	213	1989	13045		20033	209533	2773	4429	252015
1999	127	1347	14846		22716	229477	4117	6761	279391
2000	1212	1507	19573		22210	306047	8782	3707	363037
2001	162	5954	17337		22725	256205	12226	2576	317185
2002		2461	18561	33	30707	226359	10078	2825	291024
2003	160	1336	7836		18234	138826	8947	1229	176567
All	7641	27167	281443	443	488844	3081167	156046	45851	4088602

Table 3. Percentage of commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus*, by gear category in Puerto, 1983 through 2003. 2003 Preliminary data.

					Gear				
Year	Cast Nets	Dive	Nets	Other Gears	Pots	Rod & Reel	Seines	Vertical Lines	All Gears
1983	0.1	0.3	4.2		31.2	53.7	9.4	1.0	100
1984	0.1	0.5	4.5		25.5	57.5	11.5	0.5	100
1985	0.2	0.1	8.9		28.1	57.5	4.9	0.3	100
1986	0.6	0.6	23.0		20.6	50.4	4.4	0.4	100
1987	0.1	1.9	17.0		19.9	58.8	1.5	0.7	100
1988	0.7	1.3	13.9	0.5	15.5	65.2	1.9	1.1	100
1989	0.1	0.3	9.9	0.1	12.9	67.5	7.3	1.9	100
1990	0.0	0.3	5.3		11.3	74.5	7.4	1.3	100
1991	0.2	0.2	5.2		13.2	76.6	3.9	0.7	100
1992	0.2	0.2	8.0		11.2	75.7	4.1	0.6	100
1993	0.2	0.8	5.5		9.9	77.0	6.0	0.5	100
1994	0.5	0.6	5.8		11.7	73.5	6.7	1.1	100
1995	0.5	0.5	3.6		7.4	84.5	2.1	1.3	100
1996	0.2	0.5	9.7		10.3	76.2	1.3	1.7	100
1997	0.0	0.4	8.8		9.7	78.3	1.6	1.2	100
1998	0.1	0.8	5.2		7.9	83.1	1.1	1.8	100
1999	0.0	0.5	5.3		8.1	82.1	1.5	2.4	100
2000	0.3	0.4	5.4		6.1	84.3	2.4	1.0	100
2001	0.1	1.9	5.5		7.2	80.8	3.9	0.8	100
2002		0.8	6.4	0.0	10.6	77.8	3.5	1.0	100
2003	0.1	0.8	4.4		10.3	78.6	5.1	0.7	100
All	0.2	0.7	6.9	0.0	12.0	75.4	3.8	1.1	100

Table 4. Total monthly commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus,* in Puerto Rico, 1983- 2003. 2003 Preliminary data.

	Month																													
	1		2		3		4		5		6		7		8		9		10		11		12		All	
Year	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	Sum	N	total
1983	390	13159	454	13027	464	16931	412	17402	501	17737	258	9999	142	10102	174	11645	265	16787	266	19405	239	15100	120	6573	3685	167867
1984	138	7993	195	15057	197	17618	188	11301	126	6140	117	7711	94	7531	195	10539	220	11556	226	17974	174	12233	154	8531	2024	134184
1985	147	9304	160	11391	236	18645	209	12016	173	7439	227	8203	203	9643	267	15203	255	14909	205	13319	191	11853	130	8526	2403	140451
1986	169	11072	150	9375	192	11010	221	12311	235	6342	198	5005	222	6377	213	4538	248	8315	261	7563	198	4953	180	6943	2487	93804
1987	198	7185	254	10149	263	12117	270	8683	311	10610	186	5290	195	4743	243	6192	326	11070	214	7552	162	6200	82	2530	2704	92319
1988	121	4870	162	6318	203	8741	265	10611	228	6905	169	4871	109	3184	178	5291	243	7814	314	10429	147	5310	63	2890	2202	77232
1989	155	3803	159	5338	206	8171	194	7412	270	7784	194	5798	254	8266	307	10429	187	6848	255	13484	207	9952	142	3744	2530	91028
1990	180	5028	185	5421	258	10636	237	9443	200	9797	139	4545	225	8020	335	16773	387	15703	259	8632	232	7998	164	4984	2801	106978
1991	315	13918	325	14464	354	16251	313	10834	396	12944	362	13049	308	11701	307	13181	255	11231	283	13610	240	10346	164	7038	3622	148564
1992	324	13484	312	14165	385	21883	337	15161	228	10081	178	7991	170	7148	240	10610	298	16007	415	17779	195	6353	198	8397	3280	149058
1993	250	12059	374	15620	308	11660	373	18583	374	17534	278	12922	299	13765	435	17536	455	22119	446	18869	275	12360	224	10052	4091	183079
1994	310	14140	303	15824	486	28433	299	15452	310	12698	295	10657	280	10428	416	23785	248	12206	409	19418	266	14110	227	9199	3849	186350
1995	501	24468	515	26888	654	36293	491	25690	642	30666	592	23826	601	20515	546	21555	525	19513	700	29641	463	17947	415	14766	6645	291769
1996	503	16502	698	28391	752	32816	615	21373	587	23064	486	15724	487	16442	673	26972	522	21444	638	25578	564	23405	559	21991	7084	273702
1997	724	26989	462	16146	631	23314	631	28338	553	20921	609	21812	612	22587	603	25049	563	23686	615	26043	480	19160	451	18955	6934	272999
1998	609	24334	599	26074	605	31693	723	36225	584	22257	495	17125	474	16546	545	20853	264	9253	272	15029	325	18311	264	14315	5759	252015
1999	464	25774	494	28270	700	39004	530	25095	601	28340	523	22708	539	24912	590	27820	445	17125	450	17346	333	12408	295	10590	5964	279391
2000	491	20149	592	25785	771	38522	607	28232	721	26720	631	34948	651	35435	755	33753	749	37648	737	38566	504	26515	415	16764	7624	363037
2001	664	28724	543	20717	916	38446	705	33239	676	29115	600	22506	620	20703	752	31378	707	32021	576	20604	584	25458	351	14274	7694	317185
2002	575	22311	611	23037	652	29085	697	32702	587	22361	601	28019	676	27204	714	27176	615	23621	622	23265	511	19639	358	12605	7219	291024
2003	489	15796	427	11674	761	26381	606	17825	617	15615	483	9897	547	14972	626	15704	622	19228	531	13538	319	8270	312	7666	6340	176567
All	7717	321063	7974	343129	9994	477647	8923	397928	8920	345069	7621	292605	7708	300224	9114	375983	8399	358102	8694	377642	6609	287879	5268	211331	96941	4088602

N = number sales, sum = sum of pounds of yellowtail sold

Table 5. Percentage of commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus*, in Puerto Rico, 1983 through 2003. 2003 Preliminary data.

							Month						
	1	2	3	4	5	6	7	8	9	10	11	12	All
1983	7.8	7.8	10.1	10.4	10.6	6.0	6.0	6.9	1.00	11.6	9.0	3.9	100
1984	6.0	11.2	13.1	8.4	4.6	5.7	5.6	7.9	8.6	13.4	9.1	6.4	100
1985	6.6	8.1	13.3	8.6	5.3	5.8	6.9	10.8	10.6	9.5	8.4	6.1	100
1986	11.8	10.0	11.7	13.1	6.8	5.3	6.8	4.8	8.9	8.1	5.3	7.4	100
1987	7.8	11.0	13.1	9.4	11.5	5.7	5.1	6.7	12.0	8.2	6.7	2.7	100
1988	6.3	8.2	11.3	13.7	8.9	6.3	4.1	6.9	10.1	13.5	6.9	3.7	100
1989	4.2	5.9	9.0	8.1	8.6	6.4	9.1	11.5	7.5	14.8	10.9	4.1	100
1990	4.7	5.1	9.9	8.8	9.2	4.2	7.5	15.7	14.7	8.1	7.5	4.7	100
1991	9.4	9.7	10.9	7.3	8.7	8.8	7.9	8.9	7.6	9.2	7.0	4.7	100
1992	9.0	9.5	14.7	10.2	6.8	5.4	4.8	7.1	10.7	11.9	4.3	5.6	100
1993	6.6	8.5	6.4	10.2	9.6	7.1	7.5	9.6	12.1	10.3	6.8	5.5	100
1994	7.6	8.5	15.3	8.3	6.8	5.7	5.6	12.8	6.6	10.4	7.6	4.9	100
1995	8.4	9.2	12.4	8.8	10.5	8.2	7.0	7.4	6.7	10.2	6.2	5.1	100
1996	6.0	10.4	12.0	7.8	8.4	5.7	6.0	9.9	7.8	9.3	8.6	8.0	100
1997	9.9	5.9	8.5	10.4	7.7	8.0	8.3	9.2	8.7	9.5	7.0	6.9	100
1998	9.7	10.3	12.6	14.4	8.8	6.8	6.6	8.3	3.7	6.0	7.3	5.7	100
1999	9.2	10.1	14.0	9.0	10.1	8.1	8.9	10	6.1	6.2	4.4	3.8	100
2000	5.6	7.1	10.6	7.8	7.4	9.6	9.8	9.3	10.4	10.6	7.3	4.6	100
2001	9.1	6.5	12.1	10.5	9.2	7.1	6.5	9.9	10.1	6.5	8.0	4.5	100
2002	7.7	7.9	10.0	11.2	7.7	9.6	9.3	9.3	8.1	8.0	6.7	4.3	100
2003	8.9	6.6	14.9	10.1	8.8	5.6	8.5	8.9	10.9	7.7	4.7	4.3	100
All	7.9	8.4	11.7	9.7	8.4	7.2	7.3	9.2	8.8	9.2	7.0	5.2	100

Table 6a. Commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus,* in Puerto Rico by area of sale, 1983-2003. All gears combined. 2003 Preliminary data.

											Year											
Center	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Isabela	456	275	360	54		31	178	162	468	586	1103	562	1525	1062	1308	789	365	74	316	1600	105	11376
Camuy	493	585	533	561	129	149	75		123	424			382	240	1346	3690	1803	1398	1072	792	355	14150
Hatillo	1139	1513	1857	319	727	932	1342	381		812	871	666	1157	1384	2231	481	1528	158	344	135	116	18092
Arecibo			12				110	345	212	67	103	927	22	1505	2263	1252	874	2272	4238	1673	1097	16970
Barceloneta	2807	1700	556	926	256		1136	650	1621	400	809	1335	1159	309	1400	1330	631	908	2317	244	515	21010
Manati	3	10	25	203				14	148	100	219	225	911	108	630	707	614	409	693	708	84	5811
Vega Baja	305	193	1260	1008	74	10			616	108	28	60	378	343	554	940	504	1588	2602	2010	17	12596
Vega Alta	154	59	107	237	68	24	4			88	315	242	578	508	469	940	406	734	896	349	265	6443
Dorado	5	54	5	40		14	54	51	270	12	175	1294	994	994	862	547	841	297	1355	1164	1350	10378
Toa Baja		7	33	66	26				69				29				36	30	40			336
Catano	1293	1321	600	778	362	319	761	1644	7134	5317	4238	7550	11960	4600	7066	3778	3490	2036	1659	1655	1951	69510
San Juan	32395	20270	21737	14912	17053	17194	8038	19949	24293	26143	20554	27195	33139	16104	23594	25202	34308	34020	34276	27299	21771	499444
Carolina	453	81	424	31	453	869	2316	454	223	1840	547	913	1378	2726	2405	1385	2689	2945	6380	1056		29567
Loiza	894	275	175	252	359	560		279	2716	1626	1360	2394	4746	6925	7231	3303	1175	769	3165	5724	3201	47128
Rio Grande	2129	1736	1030	345	321	85		65	491	489	949	1713	3440	2020	2227	2417	3197	3000	4250	5939	2772	38613
Luquillo	1530	574	648	566	887	647	368	100	1377	1801	202	49	2850	1517	2536	693	452	722	50	1798	51	19418
Fajardo	21349	13092	21985	8281	11345	8929	7604	10126	2752	12409	16436	15373	56720	36181	37632	37757	40301	36795	52839	37235	25088	510227
Ceiba	2273	1222	1941	2118	5575	752	103	448	2019	698	232	553	4887	5301	3867	2916	3328	3595	4859	5171	2214	54070
Naguabo	6329	4447	2951	2051	2497	409	584	129		123	802	3035	2590	1144	2947	1744	3476	5403	6340	4333	3327	54659
Humacao	6709	2388	9240	7036	6828	3845	3421	7018	9274	6629	10649	12001	15649	13013	12893	7288	11390	8974	14856	11597	8903	189600
Yabucoa	974	519	773	1128	1369	600	1121	3754	3852	619	5145	3334	4944	5380	7223	1872	4077	5865	6504	8076	3912	71039
Maunabo	405	539	256	850	245	269	178	1277	1760		181	238	574	1714	2533	939	2971	1740	1803	1233	188	19893
Culebra	2649	1870	4944	4665	3848	2506	3213	2055	3072	3240	2620	3366	4575	1064	277		2778	4929	1271	2877	4521	60339
Vieques	6760	7550	3668	2412	4558	4748	2877	1054	1235	2891	3244	81	2502	9104	6669	10423	3974	3244	29565	31715	8292	146566
Patillas	207	483	4086	1987	1105	2016	1257	702	7882	2244	2936	5448	12379	2839	7230	2161	2434	4052	3648	2834	2559	70489
Arroyo	2889	3191	2412	111	30		32	516	1467	42	3	964	4119	4816	2644	1346	919	786	685	592	501	28064
Guayama	3052	4171	2291	1250	809	861	1281	550	951	3667	4090	3944	3884	6319	8697	5026	7030	2738	2196	4016	3745	70567
Salinas	1652	648	1786	1010	256	812	407	593	1307	1009	3948	6619	8016	10651	8045	7144	6533	8265	6098	7646	5117	87560
Santa Isabel	292	67				86	1918	233	739	111	360	3269	5543	8487	5927	4226	3509	6476	4631	4114	2490	52476
Juana Diaz	5078	3330	1448	61	816	10	354	53	18	10		699	731	2813	3331	1679	980	2919	3451	2922	981	31684
Ponce	292	323	52	186	12				349	383	2149	11954	12923	19184	12790	27184	28746	33128	20790	15061	20056	205561
Penuelas	542	86	122	40	198	156	57	40	31	147	49	115	40	102	54	204	194	533	1028	1545	156	5437
Guayamilla	4234	3257	4021	1986	162	160	517	299	166	273		260	2689	2966	2630	1182	3791	7443	2980	3958	875	43849
Guanica	7089	19700	8201	5198	8397	4556	13049	15592	12290	21133	18651	22807	29130	32326	24774	24292	31918	104090	21534	19852	7497	452071
Lajas	6938		3528	6130	2138	3211	1392	2913	5636	6954	4686	4751	8070	12130	12026	19248	20969	18104	16867	26360	7325	189374
Cabo Rojo	28723	28826	26518	18072	12213	11858	16498	7730	17817	14515	7885	5378	8245	14325	13789	8988	7885	15110	17254	12864	11569	306061
Mayaguez	11792	8328	8172	3872	4369	4479	5668	10229	27897	22465	49798	22988	22484	32147	25995	24498	27331	24376	21268	23170	16463	397786
Anasco		7	261	87	58	54	294	200	771	53	79	90	969	847	484	234	140	277	322	370	194	5790
Rincon	554	165	132	91	280		122	510		463	789	8	651	339	260	71	221	240	2004	596	629	8125
Aguada	352	429	654	3410	30	463	5032	8094	1304	3269	9063	9125	1631	4109	3302	2539	2633	3601	5674	3162	2648	70522
Aguadilla	2677	893	1647	1474	4470	5619	9669	8770	6217	5900	7813	4829	13179	6062	10861	11602	8955	8998	5068	7584	3672	135957
All	167867	134184	140451	93804	92319	77232	91028	106978	148564	149058	183079	186350	291769	273702	272999	252015	279391	363037	317185	291024	176567	4088602

Table 6b. Percentage of commercial sales of yellowtail snapper, *Ocyurus chrysurus*, sold in Puerto Rico by area of sale 1983-2003. All gears. 2003 preliminary data.

									Year													
Center	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Isabela	0.3	0.2	0.3	0.1		0	0.2	0.2	0.3	0.4	0.6	0.3	0.5	0.4	0.5	0.3	0.1	0	0.1	0.5	0.1	0.3
Camuy	0.3	0.4	0.4	0.6	0.1	0.2	0.1		0.1	0.3			0.1	0.1	0.5	1.5	0.6	0.4	0.3	0.3	0.2	0.3
Hatillo	0.7	1.1	1.3	0.3	0.8	1.2	1.5	0.4		0.5	0.5	0.4	0.4	0.5	0.8	0.2	0.5	0	0.1	0	0.1	0.4
Arecibo			0				0.1	0.3	0.1	0	0.1	0.5	0	0.5	0.8	0.5	0.3	0.6	1.3	0.6	0.6	0.4
Barceloneta	1.7	1.3	0.4	1	0.3		1.2	0.6	1.1	0.3	0.4	0.7	0.4	0.1	0.5	0.5	0.2	0.3	0.7	0.1	0.3	0.5
Manati	0	0	0	0.2				0	0.1	0.1	0.1	0.1	0.3	0	0.2	0.3	0.2	0.1	0.2	0.2	0	0.1
Vega Baja	0.2	0.1	0.9	1.1	0.1	0			0.4	0.1	0	0	0.1	0.1	0.2	0.4	0.2	0.4	0.8	0.7	0	0.3
Vega Alta	0.1	0	0.1	0.3	0.1	0	0			0.1	0.2	0.1	0.2	0.2	0.2	0.4	0.1	0.2	0.3	0.1	0.1	0.2
Dorado	0	0	0	0		0	0.1	0	0.2	0	0.1	0.7	0.3	0.4	0.3	0.2	0.3	0.1	0.4	0.4	0.8	0.3
Toa Baja		0	0	0.1	0				0				0				0	0	0			0
Catano	0.8	1	0.4	0.8	0.4	0.4	0.8	1.5	4.8	3.6	2.3	4.1	4.1	1.7	2.6	1.5	1.2	0.6	0.5	0.6	1.1	1.7
San Juan	19.3	15.1	15.5	15.9	18.5	22.3	8.8	18.6	16.4	17.5	11.2	14.6	11.4	5.9	8.6	10	12.3	9.4	10.8	9.4	12.3	12.2
Carolina	0.3	0.1	0.3	0	0.5	1.1	2.5	0.4	0.2	1.2	0.3	0.5	0.5	1	0.9	0.5	1	0.8	2	0.4		0.7
Loiza	0.5	0.2	0.1	0.3	0.4	0.7		0.3	1.8	1.1	0.7	1.3	1.6	2.5	2.6	1.3	0.4	0.2	1	2	1.8	1.2
Rio Grande	1.3	1.3	0.7	0.4	0.3	0.1		0.1	0.3	0.3	0.5	0.9	1.2	0.7	0.8	1	1.1	0.8	1.3	2	1.6	0.9
Luquillo	0.9	0.4	0.5	0.6	1	0.8	0.4	0.1	0.9	1.2	0.1	0	1	0.6	0.9	0.3	0.2	0.2	0	0.6	0	0.5
Fajardo	12.7	9.8	15.7	8.8	12.3	11.6	8.4	9.5	1.9	8.3	9	8.2	19.4	13.2	13.8	15	14.4	10.1	16.7	12.8	14.2	12.5
Ceiba	1.4	0.9	1.4	2.3	6	1	0.1	0.4	1.4	0.5	0.1	0.3	1.7	1.9	1.4	1.2	1.2	1	1.5	1.8	1.3	1.3
Naguabo	3.8	3.3	2.1	2.2	2.7	0.5	0.6	0.1		0.1	0.4	1.6	0.9	0.4	1.1	0.7	1.2	1.5	2	1.5	1.9	1.3
Humacao	4	1.8	6.6	7.5	7.4	5	3.8	6.6	6.2	4.4	5.8	6.4	5.4	4.8	4.7	2.9	4.1	2.5	4.7	4	5	4.6
Yabucoa	0.6	0.4	0.6	1.2	1.5	0.8	1.2	3.5	2.6	0.4	2.8	1.8	1.7	2	2.6	0.7	1.5	1.6	2.1	2.8	2.2	1.7
Maunabo	0.2	0.4	0.2	0.9	0.3	0.3	0.2	1.2	1.2		0.1	0.1	0.2	0.6	0.9	0.4	1.1	0.5	0.6	0.4	0.1	0.5
Culebra	1.6	1.4	3.5	5	4.2	3.2	3.5	1.9	2.1	2.2	1.4	1.8	1.6	0.4	0.1		1	1.4	0.4	1	2.6	1.5
Vieques	4	5.6	2.6	2.6	4.9	6.1	3.2	1	0.8	1.9	1.8	0	0.9	3.3	2.4	4.1	1.4	0.9	9.3	10.9	4.7	3.6
Patillas	0.1	0.4	2.9	2.1	1.2	2.6	1.4	0.7	5.3	1.5	1.6	2.9	4.2	1	2.6	0.9	0.9	1.1	1.2	1	1.4	1.7
Arroyo	1.7	2.4	1.7	0.1	0		0	0.5	1	0	0	0.5	1.4	1.8	1	0.5	0.3	0.2	0.2	0.2	0.3	0.7
Guayama	1.8	3.1	1.6	1.3	0.9	1.1	1.4	0.5	0.6	2.5	2.2	2.1	1.3	2.3	3.2	2	2.5	0.8	0.7	1.4	2.1	1.7
Salinas	1	0.5	1.3	1.1	0.3	1.1	0.4	0.6	0.9	0.7	2.2	3.6	2.7	3.9	2.9	2.8	2.3	2.3	1.9	2.6	2.9	2.1
Santa Isabel	0.2	0				0.1	2.1	0.2	0.5	0.1	0.2	1.8	1.9	3.1	2.2	1.7	1.3	1.8	1.5	1.4	1.4	1.3
Juana Diaz	3	2.5	1	0.1	0.9	0	0.4	0	0	0		0.4	0.3	1	1.2	0.7	0.4	0.8	1.1	1	0.6	0.8
Ponce	0.2	0.2	0	0.2	0				0.2	0.3	1.2	6.4	4.4	7	4.7	10.8	10.3	9.1	6.6	5.2	11.4	5
Penuelas	0.3	0.1	0.1	0	0.2	0.2	0.1	0	0	0.1	0	0.1	0	0	0	0.1	0.1	0.1	0.3	0.5	0.1	0.1
Guayamilla	2.5	2.4	2.9	2.1	0.2	0.2	0.6	0.3	0.1	0.2		0.1	0.9	1.1	1	0.5	1.4	2.1	0.9	1.4	0.5	1.1
Guanica	4.2	14.7	5.8	5.5	9.1	5.9	14.3	14.6	8.3	14.2	10.2	12.2	10	11.8	9.1	9.6	11.4	28.7	6.8	6.8	4.2	11.1
Lajas	4.1		2.5	6.5	2.3	4.2	1.5	2.7	3.8	4.7	2.6	2.5	2.8	4.4	4.4	7.6	7.5	5	5.3	9.1	4.1	4.6
Cabo Rojo	17.1	21.5	18.9	19.3	13.2	15.4	18.1	7.2	12	9.7	4.3	2.9	2.8	5.2	5.1	3.6	2.8	4.2	5.4	4.4	6.6	7.5
Mayaguez	7	6.2	5.8	4.1	4.7	5.8	6.2	9.6	18.8	15.1	27.2	12.3	7.7	11.7	9.5	9.7	9.8	6.7	6.7	8	9.3	9.7
Anasco		0	0.2	0.1	0.1	0.1	0.3	0.2	0.5	0	0	0	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Rincon	0.3	0.1	0.1	0.1	0.3		0.1	0.5		0.3	0.4	0	0.2	0.1	0.1	0	0.1	0.1	0.6	0.2	0.4	0.2

Aguada	0.2	0.3	0.5	3.6	0	0.6	5.5	7.6	0.9	2.2	5	4.9	0.6	1.5	1.2	1	0.9	1	1.8	1.1	1.5	1.7	
Aguadilla	1.6	0.7	1.2	1.6	4.8	7.3	10.6	8.2	4.2	4	4.3	2.6	4.5	2.2	4	4.6	3.2	2.5	1.6	2.6	2.1	3.3	
All	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

Table 7a. Commercial sales (pounds) of yellowtail snapper sold in Puerto Rico by area of sale, 1983-2003. Rod & Reel gear. 2003 Preliminary.

											cyear											
Center	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Isabela	442	275	255	54	.	.	124	145	444	586	1103	336	1472	1025	1280	789	365	65	59	1181	60	10056
Camuy	493	565	533	561	5	139	75	.	123	424	.	.	364	240	1346	3690	1803	1398	1055	792	355	13961
Hatillo	1139	1513	1857	319	664	912	1342	381	.	812	871	548	1157	1384	2231	481	1528	158	344	135	116	17891
Arecibo	.	.	12	.	.	.	110	319	201	58	103	869	22	608	1921	1192	812	2166	3125	1607	953	14076
Barceloneta	2807	1662	521	906	256	.	586	650	1621	.	764	1260	840	299	1302	1273	600	873	1147	241	505	18113
Manati	.	.	24	.	.	.	.	14	60	20	176	60	671	97	604	565	508	409	693	708	84	4693
Vega Baja	220	81	1219	615	70	.	.	.	616	46	.	31	363	285	354	479	429	1330	1696	1419	17	9269
Vega Alta	69	2	97	157	68	24	4	.	.	88	95	195	427	437	349	940	382	604	774	245	172	5129
Dorado	5	9	5	30	.	14	54	16	.	.	92	1183	492	725	208	78	325	297	627	56	488	4704
Toa Baja	.	.	33	66	26	.	.	.	69	.	.	.	29	.	.	.	13	.	40	.	.	276
Catano	487	124	503	651	209	160	596	1369	6841	5194	3884	7394	11799	4171	5355	2640	2576	1677	1619	1358	1546	60150
San Juan	31881	20240	19993	12449	15198	17041	7869	17804	23710	25853	20284	26455	31988	15833	23180	24592	34241	33850	33378	25166	21619	482622
Carolina	391	81	424	31	453	836	2284	454	223	1840	491	832	1161	1389	2385	1273	2616	2931	6285	1047	.	27426
Loiza	456	100	155	27	219	60	.	259	2674	926	1200	2117	4189	6754	6513	2713	1150	674	3126	5540	3134	41985
Rio Grande	1515	1632	981	207	221	85	.	50	473	437	949	1713	3364	1773	2182	2395	3010	2565	4195	5624	2729	36098
Luquillo	1316	358	341	226	277	366	368	100	881	918	80	40	2810	1143	1905	653	311	502	25	1262	42	13924
Fajardo	18593	9508	17833	7011	9825	8380	6878	10004	1221	12079	15900	14178	55154	34271	34365	36325	38139	35054	50911	35715	23722	475064
Ceiba	1109	268	991	1213	1618	179	84	208	1762	388	87	535	2963	2536	1981	1394	1911	1490	1743	2847	1477	26782
Naguabo	515	973	1644	791	1219	409	155	75	.	18	.	418	1915	557	2136	573	855	2896	3951	2086	1450	22635
Humacao	3376	1549	5733	4616	5011	2720	2348	5559	7347	5147	7271	10138	13894	9722	9979	5238	8066	5940	12808	8768	5753	140982
Yabucoa	589	408	487	680	958	267	996	3672	3061	430	3839	2819	4168	4527	6200	1641	3655	5560	6035	5819	2546	58356
Maunabo	87	128	49	53	46	66	.	582	1037	.	41	.	47	159	1524	654	2519	1642	910	819	150	10513
Culebra	1774	879	2622	3669	2080	1542	2468	1235	1703	322	1628	3088	4137	922	247	.	2531	2234	800	2696	4280	40858
Vieques	5536	6595	3218	1947	3765	4553	2144	712	745	2891	3186	81	1608	5963	4560	9493	2809	1446	26164	24759	6777	118950
Patillas	.	.	3533	1689	646	1414	866	320	7348	688	2764	4670	10471	2384	6160	1778	1912	3400	2978	2310	1959	57290
Arroyo	20	.	688	.	.	.	.	21	138	22	.	61	2338	2392	645	795	202	6	296	99	46	7769
Guayama	28	.	.	20	9	60	.	15	10	1825	2683	642	292	2729	3783	1335	3288	1185	443	1960	1324	21631
Salinas	85	13	19	150	67	84	50	245	79	198	390	1041	2116	1996	2380	2662	2762	5006	2917	3626	856	26741
Santa Isabel	.	.	.	.	.	.	263	.	194	.	6	420	1035	4620	4231	2386	1018	2884	2481	1904	1036	22478
Juana Diaz	.	65	25	22	.	.	280	.	.	.	.	.	198	354	482	93	.	503	135	262	114	2533
Ponce	58	235	.	100	.	.	.	.	349	383	2099	9994	11610	17049	11774	24494	23824	30113	19704	12656	20028	184469
Penuelas	430	.	23	40	198	95	51	40	31	127	49	110	40	82	54	45	194	517	959	1502	109	4695
Guayamilla	3012	2861	2224	1232	47	100	462	270	102	213	.	185	2303	2397	1877	496	1027	1923	1087	2001	51	23869
Guanica	4708	18493	6309	2421	4551	2290	12055	12780	10996	20739	18233	17770	27776	31275	24188	22772	31180	103473	20170	18970	7137	418280
Lajas	1954	.	.	97	52	136	242	654	1439	1806	12	1107	4546	5680	6351	15015	12188	9716	10105	17199	5128	93426
Cabo Rojo	3404	5750	4698	2186	1265	2813	6842	4799	8625	3934	1554	1483	4208	4406	4086	3265	3190	5551	3973	2399	1789	80218
Mayaguez	597	1704	1771	1402	715	679	3207	7863	23436	17726	41932	20791	20060	28858	23349	21821	25988	23636	19088	21194	14820	320637
Anasco	.	.	53	87	58	54	170	200	749	53	79	90	867	807	434	204	130	108	224	349	184	4899
Rincon	448	70	132	91	280	.	122	110	.	454	789	8	434	239	260	71	221	240	837	195	599	5600

Aguada	214	376	168	11	19	38	335	529	163	517	873	699	580	2512	1916	1812	2294	3115	4380	2404	2071	25024
Aguadilla	2462	648	1597	1474	4223	4837	8031	8198	5260	5627	7482	3640	12776	6050	9586	11419	8909	8914	4920	7446	3603	127101
All	90220	77165	80770	47301	54314	50352	61461	79649	113728	112787	140986	136997	246683	208646	213660	209533	229477	306047	256205	226359	138826	3081167

Table 7b. Percentage of commercial sales (pounds) of yellowtail snapper, in Puerto Rico by area of sale, 1983-2003. Rod and Reel 2003 Preliminary data.

Center	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Isabela	0.5	0.4	0.3	0.1	.	.	0.2	0.2	0.4	0.5	0.8	0.2	0.6	0.5	0.6	0.4	0.2	0	0	0.5	0	0.3
Camuy	0.5	0.7	0.7	1.2	0	0.3	0.1	.	0.1	0.4	.	.	0.1	0.1	0.6	1.8	0.8	0.5	0.4	0.3	0.3	0.5
Hatillo	1.3	2	2.3	0.7	1.2	1.8	2.2	0.5	.	0.7	0.6	0.4	0.5	0.7	1	0.2	0.7	0.1	0.1	0.1	0.1	0.6
Arecibo	.	.	0	.	.	.	0.2	0.4	0.2	0.1	0.1	0.6	0	0.3	0.9	0.6	0.4	0.7	1.2	0.7	0.7	0.5
Barceloneta	3.1	2.2	0.6	1.9	0.5	.	1	0.8	1.4	.	0.5	0.9	0.3	0.1	0.6	0.6	0.3	0.3	0.4	0.1	0.4	0.6
Manati	.	.	0	.	.	.	.	0	0.1	0	0.1	0	0.3	0	0.3	0.3	0.2	0.1	0.3	0.3	0.1	0.2
Vega Baja	0.2	0.1	1.5	1.3	0.1	.	.	.	0.5	0	.	0	0.1	0.1	0.2	0.2	0.2	0.4	0.7	0.6	0	0.3
Vega Alta	0.1	0	0.1	0.3	0.1	0	0	.	.	0.1	0.1	0.1	0.2	0.2	0.2	0.4	0.2	0.2	0.3	0.1	0.1	0.2
Dorado	0	0	0	0.1	.	0	0.1	0	.	.	0.1	0.9	0.2	0.3	0.1	0	0.1	0.1	0.2	0	0.4	0.2
Toa Baja	.	.	0	0.1	0	.	.	.	0.1	.	.	.	0	.	.	.	0	.	0	.	.	0
Catano	0.5	0.2	0.6	1.4	0.4	0.3	1	1.7	6	4.6	2.8	5.4	4.8	2	2.5	1.3	1.1	0.5	0.6	0.6	1.1	2
San Juan	35.3	26.2	24.8	26.3	28	33.8	12.8	22.4	20.8	22.9	14.4	19.3	13	7.6	10.8	11.7	14.9	11.1	13	11.1	15.6	15.7
Carolina	0.4	0.1	0.5	0.1	0.8	1.7	3.7	0.6	0.2	1.6	0.3	0.6	0.5	0.7	1.1	0.6	1.1	1	2.5	0.5	.	0.9
Loiza	0.5	0.1	0.2	0.1	0.4	0.1	.	0.3	2.4	0.8	0.9	1.5	1.7	3.2	3	1.3	0.5	0.2	1.2	2.4	2.3	1.4
Rio Grande	1.7	2.1	1.2	0.4	0.4	0.2	.	0.1	0.4	0.4	0.7	1.3	1.4	0.8	1	1.1	1.3	0.8	1.6	2.5	2	1.2
Luquillo	1.5	0.5	0.4	0.5	0.5	0.7	0.6	0.1	0.8	0.8	0.1	0	1.1	0.5	0.9	0.3	0.1	0.2	0	0.6	0	0.5
Fajardo	20.6	12.3	22.1	14.8	18.1	16.6	11.2	12.6	1.1	10.7	11.3	10.3	22.4	16.4	16.1	17.3	16.6	11.5	19.9	15.8	17.1	15.4
Ceiba	1.2	0.3	1.2	2.6	3	0.4	0.1	0.3	1.5	0.3	0.1	0.4	1.2	1.2	0.9	0.7	0.8	0.5	0.7	1.3	1.1	0.9
Naguabo	0.6	1.3	2	1.7	2.2	0.8	0.3	0.1	.	0	.	0.3	0.8	0.3	1	0.3	0.4	0.9	1.5	0.9	1	0.7
Humacao	3.7	2	7.1	9.8	9.2	5.4	3.8	7	6.5	4.6	5.2	7.4	5.6	4.7	4.7	2.5	3.5	1.9	5	3.9	4.1	4.6
Yabucoa	0.7	0.5	0.6	1.4	1.8	0.5	1.6	4.6	2.7	0.4	2.7	2.1	1.7	2.2	2.9	0.8	1.6	1.8	2.4	2.6	1.8	1.9
Maunabo	0.1	0.2	0.1	0.1	0.1	0.1	.	0.7	0.9	.	0	.	0	0.1	0.7	0.3	1.1	0.5	0.4	0.4	0.1	0.3
Culebra	2	1.1	3.2	7.8	3.8	3.1	4	1.6	1.5	0.3	1.2	2.3	1.7	0.4	0.1	.	1.1	0.7	0.3	1.2	3.1	1.3
Vieques	6.1	8.5	4	4.1	6.9	9	3.5	0.9	0.7	2.6	2.3	0.1	0.7	2.9	2.1	4.5	1.2	0.5	10.2	10.9	4.9	3.9
Patillas	.	.	4.4	3.6	1.2	2.8	1.4	0.4	6.5	0.6	2	3.4	4.2	1.1	2.9	0.8	0.8	1.1	1.2	1	1.4	1.9
Arroyo	0	.	0.9	.	.	.	.	0	0.1	0	.	0	0.9	1.1	0.3	0.4	0.1	0	0.1	0	0	0.3
Guayama	0	.	.	0	0	0.1	.	0	0	1.6	1.9	0.5	0.1	1.3	1.8	0.6	1.4	0.4	0.2	0.9	1	0.7
Salinas	0.1	0	0	0.3	0.1	0.2	0.1	0.3	0.1	0.2	0.3	0.8	0.9	1	1.1	1.3	1.2	1.6	1.1	1.6	0.6	0.9
Santa Isabel	.	.	.	.	.	.	0.4	.	0.2	.	0	0.3	0.4	2.2	2	1.1	0.4	0.9	1	0.8	0.7	0.7
Juana Diaz	.	0.1	0	0	.	.	0.5	.	.	.	.	.	0.1	0.2	0.2	0	.	0.2	0.1	0.1	0.1	0.1
Ponce	0.1	0.3	.	0.2	.	.	.	.	0.3	0.3	1.5	7.3	4.7	8.2	5.5	11.7	10.4	9.8	7.7	5.6	14.4	6
Penuelas	0.5	.	0	0.1	0.4	0.2	0.1	0.1	0	0.1	0	0.1	0	0	0	0	0.1	0.2	0.4	0.7	0.1	0.2
Guayamilla	3.3	3.7	2.8	2.6	0.1	0.2	0.8	0.3	0.1	0.2	.	0.1	0.9	1.1	0.9	0.2	0.4	0.6	0.4	0.9	0	0.8
Guanica	5.2	24	7.8	5.1	8.4	4.5	19.6	16	9.7	18.4	12.9	13	11.3	15	11.3	10.9	13.6	33.8	7.9	8.4	5.1	13.6
Lajas	2.2	.	.	0.2	0.1	0.3	0.4	0.8	1.3	1.6	0	0.8	1.8	2.7	3	7.2	5.3	3.2	3.9	7.6	3.7	3
Cabo Rojo	3.8	7.5	5.8	4.6	2.3	5.6	11.1	6	7.6	3.5	1.1	1.1	1.7	2.1	1.9	1.6	1.4	1.8	1.6	1.1	1.3	2.6
Mayaguez	0.7	2.2	2.2	3	1.3	1.3	5.2	9.9	20.6	15.7	29.7	15.2	8.1	13.8	10.9	10.4	11.3	7.7	7.5	9.4	10.7	10.4
Anasco	.	.	0.1	0.2	0.1	0.1	0.3	0.3	0.7	0	0.1	0.1	0.4	0.4	0.2	0.1	0.1	0	0.1	0.2	0.1	0.2
Rincon	0.5	0.1	0.2	0.2	0.5	.	0.2	0.1	.	0.4	0.6	0	0.2	0.1	0.1	0	0.1	0.1	0.3	0.1	0.4	0.2

Aguada	0.2	0.5	0.2	0	0	0.1	0.5	0.7	0.1	0.5	0.6	0.5	0.2	1.2	0.9	0.9	1	1	1.7	1.1	1.5	0.8
Aguadilla	2.7	0.8	2	3.1	7.8	9.6	13.1	10.3	4.6	5	5.3	2.7	5.2	2.9	4.5	5.4	3.9	2.9	1.9	3.3	2.6	4.1
All	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 8a. Commercial sales (pounds) of yellowtail snapper, *Ocyurus chrysurus,* in Puerto Rico by area of sale, 1983-2003. Pot gear. 2003 Preliminary data.

Center	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Isabela	14	.	96	.	.	31	54	.	.	.	.	227	.	28	28	.	.	.	218	419	45	1159
Camuy	.	.	.	.	124	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	134
Hatillo	.	.	.	.	.	.	.	.	.	.	.	118	.	.	.	.	.	.	.	.	.	118
Arecibo	.	.	.	.	.	.	.	27	10	9	.	59	.	884	231	21	43	97	938	66	59	2442
Barceloneta	.	24	35	.	.	.	500	.	.	.	15	75	232	.	68	11	23	.	42	.	10	1035
Manati	3	.	.	203	.	.	.	.	9	25	43	.	.	11	26	122	.	.	.	.	.	442
Vega Baja	.	.	41	301	.	10	.	.	.	.	28	29	15	16	165	447	75	96	265	271	.	1758
Vega Alta	15	13	.	.	.	.	.	.	.	.	56	47	109	.	40	.	24	125	122	54	.	605
Dorado	.	.	.	.	.	.	.	35	270	12	60	11	80	98	586	469	506	.	702	852	733	4414
Toa Baja	.	7	.	.	.	.	.	.	.	.	.	.	.	.	.	.	11	.	.	.	.	18
Catano	140	.	.	.	12	13	88	62	45	.	18	64	41	143	299	7	.	19	.	18	.	969
San Juan	.	.	1715	2114	444	72	113	2006	15	83	.	44	268	251	346	303	.	150	360	2005	84	10373
Carolina	.	.	.	.	.	33	.	.	.	.	.	.	.	1187	20	.	38	14	18	.	.	1310
Loiza	.	.	.	.	.	.	.	.	.	234	.	70	390	141	218	378	.	95	3	169	67	1765
Rio Grande	425	28	.	56	100	.	.	13	.	.	.	.	18	41	24	.	145	22	24	170	28	1094
Luquillo	10	10	97	50	35	28	.	.	.	.	30	.	15	.	57	.	55	.	.	281	.	668
Fajardo	1874	2923	3372	436	752	368	491	122	1466	303	324	871	300	727	1388	943	1309	1148	1234	1133	1144	22626
Ceiba	944	863	950	905	3881	361	19	238	257	280	15	7	1836	2360	1775	1347	1227	1842	2946	2207	651	24909
Naguabo	5718	3436	1307	758	445	.	390	40	.	30	708	2496	588	135	125	405	1160	1263	1508	1211	1325	23047
Humacao	3270	785	3144	2172	1763	1095	1054	1447	1907	1482	3378	1002	1671	2904	1970	1712	2810	2587	1207	2397	1923	41679
Yabucoa	20	86	79	118	121	196	124	82	791	189	1306	435	458	735	175	231	145	235	176	1204	1366	8272
Maunabo	301	308	141	565	81	148	178	539	29	.	.	.	54	295	244	150	91	.	43	41	21	3229
Culebra	855	991	2322	983	1768	924	745	820	1369	2759	992	278	428	142	30	.	106	2651	14	13	6	18195
Vieques	1159	735	446	262	770	127	720	270	490	.	58	.	852	2761	1369	630	988	1577	2697	6255	1325	23490
Patillas	207	434	396	212	339	252	391	382	525	1306	154	488	1608	392	926	363	510	646	610	514	580	11235
Arroyo	2536	3006	1281	111	5	.	32	129	780	.	.	832	1360	605	1406	225	156	346	229	128	368	13535
Guayama	3024	4141	2190	1200	796	801	1228	535	941	1749	1148	1830	2644	3345	4538	3489	3704	1494	1241	1769	2246	44053
Salinas	619	295	266	560	.	444	202	282	1031	654	821	2366	2120	3029	2663	2390	2609	1917	1706	1786	2297	28056
Santa Isabel	25	67	.	.	.	.	1212	143	460	8	.	23	955	870	376	847	640	944	568	349	222	7709
Juana Diaz	3747	3243	1423	39	108	10	72	53	18	10	.	544	423	1473	831	244	151	594	813	879	802	15477
Ponce	94	88	26	86	12	.	.	.	.	.	.	1415	611	451	57	161	335	758	66	234	.	4394
Penuelas	8	20	86	.	.	.	.	.	.	14	.	.	.	.	.	58	.	8	.	.	.	193
Guayamilla	243	20	189	49	.	.	.	.	.	.	.	.	11	.	33	34	.	.	26	500	.	1105
Guanica	1872	818	886	216	491	167	398	809	980	224	97	4039	1123	151	164	.	112	14	107	336	33	13035
Lajas	2967	.	1706	960	1513	2712	602	1487	2630	2687	1981	1479	1355	2123	2224	1435	3844	1910	1412	2295	618	37939
Cabo Rojo	11074	5141	10865	4621	1430	965	1003	964	895	614	430	759	593	449	1667	1193	928	831	1267	962	687	47338
Mayaguez	11105	6463	6175	2362	3428	3144	2103	1555	4130	3958	6388	1583	1491	2378	2135	2389	883	658	798	1663	1498	66285
Anasco	.	7	208	.	.	.	18	.	12	.	.	.	45	22	50	30	10	107	72	21	10	612
Rincon	16	50	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	320	31	.	417
Aguada	.	.	.	.	.	.	.	.	.	.	.	421	.	.	.	.	59	40	853	345	35	1752

Aguadilla	110	217	50	.	.	37	25	19	518	83	99	102	3	.	351	.	22	23	123	130	52	1962
All	52395	34219	39492	19339	18417	11947	11761	12057	19577	16712	18149	21713	21694	28144	26605	20033	22716	22210	22725	30707	18234	488844

Table 8b. Percentage of commercial sales (pounds) of yellowtail snapper sold in Puerto Rico by area of sale,1983 - 2003. Pot gear. 2003 Preliminary data

	Year																					
Center	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**All**
Isabela	0	.	0.2	.	.	0.3	0.5	.	.	.	.	1	.	0.1	0.1	.	.	.	1	1.4	0.2	0.2
Camuy	.	.	.	.	0.7	0.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0
Hatillo	.	.	.	.	.	.	.	.	.	.	.	0.5	.	.	.	.	.	.	.	.	.	0
Arecibo	.	.	.	.	.	.	.	0.2	0.1	0.1	.	0.3	.	3.1	0.9	0.1	0.2	0.4	4.1	0.2	0.3	0.5
Barceloneta	.	0.1	0.1	.	.	.	4.3	.	.	.	0.1	0.3	1.1	.	0.3	0.1	0.1	.	0.2	.	0.1	0.2
Manati	0	.	.	1	.	.	.	.	0	0.1	0.2	.	.	0	0.1	0.6	.	.	.	.	.	0.1
Vega Baja	.	.	0.1	1.6	.	0.1	.	.	.	.	0.2	0.1	0.1	0.1	0.6	2.2	0.3	0.4	1.2	0.9	.	0.4
Vega Alta	0	0	.	.	.	.	.	.	.	.	0.3	0.2	0.5	.	0.2	.	0.1	0.6	0.5	0.2	.	0.1
Dorado	.	.	.	.	.	.	.	0.3	1.4	0.1	0.3	0.1	0.4	0.3	2.2	2.3	2.2	.	3.1	2.8	4	0.9
Toa Baja	.	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	0	.	.	.	.	0
Catano	0.3	.	.	.	0.1	0.1	0.7	0.5	0.2	.	0.1	0.3	0.2	0.5	1.1	0	.	0.1	.	0.1	.	0.2
San Juan	.	.	4.3	10.9	2.4	0.6	1	16.6	0.1	0.5	.	0.2	1.2	0.9	1.3	1.5	.	0.7	1.6	6.5	0.5	2.1
Carolina	.	.	.	.	.	0.3	.	.	.	.	.	.	.	4.2	0.1	.	0.2	0.1	0.1	.	.	0.3
Loiza	.	.	.	.	.	.	.	.	.	1.4	.	0.3	1.8	0.5	0.8	1.9	.	0.4	0	0.6	0.4	0.4
Rio Grande	0.8	0.1	.	0.3	0.5	.	.	0.1	.	.	.	.	0.1	0.1	0.1	.	0.6	0.1	0.1	0.6	0.2	0.2
Luquillo	0	0	0.2	0.3	0.2	0.2	.	.	.	.	0.2	.	0.1	.	0.2	.	0.2	.	.	0.9	.	0.1
Fajardo	3.6	8.5	8.5	2.3	4.1	3.1	4.2	1	7.5	1.8	1.8	4	1.4	2.6	5.2	4.7	5.8	5.2	5.4	3.7	6.3	4.6
Ceiba	1.8	2.5	2.4	4.7	21.1	3	0.2	2	1.3	1.7	0.1	0	8.5	8.4	6.7	6.7	5.4	8.3	13	7.2	3.6	5.1
Naguabo	10.9	10	3.3	3.9	2.4	.	3.3	0.3	.	0.2	3.9	11.5	2.7	0.5	0.5	2	5.1	5.7	6.6	3.9	7.3	4.7
Humacao	6.2	2.3	8	11.2	9.6	9.2	9	12	9.7	8.9	18.6	4.6	7.7	10.3	7.4	8.5	12.4	11.6	5.3	7.8	10.5	8.5
Yabucoa	0	0.3	0.2	0.6	0.7	1.6	1.1	0.7	4	1.1	7.2	2	2.1	2.6	0.7	1.2	0.6	1.1	0.8	3.9	7.5	1.7
Maunabo	0.6	0.9	0.4	2.9	0.4	1.2	1.5	4.5	0.1	.	.	.	0.2	1	0.9	0.7	0.4	.	0.2	0.1	0.1	0.7
Culebra	1.6	2.9	5.9	5.1	9.6	7.7	6.3	6.8	7	16.5	5.5	1.3	2	0.5	0.1	.	0.5	11.9	0.1	0	0	3.7
Vieques	2.2	2.1	1.1	1.4	4.2	1.1	6.1	2.2	2.5	.	0.3	.	3.9	9.8	5.1	3.1	4.3	7.1	11.9	20.4	7.3	4.8
Patillas	0.4	1.3	1	1.1	1.8	2.1	3.3	3.2	2.7	7.8	0.8	2.2	7.4	1.4	3.5	1.8	2.2	2.9	2.7	1.7	3.2	2.3
Arroyo	4.8	8.8	3.2	0.6	0	.	0.3	1.1	4	.	.	3.8	6.3	2.1	5.3	1.1	0.7	1.6	1	0.4	2	2.8
Guayama	5.8	12.1	5.5	6.2	4.3	6.7	10.4	4.4	4.8	10.5	6.3	8.4	12.2	11.9	17.1	17.4	16.3	6.7	5.5	5.8	12.3	9
Salinas	1.2	0.9	0.7	2.9	.	3.7	1.7	2.3	5.3	3.9	4.5	10.9	9.8	10.8	10	11.9	11.5	8.6	7.5	5.8	12.6	5.7
Santa Isabel	0	0.2	.	.	.	.	10.3	1.2	2.3	0	.	0.1	4.4	3.1	1.4	4.2	2.8	4.3	2.5	1.1	1.2	1.6
Juana Diaz	7.2	9.5	3.6	0.2	0.6	0.1	0.6	0.4	0.1	0.1	.	2.5	1.9	5.2	3.1	1.2	0.7	2.7	3.6	2.9	4.4	3.2
Ponce	0.2	0.3	0.1	0.4	0.1	.	.	.	.	.	.	6.5	2.8	1.6	0.2	0.8	1.5	3.4	0.3	0.8	.	0.9
Penuelas	0	0.1	0.2	.	.	.	.	.	.	0.1	.	.	.	.	.	0.3	.	0	.	.	.	0
Guayamilla	0.5	0.1	0.5	0.3	.	.	.	.	.	.	.	.	0.1	.	0.1	0.2	.	.	0.1	1.6	.	0.2
Guanica	3.6	2.4	2.2	1.1	2.7	1.4	3.4	6.7	5	1.3	0.5	18.6	5.2	0.5	0.6	.	0.5	0.1	0.5	1.1	0.2	2.7
Lajas	5.7	.	4.3	5	8.2	22.7	5.1	12.3	13.4	16.1	10.9	6.8	6.2	7.5	8.4	7.2	16.9	8.6	6.2	7.5	3.4	7.8
Cabo Rojo	21.1	15	27.5	23.9	7.8	8.1	8.5	8	4.6	3.7	2.4	3.5	2.7	1.6	6.3	6	4.1	3.7	5.6	3.1	3.8	9.7
Mayaguez	21.2	18.9	15.6	12.2	18.6	26.3	17.9	12.9	21.1	23.7	35.2	7.3	6.9	8.4	8	11.9	3.9	3	3.5	5.4	8.2	14
Anasco	.	0	0.5	.	.	.	0.2	.	0.1	.	.	.	0.2	0.1	0.2	0.1	0	0.5	0.3	0.1	0.1	0.1
Rincon	0	0.1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1.4	0.1	.	0.1

Aguada	.	.	.	.	.	.	.	.	.	.	.	1.9	.	.	.	.	0.3	0.2	3.8	1.1	0.2	0.4
Aguadilla	0.2	0.6	0.1	.	.	0.3	0.2	0.2	2.6	0.5	0.5	0.5	0	.	1.3	.	0.1	0.1	0.5	0.4	0.3	0.4
All	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 9. Total annual commercial sales (pounds) of all fish and shellfish sold in Puerto Rico, 1983-2003. 2003 Preliminary data.

Year	Total # Sales All Species	Tota Landings All Species (lbs)	Total # Tickets	# Sales Yellowtail	Total Yellowtail Sales (lbs)
1983	64150	3916688	31632	3685	167867
1984	38977	3154298	18839	2024	134184
1985	37421	2855085	16260	2403	140451
1986	46339	2535388	18175	2487	93804
1987	46121	2081941	18129	2704	92319
1988	45264	2013691	18953	2202	77232
1989	52372	2290865	19969	2530	91028
1990	52474	2179705	21770	2801	106978
1991	66097	2458664	NA	3622	148564
1992	49540	2043970	24218	3280	149058
1993	60104	2495161	25303	4091	183079
1994	65172	2708878	23882	3849	186350
1995	94685	3687686	39141	6645	291769
1996	97650	3581209	38280	7084	273702
1997	100005	3804030	38470	6934	272999
1998	86957	3453324	32839	5759	252015
1999	92205	3327699	35545	5964	279391
2000	97054	3281062	38887	7624	363037
2001	104782	3389010	42436	7694	317185
2002	101850	3271960	41142	7219	291024
2003	101490	2387974	43564	6340	176567

NA- information not available

Table 10. Distribution (%) of commercial sales of all fish and shellfish sold in Puerto Rico, 1983-2003 by month. 2003 Preliminary data.

						Month							
Year	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**All**
1983	10.2	9.1	8.3	8.7	9.7	8.2	6.9	7.8	9.1	8.4	7.7	5.9	100
1984	9.0	8.6	9.1	8.5	8.4	8.3	7.3	9.4	8.0	9.0	7.7	6.7	100
1985	8.3	7.4	9.3	5.6	9.5	7.5	8.4	10.9	8.9	7.9	8.1	8.2	100
1986	10.7	9.5	9.7	8.0	7.4	8.0	8.1	8.3	9.3	8.0	5.9	7.1	100
1987	7.4	8.0	9.7	10.8	10.3	8.2	9.6	8.0	8.0	7.8	6.3	5.9	100
1988	6.7	7.4	8.7	8.6	11.3	9.1	8.5	8.0	7.8	8.6	8.7	6.5	100
1989	7.6	7.5	9.5	8.8	10.2	8.8	8.5	9.1	6.9	8.9	7.7	6.4	100
1990	8.4	7.8	8.5	8.1	8.9	7.8	9.1	10.1	9.9	8.0	6.1	7.3	100
1991	9.3	8.7	8.5	8.3	9.5	9.2	8.0	8.3	8.2	8.4	7.1	6.6	100
1992	10.6	9.5	11.6	10.4	8.3	5.1	5.8	6.4	8.4	8.0	7.9	8.1	100
1993	7.9	8.5	8.6	9.7	8.5	8.0	7.8	10.5	8.6	8.0	6.0	7.8	100
1994	8.1	8.2	9.7	8.5	9.3	7.9	7.0	10.5	6.5	8.4	7.4	8.4	100
1995	9.0	7.9	9.4	8.2	10.0	10.3	9.0	8.1	6.0	7.7	7.4	7.0	100
1996	8.2	9.2	10.3	9.0	9.3	7.0	6.9	9.2	6.6	8.5	7.7	8.0	100
1997	9.6	7.4	9.2	9.5	8.3	8.0	7.9	8.2	7.7	9.3	7.4	7.5	100
1998	10.7	10.3	11.1	11.1	11.1	8.0	8.4	8.2	4.0	4.4	6.7	5.9	100
1999	9.0	9.8	11.3	9.8	9.5	8.7	8.4	7.2	6.7	6.6	6.3	6.6	100
2000	9.2	9.8	10.1	9.5	9.5	7.2	8.0	7.4	7.3	8.6	7.2	6.2	100
2001	10.2	9.0	9.6	9.2	8.5	7.6	6.7	9.4	8.4	8.3	7.1	6.1	100
2002	9.4	9.0	9.9	9.4	8.0	8.6	8.4	8.7	7.6	8.3	7.1	5.5	100
2003	9.1	7.5	10.7	9.7	9.0	7.7	7.0	8.1	7.6	10.1	6.5	6.9	100
All	9.1	8.6	9.7	9	9.2	8.1	7.9	8.6	7.6	8.1	7.2	6.8	100

Table 11a. Total commercial sales (pounds) of all fish and shellfish sold in Puerto Rico, 1983-2003 by gear. 2003 Preliminary data.

Year	Cast Net	Dive	Net	Other	Pots	Rod & Reel	Seines	Vertical Lines	All Gears
1983	16197	832782	412383	198	1578675	834650	212275	29528	3916688
1984	19199	671430	338442	12	1381524	571450	145825	26416	3154298
1985	19012	454937	369909	2126	1137407	745825	103810	22059	2855085
1986	13389	339356	364492	219	926486	792287	89315	9844	2535388
1987	18401	261573	304113		781681	588904	115245	12024	2081941
1988	6051	364056	267329	21757	599004	640525	91586	23383	2013691
1989	8945	314160	241756	10525	824369	739847	125125	26139	2290865
1990	5744	266870	343800	1136	720784	728096	85358	27918	2179705
1991	17824	299865	470118		750184	779144	121731	19799	2458664
1992	14993	228697	399394	26	571637	728587	82425	18213	2043970
1993	13796	343961	506627	208	613365	887387	101764	28052	2495161
1994	28988	364119	473793		711561	1022672	87625	20121	2708878
1995	30163	498365	537022	232	853848	1588324	138890	40306	3687150
1996	25831	525762	657515	20	821807	1381037	119828	49409	3581209
1997	31964	511746	700863		884094	1493811	124054	57499	3804030
1998	24693	616723	625094	157	760661	1281572	70363	73943	3453207
1999	33212	555109	619643	16	713329	1277032	63058	66300	3327699
2000	32706	655273	523973	530	633807	1257090	59829	117853	3281062
2001	27263	627053	507313	1139	785733	1311577	77211	51721	3389010
2002	28046	649525	527279	1936	727646	1199879	84334	53315	3271960
2003	15798	413636	344112	207	546714	962419	73378	31710	2387974
All	432211	9794999	9534969	40442	17324316	20812117	2173029	805550	60917633

Table 11b. Percentage (%) of total commercial sales (pounds) of all fish and reef fish sold in Puerto Rico by gear category, 1983-2003. 2003 Preliminary data.

Year	Cast Net	Dive	Net	Other	Pot	R&R	Seine	Vertical Lines	All
1983	0.4	21.3	10.5	0.0	40.3	21.3	5.4	0.8	100
1984	0.6	21.3	10.7	0.0	43.8	18.1	4.6	0.8	100
1985	0.7	15.9	13.0	0.1	39.8	26.1	3.6	0.8	100
1986	0.5	13.4	14.4	0.0	36.5	31.2	3.5	0.4	100
1987	0.9	12.6	14.6	0.0	37.5	28.3	5.5	0.6	100
1988	0.3	18.1	13.3	1.1	29.7	31.8	4.5	1.2	100
1989	0.4	13.7	10.6	0.5	36.0	32.3	5.5	1.1	100
1990	0.3	12.2	15.8	0.1	33.1	33.4	3.9	1.3	100
1991	0.7	12.2	19.1	0.0	30.5	31.7	5.0	0.8	100
1992	0.7	11.2	19.5	0.0	28.0	35.6	4.0	0.9	100
1993	0.6	13.8	20.3	0.0	24.6	35.6	4.1	1.1	100
1994	1.1	13.4	17.5	0.0	26.3	37.8	3.2	0.7	100
1995	0.8	13.5	14.6	0.0	23.2	43.1	3.8	1.1	100
1996	0.7	14.7	18.4	0.0	22.9	38.6	3.3	1.4	100
1997	0.8	13.5	18.4	0.0	23.2	39.3	3.3	1.5	100
1998	0.7	17.9	18.1	0.0	22.0	37.1	2.0	2.1	100
1999	1.0	16.7	18.6	0.0	21.4	38.4	1.9	2.0	100
2000	1.0	20	16.0	0.0	19.3	38.3	1.8	3.6	100
2001	0.8	18.5	15.0	0.0	23.2	38.7	2.3	1.5	100
2002	0.9	19.9	16.1	0.1	22.2	36.7	2.6	1.6	100
2003	0.7	17.3	14.4	0.0	22.9	40.3	3.1	1.3	100
All	0.7	16.1	15.7	0.1	28.4	34.2	3.6	1.3	100

Table 12. Total commercial sales (pounds) of all shellfish and reefish by individual species group in Puerto Rico, 1983-2003. 2003 preliminary data.

COMMON_NAME	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
AMBERJACK,GREATER					884	1732	1929	1075	1160	902	598	366	1763	1205	802	270	151	7	8	213	9	13071
ANCHOVIES						10								42	86		95					233
ANCHOVY,STRIPED																		1		1		2
ANCHOVY,WHALEBONE										200					6							206
ANGELFISH,GRAY																		333				333
ANGELFISH,QUEEN							82					28				8		4		13		135
BALLYHOO	22167	11268	18666	9195	9584	449	5495	14903	27880	22951	29726	32239	56786	57695	55734	49407	50647	56934	60539	68045	41094	701402
BARBU						46	61	393	150	88	83	179	45		12							1056
BARRACUDA,GREAT									75			15	24	288	69	215	496	1102	846	172		3302
BARRACUDAS	25553	10889	9441	18893	19517	10843	15816	7123	21289	9508	8948	13016	17756	20769	26176	33475	24078	24963	18588	23771	11086	371495
BASS,CHALK											3											3
BASS,PEACOCK													11								28	39
BASS,REDEYE						10	5															15
BATFISH,SHORTNOSE							10		50		50			50		150				30	100	440
BATFISHES													15									15
BEARDFISH						8										4001						4009
BEARDFISHES						41	25															66
BIGEYE					2			176	265	371	375		360	633	68							2248
BIGEYES									32				30	15	5	59		49	1	6	78	275
BLUEGILL					833	75		61	153	483	204	1073	523	1609	101	169	789	51	467	912	168	7669
BONEFISH						24	545	1374	612	347	164	65	107	692	113	23		75	522	752	684	6097
BONEFISHES						27	89			11		2				27						156
BOXFISHES	40376	38547	34103	36154	36116	58	3136	24001	33063	39138	53955	52611	66618	64981	80937	90669	83709	83795	75822	79048	58587	1075422
BROTULA,BEARDED						160									17							177
BUMPER,ATLANTIC					8248	109	1006	563	1662	1047	1477	2200	1412	137	558	1355	76	49	512	299	370	21078
BUTTERFISH					6				37	48	15		10		19	31		70	162		7	405
BUTTERFISHES					5					7		60	7		16					2		97
BUTTERFLYFISH,BANDED																			14			14
BUTTERFLYFISH,FOUREYE								14					52	36			171	602	34	6		915
BUTTERFLYFISH,SPOTFIN																30					80	110
BUTTERFLYFISHES					7				79	40			19	151	95				45	4	2	442
CARDINALFISHES							12		382							1240						1634
CARPS AND MINNOWS						10										130						140
CATFISH,BERMUDA					4									22		68		50			10	154
CATFISH,CHANNEL																		46				46
CATFISH,WHITE					15				6		30		20						27		3	101
CATFISHES,BULLHEAD											12											12
CHROMIS,BROWN																		12	15			27
CHUB,BERMUDA						153	344	190		12		36	6	46	18	32	52		170	34	8	1101
CHUB,YELLOW							100		1280	7	6			144	2					21		1560
CICHLIDS									11		7		4		239		17			5		283
CLAMS				113	97	173		58	5		13	1619	795	120	82		7		49	5	116	3251
COBIA							10						27	68	4				38		2	149
COBIAS								31		47	12	34			28	35	43			243		472
CONCH,QUEEN	399880	294773	260825	188360	142994	230702	160247	107964	108084	90947	164590	170802	214231	239817	238619	260905	214044	281265	244829	235608	188021	4437507
CONEY				10	3758	4449	6745	5815	9142	6793	6013	5522	9788	10960	12101	13868	10253	11601	15648	19038	11002	162506
CONGER EELS						4										31						35
CONGER,MANYTOOTH						38		3			5	9	9	245	7002	36			22		15	7384
CORNETFISH,BLUESPOTTE						25							16	83			5					129
CORNETFISHES																		9				9
COTTONWICK										42					422							464
COWFISH,HONEYCOMB							10													5		15
CRAB,BLUE LAND	2060	1409	1235	1184	2063	2571	4731	1979	5650	2640	1793	2014	5730	12878	10065	4604	2600	2130	6305	6459	1617	81716
CRAB,FLAME BOX																	250			140		390
CRAB,MARINE	2			13		36	7	3	38	20	55		868	161	582	2477	2513	2211	3325	3683	2223	18216
CRAB,SPECKLED SWIMMIN					70				85	79	97	1460	719	1719	269	416	226	878	50	333	127	6527
CREOLE FISH																		43		256		299
CROAKER,REEF					6291	1473	139	2134	4382	1360	2098	5112	5769	1851	2332	2001	4456	1708	2635	3504	3598	50841
CUSK-EELS						238	35													11		284
CUTLASSFISH,ATLANTIC					40	21	44	67	321	322	897	140		774	182	308	559	207	31	340		4251
CUTLASSFISHES			630			17			273	40	58	222	57		58	139	38	74		715	146	2467
DAMSELFISHES							7				3											10
DOLPHIN,POMPANO						27	43	48	22			2	45	60	19				120		10	396
DOLPHINFISH	167					69286	69195	32033	14823	4548	1279	664	1847	667	7865	96	260	9052	45157	45798	54633	357369
DOLPHINS	42170	14867	19246	33098	28620		126	66041	54887	80640	73942	90456	195674	148490	158417	136936	129795	128676	61071	54823	10204	1528179
DRUM,SAND											27											27
DRUM,SPOTTED				4																		4
DRUMMER,GROUND							50		68	192			10									320
DRUMMER,MONGOLAR						5	10		346	3			12				37		910	12		1335
DRUMMER,WHITEMOUTH						982	2000	1903	614	69	547	33	141	120	79	14	74	17	532	578	582	8283
DRUMS						324	402	548	84		171	16	14			35	149	8		15	9	1774
DURGON,BLACK						12	163	18	40				20		24			731		5		1012
EAGLE RAY,SPOTTED					120	40		924	1018	853	895	4556	5862	3105	198	2034	411	8010	1492	94		29612
EAGLE RAYS					53	105		317	210	600	111	8	232					960	172	94		2862
EEL,AMERICAN													30	243		50						323
EELS,FRESHWATER													18	59	76			17				170
FILEFISH,ORANGE															1002							1002
FILEFISH,ORANGESPOT						1188	257		112	15	127	29	269	464	193	65	15		30	165	11	2940
FIRST CLASS			7750	122526	91518	113306	214797	178726	193239	164653	186088	173074	238771	146975	141472	137855	103248	85683	96063	75302	62918	2533963
FLAMEFISH								43		938						9	370	255				1615
FLYING GURNARD						59							10	25	1950	34		7	32	11	4	2132
FLYING GURNARDS						16						233		128	335	131		6				849
FLYINGFISH,ATLANTIC						13	92	37							4							146
FLYINGFISHES						834							2	650				81				1567
FROGFISHES								8				20										28
GOATFISH,SPOTTED					239	6113	8296	11423	13633	6178	7284	8635	12627	18822	14101	11529	22337	16104	15907	13351	8669	195248

GOATFISH,YELLOW					5	753	1221	2064	2068	1272	748	1390	1799	2231	4694	3478	3866	4496	6153	5515	4084	45835
GOATFISHES	163010	125610	58723	19871	9696	160		62		31	96	12	103		6			101	75	140	30	377725
GOBIES																4	11		80			95
GOBY,RIVER									23					115		15						153
GOBY,SIRAJO					3602	364	705	171	118	484	140		170			40	30		298	328		6449
GOBY,VIOLET												12				11						23
GRAYSBY													3	6			25			30	10	73
GROUPER,BLACK								217		7				17								241
GROUPER,MARBLED							700						200						50	350		1300
GROUPER,MISTY							26	2662	2784	5106	3885	4988	5941	5462	4347	5557	6717	5264	6183	5679	5860	70459
GROUPER,NASSAU				57	320	2022	2047	2341	4352	6612	5018	7735	7772	12594	15457	19095	14966	12964	17580	18698	10217	159845
GROUPER,RED										535			125		18		7		28		6	719
GROUPER,TIGER													151	2745								2896
GROUPER,YELLOWFIN					78	460	1249	558	1701	920	1482	447	827	1615	2088	1791	3348	11208	3641	6916	4893	43220
GRUNT,BARRED							55	15		18							32	150		14	30	314
GRUNT,BLACK															0							0
GRUNT,BLUE STRIPED						5	35		20	16	6	651	82	35	101	28	109	12	5	53	100	1258
GRUNT,BURRO					106			5		160		3			33				16	8		331
GRUNT,CAESAR																			200			200
GRUNT,FRENCH								200					18		7							225
GRUNT,SMALLMOUTH							20	34	47	16	22	6	4					10	12			168
GRUNT,SPANISH							46					10		12	17	10						94
GRUNT,TOMTATE						13		71				65										149
GRUNT,WHITE	404972	330470	274970	182185	158111	88126	78146	117946	140590	117416	161077	141856	142445	170124	163995	112661	117092	117244	152373	147099	107566	3426464
GRUNTS					360	1749	1266	1237	2822	618	1287	409	1382	737	190	234		57	88	106	19	12558
GUANCHANCHE					164		60	659	136	73	703	388	698	783	223	84	217		29	565	157	4939
GUPPY															70		26			3		99
HALFBEAK,SILVERSTRIPE				500	87	31704	22088	15494	8070	2058	176	184	60	17	2301	42					343	83123
HAMLET,BLACK														9								9
HAMLET,MUTTON						30	55												2			87
HARVESTFISH,SOUTHERN												5612				35					1	5648
HERRING,ATL THREAD					12	18	2215	2598	4215	1228	2365	981	1654	1520	120	240	100		173	101	17	17557
HERRING,DWARF														24	81	19						124
HERRING,SPINY-TOOTH													41									41
HERRINGS	21366	19150	20344	12593	23327	7913	12103	7370	20274	17152	14695	24651	26594	25810	31828	23213	27050	24336	24650	27931	16605	428953
HIND,RED				442	11465	28790	37921	39383	55515	42014	40389	28669	42190	53370	60222	54973	65913	61239	68191	81135	48045	819866
HIND,ROCK						18	1100	15				17		18		113		113				1394
HOGFISH	72696	70980	41814	37668	36543	30146	25543	21660	30943	21171	21166	32263	49439	60529	68528	49447	46301	58369	67658	68401	46776	958039

HOGFISH,SPANISH					56	46552	49734	49111	23502	7865	14138	8933	1399	671	144	360	218	31	11	285	42	203052
HOUNDFISH						88	572	630	690	980	352	91	156	35	107		20		6	73	824	4625
JACK,ALMACO						5				30							17		733	471	509	1764
JACK,BAR					2486	387	1340	6225	4921	2705	4392	4155	9699	9492	24514	27166	40894	45265	49826	63136	37085	333687
JACK,BLACK					46	5	40	115	6	3			18							70	21	323
JACK,CREVALLE									4		5	12					110					131
JACK,HORSE EYE					119	375	1010	207	16		70	141	121	41	1877	6120	5106	7568	6530	4822	4188	38311
JACK,YELLOW							1253	1341	751	1478	913	24	71	918	425	3313	2021	2459	3726	3215	827	22732
JACKKNIFE-FISH												130					24	7	54	35	4	254
JACKS	42525	30008	34700	44616	33484	24440	29202	22043	34369	22758	28581	38965	52903	48453	55364	35731	29986	29990	35831	30116	22535	726601
JENNY,SILVER						10	100		10		44	14	122	113	9	50			10			482
JEWFISH					475	6382	3543	1515	1813	288	42		395	40	85	142		27	50	40	476	15311
LADYFISH					1773	108	9	385	708	593	682	133	190	102	240		108			67		5097
LEATHERJACK						1		6				72			32	88				48		247
LIZA					1293	463	4	70	286	202	70	1247	196	11	105	114	21	154	154	112	18	4518
LIZARDFISH,SAND DIVER										89		4	10									103
LIZARDFISHES												46	225		40	6			7			324
LOBSTER,CARIB. SPINY	273679	248019	211082	210071	153407	141275	185777	168654	211588	160530	168910	192148	279171	280642	283293	298474	327067	258423	280708	300440	241910	4875268
LOBSTER,SPANISH SLIP.														5				116	372	168	380	1041
LOBSTER,SPOTTED SPINY					887				2	298	163	67				3						1420
MACKEREL,BULLET							15						15	508				19	148	62		766
MACKEREL,CERO					1339	310	1092	15385	15358	8878	10454	24221	34023	63264	98006	71401	63923	53769	82858	53325	35624	633231
MACKEREL,KING	223716	159565	131426	115040	85074	80017	95686	82055	90323	61061	107230	97003	153807	103146	105535	108407	127696	124496	99699	117868	80897	2349749
MACKEREL,SNAKE						36	17			146				11								210
MACKERELS & TUNAS	189126	65051	69377	78223	108535	113791	104698	40188	28011	22662	30920	58978	77286	100187	95643	59343	22411	21964	16272	11055	8700	1322419
MAN-OF-WAR FISH												47					36					83
MANTA,ATLANTIC						451	26	39	355	421	88	607	379	604	44	263		12	251	466	178	4182
MANTAS					201				63	110	85	376	972	33		12604	1509	10	33	110	79	16185
MARGATE				15	247	567	898	828	2130	969	494	2314	2821	4043	3610	2674	990	863	437	27		23925
MARGATE,BLACK					455	41	43	578	728	420	433	424	148	3		6	32	10	5	11	29	3366
MARLIN,BLUE					22	10602	6017	5024	6042	5044	6393	2607	1000	25	32	5	1331	12		65		44221
MARLIN,WHITE					31					55		31					19					136
MARLINS	11385	9107	10825	12559	6122	102			45				10	77	192	64			430	40		50957
MINNOW,FATHEAD														263								263
MOJARRA,RHOMBOID					154		40		10			63				2		19	2	37		326
MOJARRA,STRIPED						6	171	461	78	75		12		6	5	103		120	57	59	900	2053
MOJARRA,YELLOWFIN						5	32	168	12	15	1607	156	611	50	20	87						2763
MOJARRAS	10979	9782	9004	9887	9018	17744	11554	14827	20106	19708	17924	28607	31327	25300	23666	19140	22071	18110	18883	20922	16511	375067
MOONFISH,ATLANTIC				9	1530	436	4093	3422	8180	2240	3696	6730	6805	771	2065	953	1205	304	740	83	414	43674
MORAY,GREEN								18	8							32				7		65
MORAY,VIPER											10											10
MORAY,WHITE SPOTTED											11		50			167						228
MORAYS																	2					2
MOSQUITOFISH																		9				9
MULLET,HOG NOSE									3		32		60		210	41	14					360
MULLET,MOUNTAIN						23		257	13		80		19	200			59	53				704
MULLET,WHITE	55218	39220	44575	32794	29167	26595	19318	21328	32258	25865	26529	29541	57368	53100	55499	53134	61794	53878	59940	57024	42694	876839
MULLETS					79	279	15			13	24	92	91	7	23	162	46	20	154	6	135	1144
NEEDLEFISH,FLAT														24								24
NEEDLEFISHES						47												16		2		65
OCTOPUS,G:OCTOPUS	19702	16732	30331	11795	8896	15653	16438	24745	19962	12755	20692	25781	19387	37091	38680	39482	43600	48703	33414	28559	26476	538873

OILFISH										7			2854									2861
OTHER FISHES	178751	148621	190269	202772	126101	55724	35769	2050	3772	1756	5333	8645	42188	46006	60992	82571	52486	48985	38675	50924	3324	1385713
OYSTER,MANGROVE CUPED	49364	46247	29358	541	99	1140	165	516	400	202	129	2889	6830	8209	607	1522	1289	2010	1342	372	764	153995
PALOMETA						3	25	3	9	281	5	19	207				7			151		710
PARROTFISH,BLUE	40											300	4		5	15	10		72		12	458
PARROTFISH,MIDNIGHT										200				5			19				4	228
PARROTFISH,RAINBOW													251	3			11			120	407	792
PARROTFISH,REDTAIL																	116					116
PARROTFISH,STOPLIGHT											14		77	83	44	61	30	12	9	7		337
PARROTFISHES	233579	231387	221378	105546	76852	12208	4278	36848	68051	91918	160181	115723	79860	102779	110929	97483	80533	73961	96680	107417	69163	2176752
PERCH,CONGO							20	40												8	4	72
PERCH,DWARF SAND						19		24	20	16		24	4		23			7		8		137

PERMIT					737	377	441	720	951	293	651	604	877	515	545	1161	818	772	621	1515	456	12052
PLATYFISH,SOUTHERN														43								43
POMPANO,AFRICAN						174	491	347	433	627	282	29	65		519	27	8	27	11			3039
PORCUPINEFISH							156					2	15				2		8	17		200
PORCUPINEFISHES							16	20		19	56	27	1			1001		5		86		1231
PORGIES	83621	66907	22075	18071	10653	9063	9721	9125	12923	9993	10956	11013	18611	30706	28424	26545	34576	29524	35798	35539	20880	534722
PORGY,G:CALAMUS																			9			9
PORGY,JOLTHEAD										42	5	52	123	10				10	619	2271		3131
PORGY,PLUMA						97		5						16				30	31	26	6	211
PORGY,SAUCEREYE																			7			7
PORGY,SHEEPSHEAD									2					3							14	19
PORKFISH							43															43
PUDDINGWIFE							55						5					19	104	32		215
PUFFER,BANDTAIL	7												83	14								104
PUFFER,SMOOTH							10															10
PUFFERS																321						321
REMORA															3005							3005
REMORAS						10		12		100	96		570					2				790
RUNNER,BLUE					685	991	3683	482	1464	1333	5432	6039	4178	468	86	19	1			74		24932
RUNNER,RAINBOW						613	579	431	357	300	286	141	127	1942	174	172	39	46	119	101	257	5682
SAILFISH					40		96	78	197	187	40	154	18	44	180							1034
SARDINE,REDEAR					220	16			128				365	400	148	193	243	141	122	10	298	2284
SARDINE,SCALED						110	100	140	225	16		80		129	146		132	773	5	10	26	1892
SARGASSUMFISH								908	140	457	200		48	6								1759
SCAD,BIGEYE					21	2588	8134	8211	7933	5146	4177	2386	11272	4183	4972	3559	8506	350	894	933	400	73663
SCAD,MACKEREL							472					31			2655	12530	3					15692
SCAD,ROUND						29	470	443			33	155	70	101	675	9321		57		14		11367
SCHOOLMASTER						88		12		423		35		84	15	107	146	10	29		171	1118
SEA BASSES	332414	318648	304294	194886	132005	61229	88106	59146	78405	69244	81964	80643	93105	86597	72582	43129	47832	40570	53150	46826	31212	2315987
SEA BREAM							11	221	36		197		8			6						478
SEA CHUBS						367	22	19	137	314	138	1036	51		66	216	784	121	122	415		3808
SEAHORSE,LONGSNOUT												109								5		114
SECOND CLASS				135645	142422	124467	161398	146772	138116	94717	93418	143463	132724	147670	101845	120049	106771	58462	32688	46974	43090	1970689
SENNET,SOUTHERN					987	2285	1000	151	2212	427	2308	601	1664	879	1288	10	147		108	80	33	14180
SERGEANT MAJOR												16		80	159							255
SHARK,BIGEYED SIXGILL						1			25					2	41		80	1150		25		1324
SHARK,BLUE											16							9	7	10		41
SHARK,CARIBBEAN REEF																150			2	47		199
SHARK,COW												11		25	113		2002					2151
SHARK,DUSKY																				8		8
SHARK,FLORIDA SMOOTH.									2								5					7
SHARK,HAMMER.SCALOPED							65		60													125
SHARK,LEMON								600						34						10		644
SHARK,NURSE								48	437				9002	80		70	20	281		15		9953
SHARK,SEVEN GILL									84								137					221
SHARK,SHORTFIN MAKO												7	219						9	14		249
SHARK,SMOOTH DOGFISH														1005								1005
SHARK,TIGER														15	68				400		10	493
SHARK,WHALE							326						52	9002	5001	25	51					14458
SHARKS,CARPET									812			1361	1348									3521
SHARKS,HAMMERHEAD								30				78		15								123
SHARKS,MACKEREL												2							928			6949
SHARKS,REQUIEM					13373	27623	29797	40020	46054	35577	37270	36187	74585	59320	55110	47164	44583	41637	42147	38402	25199	694046
SHARKS,WHALE								9811														9811
SHARKSUCKER														24	24	293	505	2916	39	24	38	3863
SHELLFISH,OTHER	3915	3397	3675	4873	1945	6217	3690	1606	1636	917	3157	6547	6014	5510	4808	14236	9581	8972	10230	5477	3594	109996
SHRIMP,PENAEID UNC.			63	648	331	120		233	780	128	779	1857	531	642	1739	284	683	785	447	814	19	10881
SILVERSIDE,HARDHEAD						10											17					27
SILVERSIDES															20							20
SLEEPER,BIGMOUTH					75	100	60						335									570
SLEEPER,SPINYCHEEK						53						9								15	67	144
SLEEPERS					269	60			5				15		29				8			386
SNAIL,WEST INDIAN TOP									54	72	70	168	357	284	138	532	565	253	1270	1096	906	5765
SNAPPER,BLACK						1447	449	596	156	219	698	32		14		207	672	403	20	505	416	5833
SNAPPER,BLACKFIN						25	13	109	107	72	1986		89	18	822	3688	4341	10698	9506	9433	9943	50848

SNAPPER,CARDINAL							204	84		288	1				542	2302	3644	4952	7165	6197	7233	32612
SNAPPER,CUBERA						36		46	760	62	20	121	119	59	9							1232
SNAPPER,DOG						38	5		160	58	357	291	48	168	10		78	75	1537	120	14	2956
SNAPPER,GLASSEYE						48					8						10		35			101
SNAPPER,GRAY(GREY)							32	29	37	15	118	767	1180	52		3	10	85	53	23	1064	3467
SNAPPER,LANE	167173	152406	119138	80672	60091	80035	109495	112789	138774	91020	90927	135416	241803	265551	270196	220979	196931	211910	183271	184591	123150	3236318
SNAPPER,MAHOGANY						85	1665			45	39	88	362	207	978	274	43	41	7		7	3839
SNAPPER,MUTTON	65141	53086	45633	30338	20031	21536	31754	25175	42100	32484	29327	39694	79888	76417	76573	77393	96346	86807	88558	91841	79979	1190100
SNAPPER,QUEEN					4378	14759	15405	11379	17763	25260	32310	27731	34114	36671	38770	46070	66682	82866	102137	110058	126999	793348
SNAPPER,SILK	396343	357156	371827	356898	206976	169954	245912	176783	167085	207830	243962	338664	363134	311207	285637	209261	224695	188115	266798	197985	169825	5456046
SNAPPER,SOUTHERN RED															3							3
SNAPPER,VERMILION					2423	1418	1427	1888	4147	5920	5561	7505	18240	10184	14016	16580	17237	22397	44805	23136	15835	212715
SNAPPER,YELLOWTAIL	167867	134184	140451	93804	92319	77232	91028	106978	148564	149058	183079	186350	291769	273702	272999	252015	279391	363037	317185	291024	176567	4088602
SNAPPERS	65870	36215	32953	28950	23453	21425	22642	34333	50927	44700	43837	39549	48789	50722	66928	55953	62083	49623	56558	56695	34328	926530
SNOOK,COMMON	681					44	28		38		49			20	10	17	48	394	11697	18179	24833	56037
SNOOK,FAT						18					41		967	12	15	78			21	9		1161
SNOOK,SWORDSPINE						112	35									5	90		109		5	356
SNOOK,TARPON															5002							5002
SNOOKS	41697	25138	22625	24820	29530	29188	24397	19970	32329	28990	28179	34624	48070	49157	52802	44881	49659	40121	34926	26964	12164	700229
SOAPFISH,GREATER															130				66			196
SOAPFISHES																67		65				132
SOLDIERFISH,BLACKBAR						32						1										33
SPADEFISH,ATLANTIC							3							206						93		302
SPADEFISHES							10	57	36		40	134		8	56	43		7	87	9016	15	9508
SPANISH FLAG													8	25			14		43			90
SQUIRRELFISH					4	4394	5235	4587	4396	1348	684	263	1032	311	184	234	112	127	49	5	32	22995
SQUIRRELFISHES	19152	12539	15931	12487	3943	145	550	1850	4654	4713	6798	8730	13095	15340	21406	18765	14583	15910	17493	15983	10666	234731
STINGRAY,SOUTHERN						52	50	67	40	22	886	1299	1066	1019	472	1260	767	207	558	252	80	8096
STINGRAYS					1155			10	14	100			55	408	77		462	1002	1012			4294
SUNFISH,REDBREAST																18			8	58		84
SUNFISHES														123	112							235
SURGEON,OCEAN									198	102				8			9			6	20	343
SURGEONFISHES					29				41				7	217		4	4		20			322
SWORDFISH						5854	2	9415			41	11	7	114	28		39	63		135	23	15732
SWORDFISHES						6					16		88	26		318		665	54	486	54	1712
SWORDTAIL,GREEN																19						19
TARPON					12583	3347	4807	6319	6229	3175	4732	4654	1795	105	2433	1316	2374	354	2186	4420	2436	63264
TARPONS						1366	612	876	1036	1828	500	47	1351	383	55	1027			7	70		9157
TATTLER						28	100										19					147
THIRD CLASS				25995	27207	51666	60785	51358	63175	38679	69290	39754	87627	71405	121711	65703	33090	49562	46620	29917	9953	943494
THREADFINS					61					3		34	8						34	69	3	212
TILAPIA,BLUE								2														2
TILAPIA,MOZAMBIQUE											68											68
TILAPIA,NILE																			9			9
TILAPIA,REDEYE						82									46					5		133
TILEFISH,BLACKLINE						33		12		18	35	247	337	269	9	156	995	209	105	26	40	2491
TILEFISH,SAND					44	62	31	40	81	17	43	13		52	463	464	12	18		18	4	1360
TILEFISHES									100		12				131			10				253
TOBACCOFISH										362		25	16				9		45	28	9	494
TONGUEFISHES																14	246					260
TRASH FISH				9533	6467	5553	3343	7806	7067	5382	4386	922	2706	2560	2016	86	475	568	513	791	114	60287
TRIGGERFISH,GRAY								67														67
TRIGGERFISH,OCEAN								3				11		34	82		293	5				427
TRIGGERFISH,QUEEN	89865	72920	46348	31034	38347	27578	33027	28507	30919	27700	38127	46605	69013	63605	73157	64372	49508	41147	59673	53493	41921	1026866
TRIGGERFISH,SARGASS						8						64	23	14	6	15	92		18		16	256
TRIGGERFISHES	56				70	3	35		6	16	16	20	60	55	22	5	28	102	53	53	29	628
TRIPLETAIL							322	33		13		168	314	18	22	159	47	11			119	1226
TRIPLETAILS							145					55	50		207	36	118	31	6	54		702
TRUMPETFISH							115								28							143
TRUNKFISH					1	36914	46867	23424	16146	967	1850	853	1871	2438	898	224	175		503	1		133131
TULIP,TRUE										40												40
TUNA,ALBACORE	189					67	103	111	33	15		2694	188	98	8590	24377	24208	16182	9071	9617	6120	101661
TUNA,BLACKFIN					1473	1333	3442	6996	6808	7738	12042	12269	13256	14309	7001	450	982	3274	23982	27106	34196	176656
TUNA,SKIPJACK					2745	10228	12949	14096	16295	7109	4072	5663	5880	12557	19313	51922	40317	32174	36466	38442	30655	340882
TUNA,YELLOWFIN	214					10995	3715	68521	52744	26352	26734	2457	1659	603	45516	41653	48915	46754	33042	19303	23467	452642
TUNNY,LITTLE					1207	5049	5089	3672	8146	6102	13986	8718	16851	8792	39718	21076	18309	17176	20139	14820	11704	220553
WAHOO					744	633	448	163	279	81	1560	1274	1041	971	5290	1154	6697	2160	5022	1094	2012	30619
WARMOUTH						4		8119	112	25	5		91	5		68			9	4		8441
WRASSES						213			22	44	36	53	2	38	23	37			12	145	9139	9763
All	3916688	3154298	2855085	2535388	2081941	2013691	2290865	2179705	2458664	2043970	2495161	2708878	3687150	3581209	3804030	3453207	3327699	3281062	3389010	3271960	2387974	6.092E7

Table 13. Total sales (pounds) of all fish and shellfish by common family group in Puerto Rico, 1983-2003. 2003 Preliminary data.

FAMILY_COMMON_NAME	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
TUNAS	413245	224616	200803	193263	201117	222420	227237	231185	217997	139997	206998	213277	304007	304433	424611	379783	353458	317968	326698	292690	233374	5629177
ANCHOVIES						10				200			41	42	92		95	1		1		482
ANGELFISHES							82					28				8		337		13		468
BANANAFISHES						51	634	1374	612	358	164	67	107	692	113	50		75	522	752	684	6253
BARRACUDAS	25553	10889	9441	18893	20667	13128	16876	7933	23712	10008	11959	14020	20141	22719	27756	33784	24938	26065	19571	24588	11276	393915
BATFISHES							20	57	86		90	134	15	58	56	193		7	87	9046	115	9963
BEARDFISHES						49	25									4001						4075
BIGEYED HERRINGS					1773	1474	621	1261	1744	2421	1182	180	1541	485	295	1027	108		7	137		14254
BILLFISHES	11385	9107	10825	12559	6215	10704	6113	5102	6284	5286	6433	2792	1028	146	404	69	1350	12	430	105		96348
BONNETHEAD SHARKS							65	30	60		78		15									248
BOX CRABS																	250			140		390
BROTULAS						398	35								17					11		461
BUTTERFLYFISHES					7			14	79	40			71	187	95	30	171	602	93	10	82	1481
CARDINALFISHES							12	43	382	938						1249	370	255				3249
CATALUFAS					2	48		176	297	371	383		390	648	73	59	10	49	36	6	78	2623
CICHLIDS						82	20	42	11		7		15		285		17		9	18	32	538
COBIAS							10	31		47	12	34	27	68	32	35	43		38	243	2	621
CONGERS						42		3			5	9	9	245	7002	67			22		15	7419
CORNETFISHES						25							16	83			5	9				138
COW SHARKS						1			109			11		27	154		2219	1150		25		3696
CROAKERS				4	6291	2784	2601	4584	5493	1624	2843	5291	5946	1971	2411	2050	4740	1739	4131	4144	4193	62838
DAMSELFISHES							7				3	16		80	159			12	15			291
DOLPHINFISH	42337	14867	19246	33098	28620	69313	69364	98122	69731	85188	75221	91121	197566	149217	166301	137032	130054	137728	106348	100621	64848	1885944
DRIFTFISHES												47					36					83
EAGLE RAYS					173	145		1241	1228	1453	1006	4564	6094	3105	198	2034	411	8970	1664	188		32473
FASCIOLARIIDAE										40												40
FILEFISHES															1002							1002
FLASHERS							467	33		13		223	364	18	229	195	165	42	6	54	119	1927
FLYING FISHES						13	92	37							4							146
FLYING GURNARDS						75						233	10	153	2285	165		13	32	11	4	2980
FLYINGFISHES						834							2	650				81				1567
FRESHWATER EELS													48	302	76	50		17				493
FROGFISHES								916	140	457	200	20	48	6								1787
GOAT FISHES	163010	125610	58723	19871	9940	7025	9517	13549	15701	7481	8128	10037	14529	21052	18801	15007	26202	20702	22135	19005	12784	618808
GRUNTS	404972	330470	274970	182200	159279	90500	80552	120913	146335	119674	163319	145738	146899	174954	168374	115613	118255	118345	153136	147317	107744	3469559
HALFBEAKS	22167	11268	18666	9695	9671	32153	27582	30397	35949	25009	29902	32422	56846	57712	58035	49449	50647	56934	60539	68045	41437	784524
HERRINGS	21366	19150	20344	12593	23559	8057	14418	10107	24841	18396	17060	25712	28613	27883	32323	23665	27525	25250	24950	28052	16946	450810
JACKS	42525	30008	34700	44625	48239	32262	54166	45633	62214	39141	50597	62068	89586	68224	95262	101785	88947	86893	99549	105260	67071	1348757
LAND CRABS	2060	1409	1235	1184	2063	2571	4731	1979	5650	2640	1793	2014	5730	12878	10065	4604	2600	2130	6305	6459	1617	81716
LIVEBEARERS														43	70	19	26	9		3		169
LIZARDFISHES										89		50	235		40	6			7			427
MANTA RAYS					201	451	26	39	418	531	173	983	1351	637	44	12867	1509	22	284	576	257	20367
MINNOWS						10								263		130						403
MOJARRAS	10979	9782	9004	9887	9172	17765	11897	15456	20215	19798	19575	28852	32060	25469	23700	19382	22071	18248	18952	21018	17411	380690
MORAYS								18	8		21		50			199	2			7		305
MULLETS	55218	39220	44575	32794	30539	27360	19337	21655	32560	26080	26735	30879	57734	53318	55837	53451	61934	54105	60248	57141	42846	883564
NEEDLEFISHES						135	572	630	690	980	352	91	156	59	107		20	16	6	75	824	4714
NEW	178751	148621	198019	496470	393714	350716	476093	386710	405369	305187	358515	365857	504015	414615	428036	406264	296069	243260	214557	203908	119398	6894146
NORTH AMERICAN																						
FRESHWATER CATFISHES					15				6		42		20					46	27		3	159
Nurse Sharks								48	437				9002	80		70	20	281		15		9953
OCTOPODIDAE	19702	16732	30331	11795	8896	15653	16438	24745	19962	12755	20692	25781	19387	37091	38680	39482	43600	48703	33414	28559	26476	538873
OSTREIDAE	49364	46247	29358	541	99	1140	165	516	400	202	129	2889	6830	8209	607	1522	1289	2010	1342	372	764	153995
PARROTFISHES	233619	231387	221378	105546	76852	12208	4278	36848	68051	92118	160195	116023	80191	102870	110978	97559	80719	73973	96761	107544	69586	2178682
PILOTFISHES						520	466	209	1417	333	144	1072	57	190	86	248	836	121	292	470	8	6468
PIPEFISHES												109								5		114
PORBEAGLES											2	7	219	15	6004				937	14		7198
PORCUPINEFISHES							172	20		19	56	29	16			1001	2	5	8	103		1430
PORGIES	83621	66907	22075	18071	10653	9160	9732	9351	12961	10035	11158	11065	18742	30735	28424	26551	34576	29563	36464	37836	20900	538578
RABBITFISHES	7						10						83	14		321						435
REMORAS						10		12		100	96		570	24	3028	293	505	2918	39	24	38	7657
REQUIEM SHARKS					13373	27623	29797	40620	46054	35577	37286	36187	74585	59369	55178	47314	44583	41646	42555	38478	25209	695431
RIBBONFISHES			630		40	38	44	67	594	362	955	362	57	774	240	447	597	280	31	1055	146	6718
RUDDERFISHES					11				37	55	15	5672	17		35	66		70	162	2	8	6150
SEA BASSES	332414	318648	304294	195395	148100	103426	141592	111674	153732	131895	138796	128069	160524	173458	166923	138668	149103	143035	164611	178995	111729	3595081
SHELLFISH	3915	3397	3675	4873	1945	6217	3690	1606	1636	917	3157	6547	6014	5510	4808	14236	9581	8972	10230	5477	3594	109996
SHRIMP			63	648	331	120		233	780	128	779	1857	531	642	1739	284	683	785	447	814	19	10881
SILVERSIDES						10									20		17					47
SLEEPERS					344	213	60		5			9	350		29				8	15	67	1100
SLIPPER LOBSTERS														5				116	372	168	380	1041
SMOOTH-HOUNDS									2					1005			5					1012
SNAKE MACKERELS					4	36	17			153			2854	33		68		50			10	3225
SNAPPERS	862394	733047	710002	590662	409670	388075	520029	470198	570579	557449	632220	776241	1079534	1025054	1027497	884831	952297	1021018	1077629	971607	745531	1.601E7
SNOOKS	42378	25138	22625	24820	29530	29362	24460	19970	32367	28990	28269	34624	49037	49189	57829	44980	49797	40514	46753	45151	37002	762784
SOAPFISHES															130	67		65	66			328
SPADEFISHES							3							206						93		302
SPINY LOBSTERS	273679	248019	211082	210071	154294	141275	185777	168654	211590	160828	169073	192215	279171	280642	283293	298476	327067	258423	280708	300440	241910	4876688
SQUIRRELFISHES	19152	12539	15931	12487	3946	4570	5785	6437	9050	6061	7482	8993	14127	15651	21590	18999	14695	16037	17542	15988	10698	257758
STROMBIDAE	399880	294773	260825	188360	142994	230702	160247	107964	108084	90947	164590	170802	214231	239817	238619	260905	214044	281265	244829	235608	188021	4437507
+-`-- SUNFISHES				833	89	5	8180	265	508	209	1073	614	1737	213	255	789	51	483	974	168		16443
SWIMMING CRABS					70				85	79	97	1460	719	1719	269	416	226	878	50	333	127	6527
SWORDFISHES						5860	2	9415			57	11	95	140	28	318	39	728	54	621	77	17444
TANGS					29				239	102			7	225		4	13		20	6	20	665
TARPONS					12583	3347	4807	6319	6229	3175	4732	4654	1795	105	2433	1316	2374	354	2186	4420	2436	63264

THREADFINS					61	46	61	393	150	91	83	213	53		12				34	69	3	1268
TILAPIA											68											68
TILEFISHES					44	95	31	52	181	35	90	260	337	321	603	620	1007	237	105	44	44	4104
TONGUEFISHES																14	246					260
TRIGGERFISHES	89921	72920	46348	31034	38417	28789	33482	28594	31076	27731	38270	46729	69385	64171	73484	64457	49936	41985	59774	53716	41976	1032196
TROCHIDAE									54	72	70	168	357	284	138	532	565	253	1270	1096	906	5765
TRUE GOBIES					3602	364	705	171	141	484	140	12	170	115		70	41		378	328		6720
TRUMPETFISHES							115								28							143
TRUNKFISHES	40376	38547	34103	36154	36117	36972	50013	47424	49209	40105	55805	53463	68489	67419	81834	90893	83884	83795	76325	79054	58587	1208567
UNKNOWN	2			126	97	209	7	61	43	20	68	1619	1663	281	664	2477	2520	2211	3374	3688	2339	21468
WHALE SHARKS							326	9811					52	9002	5001	25	51					24269
WHIPRAYS					1155	52	50	77	54	122	886	1299	1121	1427	549	1260	1229	1209	1570	252	80	12390
WOBBEGONGS									812		1361	1348										3521
WRASSES	72696	70980	41814	37668	36599	76911	75332	70771	54467	29080	35340	41249	50845	61238	68695	49844	46519	58419	67785	68863	55957	1171069
All	3916688	3154298	2855085	2535388	2081941	2013691	2290865	2179705	2458664	2043970	2495161	2708878	3687150	3581209	3804030	3453207	3327699	3281062	3389010	3271960	2387974	6.092E7

Table 14. Percentage distribution (by weight) of all fish and shellfish sold in Puerto Rico by year form 1983-2003. 2003 Preliminary data.

Family Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
TUNAS	10.6	7.1	7	7.6	9.7	11	9.9	10.6	8.9	6.8	8.3	7.9	8.2	8.5	11.2	11	10.6	9.7	9.6	8.9	9.8	9.2
ANCHOVIES						0				0			0	0	0		0	0		0		0
ANGELFISHES							0					0				0		0		0		0
BANANAFISHES						0	0	0.1	0	0	0	0	0	0	0	0		0	0	0	0	0
BARRACUDAS	0.7	0.3	0.3	0.7	1	0.7	0.7	0.4	1	0.5	0.5	0.5	0.5	0.6	0.7	1	0.7	0.8	0.6	0.8	0.5	0.6
BATFISHES							0	0	0		0	0	0	0	0	0		0	0	0.3	0	0
BEARDFISHES						0	0									0.1						0
BIGEYED HERRINGS					0.1	0.1	0	0.1	0.1	0.1	0	0	0	0	0	0	0		0	0		0
BILLFISHES	0.3	0.3	0.4	0.5	0.3	0.5	0.3	0.2	0.3	0.3	0.3	0.1	0	0	0	0	0	0	0	0		0.2
BONNETHEAD SHARKS							0	0	0		0		0									0
BOX CRABS																	0			0		0
BROTULAS						0	0								0					0		0
BUTTERFLYFISHES					0			0	0	0			0	0	0	0	0	0	0	0	0	0
CARDINALFISHES							0	0	0	0						0	0	0				0
CATALUFAS					0	0		0	0	0	0		0	0	0	0	0	0	0	0	0	0
CICHLIDS						0	0	0	0		0		0		0		0		0	0	0	0
COBIAS							0	0		0	0	0	0	0	0	0	0		0	0	0	0
CONGERS						0		0			0	0	0	0	0.2	0			0		0	0
CORNETFISHES						0							0	0			0	0				0
COW SHARKS						0			0			0		0	0		0.1	0		0		0
CROAKERS				0	0.3	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
DAMSELFISHES							0				0	0		0	0			0	0			0
DOLPHINSFISH	1.1	0.5	0.7	1.3	1.4	3.4	3	4.5	2.8	4.2	3	3.4	5.4	4.2	4.4	4	3.9	4.2	3.1	3.1	2.7	3.1
DRIFTFISHES												0					0					0
EAGLE RAYS					0	0		0.1	0	0.1	0	0.2	0.2	0.1	0	0.1	0	0.3	0	0		0.1
FASCIOLARIIDAE										0												0
FILEFISHES															0							0
FLASHERS							0	0		0		0	0	0	0	0	0	0	0	0	0	0
FLYING FISHES						0	0	0							0							0
FLYING GURNARDS						0						0	0	0	0.1	0		0	0	0	0	0
FLYINGFISHES						0							0	0				0				0
FRESHWATER EELS													0	0	0	0		0				0
FROGFISHES								0	0	0	0	0	0	0								0
First Class			0.3	4.8	4.4	5.6	9.4	8.2	7.9	8.1	7.5	6.4	6.5	4.1	3.7	4	3.1	2.6	2.8	2.3	2.6	4.2
GOAT FISHES	4.2	4	2.1	0.8	0.5	0.3	0.4	0.6	0.6	0.4	0.3	0.4	0.4	0.6	0.5	0.4	0.8	0.6	0.7	0.6	0.5	1
GRUNTS	10.3	10.5	9.6	7.2	7.7	4.5	3.5	5.5	6	5.9	6.5	5.4	4	4.9	4.4	3.3	3.6	3.6	4.5	4.5	4.5	5.7
HALFBEAKS	0.6	0.4	0.7	0.4	0.5	1.6	1.2	1.4	1.5	1.2	1.2	1.2	1.5	1.6	1.5	1.4	1.5	1.7	1.8	2.1	1.7	1.3
HERRINGS	0.5	0.6	0.7	0.5	1.1	0.4	0.6	0.5	1	0.9	0.7	0.9	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.9	0.7	0.7

JACKS	1.1	1	1.2	1.8	2.3	1.6	2.4	2.1	2.5	1.9	2	2.3	2.4	1.9	2.5	2.9	2.7	2.6	2.9	3.2	2.8	2.2
LAND CRABS	0.1	0	0	0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.4	0.3	0.1	0.1	0.1	0.2	0.2	0.1	0.1
LIVEBEARERS														0	0	0	0	0		0		0
LIZARDFISHES										0		0	0		0	0			0			0
MANTA RAYS					0	0	0	0	0	0	0	0	0	0	0	0.4	0	0	0	0	0	0
MINNOWS						0								0		0						0
MOJARRAS	0.3	0.3	0.3	0.4	0.4	0.9	0.5	0.7	0.8	1	0.8	1.1	0.9	0.7	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6
MORAYS								0	0		0		0			0	0			0		0
MULLETS	1.4	1.2	1.6	1.3	1.5	1.4	0.8	1	1.3	1.3	1.1	1.1	1.6	1.5	1.5	1.5	1.9	1.6	1.8	1.7	1.8	1.5
NEEDLEFISHES						0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
NORTH AMERICAN FRESHWATER CATFISHES					0				0		0		0					0	0		0	0
Nurse Sharks								0	0				0.2	0		0	0	0		0		0
OCTOPODIDAE	0.5	0.5	1.1	0.5	0.4	0.8	0.7	1.1	0.8	0.6	0.8	1	0.5	1	1	1.1	1.3	1.5	1	0.9	1.1	0.9
OSTREIDAE	1.3	1.5	1	0	0	0.1	0	0	0	0	0	0.1	0.2	0.2	0	0	0	0.1	0	0	0	0.3
Other	4.6	4.7	6.7	8	6.1	2.8	1.6	0.1	0.2	0.1	0.2	0.3	1.1	1.3	1.6	2.4	1.6	1.5	1.1	1.6	0.1	2.3
PARROTFISHES	6	7.3	7.8	4.2	3.7	0.6	0.2	1.7	2.8	4.5	6.4	4.3	2.2	2.9	2.9	2.8	2.4	2.3	2.9	3.3	2.9	3.6
PILOTFISHES						0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
PIPEFISHES												0								0		0
PORBEAGLES											0	0	0	0	0.2				0	0		0
PORCUPINEFISHES							0	0		0	0	0	0			0	0	0	0	0		0
PORGIES	2.1	2.1	0.8	0.7	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.9	0.7	0.8	1	0.9	1.1	1.2	0.9	0.9
RABBITFISHES	0						0						0	0		0						0
REMORAS						0		0		0	0		0	0	0.1	0	0	0.1	0	0	0	0
REQUIEM SHARKS					0.6	1.4	1.3	1.9	1.9	1.7	1.5	1.3	2	1.7	1.5	1.4	1.3	1.3	1.3	1.2	1.1	1.1
RIBBONFISHES			0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RUDDERFISHES					0				0	0	0	0.2	0		0	0		0	0	0	0	0
SEA BASSES	8.5	10.1	10.7	7.7	7.1	5.1	6.2	5.1	6.3	6.5	5.6	4.7	4.4	4.8	4.4	4	4.5	4.4	4.9	5.5	4.7	5.9
SHELLFISH	0.1	0.1	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0	0.1	0.2	0.2	0.2	0.1	0.4	0.3	0.3	0.3	0.2	0.2	0.2
SHRIMP			0	0	0	0		0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
SILVERSIDES						0									0		0					0
SLEEPERS					0	0	0		0			0	0		0				0	0	0	0
SLIPPER LOBSTERS														0				0	0	0	0	0
SMOOTH-HOUNDS									0					0			0					0
SNAKE MACKERELS					0	0	0			0			0.1	0		0		0			0	0
SNAPPERS	22	23.2	24.9	23.3	19.7	19.3	22.7	21.6	23.2	27.3	25.3	28.7	29.3	28.6	27	25.6	28.6	31.1	31.8	29.7	31.2	26.3
SNOOKS	1.1	0.8	0.8	1	1.4	1.5	1.1	0.9	1.3	1.4	1.1	1.3	1.3	1.4	1.5	1.3	1.5	1.2	1.4	1.4	1.5	1.3
SOAPFISHES															0	0		0	0			0
SPADEFISHES							0							0						0		0
SPINY LOBSTERS	7	7.9	7.4	8.3	7.4	7	8.1	7.7	8.6	7.9	6.8	7.1	7.6	7.8	7.4	8.6	9.8	7.9	8.3	9.2	10.1	8
SQUIRRELFISHES	0.5	0.4	0.6	0.5	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.4	0.4	0.6	0.6	0.4	0.5	0.5	0.5	0.4	0.4

STROMBIDAE	10.2	9.3	9.1	7.4	6.9	11.5	7	5	4.4	4.4	6.6	6.3	5.8	6.7	6.3	7.6	6.4	8.6	7.2	7.2	7.9	7.3
SUNFISHES					0	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWIMMING CRABS					0				0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
SWORDFISHES						0.3	0	0.4			0	0	0	0	0	0	0	0	0	0	0	0
Second Class				5.4	6.8	6.2	7	6.7	5.6	4.6	3.7	5.3	3.6	4.1	2.7	3.5	3.2	1.8	1	1.4	1.8	3.2
TANGS					0				0	0			0	0		0	0		0	0	0	0
TARPONS					0.6	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0	0	0.1	0	0.1	0	0.1	0.1	0.1	0.1
THREADFINS					0	0	0	0	0	0	0	0	0		0				0	0	0	0
TILAPIA											0											0
TILEFISHES					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TONGUEFISHES																0	0					0
TRIGGERFISHES	2.3	2.3	1.6	1.2	1.8	1.4	1.5	1.3	1.3	1.4	1.5	1.7	1.9	1.8	1.9	1.9	1.5	1.3	1.8	1.6	1.8	1.7
TROCHIDAE									0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRUE GOBIES					0.2	0	0	0	0	0	0	0	0	0		0	0		0	0		0
TRUMPETFISHES							0								0							0
TRUNKFISHES	1	1.2	1.2	1.4	1.7	1.8	2.2	2.2	2	2	2.2	2	1.9	1.9	2.2	2.6	2.5	2.6	2.3	2.4	2.5	2
Third Class				1	1.3	2.6	2.7	2.4	2.6	1.9	2.8	1.5	2.4	2	3.2	1.9	1	1.5	1.4	0.9	0.4	1.5
Trash				0.4	0.3	0.3	0.1	0.4	0.3	0.3	0.2	0	0.1	0.1	0.1	0	0	0	0	0	0	0.1
UNKNOWN	0			0	0	0	0	0	0	0	0	0.1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0
WHALE SHARKS							0	0.5					0	0.3	0.1	0	0					0
WHIPRAYS					0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WOBBEGONGS									0		0.1	0										0
WRASSES	1.9	2.3	1.5	1.5	1.8	3.8	3.3	3.2	2.2	1.4	1.4	1.5	1.4	1.7	1.8	1.4	1.4	1.8	2	2.1	2.3	1.9
All	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Tables 15. Total annual value ($) of yellowtail snapper, *Ocyurus chrysurus*, commercial sales in Puerto Rico,1983-2001. 2003 Preliminary data.

Year	# sales	Total value ($)
1983	3685	217900
1984	2024	169381
1985	2403	193824
1986	2487	131233
1987	2704	134262
1988	2202	119351
1989	2530	142805
1990	2801	178735
1991	3622	264498
1992	3280	265214
1993	4091	321267
1994	3849	349834
1995	6645	573296
1996	7084	505331
1997	6934	540493
1998	5759	501011
1999	5964	592754
2000	7624	699582
2001	7694	665092
2002	7219	618796
2003	6340	381282

Table 16. Average price per pound ($) of yellowtail snapper sold in Puerto Rico, 1983-2003, by year and gear category of sale. 2003 Preliminary data.

											Year											
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	All
Cast Nets	1.83	1.05	1.21	1.59	1.46	1.40	1.83	2.50	1.90	2.32	2.48	2.29	2.42	2.17	1.75	1.90	2.33	2.02	1.58		2.00	2.05
Dive	1.36	1.55	1.31	1.35	1.93	1.46	1.44	1.59	1.65	1.71	1.84	1.82	2.38	2.06	2.07	2.05	2.16	2.24	2.25	2.22	2.22	2.04
Nets	1.24	1.23	1.15	1.10	1.25	1.44	1.52	1.57	1.7	1.68	1.68	1.75	1.74	1.69	1.70	1.75	1.85	1.76	1.91	1.97	1.87	1.70
Other																				2.00		1.75
Pots	1.05	1.05	1.19	1.19	1.25	1.32	1.41	1.55	1.67	1.78	1.8	1.89	1.89	1.92	1.94	2.08	2.08	2.16	2.21	2.20	2.22	1.76
Rod & Reels	1.45	1.42	1.46	1.51	1.52	1.55	1.59	1.65	1.8	1.86	1.82	1.96	1.99	1.85	2.03	2.04	2.16	2.07	2.17	2.21	2.25	1.95
Seines	1.02	0.99	1.09	1.32	1.73	1.11	1.49	1.49	1.73	1.61	1.51	1.53	1.83	1.78	1.81	1.73	1.62	1.55	1.58	1.73	1.69	1.53
Vertical Lines	1.07	1.27	1.28	1.2	1.49	1.51	1.48	1.56	1.63	1.61	1.93	1.94	2.01	1.86	2.04	2.09	2.42	2.52	2.34	2.44	2.57	2.05
All Gears	1.26	1.25	1.31	1.32	1.41	1.48	1.54	1.61	1.76	1.82	1.79	1.92	1.96	1.85	1.97	2.02	2.12	2.06	2.15	2.18	2.20	1.88

Table 17. Annual total value ($) of yellowtail snapper commercial sales sold in Puerto Rico, 1983-2003, by gear category. 2003 preliminary data.

				Gear					
Calendar Year	Cast Nets	Dive	Nets	Other	Pots	Rod & Reels	Seines	Vertical Lines	All gears
1983	227	778	8099		57106	133890	16038	1763	217900
1984	120	877	6988		37972	107039	15565	820	169381
1985	439	110	13920		50567	120747	7558	483	193824
1986	798	823	25309		26489	72920	4478	416	131233
1987	116	3169	20277		24088	83293	2281	1039	134262
1988	706	1404	15662	438	16478	81774	1615	1275	119351
1989	120	407	13397	90	16992	99263	10046	2491	142805
1990	100	447	8741		19488	136159	11744	2055	178735
1991	650	568	12657		32765	207637	8522	1699	264498
1992	545	517	20172		28761	204770	8995	1455	265214
1993	1036	2505	16127		31766	251282	16864	1686	321267
1994	2059	2277	18869		41195	262534	19108	3792	349834
1995	3207	3556	18234		41738	488429	10640	7493	573296
1996	1017	2910	44566		53611	388797	5585	8846	505331
1997	96	2441	40744		52850	429546	7579	7237	540493
1998	400	3920	22546		42366	417726	4698	9354	501011
1999	321	2945	27322		47307	493188	6646	15023	592754
2000	2535	3189	35087		48421	588708	12690	8952	699582
2001	231	12492	34684		50707	543080	18197	5702	665092
2002		5287	36708	66	66279	488693	15436	6327	618796
2003	320	2885	15020		40904	305009	13955	3189	381282
All	15042	53507	455129	594	827849	5904484	218238	91096	7565938

Table 18. Percentage value yellowtail snapper sales, *Ocyurus chrysurus,* commercial in Puerto Rico by gear category, 1983-2003. 2003 Preliminary.

Calendar Year	Cast Nets	Dive	Nets	Other	Pots	Rod& Reel	Seines	Vertical Lines	All Gears
1983	0.1	0.4	3.7		26.2	61.4	7.4	0.8	100
1984	0.1	0.5	4.1		22.4	63.2	9.2	0.5	100
1985	0.2	0.1	7.2		26.1	62.3	3.9	0.2	100
1986	0.6	0.6	19.3		20.2	55.6	3.4	0.3	100
1987	0.1	2.4	15.1		17.9	62.0	1.7	0.8	100
1988	0.6	1.2	13.1	0.4	13.8	68.5	1.4	1.1	100
1989	0.1	0.3	9.4	0.1	11.9	69.5	7.0	1.7	100
1990	0.1	0.3	4.9		10.9	76.2	6.6	1.2	100
1991	0.2	0.2	4.8		12.4	78.5	3.2	0.6	100
1992	0.2	0.2	7.6		10.8	77.2	3.4	0.5	100
1993	0.3	0.8	5.0		9.9	78.2	5.2	0.5	100
1994	0.6	0.7	5.4		11.8	75.0	5.5	1.1	100
1995	0.6	0.6	3.2		7.3	85.2	1.9	1.3	100
1996	0.2	0.6	8.8		10.6	76.9	1.1	1.8	100
1997	0.0	0.5	7.5		9.8	79.5	1.4	1.3	100
1998	0.1	0.8	4.5		8.5	83.4	0.9	1.9	100
1999	0.1	0.5	4.6		8.0	83.2	1.1	2.5	100
2000	0.4	0.5	5.0		6.9	84.2	1.8	1.3	100
2001	0.0	1.9	5.2		7.6	81.7	2.7	0.9	100
2002	0.0	0.9	5.9	0.0	10.7	79.0	2.5	1.0	100
2003	0.1	0.8	3.9		10.7	80.0	3.7	0.8	100
All	0.2	0.7	6.0	0.0	10.9	78.0	2.9	1.2	100

Table 19. Total annual value ($) of all fish and shellfish sold in Puerto Rico, 1983-2003. 2003 Preliminary Data.

Year	#Sales	Value ($)
1983	64150	4719730
1984	38977	3969018
1985	37421	4004500
1986	46339	3724647
1987	46121	3025652
1988	45264	3096314
1989	52372	3794705
1990	52474	3560764
1991	66097	4292384
1992	49540	3707795
1993	60104	4444681
1994	65172	5156078
1995	94685	7242214
1996	97634	6993718
1997	100005	7607758
1998	86957	7180580
1999	92205	7232123
2000	97049	7138272
2001	104781	7679811
2002	101849	7502764
2003	101490	5621405

Table 20. Distribution of commercial sales for all fish and shellfish by month in Puerto Rico, 1983-2003. 2003 Preliminary Data.

	Month												
Year	1	2	3	4	5	6	7	8	9	10	11	12	All
1983	9.8	9.2	8.7	8.9	9.8	8.1	6.5	7.4	9.1	8.6	8.0	5.9	100
1984	9.0	8.9	9.3	8.7	8.5	8.0	6.8	9.2	8.0	9.0	7.9	6.8	100
1985	7.6	7.0	8.6	5.4	9.7	7.1	8.3	10.9	9.1	8.6	8.6	9.0	100
1986	10.1	9.5	10.0	8.3	7.6	7.8	7.9	8.3	8.8	8.3	6.0	7.3	100
1987	7.5	8.1	9.9	10.5	10.5	8.0	9.3	7.8	7.9	7.7	6.1	6.4	100
1988	6.7	7.2	8.7	8.6	11.1	8.7	8.6	7.6	8.1	9.0	9.1	6.8	100
1989	7.8	8.1	9.9	9.0	10.1	8.6	8.5	9.2	6.8	8.2	7.3	6.6	100
1990	8.1	7.8	8.8	7.9	8.5	7.6	8.8	10.1	10.0	8.9	6.5	7.0	100
1991	8.8	8.9	8.3	8.3	9.9	9.4	8.1	8.1	8.2	8.2	7.2	6.6	100
1992	10.5	9.3	11.4	10.3	8.4	5.2	6.5	6.5	8.1	8.2	7.6	7.9	100
1993	7.7	8.5	8.5	9.4	8.3	8.3	7.6	10.5	8.8	8.0	6.5	7.9	100
1994	7.7	8.0	10.4	8.7	9.1	7.6	7.2	10.5	6.7	8.3	7.3	8.4	100
1995	9.0	7.9	9.4	8.2	9.8	10.6	9.0	8.2	6.3	7.8	7.2	6.7	100
1996	8.5	9.4	10.3	8.7	9.0	7.0	6.9	9.4	6.7	8.5	7.9	7.7	100
1997	9.5	7.2	8.9	9.1	9.1	7.7	7.7	8.0	7.4	10.4	7.5	7.6	100
1998	10.6	9.9	10.7	11.0	11.2	7.9	8.1	8.8	4.2	4.6	6.8	6.0	100
1999	9.2	9.6	10.9	9.4	9.3	8.3	8.1	7.1	7.0	7.0	6.8	7.4	100
2000	9.1	9.7	10.0	9.4	9.2	7.1	8.1	7.4	7.4	8.9	7.5	6.4	100
2001	10.3	9.1	9.6	8.8	8.2	7.6	6.7	9.2	8.5	8.7	7.2	6.2	100
2002	9.3	9.0	9.6	9.7	8.0	8.5	8.3	8.7	7.5	8.6	7.1	5.7	100
2003	9.2	7.6	10.6	9.2	8.6	7.4	6.9	7.9	7.8	10.8	6.9	7.1	100
All	9.0	8.7	9.7	9.0	9.2	8.0	7.8	8.6	7.5	8.4	7.3	7.0	100

Table 21. Total value ($) of commercial sales of all fish and shellfish sold in Puerto Rico, 1983-2003, by gear. 2003 preliminary data

					Gear			Vertical	
Year	Cast	Dive	Net	Other	Pots	Rod & Reel	Seine	Lines	All
1983	15920	1628350	327862	772	1559365	973200	183687	30575	4719730
1984	18691	1399899	267302	12	1399799	726611	128386	28318	3969018
1985	17882	836318	355155	4312	1563805	1104935	95530	26562	4004500
1986	15925	690549	385578	773	1341472	1182905	94585	12861	3724647
1987	19154	533699	359381		1144025	831795	120634	16965	3025652
1988	6962	754796	317677	53698	940859	898932	92913	30477	3096314
1989	12403	719917	301526	33861	1411332	1142816	134611	38240	3794705
1990	5362	648090	383019	4625	1312015	1078783	87312	41558	3560764
1991	21280	783814	636915		1417232	1256081	144952	32110	4292384
1992	17321	590141	519167	153	1177262	1272517	104124	27110	3707795
1993	20342	857625	633080	1041	1197502	1576962	115315	42813	4444681
1994	40899	933413	640415		1472483	1922203	111276	35390	5156078
1995	47471	1313769	763042	1131	1868657	2999294	170554	77625	7241544
1996	43657	1430818	893522	80	1850868	2522201	160883	91689	6993718
1997	47561	1464699	1064610		1959542	2793442	164424	113479	7607758
1998	33707	1700976	929348	897	1798506	2426325	120291	170413	7180463
1999	47446	1608762	921435	62	1853124	2559342	89211	152741	7232123
2000	49811	1792635	845334	2298	1629186	2422263	85164	311582	7138272
2001	39156	1824268	814070	5809	2056365	2716584	98719	124840	7679811
2002	40602	1914313	830380	10018	1954319	2537507	115895	99730	7502764
2003	17769	1269229	535116	1439	1559440	2076002	94066	68344	5621405
All	579321	24696081	12723932	120982	32467158	37020700	2512530	1573421	1.12E+08

Table 22. Percentage value of commercial sales value of all fish and shellfish sold in Puerto Rico, 1983-2003 by gear. 2003 preliminary data.

Year	Cast Nets	Dive	Nets	Pots	Rod & Reel	Seines	Vertical Lines	Other	All Gears
1983	0.3	34.5	6.9	33.0	20.6	3.9	0.6	0.0	100
1984	0.5	35.3	6.7	35.3	18.3	3.2	0.7	0.0	100
1985	0.4	20.9	8.9	39.1	27.6	2.4	0.7	0.1	100
1986	0.4	18.5	10.4	36.0	31.8	2.5	0.3	0.0	100
1987	0.6	17.6	11.9	37.8	27.5	4.0	0.6		100
1988	0.2	24.4	10.3	30.4	29.0	3.0	1.0	1.7	100
1989	0.3	19.0	7.9	37.2	30.1	3.5	1.0	0.9	100
1990	0.2	18.2	10.8	36.8	30.3	2.5	1.2	0.1	100
1991	0.5	18.3	14.8	33.0	29.3	3.4	0.7		100
1992	0.5	15.9	14.0	31.8	34.3	2.8	0.7	0.0	100
1993	0.5	19.3	14.2	26.9	35.5	2.6	1.0	0.0	100
1994	0.8	18.1	12.4	28.6	37.3	2.2	0.7		100
1995	0.7	18.1	10.5	25.8	41.4	2.4	1.1	0.0	100
1996	0.6	20.5	12.8	26.5	36.1	2.3	1.3	0.0	100
1997	0.6	19.3	14.0	25.8	36.7	2.2	1.5		100
1998	0.5	23.7	12.9	25.0	33.8	1.7	2.4	0.0	100
1999	0.7	22.2	12.7	25.6	35.4	1.2	2.1	0.0	100
2000	0.7	25.1	11.8	22.8	33.9	1.2	4.4	0.0	100
2001	0.5	23.8	10.6	26.8	35.4	1.3	1.6	0.1	100
2002	0.5	25.5	11.1	26.0	33.8	1.5	1.3	0.1	100
2003	0.3	22.6	9.5	27.7	36.9	1.7	1.2	0.0	100
All	0.5	22.1	11.4	29.1	33.1	2.2	1.4	0.1	100

Table 23. Summary CPUE statistics for yellowtail snapper from commercial sales records in Puerto Rico, 1983-2003, all gears and years combined. Q1 and Q3 =lower 25th and upper 75th percentiles.

Ntrips	N	Mean CPUE	Min CPUE	Max CPUE	STDDEV (CPUE)	Q1	Q3
1	57900	37.1	0.5	3051	54.9	10	45
2	4458	18	0.5	440.5	24.7	5	20
3	3469	14.5	0.3	237	20	3	16.7
4	2893	12.9	0.3	300	20	3	14.4
5	2616	9.1	0.2	135.2	12.9	2	9.8
6	2144	9	0.2	247.2	14.3	2	10
7	1262	8.5	0.1	114.3	13.1	2	8.6
8	1058	9.3	0.2	193.8	13.5	2	10.4
9	536	9.3	0.1	91.3	12.3	2	9.8
10	1033	16.4	0.2	1510	65.3	2	10
11	369	14.4	0.1	320	30.8	2	13.6
12	652	11.8	0.1	419	28.4	2	10
13	181	13.7	0.2	307	30.9	2	15.4
14	266	7.6	0.1	117.2	13.1	1	7.6
15	335	14.5	0.1	1167	69.1	1	12
16	285	9.9	0.2	464	30.8	1	10.4
17	145	14.9	0.1	494	46.5	2	12.4
18	178	6.4	0.1	118	11.5	1	7.8
19	126	8.1	0.1	71.3	10.6	1	12.7
20	323	8.3	0.2	359	25.3	1	7.5
21	81	7.8	0.1	43.6	8.6	1	13.7
22	88	9.9	0.1	356	43.5	1	4.5
23	56	5.7	0.1	91	12.9	1	6.5
24	82	4.1	0.1	29.2	5.7	1	4.4
25	79	4	0.2	31.6	6.5	1	4.4
26	34	3.9	0.4	26.2	4.7	1	5.4
27	22	2.5	0.1	13.8	3.7	1	2.2
28	28	2.9	0.1	23.2	5.1	1	1.9
29	5	1.7	0.1	4.7	1.8	1	2.1
30	59	4	0.2	37.5	6.2	1	5.7
31	9	2.9	0.1	6.5	2.1	1	4
32	5	1.2	0.3	2.3	0.8	1	1.6
33	2	0.2	0.1	0.4	0.2	0	0.4
34	2	0.3	0.1	0.4	0.2	0	0.4
35	2	12.7	0.4	24.9	17.3	0	24.9
36	5	2.3	0.4	5.7	2.1	1	2.8
37	1	0.5	0.5	0.5		1	0.5
38	3	2.1	0.3	3.7	1.7	0	3.7
39	2	3.6	0.1	7.1	5	0	7.1
40	13	2	0.2	10	3.1	0	2
41	2	0.5	0.1	0.8	0.5	0	0.8
42	1	0.7	0.7	0.7		1	0.7

45	2	0.3	0.2	0.4	0.1	0	0.4
46	2	12.5	0	25	17.6	0	25
47	1	0	0	0		0	0
48	2	0.2	0	0.4	0.2	0	0.4
50	5	1.3	0.1	4	1.6	0	1.4
51	1	16.4	16.4	16.4	. 1	6	16.4
53	1	1.7	1.7	1.7		2	1.7
55	2	3.6	2.6	4.5	1.4	3	4.5
56	1	0.3	0.3	0.3		0	0.3
58	2	0.2	0.1	0.3	0.1	0	0.3
59	1	11.7	11.7	11.7	. 1	2	11.7
60	3	0.2	0.1	0.4	0.2	0	0.4
62	3	2.5	0.6	4	1.7	1	4
63	1	0.7	0.7	0.7		1	0.7
64	1	0.1	0.1	0.1		0	0.1
66	1	0.4	0.4	0.4		0	0.4
69	1	0.7	0.7	0.7		1	0.7
70	3	0.8	0.1	1.9	1	0	1.9
78	1	8.3	8.3	8.3		8	8.3
79	1	0.4	0.4	0.4		0	0.4
80	1	5	5	5		5	5
87	1	0.7	0.7	0.7		1	0.7
90	3	0.9	0.1	2	1	0	2
95	1	0.1	0.1	0.1		0	0.1
96	1	0.2	0.2	0.2		0	0.2
97	7	0.4	0.1	0.9	0.3	0	0.5
99	10	0.6	0.1	1.8	0.6	0	1.2
All	80869	30.1	0	3051	49.7	6	35.5

Table 24a. Nominal unadjusted catch per unit of effort (CPUE) for yellowtail snapper commercial catches in Puerto Rico, 1983-2003, by gear and year for fisher sales records where the 'ntrips' variable = 1 trip.

	Cast Net		Dive, Spear, Scuba		Nets		Other		Pots		Rod & Reel		Seines		Vertical Lines		All	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
1983	.	.	5.0	35.6	21.0	23.5	.	.	688.0	12.2	810.0	30.4	23.0	45.9	20.0	12.9	1567	22.3
1984	0.0	.	4.0	60.8	5.0	65.0	.	.	107.0	71.9	75.0	117.6	5.0	681.4	2.0	170.0	198.0	105.2
1985	.	.	.	.	32.0	34.1	.	.	118.0	14.7	155.0	31.3	4.0	51.3	3.0	17.3	312.0	25.4
1986	.	.	1.0	8.0	6.0	36.7	.	.	15.0	12.7	41.0	33.2	2.0	9.5	.	.	65.0	27.7
1987	.	.	.	.	1.0	600.0	.	.	17.0	13.5	16.0	25.4	.	.	.	.	34.0	36.4
1988	3.0	174.7	28.0	28.2	118.0	75.6	.	.	422.0	18.8	1226	37.1	18.0	39.4	51.0	16.0	1866	34.9
1989	3.0	20.3	11.0	15.5	89.0	75.6	1.0	60.0	402.0	17.9	1426	34.0	41.0	132.3	73.0	21.4	2046	34.0
1990	1.0	40.0	10.0	17.7	53.0	20.0	.	.	194.0	15.1	806.0	41.8	2.0	63.5	21.0	26.7	1087	35.5
1991	2.0	28.5	18.0	12.9	112.0	34.2	.	.	353.0	12.8	1429	42.9	7.0	48.4	13.0	13.5	1934	36.4
1992	5.0	14.0	6.0	7.2	97.0	34.1	.	.	156.0	23.8	1156	35.8	30.0	83.2	22.0	14.6	1472	34.9
1993	7.0	34.1	10.0	66.9	138.0	27.8	.	.	198.0	30.9	1820	46.9	103.0	72.8	50.0	17.1	2326	44.9
1994	11.0	54.3	29.0	27.6	130.0	32.0	.	.	314.0	23.6	1881	45.7	89.0	107.1	50.0	14.1	2504	43.6
1995	20.0	34.4	30.0	22.6	244.0	22.6	.	.	641.0	19.1	3601	45.9	75.0	61.9	58.0	28.2	4669	40.9
1996	2.0	19.0	41.0	22.8	399.0	21.1	.	.	528.0	17.8	3130	40.3	31.0	33.0	86.0	13.4	4217	34.9
1997	.	.	38.0	16.6	436.0	23.5	.	.	363.0	22.1	3124	46.6	20.0	50.6	17.0	9.8	3998	41.4
1998	3.0	49.3	23.0	39.1	153.0	29.7	.	.	452.0	14.6	2341	46.6	20.0	78.8	87.0	9.2	3079	40.2
1999	3.0	42.3	32.0	28.6	305.0	22.3	.	.	685.0	13.3	2553	42.8	11.0	139.0	66.0	9.8	3655	35.1
2000	8.0	14.4	53.0	19.9	525.0	17.8	.	.	859.0	15.1	3745	54.0	81.0	101.2	103.0	17.6	5374	43.8
2001	6.0	27.0	138.0	26.4	436.0	20.5	.	.	776.0	16.7	4428	43.8	89.0	123.4	94.0	19.6	5967	39.0
2002	.	.	65.0	28.1	444.0	19.0	3.0	11.0	771.0	22.2	3916	40.5	102.0	87.0	127.0	10.5	5428	36.1
2003	.	.	68.0	19.6	642.0	12.1	.	.	1373	13.0	4000	34.2	93.0	96.2	124.0	9.7	6300	27.6
All	74.0	38.7	610.0	25.0	4386	23.9	4.0	23.3	9432	17.4	41679	42.9	846.0	91.7	1067	15.2	58098	37.4

. = No data in that cell

Table 24b. Relative contribution (sample sizes) by gear and year of Yellowtail snapper data in Table 24a ('ntrips'=1).

Cast Net		Dive, Spear, Scuba		Nets		Other		Pots		Rod & Reel		Seines		Vertical Lines		All	
N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean

1983	.	.	5.0	0.0	21.0	0.0	.	.	688.0	1.2	810.0	1.4	23.0	0.0	20.0	0.0	1567	2.7
1984	0.0	0.0	4.0	0.0	5.0	0.0	.	.	107.0	0.2	75.0	0.1	5.0	0.0	2.0	0.0	198.0	0.3
1985	.	.	.	.	32.0	0.1	.	.	118.0	0.2	155.0	0.3	4.0	0.0	3.0	0.0	312.0	0.5
1986	.	.	1.0	0.0	6.0	0.0	.	.	15.0	0.0	41.0	0.1	2.0	0.0	.	.	65.0	0.1
1987	.	.	.	.	1.0	0.0	.	.	17.0	0.0	16.0	0.0	.	.	.	.	34.0	0.1
1988	3.0	0.0	28.0	0.0	118.0	0.2	.	.	422.0	0.7	1226	2.1	18.0	0.0	51.0	0.1	1866	3.2
1989	3.0	0.0	11.0	0.0	89.0	0.2	1.0	0.0	402.0	0.7	1426	2.5	41.0	0.1	73.0	0.1	2046	3.5
1990	1.0	0.0	10.0	0.0	53.0	0.1	.	.	194.0	0.3	806.0	1.4	2.0	0.0	21.0	0.0	1087	1.9
1991	2.0	0.0	18.0	0.0	112.0	0.2	.	.	353.0	0.6	1429	2.5	7.0	0.0	13.0	0.0	1934	3.3
1992	5.0	0.0	6.0	0.0	97.0	0.2	.	.	156.0	0.3	1156	2.0	30.0	0.1	22.0	0.0	1472	2.5
1993	7.0	0.0	10.0	0.0	138.0	0.2	.	.	198.0	0.3	1820	3.1	103.0	0.2	50.0	0.1	2326	4.0
1994	11.0	0.0	29.0	0.0	130.0	0.2	.	.	314.0	0.5	1881	3.2	89.0	0.2	50.0	0.1	2504	4.3
1995	20.0	0.0	30.0	0.1	244.0	0.4	.	.	641.0	1.1	3601	6.2	75.0	0.1	58.0	0.1	4669	8.0
1996	2.0	0.0	41.0	0.1	399.0	0.7	.	.	528.0	0.9	3130	5.4	31.0	0.1	86.0	0.1	4217	7.3
1997	.	.	38.0	0.1	436.0	0.8	.	.	363.0	0.6	3124	5.4	20.0	0.0	17.0	0.0	3998	6.9
1998	3.0	0.0	23.0	0.0	153.0	0.3	.	.	452.0	0.8	2341	4.0	20.0	0.0	87.0	0.1	3079	5.3
1999	3.0	0.0	32.0	0.1	305.0	0.5	.	.	685.0	1.2	2553	4.4	11.0	0.0	66.0	0.1	3655	6.3
2000	8.0	0.0	53.0	0.1	525.0	0.9	.	.	859.0	1.5	3745	6.4	81.0	0.1	103.0	0.2	5374	9.2
2001	6.0	0.0	138.0	0.2	436.0	0.8	.	.	776.0	1.3	4428	7.6	89.0	0.2	94.0	0.2	5967	10.3
2002	.	.	65.0	0.1	444.0	0.8	3.0	0.0	771.0	1.3	3916	6.7	102.0	0.2	127.0	0.2	5428	9.3
2003	.	.	68.0	0.1	642.0	1.1	.	.	1373	2.4	4000	6.9	93.0	0.2	124.0	0.2	6300	10.8
All	74.0	0.1	610.0	1.0	4386	7.5	4.0	0.0	9432	16.2	41679	71.7	846.0	1.5	1067	1.8	58098	100.0

. = No data in that cell

Table 25a. Nominal unadjusted catch per unit of effort (CPUE) for yellowtail snapper commercial catches in Puerto Rico, 1983-2003, by gear and year for fisher sales records where the 'ntrips' variable<=7 trip.

	Cast Net		Dive, Spear, Scuba		Nets		Other		Pots		Rod & Reel		Seines		Vertical Lines		All	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
1983	.	.	7.0	27.1	82.0	22.3	.	.	1387	12.3	1366	26.8	105.0	43.9	46.0	16.4	2993	20.4
1984	0.0	.	5.0	51.9	5.0	65.0	.	.	114.0	71.4	83.0	121.0	5.0	681.4	3.0	118.8	215.0	104.8
1985	3.0	14.3	5.0	2.9	171.0	19.5	.	.	790.0	10.8	919.0	21.1	66.0	30.9	13.0	8.3	1967	17.0
1986	3.0	28.1	2.0	21.1	51.0	20.4	.	.	133.0	9.5	216.0	22.1	7.0	20.6	4.0	12.9	416.0	17.8
1987	1.0	11.5	.	.	6.0	123.2	.	.	48.0	11.8	61.0	25.7	.	.	.	.	116.0	24.9
1988	3.0	174.7	29.0	27.4	123.0	73.1	1.0	175.0	444.0	18.2	1301	35.7	20.0	39.6	52.0	15.7	1973	33.7
1989	3.0	20.3	11.0	15.5	105.0	66.7	1.0	60.0	464.0	17.2	1497	33.3	46.0	119.0	73.0	21.4	2200	32.8
1990	1.0	40.0	12.0	14.9	91.0	14.8	.	.	359.0	10.5	1023	38.0	2.0	63.5	31.0	19.8	1519	29.6
1991	3.0	49.2	22.0	11.5	183.0	24.1	.	.	578.0	10.9	1824	37.9	11.0	34.3	18.0	11.5	2639	30.6
1992	7.0	21.2	12.0	5.7	136.0	27.7	.	.	309.0	15.5	1474	33.5	37.0	77.3	26.0	12.9	2001	30.6
1993	11.0	27.6	16.0	42.8	176.0	25.3	.	.	483.0	16.2	2253	40.7	105.0	71.9	52.0	16.8	3096	36.6
1994	14.0	47.7	33.0	26.9	172.0	26.5	.	.	518.0	18.6	2242	41.5	95.0	101.1	86.0	14.4	3160	37.9
1995	29.0	30.1	53.0	15.8	333.0	18.6	.	.	858.0	15.9	4450	40.3	99.0	48.5	112.0	17.6	5934	35.0
1996	5.0	34.0	56.0	18.3	659.0	16.8	.	.	764.0	13.7	3896	35.6	61.0	25.1	117.0	11.4	5558	29.6
1997	.	.	43.0	15.3	620.0	19.4	.	.	575.0	15.9	3778	40.9	57.0	26.5	28.0	9.9	5101	34.9
1998	4.0	40.3	33.0	29.4	247.0	20.4	.	.	668.0	11.5	2849	41.1	26.0	64.4	117.0	9.3	3944	33.9
1999	3.0	42.3	38.0	25.3	457.0	16.4	.	.	1025	10.6	3275	37.1	24.0	78.0	167.0	8.5	4989	28.9
2000	9.0	13.2	61.0	18.1	745.0	14.0	.	.	1336	11.2	4491	47.5	86.0	96.0	144.0	13.6	6872	36.4
2001	6.0	27.0	145.0	26.7	621.0	16.2	.	.	1138	13.0	5043	40.3	100.0	111.0	140.0	14.5	7193	34.1
2002	.	.	71.0	26.4	657.0	14.5	3.0	11.0	1179	16.8	4565	36.8	106.0	84.1	158.0	9.0	6739	31.1
2003	1.0	40.0	68.0	19.6	646.0	12.1	.	.	1379	13.0	4020	34.2	93.0	96.2	125.0	9.7	6332	27.6
All	106.0	34.8	722.0	22.4	6286	19.3	5.0	53.6	14549	14.0	50626	38.4	1151	74.4	1512	13.0	74957	31.9

. = No data in that cell

Table 25b. Relative contribution (sample sizes) by gear and year of Yellowtail snapper data in Table 25a (ntrips<=7).

	Cast Net		Dive, Spear, Scuba		Nets		Other		Pots		Rod & Reel		Seines		Vertical Lines		All	
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
1983	.	.	7.0	0.0	82.0	0.1	.	.	1387	1.9	1366	1.8	105.0	0.1	46.0	0.1	2993	4.0
1984	0.0	0.0	5.0	0.0	5.0	0.0	.	.	114.0	0.2	83.0	0.1	5.0	0.0	3.0	0.0	215.0	0.3
1985	3.0	0.0	5.0	0.0	171.0	0.2	.	.	790.0	1.1	919.0	1.2	66.0	0.1	13.0	0.0	1967	2.6
1986	3.0	0.0	2.0	0.0	51.0	0.1	.	.	133.0	0.2	216.0	0.3	7.0	0.0	4.0	0.0	416.0	0.6
1987	1.0	0.0	.	.	6.0	0.0	.	.	48.0	0.1	61.0	0.1	.	.	.	.	116.0	0.2
1988	3.0	0.0	29.0	0.0	123.0	0.2	1.0	0.0	444.0	0.6	1301	1.7	20.0	0.0	52.0	0.1	1973	2.6
1989	3.0	0.0	11.0	0.0	105.0	0.1	1.0	0.0	464.0	0.6	1497	2.0	46.0	0.1	73.0	0.1	2200	2.9
1990	1.0	0.0	12.0	0.0	91.0	0.1	.	.	359.0	0.5	1023	1.4	2.0	0.0	31.0	0.0	1519	2.0
1991	3.0	0.0	22.0	0.0	183.0	0.2	.	.	578.0	0.8	1824	2.4	11.0	0.0	18.0	0.0	2639	3.5
1992	7.0	0.0	12.0	0.0	136.0	0.2	.	.	309.0	0.4	1474	2.0	37.0	0.0	26.0	0.0	2001	2.7
1993	11.0	0.0	16.0	0.0	176.0	0.2	.	.	483.0	0.6	2253	3.0	105.0	0.1	52.0	0.1	3096	4.1
1994	14.0	0.0	33.0	0.0	172.0	0.2	.	.	518.0	0.7	2242	3.0	95.0	0.1	86.0	0.1	3160	4.2
1995	29.0	0.0	53.0	0.1	333.0	0.4	.	.	858.0	1.1	4450	5.9	99.0	0.1	112.0	0.1	5934	7.9
1996	5.0	0.0	56.0	0.1	659.0	0.9	.	.	764.0	1.0	3896	5.2	61.0	0.1	117.0	0.2	5558	7.4
1997	.	.	43.0	0.1	620.0	0.8	.	.	575.0	0.8	3778	5.0	57.0	0.1	28.0	0.0	5101	6.8
1998	4.0	0.0	33.0	0.0	247.0	0.3	.	.	668.0	0.9	2849	3.8	26.0	0.0	117.0	0.2	3944	5.3
1999	3.0	0.0	38.0	0.1	457.0	0.6	.	.	1025	1.4	3275	4.4	24.0	0.0	167.0	0.2	4989	6.7
2000	9.0	0.0	61.0	0.1	745.0	1.0	.	.	1336	1.8	4491	6.0	86.0	0.1	144.0	0.2	6872	9.2
2001	6.0	0.0	145.0	0.2	621.0	0.8	.	.	1138	1.5	5043	6.7	100.0	0.1	140.0	0.2	7193	9.6
2002	.	.	71.0	0.1	657.0	0.9	3.0	0.0	1179	1.6	4565	6.1	106.0	0.1	158.0	0.2	6739	9.0
2003	1.0	0.0	68.0	0.1	646.0	0.9	.	.	1379	1.8	4020	5.4	93.0	0.1	125.0	0.2	6332	8.4
All	106.0	0.1	722.0	1.0	6286	8.4	5.0	0.0	14549	19.4	50626	67.5	1151	1.5	1512	2.0	74957	100.0

. = No data in that cell.

Table 26. General linear modeling results of standardized CPUE of Yellowtial Snapper in Puerto Rico, 1983-2003, for the 'ntrips'=1 data set. Estimates and 95% Confidence Intervals Columns in Bold.

cyear	cynew	LSMEAN	STDERR	CVLSM	L95LSM	U95LSM	**CPUE**	**U95CI**	**L95CI**
2003	0	2.64787	0.02464	0.02465	2.59987	2.69648	14.1283	14.8274	13.4620
2002	1	2.82568	0.02510	0.02510	2.77681	2.87518	16.8777	17.7286	16.0677
2001	2	2.81667	0.02484	0.02484	2.76830	2.86567	16.7263	17.5608	15.9315
2000	3	2.90116	0.02517	0.02517	2.85216	2.95080	18.2011	19.1213	17.3251
1999	4	2.83825	0.02664	0.02665	2.78639	2.89082	17.0919	18.0081	16.2223
1998	5	2.87398	0.02739	0.02739	2.82067	2.92803	17.7139	18.6908	16.7881
1997	6	2.85057	0.02624	0.02624	2.79949	2.90234	17.3036	18.2167	16.4363
1996	7	2.70917	0.02595	0.02595	2.65865	2.76036	15.0218	15.8055	14.2770
1995	8	2.83039	0.02544	0.02544	2.78086	2.88057	16.9576	17.8244	16.1329
1994	9	2.83697	0.02846	0.02847	2.78159	2.89316	17.0709	18.0503	16.1447
1993	10	2.86215	0.02907	0.02907	2.80560	2.91955	17.5065	18.5329	16.5371
1992	11	2.66923	0.03267	0.03268	2.60573	2.73380	14.4365	15.3912	13.5411
1991	12	2.78362	0.03053	0.03054	2.72424	2.84393	16.1851	17.1832	15.2449
1990	13	2.67346	0.03628	0.03629	2.60301	2.74522	14.4995	15.5681	13.5043
1989	14	2.79514	0.03035	0.03036	2.73611	2.85509	16.3724	17.3760	15.4268
1988	15	2.88300	0.03081	0.03082	2.82309	2.94386	17.8764	18.9891	16.8288
1987	16	2.52830	0.16420	0.16532	2.21994	2.86362	12.7023	17.5249	9.2068
1986	17	2.83553	0.11779	0.11820	2.61160	3.07333	17.1580	21.6137	13.6209
1985	18	2.73925	0.05759	0.05764	2.62803	2.85378	15.5010	17.3533	13.8465
1984	19	3.97952	0.07071	0.07080	3.84343	4.12061	53.6253	61.5967	46.6855
1983	20	2.40850	0.03283	0.03284	2.34470	2.47338	11.1232	11.8625	10.4301

Table 27. General linear modeling results of standardized CPUE of Yellowtial Snapper in Puerto Rico, 1983-2003, for the 'ntrips'<=1 data set. Estimates and 95% Confidence Intervals Columns in Bold

cyear	cynew	LSMEAN	STDERR	CVLSM	L95LSM	U95LSM	**CPUE**	**U95CI**	**L95CI**
2003	0	2.60774	0.022879	0.022882	2.56316	2.65284	13.5719	14.1944	12.9767
2002	1	2.58510	0.022640	0.022643	2.54098	2.62973	13.2680	13.8700	12.6921
2001	2	2.59502	0.022454	0.022456	2.55126	2.63928	13.4002	14.0031	12.8233
2000	3	2.58763	0.022621	0.022624	2.54355	2.63222	13.3016	13.9046	12.7247
1999	4	2.50341	0.023748	0.023751	2.45715	2.55024	12.2276	12.8102	11.6715
1998	5	2.59747	0.024796	0.024800	2.54918	2.64638	13.4339	14.1029	12.7966
1997	6	2.55141	0.023676	0.023680	2.50529	2.59810	12.8288	13.4382	12.2471
1996	7	2.44701	0.023236	0.023240	2.40174	2.49282	11.5569	12.0954	11.0423
1995	8	2.57235	0.022872	0.022875	2.52778	2.61744	13.1000	13.7006	12.5257
1994	9	2.63046	0.025999	0.026004	2.57984	2.68175	13.8848	14.6107	13.1950
1993	10	2.56244	0.026285	0.026290	2.51127	2.61430	12.9719	13.6577	12.3205
1992	11	2.45347	0.029485	0.029491	2.39611	2.51170	11.6337	12.3258	10.9804
1991	12	2.52411	0.027530	0.027535	2.47053	2.57845	12.4845	13.1767	11.8287
1990	13	2.39348	0.032431	0.032440	2.33044	2.45757	10.9573	11.6764	10.2824
1989	14	2.63967	0.029048	0.029054	2.58315	2.69702	14.0144	14.8355	13.2388
1988	15	2.70831	0.029776	0.029782	2.65039	2.76711	15.0105	15.9126	14.1595
1987	16	2.34540	0.095672	0.095892	2.16246	2.53749	10.4853	12.6479	8.6925
1986	17	2.26836	0.053040	0.053078	2.16581	2.37373	9.6772	10.7374	8.7217
1985	18	2.14069	0.029709	0.029716	2.08291	2.19937	8.5091	9.0193	8.0278
1984	19	3.89153	0.071686	0.071778	3.75360	4.03461	49.1119	56.5206	42.6744
1983	20	2.37205	0.026349	0.026353	2.32076	2.42405	10.7231	11.2914	10.1834

Table 28. General linear modeling results of Standardized CPUE of Yellowtial Snapper in Puerto Rico, 1983-2003, for the 'ntrips'=all data set, excluding 'ntrips'=0 observations. Estimates and 95% Confidence Intervals Columns in Bold

cyear	cynew	LSMEAN	STDERR	CVLSM	L95LSM	U95LSM	**CPUE**	**U95CI**	**L95CI**
2003	0	2.60131	0.023156	0.023159	2.55620	2.64697	13.4851	14.1112	12.8867
2002	1	2.50911	0.022600	0.022603	2.46507	2.55367	12.2972	12.8541	11.7643
2001	2	2.51988	0.022455	0.022458	2.47612	2.56414	12.4302	12.9895	11.8950
2000	3	2.51191	0.022589	0.022591	2.46789	2.55644	12.3316	12.8898	11.7975
1999	4	2.36742	0.023576	0.023579	2.32149	2.41391	10.6728	11.1776	10.1909
1998	5	2.49605	0.024762	0.024766	2.44783	2.54489	12.1382	12.7419	11.5632
1997	6	2.41792	0.023570	0.023574	2.37200	2.46439	11.2256	11.7563	10.7188
1996	7	2.30126	0.023162	0.023165	2.25613	2.34693	9.9894	10.4534	9.5461
1995	8	2.41721	0.022792	0.022795	2.37279	2.46214	11.2174	11.7299	10.7273
1994	9	2.51523	0.026108	0.026113	2.46439	2.56674	12.3736	13.0233	11.7564
1993	10	2.49128	0.026556	0.026560	2.43959	2.54369	12.0810	12.7265	11.4683
1992	11	2.36317	0.029570	0.029577	2.30565	2.42156	10.6292	11.2634	10.0307
1991	12	2.41623	0.027454	0.027459	2.36280	2.47042	11.2078	11.8274	10.6207
1990	13	2.28787	0.032593	0.032601	2.22452	2.35229	9.8592	10.5096	9.2491
1989	14	2.55550	0.029381	0.029387	2.49835	2.61352	12.8833	13.6470	12.1624
1988	15	2.69824	0.030484	0.030492	2.63895	2.75845	14.8604	15.7754	13.9985
1987	16	2.18384	0.085692	0.085849	2.01956	2.35547	8.9130	10.5431	7.5350
1986	17	2.11164	0.048569	0.048597	2.01762	2.20801	8.2715	9.0976	7.5204
1985	18	2.04405	0.028906	0.028912	1.98782	2.10113	7.7251	8.1754	7.2996
1984	19	3.83741	0.074720	0.074824	3.69375	3.98665	46.5350	53.8744	40.1955
1983	20	2.34226	0.026582	0.026587	2.29052	2.39472	10.4084	10.9651	9.8800

Table 29. General linear modeling results of standardized CPUE of Yellowtial Snapper in Puerto Rico, 1983-2003, for the rod and reel fisheries. Estimates and 95% Confidence Intervals Columns in Bold

cyear	cynew	LSMEAN	STDERR	CVLSM	L95LSM	U95LSM	**CPUE**	**U95CI**	**L95CI**
2003	0	2.75557	0.02169	0.02169	2.71330	2.79831	15.7338	16.4169	15.0790
2002	1	2.66523	0.02042	0.02042	2.62541	2.70546	14.3742	14.9612	13.8103
2001	2	2.69304	0.02020	0.02021	2.65365	2.73285	14.7796	15.3766	14.2058
2000	3	2.73887	0.02065	0.02065	2.69860	2.77955	15.4727	16.1118	14.8590
1999	4	2.52833	0.02221	0.02221	2.48505	2.57210	12.5356	13.0932	12.0017
1998	5	2.68432	0.02351	0.02351	2.63851	2.73067	14.6522	15.3432	13.9924
1997	6	2.59100	0.02152	0.02153	2.54905	2.63342	13.3462	13.9213	12.7949
1996	7	2.45777	0.02125	0.02125	2.41634	2.49965	11.6814	12.1782	11.2048
1995	8	2.54845	0.02063	0.02063	2.50824	2.58909	12.7900	13.3177	12.2833
1994	9	2.56303	0.02597	0.02597	2.51247	2.61426	12.9795	13.6572	12.3354
1993	10	2.59363	0.02622	0.02623	2.54258	2.64537	13.3829	14.0887	12.7125
1992	11	2.43258	0.03023	0.03024	2.37378	2.49228	11.3934	12.0888	10.7380
1991	12	2.58820	0.02795	0.02795	2.53381	2.64336	13.3109	14.0604	12.6014
1990	13	2.42507	0.03504	0.03505	2.35701	2.49436	11.3100	12.1140	10.5594
1989	14	2.59098	0.03073	0.03074	2.53122	2.65169	13.3492	14.1780	12.5688
1988	15	2.65023	0.03285	0.03286	2.58638	2.71516	14.1649	15.1071	13.2816
1987	16	2.14177	0.12050	0.12093	1.91286	2.38521	8.5766	10.8613	6.7724
1986	17	2.10890	0.06592	0.06599	1.98188	2.24027	8.2571	9.3959	7.2564
1985	18	1.95835	0.03485	0.03486	1.89065	2.02725	7.0919	7.5932	6.6237
1984	19	3.65442	0.11632	0.11672	3.43319	3.88918	38.9074	48.8708	30.9753
1983	20	2.26551	0.03141	0.03142	2.20444	2.32757	9.6408	10.2530	9.0652

Table 29. General linear modeling results of standardized CPUE of Yellowtial Snapper in Puerto Rico, 1983-2003, for the pot fisheries. Estimates and 95% Confidence Intervals Columns in Bold

cyear	cynew	LSMEAN	STDERR	CVLSM	L95LSM	U95LSM	**CPUE**	**U95CI**	**L95CI**
2003	0	2.37783	0.03697	0.03698	2.30606	2.45096	10.7888	11.5995	10.0348
2002	1	2.19986	0.03724	0.03725	2.12757	2.27354	9.0300	9.7137	8.3945
2001	2	2.08300	0.03751	0.03752	2.01019	2.15722	8.0342	8.6471	7.4647
2000	3	1.99813	0.03695	0.03696	1.92639	2.07122	7.3803	7.9345	6.8647
1999	4	2.04672	0.03866	0.03868	1.97168	2.12325	7.7482	8.3582	7.1828
1998	5	1.92414	0.04334	0.04337	1.84013	2.01004	6.8557	7.4636	6.2973
1997	6	1.90856	0.04425	0.04427	1.82280	1.99627	6.7500	7.3616	6.1892
1996	7	1.90484	0.04034	0.04036	1.82658	1.98473	6.7238	7.2771	6.2126
1995	8	2.16021	0.03963	0.03965	2.08332	2.23867	8.6798	9.3808	8.0311
1994	9	2.49333	0.04812	0.04815	2.40018	2.58880	12.1155	13.3138	11.0252
1993	10	2.20800	0.05126	0.05129	2.10884	2.30978	9.1095	10.0723	8.2387
1992	11	2.32050	0.05822	0.05827	2.20809	2.43630	10.1981	11.4307	9.0983
1991	12	2.17172	0.04548	0.04550	2.08361	2.26189	8.7824	9.6012	8.0334
1990	13	2.31122	0.05651	0.05656	2.20205	2.42358	10.1028	11.2861	9.0436
1989	14	2.40959	0.05125	0.05129	2.31045	2.51136	11.1440	12.3217	10.0789
1988	15	2.76852	0.05222	0.05226	2.66753	2.87223	15.9567	17.6765	14.4043
1987	16	2.13167	0.11572	0.11611	1.91156	2.36517	8.4856	10.6458	6.7636
1986	17	2.06017	0.07489	0.07500	1.91619	2.20977	7.8694	9.1136	6.7950
1985	18	2.11603	0.04094	0.04095	2.03663	2.19710	8.3051	8.9989	7.6648
1984	19	3.91148	0.09324	0.09345	3.73307	4.09858	50.1904	60.2547	41.8071
1983	20	2.35680	0.03644	0.03645	2.28605	2.42887	10.5641	11.3461	9.8360

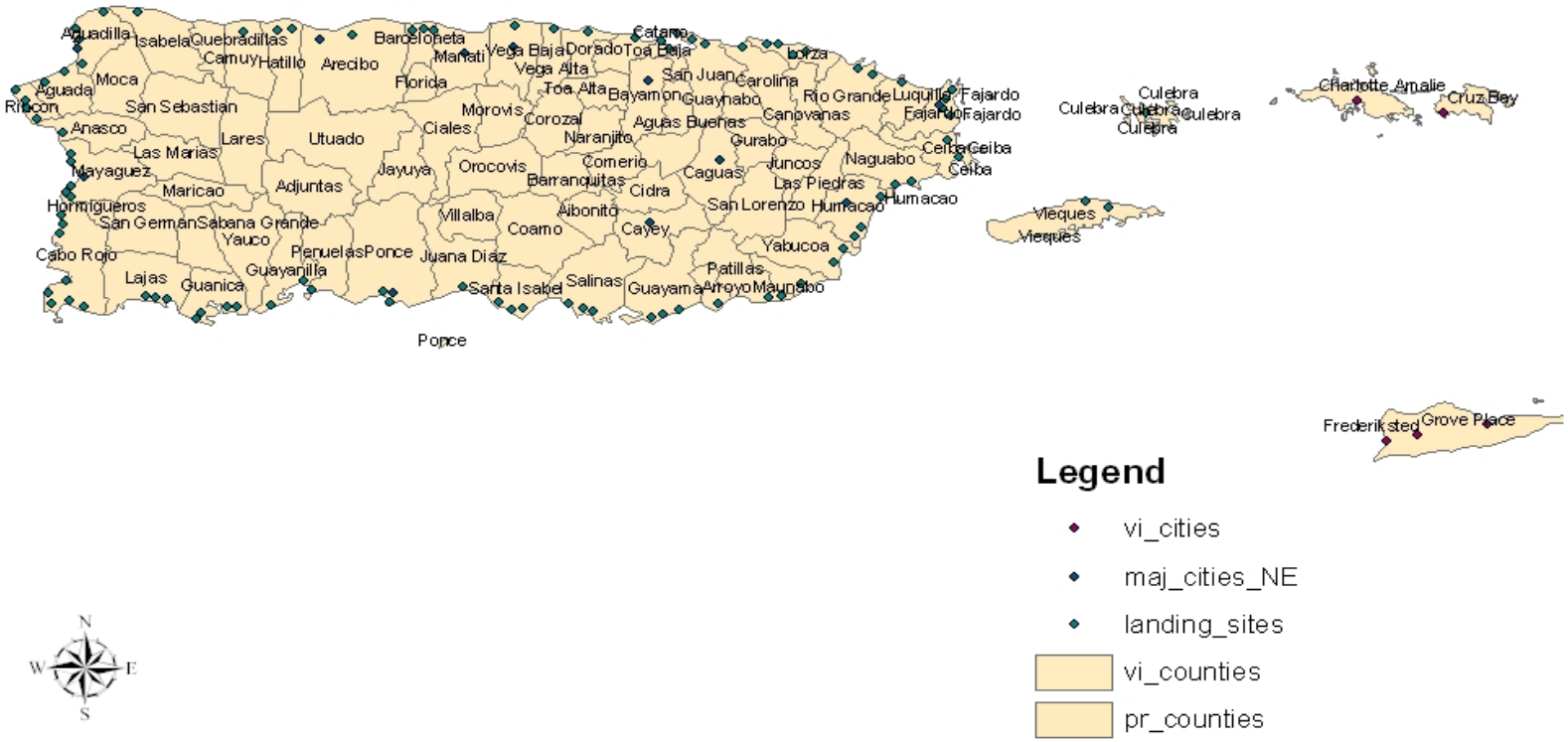


Figure 1. Puerto Rico fishing center locations used by the PR DNER, CSP, FSP in data recording. [Landing site location GIS shape file, compliments of Holly Stone, NMFS, SEFSC, Economics Division)

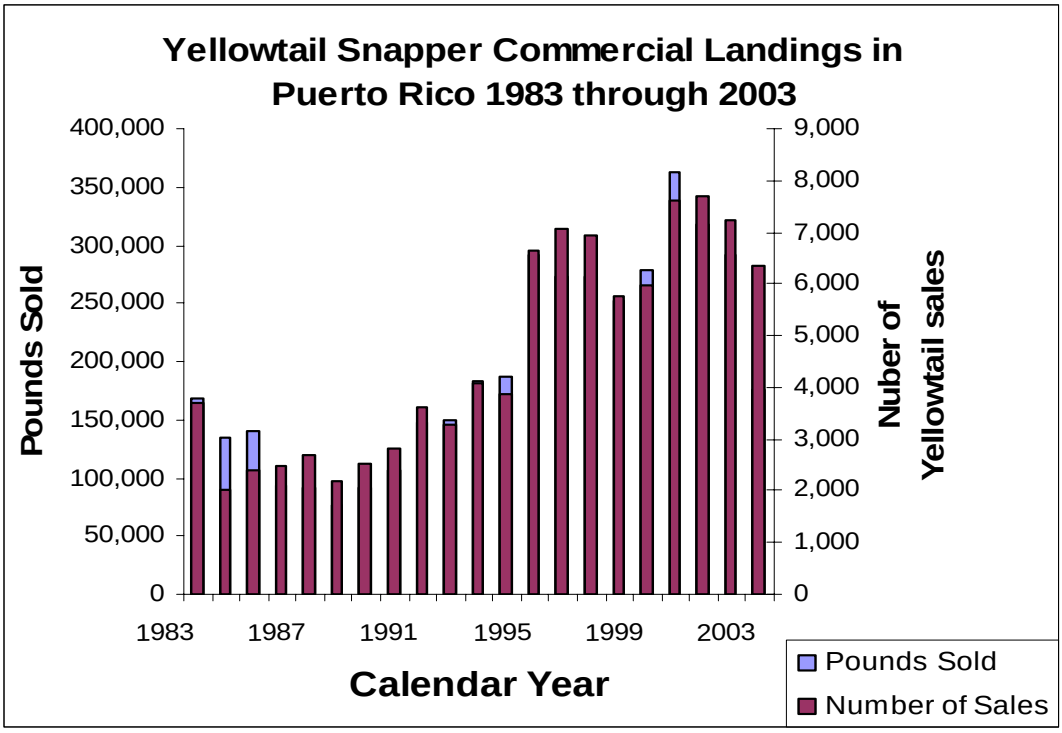


Figure 2a. Total Pounds of Yellowtail snapper sold in Puerto Rico, 1983 through 2003.

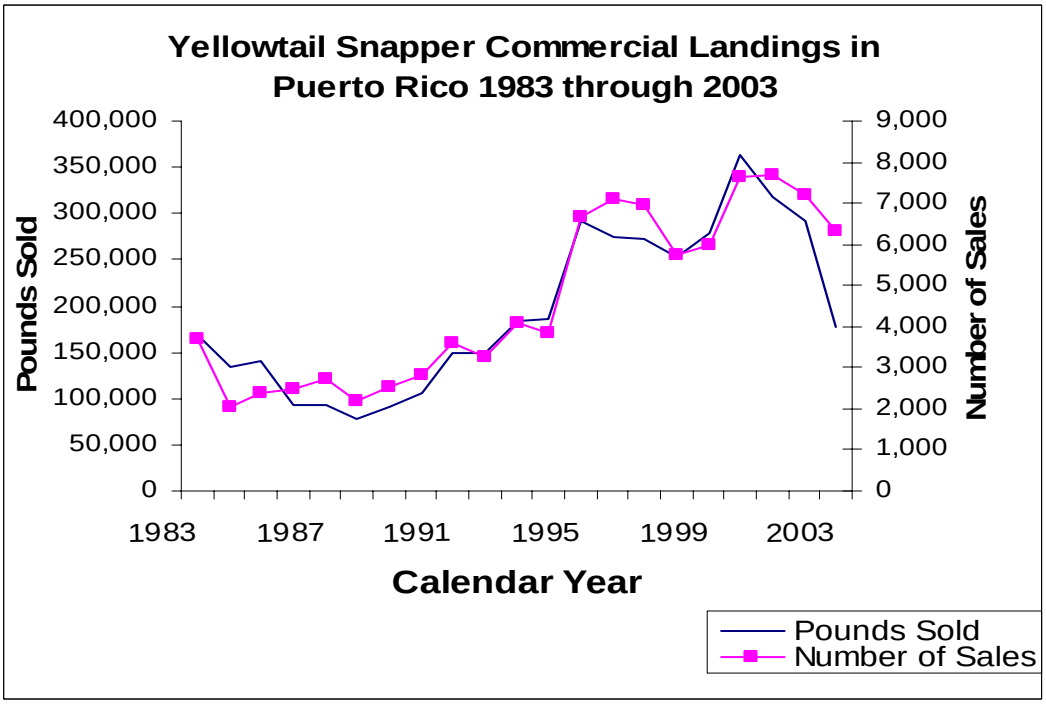


Figure 2b. Pounds of Yellowtail snapper sold in Puerto Rico, 1983 through 2003.

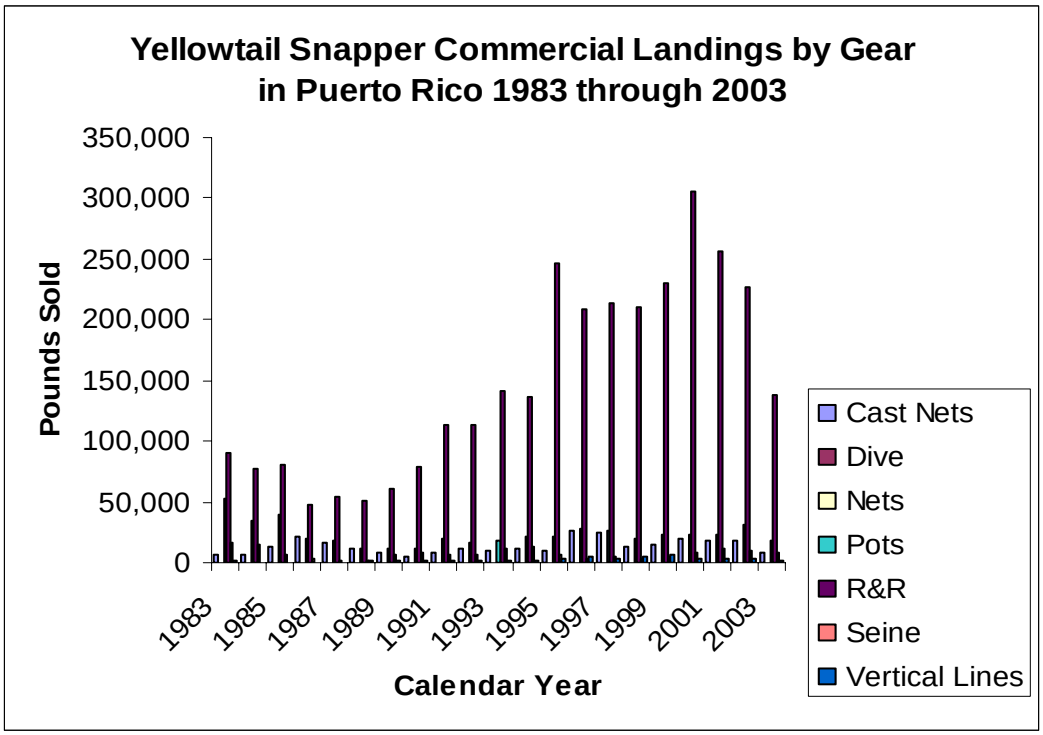


Figure 3a. Composition of commercial landings of yellowtail snapper in Puerto Rico by gear from 1983- 2003.

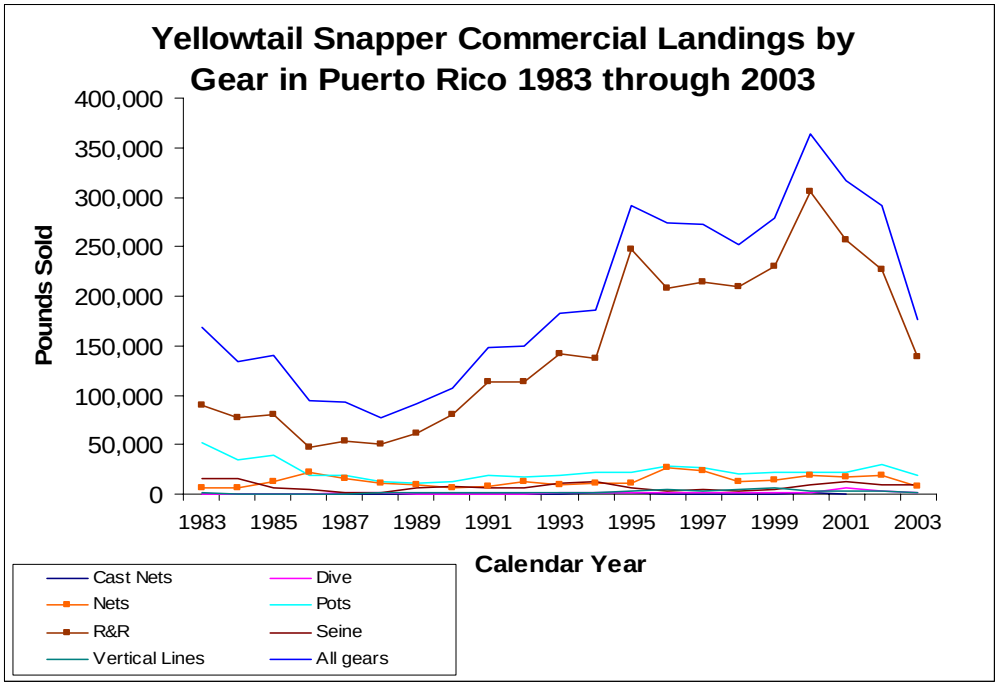


Figure 3b. Composition of commercial landings of yellowtail snapper in Puerto Rico by gear from 1983-2003.

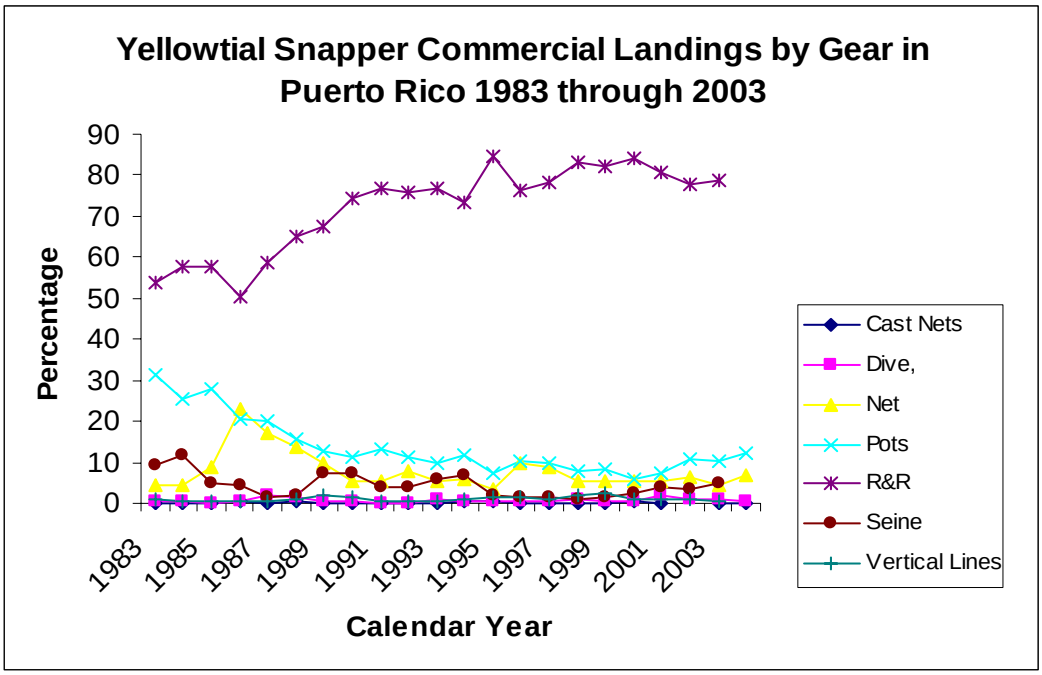


Figure 3c. Percentage compostion commercial landings of yellowtail snapper in Puerto Rico by gear category from 1983 through 2003.

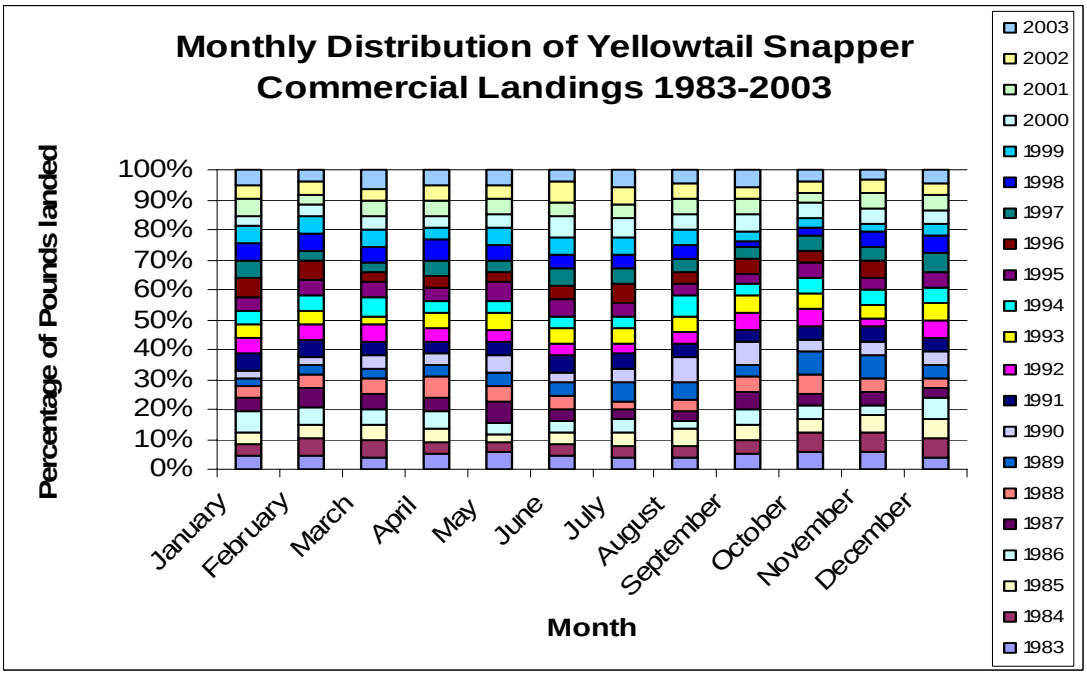


Figure 4a. Distribution of commercial yellowtail snapper in Puerto Rico by month from 1983-2003.

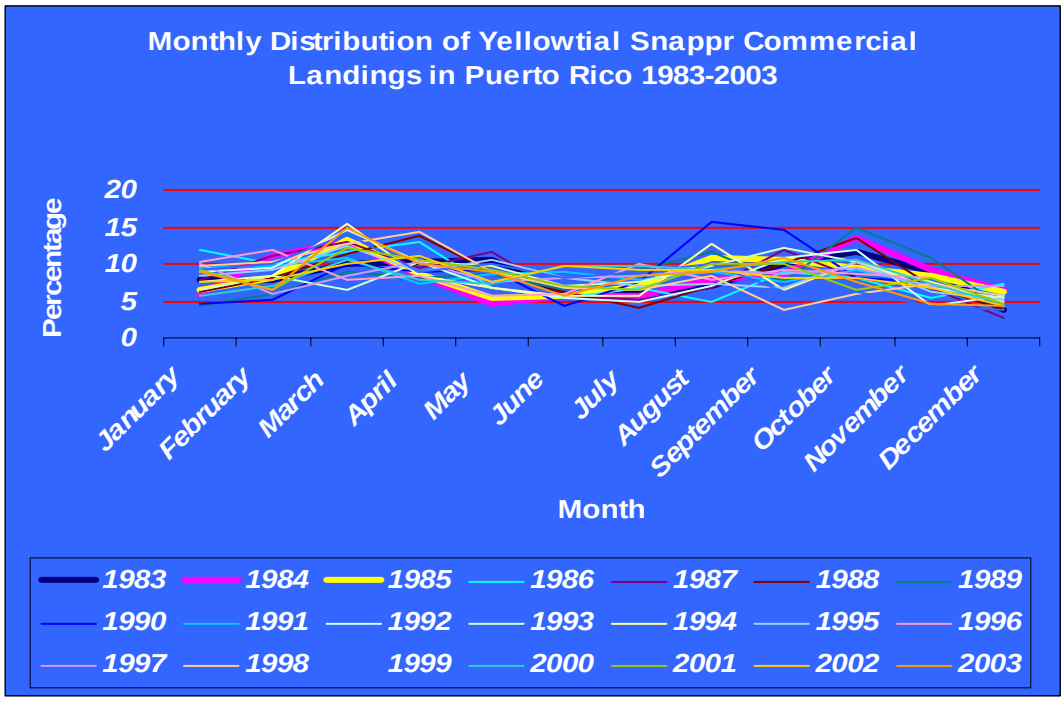


Figure 4b. Percentage distribution of commercial yellowtail snapper in Puerto Rico by month from 1983-2003.

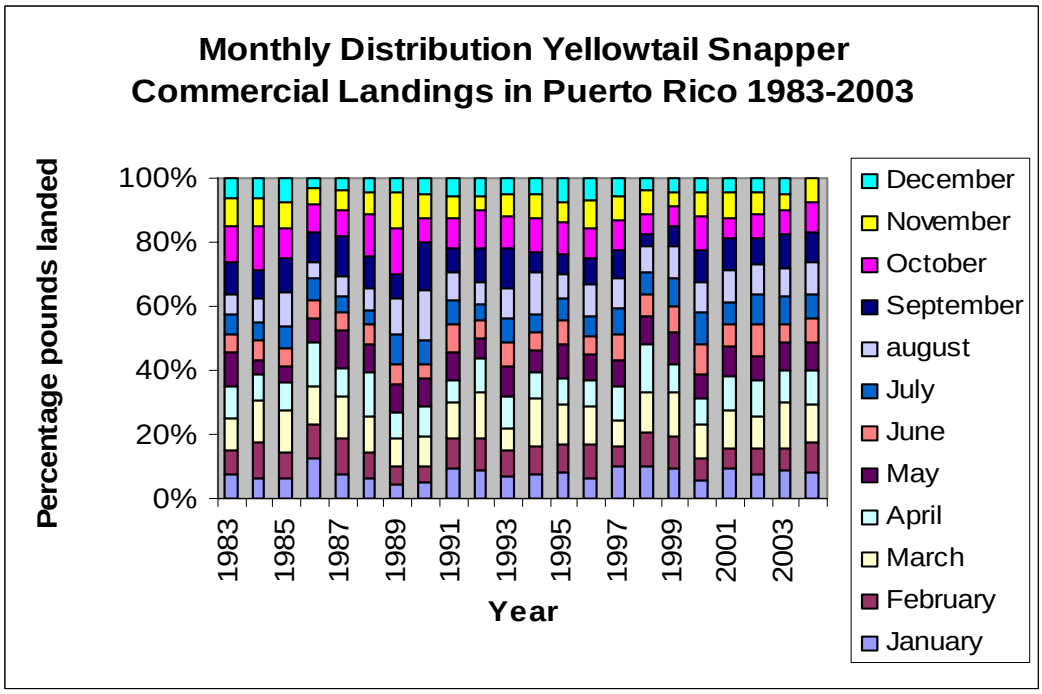


Figure 4c. Distribution of commercial yellowtail snapper in Puerto Rico by month from 1983-2003.

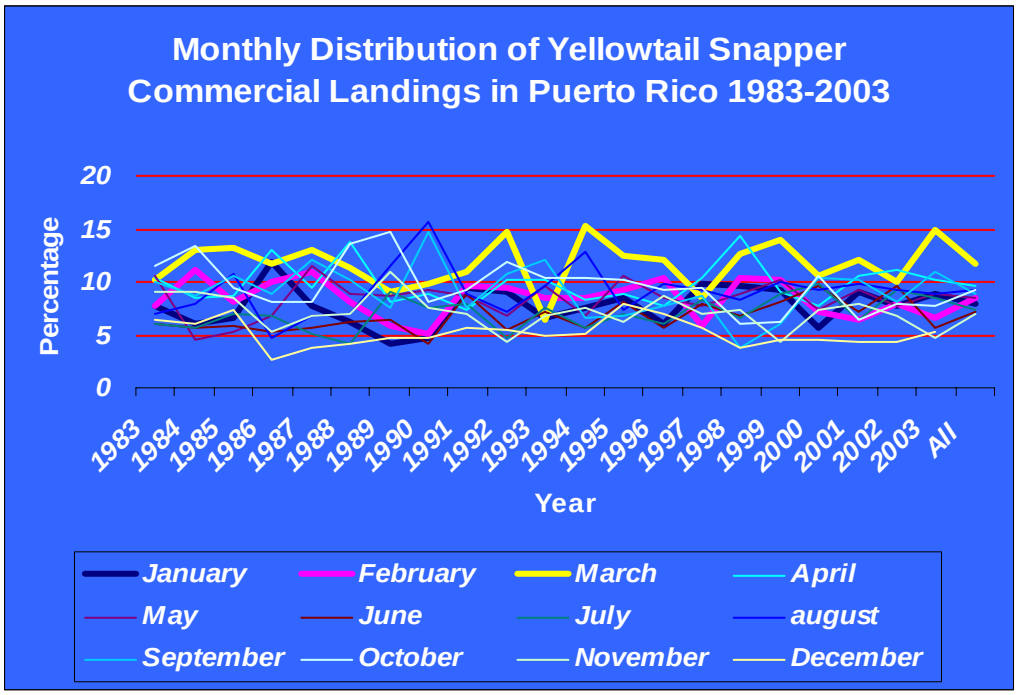


Figure 4d. Percentage distribution of commercial yellowtail snapper in Puerto Rico by month from 1983-2003

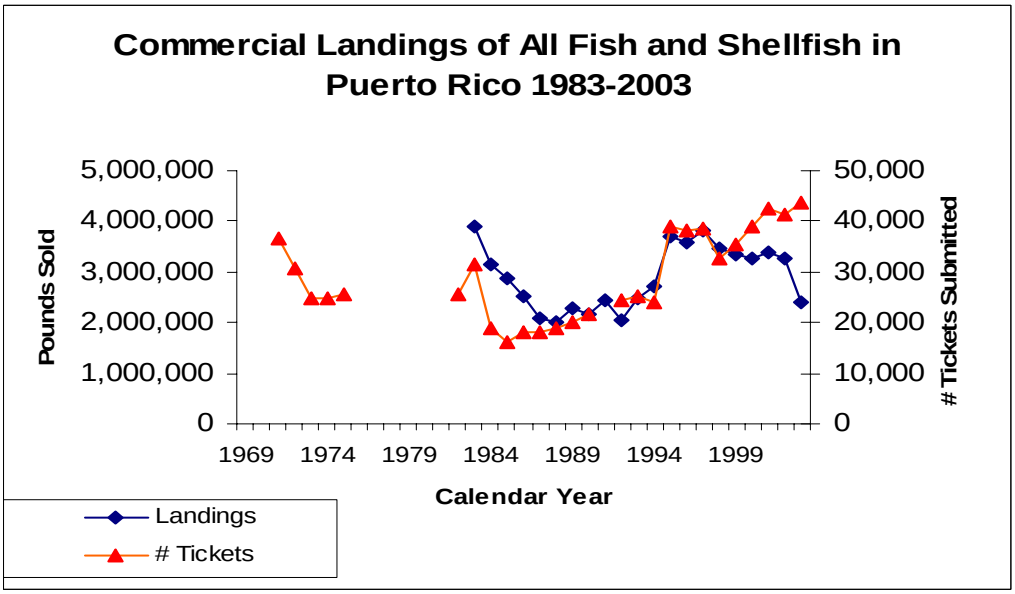


Figure 5a. Commercial landings of all fish and shellfish and number of fisher sales in Puerto Rico from 1983-2003.

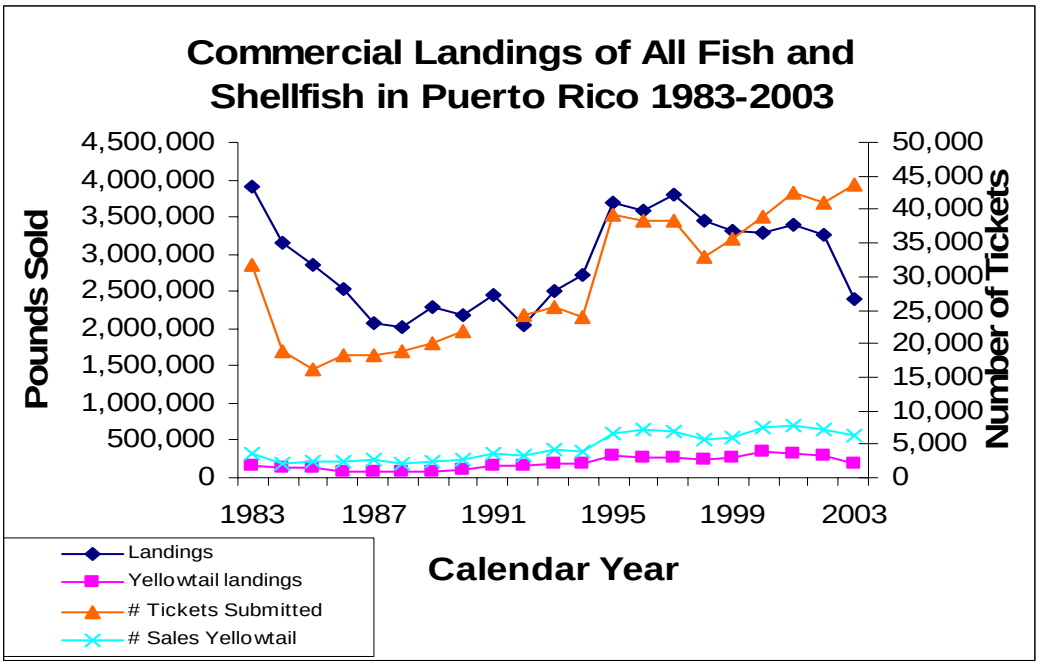


Figure 5b. Commercial landings of all fish and shellfish in Puerto Rico and yellowtail snapper landings from 1983-2003.

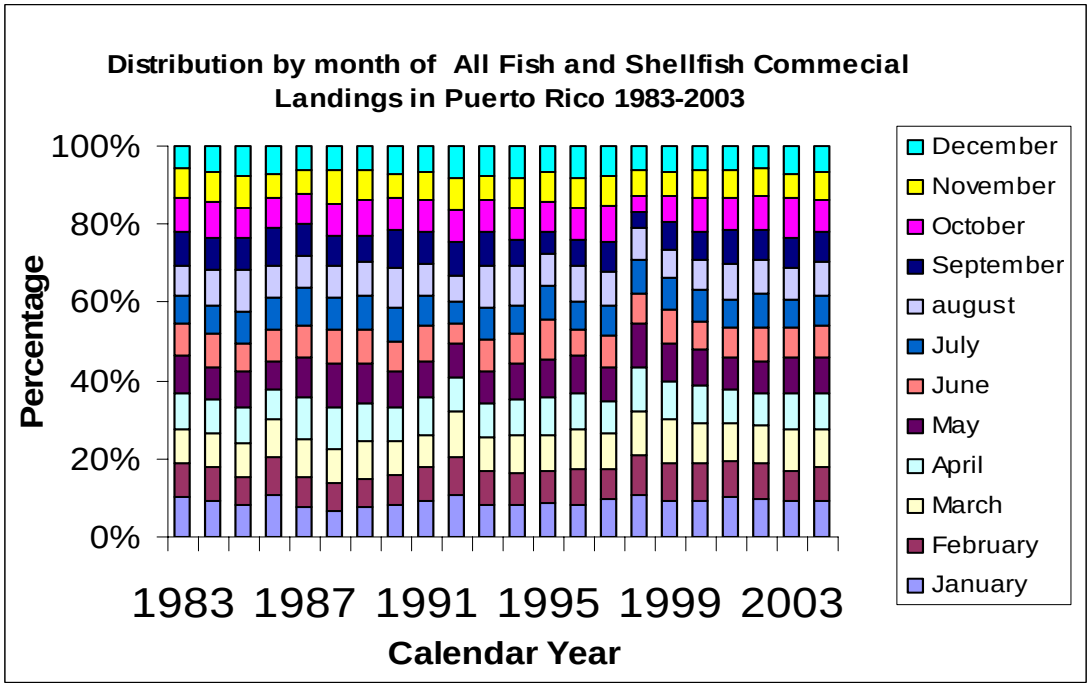


Figure 6a. Percentage distribution of all fish and shellfish commercial landings in Puerto Rico by month, 1983-2003.

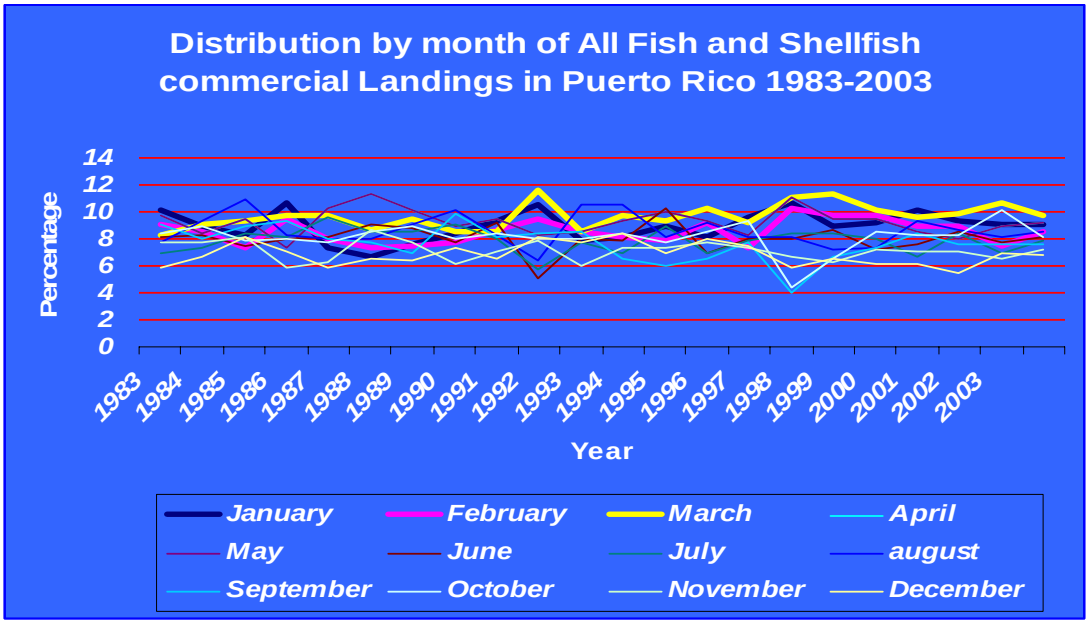


Figure 6b. Percentage distribution of all fish and shellfish commercial landings in Puerto Rico by month, 1983-2003.

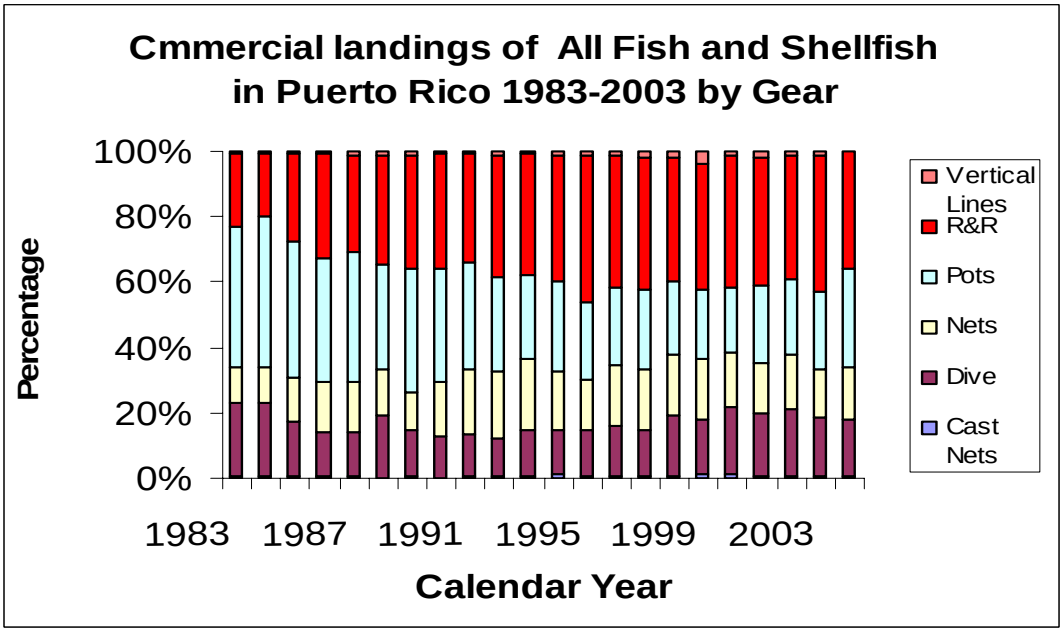


Figure 7. Percentage distribution of all fish and shellfish commercial landings in Puerto Rico by month 1983-2003.

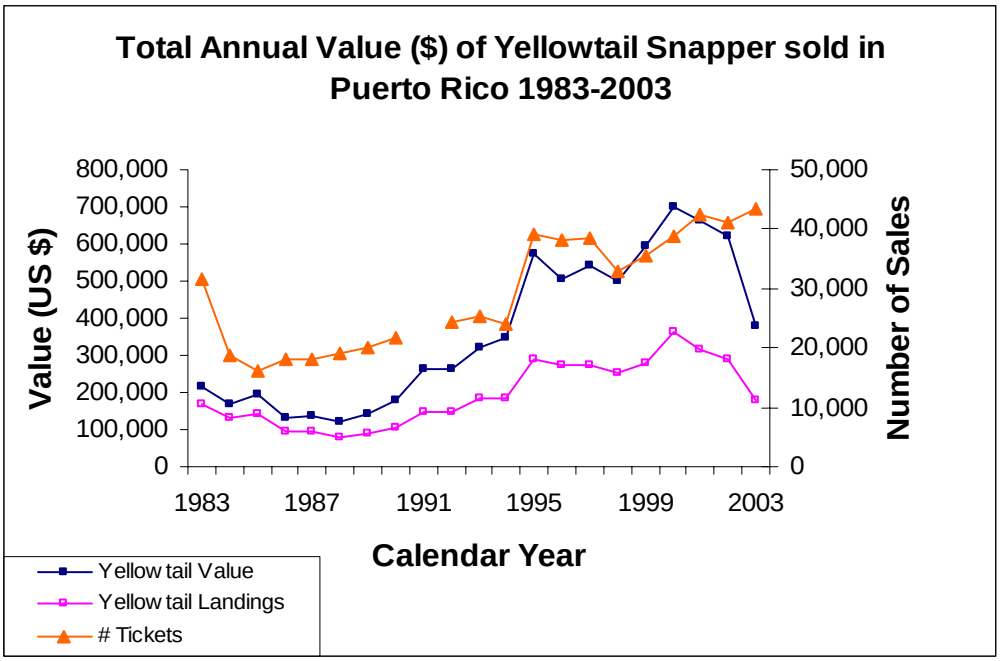


Figure 8. Total Annual landings and value yellowtail snapper commercial landings in Puerto Rico from 1983-2003 and number of fisher sales.

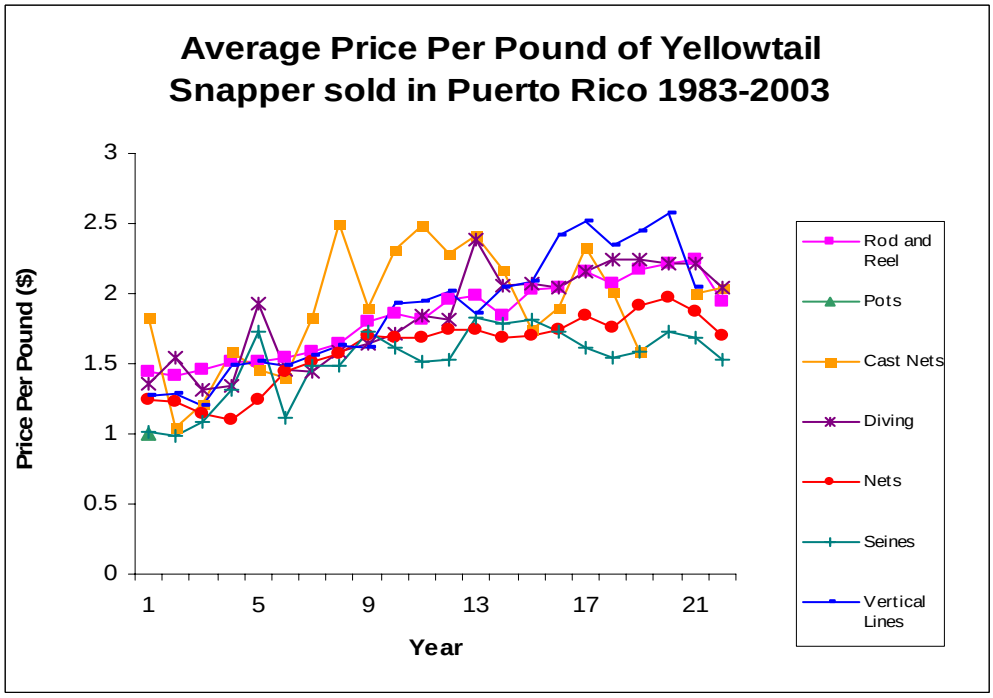


Figure 9. Average price per pound of yellowtail snapper sold in Puerto Rico by gear and year from 1983-2003.

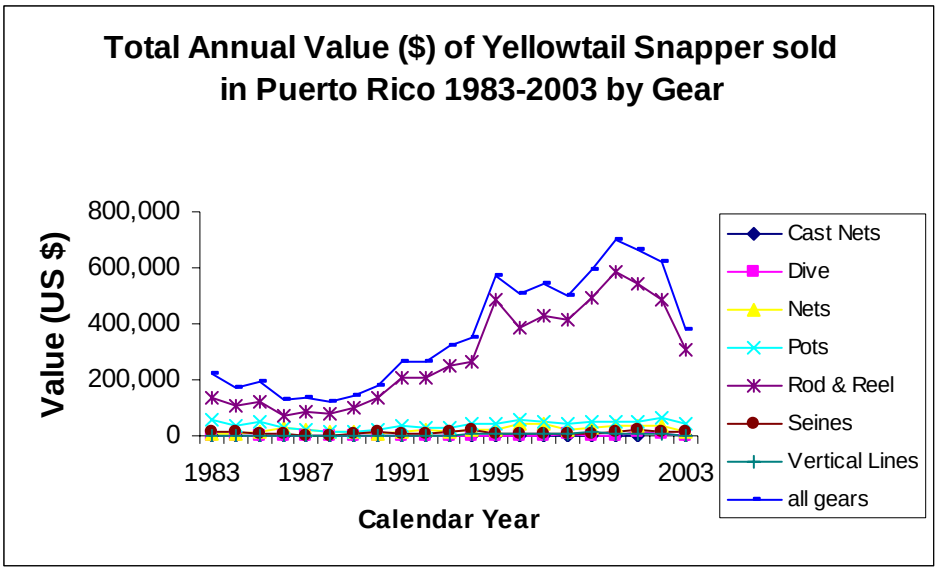


Figure 10a. Annual value of the commercial yellowtail snapper landings in Puerto Rico by year, 1983-2003 by gear.

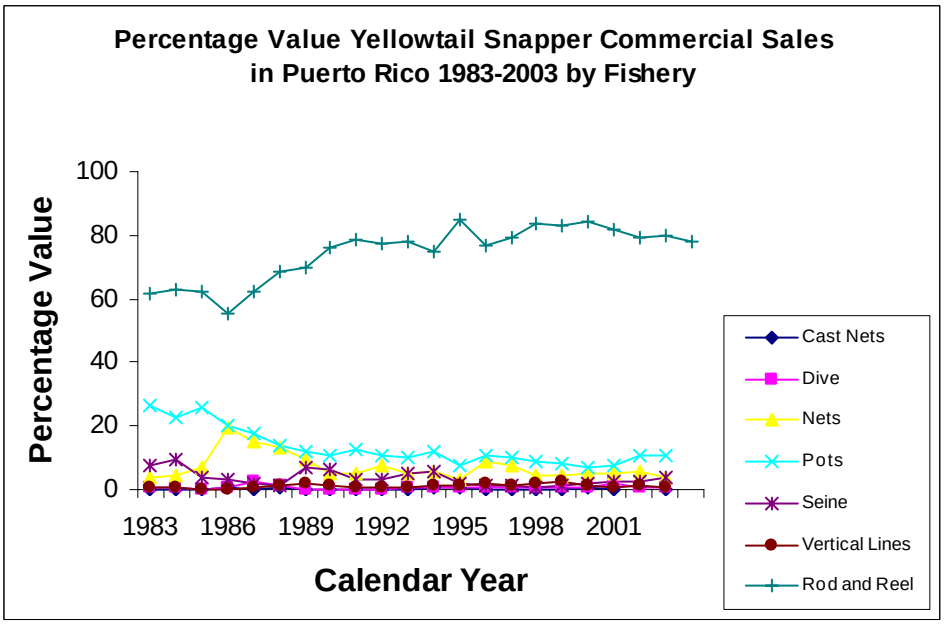


Figure 10b. Annual percentage value of the commercial yellowtail snapper landings in Puerto Rico by year, 1983-2003 by gear.

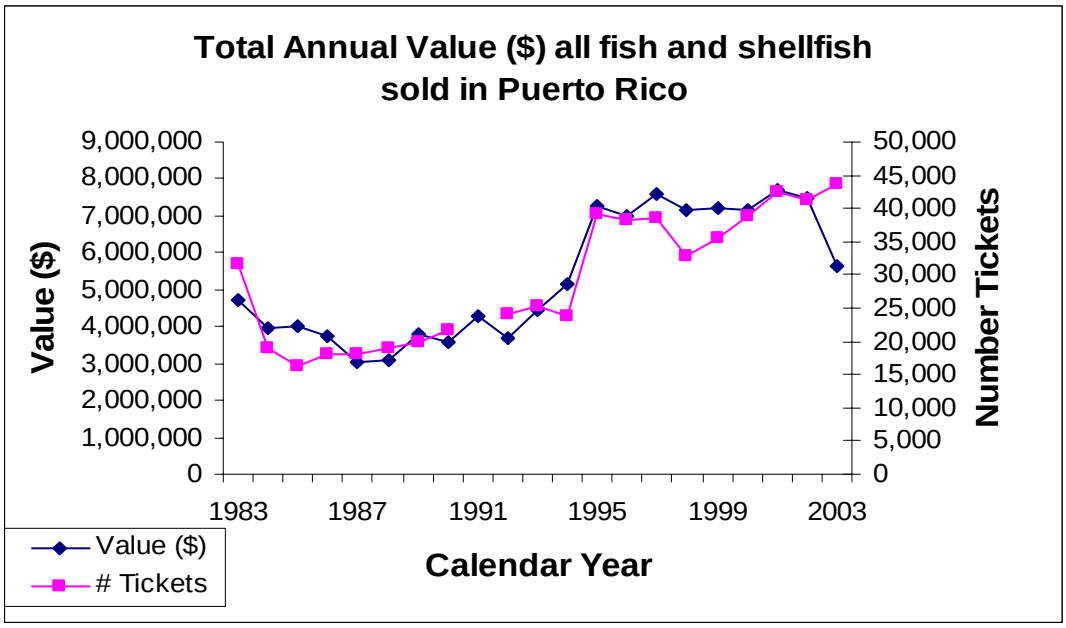


Figure 11. Annual distribution of commercial landings value of all fish and shellfish sold in Puerto Rico from 1983-2003.

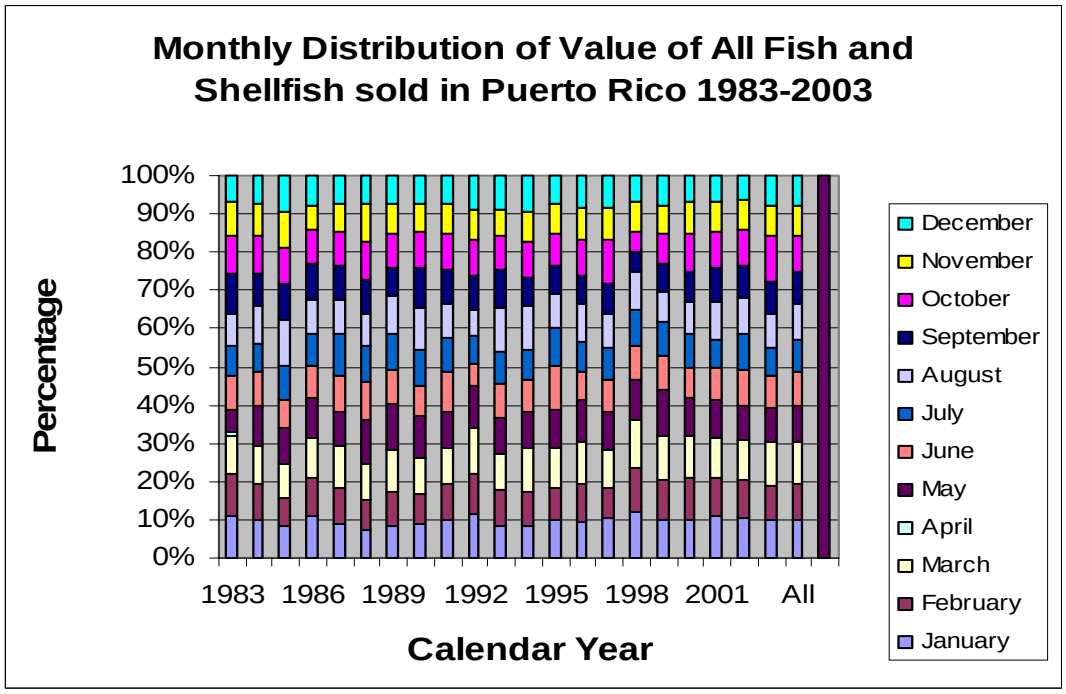


Figure 12a. Distribution of commercial landings value of all fish and shellfish sold in Puerto Rico from 1983-2003 by month.

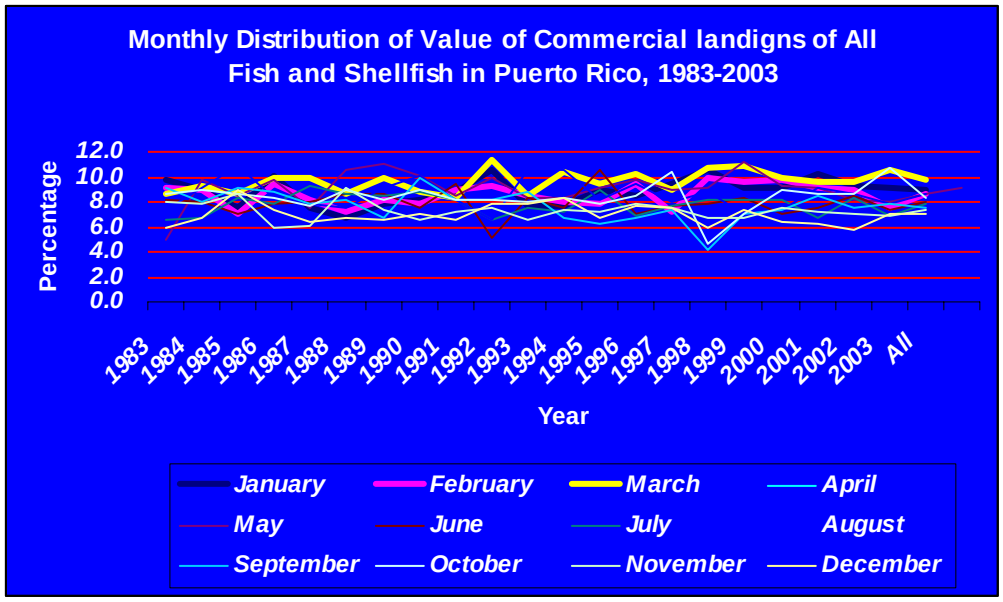


Figure 12b. Distribution of commercial landings value of all fish and shellfish sold in Puerto Rico from 1983-2003 by month.

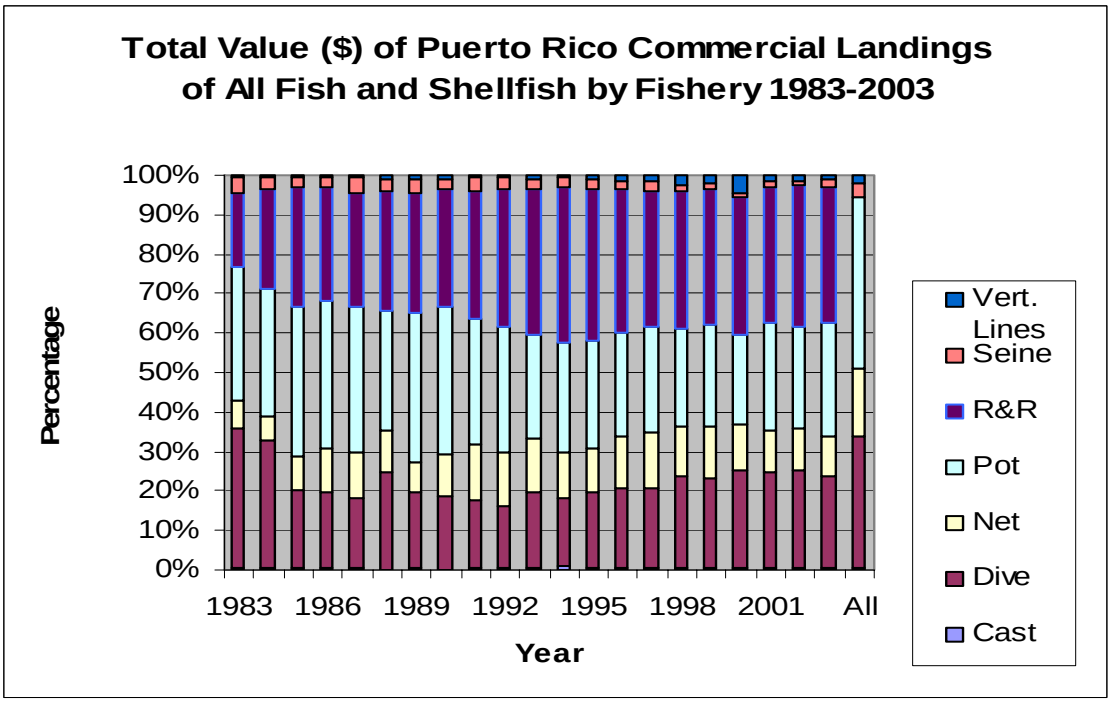


Figure 13a. Distribution of commercial landings value of all fish and shellfish sold in Puerto Rico from 1983-2003 by gear category.

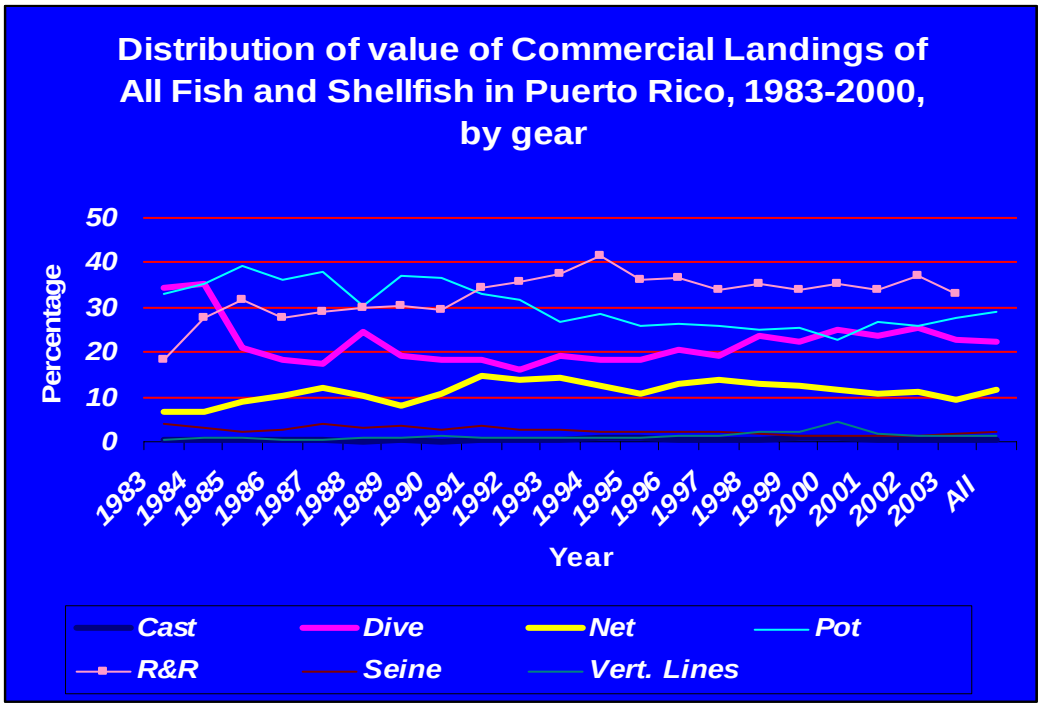


Figure 13b. Percentage distribution of commercial landings value of all fish and shellfish sold in Puerto Rico from 1983-2003 by gear category.

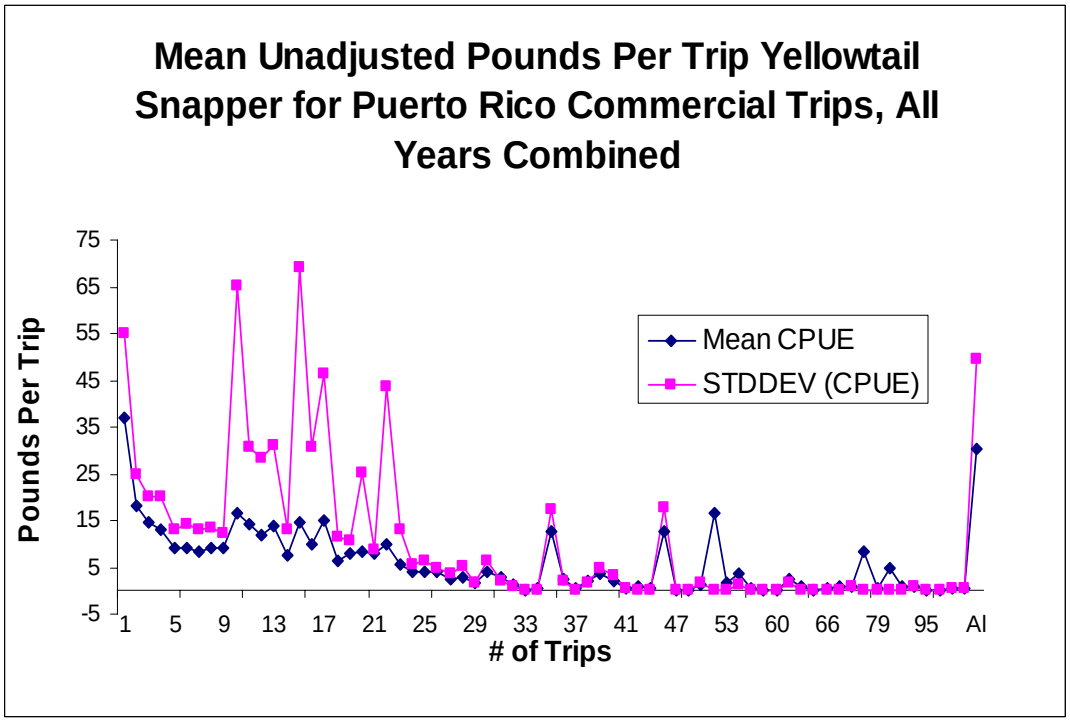


Figure 14. Mean CPUE and Standard deviation of CPUE for yellowtail snapper for commercial sales in Puerto Rico, 1983-2003..

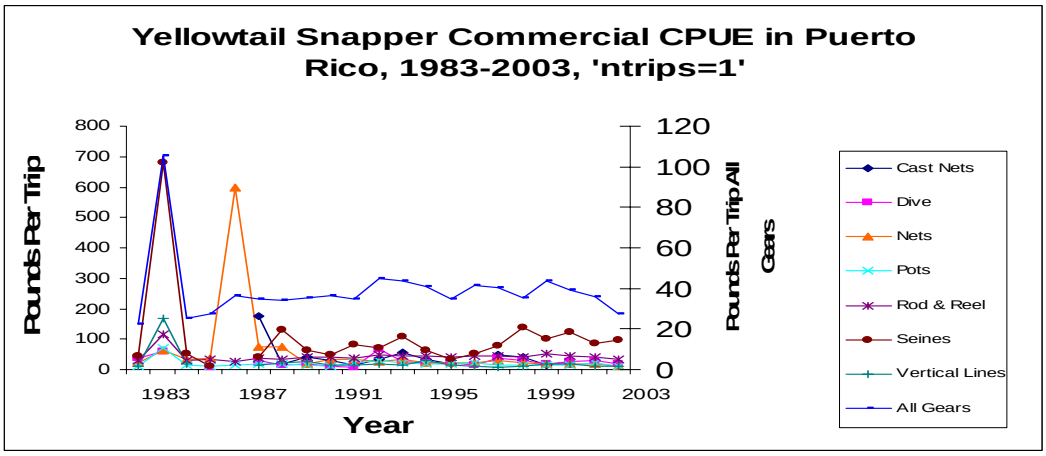


Figure 15a. Yellowtail Snapper Commercial CPUE for 'ntrips'=1 data variable, 1983-2003, by gear and year.

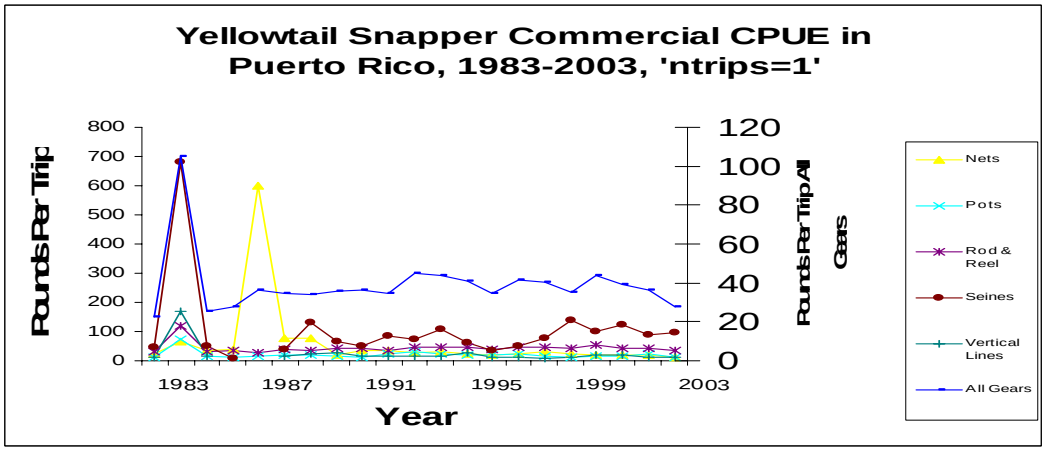


Figure 15b. Yellowtail Snapper Commercial CPUE for 'ntrips'=1 data variable, 983-2003, by gear and year for all the primary major and minor gears.

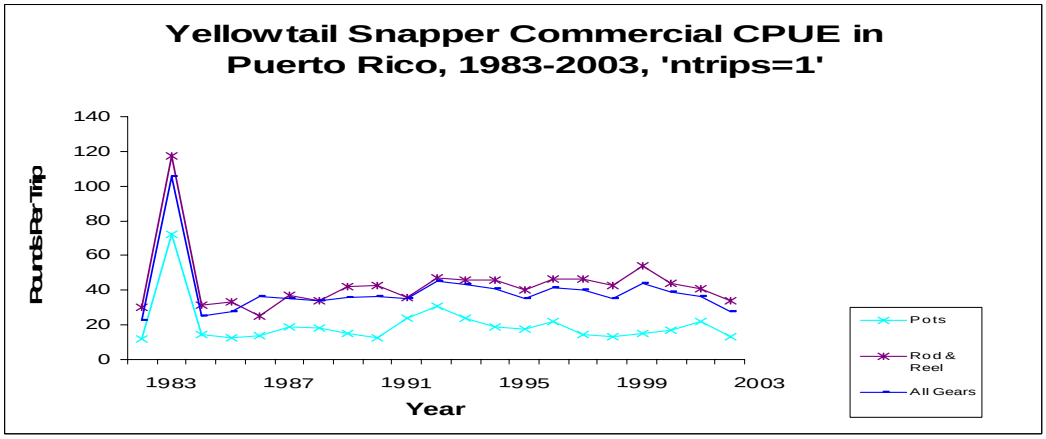


Figure 15c. Yellowtail Snapper Commercial CPUE for 'ntrips'=1 data variable, 1983-2003, by gear and year, for the two major gears used to capture yellowtail snapper in Puerto Rico.

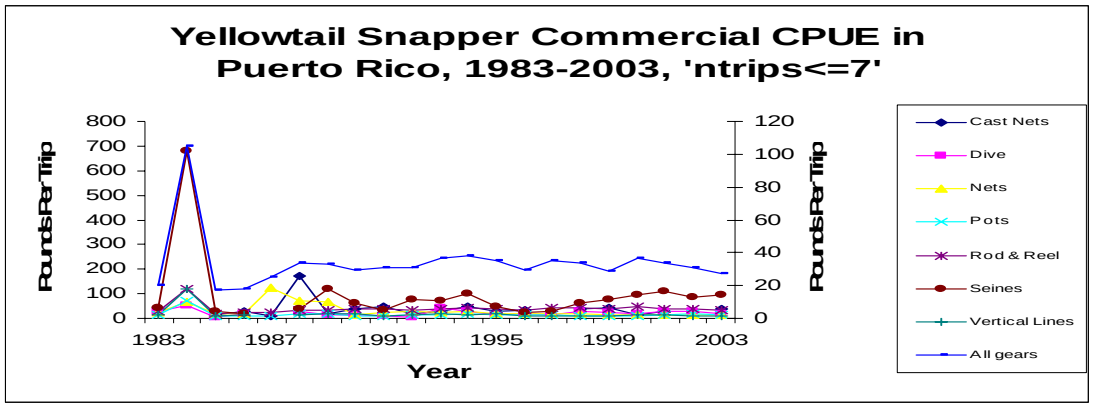


Figure 16a. Yellowtail Snapper Commercial CPUE for 'ntrips'<=7 data variable, 1983-2003, by year for all gears.

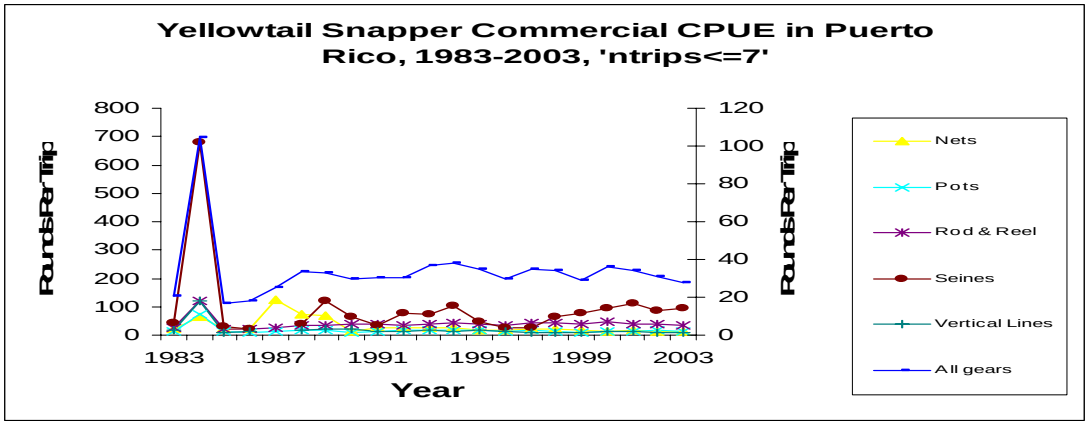


Figure 16b. Yellowtail Snapper Commercial CPUE for 'ntrips'<=7 data variable, 1983-2003, by gear and year for all the primary major and minor gears.

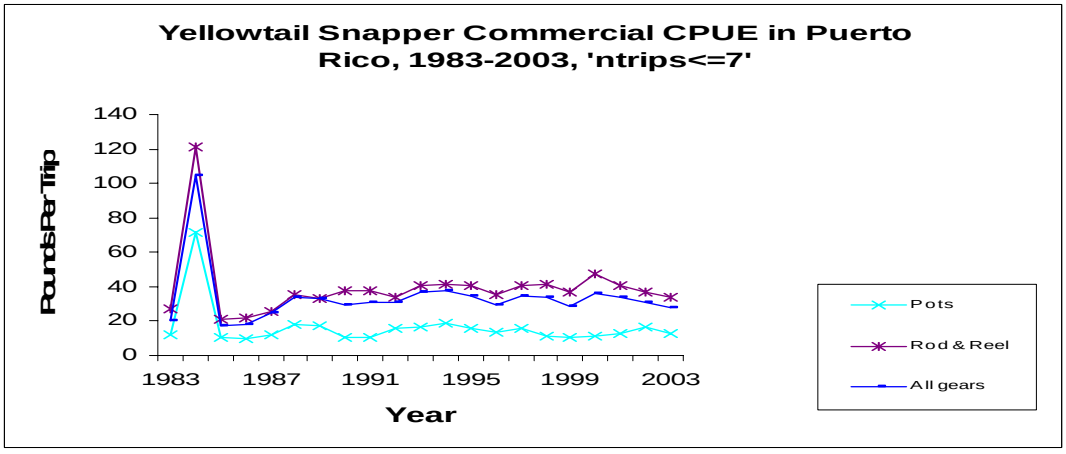


Figure 16c. Yellowtail Snapper Commercial CPUE for 'ntrips'<=7 data variable, 1983-2003, by gear and year for the two major gears used to capture yellowtail snapper

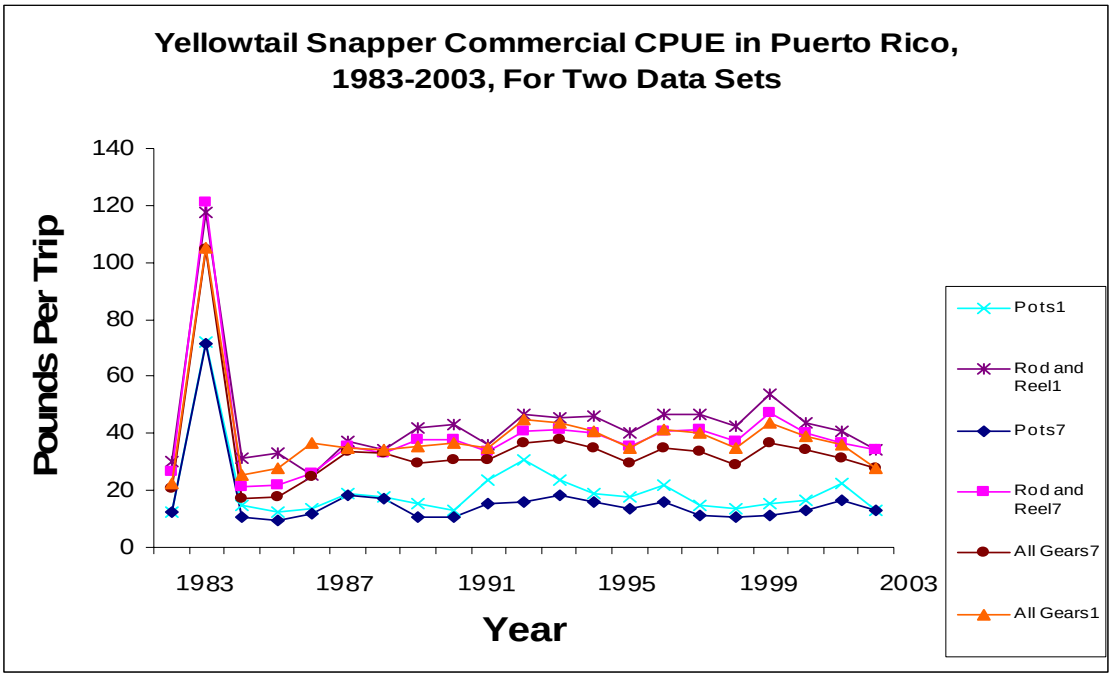


Figure 17. Yellowtail Snapper commercial CPUE in Puerto Rico, 1983-2003, for rod and reel and pot gear for two data sets.

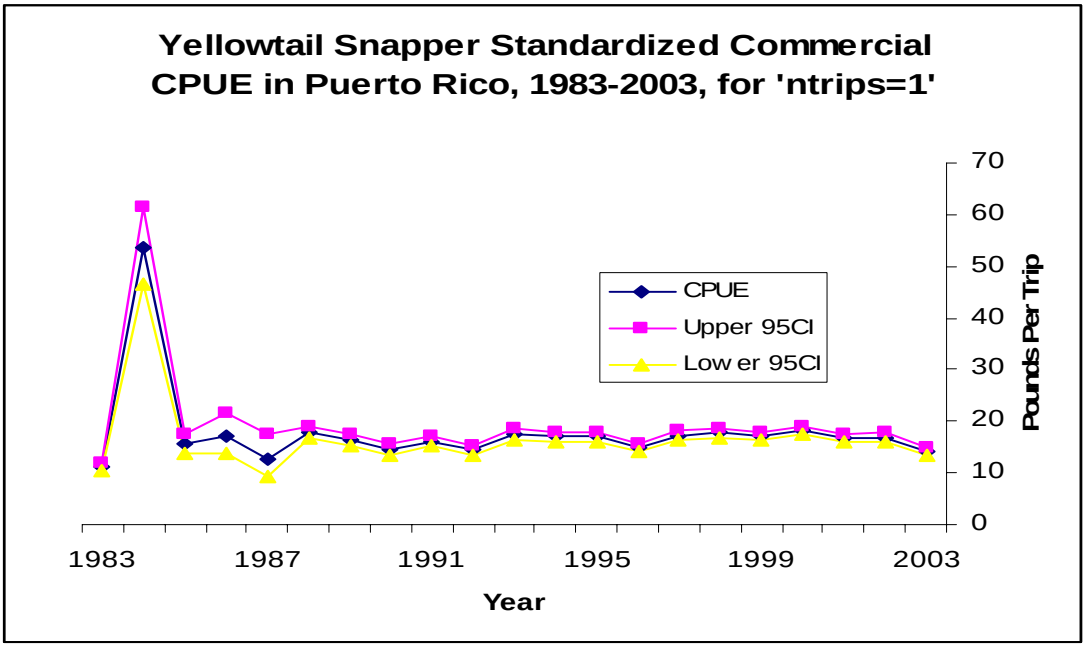


Figure 18a. Standardized commercial CPUE of yellowtail snapper in Puerto Rico, 1983-2003, for observations recorded with the 'ntrip' data variable=1.

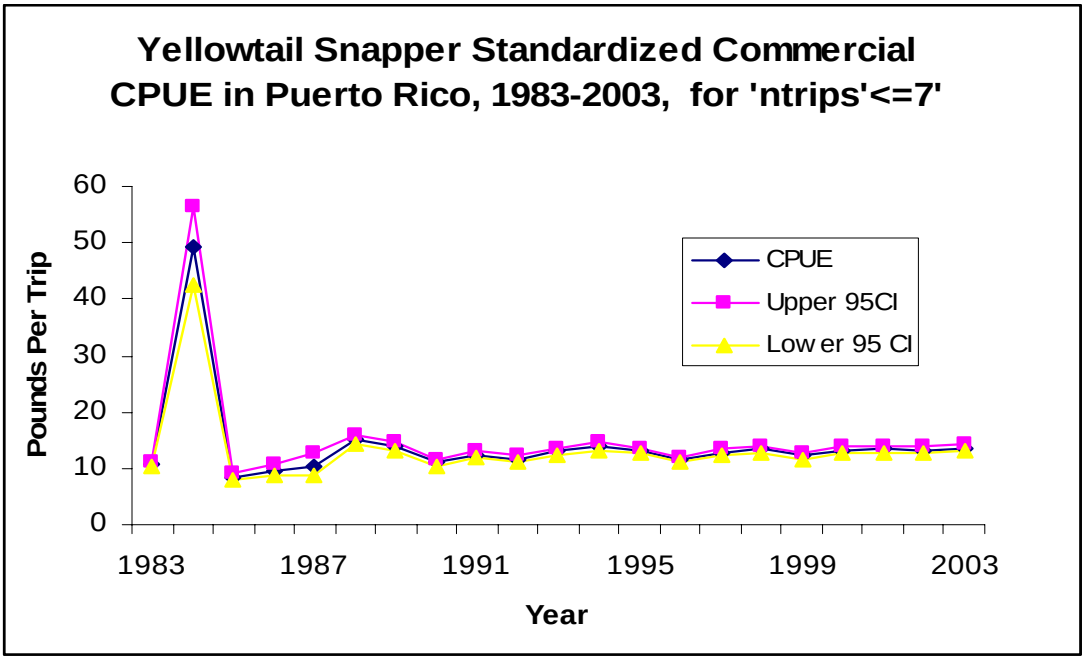


Figure 18b. Standardized commercial CPUE of yellowtail snapper in Puerto Rico, 1983-2003, for observations recorded with the 'ntrip' data variable<=7..

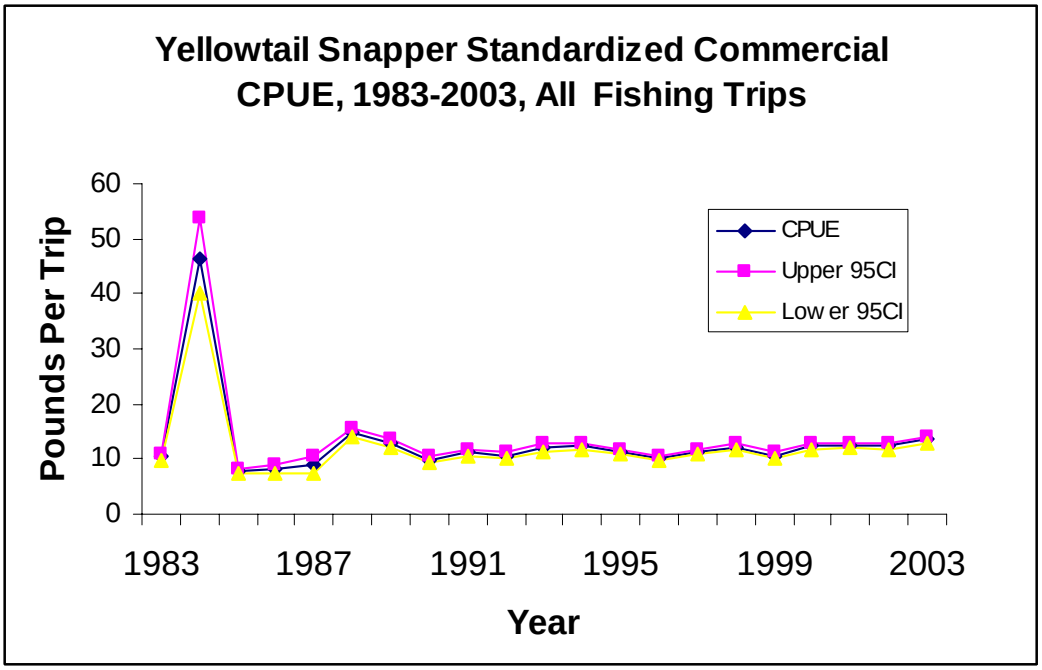


Figure 18c. Standardized commercial CPUE of yellowtail snapper in Puerto Rico, 1983-2003, for all fishing trips.

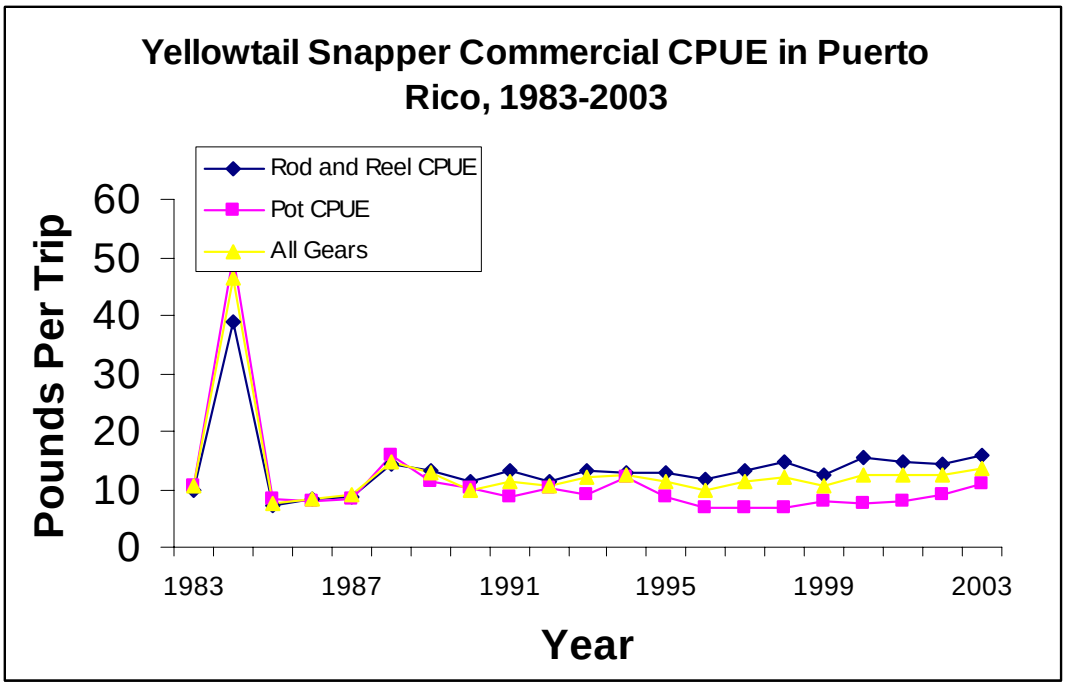
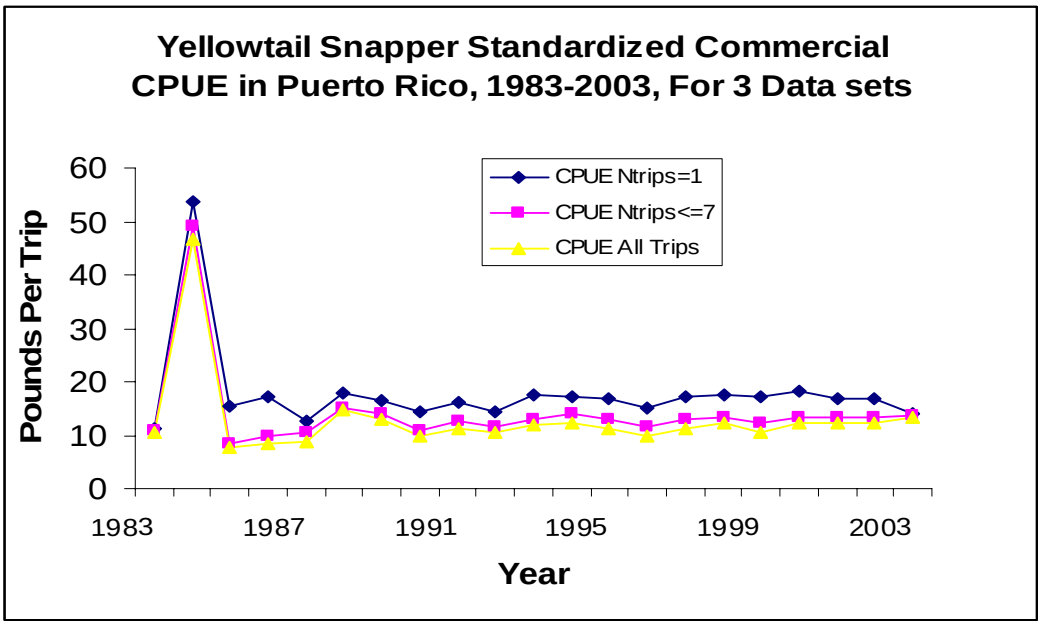


Figure 18d. Standardized commercial CPUE of yellowtail snapper in Puerto Rico, 1983-2003 from 3 data



.

Figure 18e. Standardized commercial CPIUE of yellowtail snapper in Puerto Rico, 1983-2003, for rod and reel, pot and all gears.