

Status of NOAA Fisheries Commercial Landings
And Bio-Statistical Data
For
Puerto Rico
1983-Present

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1. Commercial Landings Data

DATA FORMATS.

The Southeast Fisheries Science Center of NOAA Fisheries (SEFSC-NOAA) currently has computerized data from 1983-2003. Data are arranged by landing date, fisherman id, fishing center, gear, gear quantity, species, pounds landed, price per pound, number of trips, hours fished. Lately fields have been added for depth in fathoms (minimum and maximum), distance from shore (<10 miles, >10 miles), area fished, and trip ticket number.

Data are sent to SEFSC-NOAA in two formats. One is an ASCII text file output by the Puerto Rico PC Data Entry Program for load to the Accumulated Landings System (ALS) table ALS.ALS_LANDINGS_PUERTO_RICO. The ALS set of tables is also known as the 'General Canvass Data Set'. These data are landings only and do not include records for any trips and/or fishermen without landings. The load converts Puerto Rico species and gear codes to a NOAA format while maintaining the original codes in the record. Once loaded, these data are in a format compatible for summarization and inclusion with the mainland data from the NOAA Southeast Region (North Carolina – Texas) which are kept in a separate ALS table.

DATA SUMMARIES.

Appendix A contains tables and charts contain a summary of pounds landed and record counts for the years 1983-2003 for yellowtail snapper, spiny lobster, and total landings.

DATA CAVEATS.

- 1)The PR ID code contains locality information (Fishing Center) in first 3 digits for years from 1983-1997. After this number appears to be independent of locality.
- 2)Vessel information not present in data.
- 3)Recent gear coding error was discovered and corrected. PR gear 104 had been coded as NMFS gear code 676 for long-line gear. The proper code is 610 hand-line. Data are now corrected. The PR gear code of 104 was unchanged in the data. This error had occurred on load to NOAA-SE master table.
- 4)No validations are done on units of gear at the raw data level.
- 5)A program in the entry system will fill in fields from previous records if the field is left blank. This causes problems with the fishing hours and number of trips fields. In order to prevent a fill in of a blank field a 'K' is entered in the field by PR-DNR. These must later be nulled out prior to load to system. For help in defining trips the Trip Ticket Number has been submitted since 2003 by PR-DNR.
- 6)Species codes are more specific in the PR 'Erdman Code' format than in the NOAA code format. Currently there are 168 distinct NOAA species codes in the data and 324 distinct PR Codes. Much better cross-referencing was achieved in the year 2000 when the look up table for the master file load was updated. NOAA coding had been very general before then with NOAA code '5260' (Finfish Unclassified) allocated to many species.
- 7)Pounds in the NOAA data set are rounded on load to master table and appear higher across the board than the PR data in the *.dbf files since the *.5 decimals all round up. See appendix for detail.

DATA CAVEATS (cont'd)

8) Values are sometimes missing in the data as a result of a price not being attached. The following are lists for yellowtail snapper, spiny lobster, and total landings where no values were present.

Yellowtail Snapper

YEAR	POUNDS	RECORDS
1986	2	1
1987	148	5
1990	0	1
1992	2	1
1995	8	1
1996	341	5
1997	10	1
1998	3261	5
1999	22	2
2000	50	1
2002	3	1

Spiny Lobster

YEAR	POUNDS	RECORDS
2001	358	4
2002	281	6
2003	285	3

Total Landings

YEAR	POUNDS	RECORDS
1983	7	7
1984	5	5
1985	7	6
1986	15	7
1987	6645	99
1988	286	32
1989	1228	55
1990	262	26
1991	1281	66
1992	2092	55
1993	2818	42
1994	1282	57
1995	2103	86
1996	1500	74
1997	7671	44
1998	25112	87
1999	16431	133
2000	6555	43
2001	2520	34
2002	10848	78
2003	2545	20

DATA CAVEATS CONTINUED

- Maximum depth and Minimum depth have not been loaded to master table for 1998-1999; however, information is spotty.
- Area and Distance are not loaded to master table.
- The master table contains landings records only. Effort for trips with no catch or records from individuals showing no landings are not included. These are in the *.dbf files.

DATA IMPROVEMENTS SINCE JANUARY 2001

1983-2000 data were resent on April 20 in individual report format. Much of these data had previously existed in summarized format in the NOAA data set. These data then needed to be edited for dates, species, fishing center codes, and gear.

Bad date edits were completed in May 2001.

Problem with duplicate data was initially identified in 2000 data. Duplicates were defined as having each character in the record identical to another record. These were removed in May 2001.

The PC validation program was used by the PR-DNR staff to validate all species, gear, and fishing center codes for all years of data. This in the first part of 2002. These validated records along with the duplicates having been removed (see below) were sent to NOAA-SE in July 2002.

It was determined in June of 2001 that there were duplicate records throughout the data set. Duplicates were cleaned from the Puerto Rico DENR data set and resent to be loaded. Data were reloaded to ALS_LANDINGS_PUERTO_RICO table on 7/19/2002.

Columns for Trip Ticket Number and Maximum and Minimum Depth were added to the loader script in March or 2003.

CURRENT DATA VALIDATION

This is done at the PC level in Puerto Rico for proper species, gear, and fishing center codes and double checked on load the ALS master table. All data are run through a duplicate check on batch out from PR-DNR. Needed are validation of units for gear, pounds, price (present or not), fishing hours, number of trips, distance, area, depth. Not certain if data are proofed after entry. If not this should be done.

BIOSTATISTICAL DATA

- Puerto Rico TIP Data – This is commercial dockside sampling (bio-statistical) data from years 1983-2003.
- ITEMS OF INTEREST
- Missing historical fin-fish and some lobster data were furnished in hard-copy by PR-DNR in 2003 and were entered, edited, and loaded for years 1983-1987. The data are loaded as of Oct 2004. This was a process involving 13 people with about a man-year of labor total. The following are sums by year.

YEAR	INTERVIEWS	MEASURED
1983	164	6362
1984	470	20040
1985	251	11617
1986	513	34345
1987	322	17274
sum	1720	89638

- Comments from samplers on 1983-1987 missing forms were updated to the TIPONLINE.INTERVIEW table.
- Fisher ID's are now present in TIP for 1986-1987 and 1990-1991. No vessel id info in TIP.
- Fisher names entered in TIPONLINE comments field for 1986-1987 for missing data.

CURRENT MAKEUP OF TIP DATA SET FOR CARIBBEAN

Number of Trip Interviews

YEAR	Puerto Rico	USVI	Total
1980	34		34
1983	193	237	430
1984	703	414	1117
1985	387	867	1254
1986	555	506	1061
1987	408	490	898
1988	7	490	497
1989	104	424	528
1990	574	525	1099
1991	1020	912	1932
1992	733	84	817
1993	616	180	796
1994	270	159	429
1995	465	121	586
1996	334	91	425
1997	289	95	384
1998	464	86	550
1999	565	70	635
2000	491	41	532
2001	531	47	578
2002	530	123	653
2003	571	72	643
Grand Total	9844	6034	15878

SOURCES OF DATA IN TIP FOR CARIBBEAN

Source of Data	Number of Interviews
Caribbean Data Entry Project – Historical Data (Bolden and Woodhead) - all USVI but 59 interviews	4262
Caribbean Lobster Assessment 1990 Data	1179
Caribbean Sea-Map Pilot Study 1992 Data – Hooks	86
Caribbean Sea-Map Pilot Study 1992 Data – Traps	71
PR DNR Data Entered at NOAA-SEFSC 2004	1720
PR DNR Submission	7316
USVI DFW Submission	1065
USVI Spiny Lobster Data 1986-1991 entered at NOAA-SEFSC in 2001	179
Grand Total	15878

The above sources were identified and related to their current SEQUENCE_NUMBER in TIP. Numbers have changed from original entries.

• PROCEDURES FOR REVIEW OF SUSPECT LENGTH AND WEIGHT DATA:

• A file was created (jbennett.tip41_pr) to identify and edit for these. Both lengths and weights are looked at individually and flagged for records with the following limits:

• Yellowtail Snapper lengths <152 mm and >750 mm. **3,580 records < 152 mm and 48 records > 750 mm were found.**

• Yellowtail Snapper weights <85 grams and >3523 grams. **346 records <85 grams and 419 records > 3523 grams were found.**

• Spiny Lobster lengths <50mm and >150 mm (Carapace length type is assumed from protocol). **234 records < 50mm and 196 records > 150 mm were found.**

• Spiny Lobster weights <130 grams and >2356 grams. **78 records <130 grams and 156 records > 2356 grams were found.**

• Only Spiny Lobster and Yellowtail Snapper have these type flags. These flags are basically arbitrary, but are roughly based on general size limits in commercial catch. It was found that in the initial stages of the proposed data clean up it would be better to use simple limits rather than statistical methods due to the large proportion of incorrect length types (centimeters being reported as millimeters was typical). This problem rendered statistical methods inefficient. After initial clean up more statistical methods such as standard deviations may be used as checks.

• Lengths and Weight relationships are flagged for <0.50 or >2.0 ratio or weight/calculated weight from established length/weight regressions for all species having ratios available. The regression formulas used came from NOAA Tech Memo 215 by Bohnsack and Harper (1980) and FAO Fisheries Report 619 for Spiny Lobster. 14,325 overall records, including 3,113 Yellowtail Snapper records and 427 Spiny Lobster records were flagged for l/w regressions.

• **Formulas are as follows:**

Spiny Lobster weight calculated in grams = 0.00422*CL^{2.64091}

where CL = Carapace Length mm.

Finfish calculated log of weight in grams = LogW = LogA + (b * LogL) then

Wcalc in grams = LogW¹⁰ where LogA and b are constants.

• Total count for all records is 360,480. It is anticipated that once initial clean up is made other runs will be needed. A primary problem is that length units were incorrectly recorded and input for the length entered. Also possible are misplaced decimal errors which may have occurred in entry or load to system.

• A thorough review of the suspect data is needed. More runs by statistical methods on a continuous basis are needed both against load file and at regular intervals.

• Lists of suspect data are provided and the data are flagged in the MS ACCESS table JBENNETT_TIP41_PR. Regression factors are also listed for convenience.

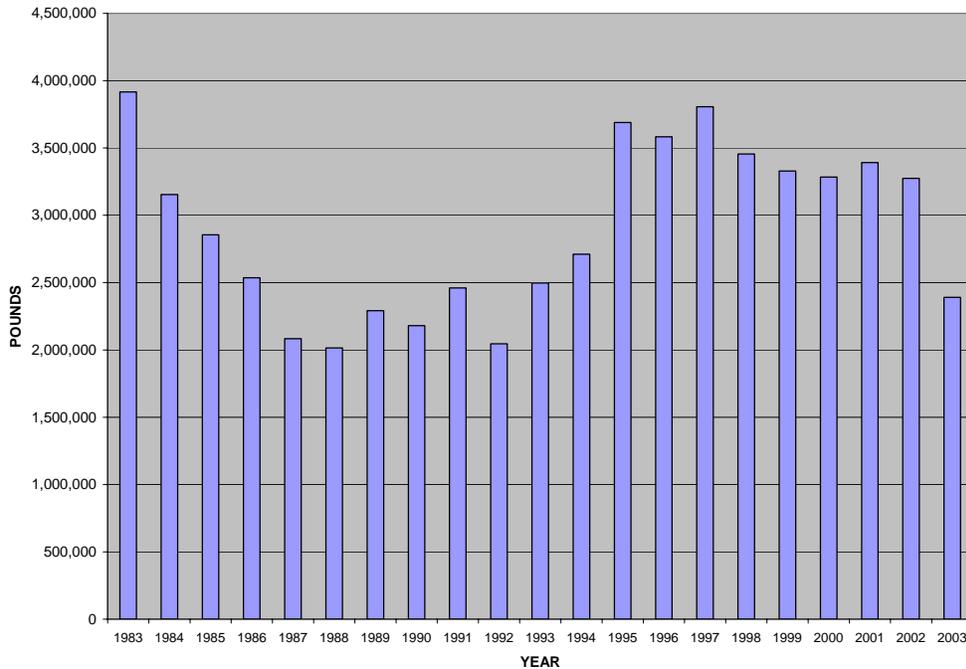
- **Major Issues to be resolved at this meeting.**
- We must agree on edits for flagged bio-statistical records.
- Do the landings data match?
- Does NOAA-SE have all the bio-statistical records in TIP?
- How can we re-create a single unique identifier that is constant in PR DNR and NOAA-SE data?
- How can we improve validation of landings data?
- How can we improve validation of bio-statistical data?
- What will the editing cycle be for landings records?
- What will the editing cycle be for bio-statistical records?

APPENDIX A: Puerto Rico Commercial Landings

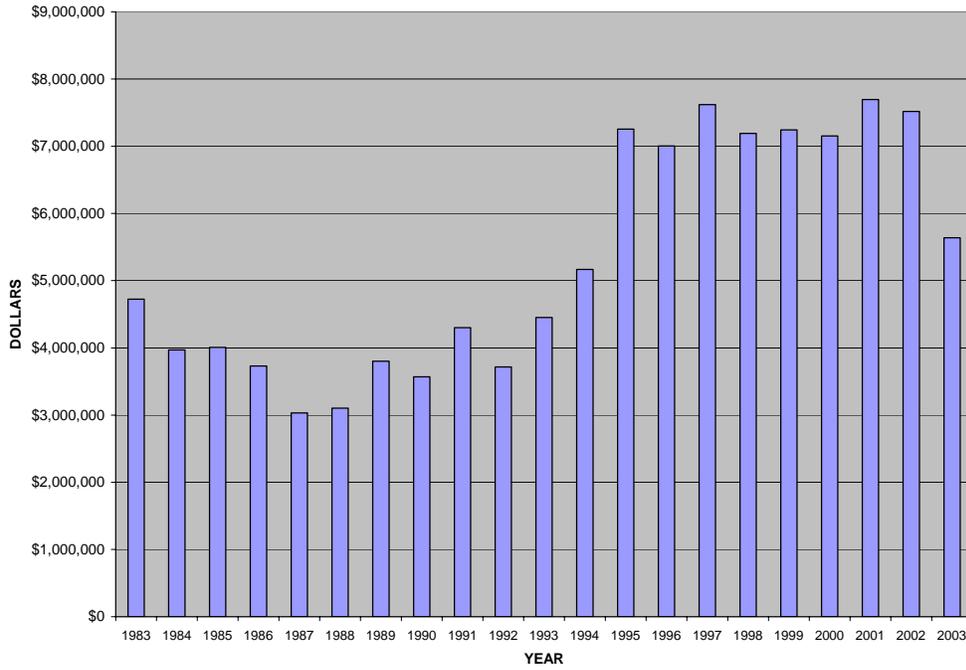
A.1 TOTAL LANDINGS

YEAR	Total Pounds	Total Value	Total Records	Pounds DBF	ALS-DBF
1983	3916688	4724192	64150	3916688.00	0.00
1984	3154298	3971543	38977	3154298.00	0.00
1985	2855085	4007430	37421	2855085.00	0.00
1986	2535387	3728373	46339	2535387.90	29.10
1987	2081940	3031271	46121	2081940.70	992.30
1988	2013663	3102082	45264	2013663.00	1034.00
1989	2290864	3799978	52372	2290864.80	356.20
1990	2179704	3568218	52474	2179704.72	1136.28
1991	2458663	4301289	66097	2458663.96	1240.04
1992	2043969	3714863	49540	2043969.74	1324.26
1993	2495160	4452878	60104	2495160.66	1360.34
1994	2708877	5165984	65172	2708877.89	2069.11
1995	3687685	7254647	94685	3687685.73	2199.27
1996	3581208	7006152	97650	3581208.99	1919.01
1997	3804030	7620212	100005	3804030.23	1860.77
1998	3453324	7192067	86957	3453324.00	1758.00
1999	3327698	7244154	92205	3327698.92	1749.08
2000	3281061	7154601	97054	3281061.54	2931.46
2001	3387748	7695930	104715	3387748.33	3492.67
2002	3271960	7518276	101850	3271960.00	2618.00
2003	2388761	5638888	101490	2388761.09	2236.91

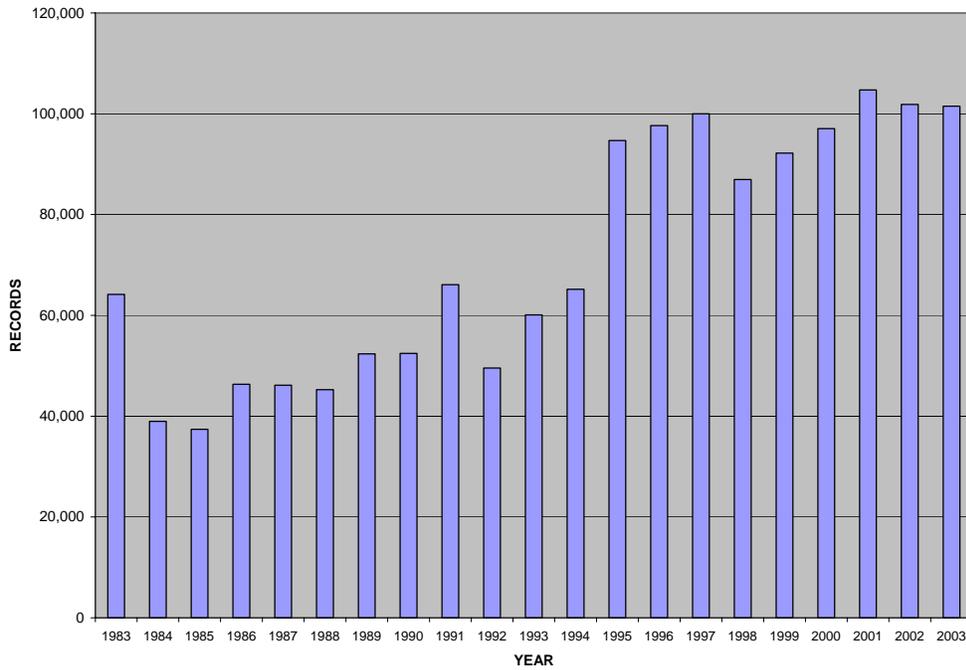
Puerto Rico Commercial Landings in Pounds for 1983-2003



Puerto Rico Commercial Landings in Dollars for 1983-2003



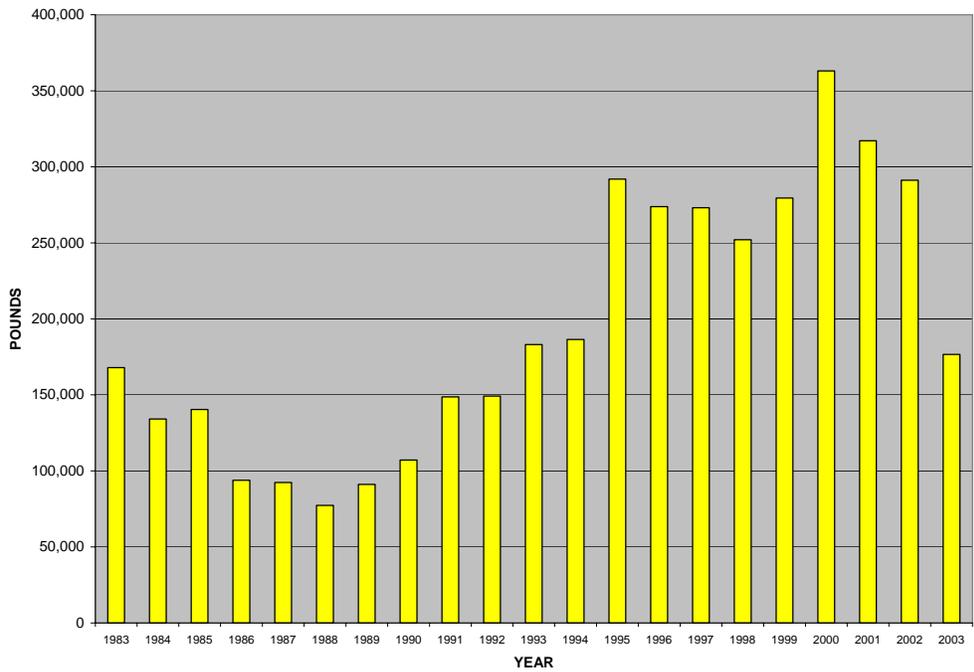
Puerto Rico Commercial Landings Data by Record Count for 1983-2003



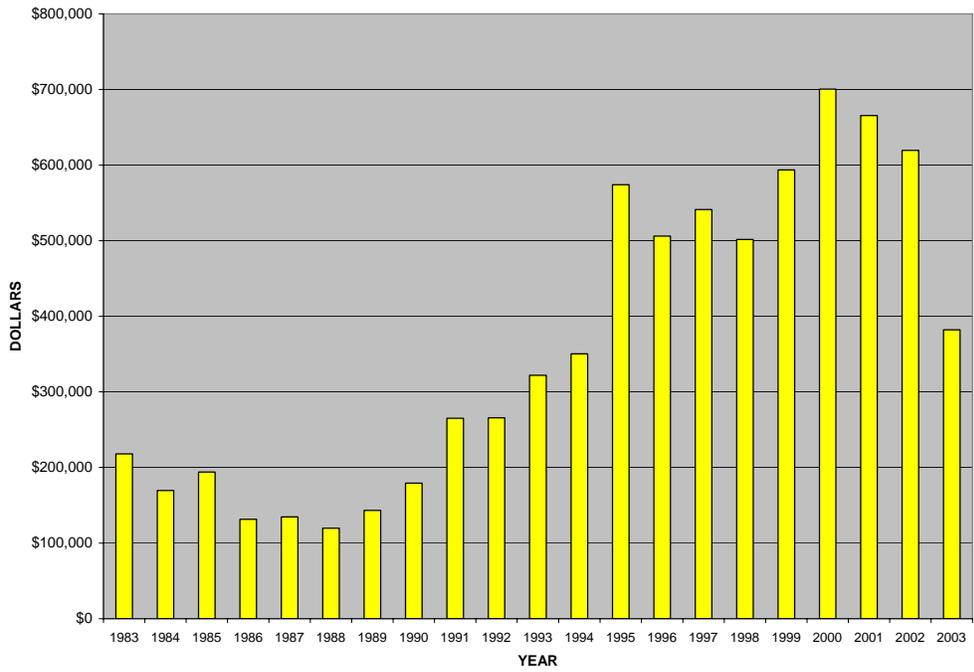
APPENDIX A.2 Yellowtail Snapper Landings

YEAR	Yellowtail Snapper Pounds	Yellowtail Snapper Value	Yellowtail Snapper Records
1983	167867	218113	3685
1984	134184	169486	2024
1985	140451	194006	2403
1986	93804	131463	2487
1987	92363	134596	2704
1988	77272	119652	2202
1989	91050	143193	2530
1990	107035	179247	2801
1991	148623	265099	3622
1992	149154	265761	3280
1993	183159	321805	4091
1994	186459	350346	3849
1995	291892	574051	6645
1996	273828	506172	7084
1997	273088	541258	6934
1998	252087	501637	5759
1999	279467	593389	5964
2000	363158	700425	7624
2001	317180	665651	7686
2002	291145	619628	7219
2003	176676	382046	6340

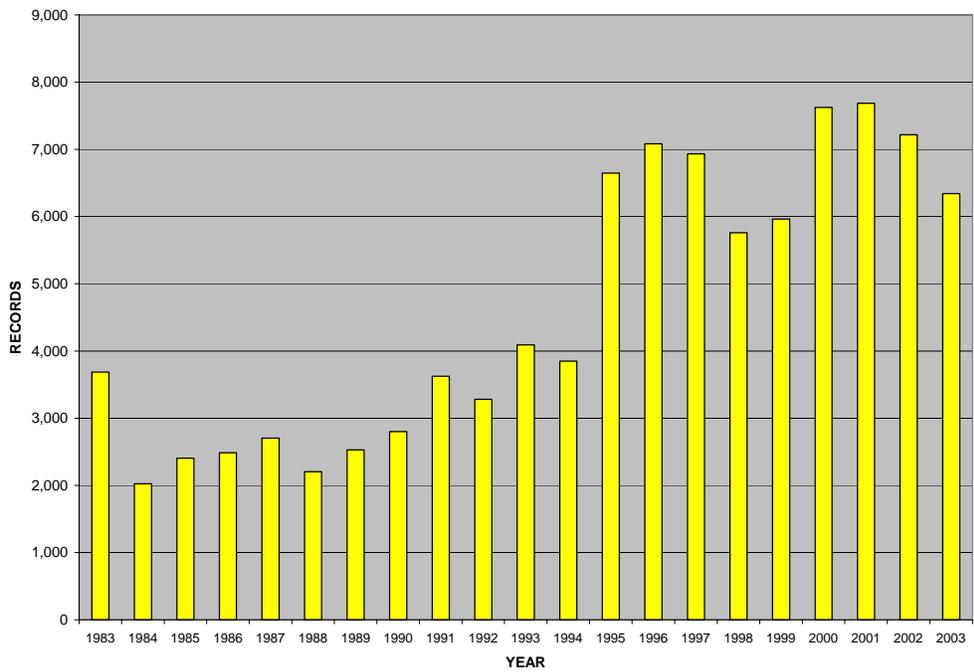
Puerto Rico Commercial Landings of Yellowtail Snapper in Pounds 1983-2003



Puerto Rico Commercial Landings of Yellowtail Snapper in Dollars for 1983-2003



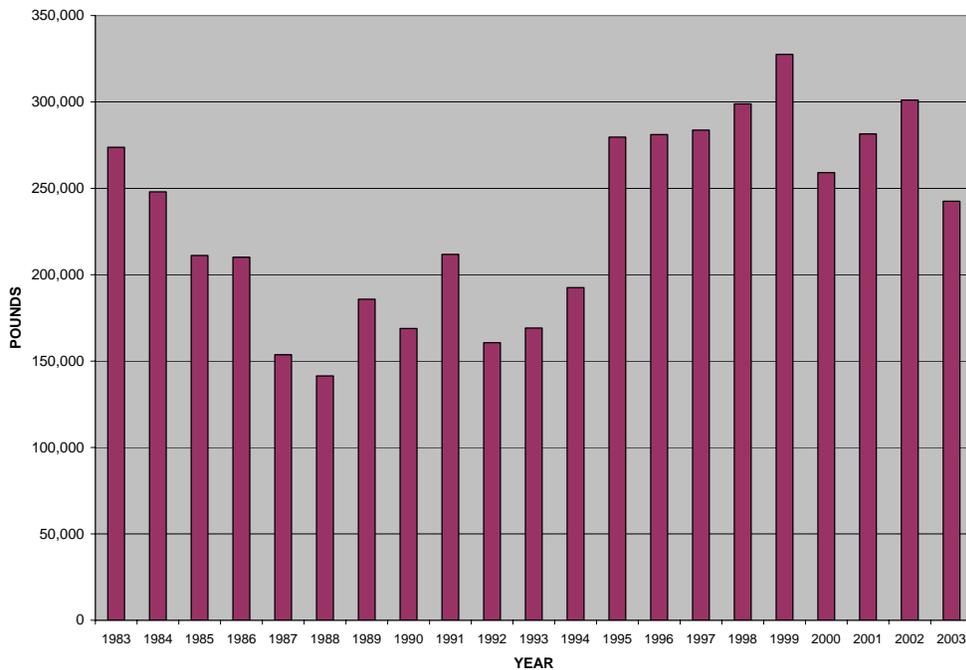
Puerto Rico Commercial Landings of Yellowtail Snapper by Record Count for 1983-2003



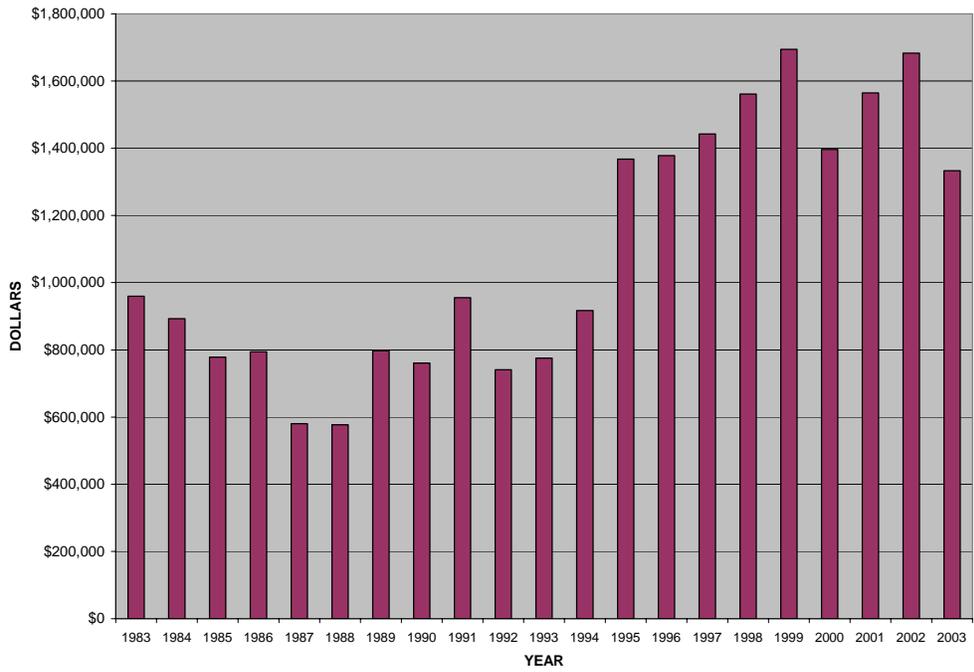
APPENDIX A.3 Spiny Lobster Landings

YEAR	Spiny Lobster Pounds	Spiny Lobster Value	Spiny Lobster Records
1983	273679	959645	7971
1984	248019	893120	5197
1985	211082	778525	4276
1986	210086	794482	5510
1987	153647	580236	5114
1988	141492	576958	5494
1989	185845	797232	6524
1990	168840	760780	6796
1991	211787	955357	8488
1992	160692	740493	5773
1993	169143	775717	7223
1994	192539	916855	8308
1995	279674	1367871	11137
1996	281122	1378399	10743
1997	283752	1442785	10397
1998	298924	1561439	9070
1999	327560	1694388	10095
2000	259138	1396669	10261
2001	281511	1564411	11447
2002	301075	1683207	10525
2003	242600	1333141	10777

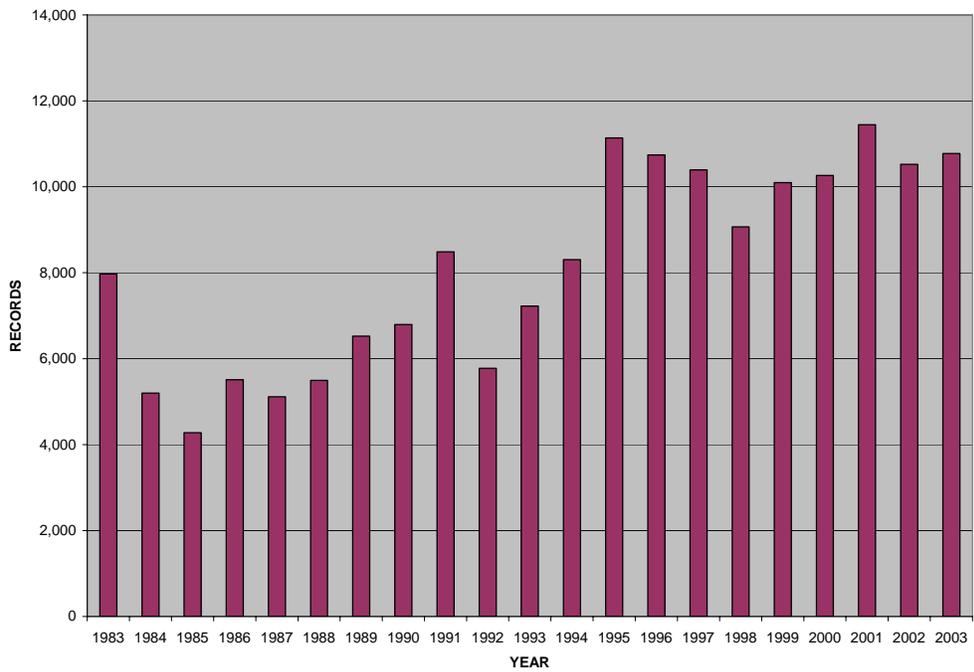
Puerto Rico Commercial Landings for Spiny Lobster in Pounds for 1983-2003



Puerto Rico Commercial Landings of Spiny Lobster in Dollars for 1983-2003



Puerto Rico Commercial Landings of Spiny Lobster by Record Count for 1983-2003

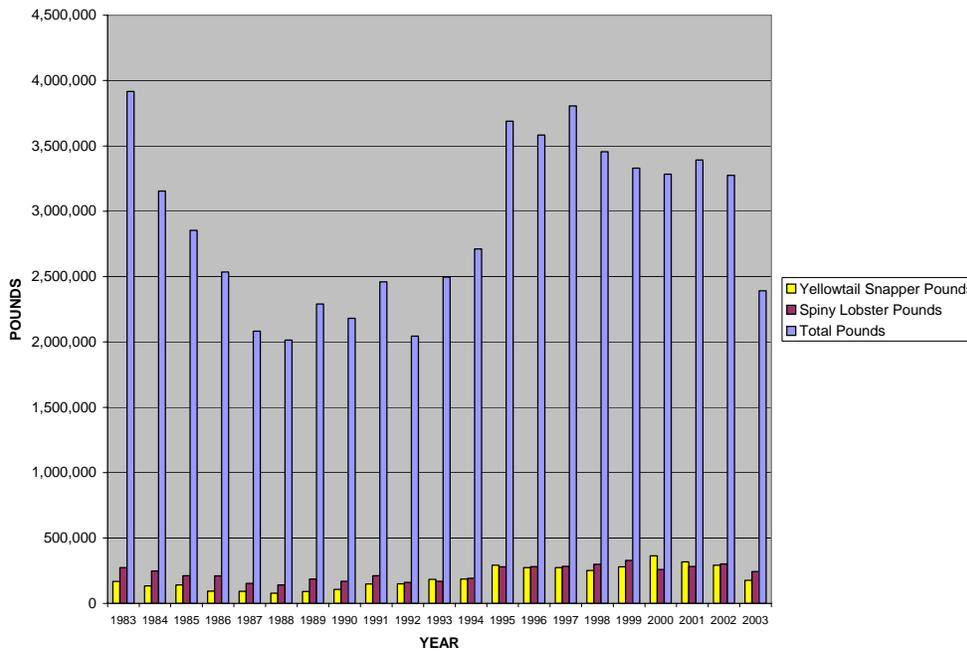


APPENDIX A.4 LANDINGS COMPARISONS

Comparison of Pounds

YEAR	Yellowtail Snapper Pounds	Spiny Lobster Pounds	Other Pounds	Total Pounds
1983	167867	273679	3475142	3916688
1984	134184	248019	2772095	3154298
1985	140451	211082	2503552	2855085
1986	93804	210086	2231527	2535417
1987	92363	153647	1836923	2082933
1988	77272	141492	1795933	2014697
1989	91050	185845	2014326	2291221
1990	107035	168840	1904966	2180841
1991	148623	211787	2099494	2459904
1992	149154	160692	1735448	2045294
1993	183159	169143	2144219	2496521
1994	186459	192539	2331949	2710947
1995	291892	279674	3118319	3689885
1996	273828	281122	3028178	3583128
1997	273088	283752	3249051	3805891
1998	252087	298924	2904071	3455082
1999	279467	327560	2722421	3329448
2000	363158	259138	2661697	3283993
2001	317180	281511	2792550	3391241
2002	291145	301075	2682358	3274578
2003	176676	242600	1971722	2390998

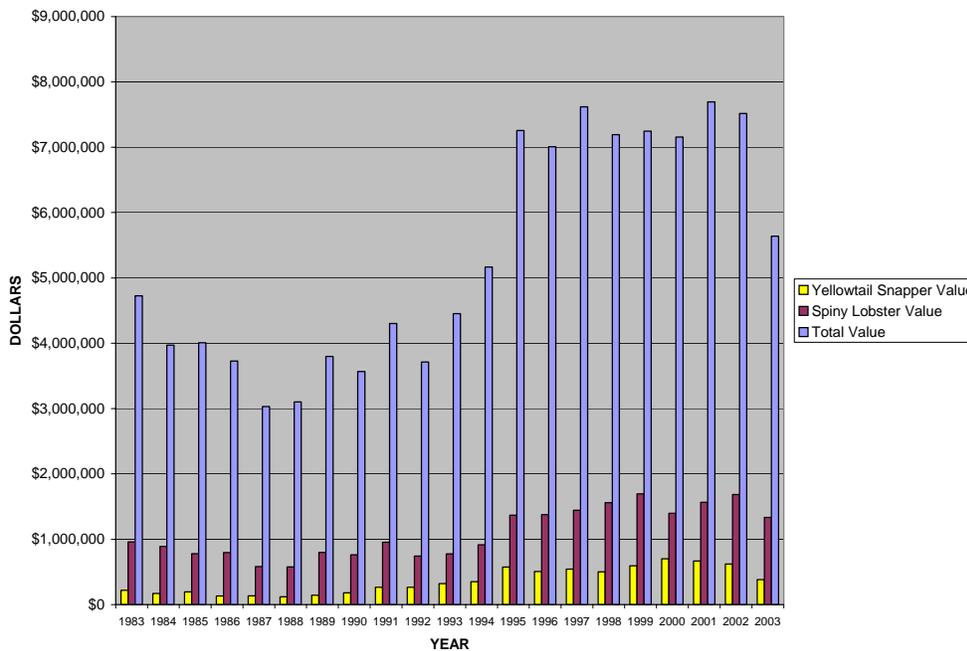
Puerto Rico Commercial Landings of Yellowtail Snapper and Spiny Lobster Compared with Total Landings in Pounds for 1983-2003



Comparison of Values

YEAR	Yellowtail Snapper Value	Spiny Lobster Value	Other Value	Total Value
1983	218113	959645	3546434	4724192
1984	169486	893120	2908937	3971543
1985	194006	778525	3034899	4007430
1986	131463	794482	2802428	3728373
1987	134596	580236	2316439	3031271
1988	119652	576958	2405472	3102082
1989	143193	797232	2859553	3799978
1990	179247	760780	2628191	3568218
1991	265099	955357	3080833	4301289
1992	265761	740493	2708609	3714863
1993	321805	775717	3355356	4452878
1994	350346	916855	3898783	5165984
1995	574051	1367871	5312725	7254647
1996	506172	1378399	5121581	7006152
1997	541258	1442785	5636169	7620212
1998	501637	1561439	5128991	7192067
1999	593389	1694388	4956377	7244154
2000	700425	1396669	5057507	7154601
2001	665651	1564411	5465868	7695930
2002	619628	1683207	5215441	7518276
2003	382046	1333141	3923701	5638888

Puerto Rico Commercial Landings of Yellowtail Snapper and Spiny Lobster Compared with Total Landings in Dollars for 1983-2003



Comparison of Record Counts

YEAR	Yellowtail Snapper Records	Spiny Lobster Records	Other Records	Total Records
1983	3685	7971	52494	64150
1984	2024	5197	31756	38977
1985	2403	4276	30742	37421
1986	2487	5510	38342	46339
1987	2704	5114	38303	46121
1988	2202	5494	37568	45264
1989	2530	6524	43318	52372
1990	2801	6796	42877	52474
1991	3622	8488	53987	66097
1992	3280	5773	40487	49540
1993	4091	7223	48790	60104
1994	3849	8308	53015	65172
1995	6645	11137	76903	94685
1996	7084	10743	79823	97650
1997	6934	10397	82674	100005
1998	5759	9070	72128	86957
1999	5964	10095	76146	92205
2000	7624	10261	79169	97054
2001	7686	11447	85582	104715
2002	7219	10525	84106	101850
2003	6340	10777	84373	101490

Puerto Rico Commercial Landings by of Yellowtail Snapper and Spiny Lobster Compared with Total Landings by Record Count for 1983-2003

