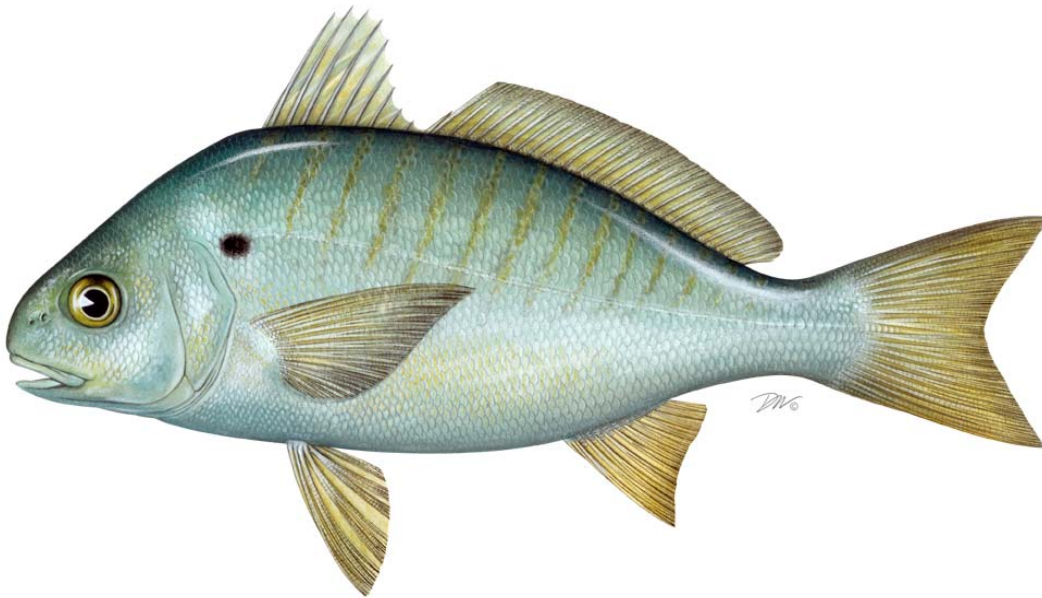


2015 REVIEW OF THE  
ATLANTIC STATES MARINE FISHERIES COMMISSION  
FISHERY MANAGEMENT PLAN FOR

**SPOT**  
*(Leiostomus xanthurus)*

2014 FISHING YEAR



**The Spot Plan Review Team**

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## **I. Status of the Fishery Management Plan**

<u>Date of FMP Approval:</u>	October 1987; Omnibus Amendment August 2011
<u>Management Area:</u>	The Atlantic coast distribution of the resource from Delaware through Florida
<u>Active Boards/Committees:</u>	South Atlantic State/Federal Fisheries Management Board; Spot Plan Review Team; South Atlantic Species Advisory Panel; Omnibus Amendment Plan Development Team

The Fishery Management Plan (FMP) for Spot was adopted in 1987 and includes the states from New Jersey through Florida (ASMFC 1987). In reviewing the early plans created under the Interstate Fisheries Management Plan process, ASMFC found the Spot FMP to be in need of evaluation and possible revision. A Wallop-Breaux grant from the U.S. Fish and Wildlife Service was provided to conduct a comprehensive data collection workshop for spot. The October 1993 workshop at the Virginia Institute of Marine Science was attended by university and state agency representatives from six states. Presentations on fishery-dependent and fishery-independent data, population dynamics, and bycatch reduction devices were made and discussed. All state reports and a set of recommendations were included in the workshop report (Kline and Speir 1993).

Subsequent to the workshop and independent of it, the South Atlantic State/Federal Fisheries Management Board (Management Board) reviewed the status of several plans in order to define the compliance issues to be enforced under the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). The Management Board found recommendations in the plan to be vague and perhaps no longer valid, and recommended that an amendment be prepared to the Spot FMP to define the management measures necessary to achieve the goals of the FMP. In their final schedule for compliance under the ACFCMA, the ISFMP Policy Board adopted the finding that the FMP does not contain any management measures that states are required to implement. In August 2009, the Management Board expanded the initiated amendment to the Spanish Mackerel FMP to include Spot and Spotted Seatrout, creating the Omnibus Amendment for Spot, Spotted Seatrout and Spanish Mackerel. The goal of the Omnibus Amendment was to update all three plans with requirements specified under the Atlantic Coastal Fisheries Cooperative Management Act (1993) and the Interstate Fishery Management Program Charter (1995). In August 2011, the Management Board approved the Omnibus Amendment for Spot, Spotted Seatrout, and Spanish Mackerel. This Amendment did not set specific management measures for Spot but it did align management of the species with the requirements of ACFCMA.

In August 2014, the Board approved Addendum I to the Omnibus Amendment. The Addendum establishes use of a Traffic Light Analysis (TLA) to evaluate fisheries trends and develop state-specified management actions (e.g., bag limits, size restrictions, time and area closures, and gear restrictions) when harvest and abundance thresholds are exceeded for two consecutive years.

## II. Status of the Stock

No coastwide assessment has been completed for spot; however, a stock assessment has been initiated and is scheduled for completion in 2016.

### *Traffic Light Approach*

As part of the requirements under the 2011 Omnibus Amendment, for years in-between benchmark stock assessments, the Spot PRT was tasked with conducting annual monitoring analysis. These trigger exercises compared five data sources to the 10<sup>th</sup> percentile of the data sets' time series. If two terminal values of the five data sources (at least one of which must be fishery independent) fell below the 10<sup>th</sup> percentile, the Management Board was prompted to consider management action.

In August 2014, the Board approved Addendum I to the Omnibus Amendment. The Addendum established the Traffic Light Approach (TLA) as the new precautionary management framework to evaluate fishery trends and develop management actions. The TLA framework replaces the management trigger stipulated in the Omnibus Amendment after concern that the triggers were limited in their ability to illustrate long-term declines or increases in stock abundance. In contrast, the TLA is a statistically-robust way to incorporate multiple data sources (both fishery-independent and -dependent) into a single, easily understood metric for management advice. It is an effective method to illustrate long-term trends in the fishery.

The TLA was originally developed as a management tool for data poor fisheries. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of population indicators. When a population characteristic improves, the proportion of green in the given year increases. Harvest and abundances thresholds of 30% and 60% (proportion of red) were established in Addendum I, representing moderate and significant concern for the fishery. If thresholds for both population characteristics achieve or exceed a threshold for a two year period, then management action is enacted.

Analysis of the composite harvest index showed a general decline beginning in 2005 and a reversal of this trend after 2012 (Figure 3). The composite characteristic did not trip in 2014 with the mean red proportion of 26.5% for 2013-2014. However, the index did trip in 2013 (38.1%) and 2012 (34.8%).

The TLA composite abundance index for adult spot (NMFS and SEAMAP surveys) was run using the 1989-2014 time period since that was when the two surveys overlapped (Figure 3). The TLA composite characteristic did trigger in 2014 with a mean red proportion for 2013-2014 of 43.5%. This reflects the drop in annual catch levels in both indexes for the last two years. During past years, the index would have tripped most years from 1989 to 2004 given the proportions of red in the index above the 30% threshold.

Overall, management triggers were not tripped in 2014 since both population characteristics (harvest and abundance) were not above the 30% threshold for the 2013-2014 time period. Nonetheless, the analysis shows that there are declining trends in the fishery independent indices as well as the commercial and recreational harvests of spot.

### **III. Status of the Fishery**

Total landings of spot from NJ to FL in 2014 are estimated at 8.37 million pounds, an increase of over 2,000,000 lbs from 2013 and roughly 500,000 lbs over the ten-year average (7,830,652) (Tables 1 and 3). The recreational fishery harvested less than the commercial fishery (35% and 65% respectively, by pounds). This contrasts with 2012, during which recreational harvests exceeded commercial harvests by roughly 3:2.

Commercial spot landings have ranged between 1.27 and 14.52 million pounds from 1950-2014 (Figure 1), with the 2014 landings (5.4 million pounds) more than quadruple the 2012 landings. The estimated ex-vessel value of the 2014 harvest was \$6.737 million (Table 1). Coastwide, the majority of commercially harvested spot are taken in gillnets (77% in 2014, Table 2). Virginia landed approximately 74% of the commercial harvest (by pounds) in 2014, followed by North Carolina with 14% of the harvest. Although small spot have been known to be a bycatch component of the haul seine, shad gillnet, and pound net fisheries in the Chesapeake Bay and in North Carolina, these mesh sizes, especially for the shad gillnet and channel net fisheries, tend to be too large to catch even large spot. Further, the shad fishery is executed in mostly freshwater, where the number of adult spot is generally low. The largest bycatch component for spot comes from the South Atlantic shrimp trawl fishery. The fate of these spot can be discards or sale, depending upon market conditions and volume.

The recreational harvest of spot along the Atlantic coast from 1981 to 2014 has varied between 3.6 and 20.1 million fish (or 1.7 and 6.9 million pounds; Tables 3 and 4). There was an increasing trend in the recreational harvest from a low in 1999 of 1.6 million fish to 15.9 million fish in 2007; however, harvest has been variable since 2007, with the 2014 catch recording 8.7 million fish (Figure 2). Anglers in Virginia were responsible for 44.8% of the total number of fish harvested in 2014, followed by anglers in North Carolina (24.2%) and Maryland (14.4%). Many anglers are known to catch spot to use as bait, as well as for other recreational purposes. The estimated number of spot released annually by recreational anglers has varied between 2.0 and 10.5 million fish, with 2014 releases estimated at 3.75 million fish.

### **IV. Status of Assessment Advice**

A formal stock assessment of spot has not been conducted. The 1987 FMP recognized the lack of biological and fisheries data necessary for stock assessment and effective management of the resource.

The Spot Plan Review Team evaluated the adequacy of data for assessment purposes in 2012, and reported the following:

- Commercial landings data appear adequate for a spot assessment; however, discard data are limited. The level of commercial biological sampling is on par with other species having assessments performed.
- The adequacy of recreational harvest and harvest length data is comparable to other species which rely primarily on MRIP data. Limited discard length data are available and discard mortality rates are unknown; however, less recreational discarding of spot occurs than for many other species, potentially due to its use as a bait fish.

- The number, time series, and distribution of fishery-independent indices appear adequate for stock assessment purposes. Biological data appear ample from several surveys, although reproductive data are limited. Further, the amount and representativeness of samples from each survey has not been investigated in detail.
- Additional investigation into the quality and quantity of commercial, recreational, and indices data for a spot stock assessment would need to take place through a data workshop.

In 2014, the PRT recommended that the Board initiate a coastwide assessment for spot. This assessment is currently underway and is expected to be completed in 2016.

## **V. Status of Research and Monitoring**

Catch and effort data are collected by the commercial and recreational statistics programs conducted by the states and the National Marine Fisheries Service (NMFS). Biological characterization data from fishery landings are also available from several states. Specifically, age data are now available from Maryland, Virginia, North Carolina, and South Carolina. Recruitment indices are available from surveys in Delaware, Maryland, Virginia, North Carolina, and South Carolina. Adult or aggregate (mix of juvenile and older spot) relative abundance indices are available from New Jersey, Delaware, North Carolina, South Carolina, and SEAMAP (covering North Carolina through Florida). These surveys, in addition to the Northeast Fisheries Science Center Bottom Trawl Survey, the Northeast Area Monitoring and Assessment Program (NEAMAP), the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP), and the Chesapeake Bay Fishery-Independent Multispecies Survey (CHESFIMS), collect a variety of biological data elements.

*Below is a description of the fishery dependent sampling conducted by states.*

Maryland: MD DNR fisheries biologists sampled commercial pound nets bi-weekly in Maryland's portion of the Chesapeake Bay from May 27, 2014 through September 2, 2014. The spot mean length from this survey of 194 mm TL (n=420) was similar to the 2013 value of 196 mm TL, and was slightly below the mean value of 204 mm TL for the 22 year time series. In 2014, 88.5% of sampled fish were age one, 6.5% were age two, and the remaining 4.0% were age zero (161 ages and 420 lengths).

Virginia: The VMRC Biological Sampling Program collects biological data from Virginia's commercial and recreational fisheries. The lengths and weights of all samples are recorded, and otoliths are removed from selected species, including spot, for ageing.

North Carolina: Commercial fishing activity is monitored through fishery-dependent sampling conducted under Title III of the Interjurisdictional Fisheries Act and has been ongoing since 1982. Data collected in this program allows the size distribution of spot to be characterized by gear/fishery. Further sub-sampling is conducted to procure samples for age determination (whole otoliths), sex ratio, reproductive condition, and weight.

South Carolina: Fishery dependent data related to Spot has been available primarily through the SCDNR State Finfish Survey (SFS) through 2012, the National Marine Fisheries Service's Marine Recreational Information Program (MRIP), and a SCDNR-managed mandatory trip reporting system for licensed charterboat operators.

*Below is a description of fishery independent sampling conducted by the states.*

New Jersey: The New Jersey Bureau of Marine Fisheries conducts an Ocean Trawl Survey, Delaware River Seine Survey, and Delaware Bay Trawl Survey. Respective indices of abundance (GM) for the three surveys in 2014 were (0.31, 0.01, 0.06).

Delaware: Annual relative abundance estimates of spot are monitored through the Division's adult ground fish bottom trawl survey. The relative abundance of spot decreased to 6.50 (#/nm) and was the lowest estimate of abundance since 2004. The Division monitors juvenile fish abundance through a 16-ft bottom trawl survey which has been conducted annually since 1980. Separate spot young of the year (YOY) indices are generated for the Delaware Estuary (Bay and River) and Delaware's "Inland Bays" (Indian River and Rehoboth Bays). YOY spot recruitment, 0.11 per tow (geometric mean), decreased in 2014 relative to 2013 for Delaware.

Maryland: Finfish collected by Maryland's Chesapeake Bay Blue Crab Trawl Survey have been enumerated since 1980. The spot Chesapeake Bay juvenile index (JI) has been variable throughout the time series. The index increased to 16.4 in 2012, which is near the 24 year time series mean of 17.7 fish per tow, but decreased to 6.1 fish per tow in 2013 and 0.80 fish per tow in 2014. The second JI was derived from the Striped Bass Juvenile Seine Survey (JSS). The 2014 GM catch per haul was 0.37, which was below the 48 year time series mean of 1.49. A 4.9-m semi-balloon otter trawl has also been used to sample Maryland's Atlantic coastal bays since 1972. The 2012 GM of 242.7 was the highest value of the 26 year time series, but decreased to 1.1 in 2013 and 0.35 in 2014, which was the lowest value of the time series. The final juvenile index is derived from the coastal bays seine survey. The 2012 GM catch per haul was 74.9 the second highest value of the 24 year time series, but the GM declined to 2.9 fish per haul in 2013 and 1.4 fish per tow in 2014. The 2014 index value is the second lowest of the 26 year time series.

Virginia: The VIMS Juvenile Fish and Blue Crab Trawl Survey was implemented in 1955 to monitor the seasonal distribution and abundance of important finfish and invertebrate species occurring in the Chesapeake Bay and its tributaries.

North Carolina: NCDMF conducts a number of surveys that encounter juvenile and adult spot. The Pamlico Sound Survey (Program 195) is a stratified random trawl survey conducted in Pamlico Sound since 1987 to obtain juvenile abundance indices (JAI). The 2014 spot JAI was 397 (2013 JAI=793). The Estuarine Trawl Survey (Program 120) samples 105 core estuarine stations along the coast each year to produce a JAI. The 2014 spot JAI (mean number of individuals/tow) was 133 (2013 JAI=140). The Pamlico Sound Independent Gill Net Survey began in 2001 and employs a stratified-random sampling design based on area and water depth. The 2014 spot CPUE (mean number of individuals/sample) was 2.3 (2013 CPUE=2.0).

South Carolina: SC conducts four surveys. SEAMAP is shallow water (15 to 30 ft) trawl survey monitors status and trends of numerous coastal species within the South Atlantic Bight seasonally (spring, summer and fall) from Cape Canaveral, FL to Cape Hatteras, NC. The annual stratified mean catch per tow in weight for the entire survey in 2014 increased by 37.5% (13.5 kg/tow) over 2013 (9.8 kg/tow). The second survey is an inshore estuarine trammel net survey conducted by the SCDNR. In 2014, CPUE decreased (34.9%) from 2013, and still remained below the long term mean for a fifth year. The third survey is an electroshock survey conducted in low salinity brackish and tidal freshwater portions of different South Carolina estuaries. The CPUE value for 2014 ( $6.76 \pm 2.35$  fish per set) was an

increase over 2013 by 47%. The fourth survey is the South Carolina Estuarine and Coastal Assessment Program (SCECAP). The CPUE increased slightly in 2014 from 2013 but still remained below the series long term mean.

Georgia: Spot are occasionally observed during the red drum gillnet survey and the trammel net survey. Lengths of captured spot were recorded and then fish were released. During 2014, 150 trammel and 216 gill net sets captured 99 and 105 spot, respectively. Average fork length of spot in trammel net was 199 mm and in the gillnet survey was 195mm. The 2014 geometric means (#/net set) from both trammel and gill (0.31 and 0.25) were slightly lower than the average geometric mean (#/net set) (0.35 and 0.31). Georgia also collects biological data through their Ecological Monitoring Survey. A total of 19,755 spot with a total weight of 446.38 kilograms were observed during this survey. Lengths ranged from 12 to 230 millimeters total length, with a mean of 118.75 millimeters total length. Geometric means (geometric mean number of fish per standard 15 minute trawl) have been steadily increasing from 1.43 in 2012, to 3.99 in 2013, to 5.12 in 2014.

Florida: The FWC-FWRI's FIM program initiated surveys on estuarine, bay and coastal systems of the Florida Atlantic at northern Indian River Lagoon in 1990, southern Indian River Lagoon in 1997, and northeast Florida (Jacksonville study area) in 2001. Indices of abundance (IOAs) data for juvenile (YOY) spot (<30 mm standard length, SL) were available from 21.3-m seine and 6.1-m trawl samples. IOAs for YOY and sub-adult/adult spot have been low and showed little variations; except in 2010 and 2011

## **VI. Status of Management Measures and Issues**

The FMP for Spot identified two management measures for implementation: 1) promote the development and use of bycatch reduction devices through demonstration and application in trawl fisheries, and 2) promote increases in yield per recruit through delaying entry to spot fisheries to age one and older.

Considerable progress has been made in developing bycatch reduction devices (BRDs) and evaluating their effectiveness. Proceedings from a 1993 spot and croaker workshop summarized much of the experimental work on bycatch reduction, and many states have conducted subsequent testing. For example, North Carolina Division of Marine Fisheries (NCDMF) conducted research on the four main gear types (shrimp trawl, flynet, long haul seine, and pound net) responsible for the bulk of the scrap fish landings in order to reduce the catch of small fish. State testing of shrimp trawl BRDs achieved finfish reductions of 50-70% with little loss of shrimp, although total bycatch numbers relative to shrimp fishery effort are still unknown. The Virginia Marine Resources Commission investigated the use of culling panels in pound nets and long haul seines to release small croaker, spot, and weakfish. The Potomac River Fisheries Commission (PRFC) also investigated the use of culling panels in pound nets, finding that the panels allowed the release of 28% of captured spot less than six inches in length.

Following favorable testing, devices have been made mandatory or recommended in several state fisheries. The use of BRDs is required in all penaeid shrimp trawl fisheries in the South Atlantic. The PRFC recommends the use of culling panels in pound nets and allows those nets with panels to keep one bushel of bycatch of flounder and weakfish. In North Carolina, escapement panels have been required in the bunt nets of long haul seines in an area south and west of Bluff Shoals in the Pamlico Sound since April 1999. However, evaluation of the beneficial effects of BRDs to spot stocks continues to need further study.



General gear restrictions, such as minimum mesh sizes or area trawling bans, have helped protect some age classes of spot. Georgia had an 8" minimum size in the commercial and recreational fishery to protect immature spot; however, this was removed in 2014. Georgia maintained its creel limit of 25 fish (both recreational and commercial) and South Carolina implemented an aggregate bag limit of 50 fish per day for hook and line fishing in 2014.

#### *Omnibus Amendment (Interstate)*

In August 2011, the Management Board approved the development of an amendment to the Spot FMP to address three issues: compliance measures, consistency with federal management in the exclusive economic zone, and alignment with Commission standards. The updated FMP's objectives are to: (1.) Increase the level of research and monitoring on spot bycatch in other fisheries, in order to complete a coastwide stock assessment (2.) Manage the Spot fishery stock to maintain the spawning stock biomass above the target biomass levels. (3.) Develop research priorities that will further refine the spot management program to maximize the biological, social, and economic benefits derived from the spot population. The Omnibus Amendment does not require specific fishery management measures in either the recreational or commercial fisheries for states within the management unit.

#### *Addendum I*

In August 2014, the Board approved Addendum I which establishes a new management framework (i.e., Traffic Light Approach) to evaluate fisheries trends and develop state-specified management actions (i.e., bag limits, size restrictions, time & area closures, and gear restrictions) when harvest and abundance thresholds are exceeded over two years. Management measures would remain in place for two years.

#### *Recent Changes in State Regulations*

Georgia: The new regulations, effective 2/25/2014 (Georgia Rules and Regulations, Department of Natural Resources 391-2-4-.04), removed the minimum size limit for spot landed in Georgia. The bag/creel limit remains 25 fish per person per day for both recreational and commercial fisheries except that there is no quantity limit for trawlers harvesting shrimp for human consumption. The season is open year round.

South Carolina: The state of South Carolina passed a regulatory measure that became effective in July 2014 which placed Spot, Atlantic Croaker, and Kingfish/Whiting (*Menticyrrhus* sp.) under a 50 fish per person per day aggregate bag limit for hook & line fishing. This regulation applies to any recreational or commercial angler that uses hook & line gear but does not affect other commercial gears (i.e. net gears).

#### *De minimis Guidelines*

A state qualifies for *de minimis* status if its past 3-years' average of the combined commercial and recreational catch is less than 1% of the past 3-years' average of the coastwide combined commercial and recreational catch. Those states that qualify for *de minimis* are not required to implement any monitoring requirements, none of which are included in the plan.

### De Minimis Requests

Georgia requests *de minimis* status. The PRT notes that Georgia meets the requirements of *de minimis*.

## **VII. Implementation of FMP Compliance Requirements for 2013**

All states within the management unit have submitted compliance reports for the 2014 fishing year. The PRT found no compliance issues.

## **VIII. Recommendations of the Plan Review Team**

### Management and Regulatory Recommendation

The Spot PRT will continue to monitor the fishery through the Traffic Light Approach.

### Research and Monitoring Recommendations

#### *High Priority*

- State monitoring and reporting on the extent of unutilized bycatch and fishing mortality on fish less than age-1 in fisheries that take significant numbers of spot.
- Evaluate the effects of mandated bycatch reduction devices on spot catch in those states with significant commercial harvests.
- Continue monitoring long-term changes in spot abundance, growth rates, and age structure.
- Continue monitoring of juvenile spot populations in major nursery areas.
- Improve spot catch and effort statistics from the commercial and recreational fisheries, along with size and age structure of the catch, in order to develop production models. This includes developing catch-at-age matrices for recreational and commercial fisheries.
- Investigate release mortality in the recreational fishery.
- Conduct age validation studies.
- Develop stock identification methods and investigate the degree of mixing between state stocks during the annual fall migration.
- Determine migratory patterns through tagging and genetic studies.

#### *Medium Priority*

- Cooperatively develop a yield-per-recruit analysis.
- Determine the onshore vs. offshore components of the spot fishery.
- Cooperatively develop criteria for aging spot otoliths and scales.
- Encourage agencies and institutions with archived otoliths samples (NEAMAP) to process them for age and biological information.
- Determine the effect that anthropogenic perturbations may be having on growth, survival, and recruitment.

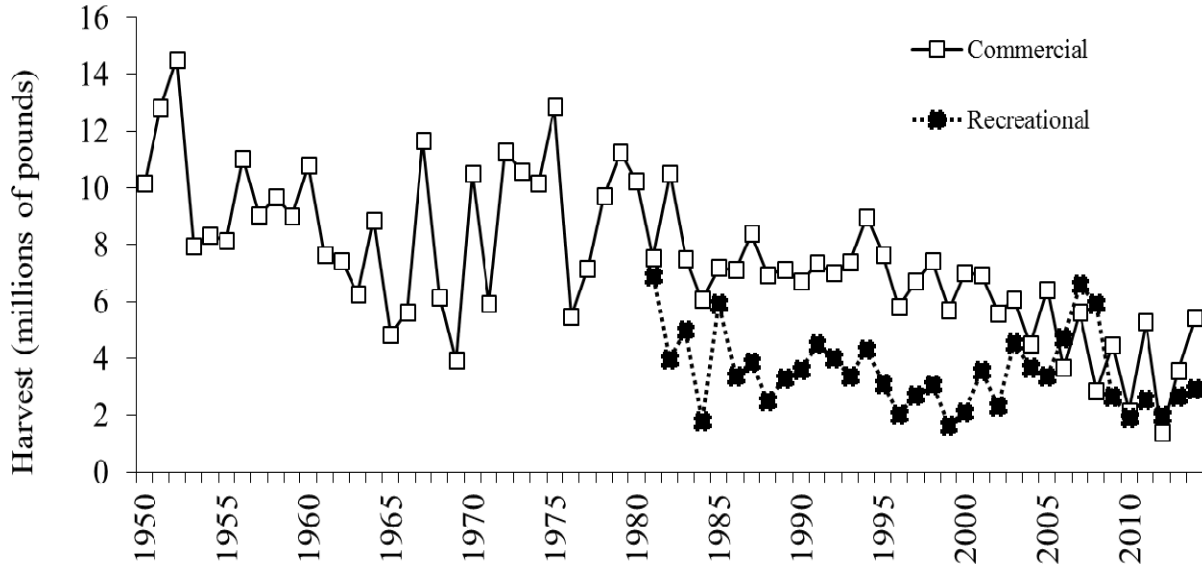
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- Atlantic States Marine Fisheries Commission (ASMFC). 1987. Fishery Management Plan for Spot. Washington (DC): ASMFC. Fisheries Management Report #11. 90 p.
- Kline LL, Speir H (editors). 1993. Proceedings of a Workshop on Spot (*Leiostomus xanthurus*) and Atlantic Croaker (*Micropogonias undulatus*). Washington (DC): Atlantic States Marine Fisheries Commission. Special Report #25. 175 p.
- Spot Plan Review Team (PRT). 2012. Spot Data Availability and Stock Monitoring Report, 2009. Washington (DC): Atlantic States Marine Fisheries Commission. Report to the South Atlantic State-Federal Fisheries Management Board. 85 p.

## X. Figures

**Figure 1. Spot commercial and recreational landings (pounds), 1950-2014**

(Recreational landings available from 1981-present; see Tables 1 and 3 for state-by-state values and data sources)



**Figure 2. Spot recreational harvest and releases (numbers of fish), 1981-2014**

(See Tables 4 and 5 for state-by-state values and data source)

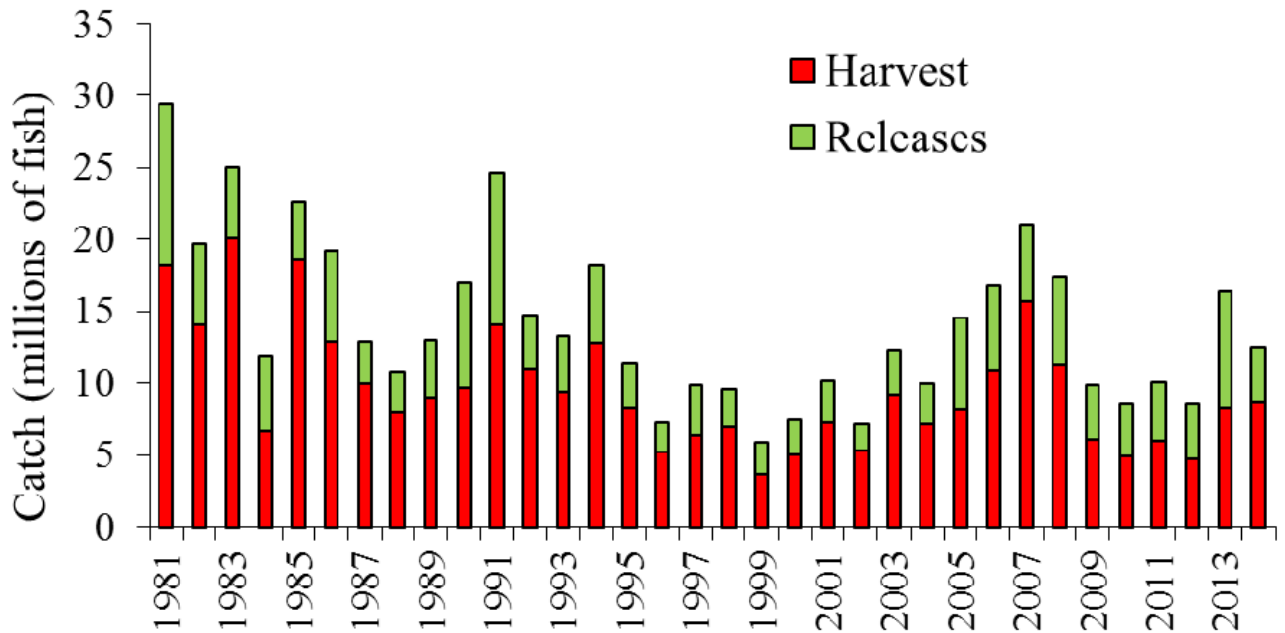
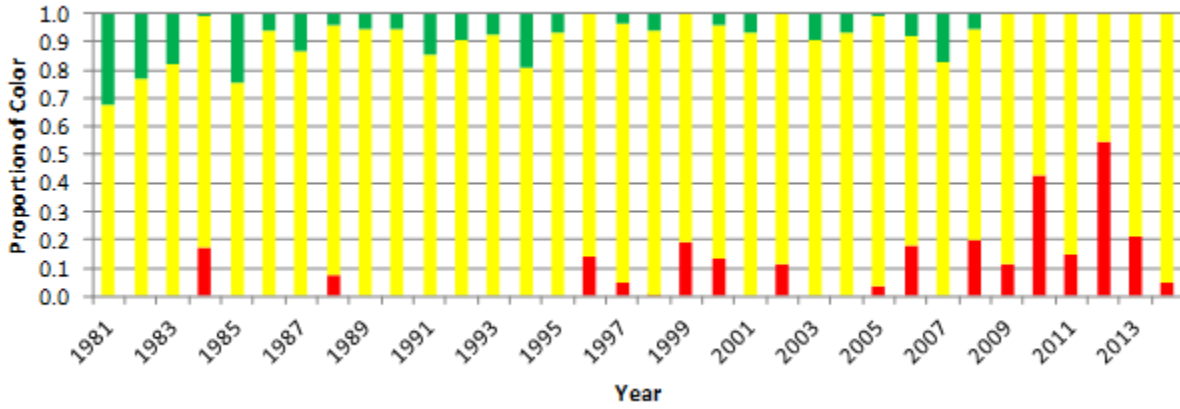
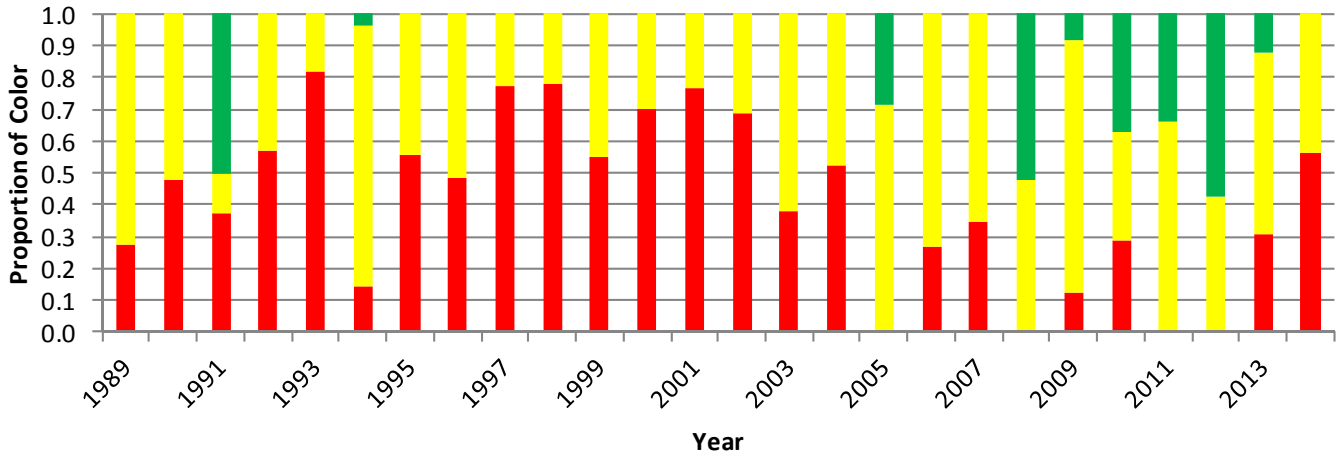


Figure 3: Traffic Light Approach for spot, 2014. Top figure shows the harvest composite index and the bottom figure shows the abundance composite index.

**Harvest Composite Index (using a 1989-2012 reference period)**



**Abundance Composite Index (using a 1989-2012 reference period)**



## XI. Tables

**Table 1. Commercial landings (pounds) by state, and estimated value (ex-vessel), 1981-2014**  
(Source: NMFS Fisheries Statistics Division & State Compliance Reports). Starred values are confidential.

Year	NY	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL	Total	Value
1981		6,000	11,100	14,200	49,899	1,025,800	3,511,574	127,384	7,721	2,798,881	7,552,559	\$1,949,238
1982		1,800	2,500	6,200	45,946	1,017,100	4,918,763	62,562	292	4,431,239	10,486,402	\$2,629,992
1983		800		129,400	347,416	1,567,900	2,952,295	240,096		2,266,296	7,504,203	\$2,034,211
1984		100		43,200	165,524	735,200	3,481,920	130,265		1,508,552	6,064,761	\$1,709,041
1985		2,400	17,237	7,700	19,912	1,561,739	4,043,843	142,755		1,399,819	7,195,405	\$2,059,771
1986		6,600	86,455	104,400	148,004	1,839,500	3,354,191	655,378	124	918,875	7,113,527	\$2,008,712
1987		15,900	140,109	251,800	291,964	3,721,100	2,806,041	220,553	1,528	943,713	8,392,708	\$2,288,900
1988		1,600	37,722	58,000	53,865	1,985,500	3,080,258	376,221	644	1,344,276	6,938,086	\$2,103,710
1989		8,200	31,249	115,800	90,920	2,468,100	3,254,473	31,472	361	1,144,639	7,145,214	\$2,447,602
1990		9,039	23,864	127,882	145,535	1,630,735	3,455,460	39,957	43	1,275,729	6,708,244	\$2,280,712
1991		54,433	262,498	216,035	147,355	2,539,340	3,047,305	31,787		1,051,532	7,350,285	\$2,341,850
1992		102,213	112,967	331,837	226,335	2,497,622	2,826,138	171,959	261	740,048	7,009,380	\$1,903,514
1993	63	10,900	21,862	182,198	88,988	3,349,399	2,672,164	251,225	1,276	826,312	7,404,387	\$2,902,373
1994		31,408	100,435	166,246	181,127	4,269,402	2,937,355	288,241	0	1,002,887	8,977,101	\$3,326,892
1995	22	30,151	62,324		177,780	3,622,954	3,006,885	209,132	247	558,087	7,667,582	\$2,572,195
1996	318	1,149	80,930	256,711	101,670	2,982,083	2,290,040	60,574	0	56,423	5,829,898	\$2,237,567
1997	189	6,175	35,686	120,331	134,591	3,465,507	2,627,977	87,170	0	227,097	6,704,723	\$2,810,144
1998	579	27,582	140,363	225,937	117,580	4,277,256	2,397,025	63,912	0	161,205	7,411,439	\$2,838,921
1999		7,822	47,770	223,463	108,326	2,961,890	2,262,213	9,393	0	72,973	5,693,850	\$2,204,565
2000	939	13,852	32,288	176,946	120,642	3,764,679	2,829,818	8,519	0	57,946	7,005,629	\$3,562,693
2001	160	20,034	74,144	283,488	176,546	3,248,212	3,093,921	12,950	0	33,056	6,942,511	\$2,835,318
2002	5,737	1,326	13,099	138,640	140,776	3,062,211	2,184,076	23,151	0	20,586	5,589,602	\$2,297,333
2003	35	6,003	74,144	184,437	277,430	3,471,484	2,043,421	17,181	0	9,337	6,083,472	\$2,747,351
2004	98	1,652	56,029	43,729	131,605	1,931,454	2,317,215	1,876	0	12,792	4,496,450	\$3,350,472
2005	435	769	125,685	114,987	95,350	4,335,314	1,714,518	10,468	0	21,156	6,418,682	\$3,310,675
2006	2,959	3,646	62,824	35,082	40,777	2,137,586	1,364,797	5,691	0	22,502	3,675,864	\$2,859,385
2007	1,080	4,474	128,207	389,520	70,514	4,335,314	879,135	6,357	0	14,317	5,637,154	\$4,258,365
2008	0	1,942	32,649	123,718	29,835	2,137,586	737,293	1,492	0	9,181	2,863,714	\$1,788,297
2009	317	34,063	71,449	528,625	63,470	4,014,576	1,006,535	22,557	0	22,057	4,456,467	\$3,239,049
2010	447	6,048	60,416	561,217	44,025	1,104,667	572,345	3,957	0	13,446	2,143,898	\$1,825,200
2011	159	54,890	93,776	553,010	60,106	3,763,055	936,993	12,162	0	29,031	5,272,523	\$1,484,039
2012	90,141	9,935	18,103	100,347	14,563	615,726	489,708	541	0	36,744	1,375,808	\$1,142,878
2013	156,751	48,324	79,157	336,020	41,286	2,097,666	768,671	585	0	31,248	3,559,708	\$3,553,436
2014	*	29,767	119,620	339,019	148,908	3,999,297	764,689	*	*	16,700	5,426,183	\$6,737,257

**Table 2. Commercial landings (pounds) by gear, 2014**  
(Source: NMFS Fisheries Statistics Division)

<b>Gear</b>	<b>Landings (lbs)</b>	<b>Percent of Total</b>
Gill nets	3,927,930	77.0%
Haul Seins	305,655	6.0%
Pound Net	306,615	6.0%
Trawl	34,674	0.7%
Other	524,221	10.3%
Total	5,099,095	100.0%

**Table 3. Recreational harvest (pounds) by state, 1981-2014**  
(Source: NMFS Fisheries Statistics Division)

Year	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	20,348	6,175	8,047	554,986	4,625,985	1,193,537	144,600	50,734	311,406	6,915,818
1982		85,446	19,281	656,245	1,563,396	1,093,047	313,177	20,199	236,027	3,986,818
1983			4,017	354,788	2,520,125	1,630,882	293,161	28,023	167,294	4,998,290
1984		3,768	5,714	361,850	404,533	650,386	169,346	81,758	122,585	1,799,940
1985	3,415	4,255		193,266	1,955,039	3,120,532	441,808	13,071	213,042	5,944,428
1986	1,327	2,114	3,836	1,139,871	1,205,158	536,443	455,836	23,369	25,360	3,393,314
1987				1,545,691	1,336,387	690,653	226,701	14,601	32,835	3,846,868
1988		84,941	1,876	80,547	720,609	802,320	632,868	14,645	184,602	2,522,408
1989	132	606	10,368	633,150	1,400,728	929,188	288,591	7,798	23,254	3,293,815
1990		5,644	11,821	791,264	2,103,751	613,904	50,525	6,259	1,737	3,584,905
1991		19,528	48,100	634,894	2,729,698	727,463	245,661	1,786	107,256	4,514,386
1992		8,788	36,799	724,279	2,278,309	403,775	397,677	6,978	167,845	4,024,450
1993	315	2,264	844	636,032	951,766	812,810	461,447	109,317	396,632	3,371,427
1994	7,198	20,364	34,795	676,687	1,217,036	1,842,360	469,518	2,687	57,234	4,327,879
1995		1,186	22,919	485,682	1,067,637	1,247,995	242,973	7,701	42,851	3,118,944
1996		10,966	789	294,404	492,982	710,086	494,448	5,445	26,953	2,036,073
1997		8,609	50,781	401,275	1,263,447	722,868	254,794	2,072	13,962	2,717,808
1998			36,658	631,422	866,619	1,249,543	228,502	2,088	47,196	3,062,028
1999			10,886	272,292	244,499	646,662	391,402	2,275	84,511	1,652,527
2000	130,649	46,244	32,968	600,302	252,885	893,835	128,669	1,402	14,129	2,101,083
2001			20,110	629,861	523,202	1,773,671	346,878	1,720	284,706	3,580,148
2002			10,870	336,660	829,972	984,898	140,164	2,857	7,840	2,313,261
2003			14,386	1,690,502	875,729	1,714,158	227,821	5,710	26,504	4,554,810
2004			6,919	442,100	1,136,261	1,846,688	245,991	721	3,338	3,682,018
2005		14,546	68,075	658,077	1,375,629	1,103,830	158,407	917	12,751	3,392,232
2006		28,971	38,010	991,142	1,926,940	978,181	745,772	1,166	6,067	4,716,249
2007	952	0	74,531	1,282,803	3,237,069	1,378,993	605,024	2,346	12,899	6,594,617
2008	0	23,157	42,078	618,172	1,828,398	671,916	2,731,815	4,292	21,041	5,940,869
2009	0	1,882	48,465	802,395	829,245	354,375	589,027	2,493	22,169	2,650,051
2010		212,616	74,641	447,575	563,423	260,757	322,885	214	28,033	1,910,144
2011		755	52,120	314,032	1,101,847	411,243	596,679	171	62,657	2,539,504
2012		104,028	21,558	253,103	410,777	230,259	933,684	91	19,090	1,972,590
2013	6,099	118,685	107,330	280,842	1,336,913	460,928	301,307	1,614	42,267	2,655,985
2014		6,477	210,001	404,080	1,276,043	704,445	157,258	3,968	165,159	2,944,135



**Table 4. Recreational harvest (numbers) by state, 1981-2014**  
(Source: NMFS Fisheries Statistics Division)

Year	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	44,278	28,006	17,508	948,931	11,662,684	4,023,934	562,750	124,057	799,226	18,211,374
1982		387,582	82,094	2,864,603	4,526,847	4,124,465	1,230,253	84,153	735,398	14,035,395
1983			14,464	1,600,362	12,059,247	4,880,268	970,747	112,123	488,029	20,125,240
1984		8,501	15,553	904,793	1,489,795	2,758,366	724,925	363,841	396,402	6,662,176
1985	15,494	12,692		1,028,391	5,491,918	8,789,391	2,355,044	62,338	861,700	18,616,968
1986	3,824	9,587	12,178	3,789,796	4,229,191	2,646,049	2,007,386	137,782	96,803	12,932,596
1987				3,180,704	3,864,151	2,129,146	599,807	79,487	73,833	9,927,128
1988		348,593	2,360	277,964	2,028,768	2,558,322	1,951,157	57,786	663,681	7,888,631
1989	602	1,128	45,853	1,154,314	3,714,855	2,924,299	1,078,570	34,977	67,506	9,022,104
1990		25,927	44,362	2,120,655	5,354,294	1,986,601	142,271	17,730	7,252	9,699,092
1991		88,393	138,113	1,841,555	8,820,075	2,317,095	598,290	10,281	269,628	14,083,430
1992		20,443	90,053	1,671,897	6,317,539	1,271,416	1,190,757	25,788	357,678	10,945,571
1993	1,168	7,788	3,263	1,880,043	2,836,534	2,057,440	1,437,809	228,606	946,757	9,399,408
1994	19,275	144,589	92,352	1,761,701	3,395,503	5,929,269	1,329,997	9,587	137,067	12,819,340
1995		2,949	51,695	1,099,658	2,731,242	3,329,981	875,189	27,842	140,231	8,258,787
1996		23,954	955	591,300	1,109,237	2,007,071	1,423,352	14,131	64,337	5,234,337
1997		20,148	126,089	713,657	3,328,144	1,440,661	680,842	5,471	31,987	6,346,999
1998			96,389	1,327,259	2,023,756	2,865,190	489,068	6,788	120,389	6,928,839
1999			19,911	655,289	569,250	1,308,167	801,785	5,578	264,233	3,624,213
2000	498,470	281,481	65,952	1,389,505	527,259	1,924,108	246,290	2,950	40,908	4,976,923
2001	0	0	51,096	1,088,997	1,056,365	3,650,711	735,551	3,681	652,976	7,239,377
2002	0	0	22,013	690,515	1,601,837	2,586,313	393,597	6,987	25,907	5,327,169
2003	0	0	30,166	3,300,595	1,441,002	3,796,556	524,513	11,523	84,686	9,189,041
2004	0	0	17,494	867,589	1,717,416	3,825,768	729,851	1,563	6,790	7,166,471
2005	0	46,795	150,772	1,788,679	2,781,973	3,012,872	358,550	3,199	23,796	8,166,636
2006	0	68,168	110,607	2,895,783	3,584,930	2,978,506	1,170,611	1,761	7,990	10,818,356
2007	1,813	0	176,997	3,615,346	8,203,377	3,078,346	605,024	6,529	30,184	15,717,616
2008	0	132,472	133,996	1,892,116	4,398,472	1,843,343	2,731,815	8,903	58,732	11,199,849
2009	0	6,720	128,799	2,064,326	2,146,607	1,056,346	589,027	17,948	25,391	6,035,164
2010	0	650,260	214,180	1,164,091	1,669,843	834,561	322,885	851	94,671	4,951,342
2011	0	1,370	150,650	912,704	2,967,029	1,207,335	596,680	968	152,329	5,989,065
2012	39,912	627,664	65,555	766,145	1,350,153	784,272	1,001,664	348	65,598	4,701,311
2013	13,294	326,956	248,346	945,972	4,332,620	1,464,592	732,413	6,573	132,204	8,202,970
2014		13,062	344,930	1,254,029	3,908,724	2,111,880	466,106	15,620	608,814	8,723,165

**Table 5. Recreational releases (numbers) by state, 1981-2014**  
(Source: NMFS Fisheries Statistics Division)

Year	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981		25,740	1,502	1,331,316	8,905,412	735,408	82,035	5,975	64,344	11,151,732
1982		974,847	5,061	1,677,415	1,618,065	806,851	366,650	44,091	205,387	5,698,367
1983		57,556		1,114,795	2,715,522	634,107	192,240	39,798	186,615	4,940,633
1984			13,260	1,150,599	2,607,693	952,816	346,003	17,897	130,493	5,218,761
1985	22,220	2,979		735,873	2,051,793	429,914	515,106	17,316	170,060	3,945,261
1986		79,712		2,720,343	2,250,794	816,204	331,290	20,863	10,351	6,229,557
1987			1,104	248,973	1,736,228	593,937	304,127	28,434	57,437	2,970,240
1988		110,698	4,501	716,258	762,504	995,806	110,498	16,951	110,003	2,827,219
1989		4,503	40,193	730,580	2,519,034	524,897	138,834	1,630	22,425	3,982,096
1990		14,504	10,120	1,811,434	4,441,195	921,849	13,709	4,079	30,937	7,247,827
1991		91,991	59,770	2,123,582	7,041,156	946,564	100,666	14,629	168,284	10,546,642
1992		1,324	12,553	493,597	2,091,001	841,163	279,044	16,791	64,738	3,800,211
1993			35,987	1,573,486	1,374,950	528,449	130,055	47,667	185,226	3,875,820
1994	8,140	160,380	53,078	1,037,498	2,142,198	1,363,884	320,921	22,434	335,647	5,444,180
1995		22,162	14,195	253,827	1,166,428	1,035,361	331,781	9,799	268,765	3,102,318
1996	7,178	39,448	1,128	208,897	577,847	924,204	212,920	5,329	65,083	2,042,034
1997		21,512	88,751	1,316,341	1,365,809	450,663	245,349	990	18,102	3,507,517
1998		12,542	75,985	633,914	900,352	650,157	307,480	12,286	58,264	2,650,980
1999			15,789	618,742	339,988	633,112	86,894	10,675	530,849	2,236,049
2000	157,991	16,633	30,522	1,080,310	502,923	481,995	115,682	17,376	54,388	2,457,820
2001		2,040	13,139	577,417	968,976	1,143,695	154,077	11,714	74,232	2,945,290
2002	2,127	3,331	27,220	501,111	481,765	671,669	103,914	20,038	44,584	1,855,759
2003		39,049	13,273	670,382	933,842	1,132,992	231,612	31,055	106,918	3,159,123
2004			39,998	383,292	882,136	1,257,887	210,215	12,536	9,427	2,795,491
2005		5,772	157,445	2,135,086	2,456,981	1,334,559	183,819	25,117	41,773	6,340,552
2006		65,244	92,864	1,355,280	1,371,751	2,588,647	496,870	3,774	21,755	5,996,185
2007	535	119,976	44,455	1,618,690	2,156,839	1,197,005	151,481	17,600	26,675	5,333,256
2008		1,166,532	98,304	1,737,665	1,487,665	1,322,408	188,746	25,908	128,942	6,156,170
2009		7,691	140,014	632,595	1,457,588	1,222,053	326,065	10,486	40,890	3,837,382
2010		191,745	72,216	1,155,003	1,155,882	871,054	166,679	562	57,924	3,671,065
2011		1,370	66,661	296,513	2,245,221	1,000,566	222,623	9,766	196,294	4,039,014
2012	37634	477938	60,334	919,896	1,145,960	759,081	142,093	3,968	373,916	3,920,820
2013	332	746,878	214,067	2,621,931	2,226,300	1,314,199	957,781	8,623	110,865	8,200,976
2014		15,323	78,691	565,679	1,173,748	890,831	427,049	27,224	575,251	3,753,796