REVIEW OF THE
INTERSTATE FISHERY MANAGEMENT PLAN FOR

ATLANTIC CROAKER
(Micropogonias undulatus)

2006 FISHING YEAR

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I. Status of the Fishery Management Plan

Date of FMP Approval:	Original FMP – October 1987
Amendments:	Amendment 1 – November 2005 (implemented January 2006)
Management Areas:	The Atlantic coast distribution of the resource from Florida through New Jersey South-Atlantic Region: Florida through South Carolina North-Atlantic Region: North Carolina through New Jersey
Active Boards/Committees:	South Atlantic State/Federal Fisheries Management Board; Atlantic Croaker Plan Development/Plan Review Team, Technical Committee, Stock Assessment Subcommittee, and Advisory Panel

The *Fishery Management Plan (FMP) for Atlantic Croaker* was adopted in 1987 and included the states from Maryland through Florida. Subsequently, the South Atlantic State/Federal Fisheries Management Board (Board) reviewed the FMP and found its recommendations to be vague and no longer valid. The Board recommended that an amendment be prepared to define management measures necessary to achieve the goals of the FMP, and the Interstate Fisheries Management Program (ISFMP) Policy Board adopted the finding that the original FMP did not contain any management measures that states were required to implement.

In 2002, the Board directed the Atlantic Croaker Technical Committee to conduct the first coastwide stock assessment of the species, in preparation of developing an amendment. The Atlantic Croaker Stock Assessment Subcommittee developed an updated stock assessment in 2003, which was approved by a Southeast Data Assessment Review (SEDAR) panel for use in management in June 2004 (ASMFC 2005a). The Board quickly initiated the development of an amendment, which went to public comment in the fall of 2005. In November 2005, the Board approved Amendment 1 to the Atlantic Croaker FMP (ASMFC 2005b). The amendment was fully implemented by January 1, 2006.

The goal of Amendment 1 is to utilize interstate management to perpetuate the self-sustainable Atlantic croaker resource throughout its range and generate the greatest economic and social benefits from its commercial and recreational harvest and utilization over time. Amendment 1 contains four objectives:

1) Manage the fishing mortality rate for Atlantic croaker to provide adequate spawning potential to sustain long-term abundance of the Atlantic croaker population.
2) Manage the Atlantic croaker stock to maintain the spawning stock biomass above the target biomass levels and restrict fishing mortality to rates below the threshold.
3) Develop a management program for restoring and maintaining essential Atlantic croaker habitat.
4) Develop research priorities that will further refine the Atlantic croaker management program to maximize the biological, social, and economic benefits derived from the Atlantic croaker population.

Consistent with the stock assessment, Amendment 1 defines two management areas: the south-Atlantic region, including the states Florida through South Carolina; and the mid-Atlantic region, including the states North Carolina through New Jersey.

Amendment 1 does not require any specific measures restricting recreational or commercial harvest of Atlantic croaker. Those states with more conservative measures are encouraged to maintain those regulations. See Table 1 for state regulations in 2006. Through adaptive management, the Management Board may vary the requirements specified in Amendment 1.

Amendment 1 established biological reference points (BRPs) to define overfished stock status and overfishing. Overfished status is defined by a threshold female spawning stock biomass (SSB) of 44.65 million pounds, with a target SSB of 63.78 million pounds. Overfishing is defined by a threshold fishing mortality rate (F) of 0.39, with a target F of 0.29. The BRPs apply only to the mid-Atlantic region; the status of the stock for the south-Atlantic region remains unknown due to a lack of data. Should it be determined that the stock is overfished or that overfishing is occurring, the Management Board will take action to recover the stock to the desired target level or to reduce the fishing mortality on the stock to the desired target level. In such a case, the Board will determine a stock rebuilding target and schedule.

For states to be found in compliance with Amendment 1, they must have implemented management controls on Atlantic croaker consistent with Amendment 1, except that a state may propose an alternative management program, which, if approved by the Management Board to have the same conservation value as the measure contained in Amendment 1, may be implemented as an alternative regulatory requirement for compliance. Beginning in 2007, states were required to submit an annual compliance report by July 1st of each year that contains commercial and recreational landings as well as results from any monitoring programs that intercept Atlantic croaker.

II. Status of the Stock

The latest stock assessment was completed in 2004 and reviewed by the SEDAR peer review panel (ASMFC 2005a). The Stock Assessment Subcommittee used an Age Structured Production Model. The assessment only accounts for the mid-Atlantic region (North Carolina and north); there was insufficient data to assess the South Atlantic region (South Carolina through Florida).

For the base mid-Atlantic run, the trend in population abundance indicates a step-wise increase reaching a peak of 974 million fish in 1999. Population estimates from 1999 to 2002 have ranged from 663 to 974 million fish. Spawning stock biomass (SSB) estimates exhibit a cyclical trend over the time series (Figure 1). From the early 1970s to 1983, SSB declined to its lowest level (11,746 MT). Since 1984, SSB has increased in three distinct phases, with estimates reaching a maximum of 96,686 metric tons in 1996. Between 1997 and 2002, SSB estimates range between 80,000 and 91,000 metric tons.

In the assessment, the fishing mortality rate (F) is based on the average population weighted F for ages 1-10+. Fishing mortality rates for Atlantic croaker exhibit a cyclical trend over the time series (Figure 2). From 1977 to 1979, F rose rapidly reaching a maximum of 0.5 in 1979. From 1980 onwards, F rapidly declined reaching its lowest levels in 1992. Since 1993, F has gradually increased and stabilized in 2002 at around 0.11.

Between 1973 and 2002 the relationship between the different sources of removals has changed. In particular, estimates of scrap/discards peaked in 1979 (3,200 MT) and since then declined to their lowest levels in 2002 (425 MT). Between 1973 and 1995, scrap/discard removals averaged 1,687 MT per year, whereas between 1996-2002 scrap/discards averaged 595 MT per year. It appears that the significant reduction in removals of predominantly age 1 and younger fish may have contributed to relatively stable fishing mortality and spawning stock biomass estimates since the mid-1990s.

The commercial and recreational catch-at-age data from recent years also shows an increasing age distribution, with a few fish of 12 years being observed in the commercial landings. Anecdotal evidence from the mid-Atlantic indicates an expansion of the population at the northern part of the range. For example, in Delaware, fishery independent indices indicate a recent increase in abundance of Atlantic croaker in the region. In addition, both commercial and recreational landings from New Jersey and Delaware have increased recently. The population has benefited from good recruitment in recent years (Figure 1), which may also be tied to the regulatory changes that have affected some of the fisheries that indirectly target Atlantic croaker.

While the assessment does not capture all of the sources of uncertainty, examination of the effects of alternate weightings of the likelihood components and alternate steepness and natural mortality estimates indicate that reference points derived from the base run are relatively robust. The reference points suggest that there was less than a 10% chance that the population is overfished or undergoing overfishing. Sensitivity analysis evaluating the inclusion/non-inclusion of shrimp bycatch estimates indicate that SSB_{msy} estimates are sensitive to the inclusion of Atlantic croaker caught as shrimp bycatch. However, increased SSB_{msy} estimates are also accompanied by higher SSB estimates. The ratio of SSB_{2002}:SSB_{msy} when shrimp bycatch is included indicates that the stock is unlikely to be below the threshold estimates. Of concern would be management goals that define biomass reference points in absolute terms. There appears to be some justification for revising the reference points for the biomass target and threshold to relative terms until a more comprehensive evaluation of Atlantic croaker from shrimp bycatch can be carried out.

The next stock assessment is scheduled for the fall of 2009, an update assessment through the SEDAR process.

III. Status of the Fishery

Commercial landings are from the National Marine Fisheries Service (NMFS), Fisheries Statistics Division (2007) or as reported to the Commission by the states. Atlantic coast commercial landings of Atlantic croaker exhibit a cyclical pattern, with low domains in the 1960s to early 1970s and the 1980s to early 1990s, and high domains in the mid-to-late 1970s and the mid-1990s to the present (Figure 3). Commercial landings increased steadily each year from a low of 3.7 million pounds in 1991 to more than 28.6 million pounds in 2003 (Table 2). Commercial landings decreased for the third year in a row since the high in 2003 to 22.0 million pounds in 2006; however, coastwide commercial landings have remained above 20 million pounds since 1996 (Figure 3). Within the management unit (New Jersey to Florida), the majority of landings come from Virginia (41.5% by weight in 2006) and North Carolina (47.1% by

weight in 2006). New Jersey landed 7.28% by weight of the coastwide total in 2006, and the remaining states all landed less than 4.0% of the coastwide total by weight.

Recreational landings are from the NMFS, Fisheries Statistics Division as estimated through the Marine Recreational Fishery Statistics Survey (2007). From 1981-2006, recreational landings of Atlantic croaker (Type A+B1) from New Jersey through North Carolina have varied between 2.8 million fish (1.3 million pounds) and 13.2 million fish (11.1 million pounds), with landings showing a strong linear increase over this period (Tables 3 and 4, Figure 4). Since 2001, the harvest has declined slightly, averaging 11.0 million fish (9.4 million pounds) from 2002-2006. The recreational harvest in 2006 is estimated at 10.2 million fish (9.2 million pounds), a slight decrease from 2005 (Tables 3 and 4). The states from New Jersey through Virginia were responsible for over 96.1% of the recreational harvest in 2006 by pounds, with Virginia taking the majority (70.0%). The number of recreational releases has increased over the time series (Figure 4). In 2006, anglers released over 11.5 million fish, about 1.27 million more fish than they landed (Table 5).

IV. Status of Assessment Advice

In 2003, the Atlantic Croaker Stock Assessment Subcommittee conducted a stock assessment for Atlantic croaker. A SEDAR Peer Review Panel reviewed this assessment in October 2003. The panel recommended additional data for inclusion in the assessment and for the Technical Committee to evaluate the use of other types of models. The Stock Assessment Subcommittee re-ran the assessment in 2004 with the changes that the SEDAR panel recommended. This assessment was reviewed by the same SEDAR panel in June 2004. The panel approved this assessment for management purposes.

V. Status of Research and Monitoring

The following fishery dependent and independent monitoring programs were reported in the 2006 compliance reports.

Fishery Dependent Monitoring

- New Jersey: commercial harvest and effort data; biological monitoring (length measurements, otolith collection) of commercially harvested croaker began in 2006 in conjunction with funding from the Atlantic Coastal Cooperative Statistics Program
- Maryland: commercial harvest and effort data; biological monitoring (length and weight measurements, sex determination, otolith collection) from on-the-water commercial pound net sampling
- Potomac River Fisheries Commission: commercial harvest and effort data
- Virginia: commercial harvest and effort data; biological monitoring (length and weight measurements, sex determination, otolith collection) of commercial fishery
- North Carolina: commercial harvest and effort data; catch and effort data from Recreational Commercial Gear License holders
- South Carolina: recreational private boat angler catch and effort data and length measurements from state finfish survey
- Georgia: commercial and for-hire/charter boat harvest and effort data; biological monitoring (length measurements, sex determination, otolith collection) via the Marine Sportfish Carcass Recovery Project

- Florida: commercial harvest and effort data
- NMFS MRFSS: recreational catch, harvest, release, and effort data; length measurements

Fishery Independent Monitoring

- New Jersey: nearshore ocean (within 12 nm) adult trawl surveys, August and October (1989-present); nearshore Delaware Bay juvenile trawl survey, April – November (1991-present); Delaware River juvenile seine survey, August – October (1980-present)
- Delaware: offshore Delaware Bay adult finfish trawl survey (1966-present); nearshore Delaware Bay and River juvenile finfish trawl survey, September and October (1980-present)
- Maryland: Atlantic coast bays juvenile otter trawl survey, April – October (standardized from 1989-present); Tangier and Pocomoke Sounds juvenile trawl survey, May – October (1980-present); Maryland coastal bays juvenile seine survey (1972-present); Chesapeake Bay juvenile seine survey (1959-present)
- Virginia: VIMS Juvenile Finfish and Blue Crab Trawl Survey (1988-present); Chesapeake Bay Multispecies Monitoring and Assessment Program (CHESMMAP) adult trawl survey (2002-present)
- Georgia: biological monitoring (age composition of stock, size/age at first spawning, sex ratio, movement/migration, fishing mortality, growth, and spawning season) via the Marine Sportfish Population Health Survey (2003-present); Altamaha River Delta and Wassaw estuaries trammel net survey, March – May and September – November (2003-present); Altamaha/Hampton River and Wassaw estuaries gillnet survey, June – August (2003-present); Ecological Monitoring [Trawl] Survey, monthly in six estuaries
- Florida: juvenile boat seine survey in northeast Florida and the northern Indian River Lagoon, December - April (1996-present); pre-recruit and adult haul seine survey in same areas plus southern Indian River Lagoon, May-October (2001-present)
- SEAMAP: shallow water (15-30 ft) trawl survey from Cape Hatteras, NC to Cape Canaveral, FL
- Northeast Fishery Science Center: Groundfish [Trawl] Survey, southern leg from New Jersey to Cape Hatteras, North Carolina

Researchers from various agencies and institutions have conducted numerous studies on Atlantic croaker. Research topics include, but are not limited to: environmental effects on recruitment, population modeling, genetic stock identification, geographic variation in life history/populations dynamics, scale-otolith age comparisons, habitat preference, and bycatch reduction gear research.

VI. Status of Management Measures and Issues

Fishery Management Plan

Amendment 1 was fully implemented by January 1, 2006, and provided the management requirements for the 2006 fishing year. No additional amendments or addenda are under development.

De Minimis Requests

With the implementation of Amendment 1, states were permitted to request *de minimis* status if, for the preceding three years for which data are available, their average commercial landings or

recreational landings (by weight) constitute less than 1% of the coastwide commercial or recreational landings for the same three year period. A state may qualify for *de minimis* in either its recreational or commercial sector, or both, but will only qualify for exemptions in the sector(s) that they qualify for as *de minimis*.

In the 2006 compliance reports, the following states requested *de minimis* status: Delaware (commercial fishery), South Carolina (commercial fishery), Georgia (commercial and recreational fisheries), and Florida (commercial fishery). The commercial and recreational *de minimis* criteria for 2007 are based on 1% of the average coastwide 2004-2006 landings in each fishery: 238,425 pounds for the commercial fishery and 95,399 pounds for the recreational fishery. Delaware's 2004-2006 commercial average (30,769 pounds) qualifies the state's commercial fishery for *de minimis* status. South Carolina's 2004-2006 commercial average (0 pounds) qualifies the state's commercial fishery for *de minimis* status. Georgia's 2004-2006 commercial and recreational averages (252 pounds and 14,356 pounds, respectively) qualify the state's fisheries for *de minimis* status. Florida's 2004-2006 commercial average (19,199 pounds) qualifies the state's commercial fishery for *de minimis* status.

However, the PRT also notes that Amendment 1 does not include any compliance requirements other than annual state reporting, which is still required of *de minimis* states. Therefore, *de minimis* requests and Board approval of such requests will not provide any benefit to states until new management measures are implemented.

Bycatch Reduction

Atlantic croaker is subject to both direct and indirect fishing effort. Historically, croaker ranked as one of the most abundant species in the bycatch of the south Atlantic shrimp trawl fishery. As a result, the original FMP recommended that bycatch reduction devices (BRDs) be developed and required in the shrimp trawl fishery. Since then the states of North Carolina through Florida have all enacted requirements for the use of BRDs in shrimp trawl nets in state waters, and croaker bycatch from this fishery has been reduced.

Atlantic croaker has also been the major component of the North Carolina and Virginia "scrap fishery". A number of additional regulations instituted by North Carolina, such as a ban on flynet fishing south of Cape Hatteras, incidental finfish limits for shrimp and crab trawls in inside waters, minimum mesh size restrictions in trawls, and culling panels in long haul seines, may have indirectly reduced catches of juvenile croaker and changed the size and age distributions of the harvest. In the last stock assessment, aggregate, unculled ("scrap") bait fisheries landings data were included for North Carolina and Virginia, and at-sea discard data were included from gill net and trawl fisheries. Scrap landings and discards were combined in the model. Between 1973 and 1995, scrap/discards accounted for an average 20% of removals, and from 1996 to 2002, an average 3% of removals (ASMFC 2005a).

Several states have implemented other gear requirements for trawls or other gears (e.g. pound nets) to further reduce bycatch and bycatch mortality, while others continue to encourage the use of these devices. Continuing to reduce the quantity of sub-adult croaker harvested should increase spawning stock biomass and yield per recruit.

Trigger Exercises
Amendment 1 requires the Technical Committee to conduct stock assessments every five years unless prompted by the completion of annual trigger exercises. The current primary trigger is based on landings data; however, catch-per-unit-effort (CPUE) will become the premier trigger for determining the necessity of stock assessments as the quality and quantity of these data improve. Maryland, Virginia, North Carolina, and Florida are aiming to develop commercial CPUE indices for the next stock assessment.

For the landings trigger, Amendment 1 states that a stock assessment will be triggered if the most recent year's commercial or recreational landings are less than 70% of the previous two years' average landings (ASMFC 2005b). Completion of the trigger exercise in 2007 demonstrated that the 2006 commercial landings of Atlantic croaker did not trigger a stock assessment prior to the scheduled 2009 SEDAR assessment (See Table 6).

Law Enforcement
The ASMFC Law Enforcement Committee reports that there are no issues relating to the enforcement of Atlantic croaker. The plan is easily enforced and compliance is high due to a minimum amount of regulations and liberal limits in states where there are regulations.

VII. Implementation of FMP Compliance Requirements for 2006

Amendment 1 provides the basis for determining state compliance for 2006. The amendment includes one regulatory requirement, stipulating that states submit an annual compliance report containing commercial and recreational landings and results of any monitoring programs that intercept Atlantic croaker. The PRT finds that all states within the management unit have fulfilled the requirements of Amendment 1.

VIII. Recommendations of the Plan Review Team

Management and Regulatory Recommendations
- Encourage the use of circle hooks to minimize recreational discard mortality.

Research and Monitoring Recommendations
<u>High Priority</u> (Those italicized are the highest priority.)
- *Determine migratory patterns and mixing rates through cooperative, multi-jurisdictional tagging studies, including tagging information from Cape Fear south. Examine otolith microchemistry data available and continue research in this area (partially met: Lankford et al. 1999).*
- *Conduct an ageing workshop to standardize ageing procedures for Atlantic croaker and standardize current age data sets.*
- *Collect bio-profile information and conduct studies on growth rates, age structure, and maturity schedule throughout the species range with a standardized protocol.*
- *Produce a general fishery independent index using state survey information, and develop a coastwide and/or regional CPUE index.*
- *Evaluate bycatch and discard estimates from the commercial and recreational fisheries and characterize the scrap fishery.*

- *Examine socio-economic aspects of the fishery.*
- Develop age-size data that are representative of all seasons and areas in the fisheries on an annual basis.
- Develop fishery-independent size, age, and sex specific relative abundance estimates to monitor long-term changes in croaker abundance.
- Improve catch and effort statistics from the commercial and recreational fisheries.
- Examine reproductive biology of croaker with emphasis on developing maturity schedules and estimates of fecundity across the management unit (partially met: Barbieri et al. 1994).

Medium Priority

- Evaluate hook and release mortality under varying environmental factors and fishery practices and include in updated assessment.
- Evaluate and compile the effects of mandated bycatch reduction devices (BRDs) on croaker catch
- Evaluate the optimum utilization (economic and biological) of a long-term fluctuating population such as croaker.
- Identify essential habitat requirements.
- Determine species interactions and predator/prey relationships for croaker (prey) and other more highly valued fisheries (predators).
- Determine the impacts of any dredging activity (i.e. for beach re-nourishment) on all life history stages of croaker.

IX. References

Atlantic States Marine Fisheries Commission (ASMFC). 2005a. Atlantic Croaker Stock Assessment & Peer Review Reports. ASMFC, Washington, DC.

ASMFC. 2005b. Amendment 1 to the Interstate Fishery Management Plan for Atlantic Croaker. ASMFC Fishery Management. Report No. 44.

Barbieri, L.R., M.E. Chittenden, Jr. and S.K. Lowerre-Barbieri. 1994. Maturity, spawning, and ovarian cycle of Atlantic croaker, *Micropogonias undulatus*, in the Chesapeake Bay and adjacent coastal waters. Fish. Bull. 92: 671-685.

Lankford, T.E., Jr., T.E. Targett and P.M Gaffney. 1999. Mitochondrial DNA analysis of population structure in the Atlantic croaker, *Micropogonias undulatus* (Perciformes: Sciaenidae). Fish. Bull. 97: 884-890.

National Marine Fisheries Statistics (NMFS). 2007. Personal communication with the Fisheries Statistics Division. See: http://www.st.nmfs.gov/st1/

X. Figures

Figure 1. Spawning stock biomass (metric tons) and age 0 recruits (millions of fish) estimates from the base mid-Atlantic model (ASMFC 2005a, Section C)

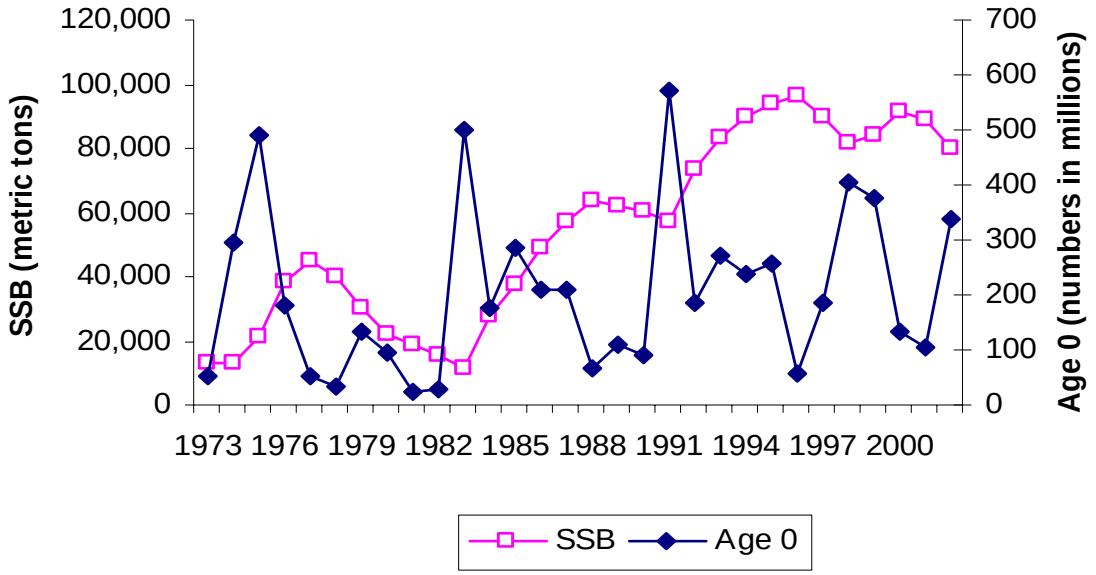


Figure 2. Average fishing mortality rates (ages 1 –10) for Atlantic croaker in the mid-Atlantic (ASMFC 2005a, Section C)

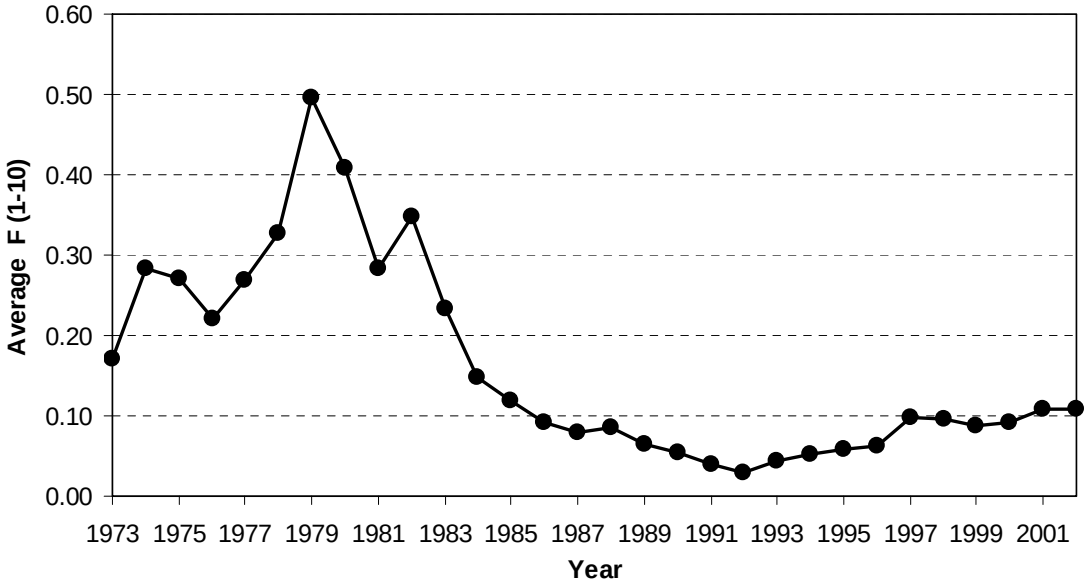
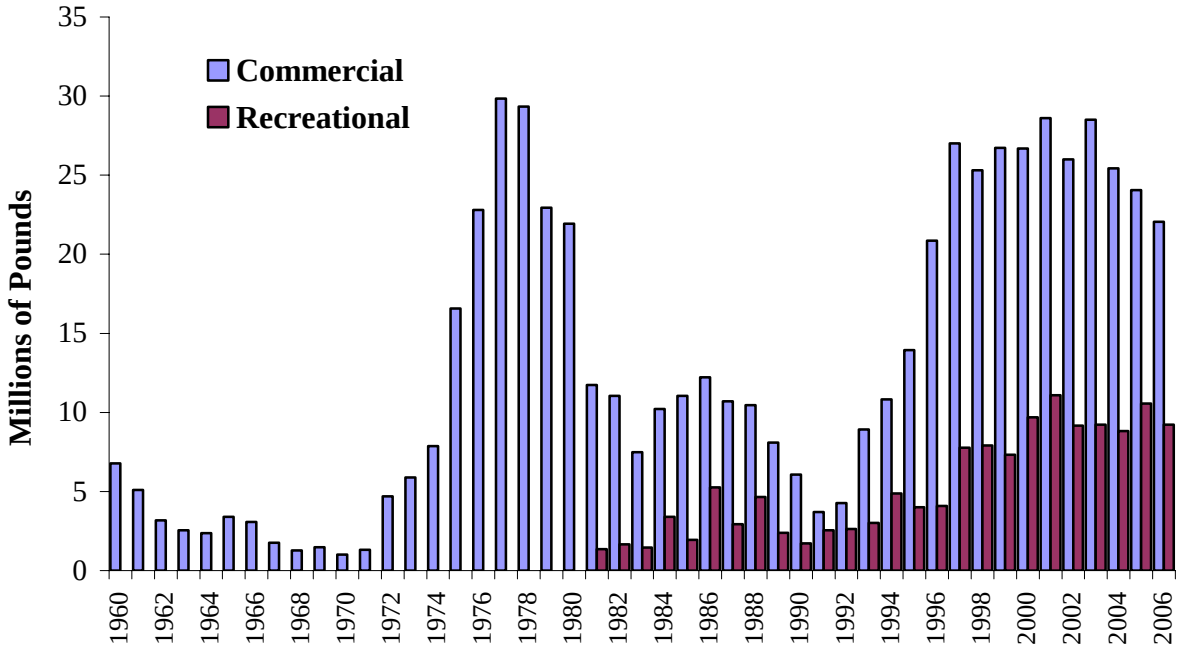
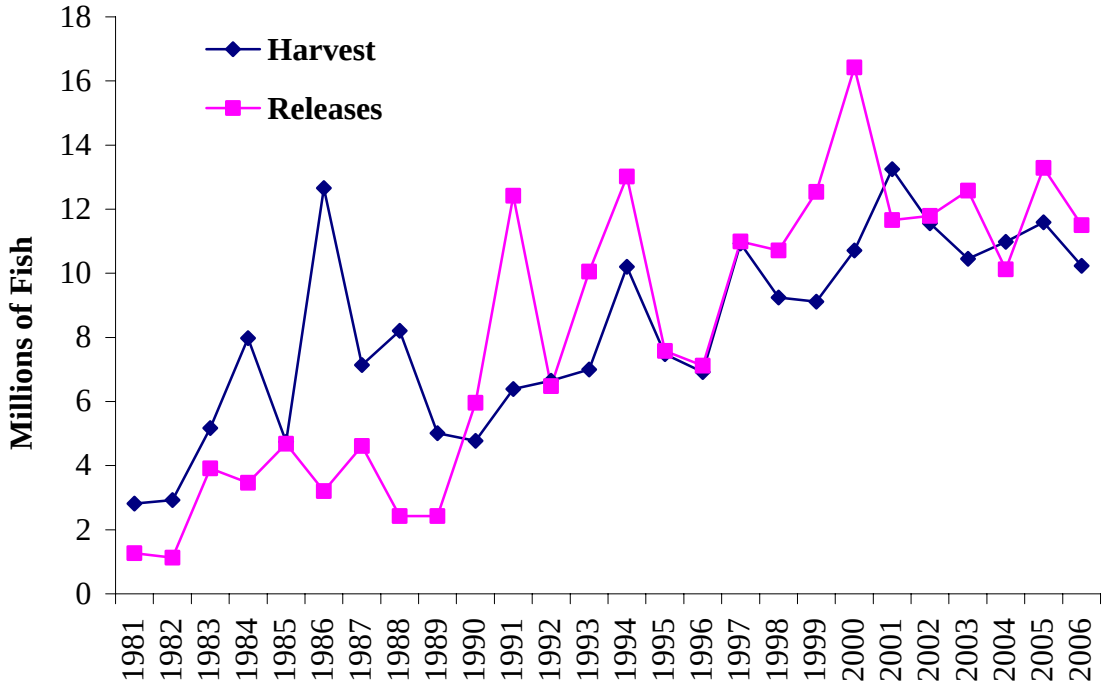


Figure 3. Atlantic croaker commercial^ and recreational* harvest (pounds) (See Tables for data and source information)



^ Commercial harvest estimate for 2006 is preliminary
* Reliable recreational harvest estimates are not available before 1981

Figure 4. Recreational harvest and releases (number of fish) of Atlantic Croaker, 1981-2006 (See Tables for data and source information)



XI. Tables

Table 1. Summary of state regulations for Atlantic croaker in 2006*

State	Recreational	Commercial
New Jersey	none	otter/beam trawl mesh restriction for directed croaker harvest (>100 lbs in possession)
Delaware	8" minimum; 50 fish/day; license required for recreational gill nets (up to 200 ft.)	8" minimum
Maryland	9" min, 25 fish/day.	9" minimum; open season: 3/16 to 12/31
PRFC	25 fish/day	none
Virginia	none	none
North Carolina	license required for recreational use of commercial gears; license required for 3+ special devices in inland waters	license required for 3+ special devices in inland waters
South Carolina	mandatory for-hire logbooks	no commercial fishery
Georgia	8" min, 25 fish/day	8" minimum; 25 fish/day limit except for commercial shrimp trawlers
Florida	none	none

* A commercial fishing license is required to sell croaker in all states with fisheries. For all states, general gear restrictions affect commercial croaker harvest.

Table 2. Commercial harvest (pounds) of Atlantic croaker by state, 1981-2006

(1981-2005: NMFS Fisheries Statistics Division, Queried 7/6/07. 2006: State Reports)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	23,500		2,100	429,800	11,205,342	2,441	1,038	72,112	11,736,333
1982	100		7,000	119,300	10,824,953	386	2,177	95,357	11,049,273
1983	200		500	150,400	7,249,680	3,200	1,097	81,737	7,486,814
1984	57,700		27,100	817,700	9,170,160	3,793		131,375	10,207,828
1985	48,800	100	9,500	2,171,821	8,695,544	1,256		115,641	11,042,662
1986	106,000	500	137,500	2,367,000	9,424,828	924		177,414	12,214,166
1987	357,600	800	119,300	2,719,500	7,289,191	698	553	217,932	10,705,574
1988	30,100	200	98,700	1,749,200	8,434,415	2,614	304	140,011	10,455,544
1989	137,100		89,500	947,300	6,824,088	1,950		94,909	8,094,847
1990	644		3,584	198,195	5,769,512	1,190	32	104,402	6,077,559
1991	31,292	700	6,183	164,126	3,436,960			56,761	3,696,022
1992	51,600	800	10,685	1,339,388	2,796,612		210	73,369	4,272,664
1993	183,414	2,500	158,062	5,264,974	3,267,652			51,465	8,928,067
1994	117,256	3,000	218,744	5,773,430	4,615,793			96,018	10,824,241
1995	334,654	13,000	549,716	6,991,044	6,021,332			22,879	13,932,625
1996	621,889		810,435	9,442,959	9,961,862			26,045	20,863,190
1997	1,994,446	10,509	1,455,707	12,790,922	10,711,704			36,572	26,999,860
1998	1,029,332	10,368	1,375,646	12,006,988	10,865,928			26,418	25,314,680
1999	2,071,046	14,729	1,584,412	12,849,954	10,185,535			26,441	26,732,117
2000	2,130,465	11,121	1,501,655	12,889,406	10,122,634			34,441	26,689,722
2001	1,389,837	22,736	2,233,160	12,929,191	12,017,459			14,857	28,607,240
2002	1,828,484	10,732	1,513,025	12,447,795	10,189,182			17,237	26,006,455
2003	1,575,738	16,561	1,532,038	10,936,274	14,429,221	116		16,547	28,506,495
2004	2,096,305	33,118	1,800,940	9,487,635	11,992,828		3	11,413	25,422,242
2005	1,847,753	39,988	1,389,308	9,271,771	11,490,729			16,541	24,056,090
*2006	1,605,282	19,200	860,271	9,150,779	10,383,561		<500	29,643	22,049,236

*Preliminary landings; Georgia's exact estimate is confidential because less than three dealers report landings; PRFC reported harvest of fish landed in Maryland (516,730 lb.) was added to Maryland's 2006 estimate (343,541 lb.) to make the total more comparable to the NMFS reported MD landings of previous year's and Virginia's 2006 harvest, which include Potomac River harvest.

Table 3. Recreational harvest (numbers of A + B1 fish) of Atlantic croaker by state, 1981-2006
(NMSF Fisheries Statistics Division, Queried 7/6/07)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	1,054	3,003	0	964,013	1,043,240	165,742	35,591	598,896	2,811,539
1982			10,452	273,039	596,493	193,554	169,749	1,682,619	2,925,906
1983			108,355	2,154,133	1,620,909	60,811	75,173	1,148,227	5,167,608
1984			211,035	2,047,720	2,147,871	588,114	202,364	2,781,742	7,978,846
1985			21,276	2,284,334	723,933	260,265	144,341	1,306,955	4,741,104
1986		4,694	123,578	6,384,966	356,742	599,442	69,887	5,118,552	12,657,861
1987	0	0	208,488	3,234,224	904,030	166,978	44,783	2,580,727	7,139,230
1988		1,186	1,005,452	4,048,690	2,256,128	144,057	64,093	685,778	8,205,384
1989		478	22,871	2,203,504	2,131,763	217,023	72,598	359,417	5,007,654
1990		281	100,673	2,374,679	1,063,452	346,631	585,380	304,064	4,775,160
1991	16,235	37,500	288,471	4,298,542	434,067	100,816	184,435	1,030,115	6,390,181
1992	0	9,854	117,427	4,524,040	723,823	74,051	440,185	754,595	6,643,975
1993	2,552	19,352	805,560	4,990,098	755,998	32,700	89,734	304,067	7,000,061
1994	1,567	5,718	1,633,581	6,494,691	1,179,735	188,520	102,974	599,032	10,205,818
1995	15,184	136,865	827,183	5,029,708	850,606	75,422	100,826	438,076	7,473,870
1996	35,037	235,389	775,115	4,997,021	662,240	37,464	61,957	116,575	6,920,798
1997	342,089	385,586	1,053,232	8,066,926	661,116	118,428	64,050	235,430	10,926,857
1998	143,404	391,231	1,126,058	6,730,181	387,427	170,528	64,953	234,360	9,248,142
1999	357,261	662,724	1,209,572	5,881,671	442,185	54,761	104,438	403,982	9,116,594
2000	1,023,442	517,886	2,674,880	5,486,159	391,056	32,332	128,922	455,870	10,710,547
2001	1,177,813	312,005	1,319,928	9,335,313	635,552	19,802	21,503	426,264	13,248,180
2002	253,472	261,634	1,223,385	9,129,060	408,944	66,409	36,497	177,751	11,557,152
2003	692,391	341,174	1,619,766	6,695,192	490,399	198,339	248,853	165,459	10,451,573
2004	1,172,210	494,104	870,844	7,292,880	474,180	135,842	44,825	497,921	10,982,806
2005	1,254,957	934,207	809,894	7,791,125	292,629	128,956	40,094	343,647	11,595,509
2006	698,222	865,850	834,556	7,072,623	434,793	38,682	40,378	247,383	10,232,487

Table 4. Recreational harvest (pounds of A + B1 fish) of Atlantic croaker by state, 1981-2006
(NMSF Fisheries Statistics Division, Queried 7/6/07)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981	582	2,317		535,297	426,240	67,284	9,665	305,547	1,346,932
1982			70,276	455,250	264,607	67,015	45,161	754,956	1,657,265
1983			32,053	486,006	395,402	14,158	25,412	510,599	1,463,630
1984			86,462	634,870	584,660	161,661	80,684	1,856,599	3,404,936
1985			17,169	843,414	278,214	72,780	40,421	684,449	1,936,447
1986		2,595	116,542	2,034,337	126,888	173,028	21,504	2,783,651	5,258,545
1987			191,628	1,306,814	352,346	64,696	14,947	1,005,053	2,935,484
1988		827	926,399	2,390,573	935,460	54,313	20,313	316,900	4,644,785
1989		284	19,189	1,329,680	658,567	80,580	21,138	268,335	2,377,773
1990		112	37,873	875,427	347,183	123,795	205,352	127,525	1,717,267
1991	4,264	10,972	117,210	1,728,021	157,660	16,173	54,116	460,453	2,548,869
1992		3,291	53,556	1,768,962	233,533	28,512	132,596	407,672	2,628,122
1993	844	9,641	476,866	1,993,915	282,910	18,005	55,604	180,517	3,018,302
1994	818	2,892	991,166	3,024,118	351,230	128,306	34,048	337,474	4,870,052
1995	9,515	82,864	567,149	2,675,381	326,135	25,386	20,862	301,918	4,009,210
1996	39,099	205,526	702,037	2,716,759	346,501	14,480	21,797	50,038	4,096,237
1997	278,758	340,198	1,117,999	5,522,195	309,457	53,863	26,272	113,096	7,761,838
1998	135,733	293,560	1,150,459	5,920,436	161,117	76,821	30,966	141,756	7,910,848
1999	301,957	522,201	1,024,398	4,969,283	212,991	26,356	32,375	231,692	7,321,253
2000	1,125,730	483,963	2,672,996	4,888,910	201,306	13,457	62,390	242,912	9,691,664
2001	1,132,214	304,127	1,278,699	7,674,759	355,009	10,750	7,844	320,487	11,083,889
2002	268,423	250,899	1,162,278	7,075,130	242,184	29,343	10,622	117,880	9,156,759
2003	682,698	262,114	2,069,176	5,674,111	317,606	59,399	71,881	79,396	9,216,381
2004	1,151,926	342,335	1,016,801	5,792,487	267,455	53,563	17,785	179,018	8,821,370
2005	1,189,849	846,084	942,702	7,240,971	143,963	42,088	13,913	147,117	10,566,687
2006	765,719	759,432	885,694	6,462,185	151,416	19,010	11,371	176,886	9,231,713

Table 5. Recreational releases (number of B2 fish) of Atlantic croaker by state, 1981-2006
(NMSF Fisheries Statistics Division, Queried 7/6/07)

Year	NJ	DE	MD	VA	NC	SC	GA	FL	Total
1981			16,233	324,238	704,259	128,192	13,481	85,740	1,272,143
1982				77,756	641,327	107,340	111,630	188,277	1,126,330
1983			1,507,184	1,410,151	424,562	119,036	70,499	379,021	3,910,453
1984			70,192	673,080	1,701,418	746,905	37,573	236,432	3,465,600
1985			13,132	1,616,052	1,596,901	238,678	66,649	1,146,582	4,677,994
1986		1,757	43,399	2,578,268	137,841	84,335	40,623	318,511	3,204,734
1987	1,374	861	32,074	2,056,580	560,853	108,366	76,908	1,770,697	4,607,713
1988		582	273,231	832,284	984,219	112,271	20,021	200,630	2,423,238
1989		1,307	41,822	1,342,169	891,926	58,642	17,632	72,822	2,426,320
1990		1,268	88,688	3,922,564	1,351,152	111,085	317,497	168,144	5,960,398
1991	91,633	75,319	3,352,190	7,418,045	669,385	25,168	140,402	647,824	12,419,966
1992	4,103	43,583	856,292	4,167,137	954,494	26,729	178,267	251,343	6,481,948
1993	5,799	13,194	2,504,362	5,795,479	1,499,217	16,949	83,203	138,875	10,057,078
1994	17,253	14,069	1,628,824	7,676,780	3,110,528	141,513	99,026	331,736	13,019,729
1995	31,019	41,574	496,046	5,494,289	1,172,716	108,345	89,609	141,732	7,575,330
1996	17,585	76,851	403,776	5,151,206	1,218,799	64,494	60,282	126,300	7,119,293
1997	111,468	384,233	1,497,670	7,275,160	1,443,568	138,107	25,630	116,276	10,992,112
1998	221,324	839,932	3,021,780	4,990,541	1,060,928	266,068	159,928	152,744	10,713,245
1999	860,325	1,017,499	2,483,800	5,668,925	1,368,478	116,826	57,567	967,894	12,541,314
2000	688,746	694,813	4,967,856	7,811,048	1,569,385	96,402	169,903	428,131	16,426,284
2001	853,621	285,123	1,585,806	7,086,706	1,256,807	115,284	192,362	282,461	11,658,170
2002	369,003	361,355	2,523,276	7,107,656	925,806	92,498	194,474	217,054	11,791,122
2003	833,508	654,697	1,393,224	6,543,524	1,552,315	440,446	965,496	192,356	12,575,566
2004	834,774	483,358	819,473	5,790,892	1,346,147	446,843	164,791	239,198	10,125,476
2005	1,280,075	761,136	950,695	8,144,430	1,289,279	327,215	265,542	271,001	13,289,373
2006	635,816	1,034,722	1,794,130	4,599,156	2,288,985	643,862	310,970	196,377	11,504,018

Table 6. Summary results of 2007 primary trigger exercise
(Source: Atlantic Croaker Technical Committee use of NMFS 2007 data)

Comparison of Commercial and Recreational Atlantic croaker harvests (pounds) from the Mid-Atlantic[1], 2004-2006.				
	2006	Average 2004-2005	Percent Difference	2006 as % of 2004-2005
Commercial	20,726,016	24,725,188	-16.17%	83.83%
Recreational	9,024,446	9,467,287	-4.68%	95.32%
[1]Includes North Carolina, Virginia, Maryland, Delaware and New Jersey				

Comparison of Commercial and Recreational Atlantic croaker harvests (pounds) from the South Atlantic[2], 2004-2006.				
	2006	Average 2004-2005	Percent Difference	2005 as % of 2003-2004
Commercial	30,279	13,968	116.77%	216.77%
Recreational	207,267	226,742	-8.59%	91.41%
[2]Includes South Carolina, Georgia and E. Florida				