



Atlantic Croaker
Micropogonias undulatus

Common Names: croaker, hardhead, King Billy, grumbler

Family: Sciaenidae (along with weakfish, spot, spotted seatrout & red drum)

Interesting Fish Facts:
•The characteristic croaking sound is produced by the vibrating of the swim bladder and special muscles

Food for Thought:
Croaker have a lean white and slightly sweet meat, good baked or pan fried

Largest Recorded: 8 lbs., 11 oz (caught by recreational rod and reel in VA in 2007)

Age/Mean Length at Maturity: 6.8" for females and 7.2" for males

Stock Status: Mid-Atlantic component is not overfished & over-fishing is not occurring; status is unknown for South Atlantic component

Species Profile: Atlantic Croaker Amendment Seeks to Maintain Healthy Mid-Atlantic Stock Component

Introduction

Atlantic croaker, *Micropogonias undulatus*, occur in coastal waters from the Gulf of Maine to Argentina. One of the most abundant inshore bottom dwelling fish along the U.S. Atlantic coast, croaker are sought by recreational anglers and commercial fishermen from New York to North Carolina. While highly valuable, there is still much that fisheries managers do not know about this resource. Amendment 1 to the original fishery management plan (FMP), approved in 2005, addresses these data needs and focuses on management to ensure long-term conservation of this important fishery resource.

Life History

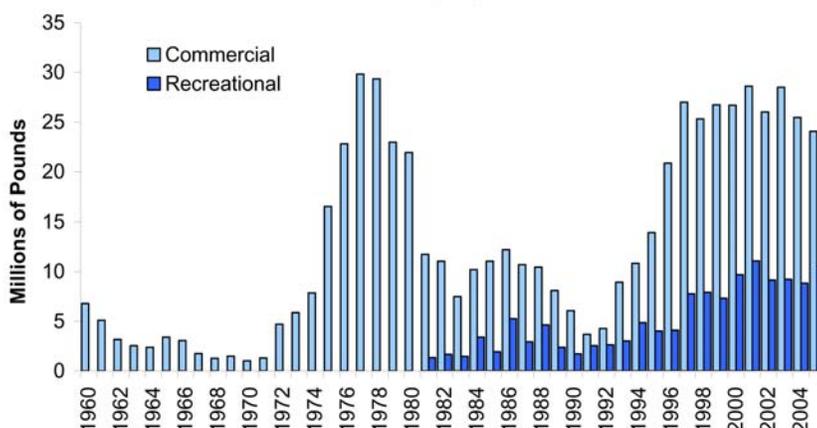
Atlantic croaker occur in U.S. coastal waters from the Gulf of Maine to Florida. Seasonal migrations of croaker have not been well defined, but the fish appear to move northward and inshore during the warmer months and southward into the ocean during the winter. Spawning occurs from July through December with fish located in both the lower Chesapeake Bay and in coastal oceanic waters. The larvae move into estuaries and develop into juveniles in low salinity waters before moving into higher salinity waters in the summer and fall. Croaker mature between the ages of one and two, at a mean length of 6.8 inches for females and 7.2 inches for males. Size at age varies throughout the species' range, although all are mature by 10 inches in length regardless of sex. The oldest croaker caught was aged at 12 years; however, croaker fossils from archeological excavations near St. Augustine, Florida indicate that coastal Indians from the First Spanish period captured fish as old as 15 years. Very young croaker eat small planktonic organisms, while juveniles and adults feed on bottom organisms such as marine worms, mollusks, crustaceans, and occasionally fish. In turn, they are eaten by many species, including striped bass, flounder, weakfish, and spotted seatrout.

Commercial & Recreational Fisheries

Atlantic croaker support important commercial and recreational fisheries along the Atlantic coast, particularly in Virginia and North Carolina. The fish has been part of a mixed-stock commercial fishery since the 1880s. The commercial landings of croaker exhibit a cyclical trend -- in some years the catch is almost 30 million pounds, while in others it is less than two million pounds (Figure 1). Since 1996, the croaker fishery has been at the high end of the cycle with commercial landings in 2005 over 22 million pounds. The dominant commercial fishing gears include haul seines, pound nets, gillnets, and trawls.

Over the past 20 years, the recreational catch of croaker along the Atlantic coast from

Figure 1. Atlantic Croaker Commercial and Recreational Landings
Source: Personal communication from NMFS Fisheries Statistics Division, Silver Spring, MD, 2007



New Jersey through Florida has risen from about two million pounds to a high of more than 11 million pounds in 2001 (Figure 1). Recreational landings were near that high in 2005, at 10.6 million pounds. Atlantic croaker are harvested in waters from a few feet deep to depths of 45 feet or more over all bottom types. They are caught by bottom fishing or jigging from anchored or drifting boats, ocean beaches and the banks of bays and rivers, as well as from structures such as piers, bridges, jetties, and causeways. They are taken in estuarine and nearshore oceanic waters by anglers fishing from party, charter, and private boats.

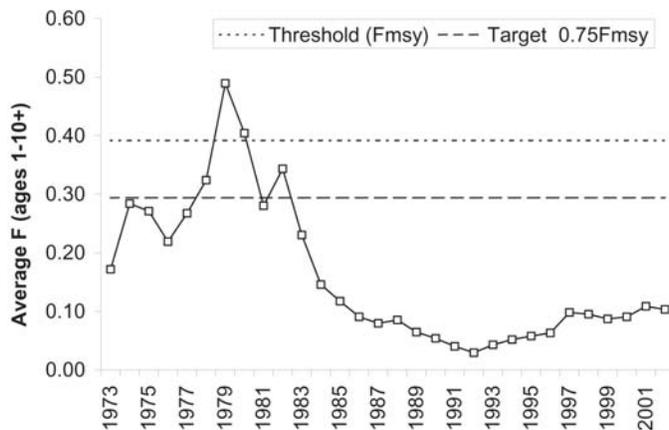
Stock Status

The latest stock assessment was completed in 2004 and the results were endorsed by the Peer Review Panel of the Southeast Data Assessment and Review (SEDAR). The assessment only accounts for the Mid-Atlantic region (North Carolina and north); there is not yet enough data to assess the South Atlantic region (Florida through South Carolina). Fishing mortality (F) rates for Atlantic croaker have changed greatly over the last thirty years (Figure 2). In the late 1970s, F rose rapidly reaching a maximum of 0.5 in 1979. In the next year, F reversed this trend and reached its lowest level in 1992. Since then, F has gradually increased and remained relatively stable around 0.10 between 1997 and 2002.



Photo courtesy of VMRC

Figure 2. Average Fishing Mortality Rates (Ages 1–10) for Atlantic Croaker in the Mid-Atlantic (Source: ASMFC Atlantic Croaker Stock Assessment Report for Peer Review, 2004)



Spawning stock biomass (SSB) estimates exhibit a cyclical trend over the time series (Figure 3). From the early 1970s to 1983, SSB declined to its lowest level. Since 1984, SSB has increased in three distinct phases, reaching a maximum in 1996. Between 1999 and 2002, SSB estimates have ranged between 80,000 to 91,000 metric tons. Annual recruitment (of age 0 fish) is highly variable and appears to be dependent on natural environmental conditions.

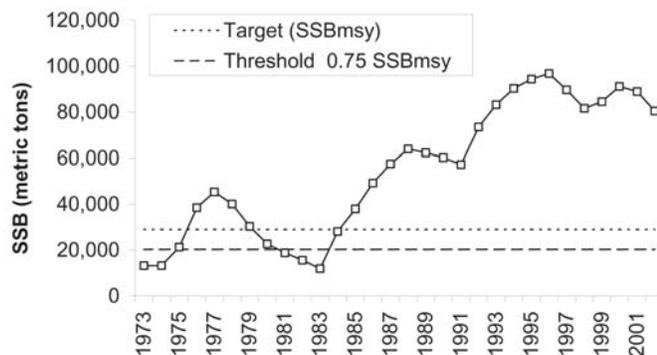
Amendment 1 to the original FMP sets reference points for the Mid-Atlantic stock component. The F target and threshold rates, 0.29 and 0.39 respectively, are used to determine if croaker is experiencing over-

fishing. The target and threshold SSBs, 28,932 metric tons and 20,252 metric tons respectively, are used to determine if croaker is in an overfished state. Under these reference points, croaker are neither overfished nor experiencing overfishing in the Mid-Atlantic region. However, the estimates of F and SSB do not include bycatch from the shrimp fishery, a potentially significant source of mortality. The next stock assessment is scheduled for the fall of 2009, again through the SEDAR process.

Atlantic Coastal Management Considerations

The original FMP for Atlantic croaker was approved in 1987, with the states of Maryland through Florida participating. In the mid-1990s, the South Atlantic State/Federal Fisheries Management Board and the ISFMP Policy Board reviewed the FMP and found it to be vague, no longer valid, and without any management measures that states are required to enforce. Thus, they recommended that an amendment to the FMP be prepared to define a new management program.

Figure 3. Estimates of Spawning Stock Biomass for Atlantic Croaker in the Mid-Atlantic (Source: ASMFC Atlantic Croaker Stock Assessment Report for Peer Review, 2004)



Developing an appropriate management program, complete with biological reference points, required a new stock assessment to be completed. After the SEDAR Peer Review Panel approved the 2004 assessment's findings for use in management decisions, the Board initiated the development of an amendment to come into compliance with the Atlantic Coastal Fisheries Cooperative Management Act and per-

petuate a sustainable resource to generate the greatest economic and social benefit.

The Commission approved Amendment 1 to the Interstate FMP for Atlantic Croaker in November 2005. Among other things, the Amendment revises the plan's management goals and objectives, expands the management unit to include the resource off of Delaware and New Jersey, establishes biological reference points (i.e., spawning stock biomass and fishing mortality targets and

thresholds) to manage the croaker resource, allows for management on a regional basis (Mid-Atlantic and South Atlantic component), and requires states to submit annual compliance reports to the Commission. Amendment 1 was fully implemented January 2006.

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