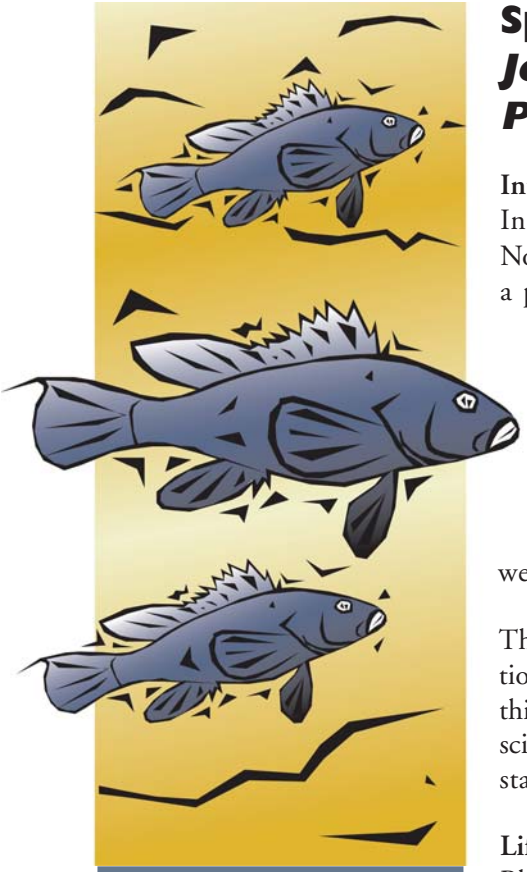


Black Sea Bass
Centropristis striata

Common Names: black will, chub, pinbass, old humpback

Family: Serranidae (true sea bass)

Interesting Facts:
*** Breeding males have vivid hues of flourescent blue and green around eyes and nape**
*** Larger males are commonly called "humpbacks" because of a pronounced lump on their foreheads - the lump is referred to as the nuchal hump (see photo to the right)**
*** An older female can produce up to 1 million pelagic eggs**

Largest Recorded: 10 pounds, 4 ounces (Virginia Beach, VA)

Maximum Age: 20 years

Length at Maturity (female): 7.48"

Stock Status: Rebuilt

Species Profile: Black Sea Bass
Joint Management Yields Rebuilt Status for Popular Mid-Atlantic Fish

Introduction

In December 2008, the black sea bass benchmark stock assessment developed by the Northeast Fisheries Science Center's Data Poor Stocks Workgroup was peer reviewed by a panel of independent experts. The assessment was a significant departure from earlier assessments with the model changing from a simple index-based model to a complex statistical catch-at-length model (SCALE). Data used in the assessment included catch history, survey and recruitment indices, growth information, and survey and catch length frequencies. The data used have been collected annually since 1968 from fish caught (recreational (since 1981) and commercial) and fish sampled in the ocean (taken on research surveys.) A simpler assessment approach was used in the past because the analytical models did not work well when they were attempted previously.

The stock assessment update, which occurred in June 2009, estimates current population size at about 103% of the biomass goal, indicating that the stock is rebuilt. While this offers good news for the stock, the Data Poor Stocks Review Panel recommended that scientists and managers should "recognize and allow for the sizable uncertainty in stock status when establishing catch limits."

Life History

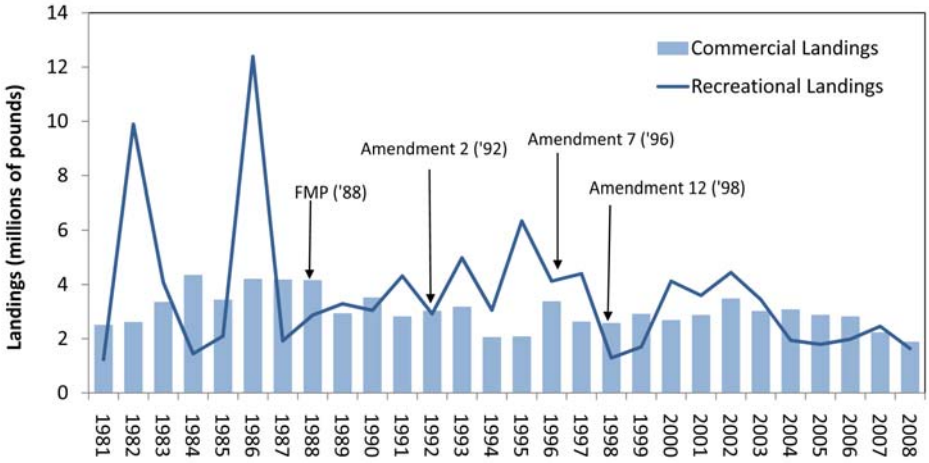
Black sea bass inhabit Atlantic coastal waters from the Gulf of Maine to the Florida Keys, concentrating in areas from Cape Cod, Massachusetts to Cape Canaveral, Florida. Two distinct stocks of black sea bass exist along the Atlantic coast with overlapping ranges. The northern stock migrates seasonally and spawns off of New England in the late summer. The southern stock spawns off of Chesapeake Bay in the early summer. A temperate reef fish, black sea bass commonly inhabit rock bottoms near pilings, wrecks, and jetties. Black sea bass rely on their large mouth and swift ocean currents to catch prey, which include fish, crabs, mussels, and razor clams. Black sea bass summer in northern inshore waters at depths of less than 120 feet and winter in southern offshore waters at depths of 240 to 540 feet.

Black sea bass are protogynous hermaphrodites, which mean they start life as a female and when they reach 9-13 inches (2 - 5 years of age) they change sex to become males. Thirty-eight percent of the females in the Mid-Atlantic demonstrate sex reversal between August and April, after most fish have spawned. Even though some fish are males when they reach sexual maturity, most produce eggs when they first mature. Following transition, a sea bass will either become a dominant male, characterized by a larger size and a bright blue nuchal hump during spawning season, or a subordinate male that has few distinguishing features. Black sea bass reproduce from February to

Photo: NEAMAP. Black sea bass with nuchal hump anterior to the dorsal fin.

July; the spawning season starts earliest in the southern portion of their range and progresses northward through spring. An average size black sea bass (ages 2 - 5) produces 280,000 eggs. Eggs float in the water column until they hatch within a few days after fertilization. Larvae drift in coastal water 2 to 50 miles offshore until they reach about a half an inch. Young sea bass migrate into estuaries, bays, and sounds. They seek shelter in a variety of habitats such as submerged aquatic vegetation, oyster reefs, and man-made structures.

Figure 1. Black Sea Bass Landings
Source: Personal communication from NMFS Fisheries Statistics Division, Silver Spring, MD, 2009



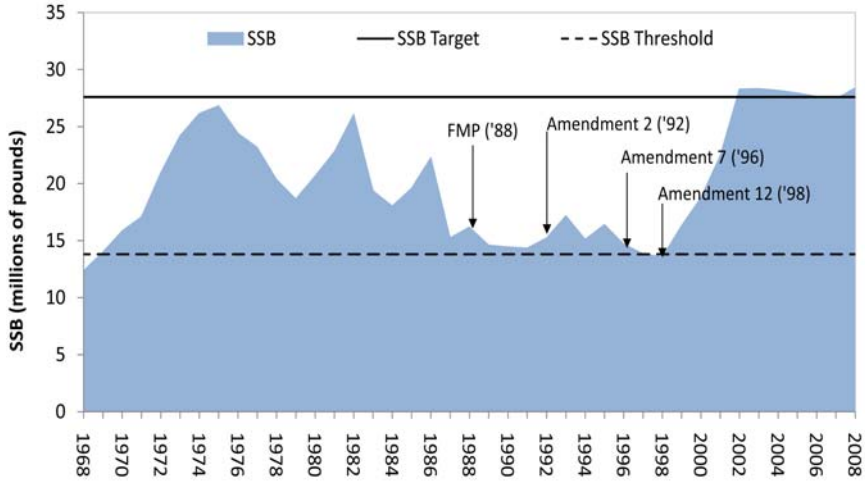
Commercial and Recreational Fisheries

Black sea bass are highly sought by both commercial and recreational fishermen throughout the Mid-Atlantic. Fisheries change seasonally with changes in fish distribution. Inshore and more southern commercial fisheries are prosecuted primarily with fish pots and handlines. When fish move offshore in the winter, they are primarily caught in trawl fisheries targeting summer flounder, scup and *Loligo* squid. Recreational fisheries generally occur during the period that sea bass are inshore. Since the fishery management plan's approval in 1997, the black sea bass fishery has operated under a quota. Landing levels for both the commercial and recreational fisheries are restricted by annual total allowable landings.

Commercial landings of black sea bass have been recorded since the late 1800s. From 1887 through 1948, commercial landings north of Cape Hatteras fluctuated around six million pounds and then peaked at 22 million pounds in 1952. Fish were primarily harvested by handlines during the 1900s. The 1950s marked the development of the trap fishery. By 1971, landings declined to 1.3 million pounds. Since the late 1970s, landings ranged from 2 million pounds (1994) to 4.3 million pounds (1984). 2008 landings were estimated to be 1.8 million pounds. Otter trawls and fish pots/traps have accounted for the majority of the black sea bass landings in most states. Other important gear includes hand lines and lobster pots. Commercial fishery discards, although poorly estimated, appear to be a minor part of the total fishery removals from the stock, generally less than 441,000 pounds per year.

Black sea bass are also an important recreational species in the Mid-Atlantic, commonly caught using squid and natural bait. In 1965, over half of the total catch of black sea bass was credited to recreational fishing. Angling pressure increased markedly in the mid-1980s. In 1998 and 1999, recreational landings decreased substantially relative to levels in the early to mid-1990s. The decrease in recreational landings may be partially attributed to an increase in minimum size limits. Landings started to increase in 2000 and averaged 4 million pounds from 2000 to 2004. Recreational landings in 2008 were estimated at 1.6 million pounds. Recreational discards are somewhat higher than commercial ranging from 0.2 to 1.7 million pounds per year.

Figure 2. Black Sea Bass Spawning Stock Biomass (SSB)
NEFSC Black Sea Bass Assessment Update, 2009



Status of the Stock

The assessment model for black sea bass changed in 2008 from a simple index-based model to a complex statistical catch at length model incorporating a broad range of fishery and survey data. The fishery catch is modeled as a single fleet with indices of stock abundance from the North-

east Fisheries Science Center's winter, spring, and autumn surveys. A model averaging approach was adopted using the average of results from ten candidate models. Recruitment at age 1 averaged 26.4 million fish during 1968-1999. The 2000 and 2002 year classes are estimated to be the largest of the time series, at 56 and 39.3 million age 1 fish, respectively. With greatly improved recruitment and declining fishing mortality rates since 2000, spawning stock biomass (SSB) has steadily increased to about 28.4 million pounds in 2008.

The new reference points are an SSB target of 27.6 million pounds and a fishing mortality (F) target of 0.42. With current SSB at 28.4 million pounds and F at 0.28, the stock is considered rebuilt and overfishing is not occurring.

With the new model, the technical advice to managers has been to proceed with caution due to a number of variables. These include uncertainty in the natural mortality estimate, model input parameters, residual patterns in model fit, and significant uncertainty associated with managing a protogynous species (i.e. individuals change sex from female to male). Additionally, there appears to be a slight retrospective bias in the model which overestimates SSB and underestimates F.

Atlantic Coastal Management

In an effort to coordinate management actions in both state and federal waters, the Commission and the Mid-Atlantic Fishery Management Council have established a joint management program for black sea bass. The program divides an annual quota between the recreational fishery (51 percent) and the commercial fishery (49 percent). Recreational fishery management measures are developed annually to achieve a target harvest limit, and usually include a combination of minimum size limits, bag limits, and fishing seasons.

Each year the Commission and Council establish a coastwide commercial quota for the following. Under the Commission process, this quota is divided among the states based on historic landings. State-specific shares are as follows: Maine and New Hampshire - 0.5%; Connecticut - 1%; Delaware - 5%; New York - 7%, Rhode Island, North Carolina, and Maryland - 11%; Massachusetts - 13%; and New Jersey and Virginia – 20%. A variety of management measures including minimum size and mesh requirements, limited entry, and closed seasons regulate the commercial fishery. For more information, please contact Toni Kerns, Senior FMP Coordinator for Management, at tkerns@asmfc.org.

Photo: John Chisholm, MA DMF