ATLANTIC MENHADEN TOTAL ALLOWABLE CATCH WILL NOT PREVENT ECOLOGICAL OVERFISHING

STRIPED BASS HEALTH AND PRODUCTIVITY LINKED TO MENHADEN DEPLETION

Responding to historically low levels of Atlantic menhaden, the Atlantic States Marine Fisheries Commission (ASMFC) approved Amendment 2 of the Interstate Fishery Management Plan for Atlantic Menhaden in an attempt to end "overfishing". Beginning in 2013, Amendment 2 establishes a **total allowable catch** (TAC) of 170,800 metric tons for the menhaden fishery, only 20% less than average landings from 2009 to 2011. Menhaden are the most important food source for many Atlantic coast fishes, birds and mammals and are essential to striped bass health. Chesapeake Bay and U.S. Atlantic coast ecosystems would be considerably more productive if ASMFC classified and managed Atlantic menhaden as a crucial forage fish and not as an industrial commodity. The TAC needs to be reduced until menhaden recruitment increases to a level that restores the nutritional health of Chesapeake Bay striped bass and other menhaden predators. ASMFC needs to establish nutritional reference points and periodically monitor the nutritional health (body fat) of striped bass to determine if the menhaden population is ecologically sound - a primary goal of Amendment 2.

Since 2006, Chesapeake Bay Ecological Foundation (CBEF) has conducted a year-round Predator/Prey Monitoring Program (partially funded by the U.S. Fish and Wildlife Service and MD DNR), studying interactions of striped bass and menhaden and monitoring diet, body fat, sex ratios and bacterial infections of more than 10,000 striped bass in Chesapeake Bay and mid-Atlantic coastal waters. CBEF data and other diet studies show menhaden are ***ecologically depleted*** (insufficient numbers to provide adequate prey for dependent predators) in the Chesapeake Bay and along the mid-Atlantic coast. The Chesapeake Bay Program is considering the application of nutritional reference points for use in ecosystem based and multispecies fish management.

The ASMFC has not resolved the problem of ***ecological overfishing*** (unsustainable harvest levels that disrupt the natural balance between predators and prey). Over the past two decades, chronic overfishing by the menhaden purse seine reduction fishery has resulted in few menhaden surviving past age 3 even though the maximum lifespan is 10-12 years. Menhaden over age 7 can produce ten times more eggs than 3 year olds. Since the early 1990's, recruitment by these young spawners has not supplied adequate prey for Chesapeake Bay striped bass. Consequently, Chesapeake Bay striped bass accumulate less body fat, growth rates slowed, internal mycobacterial infections and external lesions proliferated, natural mortality rates increased, migration patterns changed and the recreational fishery declined. Most striped bass caught in the Chesapeake Bay are less than 24" and primarily consume ages 0&1 menhaden less than 10". Since the ASMFC has established no minimum size, from 2006 thru 2011 an average of 400,000,000 age 1 menhaden (43% by number) have been harvested annually in the Chesapeake Bay area by the purse seine reduction fishery.

The tragic collapse of the Chesapeake Bay and mid-Atlantic coast striped bass **forage base** (primarily menhaden and bay anchovy) is an ecological catastrophe and a classic example of what occurs when a keystone species is overfished and an ecosystem disrupted. The depletion of young menhaden has resulted in striped bass increasing consumption of valuable recreational and commercial species, e.g., white perch and blue crab. In the Chesapeake Bay, striped bass are now preying heavily on the low blue crab population. During recent years the winter feeding grounds of large migratory striped bass have shifted from N. Carolina to Virginia and Maryland waters. In mid-Atlantic coastal waters, striped bass that fed primarily on menhaden increased predation on over-wintering adult bay anchovies which spawn in the Chesapeake Bay. Subsequently, the bay anchovy population (essential small prey) declined to historical lows. CBEF studies, MD DNR data and peer reviewed papers support the conclusion that year-round, Atlantic menhaden are the crucial forage fish for maintaining a large, nutritionally healthy population of striped bass in Chesapeake Bay and mid-Atlantic coastal waters. The goal of implementing ecosystem-based fish management in the Chesapeake Bay necessitates cooperation and open communication between fishery managers, scientists and stake holders. **Atlantic menhaden should be listed as a "Species of Concern" by NOAA's National Marine Fisheries Service.**

7/29/13

CHESAPEAKE BAY ECOLOGICAL FOUNDATION, INC
www.chesbay.org

STRIPED BASS HEALTH AND PRODUCTIVITY LINKED TO ATLANTIC MENHADEN DEPLETION

CHESAPEAKE BAY ECOLOGICAL FOUNDATION (CBEF) CONDUCTS FIRST LONG TERM YEAR-ROUND STUDY ON CHESAPEAKE BAY STRIPED BASS

CBEF HAS EXAMINED OVER 10,000 STRIPED BASS SINCE 2006, STUDYING DIET, BODY FAT, SEX RATIOS, BACTERIAL INFECTIONS, REPRODUCTIVE STAGES AND MIGRATIONS. IN 2013, ATTEMPTING TO END OVERFISHING, THE ATLANTIC STATES MARINE FISHERIES COMMISSION ESTABLISHED A *TOTAL ALLOWABLE CATCH* (TAC) OF 170,800 METRIC TONS FOR MENHADEN.

CHESAPEAKE BAY: Since the early 1990's ***ecological overfishing*** (unsustainable harvest levels that disrupt the natural balance between predators and prey) of Atlantic menhaden has depleted the food supply in the Chesapeake Bay and lowered the carrying capacity of seabirds and fishes, including striped bass (major menhaden predator). Most resident striped bass less than 24" primarily consume ages 0&1 menhaden less than 10". Due to chronic overfishing of the spawning stock, age 0 menhaden became ***ecologically depleted*** (insufficient numbers to provide adequate prey for dependent predators) in the Chesapeake Bay. After spending most of their first year in the Chesapeake Bay, young menhaden (age 0) migrate down the Bay and south along the Atlantic coast. During the following spring thru fall, many 1 year old menhaden return to the Chesapeake Bay area. In some years during their return migration, over 400,000,000 1 year olds less than 10" are caught in Virginia's section of the Chesapeake Bay and nearby coastal waters by the menhaden purse seine reduction fishery (large scale harvest of menhaden for processing into fish oil and meal). Consequently, Chesapeake Bay striped bass accumulate less body fat, growth rates slowed, mycobacterial infections and external lesions proliferated, natural mortality rates increased, migration patterns changed (females migrate to the ocean) and their diet shifted to more bay anchovy, blue crab and white perch.

ALL MEASUREMENTS IN TOTAL LENGTH

AGE AT MATURITY: MOST MALE STRIPED BASS AGE 2 - 3 / MOST FEMALE STRIPED BASS AGE 5 - 7 / MOST MENHADEN AGE 3

STRIPED BASS SIZE AND AGE VERSUS SIZE AND AGE OF MENHADEN CONSUMED

12" – 16"

Striped Bass
Age 2-3 (Approx. 50% Males)

Menhaden - Age 0
approx. 99% consumed by striped bass are less than 7"

16" – 24"

Striped Bass
Age 4-6 (Predominantly Males)

Menhaden - Ages 0&1
approx. 96% consumed by striped bass are less than 10"

24" - 45"

Striped Bass
Age 7+ (Predominantly Males)

Menhaden - All Ages
approx. 99% consumed by striped bass are less than 15"

MENHADEN - CHESAPEAKE BAY AREA
2007 DATA - NMFS BEAUFORT, NC / 2009 DATA – CBEF*

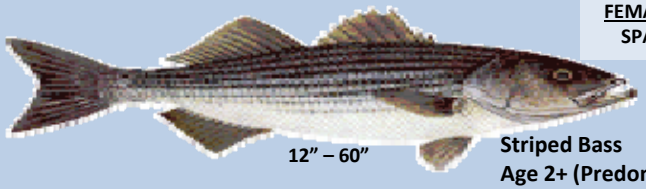
AGE	MEAN - INCHES	MEAN WT. – OZ.
*0	*5.0	*0.7
1	8.6	4.3
2	10.0	6.7
3	12.2	11.9
4	12.8	13.2
5	13.5	16.1

ASMFC has not established a minimum size on menhaden. Since the intensive menhaden fishery targets juveniles (ages 1&2), few menhaden survive to spawning age (3+). Menhaden can constitute over 75% of the striped bass diet (by weight) and are essential for nutritional health.

LARGEST DOCUMENTED STRIPED BASS (84 LBS.) CAUGHT BY MD DNR IN CHESAPEAKE BAY 1985 / LARGEST DOCUMENTED MENHADEN (17") FOUND BY CBEF IN MALE STRIPED BASS (32") FROM CHESAPEAKE BAY 2006

ATLANTIC OCEAN: From 1988 to 1993 overfishing in the Gulf of Maine depleted the older, most prolific component of the menhaden spawning stock. Concurrently, pre-spawning menhaden were being intensively fished in the Chesapeake Bay and in Virginia and North Carolina coastal waters. This overfishing lowered the carrying capacity for fishes, birds and mammals that prey on menhaden. Winter feeding grounds of large migratory striped bass shifted from N.C. to VA and MD waters. Striped bass that historically fed on menhaden increased predation in ocean waters on over-wintering adult bay anchovy which spawn in the Chesapeake Bay. Subsequently, the bay anchovy population (crucial prey for small striped bass) declined to historical lows. Now, during fall through winter, many migratory striped bass enter Chesapeake Bay and compete with resident striped bass for the depleted food supply.

FEMALE STRIPED BASS: MIGRATE TO THE OCEAN / CAN LIVE 30+ YEARS
SPAWN IN CHESAPEAKE BAY / CAN PRODUCE OVER 5,000,000 EGGS



12" – 60"

Striped Bass
Age 2+ (Predominantly Migratory Females)

Menhaden - All Ages
approx. 99% consumed by striped bass are less than 15"

MENHADEN – RECORD MEASUREMENTS
SOURCE – NMFS

AGE	LENGTH	WEIGHT
12 YEARS	20"	54 OZ.

AGE 3 MENHADEN PRODUCE APPROXIMATELY 100,000 EGGS AND AGE 7+ MENHADEN CAN PRODUCE OVER 1,000,000 EGGS

COLLAPSE OF THE CHESAPEAKE BAY AND MID-ATLANTIC COAST STRIPED BASS FORAGE BASE (PRIMARILY MENHADEN AND BAY ANCHOVY) IS AN ECOLOGICAL CATASTROPHE. THE TAC NEEDS TO BE REDUCED UNTIL MENHADEN RECRUITMENT INCREASES TO A LEVEL THAT RESTORES THE NUTRITIONAL HEALTH (BODY FAT) OF STRIPED BASS AND OTHER MENHADEN PREDATORS. THE ASMFC NEEDS TO ESTABLISH NUTRITIONAL REFERENCE POINTS FOR STRIPED BASS AND MONITOR THE NUTRITIONAL HEALTH OF PREDATOR SPECIES THEY MANAGE IN ORDER TO DETERMINE IF THE MENHADEN POPULATION IS ECOLOGICALLY SOUND. ATLANTIC MENHADEN SHOULD BE LISTED AS A "SPECIES OF CONCERN" BY NOAA'S NATIONAL MARINE FISHERIES SERVICE.