



## Species Profile: Atlantic Striped Bass The Challenges of Managing a Restored Stock

### Introduction

Striped bass have formed the basis of one of the most important fisheries on the Atlantic coast for centuries. They have been regulated since European settlement of North America. Early written accounts recorded their great abundance. Striped bass were once so plentiful they were used to fertilize fields. Like those earlier years, today's Atlantic striped bass population is thriving. In a little more than 15 years, the resource has rebuilt from an historic low of about 20 million pounds to an all-time high of 160 million pounds. This rebuilding did not occur without hardships. Both commercial and recreational fishermen alike have endured severe harvest restrictions and closures in some cases with the hope of seeing greater benefits in the near future. Fortunately, those sacrifices are paying off! Now the Commission focuses on the challenge of managing a restored stock.

### Life History

The Commission's Atlantic striped bass management program centers on the migratory population and spawning stocks from Maine through North Carolina, but the species can be found as far north as the St. Lawrence River in Canada and as far south as the St. John's River in Florida. A long-lived species (at least up to 30 years of age), striped bass typically spends the majority of its adult life in coastal estuaries or the ocean, migrating north and south seasonally and ascending to rivers to spawn in the spring.

Mature females (age six and older) produce large quantities of eggs (see side-bar), which are fertilized by mature males (age two and older) as they are released into riverine spawning areas. While developing, the fertilized eggs drift with the downstream currents and eventually hatch into larvae. The larvae and post-larvae begin feeding on microscopic animals during their downstream journey. After their arrival in the nursery areas, located in river deltas and the inland portions of coastal sounds and estuaries, they mature into juveniles. They remain in coastal sounds and estuaries for two to four years and then join the coastal migratory population in the Atlantic Ocean. In the ocean, fish tend to move north during the summer and south during the winter. Important wintering grounds for the mixed stocks are located from offshore New Jersey to North Carolina. With warming water temperatures in the spring, the mature adult fish migrate to riverine spawning areas to complete their life cycle. The majority of the coastal migratory stock originate in the Chesapeake Bay spawning areas, with significant contributions from the spawning grounds of the Hudson and Delaware Rivers.

### Commercial & Recreational Fisheries

Commercial fishermen harvest striped bass with a variety of gears including gill nets, pound nets, haul seines, and hook-and-line. Commercial harvest peaked at almost 15 million pounds in 1973, then declined to 3.5 million pounds in 1983, a 77 percent decrease. During the early to mid-1980s, a number of states closed their striped bass fisheries in order to initiate rebuilding of the stocks. The commercial fishery grew slowly under a partial reopening of state waters in the early 1990s, with coastwide harvest rising from 825,000 pounds in 1990 to 2.01 million pounds in 1994. Most of this growth resulted from the fact that Maryland was permitted to impose flexible quotas that have risen with increasing stock size.

Under restored status, the striped bass commercial harvest steadily grew from 3.4 million pounds in 1995 to peak at 6.6 million pounds in 2000. Over the past two years, the commercial harvest dropped slightly to six million pounds. Beginning in 2003, the

### *Morone saxatilis*

#### Interesting Fish Facts:

- Average Chesapeake Bay 6-year old female produces 500,000 eggs, while a 15-year old produces 3 million eggs
- Bass tagged in the Bay have been recaptured in Canadian waters, over 1,000 miles away

**Largest Recorded:** 125 pound female, NC, 1891

#### Age at Maturity:

- Females - 50% mature at age 6 (25 - 26"); 100% mature at age 9 (32")
- Males - 100% mature at age 3 (18")

#### Age at Recruitment:

- Chesapeake Bay Fishery = age 4 (18")
- Coastal Fishery = age 8 (28")

**Stock Status:** not overfished, overfishing is not occurring

commercial quotas increased under Amendment 6 allowing the states to implement coastal commercial quotas equivalent to the average harvest during 1972-1979.

The growing popularity of saltwater recreational fishing since the 1960s and 1970s, and the lack of recreational harvest caps in most states, led the sport fishing sector to land a larger percentage of the total catch. Recreational harvest grew from 3.1 million pounds in 1990 to a record high of 19.6 million pounds in 2001. In 2002, the recreational harvest declined to about 18.6 million pounds. Figure 2 shows the breakdown of striped bass landings and discard losses by fishing sector in 2002.

The payoff for the years of restricted harvest has been big. Total biomass, or the total pounds of fish in the fishery, has increased eightfold over the last 20 years. Recreational fishing for striped bass is at an all-time high. Commercial fisheries have also benefited with increases in commercial quotas, yielding greater economic profits.

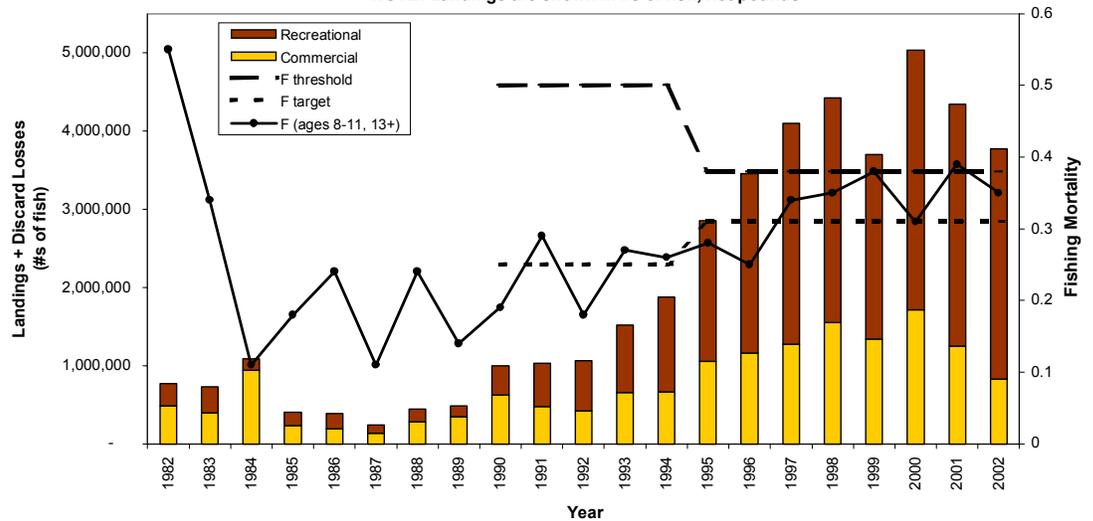
### Stock Status

The Atlantic Striped Bass Technical Committee, Stock Assessment Subcommittee and Tagging Subcommittee completed the latest annual assessment in late 2003. The assessment report included data through the 2002 fishing year and determined that striped bass are not overfished and overfishing did not occur in 2002. Not only is the spawning stock biomass 25 times greater than the levels seen in the early 1980s, but the total biomass increased by an order of magnitude during the same period (Figure 3). Both the total striped bass population and female spawning stock biomass peaked in 2002 at 114 million pounds and 49 million pounds, respectively. The fishing mortality generally trends upward since the moratoria in the mid-1980s. The 2002 average fishing mortality rate for ages 8 to 11 equaled 0.35, which is above the Amendment 5 and 6 F targets of 0.31 and 0.30, re-

**Figure 1. Atlantic Striped Bass Total Catch & Fishing Mortality, 1982-2002**

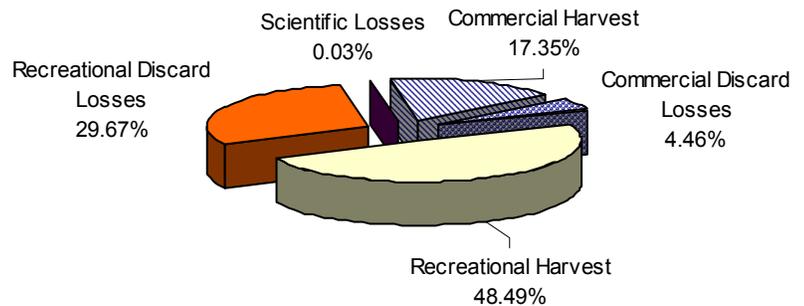
Source: ASMFC Atlantic Striped Bass Technical Committee, 2003

NOTE: Landings are shown in #s of fish, not pounds



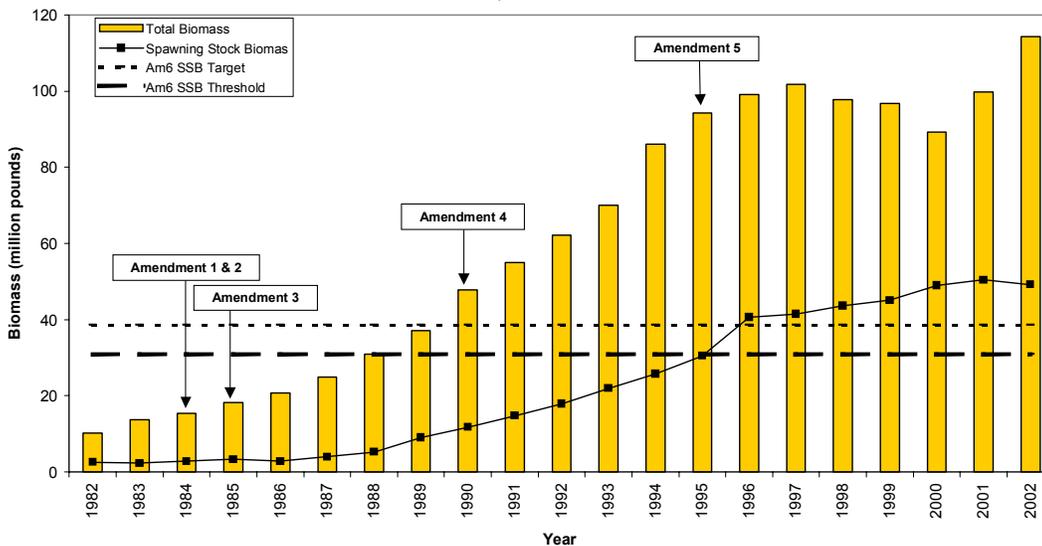
**Figure 2. Total Atlantic Striped Bass Catch in 2002 (3,770,486 fish)**

Source: ASMFC Atlantic Striped Bass Technical Committee, 2003



**Figure 3. Atlantic Striped Bass Total & Female Spawning Stock Biomass, 1982-2002**

Source: ASMFC Atlantic Striped Bass Technical Committee, 2003

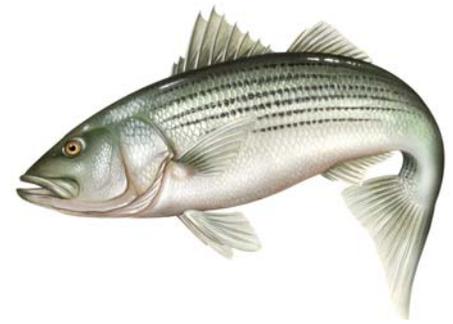


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spectively, but below the overfishing threshold of 0.38 under Amendment 5 or 0.41 under Amendment 6.

Overall, the Atlantic stocks of striped bass appear to be abundant in number, capable of producing strong incoming year classes and are being fished at levels within the bounds of the current fishery management plan. The population should be considered fully exploited.

### Atlantic Coastal Management Considerations

Before the Interstate Fishery Management Plan for Striped Bass (1981), states independently promulgated regulations (i.e. minimum size limits) to constrain the fishing mortality on the Atlantic coast striped bass population. Striped bass fisheries would not be where they are today, however, without the support of the 1984 Atlantic Striped Bass Conservation Act. This Act, which was the precursor to the Atlantic Coastal Fisheries Cooperative Management Act, provided Atlantic coastal states with the necessary tools to cooperatively and more effectively conserve and manage striped bass stocks.

In an effort to regenerate the scarce mature adult portion of the population, many of the jurisdictions implemented moratoria in the mid-1980s to protect the 1982 and subsequent year classes. As a result of Amendments 4's stringent management program, the Commission

declared Atlantic coastal striped bass stocks fully recovered in 1995.

Since Amendment 4, the foundation of the striped bass management program has been to maintain harvest below a target fishing mortality rate (F). While Amendment 6 modifies the F targets and thresholds, it also introduces a new set of biological reference points to more effectively monitor the status of the population (Figure 4). On an annual basis, the female spawning stock biomass will be monitored to ensure this portion of the population remains above the threshold of 30.8 million pounds to avoid an overfished status. These new reference points, as well as new management triggers, enable the Management Board to be more responsive to changes in the stock.

The Chesapeake Bay and Albemarle-Roanoke regulatory programs differ from the coastal migratory stock because these programs are predicated on a more conservative Ftarget than the coastal migratory stock. The independent Ftarget allows these jurisdictions to implement separate seasons, harvest caps, and size and bag limits as long as they remain under that target.

While the NOAA Fisheries continues to implement a ban on the possession and harvest of striped bass in the exclusive

Figure 4. Amendment 6 Control Rule

	FISHING MORTALITY RATE	FEMALE SPAWNING STOCK BIOMASS
TARGET	F = 0.30*	38.6 million pounds
THRESHOLD	F = 0.41	30.9 million pounds

\*The target fishing mortality rate for the Chesapeake Bay and Albemarle-Roanoke stock is F=0.27

In addition to the control rule, Amendment 6 phases in new regulations for both the commercial and recreational fisheries. Beginning in 2003, the coastal commercial quota for striped bass was restored to the state's historical average landings during the 1972-1979 base period, a 43 percent increase from the 2002 coastal commercial quotas. As of January 1, 2004, all states are required to implement a two fish recreational bag limit with a minimum size limit of 28 inches, except for the Chesapeake Bay fisheries, Albemarle-Roanoke fisheries, and states with approved conservation equivalency proposals.

economic zone (3-200 miles offshore), Amendment 6 includes a recommendation to the Secretary of Commerce to consider reopening the EEZ to a controlled striped bass fishery. NOAA Fisheries has initiated the rulemaking process and is considering the Commission's recommendation.

Over the next year, the states will fully implement Amendment 6 and begin to monitor the effects of its regulations on the stock. For more information, please contact Megan Gamble, Atlantic Striped Bass Fishery Management Plan Coordinator, at (202)289-6400 or <mgamble@asmfc.org>.



Gene Kray with a keeper.