

## Striped Bass

*Morone saxatilis*

Contributor (2005): Forest Sessions, Scott Lamprecht, and Jason Bettinger [SCDNR]  
Reviewed and Edited (2013): James Bulak and Mark Scott [SCDNR]



### DESCRIPTION

#### Taxonomy and Basic Description

The Striped Bass is a member of the family Moronidae, which contains 4 North American species (Jenkins and Burkhead 1994) that are known as the temperate basses. The Striped Bass, commonly called “rockfish” or “lineside,” has a compressed, moderately deep body covered with ctenoid scales. Striped Bass have an olive-green back, a silvery flank with several thin, dark lines and silvery-white belly. Striped Bass are large, robust fish that attain adult sizes of up to 198 cm (78 in.), but most individuals in freshwater systems are much smaller, measuring less than 99 cm (39 in.).

#### Status

The Striped Bass is currently considered stable (Warren et al. 2000) and secure (G5) throughout the majority of its native range, and is not listed in South Carolina (SNR) (NatureServe 2013). Although the species currently appears stable, there are populations of concern in South Carolina. South Carolina is home to small reproductively isolated populations of Striped Bass that exhibit minimal anadromy and are generally restricted to their natal coastal rivers (Bulak et al. 2004). It is those small, unique populations that warrant conservation concern in South Carolina.

#### POPULATION SIZE AND DISTRIBUTION

The Striped Bass’s native range includes coastal rivers on the Atlantic Slope from the St. Lawrence River, Canada, to the St. Johns River, Florida, and in Gulf Slope drainages from western Florida to Lake Pontchartrain, Louisiana (NatureServe 2004). The Striped Bass has been introduced into rivers and reservoirs throughout the United States as it provides a valuable recreational fishery. The populations of conservation concern within South Carolina inhabit coastal rivers in the Lower Coastal Plain including the Savannah River, New River, Combahee River, Ashepoo River, Edisto River, Santee-Cooper Rivers, Black River, Lynches River, Pee Dee River, Little Pee Dee River and Waccamaw River.

Striped Bass population trends within the coastal rivers are not well known. However, based on anecdotal evidence it appears that the coastal Striped Bass populations have declined. Coastal Striped Bass populations appear to be relatively small. A recent study of the Combahee River estimated the population of Striped Bass greater than 30 cm (12 in.) to be only 406 individuals (Bulak et al. 2004).

## HABITAT OR NATURAL COMMUNITY REQUIREMENTS

Striped Bass inhabit medium to large rivers; they are also found in impoundments where they have been introduced but are often unable to complete their life cycle. They prefer to occupy areas with clean, sandy bottoms with fine gravel and rock (NatureServe 2004). Adult Striped Bass have a thermal tolerance of 6 to 27°C (43-81°F) (Merriman 1941), but seek temperatures between 18 to 25°C (64-77°F) when available (Coutant and Carroll 1980; Crance 1984). During spawning, Striped Bass occupy shallow rocky and gravelly areas with strong, turbulent water flow. Striped Bass eggs are semi-bouyant; they drift and sink slowly requiring moderate current to keep the eggs from settling to the bottom and dying before they are hatched in 1 to 3 days (Scruggs 1955, Etnier and Starnes 1993). Hassler et al. (1981) observed that optimum water temperatures for successful Striped Bass egg hatching and survival in North Carolina was 17 to 18°C (63-64°F).

## CHALLENGES

The major challenges to South Carolina's coastal Striped Bass populations include siltation, increased river water temperatures, hydrologic modification, and over-exploitation. Clearing forests and riparian areas along coastal rivers and their tributaries has lead to increased siltation and potentially warmer water temperatures. Warmer water temperatures may decrease the amount of summertime refuge habitat for Striped Bass and negatively impact reproduction. In the Combahee River, Striped Bass used areas with greater riparian overstory and associated cooler water temperatures as summertime thermal refuges (Bjorgo et al. 2000). Dams also negatively impact Striped Bass populations by disrupting migrations and altering thermal and hydrologic regimes. The presence of impoundments along the Savannah and Pee Dee Rivers may partially account for limited reproduction in those systems. Additionally, stocking non-endemic Striped Bass into coastal rivers may compromise the genetic integrity of these small, isolated populations (Bulak et al. 2004). Escapement of hybrid striped bass into coastal systems containing reproducing populations of striped bass may also pose a threat to the genetic integrity of those populations.

## CONSERVATION ACCOMPLISHMENTS

Recent changes in sport fishing regulations on coastal river systems have reduced harvest and the potential for summer mortality of striped bass due to angling. In 2012, regulations were changed and now state that from June 1<sup>st</sup> to September 30<sup>th</sup> it is unlawful to take, attempt to take, or to possess striped bass from the State's coastal river systems, decreasing the potential for angling-related summer mortality. Additionally, during the remainder of the year, striped bass must be at least 66 cm (26 in.) in length, protecting female striped bass from harvest prior to spawning. Hybrid striped bass are not stocked in the Santee-Cooper drainage in order to protect that spawning stock. The genetic integrity of small isolated Striped Bass populations are protected thanks to the current South Carolina Department of Natural Resources (SCDNR) stocking policy which allows only endemic stocks to be used to augment coastal river Striped Bass populations. An effort is now underway to re-build the Striped Bass population in the Ashley River. Also, efforts are currently underway to use genetic tools to characterize the relative uniqueness of

striped bass population in major coastal rivers. For 2013, North Carolina has agreed to stock Santee-Cooper striped bass progeny in Mountain Island Lake near Charlotte to reduce to potential of North Carolina stock emigrating into South Carolina. Spawning flows for striped bass have been identified for several hydroelectric facilities in South Carolina that are currently in the relicensing process.

## CONSERVATION RECOMMENDATIONS

- Describe life history and habitat requirements of the Striped Bass.
- Identify critical habitats and areas with healthy populations of the Striped Bass. Protect these areas, once identified.
- Identify and monitor key Striped Bass habitats like thermal refuges and spawning sites.
- Assess Striped Bass reproductive potential in the coastal rivers.
- Determine the genetic stock structure of striped bass in the Great Pee Dee River. Transmit some adult fish to gain a better understanding of seasonal habitat utilization within this drainage.
- Determine reasons for lack of Striped Bass recruitment in the Savannah and Pee Dee River Systems.
- Protect critical habitats from future development and further habitat degradation by following Best Management Practices (BMPs) and protecting and purchasing riparian areas.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and in other areas that contain available habitat.
- Encourage responsible land use planning.
- Consider species needs when participating in the environmental permit review process.
- Augment coastal Striped Bass populations with endemic strains, as needed.
- Use hatchery practices that will either maintain or enhance effective population size in a particular drainage.
- Initiate efforts to augment the striped bass population in the ACE Basin.

## MEASURES OF SUCCESS

Determining the distribution, life history, habitat needs, and Southeastern population structure and trends would represent a measure of success for these species. Methods that protect water quality are also likely to protect this species. In the event that more protective BMPs are implemented, population studies of these fish could assist in determining the effectiveness of those measures. An increase in coastal Striped Bass populations within the State would also indicate that restoration and habitat protections were successful.

## LITERATURE CITED

Bulak, J.S., C.S. Thomason, K.H. Han and B.E. Ely. 2004. Genetic variation and management of striped bass populations in the coastal rivers of South Carolina. *North American Journal of Fisheries Management*. 24:1322-1329.

- Coutant, C.C. and D.S. Carroll. 1980. Temperatures occupied by ten ultrasonic-tagged striped bass in freshwater lakes. *Transactions of the American Fisheries Society*. 109:195-202.
- Crance, J.H. 1984. Habitat suitability index models and instream flow suitability curves: inland stocks of striped bass. U. S. Fish and Wildlife Service FWS/OBS-82/10.85.
- Etnier, D.A. and W.C. Starnes. 1993. *The Fishes of Tennessee*. The University of Tennessee Press. Knoxville, Tennessee. 681 pp.
- Hassler, W.W., N.L. Hill and J.T. Brown. 1981. The status and abundance of striped bass, *Morone saxatilis*, in the Roanoke River and Albemarle Sound, North Carolina, 1956-1980. North Carolina Department of Natural Resources and Community Development, Division of Marine Fisheries, Special Scientific Report 38. Raleigh, North Carolina.
- Jenkins, R.E., and N.M. Burkhead. 1994. *Freshwater Fishes of Virginia*. American Fisheries Society. Bethesda, Maryland. 1079 pp.
- Bjorgo, K.A., J.J. Isely and C.S. Thomason. 2000. Seasonal movement and habitat use of striped bass in the Combahee River, South Carolina. *Transactions of the American Fisheries Society*. 129:1281-1287.
- Merriman, D. 1941. Studies on the striped bass, *ROCCUS SAXATILIS*, of the Atlantic coast. *Fish. Bull.* 35. 50:1-77.
- NatureServe. 2004. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.0. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: September 1, 2004).
- NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: March 26, 2013).
- Scruggs, G.D. 1955. Reproduction of resident striped bass in Santee-Cooper Reservoir, South Carolina. *Transactions of the American Fisheries Society*. 85:144-159.
- Warren, M.L., Jr., B.M. Burr, S.J. Walsh, H.L. Bart, Jr., R.C. Cashner, D.A. Etnier, B.J. Freeman, B.R. Kuhajda, R.L. Mayden, H.W. Robison, S.T. Ross and W.C. Starnes. 2000. Diversity, distribution, and conservation status of the native freshwater fishes of the southern United States. *Fisheries* 25(10):7-31.