

## Hogchoker

### *Trinectes maculatus*

Contributor (2013): Marcel Reichert (SCDNR)  
(Text and information largely based on Marcy et al. 2005)

#### DESCRIPTION

#### Taxonomy and Basic Description

The hogchoker is a member of the Achiridae (American Soles), a family of flatfishes that occur in both salt and freshwater. The American soles are laterally flattened and the general body shape is rounded or oval. Like all flatfishes, the larvae have eyes placed on each side of the head like other fishes, but during metamorphosis one eye moves over the head so that after metamorphosis both eyes are located on the right side of the head. At this time the juveniles start their demersal life and the eyed side of the fish takes on the adult color pattern. The blind side usually remains white or mottled. All Achiridae are carnivores preying largely on benthic invertebrates (Marcy et al. 2005).

The hogchoker has a laterally flattened body, and the small eyes are located on right side of the body after metamorphosis is completed. Note that most other flatfishes found in South Carolina waters have the eyes located on the left side after metamorphosis. The mouth is small and curved. The color on the eyed side is light to dark brown with 7 or 8 dark, narrow, vertical lines with a row of spots along the lateral line. It also has two large, diffuse blotches at about mid-body on the base of the dorsal and anal fins. The blind side is whitish, sometimes with darker spots or lines. The pectoral fins are absent. The right pelvic fin is continuous with the anal fin, and the dorsal, anal/pelvic, and caudal fins are profusely mottled with dark blotches. Tiny ctenoid scales are present on both sides. The hogchoker can reach 200 mm (8 in.) in total length, but is usually not larger than 170 mm (6 in.) with females growing to larger sizes than males. The dorsal fin has 50-56 rays; the anal fin has 36-42 rays; the pelvic fin has 3 rays on the eyed side and 1 on the blind side (Hildebrand and Schroeder 1928); the caudal fin has 16 rays (Dizon et al. 1973).

Hogchokers spawn in the summer in marine coastal waters and estuaries (Dovel et al. 1969; Koski 1972). Eggs are pelagic but less buoyant in lower salinities (Lippson and Moran 1974). Eggs and larvae were collected from May, when water temperatures reached 20°C (68°F), through September in Maryland (Dovel et al. 1969), October in N. Carolina (Hettler and Chester 1990), and at least through August in Georgia (Reichert and Van der Veer 1991). Temperature and the length of daylight may be important environmental factors in initiating peak spawning activity in July (Dovel et al. 1969). Analysis of migration patterns in Maryland (Dovel et al. 1969) and in the Gulf of Mexico (Peterson-Curtis 1996) suggest that after spawning in the summer, most adults migrate into low salinity waters upriver where they are found from November to March. In spring, they migrate back to the estuarine spawning grounds. In summer and fall, the developing larvae and early juveniles migrate upstream into freshwater. Small larvae have both pectoral fins and one eye on each side of the body. When they are between 1.6 and 6



Figure 1: Hogchoker.  
Photo by David E. Scott from Marcy et al. 2005

mm (1.06-0.2 in.) in length, the pectoral fins degenerate to small flaps and ultimately disappear. In fish between 6 mm and 10 mm in length (0.2-0.4 in.), the left eye migrates over the head to the adult position on the right side (Able and Fahay 1998), and juveniles begin their demersal life.

With increasing size, juveniles gradually start following the adult migration patterns but do not seem to migrate into the high saline spawning grounds until full sexual maturity is reached between the ages of 2 and 4 (see details in Dovel et al. 1969 and Koski 1978). Maximum life span may be 5 years in males and 7 years in females, but most males and females do not live beyond 3 and 4 years, respectively (Koski 1978). Growth is not very fast and the average maximum total length for hogchokers is between 115 and 140 mm (4.5-5.5 in.), depending on the area (Mansueti and Pauly 1956, Koski 1978, Peterson-Curtis 1996). The hogchoker's diet consists of benthic organisms, but the prey composition depends largely on the water salinity. In freshwater, hogchokers predominantly eat small aquatic crustaceans and insects, but mollusks and annelid worms are also included. In waters that are more saline, the diet consists largely of polychaete and oligochaete worms, while crustaceans and mollusks become less important as prey (Derrick and Kennedy 1997). Eggs and larvae are described in Lippson and Moran (1974) and Wang and Kernehan (1979).

#### POPULATION SIZE AND DISTRIBUTION

Hogchokers are distributed from Cape Ann, Massachusetts, along the coasts of the Atlantic and Gulf of Mexico to Panama, but are absent in the West Indies (Burgess *In*: Lee et al. 1980). To date, no stock assessment has been done as this species has little economical value and the population size is unknown. Long-term trends of relative abundance of hogchokers in the SEAMAP-SA Trawl Survey indicate a decline of regional catches in the early years of the survey. However, catches off SC have generally remained the same but can vary greatly from year to year (Figure 2).

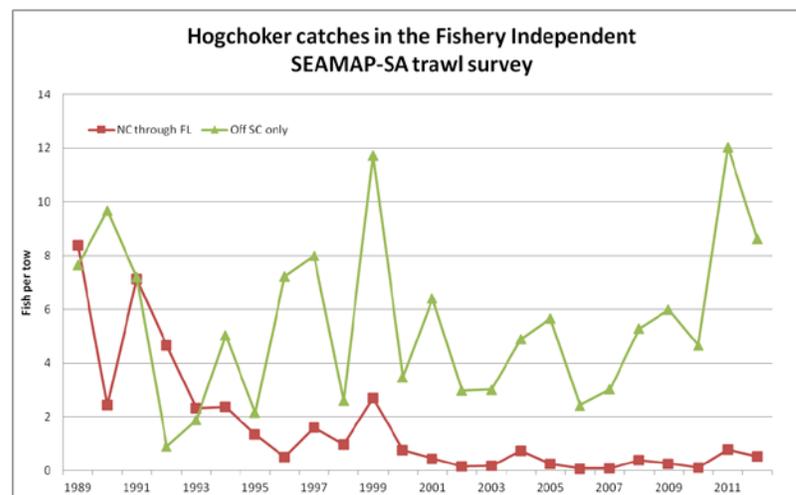


Figure 2: Catches of hogchokers in the SEAMAP-SA Trawl Survey in number of fish per tow.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Hogchokers are found in both marine and fresh waters. Juveniles prefer tidal freshwater and seagrass beds around tidal creek mouths (Mettee et al. 1996). Hogchokers swim considerable distances up rivers and can, at times, be locally abundant in many South Carolina rivers on sandbars along the inside bank of curves or bars at the mouths of tributary streams (e.g. Marcy et al. 2005). Smaller individuals, around 40-65 mm (1.6-2.6 in.) SL, are found in shallow water of 1 m (3 ft.) or less, while larger individuals appear to be found in deeper water on sandy bottoms.

## CHALLENGES

Hogchokers rely on both freshwater and marine waters to complete their life cycle. Maintaining availability of suitable habitat and water quality are essential for the management of the species. By-catch in the trawl fishery is another challenge; although the hogchoker is a tough species and able to survive rough handling, they tend to get stuck in trawl nets, contributing to mortality.

## CONSERVATION ACCOMPLISHMENTS

In 1986, SCDNR closed estuaries to trawling, thereby protecting important nursery habitat for hogchokers. This closure and equipment restrictions have reduced by-catch in trawl fisheries, which undoubtedly contributes to conservation of these species. Other than the trawl fishery, hogchokers are rarely caught by other fishing gear.

## CONSERVATION RECOMMENDATIONS

- Further explore the potential of the hogchoker as an important trophic link in marine ecosystems.
- Monitor trends in hogchoker populations by collecting data about this species during ongoing monitoring programs like SEAMAP-SA trawls survey and by sampling by-catch in the commercial fishery.
- Work with the shrimp fishery to develop ways to return by-catch more expeditiously so as to reduce mortality. Continue developing trawl gear improvements to further reduce the impact on bottom habitat and communities.
- Protect water quality in marine ecosystems by encouraging municipalities to use Best Management Practices (BMPs) to reduce runoff from highways, agricultural fields, and housing developments. Improve BMPs in areas already affected by non-point source pollution.
- Plan development based on sound terrestrial, riverine, and estuarine ecology that takes into consideration all factors that will affect the long-term health of the estuary ecosystem. For example, rather than use commercially important species as indicators, look at groups of species across all trophic levels.
- Identify the origin of non-point source pollution and specific point source pollution and develop plan of action to mitigate any negative effects to the affected aquatic systems.

## MEASURES OF SUCCESS

By developing and implementing ways to monitor population trends for hogchokers and other benthic organisms, SCDNR will be able to document the continued stable abundance of important species. The measurement of success will be the trend in catches of hogchokers in the SEAMAP-SA trawl survey and other surveys.

## LITERATURE CITED

- Able, K.W. and M.P. Fahay. 1989. The first year in the life of estuarine fishes in the Middle Atlantic Bight. Rutgers University Press, New Brunswick, New Jersey, 342 pp.
- Derrick, P.A., V.S. Kennedy. 1997. Prey selection by the hogchoker, *Trinectes maculatus* (Pisces: Soleidae), along summer salinity gradients in Chesapeake Bay, USA. Mar. Biol. 129, (4), 699-712.
- Dizon, A.E., R.M. Horrall and A.D. Hasler. 1973. Meristic characters of some marine fishes of the western Atlantic Ocean. Fishery Bulletin 71:301-317.
- Dovel, W.L., J.A. Mihursky and A.J. McErlean. 1969. Life history aspects of the hogchoker, *Trinectes maculatus*, in the Patuxent river estuary, Maryland. Chesapeake Sci. 10 (2), 104-119.
- Hettler, W.F. and A.J. Chester. 1990. Temporal distribution of ichthyoplankton near Beaufort Inlet, North Carolina. Mar. Ecol. Prog. Ser. 68, 157-168.
- Hildebrand, S.F. and W.C. Schroeder. 1928. Fishes of Chesapeake Bay. Bulletin of the United States Bureau of Fisheries, Vol. XLIII - part I. 388 pp.
- Koski, R.T. 1978. Age, growth, and maturity of the hogchoker, *Trinectes maculatus*, in the Hudson River, New York. Trans. Am. Fish. Soc. 107, (3), 449-454.
- Lee, D. S., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister and J. R. Stauffer, Jr. 1980. Atlas of North American freshwater fishes. North Carolina Biological Survey Publication 1980-12.
- Lippon, A.J. and R.L. Moran. 1974. Manual for identification of early developmental stages of fishes of the Potomac River estuary, Maryland Department of Natural Resources, Power Plant Siting Program, Report PPSP-MP-13.
- Mansueti, R. and R.Pauli. 1956. Age and growth of the northern hogchoker, *Trinectes maculatus maculatus*, in the Patuxent River, Maryland. Copeia 1956, 60-62.
- Marcy, B.C., D.E. Fletcher, F.D. Martin, M.P. Paller, & M.J.M. Reichert. 2005. Fishes of the Middle Savannah River Basin with emphasis on the Savannah River Site. University of Georgia Press, 462 pp.
- Peterson-Curtis, T.L. 1996. Seasonal migration in the southern hogchoker, *Trinectes maculatus fasciatus* (Archiridae). Gulf Res. Rep. 9 (3), 169-176.
- Reagan, R. E. and W. M. Wingo. 1985. Southern flounder - Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Gulf of Mexico). U.S. Dept. of the Interior, U.S. Fish Wildl. Serv. Biol. Rep. 82(11:30)
- Reichert, M.J.M., Van der Veer, H.W., 1991. Settlement, abundance, growth and mortality of juvenile flatfish in a subtropical tidal estuary (Georgia, U.S.A.). Neth. J. Sea Res. 27, (3/4), 375-391.
- Wang, J. C. S. and R. J. Kernahan. 1979. Fishes of the Delaware Estuaries, a guide to the early life histories. E. A. Communications, Ecological Analysts, Towson, Maryland.