Tonguefishes Guild

Blackcheek Tonguefish *(Symphurus plagiusa)*
Off-shore Tonguefish (*Symphurus civitatium*)

Contributor (2005): Marcel Reichert (SCDNR)
Reviewed and Edited (2013): Marcel Reichert (SCDNR)

Blackcheek tonguefish
Photo by Marcel Reichert.

DESCRIPTION

Taxonomy and Basic Description

Tonguefishes are small flatfishes with a small curved mouth and united caudal, dorsal, and anal fins. The relatively small eyes are located on the left side, and their general shape is elongated and drop-like. The ground colors of the most abundant South Carolina species are light brown on the eyed side and whitish on the blind side. The Blackcheek Tonguefish, *Symphurus plagiusa* (Linnaeus 1766), is the most abundant of the South Carolina tonguefishes. It is one of 34 species in the genus *Symphurus* (Order: Pleuronectiformes, Family: Cynoglossidae) described from the Western Atlantic (Munroe 1991; Munroe 1998), 9 of which occur off the South Carolina coast (Ginsburg 1951; Munroe 1998). The Blackcheek Tonguefish can reach a standard length of 174 mm or 7 in. (Moe and Martin 1965).The species gets its name from the black spot located on the dorsal portion of the opercle on the eyed side. Adults have 4 to 5 vertical bars on the eyed side, while juveniles can have up to 10 of these bars. The diet of blackcheek tonguefishes is varied and consists largely of smaller bottom-dwelling organisms including algae, mollusks, polychaetes, copepods, and other small crustaceans (Stickney 1976; Reichert and Van der Veer 1991; Toepfer and Fleeger 1995; Munroe 1998).

Morphologically, the Blackcheek Tonguefish is most similar to the Off-shore Tonguefish (*S. civitatium* Ginsburg 1951). The 2 species can be separated by the number of caudal fin rays (10 in the Blackcheek and 12 in the Off-shore Tonguefish), the number of bands on the eyed side (10 or less in the blackcheek and 12 or more in the off-shore tonguefish), and a slightly smaller maximum size of 152 mm or 6 in. standard length in the Off-shore Tonguefish. (Munroe 1998; Munroe et al. 2000). See Table 1. It was long assumed that these two species rarely co-occurred and that the Blackcheek Tonguefish was the only species that was usually collected in estuarine and shelf waters. However, Munroe et al. (2000) found that the two species do co-occur in the north central Gulf of Mexico and in nearshore waters off Cape Hatteras, North Carolina. Although no comprehensive study is available, it is most likely that the Blackcheek Tonguefish and the Off-shore Tonguefish co-occur in South Carolina estuaries and shelf waters, “potentially compromising results of earlier ecological and distributional studies that assumed the presence of only a single species” (Munroe et al. 2000). Since it is likely that many studies did not differentiate between these species, this account includes both species. If information pertains

specifically to either the blackcheek tonguefish or the offshore tonguefish, the individual species will be mentioned; otherwise they are referred to as "tonguefish."

Table 1: Differences between the Blackcheek Tonguefish and the Off-shore Tonguefish (Munroe et al. 2000).

Characteristic	Blackcheek Tonguefish	Off-shore Tonguefish
Caudal fin rays	10 caudal fin rays (<2.4% has 8, 9 or 11)	12 caudal fin rays (< 1% has 9, 11 or 13)
Eyed side coloration	Juveniles more darkly	Juveniles lighter
Vertical bands	From 10 in juvenile to 4 or 5 in adults, wider and incomplete in adults	In all sizes 12-20, narrower and always complete
Blind side pigmentation (especially in juveniles)	Medium series of melanophores and 2 interrupted diagonal series of dash-like blackish melanophores	Almost uniformly white (except a medium row of melanophores)

Status

Due to their small size, there is no directed fishery for tonguefishes in South Carolina (or elsewhere); however, they are commonly caught as by-catch in trawl fisheries (Keiser 1976; Keiser 1977, SEAMAP-SA Coastal Survey data), and at least one of the species appears to be vulnerable to by-catch mortality. Despite their cryptic life style, they may be preyed upon by larger epibenthic piscivores because of their small size and relative abundance, indicating that the tonguefishes may be an important tropic link in marine ecosystems.

POPULATION SIZE AND DISTRIBUTION

The Blackcheek Tonguefish occurs in estuaries and shelf water from the New York Bight south along the Atlantic Coast into the Gulf of Mexico to the Campeche

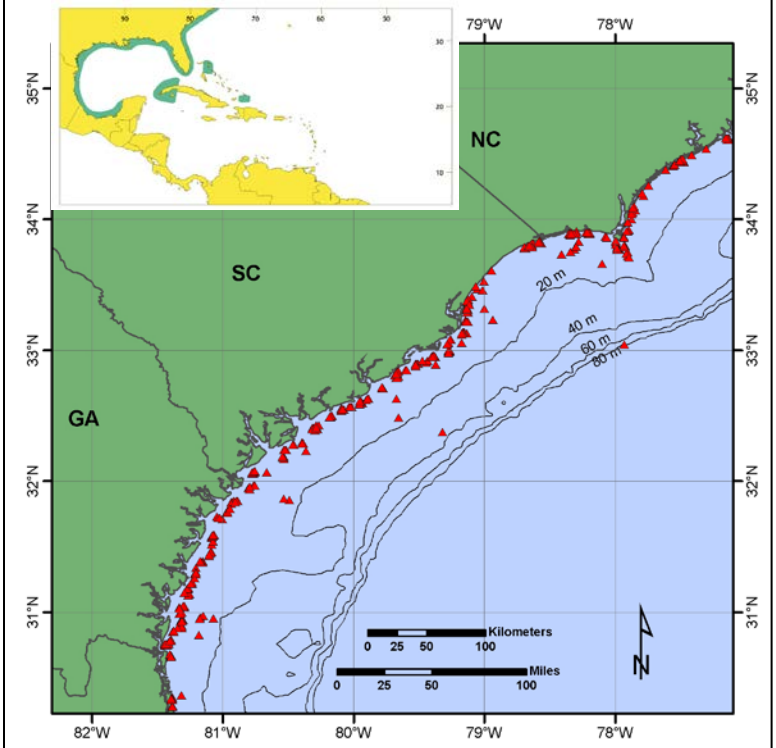

Figure 1: Locations of capture of tonguefish identified as Blackcheek Tonguefish off South Carolina and adjacent waters during sampling by the MARMAP and SEAMAP Programs, Marine Resources Division, SCDNR. Graphic by P. Weinbach, SCDNR.
Inset: Distribution of Blackcheek Tonguefish in the western central Atlantic region [from Munroe (2002)].

Peninsula, the Bahamas, and Cuba (Munroe et al. 1998). See Figure 1. The Carolinas are considered the center of distribution for the species. The Blackcheek Tonguefish is mostly a shallow water species, occurring from less than 1 to 30 m in depth (3 to 98 ft.), although specimens have been collected to 183 m (600 ft.) (Munroe 1998).

The Off-shore Tonguefish has a similar distribution, but is absent from the Bahamas and Cuba, and is generally absent from the west Florida shelf (Topp and Hoff 1972; Munroe 1998). It occurs from 1 to 73 m depth (3 to 239 ft.) depth, but is generally most abundant between 11 and 45 m (36 to 148 ft.) (Munroe 1998). It was thought to occur farther from the coast than the Blackcheek Tonguefish (hence its name, Off-shore Tonguefish), but recent findings contradict this view (Munroe et al. 2000).

The population size of the tonguefishes off the South Carolina coast is unknown, but by-catch data and research collections indicate that it can be very abundant. In North Inlet, South Carolina (SEAMAP-SA Coastal Survey data and Reichert unpub. data) it is a relatively abundant species taken in bottom trawls. These findings are consistent with data from areas like Chesapeake Bay, Virginia (Terwilliger 1999) and Sapelo Island, Georgia (Reichert and Van der Veer 1991). Although there is some question regarding identification, catches of Blackcheek Tonguefish in the SEAMAP-SA trawl survey indicates a downward trend in relative abundance through 2010, with a possible slight increase in the following 2 years. See Figure 2.

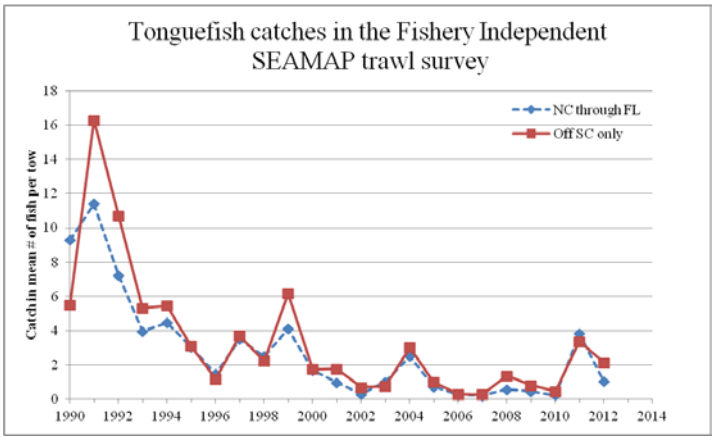

Figure 2: Catch (in average number of fish per tow) of Blackcheek Tonguefish in the SCDNR-SEAMAP-SA Trawl Survey conducted off South Carolina (SC only) and from Cape Hatteras, North Carolina to Cape Canaveral, Florida (NC through FL).

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

The Blackcheek Tonguefish tolerates a wide range of salinities from 0 to 43 parts per thousand (ppt) and is considered the most euryhaline (capable of tolerating a wide range of salinities) of the North American tonguefishes (Munroe 1998). The species abounds over soft sediments and is found in much lower abundances in surf zones and live bottom areas (Munroe 1998). Although the offshore tonguefish has also been collected from softer sediments, it seems to be more abundant over sand-silt and lithified sediments of cemented lime (Topp and Hoff 1972; Munroe 1998). There is no published information about natural community requirements. Three specimens of offshore tonguefish collected during MARMAP offshore trawling efforts came from 3 stations off northern Georgia and southern South Carolina, in depths from 79 to 137 m (259 to 449 ft.) (Sedberry pers. comm. and MARMAP unpubl. data).

Spawning habitats in South Carolina likely include the shallow coastal and shelf waters and large estuaries. Spawning occurs from March through October, with a peak in June and July (Martin and Drewry 1978; Reichert and Van der Veer 1991). Small juveniles are collected in high

numbers in shallow waters in estuaries, and tonguefishes seem to migrate to deeper areas with increasing size (Reichert and Van de Veer 1991; Reichert unpub. data). This indicates that estuaries may be important nursery areas for tonguefishes. The larger adults are mostly collected in deeper creeks, shallow coastal waters, and on the shelf; this corroborates the information on spawning habitat.

CHALLENGES

Tonguefish populations may be adversely affected as they are frequently caught as bycatch in trawls, especially in the shrimp fishery (Keiser 1976; Keiser 1977) and are regularly collected in shallow coastal waters and estuaries (Shealy et al. 1974; Reichert and Van der Veer 1991; Terwilliger 1999). They are often considered a nuisance since they get caught in the nets, possibly interfering with net efficiency, and cleaning the nets often requires removing tonguefish by hand. Due to their hardiness, tonguefish survival should be good if the catch is sorted quickly and the by-catch is promptly put overboard. Estuaries are important nursery habitats for tonguefishes and consequently, threats to these habitats may adversely affect tonguefish populations.

CONSERVATION ACCOMPLISHMENTS

In 1986, SCDNR closed estuaries to trawling, thereby protecting important nursery habitat for tonguefishes. This closure and equipment restrictions have reduced by-catch in trawl fisheries, which undoubtedly contributes to conservation of these species.

CONSERVATION RECOMMENDATIONS

- Describe ecological differences; spatial and seasonal distribution; and habitat requirements and how these requirements differ between these two and other species of tonguefish.
- Explore the potential of tonguefishes as trophic links in marine ecosystems.
- Monitor trends in tonguefish populations by collecting data about this species during ongoing monitoring programs like SEAMAP and by sampling by-catch in the commercial fishery.
- Work with the shrimp fishery to develop ways to return bycatch more expeditiously so as to reduce by-catch 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 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 a 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 the tonguefishes and other benthic organisms, SCDNR will be able to document the continued stable abundance of important species. The measurement of success will be to see an increasing trend in catch of tonguefish during SEAMAP surveys.

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