

## Southern Flounder

*Paralichthys lethostigma*

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### DESCRIPTION

#### Taxonomy and Basic Description

The Southern Flounder, *Paralichthys lethostigma* (Jordan and Gilbert, 1884), is a member of the Paralichthyidae family, or left-eyed flounders. Diagnostic characters of this bottom dwelling predator include a rather large mouth with large sheathed teeth, an arch in the lateral line over the pectoral fin, and no ocellated spots on the pigmented side. The southern flounder is the most abundant of the four species of the *Paralichthys* genus found in South Carolina estuarine and near shore waters, occurring from freshwater-tidal riverine systems to full strength seawater (Wenner et al. 1990). This species is often confused with the summer flounder (*P. dentatus*) or the gulf flounder (*P. albigutta*), from which it can be differentiated by comparing counts of vertebrae, fin elements, gill rakers and body pigmentation. The fourth species, *P. squamolentus*, is found on South Carolina beachfronts only as juveniles (Anderson et al. 1977). Although the South Carolina state record southern flounder weighed 8 kg (17 pounds, 6 ounces) (SCDNR 2004), this species occurs much more abundantly up to about 2.3 kg (5 pounds) in local waters.



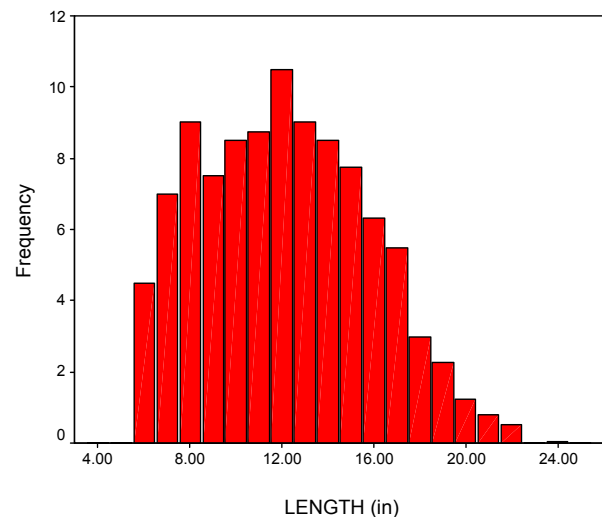
#### Status

This species is the third most sought recreational finfish in South Carolina estuaries (C.A. Wenner, pers. comm.) and recreational anglers are allowed to harvest 20 fish greater than 30.5 cm (12 inches) per day using either hook and line or gig gear (SCDNR 2005). The southern flounder does not enjoy game fish status, so there are no restrictions on commercial capture or sale as long as the 12-inch size restriction is followed (SCDNR 2005). Recently, fishing pressure has increased greatly for this species; however, we do not know what affect that increased pressure is having on southern flounder populations.

#### POPULATION DISTRIBUTION AND SIZE

South Carolina is well within the northern limits for this species, which has a range from North Carolina to eastern Florida on the Atlantic coast, and from southwestern Florida through the Gulf of Mexico to the Yucatan peninsula (Munroe 2002).

Tagging efforts have been conducted in South Carolina estuarine waters (Wenner 1990), and the resultant information revealed that the population of southern flounders in the state



appeared healthy and in no immediate threat of over-harvest (C.A. Wenner, SCDNR, pers. comm.). Year-class strength and size at age data is being gathered routinely by the Inshore Fisheries group at SCDNR to monitor estuarine recruitment of juveniles and ensure that population abundance remains at an appropriate level. The large number of specimens at the minimum legal size of 30.5 cm (12 inches) and smaller is a good indication of the overall health of this species in South Carolina waters.

## HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Immature southern flounders remain in the estuaries throughout the year. Adults migrate from estuaries during colder months to spawn offshore. Larvae are transported by ocean currents into the estuaries, finally reaching their nursery habitat as small juveniles (1.3 cm or 0.5 inches) in the upper reaches of South Carolina estuaries. It is believed that both sexes reach maturity at age 2, though females are much larger than males at that time (males are approximately 20 cm or 8 inches; females measure approximately 33 cm or 14 in). Females not only grow faster than males, but also live longer (males live up to 3 years; females live up to 9 years) (Wenner et al. 1990).

Diet information for the southern flounder was investigated by Wenner et al. (1990) for adults and by Fernandez (1991) for juveniles. Prey items reflected the habitat location of this species during growth. Small animals fed on copepods and opossum shrimp found in the upper reaches of the estuaries (Fernandez 1991). As the flounders grew and moved down the estuaries into higher salinities, their diet changed to include larger crustaceans and small fishes (Wenner et al. 1990). Larger southern flounders primarily consumed fishes and small blue crabs found in the shallow waters near the marsh edge in the higher salinity/lower reaches of South Carolina estuaries (Wenner et al. 1990).

## CHALLENGES

The increase in the human population along the coast of South Carolina is disproportionate to the general demographics of the nation as a whole and a concomitant increase in fishing pressure on flounder stocks in local estuaries has resulted (pers. obs.). Commercial harvest information (primarily from coastal shrimp boat by-catch) does not separate this species from the general category 'flounders;' therefore, there is no mechanism to determine the impact of commercial operations on the extra-estuarine populations of this species.

Chemical contaminants, especially those that precipitate and incorporate into the sediment, pose a great threat to this species because of its close and persistent contact with the estuary bottom. Metals, polycyclic aromatic hydrocarbons (PAHs) and pesticides were shown to accumulate in the muddy sediments with which this fish is closely associated (Sanger 1998); these were shown to be detrimental to the benthic creatures exposed to it. There is presently no testing of southern flounders for any of the above contaminants, except for the heavy metal mercury. Fortunately, samples of southern flounder fillets regularly examined since 2001 have not indicated any harmful build-up of the highly toxic methyl-mercury that can be found in South Carolina waters (SCDHEC 2005).

Preliminary investigations have shown various amounts of southern flounder parasites in different South Carolina estuarine systems. Since there is a history of industrial discharge in the Winyah Bay and Charleston Harbor estuarine systems, the potential of a positive correlation with parasite loads and pollution needs to be further investigated, especially in these two areas. Understanding the affects of parasite loads on natural populations of southern flounders, especially in reference to contaminants in the estuaries, could assist in circumventing future population problems.

## CONSERVATION ACCOMPLISHMENTS

Because southern flounder are such a sought-after species, the State of South Carolina instituted harvest restriction on both the commercial and recreational fishery. Harvest of this important species is currently regulated by law with a 12-inch minimum size and 20 fish harvest limit per angler per day.

## CONSERVATION RECOMMENDATIONS

- Examine long-term trends in southern flounder population size, abundance and relative distribution; relate these dynamics to fishing pressure, pollution affects, parasite load and disease.
- Determine effects of pollutants on southern flounder reproduction, growth and longevity.
- Determine the seasonality and potential estuarine hotspots of parasitic infections on southern flounder; relate these to growth and reproductive dynamics.
- Monitor the effects of recreational fishing stress on the existing population of southern flounders.
- Monitor the effects of marine pollutants on fish.
- Test for benthic contaminants. Acquiring this knowledge could benefit a great number of species that associate closely with the estuarine bottoms in addition to southern flounders.

## MEASUREMENT OF SUCCESS

Currently, South Carolina enjoys a healthy southern flounder population. By monitoring and reacting to a potential decline of this species due to increased angler harvest, parasite load, or environmental contaminants, SCDNR will be able to maintain adequate stocks.

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