Silver Perch

Bairdiella chrysoura

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DESCRIPTION

Taxonomy and Basic Description

Silver perch is one of the smaller members of the family Sciaenidae (drums). It is therefore closely related to other drums such as red drum, black drum, spotted seatrout, weakfish, spot, and Atlantic croaker, which are favorites of coastal anglers. So, despite what its common name might suggest, it is not in the same family as the white perch (*Morone americana*, family Moronidae), and neither "perch" is a true perch (family Percidae).

While Robins and Ray (1986) noted maximum size of silver perch as 30 cm (11.8 in.), it is more likely to be encountered in South Carolina (SC) estuarine and coastal waters at sizes below 20 cm (7.9 in.). The silver perch has a silvery, greenish, or bluish dorsal color, transitioning to bright silver or a yellowish coloration ventrally. Very faint horizontal striping may be noticeable. The caudal (tail) fin is truncate (squared off), which helps differentiate it from a similar diminutive cousin, the star drum, which has a lanceolate (pointed) tail and is generally very bronzy in color. The mouth is relatively large, oblique, and located terminally. Fins range from dusky to whitish or yellowish in appearance with 10-11 spines in the first dorsal, 1 spine and 19-23 fin rays in the second dorsal, and 2 spines and 8-10 rays in the anal fin (Chao 2002). Unlike many of its drum relatives, it does not possess any chin barbels.

Status

Silver perch is not a managed species. It has not undergone a state or federal stock assessment, nor has it been formally evaluated by the International Union for Conservation of Nature (IUCN).

POPULATION SIZE AND DISTRIBUTION

Silver Perch distribution extends down the US Atlantic Coast from Cape Cod through Florida and the Caribbean Islands, and west across the Gulf of Mexico to the Rio Grande (Chao 2002). It is a common and abundant inhabitant of estuaries and near-shore coastal ocean waters off SC. Summertime sampling via trawl in SC tidal creeks and open estuarine waters by the South Carolina Estuarine and Coastal Assessment Program (SCECAP) has yielded average annual density estimates ranging from 0.7 to 95.6 individuals per hectare for years 1999 through 2012 (Van Dolah et al. 2013; SCECAP unpublished data). Some segment of the population also utilizes coastal near-shore waters along the Atlantic Coast of the Southeastern US, as evidenced by trawl data of the Southeast Area Monitoring and Assessment Program – South Atlantic (SEAMAP-SA) Coastal Survey. However, density estimates from data of the Coastal Survey off SC, for spring, summer, and fall combined (0.01-2.39 fish per hectare), are substantially lower than SCECAP's estuarine estimates. Oceanic waters north of SC (up to Cape Hatteras, NC) and south of SC (down to Cape Canaveral, FL) appear to yield higher estimates than for SC oceanic

waters (SEAMAP-SA unpublished data). In potential contrast, summer sampling in estuarine and near-shore waters of the Gulf of Mexico for a life history study by Grammer et al. (2009) suggested that this was a purely estuarine species, at least in the northern Gulf of Mexico. Review of annual abundance data from estuarine electrofishing and trammel data of the South Carolina Department of Natural Resources (SCDNR) Inshore Fisheries Section suggests that South Carolina's population of silver perch fluctuates in response to winter water temperatures, declining sharply following severe winters. However, the pattern does not appear to be as distinct in the SEAMAP data from offshore waters (Fig. 1).

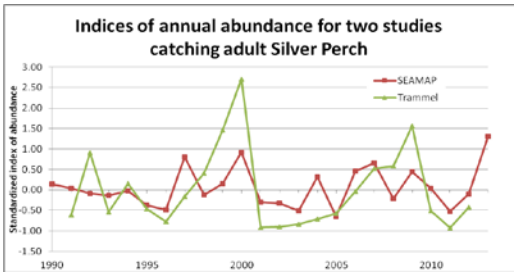

Fig. 1. Indices of annual abundance for Silver Perch from the Inshore Fisheries trammel net survey in SC estuaries and the SEAMAP-SA Coastal (trawl) Survey in near-shore ocean waters. Indices standardized to common scale. (Inshore Fisheries and SEAMAP-SA unpublished data)

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Silver perch are generally reported to favor estuarine and coastal waters with sandy or muddy substrates and use estuaries as nurseries and feeding areas during the warmer months (Chao 2002). Data from several studies conducted by SCDNR staff document their regular occurrence throughout our coastal waters from small tidal creeks and brackish waters of upper estuaries to at least several miles off our beaches. The Inshore Fisheries Section has collected silver perch by a number of means over the years including: rotenone sampling of small tidal creeks (1991-1993), "stop nets" at the head of two coves near ocean inlets (1991-1996), trammel netting in large creeks and along banks of sounds, inlets, and Charleston Harbor (1991-2013), and electroshock fishing in the upper reaches of SC estuaries (2001-2013). Data from their rotenone sampling in small tidal creeks (blue line, Fig. 2) suggests that small silver perch begin to appear in these SC creeks in April, spike to peak abundance in June, quickly subside by August, and are gone from these small creeks by December. Data from electroshock fishing along the banks of brackish portions of larger SC creeks and rivers clearly shows silver perch to be present in this habitat year round.

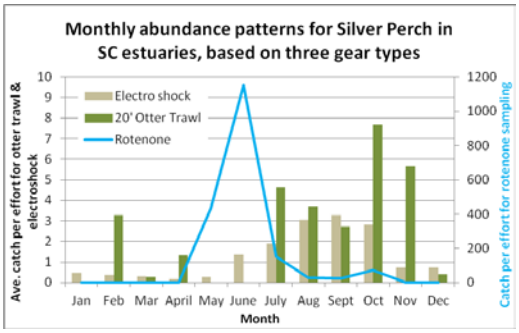

Fig. 2. Monthly catch levels for a number of SCDNR sampling gears in inshore waters. (Inshore Fisheries Section, unpublished data).

In this habitat, abundance appears to build from April to a peak in September, decline through November, then fluctuate at low levels through winter and early spring. Fish up to 191 mm (7.5 in.) standard length were encountered even in the lowest salinity water (0-3 ppt salinity). Inshore Fisheries staff also began logging fish data from 20 ft. otter trawl samples during SCDNR Crustacean Management Section (CMS) sampling cruises in 2010. The data also indicate that Silver Perch are present in larger creeks and sounds most months (Fig. 2) (Inshore Fisheries Section, unpub. data). Interestingly, so far, silver perch have been absent from these samples in May and June, the same months that abundance peaked in rotenone samples from very small creeks. Additional years of CMS data will be necessary to see if this pattern holds. SCECAP sampling, conducted during July and August, found Silver Perch to be much more abundant in small tidal creeks (<100 m or <328 ft. wide) than in larger creeks and open estuarine waters (>100 m wide) (Fig. 3) (Van Dolah et al. 2013). SEAMAP-SA trawl samples off the beaches

produce low numbers in each of the three seasons sampled: spring, summer, and fall, although spring usually yields highest abundance (SEAMAP-SA unpublished data).

The diet of silver perch includes crustaceans, worms, and fishes (Chao 2002). Based on their study in a SC tidal creek, Kleypas and Dean (1983) reported that silver perch were the most abundant predatory fish encountered in their samples and that their diet was predominated by grass shrimp, but also included mud crabs, isopods, amphipods, and fish. They further reported that feeding primarily occurred at night and seemed to have an association with high tide; their catch data suggested the fish were moving in and out of the creek with the tide.

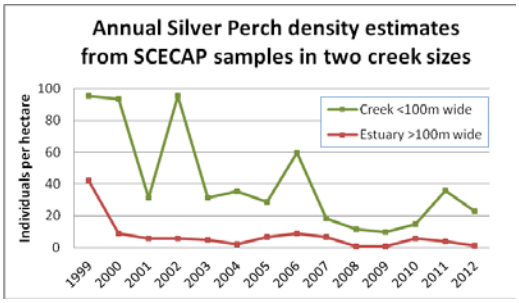

Fig. 3. Annual density estimates for Silver Perch from summer (July & August) SCECAP trawl samples in two water body sizes: creeks <100 m wide, and creeks or larger water bodies >100 m wide.

Gulf of Mexico silver perch, studied by Grammer et.al (2009), reached maturity at the end of their first year of life at lengths between 91 and 95 mm (3.6-3.7 in.) standard length. Work by Radcliffe on fish from Beaufort, NC and Chesapeake Bay, VA, reported by Welsh and Breder (1924), indicated that fish may grow to 6 to 14 cm (2.4-5.5 in.) by their first winter, but noted a more protracted development. His scale-based aging suggested these fish did not spawn until the start of their third season of growth and 2 years of age, at a size of 15 to 21 cm (6.0-8.3).

CHALLENGES

- The fate of silver perch would seem inextricably linked to the health of our estuarine systems. Our ability to implement management practices which successfully allow continued coastal development without a reduction in water quality and marsh production (e.g. grass shrimp stocks) will likely determine the continued success of this species.
- Diminishing, or at best static, funding levels for biological and environmental monitoring programs have reduced the number of samples that can be collected and reduced the rate at which they can be processed and analysed. The repercussions of this are a reduced capacity to identify threats and pre-empt or mitigate them before lasting damage is done, and reduced certainty that catch values (indices) properly represent population trends.

CONSERVATION ACCOMPLISHMENTS

- Thanks to actions of the SC General Assembly, most of the area of SC's coastal sounds and bays has been closed to trawling since 1986. As this is clearly prime habitat for silver perch, fishing mortality for this species should have been substantially reduced.
- Implementation of BRDs (by-catch reduction devices) in shrimp trawls, starting in 1996, has probably further reduced fishing mortality rates, sparing some individuals in coastal near-shore waters.

CONSERVATION RECOMMENDATIONS

- Continue efforts to develop and implement effective by-catch reduction devices (BRDs).
- Continue long-term monitoring of abundance to confirm that population numbers remain high.

- Further investigate the importance of this species as forage for other species in order to improve understanding of its trophic importance.
- While this species appears to be doing well, it would likely benefit from any actions which serve to protect and/or improve water quality.

MEASURES OF SUCCESS

Potentially, one survey, or a combination of surveys mentioned above, could be used to generate an annual index of abundance. Absence of a persistent decline in this index could probably be interpreted as maintaining a viable population level. Insufficient analysis has been completed at this time to be able to recommend the best index value to track.

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