

“Smoky” Sculpin

Cottus bairdii complex

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DESCRIPTION

Taxonomy and Basic Description

The “Smoky” Sculpin is a member of the family Cottidae, which is a large family of mostly northern-hemisphere marine fishes found around the world. The genus *Cottus* is strictly confined to freshwaters of North America and Eurasia (Robins 1961; Page and Burr 1991). The taxonomy of the genus is uncertain at present. The name “Smoky” Sculpin has been used to reference the *C. bairdii*-like form occurring in South Carolina, which may be a subspecies or potential new species; however, the formal description has not yet been published (Jenkins and Burkhead 1994; Warren et al. 2000). The *C. bairdii* complex is widespread, occurring in the eastern half of North America from arctic Canada southward where cool streams and rocky substrates are present, as well as in western North America on both sides of the Continental Divide. The adult “Smoky” Sculpin ranges in total length from 58 to 114 mm (2.3 to 4.5 in.). As is typical of other members of the genus *Cottus*, the “Smoky” Sculpin has a large head and mouth, 2 dorsal fins (the first is spiny and the second is soft-rayed) and 3 reduced preopercular spines. This sculpin has a complete lateral line—or nearly so—and well-developed palatine teeth. Red marginal and black basal bands in the spinous dorsal fin are found on males. Pigmentation is highly variable, with body background color ranging from coppery brown to slate gray, approaching black in nuptial males, with dark brown to black mottling on sides and back (Robins 1961; Page and Burr 1991; Jenkins and Burkhead 1994).

Status

Warren et al. (2000) listed the global status of the “Smoky” Sculpin as currently stable within its range, and secure (G5) by NatureServe (2013). The “Smoky” Sculpin is not listed (SNR) in South Carolina (NatureServe 2013).

POPULATION SIZE AND DISTRIBUTION

The Smoky Sculpin is endemic to the southern portion of the Blue Ridge physiographic region (Warren et al. 2000). In South Carolina, it is found in the extreme upper Savannah River drainage, primarily in the Blue Ridge Ecoregion; however, peripheral populations extend down onto the Inner Piedmont in a few locations. The Savannah populations are thought to have colonized the basin due to stream capture of Tennessee drainages (Jenkins et al. 1971). Outside of South Carolina, the species occurs in the Blue Ridge portions of north Georgia, east Tennessee, and western North Carolina (Jenkins and Burkhead 1994).

The “Smoky” Sculpin in South Carolina is only found in the extreme upper Savannah River drainage, primarily the Chattooga River and tributaries. Populations in the Chattooga are locally abundant and appear to be currently stable based on yearly fish population sampling (SCDNR unpublished data). Future population viability is likely, particularly in light of the protected status afforded the Chattooga as a Wild and Scenic River. Based on South Carolina Stream Assessment (2006-2011) data, the mean statewide density estimate for “Smoky” Sculpin in wadeable streams was 0.06 (95% confidence interval: 0.00 – 0.13) per 100 m².

HABITAT OR NATURAL COMMUNITY REQUIREMENTS

The “Smoky” Sculpin inhabits clear, cold to cool headwaters, creeks, springs and small montane rivers of high to moderate gradient. Substrates are rubble and gravel, which are important to its benthic feeding habits and crevice spawning behavior.

CHALLENGES

The Smoky Sculpin is currently stable throughout its range. The limited distribution of this species within South Carolina makes it vulnerable to impacts from land development, deforestation, loss of riparian cover, siltation, and hydrologic alterations (channelization and impoundment construction). Because of its limited distribution within South Carolina, such habitat alteration could extirpate it from the State.

CONSERVATION ACCOMPLISHMENTS

The core area of “Smoky” Sculpin abundance is protected by the Wild and Scenic Chattooga River.

Educational materials have been developed in order to raise public awareness of nongame species and their ecological importance to the natural history of South Carolina’s aquatic habitats, including:

- The Reel Art program creates a topic for secondary school students and judges the artists’ submissions (e.g. a list of the Piedmont Fishes of SC to select from as subjects for drawing or painting).
- We compiled information and photographs for the development of nongame fish description web pages which are currently in development.
- We developed the Blackwater River Guide and interactive Powerpoint.
 - <http://www.dnr.sc.gov/education/pdf/BlackwaterInteractivePoster.pdf>
 - <http://www.dnr.sc.gov/education/pdf/BlackwaterRivEdGuide.pdf>
- We developed and printed the Fish Species of Concern Coloring Book (2009).
 - <http://www.dnr.sc.gov/aquaticed/pdf/SCFishesofConcernColoringBook.pdf>

CONSERVATION RECOMMENDATIONS

- Use South Carolina Stream Assessment decision-support GIS modeling tools to identify levels and spatial distributions of critical habitat factors to sustain the species in geographic areas of interest.
- Use South Carolina Stream Assessment decision-support GIS modeling tools to identify priority regions and watersheds at greatest risk of decline in stream integrity.
- Describe life history and habitat requirements for the “Smoky” Sculpin.
- Conduct genetic studies of the “Smoky” Sculpin to resolve taxonomic questions regarding differentiation of Savannah populations.
- Identify and protect areas with healthy populations and intact critical habitat for the “Smoky” Sculpin.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and in other areas that contain available habitat.
- Consider this species’ needs when participating in the environmental permit review process.
- Encourage responsible land use planning.
- Continue to develop educational materials in order to raise public awareness of nongame species and their ecological importance to the natural history of South Carolina’s aquatic habitats.

MEASURES OF SUCCESS

Determining the distribution, life history, habitat needs, and Southeastern population structure and trends would represent a measure of success for this species. Methods that protect water quality are also likely to protect this species and others. Genetic resolution of the status of the species will allow for more specific management protocols.

LITERATURE CITED

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