

Christmas Darter

Etheostoma hopkinsi

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DESCRIPTION

Taxonomy and Basic Description

Christmas Darter (Rohde et al. 1994) is a member of the family Percidae; this diverse family contains approximately 150 species of darters, all of which are found in rivers, lakes, swamps and springs of Eastern North America. The Christmas Darter belongs to the genus *Etheostoma*, the largest genus of North American fishes (Jenkins and Burkhead 1994). The Christmas Darter is the only South Carolina representative of the subgenus *Oligocephalus*, one of the largest subgenera of *Etheostoma*. Two subspecies have been identified: *E. binotatum* from the Savannah River drainage in both Georgia and South Carolina, and *E. hopkinsi* from the Altamaha and Ogeechee river drainages in Georgia. Kuehne and Barbour (1983) have hypothesized possible species level differentiation of *E. binotatum* and *E. hopkinsi* due to marked differences in appearance of breeding males. The colorful Christmas Darter ranges in length from 41 to 71 mm (1.6 to 2.8 in.). As is typical of other members of the subgenus *Oligocephalus*, the Christmas Darter has a small conical head, broad frenum, and two anal spines. Breeding males have a blue marginal and a red sub-marginal band on the spiny dorsal fin (Kuehne and Barbour 1983). This darter has 10 to 12 dark green bars on its side, separated by a red bar in a mature male and a yellow bar in the female. Its greenish back has eight dark saddles while its belly is light green.

Status

The Christmas Darter is currently considered stable within its range (Warren et al. 2000). NatureServe (2013) lists the status as secure and apparently secure both globally (G4, G5) and locally in South Carolina and Georgia (S4). The Christmas Darter has received legal status as a fish of concern in South Carolina.

POPULATION SIZE AND DISTRIBUTION

The Christmas Darter is found in the upper Savannah River drainage, primarily above the fall line. Populations identified below the Fall Line may be Savannah darters. Outside of South Carolina, Christmas Darters are found in the Altamaha and Ogeechee drainages in Georgia, both above and below the Fall Line (NatureServe 2004). The Christmas Darter was considered by Kuehne and Barbour (1983) to be currently stable. They note that *E. binotatum* is common in creeks along the fall line containing gravel and rubble substrate and in headwater creeks in the Savannah River drainage. Page and Burr (1991) also refer to the Christmas Darter as fairly common. However, areas of abundance are often disjunct. Major land disturbances within

critical habitat could cause severe loss within their range. Our taxa team was of the impression that Christmas Darter may be in decline within South Carolina. Based on South Carolina Stream Assessment (2006-2011) data, the mean statewide density estimate for the Christmas Darter in wadeable streams was 0.07 (95% confidence interval: 0.03 – 0.12) per 100 m².

HABITAT OR NATURAL COMMUNITY REQUIREMENTS

The Christmas Darter inhabits gravel or rubble riffles in cool water springs, creeks, and small- to medium-sized rivers where stronger currents exist. It sometimes occurs in slower moving waters with submerged vegetation (Rohde et al. 1994).

CHALLENGES

The Christmas Darter is currently stable throughout its range; however, the wide separations between critical habitats and healthy populations are a concern. Because of the limited distribution of the Christmas Darter within South Carolina, this fish is vulnerable to development, deforestation, loss of riparian cover, siltation, and the effects of impoundments within areas of abundance.

CONSERVATION ACCOMPLISHMENTS

South Carolina Stream Assessment data have facilitated the calculation of standardized abundance (density) estimates for this species at multiple spatial strata including statewide, river basin, level-IV ecoregion, and “ecobasin” (ecoregion x river basin). These estimates, for the first time, provide an objective measure of current population status that will serve as a baseline for following future population trends and gauging the effectiveness of conservation actions.

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 of the Christmas Darter.
- Conduct a genetic survey to determine the relationship between the Christmas and Savannah darters.
- Protect critical habitats from future development and further habitat degradation by following Best Management Practices (BMPs) and protecting and purchasing riparian areas.
- Promote land stewardship practices through educational programs both within critical habitats with healthy populations and in other areas that contain available habitat.
- Encourage responsible land use planning.
- Consider this species' needs when participating in the environmental permit review process.
- 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.
- Educate motor vehicle operators of the negative effects of crossing streams at multiple locations and using stream bottoms as trails.
- Conduct an education and outreach campaign to raise awareness of the impacts of illegal introductions of non-native species.

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. In the event that more protective BMPs are implemented, population studies of this fish could assist in determining the effectiveness of those measures.

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