

Turquoise Darter

Etheostoma inscriptum

Contributor (2005): Gene Hayes and Jason Bettinger [SCDNR]

Reviewed and Edited (2013): Mark Scott, Andrew R. Gelder, and M. Troy Cribb [SCDNR]



DESCRIPTION

Taxonomy and Basic Description

The Turquoise Darter is a member of the family Percidae and the subgenus *Etheostoma*; this subgenus contains 14 species, 11 of which occur in South Carolina (Rohde et al. 1994).

The Turquoise Darter is a moderate-sized darter, ranging in adult length from 66 to 78 mm (2.6 to 3.1 inches) (Rohde et al. 1994). Adults of both sexes have 5 to 6 dark dorsal saddles and 6 blotches on the side (Kuehne and Barbour 1983). The male Turquoise Darter is brown with several horizontal rows of small red spots, while the sides of the female are yellow-brown with brown saddles and blotches. The colorful breeding males take on a pinkish body color with dark green bars on the side. The lower portion of the head becomes blue, as do the pelvic fins, anal fins, and outer extremes of the caudal fin. The dorsal fins of males become blue-green with red edges during the spawning period (Rohde et al. 1994).

Status

Globally, the Turquoise Darter is listed as apparently secure (G4) (NatureServe 2013). The Turquoise Darter is not listed in South Carolina (SNR) or Georgia (S4), but is a fish of special concern in North Carolina, where it is considered critically imperiled (S1) (NatureServe 2013), likely due to its very restricted range in that state. In an assessment of Southeastern fishes, the Turquoise Darter was considered currently stable (Warren et al. 2000).

POPULATION SIZE AND DISTRIBUTION

The Turquoise Darter is found in the Savannah River drainage in North Carolina, Georgia and South Carolina. In Georgia, it is also found in upper Ogeechee and Altamaha River drainages (Page and Burr 1991). In South Carolina, it is most often found above the Fall Line, but also occurs in the upper Edisto River in the Coastal Plain. The Turquoise Darter is frequently documented in stream surveys; however, the true abundance of the species is unknown. Detailed survey and inventory for range and abundance of the Turquoise Darter are needed (Kuehne and Barbour 1983). Based on South Carolina Stream Assessment data (2006-2011), the mean statewide density estimate for Turquoise Darter in wadeable streams was 0.03 (95% confidence interval: 0.02 – 0.04) per 100 m².

HABITAT OR NATURAL COMMUNITY REQUIREMENTS

The Turquoise Darter is a riffle dweller within large streams and small rivers. In much of its range, riffle habitat conditions occur sporadically, accounting for the darter's spotty distribution. It normally lives in the moderately swift areas of a stream at depths of 10 to 30 cm (4 to 12 in.) (Kuehne and Barbour 1983).

CHALLENGES

Although the Turquoise Darter is currently considered stable, conservation efforts within South Carolina are critical to its global conservation. Approximately one-third of the global distribution of Turquoise Darter occurs in South Carolina. Within the State, destruction of stream riffle habitat caused by land development, deforestation, loss of riparian cover, siltation, and hydrologic alterations like channelization and impoundments could jeopardize this species. Coastal Plain populations of the Turquoise Darter are of concern due to increased development pressures in that region. Further, in extreme headwaters of their range, Turquoise Darters may be adversely affected by Brown and Rainbow Trout introductions.

CONSERVATION ACCOMPLISHMENTS

Populations of Turquoise Darters occurring in Matthews Creek, Big Falls Creek, and Howard Creek are protected through land purchase and/or conservation easements. A successful reintroduction of Turquoise Darters was conducted on Six Mile Creek in 2003. 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. Web pages 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 Turquoise Darters.
- Study the potential predator/prey relationship between darters (Turquoise and Seagreen Darters) and introduced trout (Brown and Rainbow Trout) and the impact of this relationship on the native darters.
- Protect critical habitats from future development and further habitat degradation by following Best Management Practices 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.

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.

LITERATURE CITED

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