



**Common Name:** WOUNDED DARTER

**Scientific Name:** *Etheostoma vulneratum*

**Other Commonly Used Names:** none

**Previously Used Scientific Names:** The species is in the subgenus *Nothonotus*, which some authors recognize at the generic level.

**Family:** Percidae

**Rarity Ranks:** G3/S1

**State Legal Status:** Endangered

**Federal Legal Status:** Not Listed

**Description:** The wounded darter attains a total length of about 87 mm (3.4 in). This species has a frenum, six branchiostegal fin rays, and narrowly joined gill membranes. Males and females have a prominent suborbital bar (teardrop) and faint horizontal rows of pigment along the light-brown to olive body. There is a vertical row of four dark spots on the base of the caudal fin: two prominent spots clustered near the middle of the fin and 2 less prominent spots on the fin margins. There are eight dorsal saddles and about 10 vertical bars that are more evident in juvenile fish than more darkly colored adults. Although pigmentation intensifies during spawning (see photo at bottom of account), adult males are brightly colored throughout the year with a green breast and red spots along the sides. Bright red spots mark the front and rear margins of the first dorsal fin. The second dorsal fin is reddish, and the caudal fin is predominantly red with black streaks of pigment between the middle fin rays. Females from the Toccoa River have a red ocellus in the first dorsal fin, but otherwise lack bright breeding coloration (see photo at bottom of account). Descriptions from other drainages have noted that females may have some red-spots on their sides.

**Similar Species:** The wounded darter can be easily confused with the redline darter (*Etheostoma rufilineatum*). Head pigmentation is one of the best characteristics for separating these two species in the Toccoa River system and works for both sexes. The wounded darter has a prominent vertical bar (i.e., teardrop) below the eye, whereas the redline darter is marked with horizontal dashes of pigment below the eye. Redline darters also have white pigmentation on the base of the caudal fin that resembles an hour-glass shape.

**Habitat:** The wounded darter lives in moderate to large rivers, inhabiting deep runs with gentle to moderate current over boulders and large cobble substrates. They are usually found in the crevices underneath boulders and large cobbles, particularly in reaches where these substrates are stacked on top of each other and not embedded by fine sediment.

**Diet:** Like many other darters, the wounded darter feeds primarily on aquatic invertebrates. A large proportion of their diet consists of larval midges, but they have also been reported to feed on larval mayflies, caddisflies, crane flies, and aquatic mites.

**Life History:** Spawning has been documented between late May and late July, when water temperatures ranged 16-20 ° C. The wounded darter is an egg-clumping species. Females deposit clutches of eggs on the undersides of rock ledges, where territorial males defend the eggs until they hatch. Clutch sizes of 17-166 eggs have been reported, with higher numbers probably reflecting deposition over multiple spawning events and possibly by multiple females. Wounded darters reach sexual maturity at 2 years of age. Their lifespan is unknown, but the closely related spotted darter (*E. maculatum*) is known to live 4-5 years.

**Survey Recommendations:** This species can be surveyed using underwater observation methods or by backpack electrofishing upstream of a stationary seine. Both methods were employed at 9 sites sampled on the Toccoa River in 2008 and wounded darters were detected at the same three sites using both methods. However, because this species is often concealed under cobbles and boulders, it can be difficult to detect when present. Carefully flipping cobbles will increase detection rates for both methods. In addition, crevices underneath rocks that are too large to flip can be searched with a flashlight while making underwater observations.

**Range:** The wounded darter occurs only in the upper Tennessee River system in east Tennessee, North Carolina, Virginia and Georgia. In Georgia, it inhabits the mainstem Toccoa River and downstream portions of larger tributary streams. Most records are from the mainstem Toccoa River upstream from Blue Ridge Reservoir; the only record downstream of the reservoir is from the Fightingtown Creek system. Check the [Fishes of Georgia Webpage](#) for a watershed-level distribution map.

**Threats:** Impoundments throughout the upper Tennessee River system limit available habitat for the wounded darter. The portions of the system that remain free-flowing are vulnerable to degradation by excessive inputs of silt and sediment. Stream degradation results from failure to employ Best Management Practices (BMPs) for forestry and agriculture, failure to control soil erosion from construction sites and bridge crossings, and increased stormwater runoff from developing urban and industrial areas. Increasing development of second homes utilizing poor

construction and riparian management practices poses a significant threat to this species. Finally, hemlock wooly adelgid is an additional threat to aquatic habitats in this region.

**Georgia Conservation Status:** Twenty-nine randomly selected sites, located upstream and downstream of Lake Blue Ridge on the mainstem Toccoa River, were surveyed by snorkeling during summer 2008. The wounded darter was observed at 9 of these sites (31 %), all of which were located upstream of Lake Blue Ridge. There is no historic data for comparison, but this percentage of occupied sites provides a benchmark for future population assessments. Given the species limited range within the state, it remains vulnerable to extirpation.

**Conservation and Management Recommendations:** Conserving populations of the wounded darter will require maintaining and improving habitat quality in the upper Toccoa River by eliminating sediment runoff (from land-disturbing activities such as roadway and housing construction) and maintaining forested buffers along stream banks. There are many opportunities to enhance and widen riparian zone habitats by [planting native trees and shrubs](#) along creeks and streams. The [Georgia Forestry Commission](#) provides information on treatment options for hemlock wooly adelgid. Finally, ongoing monitoring efforts should be continued for this species.

#### **Selected References:**

Etnier, D. A. and W.C. Starnes. 1993. The fishes of Tennessee. Univ. Tennessee Press, Knoxville. 681pp.

Page, L. M. and B. M. Burr. 1991. A field guide to freshwater fishes of North America north of Mexico. Houghton Mifflin, Boston. 432pp.

Stiles, R.A. 1972. The comparative ecology of three species of *Nothonotus* (Percidae-*Etheostoma*) in Tennessee's Little River. Ph.D. Dissertation, The University of Tennessee, 97 pages.

**Author of Account:** Byron J. Freeman and Brett Albanese

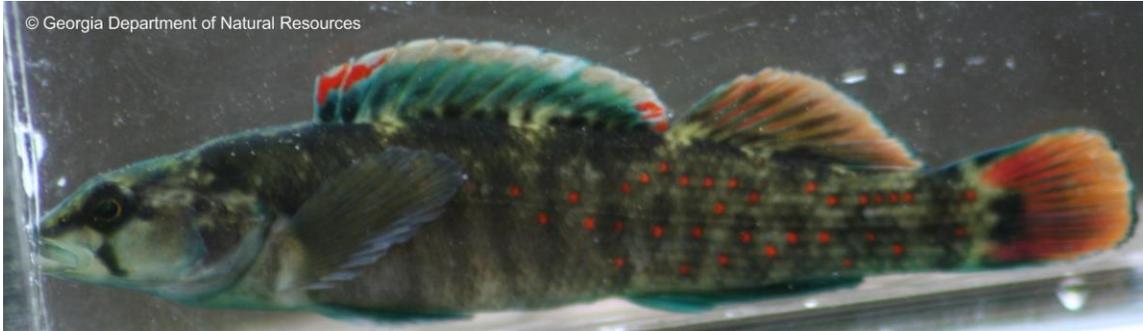
#### **Date Compiled or Updated:**

B. Freeman, 1999: Original account.

K. Owers, Jan 2009: Added picture, updated status and ranks, added fish atlas link, converted to new format, minor edits to text

B. Albanese, June 2009: general update of entire account and more pictures.

Z. Abouhamdan, April 2016: updated links



Male wounded darter collected from the Toccoa River system during the breeding season



Female wounded darter collected from the Toccoa River during the breeding season.