



**Common Name:** NORTHERN STUDFISH

**Scientific Name:** *Fundulus catenatus* (Storer)

**Other Commonly Used Names:** none

**Previously Used Scientific Names:** none

**Family:** Fundulidae

**Rarity Ranks:** G5/S1S2

**State Legal Status:** Rare

**Federal Legal Status:** none

**Description:** Northern studfish generally have silvery to brown body coloration, with scattered horizontal brown dash marks forming lines on the sides. Fins lack coloration and the mouth is upturned. Breeding males are extremely colorful, having bright blue coloration along the sides with horizontal red lines. These males develop orange spots and lime-gold coloration on the head. Anal and caudal fins have yellow-orange margins, and all fins except for the caudal have tubercles on the fin rays. The northern studfish is one of the largest killifishes, with total body length that may reach up to 180 mm (7 in.).

**Similar Species:** This species should not be confused with any other fish species within its range in Georgia. The blackspotted topminnow (*Fundulus olivaceus*) is sympatric, but is easily differentiated by its prominent black lateral stripe (vs. no stripe in the northern studfish).

**Habitat:** Northern studfish are usually located along the edges of small to medium-sized streams with minimal to moderate current velocity, often occurring in sluggish margins and pools.

**Diet:** Juveniles feed mostly at the water surface, preying on fallen organisms and emergent aquatic

insects. Adults eat a variety of organisms including snails, fingernail clams, aquatic insect larvae and even crayfish. Main feeding times are in the morning and late afternoon.

**Life History:** Topminnows and studfish (*Fundulus* spp.) that occur in streams are often found along sluggish margins and are well adapted to swimming just below the water surface. The northern studfish is aggressive, and males are territorial during the breeding season, which occurs from April through July. Preferred spawning habitat is calm water over shallow gravel patches with eggs being laid on gravel; there is one report of spawning in the saucer-shaped nest of a male sunfish. This species may live for 5 years or longer.

**Survey Recommendations:** This agile fish can quickly escape seines by leaping. They can also be overlooked if shoreline habitats are not targeted during sampling. Corraling fish with multiple seines may improve odds of capture.

**Range:** The northern studfish occurs west of the Mississippi River in the lower Ohio River basin and streams draining the Ozark and Ouachita mountains, and east of the Mississippi in the Tennessee, Cumberland, and Green river drainages. Isolated populations occur in Indiana and Mississippi. Georgia populations occur in the South Chickamauga Creek watershed (Tennessee River drainage), primarily in the Lookout and West Chickamauga Creek systems. Check the [Fishes of Georgia Webpage](#) for a watershed-level distribution map.

**Threats:** The northern studfish has a very small range within Georgia, making it vulnerable to extirpation from the state. 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. Fishes like the northern studfish that depend upon clean gravel substrates on which to lay their eggs are especially vulnerable to impacts of excessive sedimentation, as these spawning sites will fill in with silt and sediment.

**Georgia Conservation Status:** The northern studfish has only been documented from two small watersheds (HUC 10s) in northwest Georgia. It has been observed at several sites within both of these watersheds during the last 10 years.

**Conservation and Management Recommendations:** Conserving populations of the northern studfish and other rare fishes in the Chickamauga Creek system depends on maintaining habitat quality in the creek and its tributaries, and ultimately on improving habitat and water quality in degraded streams. It is essential to eliminate sediment runoff from land-disturbing activities (such as roadway and housing construction) and inputs of contaminants (such as fertilizers and pesticides). [Forested buffers](#) should be maintained along the banks of rivers and all of their tributaries. In addition, there are many [technical assistance and cost-sharing programs](#) that can help farmers implement best management practices, such as restricting cattle access to streams. Maintaining natural streamflow patterns by preventing excessive water withdrawal or unnaturally flashy runoff (such as from urban storm water runoff) also is an essential element of protecting riverine habitat quality.

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**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, Aug, 2009: general account update.

Z. Abouhamdan, April 2016: updated links