Common Name: TENNESSEE DACE

Scientific Name: *Phoxinus tennesseensis* Starnes and Jenkins

Other Commonly Used Names: none

Previously Used Scientific Names: none

Family: Cyprinidae

Rarity Ranks: G3/S1

State Legal Status: Endangered

Federal Legal Status: none

Description: The Tennessee dace is a slender minnow with a somewhat pointed snout. This species has distinct breeding and non-breeding color phases. During most of the year (non-breeding) the back is an olive color with small scattered black specks. A black stripe of varying intensity runs from the upper connection of the gill cover with the body, to the base of the caudal fin. A second stripe runs below this stripe from the snout to the base of the caudal fin. The lower stripe may appear slightly kinked upwards over the pelvic fins. In some cases individuals of this species can be completely pale. The belly is whitish and the fins are clear to yellowish. During the April-May breeding season, the stripes are more intense and the lower stripe appears to be broken into two parts above the pelvic fins. The area between the upper and lower stripes is yellowish, and in very bright individuals, the snout may be yellowish. There are silvery spots at the bases of the pectoral, pelvic, dorsal, and caudal fins. The belly is scarlet, and in exceptionally bright individuals, the gill cover is also bright red. The underside of the head is black and the paired fins are bright yellow. Males average brighter than females. Non-breeding adults may have some red on the belly and yellow in the fins at any time of the year. This fish reaches a maximum total length of about 75 mm (3 inches).

Similar Species: Two common minnows that could occur with Tennessee dace are western blacknose dace (*Rhinichthys obtusus*) and creek chub (*Semotilus atromaculatus*). Both of these minnows appear more robust than Tennessee dace and have bodies that are more or less round in cross section rather than parallel-sided (i.e., laterally compressed). As mentioned above, Tennessee dace have two dark lateral stripes, whereas the other species may have a single stripe as juveniles, but no stripes as adults.

Habitat: This species is typically found in pool areas of clear headwater creeks less than 2 m (6½ feet) in width. Most of the streams in which this species occurs have a rocky substrate and overhanging banks that provide hiding places.

Diet: Tennessee dace primarily feed on organic detritus, algae, and diatoms. They will also eat aquatic insect larvae and have been observed picking at material on the surface of the water.

Life History: Like other members of the genus, spawning occurs in late spring, from early April to about mid-June. Spawning takes place over small, clean, gravel substrates at the head of small riffles. Tennessee dace sometimes spawn over the nests of other minnows like the creek chub (*Semotilus atromaculatus*) and the stoneroller (*Campostoma)*. No parental care is provided. Most individuals are mature by the end of their first year and probably live only three years.

Survey Recommendations: Because this species typically occurs in small creeks, they can often be captured with a small seine. Backpack electrofishing may be more effective in streams where dace can seek cover under boulders, undercut banks, or other complex cover types. Presence/absence surveys can often be carried out in clear streams using binoculars with close focusing ability. This method can be very effective and prevent harm to individuals or disruption of spawning activities.

Range: The Tennessee dace is endemic to the upper Tennessee River drainage and most populations are found in the Ridge and Valley physiographic province in northeastern Tennessee. Three or four populations are known from extreme southeastern Virginia and a single population is known from the Lookout Creek system in northwestern Georgia. Check the Fishes of Georgia Webpage for a watershed-level distribution map.

Threats: Because of its small known range in Georgia, the Tennessee dace could easily be extirpated from the state. Small headwater streams are vulnerable to impacts associated with residential and commercial development. Small streams are often "piped," which results in the complete loss of habitat for a headwater specialist such as the Tennessee dace. Other impacts to headwater streams include destruction of streamside forest, impoundment, alteration of natural stream flow patterns due to increases in paved or other impervious surfaces in the watershed, and water quality impairment associated with nutrients, toxic chemical, and sediment runoff. Heavy sedimentation resulting from poor development and land management practices may cover gravel spawning substrates needed by this species for reproduction.

Georgia Conservation Status: Only a single population of this species is known in Georgia and it occurs on private land. This population represents the southernmost natural population of the Tennessee dace. Populations on the edge of a species range are a high priority for

conservation because they often represent distinct evolutionary lineages with different adaptive potential than populations in the center of the species range. A nearby population reported from Whiteside, Marion County, TN was documented in 1889 and is considered extirpated.

Conservation and Management Recommendations: Additional surveys are needed to identify more populations of this species in Georgia, if they exist. Current land use in the local watershed is dominated by agricultural and forestry uses. Local residents can protect this population by following best-management practices for agriculture and forestry, minimizing the use of fertilizers and pesticides, and protecting forests along the banks of the stream. Wider forested buffers are needed in areas with steep slopes or in areas that are adjacent to intensive agricultural use. Establishing conservation easements along this stream may help protect this population from future development pressures without conflicting with current land uses.

Selected References:

Etnier, D.A. and W.C. Starnes. 1993. The fishes of Tennessee. The University of Tennessee Press, Knoxville. 689 pp.

Starnes, W.C., and R.E. Jenkins. 1988. A new cyprinid fish of the genus *Phoxinus* (Pisces: Cypriniformes) from the Tennessee River drainage with comments on relationships and biogeography. Proceedings of the Biological Society of Washington 101: 517–529.

Author of Species Account: Christopher E. Skelton

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