DOUGHERTY PLAIN CAVE AMPHIPOD

Stygobromus doughertyensis

Order: Amphipoda
Family: Crangonyctidae
FNAI Ranks: G1G2/S1
U.S. Status: none
FL Status: none

Description: Like other stygobiont (aquatic cave-dwelling) amphipods, this tiny crustacean is very small (males 3.8–6.5 mm, females 8.6–9.2 mm, relatively medium-sized for an amphipod) and white to translucent, with a laterally compressed body. Diagnostic characters include complete absence of eyes, powerful (possibly for carnivory) gnathopods (modified thoracic appendages) with two rows of robust setae (fine bristles) on the palmar margins, absence of sternal gills from pereonites (main body somites or segments) 2–6, pleopods (abdominal swimmerets or swimming legs) 1–3 with well developed rami, and an elongated telson (body part posterior to last abdominal segment) that tapers distally (Cannizzaro et al. 2019b, which provide extensive descriptions of both sexes).

Similar Species: This medium-size troglomorphic (cave-adapted) species co-occurs with another amphipod in the same genus, *Stygobromus floridanus*. The latter reaches larger size (to 15.7 mm) and has longer first antennae with more flagellar segments (19–32 vs. 10–16), sternal gills on somites 3–6, and differences in several other body parts (Cannizzaro et al. 2019b). These species also co-occur with the stygobitic amphipod *Crangonyx manubrium* (Cannizzaro et al. 2019a), which has vestigial eyes and less robust mouthparts more suited to herbivory (Cannizzaro et al. 2019b). Because many amphipods are similar externally, identity should always be confirmed by an expert.

Habitat: This is a fully stygobitic species that inhabits karst groundwaters in limestone caves and springs within the Dougherty Karst Plain. All of the original specimens were collected from the mid-water column (Cannizzaro et al. 2019b).

Seasonal Occurrence: Data are insufficient to describe life cycle or seasonal habitat use. The species would be expected to inhabit sites year-round, although populations likely fluctuate.

Florida Distribution: This amphipod appears to be endemic to the subterranean aquifer of the Dougherty Karst Plain, which in Florida lies only within Jackson County. Although known from only one cavern at the time of description (2019), it is expected to occur in others. The related *S. floridanus* occurs syntopically in this aquifer with *S. doughertyensis* (Cannizzaro et al. 2019b).

Range-wide Distribution: The Dougherty Karst Plain extends into southwestern Georgia, where thus far this minute crustacean has been collected from one spring cave (Cannizzaro et al. 2019b).

Conservation Status: As of 2019, only one Florida occurrence was known, and although others may occur nearby, these would still be within the same relatively small local aquifer and potentially represent one principal occurrence because of shared groundwater connection. As a cave species, *S. doughertyensis* is probably quite fragile and sensitive to changes in habitat, especially water quality. The Dougherty Karst Plain lies within a region where agricultural, industrial, and residential uses are likely to contribute pollutants to and make unsustainable use of the aquifer.

Protection and Management: It is critical to protect land around all karst features (sinks, caves, springs) within the range of this species. This is especially true in the Dougherty Plain, which supports one of the highest diversities of stygobitic crustaceans known. Land managers should retain natural vegetation and avoid use of chemical pesticides and herbicides within at least 50 m of recorded sites, including associated subterranean conduits. Entrances to caves may be gated or fenced as needed at sites where human visitation is unduly disturbing natural resources. Populations of amphipods and other associated cave crustaceans, in addition to groundwater quality, should be regularly monitored at sites known to support this species.

References: Cannizzaro et al. 2019a,b

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