



Conference Abstract

Amphipod Behavioral Adaptations to the Absence of Surface Water

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Abstract

In the Mid-Atlantic Piedmont and Coastal Plain the hypotelminorheic habitat—a shallow subterranean habitat typically underlain by a clay layer—is inhabited by many species that are both troglomorphic (reduced or absent eyes and pigment and elaborated appendages) and stygobiotic (limited to subterranean habitats). Among these is the amphipod species *Stygobromus tenuis potomacus*. *Crangonyx shoemakeri*, is a stygophile that also occurs in wetlands as well as the hypotelminorheic. A third amphipod is occasionally found in seeps, most commonly those with direct connections to permanent surface streams—*Gammarus minus*. Little is understood about how species survive the seasonal changes including drastic water fluctuations. To explore this question, a laboratory experiment was conducted to measure the death rates of amphipod species in a clay substrate habitat when open surface water was removed to determine whether the ability to burrow into clay substrates is an important factor in the occurrence of *S. tenuis potomacus* species and *C. shoemakeri* in seeps and hypotelminorheic habitats as well as determine if the inability to burrow explains the general absence of *Gammarus minus* from seeps. Overall, there is a 25 percent increase in mortality for *G. minus* when subjected to drying, a statistically significant difference ($G=8.73$, $p<.005$). On the other hand, there is no apparent statistically significant difference in survival rates between *S. tenuis potomacus* and *C. shoemakeri*. This survivability may be attributable to their behaviors. To protect these species, and the endemic and endangered species of amphipod like *Stygobromus hayi*, it is important to

preserve the habitat, including the clay layer. Management strategies should focus on conserving these key habitats, not just the endangered species.

Keywords

Adaptation to desiccation, burrowing, *Crangonyx shoemakeri*, *Gammarus minus*, Hypotelminorheic, shallow subterranean habitats, *Stygobromus*

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