**Abstract**

The Mexican tetra (*Astyanax mexicanus*) has two primary ecotypes: cave fish and surface fish. Cave fish are characterized by troglomorphic phenotypes, such as vestigial eyes and reduced pigmentation. Studies have documented phenotypic differences in these ecotypes, which likely diverged between 0.2 to 1 million years ago. However, surface *A.mexicanus* fish were introduced relatively recently to the Edwards-Trinity aquifer in Texas in the early 1900s, and subsequent cave colonization by portions of this population shows evidence of divergence through rapid phenotypic and behavioral evolution. The establishment of these satellite populations from cave and surface river invasions are a case study into the rapid evolution of traits within a new environment, allowing observation on how sensory systems may adapt in real time. Auditory evoked potentials (AEPs), particle acceleration (PAL) and electroretinography (ERG) assays were conducted to quantify sensory differences between satellite cave and surface populations. Honey Creek cave fish were found to be significantly more sensitive (p < 0.05) than Honey Creek surface fish to sound pressure levels between 0.5 kHz - 0.8 kHz, while some pairwise differences were found between Blue Hole, San Antonio Zoo, and San Pedro Springs populations between 0.5 kHz - 0.7kHz (p < 0.05). Particle Acceleration assays also showed significant differences between Honey Creek Cave and Surface (p < 0.05) as well as Blue Hole, San Antonio Zoo and San Pedro Springs (p < 0.05) within the same range of frequencies tested. Electroretinography data indicated that Honey Creek cave fish were significantly less sensitive (p < 0.05) to light than Honey Creek surface fish at 530 nm, while no differences were found between Blue Hole, San Antonio Zoo and San Pedro Springs. Collectively, these results indicate rapid divergence of *A.mexicanus* at the most sensitive ranges of their visual and auditory sensory systems, and future monitoring may demonstrate continual divergence of sensory systems in populations exposed to new environments.