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TBIOMD 410

Final Draft - Abstract and Title

Title:

Impacts of Arsenic Exposure on the Behavior of Chinese Mystery Snails

Abstract #3 Revisions (247 words):

Chinese Mystery Snails (CMS) are an invasive species found in freshwater lakes across Washington, where environmental contaminants such as inorganic arsenic (As) are present. Within South Puget Sound lakes like, Steel Lake and Lake Killarney, As accumulates in the bacteria and algae on which CMS feed. Previous studies demonstrated that As exposure in vertebrate and invertebrates can cause microbiota dysbiosis, leading to altered neural activity, oxidative stress, and disrupted metabolic pathways. We hypothesize that increased As exposure will alter the CMS-microbiome, resulting in detectable changes of movement and feeding habits. To test this, we obtained 96 CMS and exposed half to 0.2ppm As for ~7 weeks, while the other half remained in 0ppm As water. We assessed feeding behavior and movement, by measuring time spent in contact with the food sources and time spent out of shell. We then placed the 0ppm As and 0.2ppm As snails into their appropriate beakers where we observed the snails for the anticipated behavioral changes. We found that 0.2ppm As exposed CMS spent significantly less time in contact with food but did not significantly differ in their time out of shell. These results suggest that As exposure impacts normal neuronal behavior in CMS. To further investigate this relationship, we dissected the CMS and attempted to extract DNA to assess potential bioaccumulation. Future directions include 16s sequencing to determine differences between microbiome of As exposed vs non-exposed CMS; alongside additional behavioral testing to determine whether sensory functions are affected by As exposure.