Identifying the Effect of Limiting Micronutrients on the Ecological Footprint of Bellamya chinensis

Drummer, Luke (School: Mankato East High School)
Bloom, Malachy (School: Mankato East High School)

Bellamya chinensis (B. chinensis), more commonly known as the Chinese mystery snail, is a non-native, invasive snail species found in North America. B. chinensis is known for its explosive population growth when introduced into new water bodies. In this study, we have investigated the ecological footprint of B. chinensis in Albert Lea Lake, located in South Central Minnesota and Rice Lake, located in Northern Wisconsin. It is often speculated that free calcium ions in lake water is positively correlated with the species' population. This research aims to determine if micronutrients, such as calcium, have a significant effect on the ecological footprint of B. chinensis by comparing shell length, brood composition, and annual fecundity between different environments. We collected a total of 160 snails from Albert Lea Lake and Rice Lake over two sampling periods in July and August of 2018. Statistically significant differences in shell length and annual fecundity were found with the higher calcium environment (Albert Lea Lake) having a greater mean shell length, a greater, but not statistically significant, shelled to yolk embryo ratio, and a greater annual fecundity. Our research suggests that free calcium ions in fresh water is the primary factor for the ecological footprint of B. chinensis.

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