



Mapping Snail Spatial Distribution in Guam's Rivers

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Mapping Snail Spatial Distribution in Guam's Rivers

Abstract

The family *Hydrobiidae*, otherwise known as the common mud snail, can be further classified into more specific divisions—and can live in both fresh and brackish water. One example, New Zealand Mud Snails are considered to be a nuisance to the environment because of two recognizable characteristics: its ability to reproduce quickly in high densities, and its capability to survive in many environmental conditions, which allow them to negatively influence the ecosystem's food-chain and even alter the physical features of its surroundings. Also because of these traits, the family is able to withstand diverse environmental factors, which in turn allow them to migrate and replicate elsewhere, posing the same threats in different areas. This experiment aims to determine the distribution of *Hydrobiidae* in different rivers and how the distribution changes in relation to varying environmental factors: pH, electrical conductivity (EC), and water depth. To do so, teams of five kayakers paddled through three rivers—forming a straight line across the river's width—at intervals of 100m. The GPS coordinates and depth are recorded while mud samples are collected underneath each kayak. Each sample is then stored, sieved for snails, and tested for pH and EC. Maps of spatial distribution will be created in QGIS. We hypothesize that snail population from the middle of the river to be less than that from the river's shores, since salt deposits found in the middlemost areas of the river causes pH and EC levels to peak and therefore account for the decrease of snails.

Keywords

GIS; Hydrobiidae; New Zealand Mud Snails; pH in seawater



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ABSTRACT

The family *Hydrobiidae*, otherwise known as the common mud snail, can be further classified into more specific divisions—and can live in both fresh and brackish water. One example, New Zealand Mud Snails are considered to be a nuisance to the environment because of two recognizable characteristics: its ability to reproduce quickly in high densities, and its capability to survive in many environmental conditions, which allow them to negatively influence the ecosystem's food-chain and even alter the physical features of its surroundings. Also because of these traits, the family is able to withstand diverse environmental factors, which in turn allow them to migrate and replicate elsewhere, posing the same threats in different areas. This experiment aims to determine the distribution of *Hydrobiidae* in different rivers and how the distribution changes in relation to varying environmental factors: pH, electrical conductivity (EC), and water depth. To do so, teams of five kayakers paddled through three rivers—forming a straight line across the river's width—at intervals of 100m. The GPS coordinates and depth are recorded while mud samples are collected underneath each kayak. Each sample is then stored, sieved for snails, and tested for pH and EC. Maps of spatial distribution will be created in QGIS. We hypothesize that snail population from the middle of the river to be less than that from the river's shores, since salt deposits found in the middlemost areas of the river causes pH and EC levels to peak and therefore account for the decrease of snails.

Key Words: GIS, *Hydrobiidae*, New Zealand Mud Snails, pH in seawater

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