

Summary of Stream Sampling for Macroinvertebrate Diversity at Amherst College 2021

In 2021 we sampled stream macroinvertebrates at Mill River, Adams Brook, and Buffam Brook in Amherst and Pelham, Massachusetts.

We used dip nets to sample macroinvertebrates and measured flow at sample sites. Then, students used a dichotomous key to identify the types of organisms we collected in the lab. We estimated richness, diversity, and density of macroinvertebrates and made inferences about stream health. Students continue to derive benefits from working with authentic data on a local ecosystem and drawing connections to environmental impacts of human actions.

Across the sampled sites, we collected 1009 organisms from 14 different taxonomic groups in 2021. Environmentally sensitive species included mayflies, stoneflies, and caddisflies. These were found in all sampled sites and their presence is one indication that these streams may be in good health.

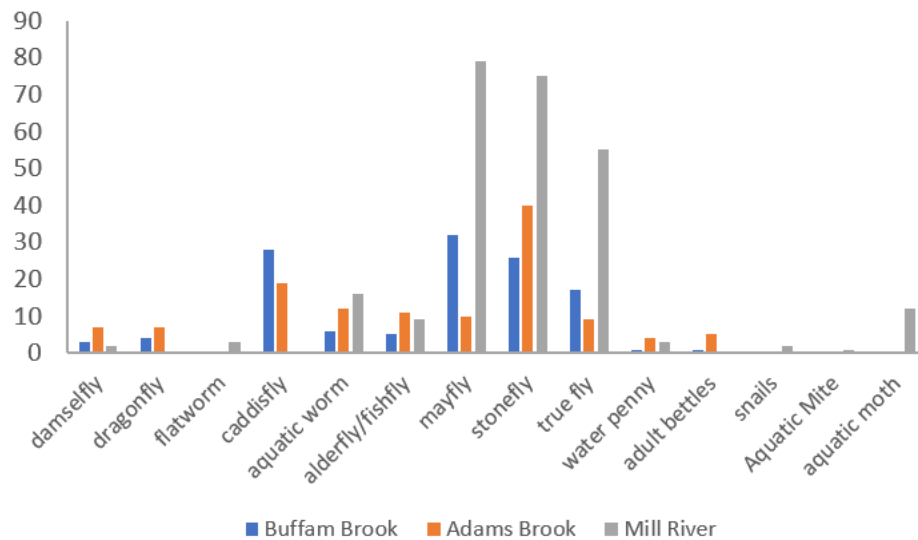


Fig. 1. Macroinvertebrates detected in streams in Amherst and Pelham, MA in fall 2021. *Note that 502 caddisflies were detected at Mill River, though this is not displayed.*

Patterns of Density and Diversity Over Time

Density has remained highest in Mill River since 2019, primarily due to caddisflies (Fig. 2a). The site with the highest taxonomic richness has varied over time (Fig. 2b). Simpson's Diversity was lower in Mill River than the other two sites in 2018 and 2021, but there was no difference in middle years (Fig. 2c).

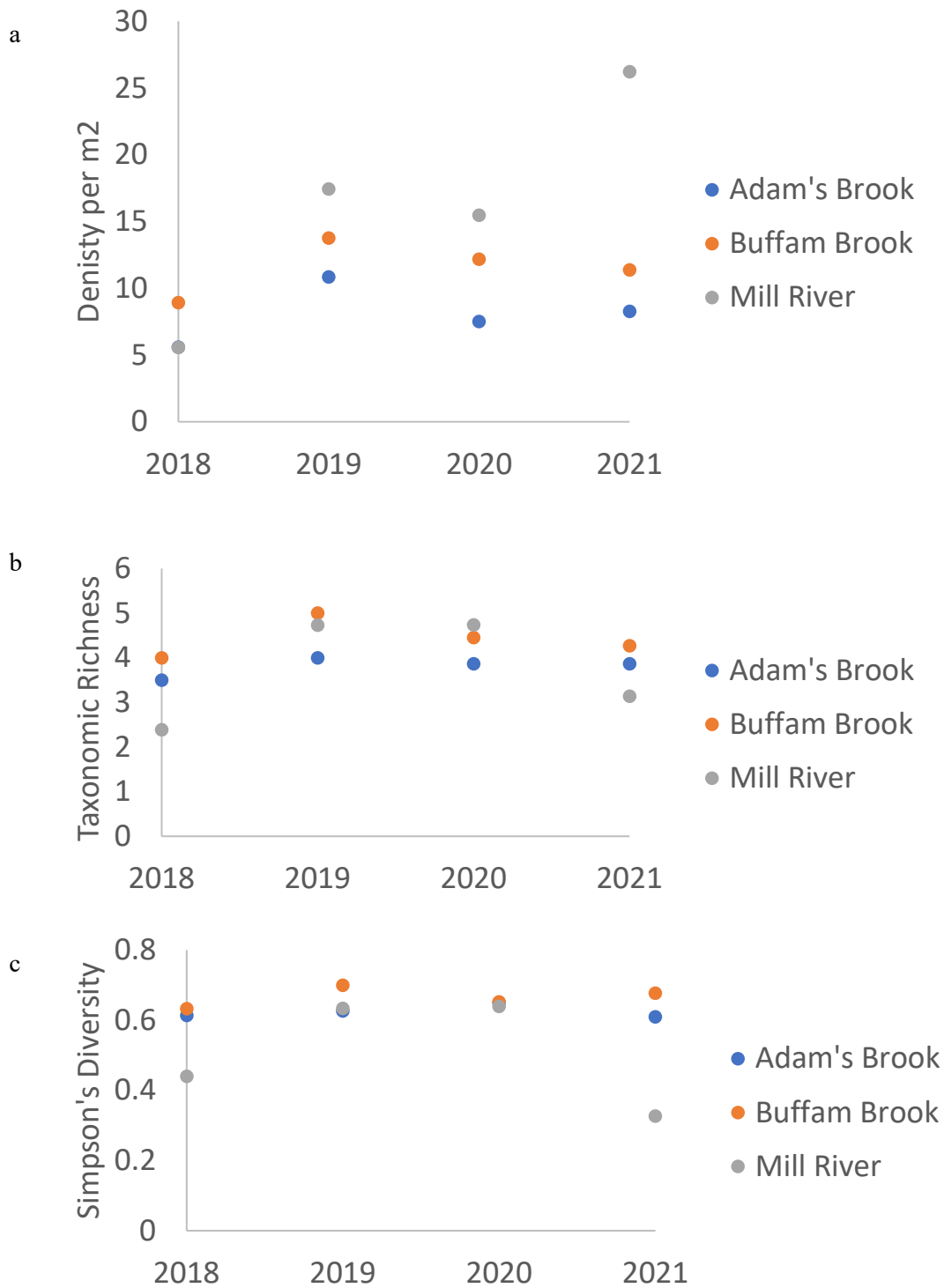


Fig. 2. Density (a), taxonomic richness (b), and Simpson's Diversity (c) of stream macroinvertebrates at streams in Amherst and Pelham, MA in 2021. *Taxonomic richness typically refers to order or subclass level classification.*