

# Cathance River Invertebrate Sampling

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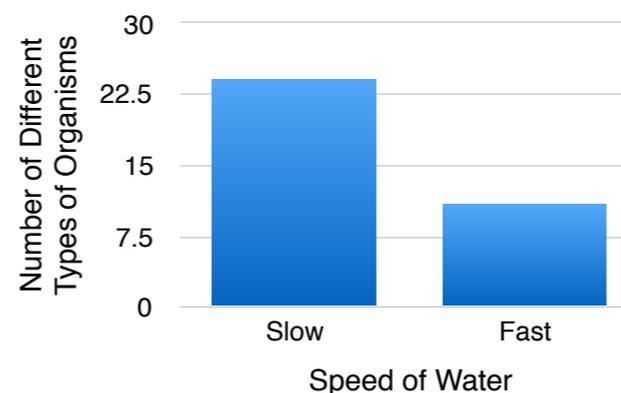
**Problem:** Determine what types of aquatic invertebrates live in the Cathance River, and how the number and types of organisms in each population are affected by the speed of the water and what they indicate about the water quality of the river.

**Hypothesis:** There will be larger populations and more diversity of aquatic invertebrates in areas of slower-moving water than in faster-moving waters. Based on the diversity of invertebrates, the Cathance River will have moderately clean water.

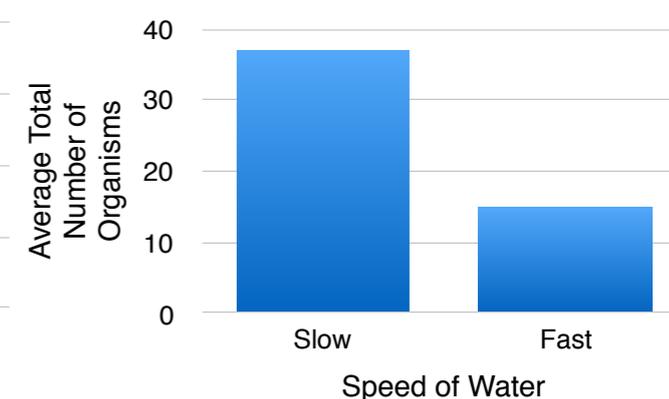
## Invertebrate Pollution Tolerance Indicator Listing Organisms Found and Their Sensitivity to Pollution

| Water Speed   | Sensitive  | Moderately Tolerant   | Tolerant   |
|---|--|---|--|
| <b>Slow</b><br>Avg. Speed: 7.57 cm/s<br>Range: 0.17 cm/s to 50 cm/s | Caddisfly Larvae, Mayfly Nymphs, Gilled Snails, Giant Water Bugs, and Water Spiders                  | Scuds, Aquatic Sow Bugs, Predacious Diving Beetles, Damselfly Nymphs, Dragonfly Nymphs, Water Fleas (Cladoceras), Whirligig Beetles, Crane Fly Larvae, and Copepods | Water Mites, Pouch Snails, Non-Biting Midge Larvae, Mosquito Fly Larvae, Water Striders, Backswimmers, and Water Boatmen |
| <b>Fast</b><br>Avg. Speed: 75.2 cm/s<br>Range: 25 cm/s to 200 cm/s  | Caddisfly Larvae, Stone Fly Nymph, Mayfly Nymphs, Hellgrammites, Gilled Snails, and Black Fly Larvae | Scuds, Dragonfly Nymphs, Water Fleas (Cladoceras), and Crawling Water Beetles   | Water Striders   |

Speed of Cathance River vs the Number of Different Types of Organisms Found



Speed of Cathance River vs Weekly Average Number of Organisms Found



Researchers Scooping Invertebrates



Caddisfly Larva



Mayfly Nymphs (left), Stonefly Nymphs (right)

### Procedure:

1. Visit the slow-moving (7.57 cm/s) and fast-moving (75.2 cm/s) river sites with all materials and waders on (slow moving upstream to fast moving).
2. Measure water speed at each by using a meter stick and a stopwatch to time how long it takes for a twig to travel one meter
3. Take 4 scoops in each area of the river with the net and dump them into the buckets, each 1/2 full with water.
4. Separate individual types of invertebrates into the ice cube tray, identifying them and counting the number of each type.
5. Clean up materials, and put invertebrates back in the water where found.

### Acknowledgements:

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### Conclusions:

The hypothesis was supported regarding both the invertebrate diversity and pollution levels. In the slower-moving water there is a greater abundance of invertebrates found than in the fast-moving water. In the slower-moving water there is greater species diversity found than in the fast-moving water. 24 different types of invertebrates were found in the slow-moving water. Only 11 different types of invertebrates were found in the fast-moving water. There was a greater weekly average of invertebrates found in the slow moving water than in the fast (37 in slow, 15 in fast). Overall, Cathance River water quality is relatively clean based on invertebrate data. The slower moving water has proportionally less species that are sensitive to pollution, suggesting that it may be more polluted than the fast-moving water.