Photo: Project STREAM

Biomonitoring is for everyone: How project STREAM combines citizen science with DNA technology

PROJECT STREAM

Since the project launched in 2019, STREAM (Sequencing The Rivers for Environmental Assessment and Monitoring) has partnered with community groups, watershed organizations, and Indigenous communities to provide training and resources needed to collect bulk DNA samples from benthic macroinvertebrates to enhance our understanding of watershed health across Canada.

BENTHIC MACROINVERTABERTES AND BIOMONITORING

Benthic macroinvertebrates are aquatic insects without a backbone that are large enough to see without the aid of a microscope. They include dragonfly and stonefly larvae, snails, worms, and beetles. Benthic macroinvertebrates spend their whole lives in and around a waterbody. They are often used as biological indicators, or "living indicators", to assess the health of the waterbody and watershed. While biological indicators are able to provide a signal of environmental stress, detailed investigations are required to determine the cause of the stress.

WHAT IS DNA METABARCODING?

DNA metabarcoding is used to characterize the DNA of benthic macroinvertebrates collected from a bulk sample in order to identify taxa present. Samples are blended together and DNA is extracted from the collective biomass, amplified, and compared to a known library to identify which taxa of organisms are present.

Photo: Project STREAM

Caenidae Mayfly genus Caenis
Photo: Learning to See, Seeing to Learn

Photo: Project STREAM

HOW YOU CAN GET INVOLVED

- Find out more about Project STREAM and how you can get involved in community-based biomonitoring. Don't forget to check out their StoryMap and Data Portal!
- Learn more about Living Lakes Canada and their collaborative water stewardship initiatives.
- Contribute to community science by sharing your species observations on iNaturalist.
- Learn about macroinvertebrates using Carnegie Mellon University's interactive learning tool.
- Explore the CABIN (Canadian Aquatic Biomonitoring Network) Biomonitoring Activities map.

Join the free Freshwater Stewardship Community!
watersheds.ca/freshwater-stewardship