



Procedure for collecting benthic macroinvertebrate DNA samples in wadeable streams

QUICK REFERENCE GUIDE

Please refer to the [STREAM Field Manual](#) for a full description of the procedure. This quick reference guide is to be used by individuals already familiar with and trained in the procedure for collecting benthic macroinvertebrates.

In addition to the STREAM Field Manual's field sampling equipment needed for aquatic biomonitoring, the following equipment and materials are required for DNA sampling:

Required DNA Sampling Equipment and Materials

1. Unscented household bleach
2. Prepared bleach solution (refer to preparation)*
3. Spray bottle (for bleach solution)*
4. Safety glasses (with side shield)
5. Cleaning brush
6. Nitrile gloves
7. Heavy rubber gloves (for decontamination using bleach)
8. Denatured ethanol (95%)*
9. Wash bottle (denatured ethanol)*
10. Electric tape or Parafilm®¹
11. Wastewater collection bucket/container (sealable)
12. Cooler for sample jars (labelled according to TDG requirements)*
13. Cooler for denatured ethanol (labelled according to TDG requirements)*

*Note: label according to Workplace Hazardous Materials Information System (WHMIS) and Transportation of Dangerous Goods (TDG) requirements. Ensure material Safety Data Sheets (MSDS) are readily available.

Practitioners must be aware of and follow all required Workplace Hazardous Material Information System (WHMIS 2015), Transportation of Dangerous Goods (TDG) and other health and safety considerations, requirements and/or regulations when using or transporting bleach, denatured ethanol, samples containing denatured ethanol and rinse wastewaters.

Overview of DNA benthic macroinvertebrate sample procedure steps

- 1. Course cleaning of sampling equipment (where necessary).** Remove any obvious materials from sampling and process equipment and gear, before beginning decontamination.



- 2. Decontaminating sampling and processing equipment.** Wearing personal protective equipment (PPE), spray all sampling and processing equipment with diluted bleach solution to cover all surfaces. Spraying should be done over a collection bucket to capture excess solution. Equipment should rest for 2 to 5 minutes.



- 3. Rinsing sampling and processing equipment** of bleach solution with water into a large bucket/container. Rinse water is to be collected and disposed of in a municipal water flow in accordance with any required precautions or regulations.



- 4. New nitrile gloves are worn for DNA sample collection, double layered.**



5. Using appropriate safety equipment and PPE **collect and process benthic invertebrate sample** according to the STREAM Field Manual. Once stream sample collection is complete and you are ready to begin sample processing, remove one pair of nitrile gloves.



6. **Transferring invertebrate sample to clean/new sample jar**, rinse final portion of sample into sample jar using ethanol.



7. **Preserve sample** ensuring the final concentration of denatured ethanol is 50% or higher.

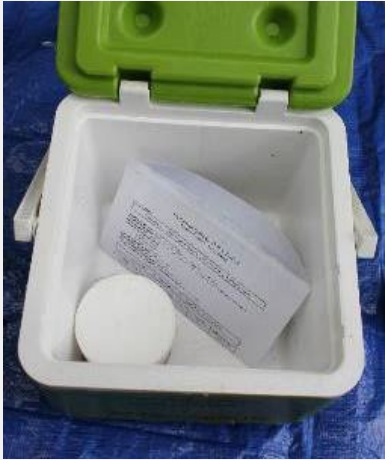


8. **Secure and Label sample jar**. Sample jar lid should be sealed to the sample jar using either electrical tape or Parafilm^{®1}, label lid and outside of sample jar. The tape or Parafilm^{®1} will need to be stretched across the seam to ensure a seal on the jar.



¹ Parafilm[®] (Beamis, 2020. Oshkosh, WI, USA).

9. Store sample in the field/during transport. Sample is placed on ice in a cooler or in a portable freezer, prior to shipment. Ensure cooler has required MSDS and TDG labelling.



Any shipment of denatured ethanol, or samples containing denatured ethanol, must follow Transportation of Dangerous Goods (TDG) regulations.