

Part 2: Macroinvertebrate Stream Quality Assessment

2.4 Lesson Sequence



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Explore

1. Before they begin identifying, have students fill out the site location information on the MiCorps Stream Macroinvertebrate Datasheet (<https://micorps.net/wp-content/uploads/2021/08/VSMP-Macro-OrderLevel-Datasheet-2020.pdf>) or the [Macroinvertebrate Quality Assessment Student Spreadsheet](#). If groups are sharing a site you may want to record on the Mi Corps paper before combining totals in the student spreadsheet for each site.* To find longitude and latitude:
 - **In the Field:** Open the Google maps app on a smart phone and find your location, then drop a pin. When you tap on the pin, the latitude and longitude will be shown.
 - **In the Classroom:** NASA has an easy to use latitude and longitude finder map that can be found here: <https://myNASAdata.larc.nasa.gov/EarthSystemLAS/UI.vm>
2. In small groups, students take apart the Hester-Dendy samplers and identify each organism they see using the Aquatic Macroinvertebrate Sorting and Identification Guide Placemat from Tip of the Mitt Watershed Council found at: https://docslib.org/doc/2926092/aquatic-macroinvertebrate-sorting-and-identification-guide#google_vignette (teachers will need to print large and laminate). Encourage students to have patience and take their time. Macroinvertebrates can often be hard to see at first, but with a little effort, students can get the hang of it. In leaf packs or muddy water, it may take a few minutes of looking around to find the insects. Looking for motion will often help students.

*If students are doing the Hester-Dendy Design Challenge, they will want to use the **3.2d and 3.2e Design Challenge Worksheets** at this time, or record where on the Hester-Dendy sampler organisms were found, and how the Hester-Dendy sampler held up in the water.*
3. Find the total number of each type of organism found and enter it into the student spreadsheet here: <http://bit.ly/streammacro>. (Teacher will need to make a copy of the datasheet, as it is view only). The Google sheet will automatically calculate a stream quality score for students. Similar to the habitat sheet used in **Lesson 1.2 Stream Habitat Assessment** ([Stream Physical Characterization and Habitat Assessment Spreadsheet](#)), it will make a summary of all results and only allows students to enter data, not make edits.
4. If preserving organisms use 2.4c Macroinvertebrate Stream Quality Assessment and Analysis Worksheet as a reference and, have students label preserved organisms after completing their datasheet.
5. Make sure students clean off their Hester Dendy samplers and reassemble them when done.

*If you have several Hester Dendy samplers at the same sampling location, or if you also use kick sampling/leaf packs to collect macroinvertebrates, you will want to combine their data to determine the stream quality score. This is especially important if you want to upload your data to a local watershed organization data repository.

Explain

Pass out **2.4c Macroinvertebrate Stream Quality Assessment and Analysis Worksheet** for students to complete in small groups. This worksheet offers some guiding questions to help students interpret what the macroinvertebrates in their stream tell them about water quality. It is intended to have them begin to think about what could be done to improve their stream. You may wish to also have the **2.2a Macroinvertebrate ID Cards** available for students to refer to when answering questions.

Extend

1. Students can preserve insects they find interesting and create a detailed ID of the insect with a description of the organism for future classes to use as references. See **2.4b Preserving Macroinvertebrate Specimens**.
2. Have students compare what organisms they found to the closest sampling site done by the MDEQ in 2014. Find material at https://www.michigan.gov/documents/deq/wrd-monitoring-report-2014-lower-grand-watershed_606955_7.pdf