

Benthic Invertebrates

Characterizing benthic invertebrates that live in intertidal sediments can give valuable information on the habitat of the beach. Benthic invertebrates are important components of the nearshore food web, and are good indicators of biodiversity and physical parameters. Invertebrate assemblages may change depending on shoreline armoring, sediment types, and movement of sediments.

Materials

- 50 m transect tape, gloves
- 10 x 15 cm benthic core, 2 mm sieve
- Water sprayer, and a bucket for collecting and sieving water
- Jars and labels, 10% formalin

Sampling Summary

- 50 m transect parallel to shore
- 10 cm diameter core, 15 cm depth
- N=10 random cores per transect
- Transects at 0' MLLW, others as appropriate
- Invertebrate taxa and counts, preserve unknowns in 10% formalin
- SAFETY: formalin is toxic, store carefully and avoid skin contact

Scale of Effort

\$\$\$* Cost – high, simple field materials but laboratory supplies for identifying invertebrates can be expensive

\$ People – low, 2-3 people can collect samples

\$ Fieldwork time – low, taxa identification and counts in the field, 1 day, once a year May-August

\$\$\$* Processing time – high, entering field data into computer format, invertebrate identifications in the lab

\$\$\$* Technical expertise – high, depending on invertebrate ID level

* Medium or low if taxonomic resolution is decreased

Additional Resources

Reports that have used this method:
[Dethier et al. 2005, 2006](#)

Similar methods: Different elevations with a 0.5 mm sieve: [Toft et al. 2014](#)



Methods

These methods are designed for beaches that have a mixture of sand, pebbles and cobbles that typify Puget Sound. At ten random points along a 50 m transect parallel to shore at MLLW, take a sample using a 10 cm diameter core dug to 15 cm depth. Rinse the sample through a 2 mm mesh sieve using filtered water from a spray bottle or garden sprayer to remove sediments and retain adult macro-infauna (smaller mesh sieves such as 0.5 mm would sample juveniles and adults of smaller infauna). Identify invertebrates to the species taxonomic level if possible, especially if key species are of interest or if precise measurements of taxa richness and diversity are needed. If taxonomic expertise is limited, identifications to the Family taxonomic level or to a low-resolution functional group are easier and still of great value (see [Dethier et al. 2006](#)). All organisms not identified in the field can be fixed in 10% formalin in a labeled jar. Sample in May-August during daytime low tides, and plan for a -2' MLLW low tide to ensure time for sampling when 0' MLLW is exposed. Sample at other elevations based on project goals and topography of the site.

Data to record in the field

Date, time, site name, transect elevation, sample number (also include these on the jar label), benthic invertebrate taxa and count data. It is advisable to take a digital photo of the transect for documentation.

Processing

Enter the field data into computer spreadsheets. Identifying taxa in the laboratory requires a stereo microscope, identification skills, and time. Invertebrates such as crustaceans, polychaetes, and clams are usually identified to genus or species, other invertebrates are often identified to higher taxonomic levels. Consistent identifications allow calculations of diversity (e.g., taxa richness, the number of different taxa). Convert counts to density ($\#/m^2$) based on the surface area of the core.

Suggested citation: *Shoreline Monitoring Toolbox*. Washington Sea Grant.

Website: shoremonitoring.org