

Epibenthic invertebrates

Epibenthic invertebrates can be good indicators of beach conditions and certain species are important prey for juvenile salmon. They live at the interface of bottom sediments and the water and their populations are affected by sediment size, presence of eelgrass and algae, and stressors such as shoreline development.

Materials

- 50 m transect tape
- Epibenthic pump, hand or battery operated
- 0.106 mm sieve
- Water sprayer, and a bucket for collecting and sieving water
- Jars and labels, 10% formalin
- Waders or drysuit/wetsuit
- Stereo microscope

Sampling Summary

- 50 m transect parallel to shore at 0' MLLW
- N=7 random pumps per transect
- Preserve in 10% formalin, or 70% isopropyl alcohol if just counting crustaceans
- SAFETY: formalin is toxic, isopropyl alcohol is flammable, store carefully and avoid skin contact

Scale of Effort

- \$\$\$ Cost – high, field and laboratory supplies can be expensive (e.g., waders, microscopes)
- \$ People – low, 2-3 people can collect samples
- \$\$ Fieldwork time – medium, once a month May and July
- \$\$\$ Processing time – high, analyzing invertebrate samples in the laboratory
- \$\$\$ Technical expertise – high, depending on invertebrate ID level

Additional Resources

Reports that have used this method:

[Toft et al. 2013](#)

[Munsch et al. 2021](#)

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

Website: shoremonitoring.org



Harpacticoid copepod



< 1 mm

Amphipod



5-10 mm

Methods

Epibenthic pumps are used to sample the invertebrates living on top of and near the substrate. Take seven samples randomly along a 50 m transect parallel to shore at 0' MLLW. The elevation range between +1' and -2 MLLW is where invertebrates that are consumed by juvenile salmon commonly occur. Sample when there is about 2 feet of water over the substrate. For each sample, run the battery pump for 20 seconds or complete 20 strokes with the hand pump. Collect the outflow on a 106 micrometer mesh sieve, and rinse into a jar using filtered water from a spray bottle or garden sprayer. Fix samples in 10% formalin or 70% isopropyl alcohol in a labeled jar. Formalin is preferred because alcohol is not a good fixative of soft-bodied animals. Conduct sampling when juvenile salmon are near shore and feeding on invertebrates – April-May for juvenile chum salmon and June-July for juvenile Chinook salmon.

Data to record in the field

Date, time, site name, sample number (also include these on the jar label). It is advisable to take a digital photo of the transect.

Processing

Enumerating epibenthic invertebrates requires a good stereo microscope, identification skills, and time. Harpacticoid copepods and amphipods are two types of juvenile salmon prey that are usually identified to genus or species. Other invertebrates are often identified to higher taxonomic levels. Consistent identification level allows calculation of diversity measurements (e.g., taxa richness, the number of different taxa in the sample). Convert counts to density (#/m²) based on the surface area of the pump cylinder.