

Wrack invertebrates

Invertebrates associated with beach wrack are a good indicator of upper beach conditions and an important prey component for shorebirds and other animals. Invertebrate abundances may vary depending on the amount of beach wrack and logs, substrate type, shoreline armoring, and other habitat features.

Materials

- 50 m transect tape, 0.106 mm sieve
- 16 oz plastic cups
- Natural dishwashing soap (biodegradable, odorless)
- Water sprayer, two buckets for collecting and sieving water
- Jars and labels, 70% isopropyl alcohol

Sampling Summary

- 50 m transect parallel to shore, both at recent wrack line and higher elevation older wrack line.
- Place traps with a drop of soap and ~3 cm of sieved water
- N=5 random traps per transect
- Leave for 1 hour, preserve in 70% isopropyl alcohol
- SAFETY: isopropyl alcohol is flammable, store carefully and avoid skin contact

Scale of Effort

- \$ Cost – low, simple materials and data can be all field-based
- \$ People – low, 2-3 people can deploy and collect traps
- \$ Fieldwork time – low, 1 day, once a year in September when wrack lines are exposed
- \$\$ Processing time – medium, depending on amount of laboratory analysis
- \$\$ Technical expertise – medium, depending on invertebrate ID level

Additional Resources

Reports that have used this method:

[Heerhartz et al. 2016](#)

[Dugan et al. 2008](#)

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

Website: shoremonitoring.org



Methods

Pitfall traps are used to collect mobile invertebrates during an ebbing tide when the upper beach is exposed. Pitfall traps are standard 16-oz plastic keg cups, make sure to measure the diameter of the opening to standardize counts. Five replicate traps are placed randomly along a transect parallel to shore and left for 1 hour. Establish two transects: (1) at the most recent high tide line that has fresh wrack deposition, and (2) just above MHHW in older wrack and logs. If there is a bluff or shoreline armoring, sample the elevation at the base. At deployment, pour a drop of natural odorless dishwashing soap in the bottom of each trap, and fill with about 3 cm of sieved water. The dishwashing soap relieves surface tension so that invertebrates will remain trapped, and sieving the water ensures that there are no invertebrates that could contaminate your sample. To collect the traps, each trap is poured into a sample jar (use a spray bottle with sieved water if needed, or a sieve to decant water). Fix the sample in 70% isopropyl alcohol and label the jar. Alternatively, counts can be estimated in the field by marking 5ml increments on the inside of the cups to measure the volume of invertebrates sampled. One subsample of 10 ml could be saved to get exact invertebrate counts for scaling of volume estimates. Sample in September as it is typically a period of high wrack accumulation, on an ebbing tide when the upper beach +6' MLLW and above is exposed.

Data to record in the field

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

Processing

Analysis can focus on counts of beach-hopper amphipods or include other invertebrates such as insects and collembolans as well. Microscope identification of insects requires some skill and time, see the insect protocol for guidelines. Convert counts to density ($\#/m^2$) based on the surface area of the trap opening. Compare to substrate type and beach wrack data if taken.