

Insects

Terrestrial insects are a good indicator of shoreline conditions and an important prey component for juvenile salmon. Using passive fallout traps to characterize the insect community simulates insects that could fall on the surface of the water and be available as fish prey. Insect communities may vary depending on the amount of riparian vegetation, shoreline armoring, and other habitat features.

Materials

- Plastic storage bins 40 x 25 cm (0.1 m²), 10 cm high
- Natural dishwashing soap (biodegradable, odorless)
- 0.106 mm sieve
- Water sprayer, two buckets for collecting and sieving water
- Jars and labels, 70% isopropyl alcohol
- Microscope

Sampling Summary

- 50 m transect parallel to shore above tidal inundation
- Place bins with a few drops of soap and ~5 cm of sieved water
- N=5 random bins per transect
- Leave for 24 hours, preserve in 70% isopropyl alcohol
- SAFETY: isopropyl alcohol is flammable, store carefully and avoid skin contact

Scale of Effort

\$\$\$ Cost – high, field and laboratory supplies can be expensive (e.g., alcohol, microscopes)

\$ People – low, 2-3 people can deploy and collect bins

\$\$ Fieldwork time – medium, once a month June and July, two days in a row for deployment and collection

\$\$\$ Processing time – high, analyzing insect samples in the laboratory

\$\$ Technical expertise – medium, depending on insect ID level

Additional Resources

Reports that have used this method:

[Toft et al. 2013](#)

[Sobocinski et al. 2010](#)

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

Website: wsq.washington.edu/toolbox



Methods

Use plastic storage bins (preferably 40 x 25 cm) filled with 5 cm of soapy water as fallout traps. Make sure to measure the surface area of the bins to standardize counts. Place five replicate bins randomly along a 50 m transect parallel to shore. Pour a few drops of natural odorless dishwashing soap in the bottom, and fill with about 5 cm of sieved water. The dishwashing soap relieves surface tension so that insects will remain trapped, and sieving the water ensures that there are no invertebrates that could contaminate your sample. Leave the bins in place for 24 hours. To collect the insects, drain each bin through a 106 micron mesh sieve, and spray the insects into a sample jar (fill a spray bottle or weed sprayer with sieved water for this). Fix the sample in 70% isopropyl alcohol and label the jar. Sample in June-July when juvenile Chinook salmon are feeding along the shoreline, and vegetation and insect communities are developed.

Data to record in the field

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

Processing

Microscope identification of insects requires some skill and time. Chironomidae flies and aphids are two key juvenile salmon prey items that should be identified at the Family taxonomic level. Other insects such as Hymenoptera and Lepidoptera can be identified at the Order level if taxonomic expertise is limited. Processing at a consistent taxonomic 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 bin.