Fish

Improving habitat for out-migrating juvenile salmon is often a goal of nearshore restoration efforts. Direct observation of fish use of a site is desirable to assess function of the site. Surface snorkel surveys are recommended as an observational method that can generate data without handling fish. Observations are focused on juvenile salmon abundance, feeding behaviors, and records of other nearshore fishes.

Materials

- Snorkel gear – drysuit or wetsuit, mask, snorkel, fins, ankle weights
- 50 m or longer transect tape
- Underwater writing tablet, or clipboard with datasheet printed on waterproof paper

Sampling Summary

- 75 m transect parallel to shore
- 3 m and 10 m from shore for deep sites, 1.5 m water depth if shallow
- Need at least 2.5 m water visibility
- SAFETY: Highly advised to be a skilled swimmer and have snorkel or SCUBA dive experience. Always stay at the surface, be aware of any boat traffic or hazards, and have a shore-based observer

Scale of Effort

$$$ Cost – high, snorkel gear is expensive, SCUBA divers may already have gear which would reduce costs

$ People – low, 2 snorkelers and 1 shore observer can establish transects and record data

$$$ Fieldwork time – high, base effort 2x/month at high tides May-July

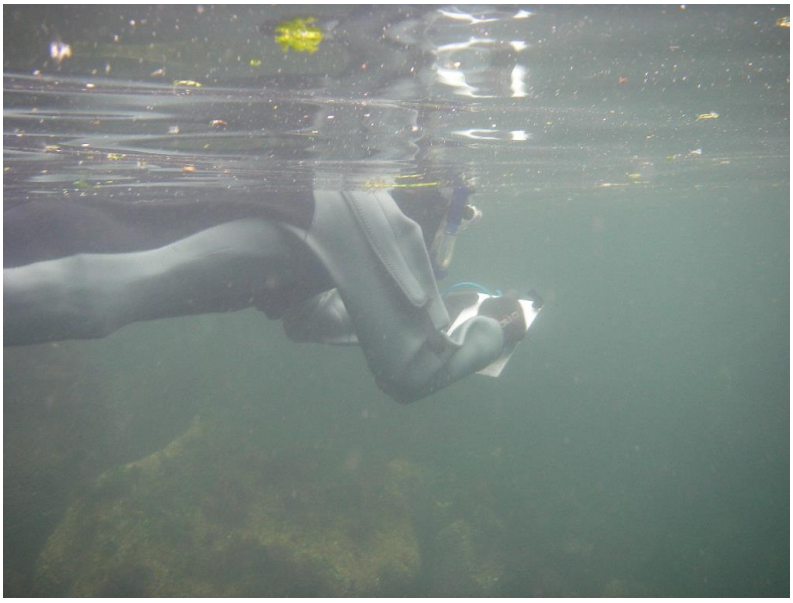
$$ Processing time – medium, entering field data into computer format, possible verification of fish ids

$$$ Technical expertise – high, snorkel surveys and fish identifications both require background knowledge

Additional Resources

Reports that have used this method:
Toft et al. 2007, 2013
Munsch et al. 2016
Sawyer et al. 2020

Suggested citation: Shoreline Monitoring Toolbox. Washington Sea Grant.
Website: shoremonitoring.org



Methods

Conduct surface snorkel surveys parallel to shore along a 75 m transect at high tide. Have two snorkelers in the water and a shore-based observer. The water depth and distance from shore may vary with the site – for deep sites target 3 m and 10 m from shore, for shallower sites target 1.5 m water depth. These are good ranges for juvenile Chinook salmon. Smaller juvenile chum and pink salmon may be in shallower water. Record observations of fish species, number (approximate if over 20), length range (2.5 cm increments), water column position (surface, middle, bottom), and feeding behavior. Swim slowly and consistently, scanning the water column with a focus near the water's surface where juvenile salmon are likely to be (tilt your head sideways for this). Pause to record data as appropriate. Data can be written on either an underwater writing tablet or clipboard with datasheet printed on waterproof paper. Use the transect tape to measure the transect length, water depth, and underwater visibility (horizontal distance that you can see the writing tablet underwater – needs to be at least 2.5 m). April-May are good peak outmigration months for juvenile chum and pink salmon, June and July are good peak months for Chinook.

Data to record in the field

Date, time, site name, transect length, tide height, water depth, distance from shore, underwater visibility, fish data. An underwater digital camera can help document fish presence.

Processing

Enter the field data into computer spreadsheets. Fish counts are standardized by numbers/m^2 as: fish number/(transect length x underwater visibility).