Protocol: Fish Trawls

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MarineGEO
THE TENNENBAUM
MARINE OBSERVATORIES NETWORK

Smithsonian Institution

Introduction

This protocol provides standardized data on mobile fish and invertebrate communities associated with subtidal habitats like seagrass beds, oyster reefs, and bare substrate. Additional copies of this protocol, field datasheets, data entry templates, literature, and more can be found at: https://marinegeo.github.io/modules/fish-trawls.

Note: Sites with good visibility may instead consider using Diver Visual Surveys.

Measured Parameters

This assay quantifies mobile fish and invertebrate community structure, measured as:

- Mobile fauna abundance and length (mm)

Requirements

Personnel: 3 people

Estimated Total Time Per Location ($n = 2$ trawls):

Preparation: 1 person x 1 day
Field work: 3 persons x 2 day
Post processing: None
Data processing: 1 person x 1 day

*Estimated times will vary by site and conditions

Replication: Two (2) trawls for approximately 2 minutes each (total $n = 2$ per location)

Materials:

Survey Design:

- ☐ 1 50-m metric transect tape
- ☐ Hand-held GPS unit
- ☐ 2 PVC marker poles (diameter and length as needed)

Fieldwork:

- ☐ 1 otter trawl (record dimensions including length, width, opening, and mesh size)
- ☐ Waterproof paper
- ☐ Pencil
- ☐ Clipboard
- ☐ Ruler (mm)

Methods

Fully review this and any additional protocols necessary for the sampling excursion. Address any questions or concerns to marinegeo@si.edu before beginning this protocol.

Preparation:

1. This protocol assumes $n = 1$ two-minute trawl, replicated twice per location. Please refer to the appropriate habitat survey design document for the placement of trawls.
2. Acquire appropriate institutional permissions for handling vertebrates (e.g., IACUC). MarineGEO is not responsible for any issues arising from failure to comply with institutional standards for ethical animal treatment.
3. Print field data sheets on waterproof paper.

Fieldwork:

1. Conduct trawls before any other surveys/collections (as to not scare away organisms).
2. Identify starting location for the first trawl. The location should ensure that the trawl occurs mostly within or immediately adjacent to the target habitat. Record the starting location using GPS.
3. Deploy otter trawl over side of boat.
4. Throttle forward at low speed (3-4 knots) to keep wings open for approximately 2 minutes or until no longer in the target habitat. The track of the boat should be as linear as possible.
5. Record ending location using GPS.
6. Retrieve the otter trawl and work through the net, removing and recording the identity of all organisms >5 cm in length. For the first 20 individuals of each species, also record their length (in mm). For fishes, measure total length (tip of the snout to tip of the caudal fin); for invertebrates, measure carapace width or total length (Fig. 1). Return all organisms to the water as rapidly as possible to minimize handling time.
7. Photograph any unidentifiable species for potential identification later.
8. Repeat steps 2-7 for the second location.

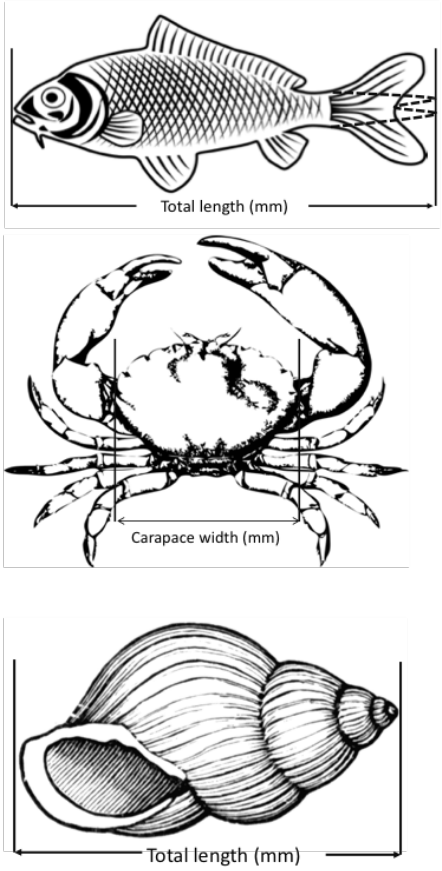

Figure 1: Length measurement for different taxonomic groups that may be caught in the trawl

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Data Submission

1. Scan the completed field data sheets and save both paper and electronic versions locally. We do not require you to submit the scanned forms.
2. Enter data into the provided data entry template. Each template is an Excel spreadsheet. Please provide as much protocol and sample metadata as possible, such as the protocol version and contact information. Use the "notes" columns to provide additional information or context if a relevant column doesn't already exist, rather than renaming or creating columns.
3. Use our online submission portal to upload the Excel Spreadsheet: https://marinegeo.github.io/data-submission
4. Contact us if you have any questions: marinegeo@si.edu