

Squidpop Assay

v 0.1.0



Introduction

Predation is an important process in nearly all marine ecosystems as it structures communities and transfers energy into and out of coastal food webs. The goal of this protocol is to establish a simple, standard method to quantify the relative intensity of feeding by generalist predators that is comparable across a wide range of sites and conditions.

This method has already been used to address a variety of questions (see: <https://marinegeo.github.io/modules/squidpops#selected-literature>), and when coupled with camera deployments can also be part of a Baited Remote Underwater Video (BRUV) sampling of the fish community.

Additional copies of this protocol, field datasheets, data entry templates, instructional videos, literature, and more can be found on the MarineGEO protocol website: <https://marinegeo.github.io/>.

Measured Parameters

This protocol quantifies the rate of fish carnivory, measured as:

- Bait loss after 1 hour and after 24 hours

Requirements

Personnel: 2 people min. for dive operations

Time: Preparation: 1 person x 2 hours

Field work: 2 people x 2 days

Data processing: 1 person x 1-2 hours

Replication: Twenty-five (25) baited stakes are taken along three (3) transects (total $N = 18$)

Materials Checklist:

- ☐ Dried squid mantle
- ☐ 13 mm diameter auger punch or cork borer
- ☐ Scissors
- ☐ Sewing needle (or other thin, sharp tool)
- ☐ Thin monofilament line (1 m)
- ☐ Electrical tape (1 roll)

□ Fiberglass garden stakes (25)

Material specifications:

Squid: We use dried squid as bait because most marine predators will readily eat it, it is widely available, and the dried bait can be shipped and stored without refrigeration. It is important to get the type of squid in which the mantle remains whole, resembling a sheet. MarineGEO uses Hang Tai Marine Products Co. Dried Squid in 7oz. packages

Fishing line: Clear monofilament 2-10 pound test

Cork Borer: Cork borers, biopsy punches, and hollow punches will all work. Size of 13 mm \approx 0.5 inches.

Fiberglass Plant Stakes: 30-50cm in length. Do not use white, brightly colored, or florescent stakes.

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. Cut 25 discs from dried squid mantle using auger punch or cork borer (Fig. 1). If these tools are not available, cut 1 x 1 cm squares
2. Secure squid to line by threading a sewing needle with monofilament line. Pierce the bait with the needle, wrap the line around the bait, and tie a knot around the squid
3. Cut the line approximately 5 cm from squid bait. Wrap the free end of the line to the stake and tape it in place. Leave \sim 1 cm of line between the bait and the end of the stake (see Fig. 2)
4. Identify sampling scheme. If following the MarineGEO survey design, review the materials [here](#) (25 replicates x 3 transects = 75 replicates total). Alternately, replicate samples can be taken haphazardly within the bed (if done, record GPS coordinates of each sample)
5. Print out a field datasheet for each site, preferably on waterproof paper



Figure 1. 'Squidpop' baits are discs cut from mantle of dried squid using a cork borer or auger punch.

Note: *Keep the squid dry until deployment otherwise the squid can become oily or slimy. We recommend keeping squidpops in the refrigerator until deployment*

Fieldwork Day 1: Deploying and 1-hr check

1. Identify transect locations determined during Preparation (#4), and record the GPS coordinates (decimal format) of the beginning and end of each of the transects
2. Deploy the Squidpops every 2-m along the transect by pushing them firmly into the substrate. They should be roughly the same height above the bottom
3. After the last replicate has been deployed, record the time
4. After one hour, examine each squidpop *in situ*.
 - Record bait as present (**P**) or absent (**A**). Bait absent means the entire bait is absent; partial baits are counted as present
 - Record any missing or dislodged squidpop stakes as missing (**M**) on the datasheet (i.e., those that cannot be located and have been presumably been lost)
5. Leave all squidpops in place for 24-h

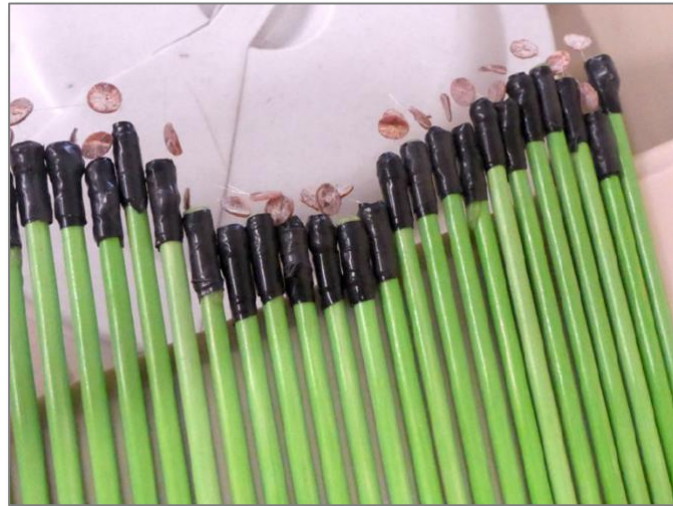


Figure 2. Final 'Squidpops' ready for deployment

Fieldwork Day 1: 24-hr check and retrieval

1. Return to the site and locate the positions of the three transects
2. Examine each squidpop *in situ* and record as present (**P**), absent (**A**), or the stake as missing (**M**)
3. Remove all stakes and any other materials (e.g., buoys) from the field

Data Submission

1. Enter data into provided data entry template
2. Scan the completed field data sheets and save both paper and electronic versions
3. E-mail data entry file and scanned field data sheets to: marinegeo-data@si.edu