MarineGEO

THE TENNENBAUM
MARINE OBSERVATORIES NETWORK

Ocean Bitemap:
Video Protocol

2016-04-04

Bitemap Video Protocol

Overview:

To characterize the fish communities and identify common predators, it is possible to use small GoPro cameras in place of, or in tandem with, beach seines. Here we present two video methodologies for using GoPros to this end. This first is a protocol to be used specifically with Squidpops to identify and size predators, the second is a general fish observation protocol to use for characterizing the fish community. Keep in mind these protocols are designed to be done in relatively clear-water conditions where visibility is *at least* 3 meters.

Materials:

ITEM	***QUANTITY***
GoPro Camera affixed to PVC Stake	1
Scale Bar (large enough to be seen by camera, metric units)	1
Prepared Squidpops (for Squidpop observations)	25
Bait Bag (for fish community observations)[squid, plastic mesh, zip ties, post or dowel]	1

Getting Prepared:

1) Attach GoPro to PVC stake at least 0.5m in length (or long enough to clear seagrass canopy if deploying in seagrass habitat).

2) Set GoPro to medium angle setting (to prevent distortion of fish at edges of frame). Make sure all time and date settings on your GoPro are correct.

3) Make bait bag to attract fish (if not deploying with Squidpops). This can be done by cutting up dried squid (see resources list for products) into chunks (~3cm square, use at least one whole squid) and placing into plastic mesh canvas (see resources). Close the mesh like a pouch around the squid pieces and close with zip ties. This is then affixed to the end of a rod or dowel with a similar length to your GoPro PVC stake.

GoPro Video Monitoring:

4) Deploy Squidpops (Squidpop Protocol) or push rod/dowel with bait bag attached into substrate in approximately 1m of water so the bait bag is at approximately 30cm above the substrate, or clear of any seagrass canopy.

5) Push the PVC stake with GoPro into the sediment so that the field of view captures at least one Squidpop (or the bait bag), but preferably multiples at the beginning of your deployment.

6) Begin recording. Note the time on your data sheet

7) Hold your scale bar in the same plane as the Squidpop closest to the GoPro in clear view of the camera for at least 10 seconds. This will allow you to set the scale for measuring fish predators later.

8) Finish deploying Squidpops and let soak for one hour, or leave bait bag in place and return in one hour.

9) Retrieve the camera after you return for your one hour bait count. Note the time. Remove bait bag as necessary.

GoPro Video Analysis:

10) Watch a one hour segment of the video beginning from the moment you removed the scale bar.

11) Using the scale bar as a guide, track the size and identity (to lowest taxonomic resolution possible) of the fish(es) responsible for removing the bait.

Note: A simple, cost-effective way to measure distances in video is to use the scale bar from the beginning of the video to make a grid on a piece of clear plastic that you can then tape over your computer monitor. Remember that lengths measured are only accurate when the fish is in the same plane as the original location of the scale bar, therefore you will only be estimated fish lengths when fish strike at squidpops or interact with bait bags, putting them in roughly the same plane.

Video Analysis Rules - Squidpops

12) Track the strikes, or number of bites taken by all fish (identified to lowest taxonomic level and length measured) that approach and interact with the bait, whether they visibly remove bait or not.

13) If a fish leaves the frame it is considered 'gone', and you will still count every fish that enters the frame after, even if it looks identical to a fish you think you've already seen and counted. (for example, if a 10cm long parrot fish enters the frame, strikes twice at the bait then leaves the frame, and then 15 seconds later a 10cm long parrot fish enters the frame, strikes once and removes the bait, you would record both occurrences as separate events. See data sheet metadata for more information).

14) Keep track of the identity of all other fishes that enter the camera's field of view during the one hour viewing period. In other words, if you see a species you haven't seen before, note it on your datasheet (abundance and measurement are not needed). Make a note of the maximum number of each species you see in the frame at the same time, as well as the maximum number of all fish that appear in a single frame during the deployment.

Video Analysis Rules - Bait Bag

15) Identify and measure all fish that approach and interact (touch) the bait bag.

16) If a fish leaves the frame it is considered 'gone', and you will still count every fish that enters the frame after, even if it looks identical to a fish you think you've already seen and counted. (for example, if a 10cm long parrot fish enters the frame, interacts with the bait bag, then leaves the frame, and then 15 seconds later a 10cm long parrot fish enters the frame and interacts with the bait bag, you would record both occurrences as separate events. See data sheet metadata for more information. See also #14 above for tracking maximum fish numbers.)

Data Submission

17) Submit the results of your video analysis to MarineGEO@si.edu using spreadsheets provided in the Resources section of the Bitemap website (http://bitemap.wordpress.com) with the email subject line: *BITEMAP GOPRO DATA [your site name]*