



Ocean Bitemap: Fish Seine Protocol

2016-03-30

Bitemap Seine Protocol

Overview:

The fish community in the area where squidpops are deployed will be characterized using a standard seine haul protocol. The Nearshore Seining Survey is based on one developed for a long-term research study on dynamics of fishes and invertebrates at the Smithsonian Environmental Research Center (SERC) on the central Chesapeake Bay. For Bitemap, the standard seine haul provides a method that allows rigorous comparisons of nearshore fish communities across sites, provided the sites are sufficiently shallow ($< \sim 1.5$ m) and free of structure to allow a seine to be pulled through. While it may vary among study sites, it is typically easiest to accomplish seines of this type at low tide.

Materials:

<i>ITEM</i>	<i>QUANTITY</i>
seine net with 0.635cm (1/4 in) stretch mesh, 10m mouth width	1
bins and buckets	several
metric rulers	1 per person
metric tape measure	1
small aquarium dip nets	1 per person
transect markers (PVC pole, flag, tape, etc.)	4
weighted float or pole marker	1
data sheet and pencils	several
digital camera	1
crab tongs (optional)	several
GPS unit (optional)	1

Getting Prepared:

- 1) Gather all the necessary supplies listed above.
- 2) Once in field, partially fill your large and small bins with water and place these on beach where the seine will come in. Fill in data on data sheet including time, date, location, etc.

Note: Do not walk through the water anywhere near the transect you are about to sample. This will disturb the fishes prematurely and alter your capture efficiency.

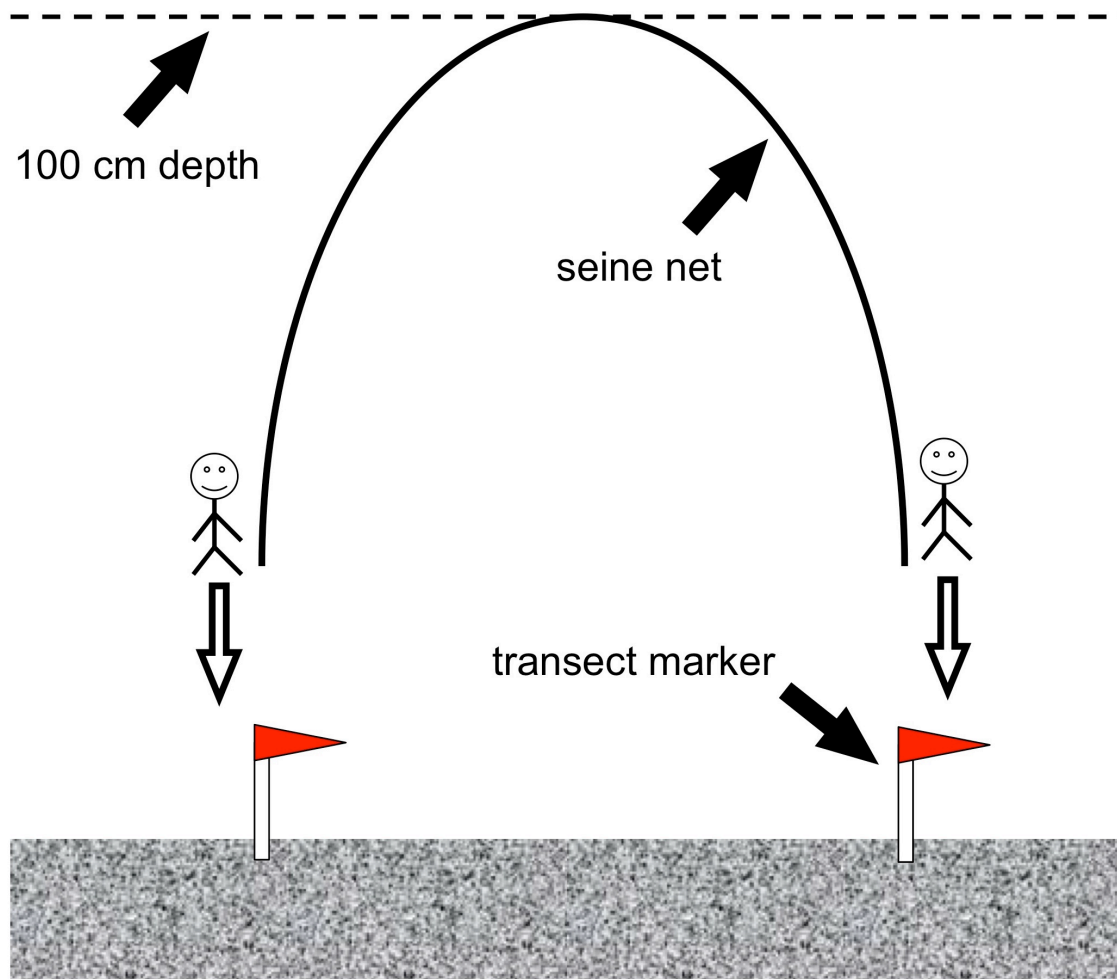
- 3) Set your transect markers near the water line 10 meters apart from each other in front of the area where you intend to seine. These will provide guides allowing the seiners to maintain a direct line to the shore with 10 meters between them.

Note: If your site does not abut shoreline, you will have to modify the protocol to standardize the length of your seine haul. We recommend pulling the net no less than 20 m across your site. You will then have to sample the captured fish community from a boat, stable platform, or any other method that allows you to access all the fish in your net while minimizing stress on the animals.

Seining:

- 4) With the seine net rolled up, walk it well outside the margins of the transect to a depth of 100 cm, carrying a weighted float or pole marker. Once at this depth, approach the transect border. One person should stop offshore of the closest corner of the transect (keeping a hold of one end of the net), while the other person continues to walk parallel to shore toward the point offshore of the other transect marker. While walking, the net should be unrolled between the two people. At this stage, the two seiners are in position to start, with the seine pulled out parallel to shore, 10 m apart, in 100 cm of water. Use the transect markers on shore as guides to maintain a 10 meter distance between you as you begin.
- 5) Once in position, drop or secure the transect marker (weighted float or pole) at the beginning starting point of the seine haul. This will allow you to measure the distance from the shore to the start of the transect later.
- 6) Haul that seine! Both people holding the seine should walk towards their shore markers, staying parallel with each other, 10 m apart, and perpendicular to shore. Keep the poles of the seine net upright or pointed towards shore, not slanting back behind you.

Note: If the net gets snagged on a log, have a person walk outside of the seine net to the point where the net is snagged. Lift the net minimally off of the bottom to un-snag it. Remove the debris from the transect if possible and continue seining.



- 7) Once the two seine pullers have reached the shore and pulled the first couple of feet of net in, lay the poles down on the beach and begin to pull the net in.

Note: It is very important to keep the seine's sinker line (the bottom part of the seine), on the bottom. As you're pulling it in, it is natural to want to lift the line as you pull—but do not lift the seine off the bottom as fish will escape. Keeping the sinker line on the bottom, pull the top (float) and sinker lines in together. This should be done evenly from both sides.

- 8) Once the sinker line is completely on shore you have formed a 'netted pouch' with the seine. Lift up on the sinker line and the float (or top) line at the same time from the ends of the net (if available, have people stationed through out the middle to make sure the net doesn't drop into the water).
- 9) Shake fish carefully down the net until you have the whole pile of fish in a single pocket of net. Usually it is easiest for the two seiners to do this by moving toward the

center of the seine. Holding the net together (to prevent escape), bring the net out of the water, and transfer the fish into the large bin of water including those individuals that have become entangled in the net.

- 10) Sort the fish from the large bin into the smaller bins/buckets by species. Keep larger fish separate to prevent predation or injury while in captivity. It is important to minimize the time spent holding and handling the fish, which stresses them. To maximize efficiency, some people should start measuring while others finish sorting.
- 11) Begin measuring the fishes, starting with the most delicate. Measurement should be of the fish's *total* length, from snout to tip of tail. Measure 25 individuals of each species collected, then simply count the rest of that species. For example, if you collected 45 of a particular species, you would measure the lengths of the first 25, then simply note that you caught 20 more individuals of that species. Big animals (larger than 10cm along widest axis) other than bony fishes should be measured using the standard for that type of animal: carapace width for crabs, or length and width of the body for animals like horseshoe crabs, turtles, rays, etc.

Note: For ease of processing and to avoid confusion, try to focus on a single species at a time. One person should serve as 'recorder' and write down fish ID, length, and count measured by the fish 'handlers'.

- 12) Continue this process until all fish have been measured or counted. When you finish a bucket or bin, pour the water out of the bin through a net to make sure that you haven't missed any fish.
- 13) Once all animals have been measured, counted, and released, clean up your site.



MarineGEO

Genus species	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20	L21	L22	L23	L24	L25	Abundance
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Notes