Collection of coral larvae in field

Puerto Rico Center for Environmental Neuroscience

Abstract

This protocol provides materials needed and steps for collecting brooded coral larvae in the field.

Citation: Puerto Rico Center for Environmental Neuroscience Collection of coral larvae in field. **protocols.io** dx.doi.org/10.17504/protocols.io.fazbif6
Published: 13 Jul 2016

Guidelines

Placement of gear in field

1. At site, place gear in raft and tow to trap site, hooking anchor at secure point on bottom upstream of trap site.
2. Dive teams search for coral colonies to place in traps while surface team transports traps to bottom.
3. Place egg crate in order from 1-20 and traps on bottom weighted with rebar in same order.

Selection of corals

1. Search for mostly flat, healthy colonies (polyps clearly visible) near an edge 10-25 cm in diameter.
2. Remove with chisel and mallet without breaking colony or edge. **Use gloves to protect hands from sponges and coral surface.** Touch colony surface as little as possible.
3. Remove any large invertebrates and algae from colony using chisel, small brushes, and hands.
4. Transport corals to trap site in baskets. Use lift bag for massive colonies.

Placement of colonies in traps

1. Select a mostly flat area of sand.
2. Place numbered egg crate in sand and place colony on top.
3. Photograph colony with numbered tag visible for diameter measurement.
4. Cover colony with trap. Colony should be in the center of trap without any part touching the sides of the trap.
5. Fix trap with 1 m rebar at 2 points minimum. Smaller rebar can be used at other points. When hammering, pull trap so that it is snug with other rebar and at an outward angle so that the trap will not ride up off the bottom.
6. Secure trap to rebar with cable ties. The bottom of the trap should rest on the bottom with little or no gaps.
7. Place other traps such that the same rebar can be used for several traps.

8. Install tops on traps after they are secured. Ensure top is correctly seated and hand-tightened, both the top and top lid. Always tighten using the falcon tube top glued to the bottom to avoid breakage. Check top for any breakage or nytex slippage.
9. Photograph layout and take temperature and salinity.

Daily sampling and maintenance

1. Bring cooler with bucket and/or hand pump for filling with fresh seawater at end of dive.
2. Put line with clip in water off boat for goodie bag with larvae and another line for divers.
3. Check each trap for larvae. Top may need to be tapped to get contents swimming. Anything similar to larvae with rapid movements are not larvae. Any damaged traps and tops need to be replaced.
4. If no larvae present, open top and clean out any debris.
5. If larvae present, note trap number and seal top with cap(s).
6. To swap with a new top, have new correctly numbered top on hand; lightly unscrew top on trap with larvae without removing. Separate new top from falcon tube and then quickly unscrew old top and place on falcon tube. Make sure that the tube is seated properly.
7. Place trap with larvae in goodie bag attached to weight with clip on the bottom.
8. Brush all surfaces of trap and ensure that coral has not shifted or that no sediment has accumulated in top or on colony.
9. Check that all tops are seated properly and hand tight.
10. Bring larvae immediately to lab, avoiding direct sunlight, for immediate counting and transfer to HCl-cleaned beakers. Ensure that lights are set to 80-100 µmoles/m^2/s on an 8hr light-dark cycle and water temperature is near field conditions (78 °F/25.5 °C and salinity 35 for Parguera).
11. Enter larvae collection info into excel preadsheet.

Maintenance of racks for tiles and frags

1. Brush sediments from all surfaces.
2. Check that temperature loggers are functioning (light flashes). Swap out for new loggers every 3 months. For swap need two pre-programmed loggers (labeled), new cable ties, and scissors.
3. Add new tiles and slides each month and bring back seasoned tiles to lab in bucket filled with seawater.

Trap removal

1. Pull all tops for counting larvae, even those that do not appear to have larvae.
2. Carefully lift off traps and weight on bottom with rebar.
3. Gently brush out sediment from inside of trap in water (best for those snorkeling).
4. Move coral on egg crate to secure area for photographs.
5. Prepare rebar and tags for those colonies that will be monitored.
6. Bundle rebar and traps for transport back to lab.
7. Rinse all gear with fresh water. Jet traps both inside and out and leave in sun to air dry, turning once to dry both sides.

Transport of larvae to San Juan from Parguera

1. Labels should be prepared for all containers that include: date larvae collected, larvae state (L0, L1, L2, S1 etc.), and number of larvae. Place swimming larvae in cleaned glass bottles or jars with lid. Should not have more than approximately 100 larvae per 200 ml. Leave some head

space for oxygen.
2. Settled corals should be placed in glass bowls with glass lid with rubber lip for a good seal. Fill to top with filtered seawater before putting lid in place. This should take place once lab has been cleaned and prepared for departure to minimize time spent in dark, sealed containers.
3. Place bottles, jars and bowls in cooler with packing material to cushion and immobilize. Keep in lab until ready for transport. Should be transported inside a car with air conditioning.
4. Once in lab, all containers should be opened and put into temperature control with lighting. Some of the swimming larvae should be placed for settling. Ensure that all larvae and settled have proper labelling.

Before start

Gear and materials needed:

Mallets

Chisel

Gardening gloves

60 pieces of ½" rebar 1 m in length, tied in bundles of 20

Egg crate stands with numbered tags

21 numbered conical larvae traps and 21 removable tops, tied together to avoid flying out of boat and raft (Design by Wade Cooper)

Underwater camera

Raft with line and anchor

Baskets with webbing handles

Small lift bag

2 mesh goodie bags with drawstring opening and clip

1 small-pore darkened mesh with metal closure and clip

3-4 lb lead weight with clip

3 m line with clip for boat

Flip-top cooler

Bucket

Manual water bilge pump to fill cooler with seawater

Bleach bottle site markers (Coyer et al)

Grip-rite 3” fluted masonry nails

Cable ties

Underwater slate with solid graphite pencil and clip

SCUBA gear

Large, soft-bristle brushes

Small, soft-bristle brushes

Extra nytex

Extra 50 ml Falcon tubes

Extra 50 ml Falcon tube caps

Small mesh goodie bag with string

Canvas goodie bag with clip to carry gear

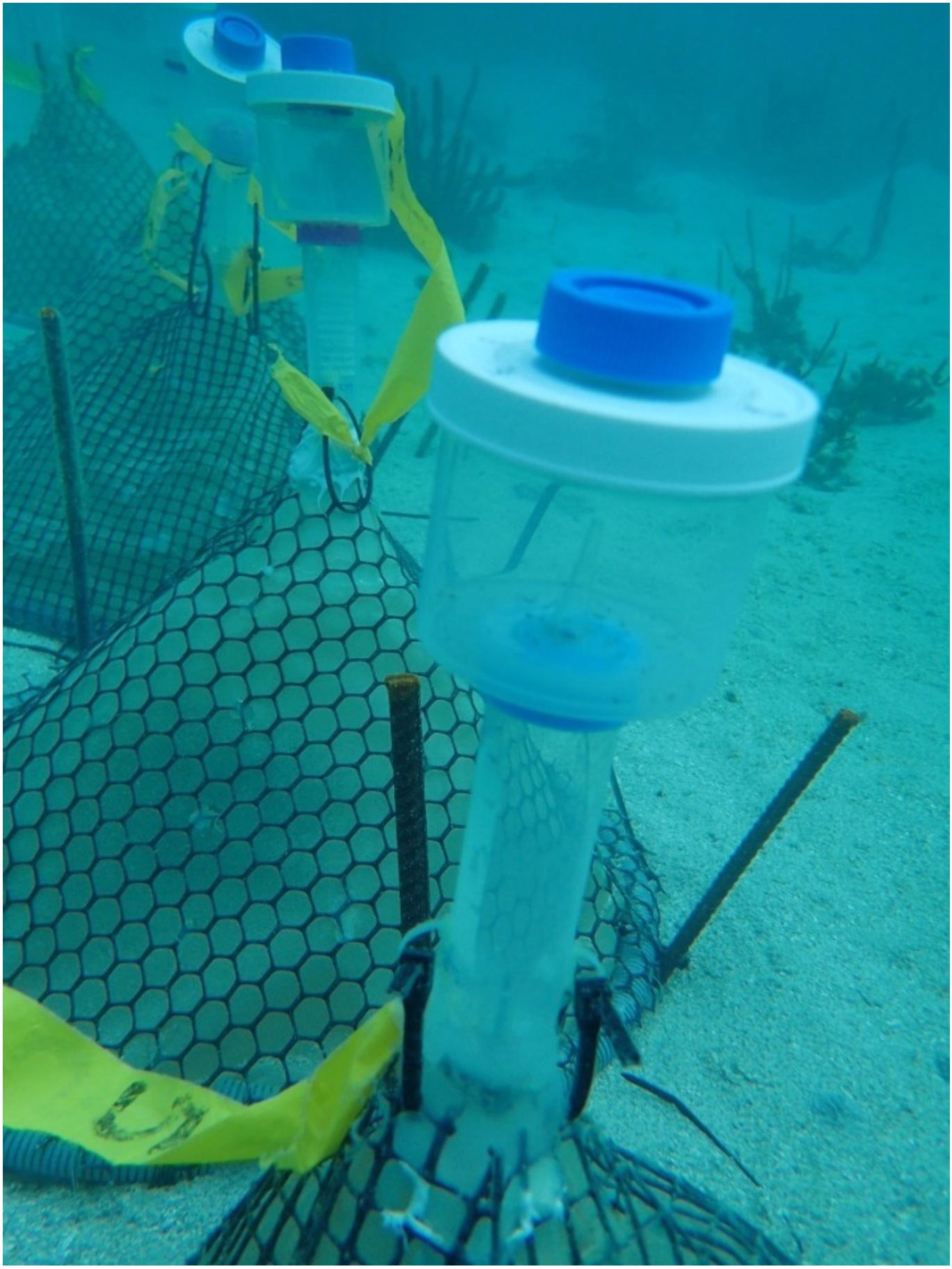
Protocol

Step 1.

Place coral colonies in traps 3-5 days prior to the new moon during spring-summer (April-July).

Step 2.

Image of traps in place in the field. Photo credit: L.M. Roberson, La Parguera, Puerto Rico.



Step 3.

Image of larvae collected in trap top. Photo credit: L.M. Roberson, La Parguera, Puerto Rico.