



Building Marine Ecosystems

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Activity Name: Building Marine Ecosystems

Ages: all ages

Activity Level: low to medium

Length of time: 60 min or more

Number of Participants: small groups (10) or large (up to 30)

Concept: Participants explore the intertidal area (best if it's a rocky intertidal area) collecting specimens they would like to observe and placing them in an aquarium that is set up on the beach.

Materials Required: a large aquarium and stand. A shade umbrella or canopy and/or freezer packs for a hot, sunny day. Marine animal intertidal ID cards, small nets, buckets.

Introduction: Participants are told we are going to build an ecosystem in the aquarium together. They are also guided in their explorations that when collecting specimens they must minimize stress to the organisms: by being very gentle, using salt water-filled buckets for species found underwater, and ensuring that the critters are returned to where they found them (or a similar habitat). They are also shown how to replace disturbed rocks or logs to maintain habitats for other creatures. Other crucial considerations are to ensure when handling more tolerant species children have washed their hands to remove sunscreen residue (toxic to some species) before; maintaining the clarity of the water by washing off mud and sand from objects or specimens that may be coated and monitoring the behaviour of the animals in the aquarium(s) to look for signs of stress due to low oxygen levels or high water temperature. In this latter case, organisms must be removed and put back as soon as possible, in some cases this would mark the end of the activity.

Methods: Leaders set up the aquarium(s) near to the intertidal area and during a low tide slack or falling tide (keeping in mind where the tide is at), the aquarium(s) are filled with fresh, clear sea water. Participants are give directions (stated above) for collecting their specimens.

Two enhancements to this activity could be having local divers collecting interesting specimens deeper in the water or also using a beach seine net to collect fish and crabs, etc. that would be found in mid tidal beach habitats (eelgrass beds, sandy bottoms etc.)

The whole group debriefs after a certain amount of time has gone by (roughly 40-50min): what did you find, what do we know about each of these species, etc. Having

a local naturalist (marine expert) can really enhance this activity as you can ask them to talk to each specimen found and add to the collective understanding of the group!

Next discuss the habitat for each species so that when everyone returns the specimens they know where would be a great place. Returning the critters takes a bit of time so make sure you don't have to rush through this - the participants learn a lot about habitats as they find appropriate homes for all of the specimens.



Tips for Teachers:

- This is a very exciting activity for young participants, so controlling the enthusiasm somewhat might be necessary. For example, setting parameters so you don't get too much of one species (ie. shore crabs) and ensuring that whatever is placed in the aquarium will enhance the ecosystem (ie. no muddy rocks, or dirty sand which will just cloud the water - having a separate wash bucket will help with this)
- Controlling the water temperature will reduce the stress on the organisms. The gel type ice packs are good for this and last long enough to complete the activity.
- Make sure you give enough time for explorations and observations. The participants can learn so much engaging in this activity. Especially just observing the behaviour of specimens in the aquarium.
- Journals could be incorporated into this activity as participants find and identify species (using the ID cards), then sketch and record their findings.

Background facts and information:

- You can tell the difference between male and female crabs by looking at their belly: males have the shape of a lighthouse and females have the shape of a spoon.
- Sea stars are suffering from a wasting disease in many places on our coast - you might find an example of one suffering from this
- You can differentiate between a dead crab and a molted shell in that the molted shell does not smell. Then discuss how crabs grow shells beneath their present shell and then molt their outer casing (a recently molted crab is referred to as a soft-shelled crab). This is also very similar to spiders.