

Making an anemone tank: An OPIHI Extension Activity

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Why anemones?

Three species of anemones that are common in the intertidal in Hawaii seem to do quite well in small aquaria with minimal care (also please read “Intertidal Organisms in the Classroom for tips on maintaining intertidal animals). Our students (and the teachers!) have had fun watching the anemones grab food with their tentacles, move around the tank, and reproduce in a number of ways. Anemones move slowly, making them ideal for new biologists to study. Having anemones in the classroom offers an opportunity for students to practice observation skills and learn about animal behavior.

You’ll need:

- 1. Tank.** Glass or clear plastic tanks are best so that kids can see the animals well. A large, wide mouth jar will also do, although rectangular shapes provide better viewing and more room for animals to move around.
- 2. Salt water.** You can buy your salt water at an aquarium store in the form of a mix like Instant Ocean, or bring it in from the ocean in a clean bucket or gallon jug. If you are taking it from the ocean, try to take it from a place where the water is clear and free of sediment, and not near a freshwater source such as a creek or storm drain. Periodically replace the water by draining monthly (remember, these are intertidal animals and can handle being out of water briefly). The water will evaporate over time, leaving salt on the edges of the tank. Remove the salt and replace water as needed to prevent hypersalinity.
- 3. An aerator.** Inexpensive bubblers from Longs will do just fine. Get some clear plastic tubing and a pack of air stones. You can buy these items for under \$10.
- 4. Fish food.** Flakes are best, and don’t require refrigeration. Colorful flakes will be the easiest to see in the anemones’ digestive tracts. Other foods you might try include small fish, shrimp, or frozen pellets available in pet stores.
- 5. Anemones.** The glass anemone, *Aiptasia pulchella* (p. 41 in John Hoover’s book, Hawaii’s Sea Creatures), is the most common intertidal anemone in Hawaii. The dusky anemone, *Anthopleura nigrescens* (p. 37 in Hoover), and *Boleceroides mcmurrichi* (p. 36) are also very common. At low tide, you will find *A. nigrescens* near the water’s edge growing around or on rocks, tentacles tucked in and covered with sand. *Aiptasia pulchella* is often found in holes in tidal benches, while *B. mcmurrichi* occurs is slightly deeper water. Anemones can be removed from surfaces they’re attached to by sliding a thin putty knife or palette tool under the bottom of their pedal disk, but the best way to collect them is to find some growing on shell fragments, algae or other objects that you can pick up. You can also experiment with the anemone-like group of animals called zoanthids (pp. 42-46 in Hoover) that tend to grow in clusters or colonies. They are also abundant in and around many harbors. Hoover says some are toxic and should be

handled with care. We wear plastic gloves when collecting and have kept them with no problems in a tank with other animals. Some of them are quite colorful.

Things anemones do (and some questions to ask about them)

1. Eat. Anemones feed by capturing their prey with their tentacles, which have stinging cells called nematocysts. These anemones have nematocysts that are so small that they just feel slightly sticky to our fingers when we touch them. But for a tiny animal they are deadly! Students can try picking up fish flakes with a pair of forceps and tickling the anemones' tentacles with the flakes. Anemones will use their tentacles to grab the food and bring it to their mouths. The glass anemone tends to get very clear in the classroom because it loses an algal symbiont. We've actually observed the colorful fish flakes in the anemone's stomach! We've also seen anemones eating small dead fish and shrimp. (Do they have a food preference? If you have supplies of various food types on hand, kids could try feeding trials to see if they have a favorite food. Is there anything an anemone will spit out? What about a small piece of algae?)

2. Move. Anemones will extend their bodies and tentacles when they are hungry (which is most of the time) and will pull in their tentacles and reduce body length when stressed (When else? A good question for kids to try to answer.). They will also move, very slowly, around the tank. (How do they move? Why do they move? When do they move, at night or during the day? How could their movements be tracked?).

3. Reproduce. The glass anemone has a least four modes of reproduction that I've observed. They 1) leave bits of their pedal disk behind when they move around; these regrow into tiny anemones (pedal laceration); 2) split in half down the middle and regrow (longitudinal fission); 3) detach their tentacular crown from their bodies, which floats around for a while as it grows a new body; meanwhile the body regrows its oral disk and new set of tentacles; 4) they will also give live birth, ejecting baby anemones from their oral disks. The dusky anemone reportedly only reproduces via longitudinal fission, but my guess is that no one has really studied it, so young scientists might make a new discovery! For older students, these observations might lead to a discussion about the ecological and evolutionary advantages of multiple means of reproduction, asexual vs. sexual and those that lead to dispersal of young vs. those that result in the young staying near the parent. Younger students might want to compare different modes of reproduction across different types of animals.