



NYSDEC Environmental Education

Plankton in the Air

A game illustrating filter-feeding animals and describing plankton

Group Size	one class
Duration	10-15 minutes
Concepts	Plankton, Marine Food Chains, Filter Feeding, Role-playing
Location	Classroom area allowing movement or outside
Age/grade	Pre-K through 5
Objectives	Students will identify places that animals live. Students will identify that some animals can live in more than one habitat.
Materials	Bubble liquid Bubble blower (suggested) Examples (photos or props) representing filter-feeding organisms

Background for Instructors

Plankton is defined as floating plants and animals that cannot move against the current under their own power. We usually refer to any floating, small or microscopic organism (plant or animal) as plankton.

Plankton is divided into phytoplankton (plant plankton) and zooplankton (animal plankton). Phytoplankton is made up of single-celled and multi-cellular green organisms that use photosynthesis to live and grow from solar energy, in much the same way plants do on land. Phytoplankton lives and dies floating around on the currents of the world's oceans, bays, and estuaries. Zooplankton includes a vast array of tiny animals that feeds on phytoplankton and one another. Zooplankton includes many animals that never get very large, eggs of fish and marine invertebrates, and many larval forms of familiar sea creatures (crabs, lobsters, jellyfish) that leave the plankton as they mature.

Many types of marine animals feed by forcing sea water through filters to remove edible particles from the water. This method of capturing food is known as filter-feeding. Bivalves,

such as clams and mussels draw water into their body through a siphon, pass it through a series of filters, and expel the water, digesting the microscopic organisms that were floating in the water. Baleen whales use their brush-like teeth to strain small shrimp, krill and fish from the sea water. Barnacles use a fan-like tail to scoop plankton from the water like a child might use a butterfly net on insects. All of these methods are types of filter-feeding.

Procedures

Gather students together, and explain how energy moves through the food chain. Plants make energy and grow from the sun. Herbivores (plant-eating animals) eat the plants. Carnivores (meat-eating animals) eat the plant-eating animals. Other carnivores may eat them.

Describe plankton, and its role in the environment. Explain how plankton creates the base of many marine food chains. You can ask a student for a 'favorite sea creature,' and describe a food chain from the sun to that animal. For example, if a child says 'shark', you can create the following food chain: sun-plankton-shrimp-little fish-big fish-shark. Describe how whales use great gulps of sea water and their special teeth (baleen) to gather up the plankton. Explain how clams and oysters draw water into a siphon to do the same. Explain how jellyfish use tiny tentacles to sting and capture plankton, etc...

Once the children have a basic understanding of the role of plankton in the marine environment, introduce the rules of the game we will play. There is no running, no pushing, etc. Explain that the children will become the filter feeders. They will mimic the filter feeders as follows:

Whales- cross your arms over your face and open and close them like a giant mouth

Jellyfish- put both hands on your chin and wiggle your fingers like tentacles

Clams (or other shellfish) - sit on the floor, cupping hands together like two shells (sitting on the floor represents the fact that most bivalves cannot chase prey)

Use these motions to "become" these filter-feeders (feel free to add others if you imagine them). Once the plankton arrives, we can "eat." Practice the motions with the students until they can change from one to another with ease.

In some way, "fill" the room with sea water. For example, mimic turning a great wheel on the floor, as if turning on a giant hose valve. Encourage the students to turn wheels of their own, or help you turn the big one. Make sounds of rushing water and encourage the illusion that the room is rapidly filling with sea water. As the room fills, have the children pretend to start to float or swim around the room.

Once the students are adrift, start blowing bubbles. The children should continue drifting. Tell the students that the bubbles represent plankton, drifting on the currents. Once there are a good number of bubbles, tell the students that they can now be whales, and "feed" on

the plankton. Remind them that they should pop the bubbles with their arms and hands, not their mouths. After a short time, tell the students to become jellyfish, then clams. Go back to whales, jumping from one motion to another.

After 10-15 minutes, bring the students back to the starting point, and analyze which strategies were best or worst.

Provocative Questions

Did all of the plankton get eaten?

Did all of the filter-feeders (students) find food?

Was it easy to catch the plankton?

Could the filter-feeders eat without moving?

Could the plankton escape?

Would filter feeding work if there were only a little plankton around?

Extensions

Use aquarium or butterfly nets to more accurately represent filter-feeding strategies. Does this method catch more bubbles?

Alternatives

Bubbles can represent small fish or squid. Encourage students to invent motions that mimic other sea creatures (shark, fish, crabs, squid, etc).

Example Local Food Chains

