Observing Algae

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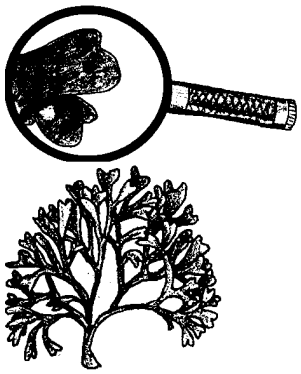
Key Concepts

1. Marine algae come in a variety of shapes, colors, sizes, and textures.
2. Microscopic algae can be classified by observable features.



Background

Macroscopic marine algae, or seaweed, can be a fascinating group of plants to investigate. The three main groups are the green algae, brown algae, and red algae. Observations of preserved or fresh drift algae can be an enjoyable way for to learn about the variety and importance of these marine ecosystem members.

Green algae: representatives include sea lettuce, moss weed, tube algae, and dead man's fingers. Green algae vary in color from yellow-green to dark green.

Brown algae: representatives include the rockweeds and kelp. Plants include blades, stipes, holdfasts, and pneumatocysts.

Red algae: representatives include nori, coralline algae, sea grapes, and Turkish towels. The colors vary greatly.

For greater detail, refer to the Background information found in the activities "Sea Forest" and "Keys to Identification of Some Common Marine Plants".

Materials

For each group of 2-3 students:

- trays or plastic bags to hold the seaweed
- live and/or pressed specimens of drift green, brown, and red algae
- hand lens or dissecting scope
- a piece of sketch paper
- sample of edible algae such a nori
- a set of colored pencils (optional)

Teaching Hints

"Observing Algae" gives students the opportunity to make observations about macroscopic marine plants without the use of microscopes or detailed scientific keys. Students are asked to use their senses to make observations and generalizations about green, brown, and red algae. You may choose to give students the worksheet and have them answer the questions or you may give them time to observe and draw algae samples and then ask them the worksheet questions as a check of what they noticed.

It is best to use fresh drift specimens if possible. If you are able to collect fresh specimens of drift marine plants, be sure to check state and local restrictions. You will need to collect a sufficient portion of a plant to allow identification.

Plants can be kept in plastic bags overnight in a refrigerator. You may want to put specimens in separate plastic bags before refrigeration. Also, be sure to keep fresh specimens of Desmarestia (see Key to Identification) separated from other specimens. This alga is very acidic and may bleach other specimens. Do not add Desmarestia to an aquarium because the acid it releases is likely to kill any animals in the tank. Fresh specimens may become very slimy, so rinsing them with fresh water before use in lab is desirable.

Since it is not always possible or convenient to obtain fresh algae specimens, you may want to consider making a class set of pressed algae herbarium specimens following the suggestions given in the activity "Pressing Algae".

With the help of an algae key, separate several specimens of green, brown, and red algae for each group of 2-3 students. Because color of algae can sometimes be misleading, it is recommended that the algae be sorted for students into trays or plastic bags. Have hand lenses or dissecting scopes, sketch paper, edible algae samples, and colored pencils (optional) available. The lab is organized so students make observations about the green algae, the brown algae, the red algae, and then all of the representatives.

Key Words

algae - one-celled or many celled aquatic plants that have no root, stem, or leaf systems

blade - broad, leaf-like portion of algae

frond - the blade(s) and stipe of an algae

holdfast - the rootlike portion of the algae that holds it to a rock or surface. Unlike a true root, it doesn't gather water and nutrients from the soil.

kelp - any large brown, cold water algae of the family Laminariaceae, used as food and in various manufacturing processes

pneumatocyst - air filled bladder found in some algaes allowing for positive buoyancy

stipe - the stalk arising from the holdfast and to which the blades attach

Answer Key

A. Green Algae

1. - 4. Shades, shapes, textures, and types of algae will vary.
5. Sketches will vary.

B. Red Algae

1. - 4. Colors, shapes, textures, types will vary.
5. Sketches will vary
6. Tastes described.

C. Brown Algae

1. - 4. Colors, shapes, textures, features will vary.
5. Sketches will vary.

D. All Algae

1. Brown algae include larger representatives, including some of the fastest growing plants on earth.
2. Holdfast drawing and description.
3. The pneumatocysts help keep the plant buoyant and lift the blades to receive sunlight.
4. Flexibility allows the plant to withstand the strong waves, storms, and currents that can tear plants apart. In withstanding these elements, kelp plants dissipate energy of waves, thus providing a sheltered area shoreward. Waves and currents are vital for transporting fresh gasses and nutrients required for photosynthesis.
5. Algae categories will vary.