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ABSTRACT

This autoinstructional lesson deals with lessons in marine biology. A student will have experiences with both animal and plant life living in a salt water marsh environment. The student guide states the objectives to be attained and general directions for using the equipment and materials as well as a script. Approximately 30 minutes, including viewing time of the slides, is required. A list of vocabulary terms and a short bibliography are included on the teacher's guide. A student vocabulary sheet is presented. (EB)

AN IMAGINARY TRIP THROUGH THE MARSH

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TEACHERS GUIDE

AN IMAGINARY TRIP THROUGH THE MARSH

Objectives: Upon completion of the entire unit, of which this AT is a part, the learner will:

1. Examine three pictures and label the pictures that are classified as a marsh.

2. Give two descriptive statements explaining how marsh plants are especially adapted to their habitat.

3. Identify the respective homes of a marsh crab and a fiddler crab.

Vocabulary

Detritus	Spartina	Uca
Habitat	Sesarma	Regeneration
Marsh	Tidal Flat	
Melampus	Tidal Creek	

Equipment and Material

Set of slides to accompany the tape
Taped cassette An Imaginary Trip through the Marsh
Diagram showing the orientation of the trip
Diagram showing stylized varieties of plant vegetation
Script

Also required but not in the packet:

Cassette tape recorder and earphones
Slide Projector

Time Approximately ½ hour including viewing time of the slides

Space Carrel

Bibliography

Boolootian, R. & Thomas, J. Marine Biology. Holt, Rinehart, and Winston, New York. 1967
Amos, W. The Life of the Seashore. McGraw-Hill Book Company, New York. 1966
Engel, L. ed. The Sea. Time Incorporated, New York. 1963
Ogburn, C. The Winter Beach. Pocket Books, New York. 1971

STUDENT VOCABULARY SHEET

1. Detritus - decaying organic (plant) and animal material. All of the detritus from the marsh comes from the few kinds of plants that can grow in salt mud. These are mostly grasses and algae. Detritus is found in all marine environments and is an important source of food for many marine animals.

2. Tidal Marsh - always hold water. A tidal marsh as the name implies is affected by the rise and flow of the tide.

3. Habitat - the immediate surroundings of a plant and animal. Its living space.

4. Melapus - is a snail found on the marsh.

5. Spartina - is the common, most abundant form of vegetation found in the marsh.

6. Sesarma - is the purple marsh crab.

7. Tidal Flat - is an area located beside the marsh but is usually covered with at least a shallow layer of water.

8. Tidal Creek - is a stream of water found in a marsh whose waters follow the rise and fall of the adjoining ocean tides.

9. Uca - is the scientific name for the fiddler crab.

10. Regeneration - the capacity of an organism to regrow lost body segments.

STUDENT GUIDE

OBJECTIVES:

1. The student will state the major reason for plant variation on a salt water marsh.

2. The student will identify the respective homes of a marsh crab and a fiddler crab.

3. The student will examine three pictures and label the pictures that are pictures of a marsh.

General Directions:

Carefully observe the order of the slides so that the audio and the visual portion of the presentation are together. You will have time to go over the slides at the end of the trip without repeating the tape.

After you have completed the AT please rewind the tape and leave everything exactly as you found them.

Have fun on your field trip!

It is not necessary for you to be an artist and make a perfect copy of each variety of plant life you see. Your whole point in drawing sketches is merely to have a personal record of different plant varieties. As long as your sketches help you to identify the plants, that is all that is necessary. Refer to diagram two.

At this point, by looking at the close-up pictures, you may draw as many plant varieties as you can see.

Let's begin our slide trip. As observers and participants in this trip you should note all the different vegetation that you see. Carefully examine the next four slides, that is, slides 3-4-5-6.

One of the most common marsh grasses is Spartina. One variety of Spartina grows close to the water in the tidal creeks and a smaller variety of Spartina covers a large area of the flatland marsh. Examine slide 7.

Now walk along the tidal creek and note the different plant varieties here. Refer to diagram one, the pink arrows will indicate just where you are going with respect to the next few slides.

Finally, stop and look all around you trying to locate by sight, any part of the marsh that seems higher in elevation. Examine slides 8-9-10. These areas should have slightly different plant populations. Can you hypothesize as to why? Stop the tape and give it a try.

Here is one theory or hypotheses: in the area of the marsh with higher elevation, different plant varieties will be found because the soil there probably has a thicker layer of decayed plant material, detritus, as well as a lower soil salinity. As the land rises slightly, marsh grass gives way to pickle weel and sedges, which are tolerant of salt mud, but not frequent tidal immersion. In other words, the plants growing further away from the salt water would probably soon die as they continuously got wet by a high tide. These plants can stand the salty mud, but not the salty water.

Now that we have become aware of the different plant species, each with a definite reason to be growing where they are, let's examine some of the obvious swamp dwellers.

The most noticeable animal that we will find is the fiddler crab. Slide II please. Anywhere there is a small area of ooze, watery mud, many fiddler crabs, Uca, will be found moving around quite fast. These crabs are constantly flitting across the mud to find new feeding grounds. These crabs actually strain the water and mud, picking out the detritus, the decayed plant and animal material. This is their major source of food.

You can actually observe the flurry of activity in Uca, fiddler crabs, at low tide. The crab might also be active during high tide, but he will not be very far away from his burrow.

Note that it is only the male fiddler that has one oversized claw. Slide 12, whereas the female has two small claws (slide 13). The large claw of the male doesn't help him to get food any more efficiently than the female. The claw does serve as a means of attracting females as well as fighting with another crab. If the large claw gets amputated in a battle, the crab will not go for the rest of his life with merely one claw. Crabs are capable of regeneration, the process of regrowing lost body parts. In this case the small claw of the male fiddler will grow into a large claw and the arm with no claw will grow a new small claw. Within a few weeks we will not be able to tell that this crab had even lost a claw.

In addition to identifying the animal, you can easily learn to look for his burrow. Please examine slide 14. The opening to a fiddler's burrow is either perfectly round or surrounded by a slight lip, depending upon each individual species. His home is down about 1½ to 2 feet deep.

Occasionally, along with the fiddler, the Sesarma, or purple marsh crab is found. Examine slide 15. Unlike the fiddler, the Sesarma is not found in abundance on the marsh. Your search for the purple marsh crab will become easy when you learn how to recognize his unique "doorpost". The purple marsh crab constructs a hooded hut over the entrance to its burrow. The Sesarma's burrow descends straight down for about a foot, and then levels out into several tunnels and rooms. Re-examine the last slide.

The purple marsh crab's diet consists mainly of the marsh grass, Spartina. The purple marsh crab is truly a vegetarian.

Aside from the obvious crabs that inhabit the marsh, you will also find many different kinds of animals. Worms of many different kinds, some of which are large and colorful, occupy the mud. Buried alongside of the worms might be different kinds of clams and ghost shrimp. These particular animals are usually hard to capture because they are very efficient diggers, often faster than we can dig with a shovel.

On the surface of the marsh, many different varieties of snails can be found. Slide 16. Marsh snails, Melampus, perch on the stalks of grass above the habitat of the fiddler crabs, as well as sitting on the ground.

In addition to these lower forms of life, you will also find muskrat inhabiting salt water marshes. Their presence is easily detected by the appearance of their homes, which resemble a pile of

sticks above the water. Please examine the next two slides 17-18.

In summary, animals of the salt water marsh are mostly migratory or burrowing forms; the crabs, for example retreat to their burrows when the tide rises and emerge to feed when the tide falls. Certain mammals, birds, and reptiles find protected salt marshes highly suitable for nesting and feeding. Refer to the next slide which shows a clapper rail hiding in its nest. Slide 19.

Coastal marshes nourish life in the sea. The decay of the marsh plants and animals releases chemical nutrients into the coastal water where they support the growth of plant plankton. Thus, shoreline marshes, called wastelands by some, actually produce much of the nourishment for many forms of life in the coastal seas.

Thanks for walking with me today.