Amy Richard/ Laura McFarland / Louise Young – Dedham Middle School
WISP Lesson

Title: Drama in the Salt Marsh

Objectives:

Introduction to various organisms that live in a salt marsh.
Recognize adaptations of organisms that live in a salt marsh.
Review concepts of ecosystem and niche.
Explain different roles in an ecosystem using the example of a salt marsh.
Demonstrate how abiotic factors such as wind, sun, water and oxygen affect biotic factors in an ecosystem.

Standards: Massachusetts State Frameworks
Learning Standards for Grade 6-8 Life Science (Biology)
Living Things and their environment
13. Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.
Learning Standards for Grade 9 or 10 Biology
6. Ecology (6.1-6.5)

Materials:

Salt Marsh Character Cards
Soap bubbles

Vocabulary:

Ecosystem
Niche
Consumer
Producer
Decomposer

Procedure:

1.) Have students take out their science notebooks and write down the five vocabulary words {see **Vocabulary** section} that are written on the board.
2.) In a class discussion format, have the students define the words.
    a. For Ecosystem ask prompt questions such as
        i. "What ecosystem do you live in?"
        ii. "What would be the difference between a desert ecosystem and where you live?"
        iii. "What would happen if you took a plant from the ecosystem where you live and put it in a different ecosystem, like a desert? Would that plant survive? Why not? What if you did the opposite?"
    b. For niche explain that students have a role in society and that it can change over time
        i. "What is your job?"

ii. Discuss that there are farmers who grow food and trash people who take away waste and that these are important roles in our society. "What would happen if no one took these roles?"

c. For decomposer, consumer and producer, explain that these words are roles in an ecosystem. Have students try to explain what these roles are and who fulfills them.

i. For decomposer ask "What would happen if we locked you in your house with no one food shopping and you could not order delivery or grow your own food? What would eventually happen?" Lead them to recognize the importance of decomposers to return nutrients back into the soil for plants to reuse.

3.) Ecosystems and introduction to the salt marsh.

a. Ask them what type of water, salt or fresh, you would typically find in a forest ecosystem and in what form. "Where does that water in a river or stream flow to?"

b. Begin a schematic starting with forest and ending with ocean.

c. "How many of you have been to the ocean?" "Did the forest just stop and the ocean began?" "Or was there more of a transition from the forest to the ocean?"

d. Put salt marsh in between forest and ocean on your schematic. Explain that a salt marsh is a transition between forest and ocean and some of the animals that may live there. Add that there are tides in a salt marsh and for half of the day part of the salt marsh is covered with water and the other half of the day it is dry. This is a great time to show pictures of a salt marsh or to bring in live examples of organisms that live in the salt marsh.

4.) Adaptations of organisms living in a salt marsh.

a. Explain the areas around a salt marsh: ocean, low tidal zone, high tidal zone and upland or forested area. Ask "What types of organisms would you find in these areas?" How do you think these organisms deal with the tides?"

b. Pass out character cards. Give direction "I will be passing out these cards that have an important member of the salt marsh on them. Please read the description of your character carefully and silently to yourself."

c. Set the stage. Divide your room into salt marsh areas and tell the students what the boundaries are for each area. The zones are ocean, low marsh, high marsh and upland. Standing in the ocean area, ask "which of you live in the ocean?" then have students tell the class who they are and read the back of their card. Continue for each of the areas moving into each area to emphasize where the students will be standing momentarily. Save oxygen, wind, sun, moon and water for the next step.

d. Have the student with oxygen read her card and explain what oxygen's role in the salt marsh is. Then continue with wind, sun, moon and water.

e. Have students move to their respective habitats in the room. They are acting out how their organism would behave at low tide (have water designate where the water line is). Give soap bubbles to student with

oxygen card to simulate production of oxygen. Go around the room and ask each student who they are and what they are doing and why.

f. Have the student who is water move inland to demonstrate high tide. Again, go around the room and ask each student who they are, what they are doing and why.

g. Continue alternating low and high tide. After you have determined enough tides have passed, ask students to pass in the character cards to you.

5.) Student evaluation

a. Have students open their science notebooks and answer the following question: "Describe one thing you learned today."

Evaluation:

Pre-evaluation:

a) Vocabulary words
b) Answers to verbal questions of "How would your creature act at high and low tide?"

Post-evaluation:

a) Vocabulary words on end of unit test
b) Students actions during performance at high and low tides
c) Answer to: "What is one thing you learned today?"

Extensions:

Create a food web in the salt marsh using string and Character Cards
Use the internet to find out more about tides
Field trip to the salt marsh where students have to find the character they played in the classroom.

References:

"Salt Marsh Players". 1995. Project WET curriculum and activity guide. Pp.99-102. The watercourse and council for environmental education (CEE). {Character cards can be found here as well as a schematic for the salt marsh environment showing where characters should be placed}

Pictures and background info:
Presentation on Salt Marsh by Odyssey High School.
http://www.odysseyhighschool.net/Watershed%20Presentation%20Boston%20College/sld001.htm

Forry, B. 2002. "Restoration work set to begin in Neponset marshes." Dorchester Reporter. http://www.dotnews.com/marsh.html

Dalia, W. 1998. "Losing Massachusetts' coastal salt marshes."
http://site.www.umb.edu/conne/wendy/intro.htm