April 2001

SeaWorld/Busch Gardens

Ecology & Conservation

4-8 Classroom Activities

Suited for Survival

OBJECTIVE

Given a particular marine environment, the student will be able to research that environment and create a new species (plant or animal) with adaptations that suit the species for the environment. The student will be able to predict how this new species might affect the ecosystem into which it is introduced.

ACTION

1. Divide the class into small groups. Give each group a card naming a particular marine environment (or let the students choose their own). Students research and write information about their environment including temperature, depth, topography, and plants (algae) and animals that live there.
2. Have students brainstorm and list essential adaptations for a new species that they "create." Consider the species' role in the ecosystem.
   - Where does it live?
   - What and how does it eat?
   - What eats it?
   - How does it avoid predators?
   - How does it reproduce?
3. Students sketch their new species. They label and describe the purpose of each adaptation. (If time allows, students may want to create a 3-D image of their animal with clay or papier mâché.)
4. Discuss the following questions with your students:
   - What effect would introducing this species have on the rest of the ecosystem?
   - Would any of the existing species' populations suffer?
5. Have students construct a food chain or food web including their newly introduced species.

DEEPER DEPTHS

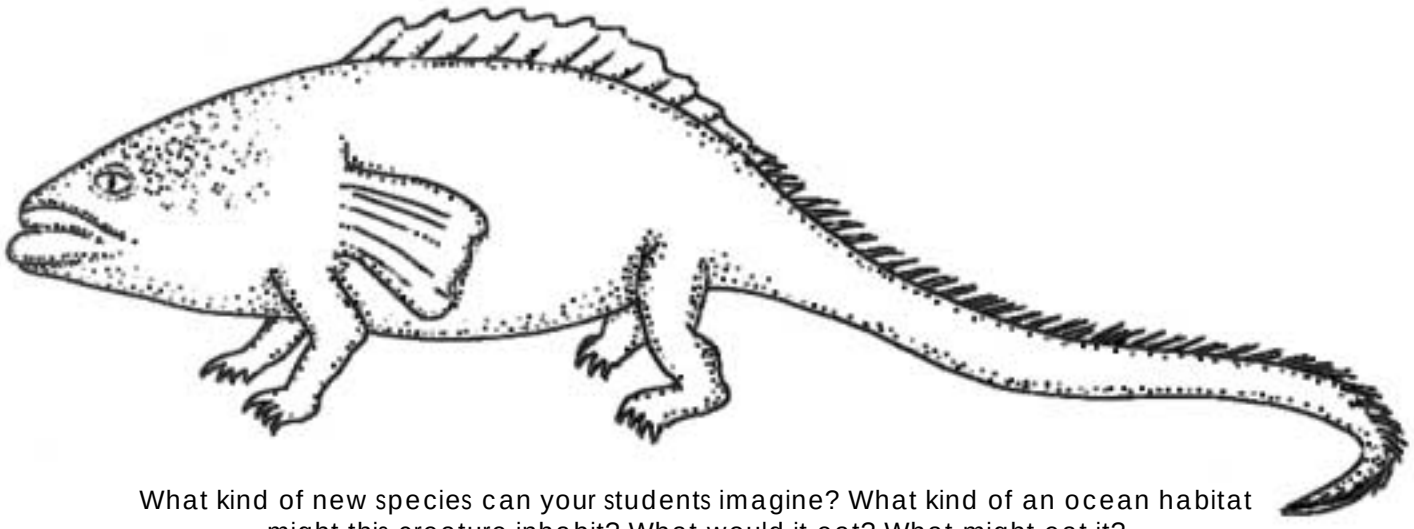
Repeat activity using land-based environments such as rain forests, savannahs, grasslands, jungle, etc. Students should research plants and trees of the area, rainfall, terrain, and temperature. Design the new animal answering the same questions posed for the marine animal. If students do both marine and terrestrial adaptations, compare the results. What differences in the environment cause differences in animal adaptations and appearance? For example, the buoyancy of water in marine environments vs. the pull of gravity in terrestrial environments.

MATERIALS

For each student or student group:

paper
- markers/colored pencils
- reference materials and/or Internet access
- modeling clay or papier mâché materials (optional)

For class:
- 3' x 5' cards with marine environments written on them (for example, deep sea, rocky intertidal, coral reef, kelp bed, open ocean, deep-sea thermal vent, sandy beach, etc.)



What kind of new species can your students imagine? What kind of an ocean habitat might this creature inhabit? What would it eat? What might eat it?

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Sea Turtle Summit

OBJECTIVE

Given a hypothetical environmental situation, the student will be able to research available literature for factual information and logically argue a point of view. The students will demonstrate a real-life decision-making process and evaluate its outcome.

ACTION

1. Divide your class into three groups. Each group will represent a different faction in an environmental issue. The issue at hand is a diminishing population of sea turtles.
    - Group One is the local native community.
    - Group Two is a team of population biologists who have been studying sea turtles.
    - Group Three is an alliance of environmental activists.
2. Copy and distribute the player cards to the students. Familiarize yourself with the scenario by reading all three player cards. Give the students a chance to familiarize themselves with the situation and to gather additional resources from the library, newspapers and journals, special interest organizations, Internet, etc.
3. Stage a "Sea Turtle Summit," with all three groups meeting to discuss the issue. Mediate between the groups. At the end of the meeting, vote on a plan that will be acceptable to all factions.
4. After the activity is over, discuss how conservation issues are complex problems of society that affect people as well as animals. Ask the following questions to prompt students to discuss the decision-making process.
    - Were all three groups satisfied with the outcome of the meeting and the new policy?
    - Is it always easy or possible to come up with a solution acceptable to all concerned?
    - Would it ever be beneficial to compromise your point of view? When and why?
    - What role does science play in policy-making?
    - What role does public education play in awareness and action?

Sea Turtle Summit Playing Cards

LOCAL NATIVE COMMUNITY

You live in a small coastal village. Ever since the first settlers, you have hunted sea turtles. You hunt the turtles to survive: they provide food for your family, and you sell parts of the turtles to traders so you can buy other materials you need.
Your beaches are the only known nesting ground for these sea turtles. It is easy to hunt turtles offshore and collect their eggs from the beach. Unfortunately, the sea turtles you hunt are becoming harder and harder to find. You have heard that they are now an endangered species.
Unemployment in your area is very high. There is no other business or industry in your community. The only trade you have ever known is hunting sea turtles and collecting their eggs. Hunting sea turtles is the only way of life you know. It is part of your culture. You believe that the turtles are spirits, and you celebrate them in legends, stories, and special ceremonies. You feel that the turtles and their eggs belong to you and your community and your culture. Any interference would disrupt your way of life and would destroy your culture and belief system.

POPULATION BIOLOGISTS

You have been assigned to find new ways to increase the sea turtle population. According to your data, within a few years the number of sea turtles will be so low that there will be no chance for successful reproduction. You fear that this species is on its way to extinction unless something is done now.
You know that a certain beach community is totally dependent on the sea turtle for its welfare. The sea turtle is economically important; it provides food and income for other necessities. The turtle also is culturally important to these people.
Your team has come up with only one proposal to increase the sea turtle population. Your plan is to collect the eggs from the beach, incubate and hatch them, then release them back into the ocean as yearlings. Meanwhile, hunting the turtles and collecting the eggs would be strictly regulated.

ENVIRONMENTAL ALLIANCE

Your organization is a group of "take action" individuals dedicated to protecting wildlife and the environment. You compile and distribute data, identify conservation needs, design conservation actions, analyze the effectiveness of conservation actions, implement systems of observation and inspection, and lobby decision-makers.
You and your organization are concerned about the sea turtle population. If people of the beach community continue to hunt turtles and eggs, the sea turtle population will suffer. Your goal is to stop the beach community from hunting the turtles and to stop any human disturbances or interaction with the turtles.

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Trash Trivia

OBJECTIVE

Students will classify trash components and select appropriate ways of recycling.

ACTION

1. Before the activity, ask the students to write down 10 items they see people throwing in the trash, or items they throw into the garbage. The day of the activity, have students bring their lists to class.
2. To begin the activity, read the following story.

   "Imagine yourself living in a small town with several neighboring areas of forest and wildlife. You receive word that one of these neighboring forests has been slated to become a landfill. The landfill will destroy the forest ecosystem and the odor, rodents, and potential fires associated with landfills concerns you. The landfill that the town currently uses still has space left. However, the town would have to drastically reduce the amount of discarded garbage to make the landfill last another 10 years. During that time, a new site could be chosen for the next designated landfill. The town decides to launch a massive recycling program to conserve space at the present landfill and save their neighboring forest and wildlife."

2. Using the items on the students' lists, create a data table categorizing the trash. List the item, then mark how many pieces of that item students recorded. Every student should have some of their items on the data table. Items should not repeat. Next to the data table, list the following five words: plastic, aluminum, paper, glass, and compost.
3. Open a class discussion by asking each student to select one of the items on the garbage list and recycled it into any of the "bins." For example, soda cans and aluminum foil in aluminum; milk, salad dressing and other containers in plastic; magazines, wrappers, and newspapers in paper; jars and bottles into glass; fruit peels and plant trimmings into compost. If it is a product that does not fit any of the above mentioned recycling categories, mark it with a star. The stared items will go to the landfill. After all the items have been classified into the recycling bins or the landfill, discuss how much of the trash was able to be recycled (not put into the landfill). Could the town last another 10 years using the old landfill?

DEEPER DEPTHS

The students can select an item of trash and make it into something useful. They can then present their creations to the class on the day of the discussion. For example, mobiles out of aluminum cans or empty milk gallon-containers poked with small holes and filled with water. Place the containers halfway in the ground in a flower bed. The holes will let the water slowly drain to provide a continuous water source for the plants until the container is empty.

MATERIALS

For class:

- paper
- pencil or pen
- chalkboard, dry erase board or overhead projector
- markers or pens for board or overhead

A beach clean-up can generate lots of trash (left). Participants sign in and log the kinds of items they collected during the day (above).