**Adaptation and Behavior**

**Lesson #9:** **Adaptation – Raccoon Islands**

**Time Frame:** 60 minutes

**Learning Standards:**

*Science*

Life Science: Plant (and Animal) Structures and Functions

1. Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g., shape of beak or feet, placement of eyes on head, length of neck, shape of teeth, color.

*English / Language Arts*

Oral Presentation

1. 3.8 Give oral presentations for various purposes, showing appropriate changes in delivery and using language for dramatic effect.

**Student will be able to:**

1. Design, draw, and describe the adaptations of a raccoon that is adapted for life on a certain type of island.
2. Give a presentation to the class explaining the island environment and the adaptations of their raccoon.

**Resources and Materials:**

|  |  |
| --- | --- |
| **Item** | **Amount** |
| Science notebooks |  |
| Raccoon Fact Sheet | 1 (in binder) |
| Island Descriptions:  Island A  Island B  Island C  Island D | (in bin)  25  25  25  25 |
| Island Diagrams:  Island A  Island B  Island C  Island D | (in bin)  25  25  25  25 |
| Art materials to make raccoon models | (in classroom) |

**General Teacher Background Information**

This activity allows students to be creative and imagine how different raccoons might be adapted to survive in different environments. You can provide a story, with as many details as you choose, about how the raccoons all ended up on different islands and how long they have been on these islands.

**Focus Activity:** Ask students to brainstorm everything they know about raccoons in their science notebooks.

**Introduction:** Review how animals become adapted to different environments. What is adaptation? How do animals become adapted to their environments? Introduce the story of the raccoon islands and discuss how raccoons might change over time to adapt to the different environments on each island.

**Activity:**

1. Ask the students to work either in small groups of individually to create a raccoon that is adapted to a particular type of island. (If the students work individually they can complete some of this project at home.)
2. Give each group or person a diagram and description of one of the following islands (attached) to design a raccoon that is adapted to the conditions of the island.
3. Students must complete the following tasks: (either write these on the board or provide in a student handout)
   1. Draw the raccoon (showing its adaptations to the environment) or make a three dimensional model of the raccoon. You may specify the number of adaptations that each student should include.
   2. Explain how each raccoon adaptation allows it to survive on the island (at least one sentence per adaptation).

Students may finish these tasks for homework as necessary.

1. Ask each group, or individual, to present their raccoon to the class and explain how it is adapted to its environment (some groups will have the same island and it is interesting to see how different raccoons are adapted to the same conditions).

**Closure:** Discuss the following ideas and questions as a class. What would happen to a raccoon that was adapted to Island A if it was carried on a piece of wood to Island B? Would the raccoon survive? Explain. Ask similar questions about the other raccoons and other islands and reinforce the idea that adaptations take time to occur.

**Assessment:** Raccoon drawings and/or models, descriptions of how the raccoons are adapted to their environments, class presentations, and class discussions

**Raccoon Fact Sheet**

**Video:** [www.youtube.com/watch?v=ocf1iweoGxM](http://www.youtube.com/watch?v=ocf1iweoGxM)

**What they look like:**  Raccoons are distinguished by a black mask across the eyes and bushy tail with anywhere from four to ten black rings. The forepaws resemble slender human hands and make the raccoon very dexterous. The coloration of the raccoon varies with habitat, and ranges from grey to reddish brown to buff. Raccoons have a stocky build and typically weigh from six to seven kilograms (avg. 6 kg or 13.2 lbs). Males are usually heavier than females. The body length ranges from 2 to 3 ft.

**Where they live:** Raccoons are found across southern Canada, throughout most of the United States, and into northern South America. Raccoons prefer to live in moist woodland areas. They can also be found in farmlands, suburban, and urban areas.

**What they eat:**  Raccoons are omnivorous animals (they eat plants and animals). Plant foods vary from fruits to nuts, including wild grapes, cherries, apples, berries, and acorns. Raccoons may also eat peaches, plums, figs, citrus fruits, watermelons, and walnuts. They also forage for crayfish, insects, frogs, fish, and bird eggs. Raccoons have adapted to eat trash and other food available in urban areas.

**Behavior:** Raccoons are nocturnal (active at night), but can sometimes be seen during daylight hours. They are solitary animals (live alone) and the only social group raccoons form consist of a mother and her young. Although they move slowly, with a shuffle like walk, they can reach speeds of 15 miles per hour on the ground. Raccoons climb with agility and are can withstand a drop of 35 feet from a tree. Raccoons are excellent climbers and strong swimmers.

**Lifespan/Longevity:** Raccoons have been known to live a maximum of 16 years in the wild. A captive animal was recorded living for 21 years. The life span of raccoons in the wild is estimated at three to five years.

**Other facts:**

* Raccoons live an average of 5 years in the wild.
* They are very agile climbers.
* They are preyed on by coyotes, wolves, hawks, and owls.
* Raccoons are nocturnal animals, so they are rarely seen during the day.
* Raccoons have excellent night vision.

Source: http://naturemappingfoundation.org/natmap/facts/raccoon\_k6.html

**Island A**

This island is mostly flat with a few hills. The ground is soft dirt and several types of small shrubs grow in the center of the island. No animals live on land but the sea water around the island is full of fish. The island is surrounded by a coral reef that keeps predators out. The shore of the island is sandy. Fresh water is available.

**Island B**

This island is small with a rocky shoreline. Along the shore, there are tide pools protected by big rocks. The tide pools have crabs and barnacles (all animals with shells that are hard and tough). A small ocean plant grows all around the shore of the island. This plant is completely eaten by animals in the tide pools. This plant grows best on the big rocks that stick out into the ocean. The ocean has strong currents. Fresh water is available.

**Island C**

This island does not have many living things. A few types of cactus live on the bare rocks. A large cactus-eating tortoise lives on this island. Also, one type of large bird nests on this island every year. They build their nests on the rocks and protect their nests from the sun by standing over the nest with their wings open. Depending on the season, fresh water, in small amounts, is available.

**Island D**

This island is an extinct volcano. Grasses grow down low, at the base of the mountain, and then shrubs grow further up. After that, the mountain changes to tropical rainforest and plants and trees grow. Frequent rain (freshwater) is present at this altitude on the island. There are many types of small animals and two types of birds that live on this island. The first is a raptor that eats other animals. The second type of bird catches fish in the water about one mile offshore. Both nest in trees.







