



## Animal Adaptation Lesson Plan

### LEVELS:

Grades Kinder to 4

### SUBJECTS:

Science, Environmental Education, Expressive Arts

### STATE STANDARDS: (New Mexico)

1) Science and Environmental Education: Science

6.29.10.8 C. Strand 2: Content of Science

2) Expressive Arts: Art 6.29.2.14 A. Strand: Theatre  
Drama

### CONCEPTS:

The conditions in the Chihuahuan desert and White Sands dunefield provide ecological knowledge of wildlife populations and their ability to change and adapt within that environment. Variation and change occur in all ecological systems. All forms of life are affected by changes in the quality, quantity, and distribution of their habitats. All life forms exhibit adaptations to the environments in which they live.

Wildlife are adapted to their environment in ways that enable them to survive and maintain their populations. There are many physical and behavioral adaptations, such as body coverings, hibernation, and migration associated with climatic conditions. Adaptations to the prey/predator relationship may include behavioral (e.g., signaling, flight, freezing) as well as physical (e.g., camouflage, mimicry) variations. Each habitat is suitable only to those life forms that are adapted to its ecological conditions.

### SKILLS:

- Creative thinking
- Cause and effect
- Environmental awareness

### OBJECTIVES:

- Students will identify examples of adaptations in animals.
- Students will describe the importance of adaptations to animals.

### VOCABULARY:

- *Adaptation* – a change in an animal’s lifestyle that improves its chances of survival in its environment.
- *Predator* - animal that kills and eats other animals.
- *Prey* - animals that are killed and eaten by other animals.

### MATERIALS:

- Blindfolds
- Outdoor area like a thicket or other vegetated area free of poisonous plants and other hazards where a student s can safely hide.
- Or build a “thicket” with desks, chairs, and blankets in a large room.

### BACKGROUND:

Animals are adapted to their environment in order to survive. Animals also may be adapted to changes in their habitats. For example: snowshoe rabbits have a white winter coat to blend with a snowy environment and a tan summer coat to blend with summer ground and vegetation colors. Chameleons change color to blend with their surroundings. The walking-stick insect can look like a twig or stick. Fawns have spotted hair that resembles dappled light on the forest floor in the spring. Adaptations to predator/prey relationships also may include behavioral (e.g., hiding or flight) as well as physical (e.g., camouflage) variations.

At White Sands, animals have adapted in a variety of ways. The most effective is through camouflage or blending into the surrounding environment. Animals that are lighter colored survive longer than their brother or sister that is darker in color.

Most animals in the White Sands dunefield are nocturnal. Coming out at night to forage allows the animals to move around in low light which makes them less visible.

Adult animals at White Sands are smaller than their

cousins in the mountains. The smaller an animal is in size, the less food and water is needed to survive. There is very little food and no standing water in the dunefield, so this technique of survival can be very helpful.

Animals can use movement to help survival In the animal world, when there is danger, an animal can freeze in place. This works especially well if the animal is camouflaged. Or the animal can flee or run from the coming predator. An animal that can move quickly has another tool for its survival. The kit fox runs quickly in a zig-zag pattern that makes it difficult for its predators to catch. The kangaroo rat can jump six feet in the air to evade a predator.

One of the most crucial adaptations for the animals in the White Sands dunefield is the retaining of water. Since there is no standing water in the dunes, whenever an animal can get water, it has to keep the water for as long as possible. The kangaroo rat is special: he never has to drink water. He gets all his moisture from the plants that he eats. The kangaroo rat will collect 600-800 seeds a day and put them in his cheek pouches to take them to his burrow. When eating these seeds, the k-rat will extract the moisture and retain it in his body until it is all used. The animals at white sands will retain their water similar to the k-rat. However, if there happens to be a puddle after a thunder storm, the k-rat will not drink the water. All the other animals will drink since there is water available.

The major purpose of this activity is for students to understand the importance of adaptation for survival.

#### **GETTING READY:**

Pictures on board:

1. Desert area with plants
2. Interdunal area
3. Various animals that live in desert
4. Various plants that live in desert.

#### **DOING THE ACTIVITY:**

1. Take the group to a "thicket."
2. Blindfold one student who will be the "predator." The predator slowly counts to 20 while the other students or "prey" hide. Hiding students must be able to see some part of the predator at all times.
3. After counting, the predator removes the blindfold and looks for the prey. The predator can turn around, squat, and stand on his/her tip-toes, but cannot walk or change location. The predator should see how many students he/she can find, identify them out loud and describe where they are. When identified, the prey move to the predator's location and wait until the next round to become predators. Make sure the students do not tell the original predator where any students are hiding.
4. When the original predator cannot see any more students, a new round starts. All of the predators put on blindfolds. Predators should be in close proximity to each other. Each predator has the same motion restrictions. Again, the original predator counts aloud to 20. All the remaining prey must move at least 10 feet closer to the predators. Those remaining prey still try to remain hidden but must still be able to see some part of the predator at all times. All the predators remove their blindfolds and take turns naming the students they can see.
5. Play as many rounds as necessary until only one or two "prey" students are left. At that time, have the remaining students stand up and identify themselves. It may be surprising how close the prey got to the predators without being detected. Both the ability to remain undetected and to detect others are examples of successful adaptations. Introduce the term "adaptation."
6. Conduct the activity one or two more times.

7. Discuss what made predators and prey successful. Were they quiet, clever, camouflaged, or good listeners? Ask students to identify animals that have adapted and their characteristics to survive.

8. Ask the students how they could change to be more successful predators and prey. Some ideas that may come out are changing color (clothes), wearing clothing that does not stick to plants, being smaller, climbing a tree. Ask the students if animals can make any similar kinds of changes.

9. Talk about differences between physical and behavioral changes. Have the students identify which adaptations related to predators and prey are 1) behavioral, 2) which are physical, and 3) which involve both.

10. Ask students to summarize what they have learned. See if students can think of other examples of animal adaptations. Generalize that all animals adapt to survive. Have students read the background information on plants. Discuss adaptation. Have the students write down as many adaptations as they can find from the background information.

#### **EXTENSIONS:**

##### **White Sands Extension:**

1. Select an animal: pupfish, tarantula, lizard, darkling beetle, kit fox, gopher snake, kangaroo rat, apache pocket mouse, great horned owl.
2. Research the animal chosen and list the adaptations that allow the animal to live successfully at White Sands.
3. Draw this animal's ideal environment. How does the ideal environment differ from the environment where they live in the present?

##### **Aquatic Extensions:**

1. Imagine an underwater thicket. What would be the same, if anything, about the predator and prey relationships in an underwater thicket? What would be different, if anything? Draw two different underwater thickets – one in a pond

and one in an ocean. Include pictures of fish and other aquatic life that are hardly visible because of adaptations and pictures of others that are easy to see.

#### **2. Identify predators and prey in two or more aquatic environments**

#### **EVALUATION:**

1. Describe the importance of adaptations to animals. Give at least two examples of animal adaptations to White Sands National Monument.
2. Create a play or skit that shows how both predators and prey are adapted to survive. Using the White Sands National Monument Worksheet, have students match the adaptation to the appropriate picture.