Grand Teton

Title: Design an Animal

National Park Service
U.S. Department of the Interior

Grand Teton National Park
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Memorial Parkway

Essential Question/Objective:

1. Students will be introduced to four generalized plant communities (or "habitats") found within Grand Teton National Park. Students will hypothesize how animals living in each community are uniquely adapted to survive, and will design an imaginary animal adapted to live in one or more of the plant communities.

Background:

1. Review habitats of Grand Teton National Park and the climate and distinctive features of each: The **sagebrush habitat** is generally low in elevation and is the driest of the plant communities. Animals that live in the sagebrush are adapted to deal with extreme heat and to survive in open spaces with limited food and water options. The **forest habitat** is comprised of conifer and deciduous trees with the occasional meadow or stream. Animals that live in the sagebrush are adapted to hide in dense cover and use trees as sources of shelter or places to find food. The **wetland habitat** is the wettest plant community as is generally found at low elevations in the bottom of valleys and around lakes and rivers. Most animals utilize the wetland community at some point for drinking water, but the animals that live in this community are especially adapted to use water for survival. The **alpine habitat** consists of plants that live at high elevations at the tops of mountains. Water is generally scarce, and animals that are adapted to live in this community must deal with extremely cold temperatures, high winds, and a thick snowpack.

Grade Level: 1-3

Subject: Life Sciences

Setting: Classroom

Duration: 30-45 minutes

Common Core Standards:

Next Generation Science Standards:

K-ESS2-1, K-ESS2-2, K-2-ETS-2, 3-LS1-1, 3-LS3-2

Additional Standards:

NGSS Cross Cutting Relationships:

Patterns, Cause and Effect, Structure and Function

2. Examples of animals and adaptations: **North American pronghorn (sagebrush habitat)** - The pronghorn is the fastest land animal in North America and can run at sustained speeds of 40-50 miles per hour. Because there is little to hide behind in the sagebrush community, the pronghorn uses speed to outrun predators. It is even adapted to eat sagebrush, a plant most grazers find inedible but that is easy to find in this community. **American marten (forest habitat) -** The American marten (also called "pine marten") is a member of the weasel family that dens in hollow logs, stumps and under tree roots that are plentiful in the forest community. Its brown coat provides camouflage and its elongated body shape allows it maneuverability in the thick cover of the forest. It can also climb trees in order to escape potential predators and search for its own arboreal prey sources like the red squirrel. **North American Beaver (wetlands habitat)** – Beavers are members of the rodent family that are adapted for life in the water. They have webbed rear feet that allow them to swim and dive and can hold their breath for up to 15 minutes. Beavers also have large flat tails that they slap on the water to warn other beavers of potential predators. Beavers even make their homes in the water, either by building lodges of sticks or by digging holes into the bottom of riverbanks. **American pika (alpine habitat)** – This tiny member of the rabbit family lives in rocky debris in mountainous terrain. It survives long, cold winters at high elevations by burrowing into tunnels in the snowpack. It has a thick furry coat and relies on the insulation the deep snowpack provides

for warmth. During the summer months, it gathers stores of grasses called "haypiles" that provide food for the pika in the winter.

Preparation:

1. Prepare a variety of materials for allowing students to create their own animal. This could be egg cartons, scrap cardboard, scrap plastic, googly eyes, scrap fabric, markers, etc. If materials for a 3-D animal are not available, students can draw animals on paper with markers and/or colored pencils.
2. Print out attached pictures of habitats, descriptions, and animals that live in each.
3. Divide students into four groups, one group for each habitat.

Lesson Hook/Preview:

1. Begin by showing students the map of United States (use the attached graphic or one of your own). Have them identify where they live, and to describe as a class what the climate is like and what plants and animals live where they do. If they have not heard the term climate before take a moment to explain what a climate is (climate refers to a region's typical weather pattern and is determined by taking the averages of weather conditions in a specific region over many, many years) and how it can vary from place to place throughout the United States. Example: the northern United States is generally colder than the southern United States and the western United States is usually drier than the eastern United States.

Procedure:

1. Explain that animals' habitats look very different in different regions of the country based on the climate and type of plants that grow there. Have students think about their own climate, and animal habitats within it, and hypothesize what adaptations animals would need to survive.
2. Pass out Grand Teton National habitat pictures (one to each group) and explain that in preparation for talking with rangers at Grand Teton National Park, we are going to explore different animal habitats found in Grand Teton National Park and some of the animals that live there. Explain that animals have certain adaptations to help them survive in their specific habitat.
3. Have each group study the habitat in front of them and hypothesize why the animal associated with it chooses that habitat to live in based on their observations of the animal (this can be individual, think, pair share, or presented by the group to the class, one group at a time). Does the animal have camouflage to blend in with its surroundings? Does it have a thick fur coat? Is it adapted to hide under snow or in logs? Does it have long legs for running or webbed feet for swimming? Ask students if they can think of any other animals that might live in this habitat, and what observations they can make about the habitat lead them to believe an animal could survive there. If students are having trouble, give them examples: could a beaver from the wetland survive in the sagebrush habitat. Why not? Could a pronghorn survive in the alpine? Why not? (Sagebrush is too hot and doesn't provide water for the beaver while the alpine is too cold and might not have enough grass for the pronghorn).
4. Explain to students that they will now get the opportunity to invent their own animal with adaptations to survive in the habitat they were provided (you can also let them create adaptations to survive in other habitats if you would like) Have them think about the following questions:
   - What will their animal's name be?
   - What adaptations will your animal have?
   - What color will your animal be?
   - Will your animal have to survive extreme temperatures (hot or cold) in its habitat? How will it do this?
   - How will your animal get the resources (food, water, shelter) it needs all year long?
5. Allow students time to draw their animal and/or provide them with a variety of materials.

6. Share: group, partner, or process share.

Vocabulary

Adaptation
Climate
Habitat
Alpine
Sagebrush
Forest
Wetland

Sagebrush Habitat

- The driest plant habitat in Grand Teton National Park. Water is extremely limited.

- This habitat generally makes up the valley floor and plains.

- Very hot in the summertime, very cold, windy and snowy in the wintertime.

- Tress may be scarce, ground-cover plants like sagebrush and grasses are common.

North American Pronghorn (Sagebrush Habitat)

- Not related to antelope, although sometimes referred to as a "pronghorn antelope."

- Once widespread across the Great Plains, still found commonly in Wyoming.

- Fastest land animal in North American. Uses speed to outrun predators.

- Excellent eyesight.

- Usually lives in herds for at least part of its life.

- Able to digest sagebrush, a plant toxic to many other animals.

Forest Habitat

- Made up of thick, woody tree cover and places for animals to hide.

- Can contain deciduous trees (trees that have leaves), conifer trees (tress that have needles), or both.

- Generally contains some water.

- Hot in the wintertime, cold in the summertime.

- Generally contains some meadows or open, grassy spaces.

- In the West, wild fire plays an important role in naturally maintaining this habitat.

American Marten (Forest Habitat)

- Related to weasels

- Eats small animals such as voles, mice and squirrels

- Able to climb trees and fit under logs and branches

- Thick, soft fur coat that is prized by human trappers

- Males need large territories up to 500 acres. Females tend to have smaller territories between 200 and 300 acres.

Wetland Habitat

- Wettest habitat in Grand Teton National Park. Water is abundant.

- Contains plants that rely on water, like willows, cottonwood trees, and aquatic sedges.

- Hot in the wintertime, cold in the summertime.

- Water can freeze solid in wintertime if weather is cold enough.

North American Beaver (Wetland Habitat)

- Related to rodents.

- Eats herbaceous plants and some trees.

- Have waterproof fur, webbed feet for swimming, and a flat tail that is slapped on the water to warn other beavers of potential predators.

- Able to swim and dive.

- Build lodges to live in out of sticks, logs and mud.

- Construct dams to create habitat (deep pools) to live and feed in.

Alpine Habitat

- Extremely cold in the wintertime, cold to mild temperatures even in the middle of the summer.

  - High elevation. Few trees and plants are able to survive.

    - Windy and exposed.

    - Rocky and mountainous

    - Water is extremely limited.

  - Usually covered in tens of feet of snow in the wintertime

American Pika (Alpine Habitat)

- Related to rabbits.

- Eats high mountain grasses.

- Has thick fur.

- Stores food for winter in rock piles during the fall and summer.

- Uses rocks and tunnels under snow for shelter.

- Makes a high pitch "EEEEEP" call to alert other pikas of potential danger.

- Sensitive to warm temperatures.