



Variation and Adaptations Activity Guide Biodiversity Camp

What you need

- Activity Guide Worksheet, included in the final pages of this Activity Guide
- Scissors

Preparation

Observe the images of three different species of bear: polar bear, brown bear, and American black bear. Compare and contrast all three bear species. What is similar about them? What is different?



Polar Bear
Image from USFWS



Grizzly Bear, a Subspecies of Brown Bear
Image from USFWS



American Black Bear
Image from Eileen Hornbaker, USFWS

There are a lot of similarities between the three species of bear. For example, each species of bear has fur. There are also a lot of differences between the three species of bear. The fur of each species of bear is a different color! The polar bear has fur that appears white. The grizzly bear, a subspecies of brown bear, has brown fur. And the black bear has black fur. The color of fur of each species of bear indicates variation. One example of variety, or differences, between the bear species is their fur color.

What to do

Follow the instructions on and use the Activity Guide Worksheet to explore variation and adaptations!

What is happening?

Variation, such as the differences between fur color in bear species, can be studied to better understand adaptations. Adaptations are features that have changed over time that allow animals and other living things to survive their environment. So, for the three bear species, their fur color is an adaptation that has allowed them to survive their environment. There are many examples of adaptations. Adaptations, or features that have changed over time, include the webbed feet of a river otter that allow it to swim in water and the wide, bumpy teeth of a bison that allow it to graze on prairie grasses, which in turn allows prairie grasses like big bluestem to grow. Explore these adaptations and others in the Activity Guide Worksheet.



Variation and Adaptations Activity Guide Worksheet
Biodiversity Camp

Part 1.

Review the images of birds, mammals, insects, and plants, and carefully read the description for each image. Then, cut along the dashed lines and cut out the images for use in Part 2.

Birds



Great Blue Heron. The great blue heron has a unique beak shape. It uses its long, sharp beak to spear fish, frogs, and other prey. Its beak shape is an adaptation that allows it to survive its environment.

Image from Lee Karney, USFWS



Greater Prairie-Chicken. The greater prairie-chicken forages for food on the ground and uses its beak to eat seeds, grains, and insects, including grasshoppers. The shape of its beak is an adaptation that allows it to survive its environment.

Image from Dave Menke, USFWS



Wild Turkey. The wild turkey forages for food on the ground. This food includes acorns from a variety of oak trees. The shape of a wild turkey's beak is an adaptation that allows it to survive its environment.

Image from Matt Poole, USFWS

Mammals



American Bison. The American Bison grazes on plants like grasses and uses its wide, bumpy teeth to grind its food. As the bison feeds on grasses, it compacts the soil with its hooves. Its teeth are an adaptation that allow it to survive its environment.

Image from Ben Edwards, USFWS



Red Fox. The red fox has fur that is predominantly red. It also contains specks of brown. It needs this fur to camouflage, or blend in with its surroundings. The fur color of the red fox is an adaptation that allows it to survive in its environment.

Image from Lisa Hupp, USFWS



North American River Otter. The river otter has webbed feet. It needs these webbed feet to move quickly through water. The webbed feet of a river otter are an adaptation that allow it to survive its environment.

Image from Tom Koerner, USFWS

Insects



Dragonflies. Dragonflies hatch from eggs in water and live there as nymphs. As adults, dragonflies live near water. Dragonflies have several adaptations that allow them to survive in an aquatic environment while young.

Image from Sam Stukel, USFWS



Large-headed Grasshopper. The large-headed grasshopper lives in grasslands and eats grass. It has special mouthparts, known as mandibulate mouthparts, that allow the grasshopper to bite and chew food. These mouthparts are an adaptation that allow the grasshopper to survive its environment.

Image from Alyssa Canova, NPS



Yellowjackets. Yellowjackets have chewing mouthparts. They make paper-like nests by combining chewed-up wood fibers and saliva. Yellowjackets' mouthparts are an adaptation that allow yellowjackets to survive their environment.

Image from Insects Unlocked project at the University of Texas at Austin

Plants



Big Bluestem. Big bluestem is a grass with long, deep roots. It grows well in areas where the soil has been compacted by grazing animals, and it needs fire to grow. Big bluestem is adapted to grazing pressure and fire, which allows it to survive its environment.

Image from Ryan Hagerty, USFWS



Cattails. Cattails are found in aquatic environments. These plants have a complex root system. They have an air ventilation system that transports air to their roots. Cattails can grow in deep water, even if their roots are completely covered by water. The air ventilation system and root system are adaptations that allow cattails to survive their environment.

Image from Sheel Bansal, USGS



Chinkapin Oak. Chinkapin oak is a species of oak tree. It is a flowering plant that produces flowers and acorns. The production of flowers and acorns is an adaptation that allows the chinkapin oak to survive its environment.

Image from Ryan Hagerty, USFWS

Part 2.

Use the images you cut out from Part 1, and place them in the appropriate environment based on their adaptations by setting the image on top of the picture of the appropriate environment. There are three environments: a wetland, a prairie, and a forest. Place one bird, one mammal, one insect, and one plant in each environment. Hint: Turn the page to start the activity!

Wetland

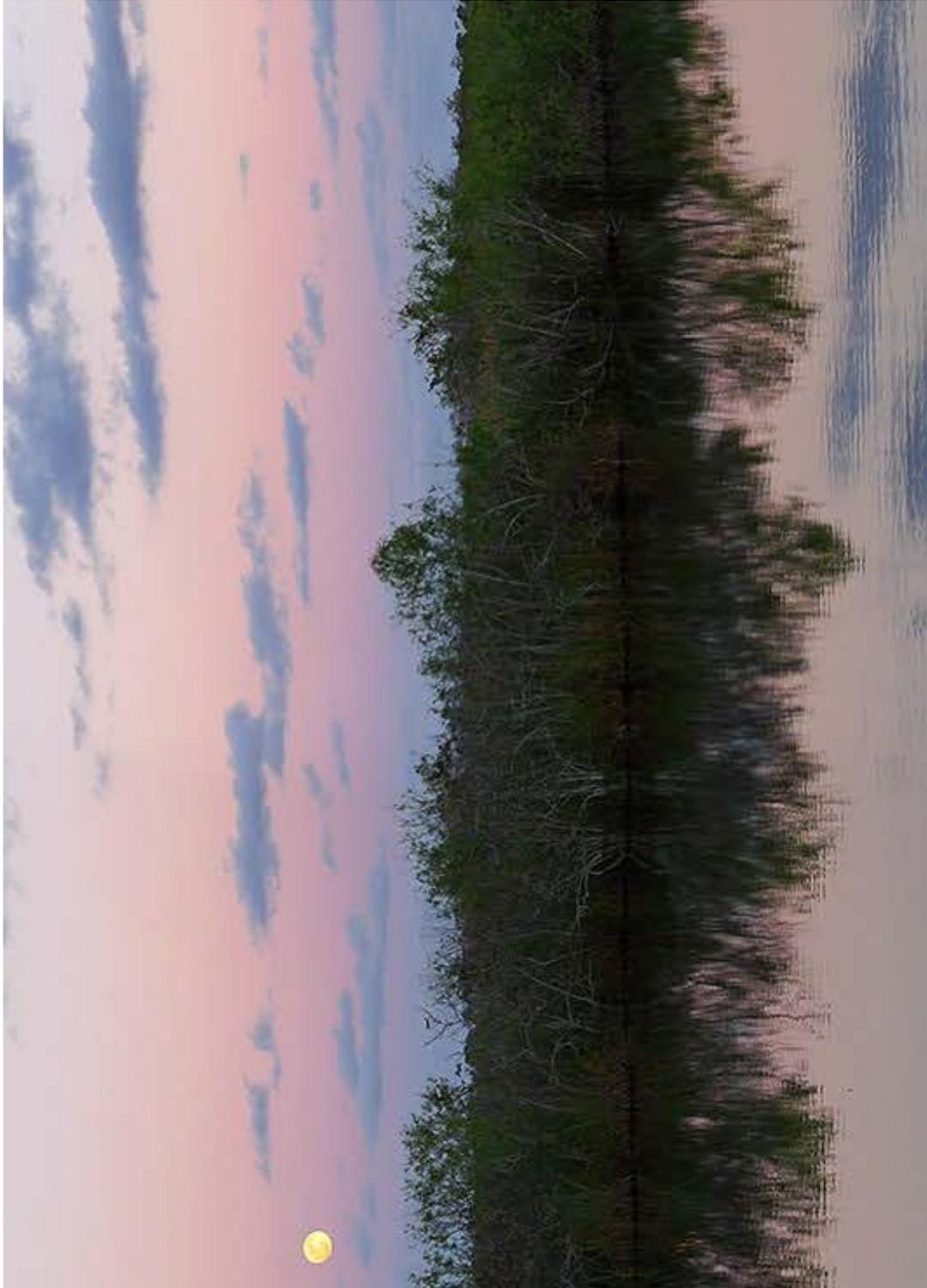


Image from Everglades National Park, NPS

Prairie



Image from NPS

Forest

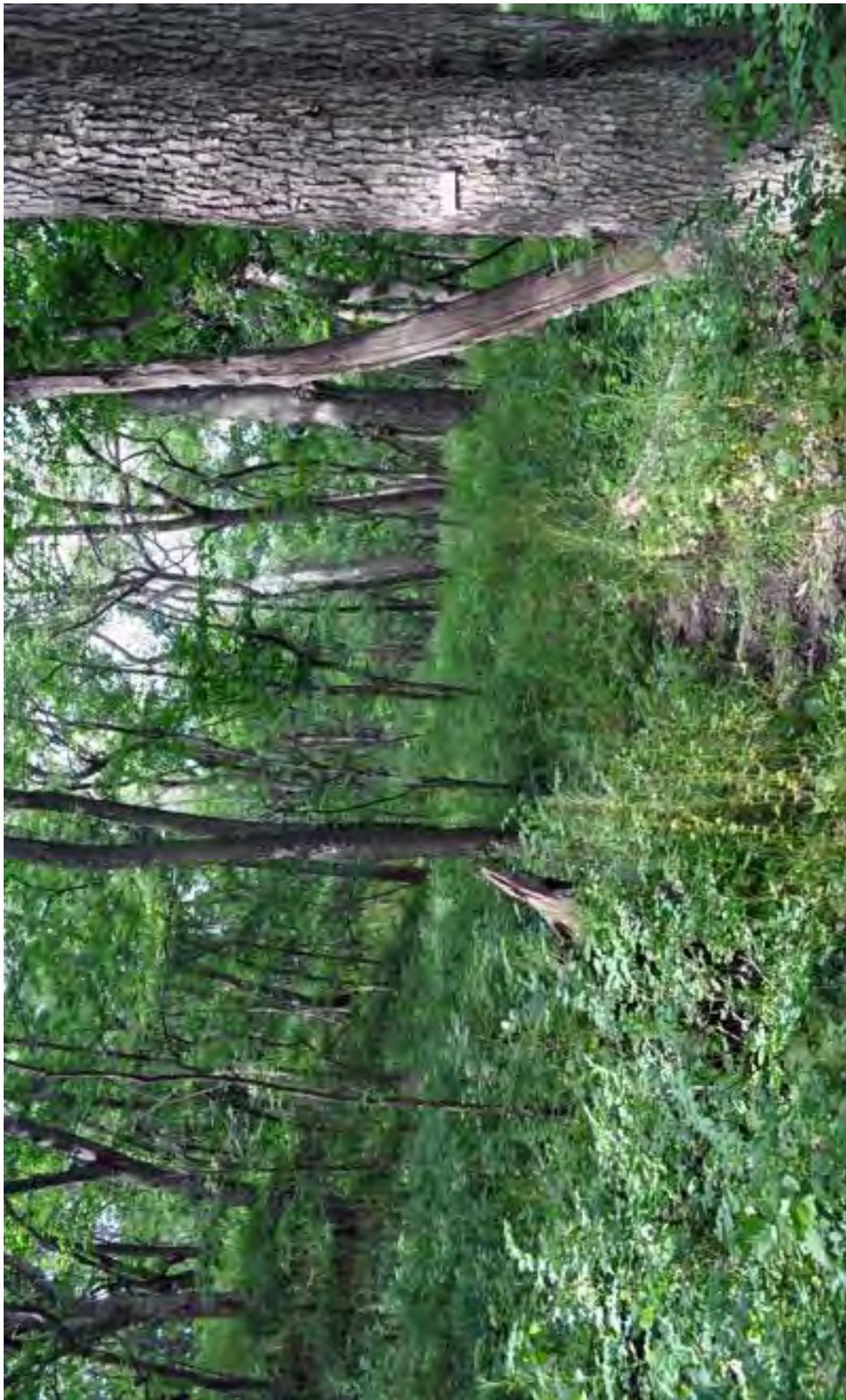


Image from Kansas Biological Survey, University of Kansas