

ANIMAL ADAPTATIONS

SURVIVAL IN THE WILD

Webbed feet, camouflaged fur, or spines on your back are all amazing ways that animals adapt to survive in the wild everyday. In this fun-filled hour, students will learn about adaptations, try on fun costumes, and see firsthand how three of our live non-releasable animals have adaptations that help them thrive in their specific habitats. After the presentation, students will be encouraged to create their own animals with adaptations that they make up! This program is designed for Kindergarten through 5th grade.

Equipment and Room Requirements

- Classroom or multi-purpose room space is fine.
- Chairs (or desks & chairs) for students or comfortable floor space.
- Multiple presentations can be done at a single location or in individual classrooms if 15 minutes is allowed between presentations
- No other equipment is needed.
- Group size maximum - 30. Groups of 25 or fewer are recommended for pre-K and Kindergarten classes.
- Teachers must be present in the room during the program.
- It is helpful to have a rolling cart available to help move boxes into the building and between classes.
- It will help our instructors if your students are wearing the nametags provided in this packet.

Note: Permits are required for most of the specimens (living and stuffed) that are used in Chewonki Traveling Natural History Programs and students are reminded of the legal limitations of private collections. All of our living animals are non-releasable because of prior injuries, confiscated, or were captive raised before arriving at Chewonki. No animals have been harmed or taken specifically for use in Chewonki programs.

Class Outline

Each presentation takes one full hour and is broken down into several engaging activities. The instructor will match the class' level of knowledge and adjust the level of the presentation accordingly. *No specific preparation is needed.* Any preparation or familiarity with animals and their adaptations will be incorporated into the presentation.

A. Introduction

1. What is a habitat?
2. What is an adaptation?

We will discuss three types of adaptations:
mouthparts, feet, and body coverings

B. Mouthparts

Students will help demonstrate four different kinds of mouthparts using costumes.

C. Live Animal Demonstration

1. Three of Chewonki's non-releasable animals will be shown throughout the program. It is the instructor's choice to decide which animals to bring. You can request a specific animal if it helps with your classroom learning goals.
2. With each animal we will discuss the mouthpart, feet and body covering of the animal and ask questions about where it lives, how it uses an adaptation to survive and what other specific adaptations we can observe.

D. Feet

Students will help demonstrate four different kinds of feet using costumes.

E. Live Animal Demonstration

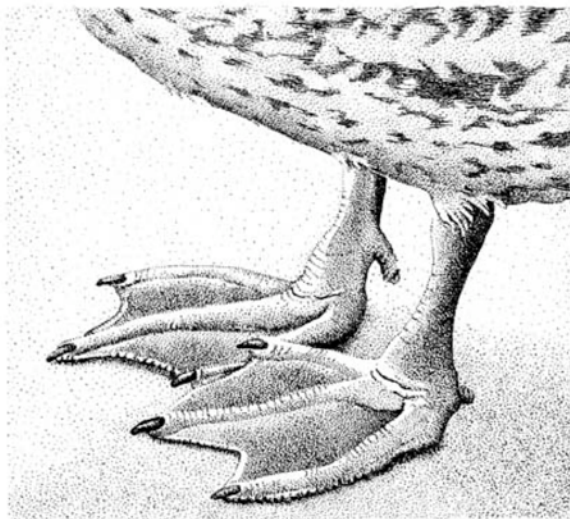
F. Body Covering

Students will help demonstrate five different kinds of body coverings using costumes.

G. Live Animal Demonstration

H. Wrap-up

1. We focus on continuing to investigate the adaptations of animals we see in the wild (or even at home). What adaptations can we observe? How do they help that animal to survive in its habitat?
2. Students will have the opportunity to handle the many specimens we bring to demonstrate the unique adaptations that different animals exhibit.



Animal Adaptations

Survival in the Wild

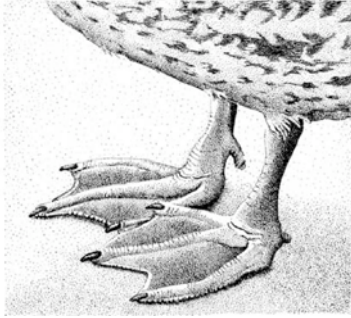
Chewonki's *Animal Adaptations* program explores the amazing ways that animals adapt to survive in the wild everyday like having webbed feet, camouflaged fur, and spines on their back. In this fun-filled hour, students will learn about adaptations, try on fun costumes, and see firsthand how three of our live non-releasable animals have adaptations that help them thrive in their specific habitats.

Presented by:



LOCATION: _____

DATE: _____ TIME: _____



PRESS RELEASE

Date:
Contact:

Chewonki presents “Animal Adaptations”

What: A one-hour program to explore the amazing adaptations that animals use to survive in their environment.

When:

Time:

Where:

Cost:

Presenter:

What is an adaptation? How do these adaptations help animals to survive in their specific habitats?

Chewonki’s **Animal Adaptations** program focuses on exploring and understanding the unique adaptations that animals use to survive in the wild every day. Through interactive activities using costumes and hands-on materials we will learn what an adaptation is and how it helps an animal to thrive in its specific habitat. Participants will also have the opportunity to observe and discuss the different adaptations of three of Chewonki’s resident non-releasable animals.

Vocabulary

- Adaptation** A behavior, physical feature, or other characteristic that helps an animal survive and make the most of its habitat. For example, turtles have a hard shell for protection from predators.
- Amphibian** A cold-blooded vertebrate with moist, sensitive skin that typically lays eggs in the water. Amphibians (derived from the Greek *amphibios* meaning both kinds of life) typically begin life in the water, then become air-breathing land animals as adults (there are exceptions). Salamanders, newts, frogs, toads, and caecilians are all examples of *amphibians*.
- Antennae** Jointed appendages on the heads of arthropods that are used to sense.
- Arthropods** Insects, millipedes, centipedes, crustaceans and arachnids all belong to the phylum Arthropoda. These invertebrate animals have jointed legs, a segmented body and an exoskeleton.
- Camouflage** Protective coloring or shape that helps an animal hide from its predators or prey.
- Carapace** The top portion of a turtle's shell.
- Carnivore** An animal that eats meat. Wolves, snakes, and owls are examples of *carnivores*.
- Constrictor** A snake that suffocates its prey by coiling around it and preventing it from taking a breath.
- Contour Feathers** The outer layer of feathers that cover a bird's body, wings, and tail. These feathers give the bird its characteristic appearance and help to keep the down feathers underneath dry.
- Crustacean** *Crustaceans* have a body that is broken up into segments, a pair of jointed legs per body section, a hard exoskeleton made of chitin, and two pairs of antennae. Lobsters, crayfish, crabs and shrimp are examples of this aquatic group of arthropods.
- Detritus** Organic matter or material such as decaying plants and animals. Often found on the forest floor or along a high tide line.
- Diurnal** Active and feeding during the day.
- Downy Feathers** Soft and fluffy feathers next to the body that provide insulation.

Echolocation	The sonar-like system used by dolphins, bats, and other animals to detect and locate objects by emitting high-pitched sounds that reflect off the object and return to the animal's ears or other sensory receptors.
Ectothermic	“Cold-blooded” – unable to internally maintain a constant body temperature. The body temperature of an <i>ectotherm</i> changes with the temperature of their surroundings. Reptiles, fish, amphibians and all invertebrates are <i>ectothermic</i> .
Endangered	A species of animal or plant whose population is very low and at risk of becoming extinct.
Endothermic	“Warm-blooded” – able to maintain a constant body temperature independent of the outside temperature. Mammals and birds are <i>endothermic</i> and can utilize food and/or shiver to produce heat in their bodies.
Environment	Everything that surrounds and affects an animal. The environment includes non-living things, such as water and air, and other living things.
Exoskeleton	A hard body covering (shell) found on the outside of arthropods.
Fur	A thick covering of hair on many mammals that protects and insulates them.
Flight Feathers	Long stiff feathers on the wings of a bird, which help with flying and steering.
Gills	Respiratory organs of most aquatic animals that breathe water to obtain oxygen.
Habitat	An animal's home or area where it lives.
Herbivore	An animal that eats only plant material. A moose is an example of an herbivore.
Insectivore	An animal that eats only insects. A big brown bat is an example of an insectivore.
Jacobson's Organ	A structure in the top of the snake's mouth that helps it smell its environment (scent is picked up with the tongue).
Mammal	An animal that is warm-blooded, has fur or hair, and bears live young and nourishes them with milk. Bears, mice, and whales are all examples of mammals.
Molt	To shed and replace. A bird will <i>molt</i> old feathers and new ones will grow.
Nocturnal	Active and feeding at night.
Omnivore	An animal that eats both plants and animals. Bears are examples of <i>omnivores</i> .

Pincers	Claws used to grasp or pinch. Animals like crayfish and crabs use their <i>pincers</i> to hold or catch food.
Proboscis	The long protruding mouth part of certain insects adapted for piercing or sucking. A butterfly uses a <i>proboscis</i> to drink nectar.
Plastron	The bottom of a turtle's shell.
Predator	An animal that hunts other animals for food.
Prey	An animal that is hunted by another animal for food.
Raptor	A predatory bird, typically with sharp talons, strong feet (for grasping prey), and a pointed curved beak (for tearing meat).
Reptile	A cold-blooded, dry-skinned vertebrate that usually has scaly skin and typically lays eggs on land. Lizards, turtles, crocodilians, snakes, and tuataras are the five groups of <i>reptiles</i> .
Roost	To sleep or a place where animals rest or sleep.
Scutes	An external horny plate or large scale (i.e. the belly scales of a snake or the scales on the carapace of a turtle).
Talons	The sharply pointed and curved claws of a raptor.
Tomium	The cutting edge of the mouth of a turtle, similar to a bird's beak.
Toxin	A poisonous substance that is produced by a plant or animal. Toxins are often used as a defense against predators. For example a millipede will excrete a toxin if it feels threatened.
Venom	A toxin (poison) that is used by animals for protection or hunting.
Webbed Feet	Feet that have skin attaching the toes. <i>Webbed feet</i> are specialized for swimming. Ducks, frogs, and beavers are all animals that have <i>webbed feet</i> .

Adaptations: What Are They All About?

Adaptations are any behavioral or physical characteristics of an animal that help it to survive in its environment. These characteristics fall into three main categories: body parts (e.g. feet, mouthparts), body coverings, and behaviors. Any or all of these types of adaptations play a critical role in the survival of an animal.

Adaptations can be either physical or behavioral. A *physical adaptation* is some type of structural modification made to a part of the body. A *behavioral adaptation* is something an animal does – how it acts – usually in response to some type of external stimulus. When you look at an animal, you can usually observe some of its adaptations – like what it is able to eat, how it moves, or how it may protect itself. Different animals have many different ways of trying to stay alive. Their adaptations are matched to their way of surviving. A group of animals often has its own set of general adaptations. These animal groups include: arthropods, fish, amphibians, reptiles, birds, and mammals. Some of these adaptations make it easy to identify with which group an animal belongs. A good example of an animal adaptation is the way in which an animal moves from one place to another.

Animals' adaptations have evolved to be what they are today. This means a long period of slow change resulted in an animal's adaptation(s). The spots on the snow leopard, for example, did not emerge overnight. Instead, this process took generation upon generation of snow leopards physically adapting to their environment for characteristic spot patterns to evolve. Those snow leopards with spot patterns were able to hide more successfully, therefore surviving longer than those without spots. This allowed the longer surviving snow leopards to reproduce and create more snow leopards with spot patterns like their own. Indeed, this process of change over time is the key to how many organisms develop adaptations. Some adaptations can arise quickly through genetic mutations; these mutations also may be deadly.

In the sections that follow, different types of distinctly visible adaptations and their importance will be discussed. Since behavioral adaptations are far more difficult to observe, they will not be focused on here. However, the visible adaptations mentioned are easy to recognize on most animals (even household pets) and should be identifiable and interesting to students.

Body Parts

Many animals have developed specific body parts adapted to survival in a certain environment. Among them are webbed feet, sharp claws, whiskers, sharp teeth, different beaks, wings, and hooves.

Webbed Feet

For most aquatic animals, swimming is a must. To aid swimming, many animals have adapted and evolved with webbed feet. Webbed feet help animals propel themselves through the water with ease. This can help the animal swim faster to catch prey or escape a predator. Also, if an animal has to swim long distances, webbed feet can help it save energy

so it can swim farther. Some animals with webbed feet include ducks, penguins, alligators, and otters.

Sharp Claws

Many land and sea animals alike have developed sharp claws. Sharp claws can be used for many different purposes. For instance, many herbivores use their sharp claws for digging for berries, roots, and herbs or burrowing for shelter. Animals that eat meat may use their claws for killing their prey or tearing meat from their kills. Also, claws can be used to increase traction to run faster or to climb higher. Other times, sharp claws can be used for defense. For some animals, showing of claws is enough warning for their predators or competitors to back off. There are many animals that have sharp claws including bears, bobcats, hawks, and lizards.

Hooves

Hooves are another body part that is an important adaptation for many large animals. In most cases, animals with hooves use their specially adapted feet to maneuver in a rocky environment. Hooves, which are made of the same substance (keratin) that makes up our toenails, protect the feet of these animals and allow for greater mobility than unprotected feet. Many animals with hooves are very fast runners because they are effectively running on their tiptoes rather than their whole foot. Their speed helps them to outrun predators. Animals with hooves include deer, caribou, mountain goats, and horses.

Sharp Teeth

One of the most visible adaptations on many animals, sharp teeth helps an animal eat! Found primarily on meat-eating animals (carnivores and omnivores), sharp teeth are used mainly for the tearing and chewing of an animal's prey. These teeth are very different from the flat teeth that plant-eaters, or herbivores have developed to grind up plant matter. Sharp teeth can serve another purpose: defense. In some animals, bearing a large set of sharp teeth can show power or fear. Examples of animals with sharp teeth include bears, coyotes, raccoons, and alligators.

Whiskers

Although not usually thought of as an adaptation, whiskers serve an important purpose for many animals. In most cases, whiskers around the face, specifically the mouth area, help the animal feel its way through tight spots. In a way, they serve as "feelers," telling the animal whether or not it can fit into a specific area. One example is the Virginia Opossum, which has four rows of whiskers. The whiskers are used to help feel their way through narrow areas and to sense prey. Many mammals have whiskers from mice to beavers to walrus.

Different Beaks

Just as in the case of sharp teeth, beaks are often an adaptation used to help an animal eat. However, beaks can be a feature of birds that are carnivores, herbivores, insectivores, frugivores, nectarivores, and so on. For instance, the large beak of the toucan has been adapted to help it grab and crack open large nuts and fruits. In the case of the bald eagle, a

large sharp, hooked beak is used to tear meat. Hummingbirds have long skinny beaks that they use to stick into the flutes of flowers and drink nectar.

Wings/Flying

Wings are another highly visible adaptation on many animals. Although most think of birds when it comes to wings, other animals like bats also have wings that help them fly around and hunt insects. Animals like the golden eagle and peregrine falcon can reach speeds up to and above 60 miles per hour in flight. This speedy flight is used to attack and catch prey. Other birds, like the belted kingfisher, do not reach such high speeds, but still use their wings to travel from place to place and to hunt for fish. Finally, the penguin does not use its wings to fly at all. Instead, it uses its wings as flippers to move through the water.

Body Coverings

An animal's body covering is one clearly visible adaptation. Body coverings help to protect animals in diverse environments ~ from the land to the water, from the arctic to the desert. Mammals have hair, or fur, that helps insulate their bodies. It keeps them warm in winter and can protect specific areas of the body, like eyelashes protecting the eyes. Some mammals have different coverings: the armadillo has plates, the porcupine has quills, and naked skin covers the dolphin. All of these coverings help these mammals to survive in the different conditions in which they live. Birds also have a very protective covering: feathers. The feathers keep the bird warm in winter, help it fly or swim, and help it stay waterproof.

Amphibians and reptiles have body coverings that protect them as well. Amphibians have moist, slick skin that is well suited for the water. Reptiles have tough, dry skin covered in scales. Insects, such as the cockroach, have a hard outer shell called an exoskeleton. These hard coverings enable cockroaches to squeeze into very small places, which helps them to find food and shelter. Many insects build nests (a behavioral adaptation) or cocoons (behavioral and structural adaptation) for the winter because their body coverings alone do not permit them to adjust to the cold. Many insects also have other adaptations included in their body coverings like cells that sense light and pigments that allow some insects to change colors in order to hide themselves from predators.

Striped Fur

Striped fur can be one variation of a special adaptation called camouflage. Striped fur, in most cases, helps animals blend into their environment. This helps the animal in several ways, including hiding from predators and sneaking up on prey. Striped fur, as in the case of a tiger's vertical stripes, serves the animal by helping it match the surrounding vegetation, thus making it nearly invisible to other animals. In other animals, like the skunk, the stripes serve as a warning to predators. In this way, the stripes serve as a defense mechanism.

Brightly Colored Feathers

Found mostly in tropical rainforests, birds have brightly colored feathers as an adaptive body covering. Brightly colored feathers can serve several purposes, including camouflage, defense, and attracting mates. In some parts of the rainforest, the macaw and its brightly

colored feathers can hide among similarly brightly colored plants and flowers. The male mallard duck uses its bright feathers for another purpose: attracting a mate. In contrast to the male, the female mallard has very dull colored feathers. This feature, common among female birds of most species, helps females hide while guarding their nest and protecting their young.

Spotted Fur

Another adaptive type of body coloring is spotted fur. Spotted fur is similar to striped fur in that it serves as camouflage. Many animals with spotted fur live in heavily wooded forest areas. One example is the jaguar, which lives in the rainforest. The jaguar's spotted fur helps it blend in with the small patches of sun that reach the rain-forest floor. These patches, mixed in with the shade, produce an effect that highly resembles a jaguar's coat. Another animal with spotted fur is the snow leopard. The snow leopard, with a white coat and black spots, lives in wooded areas as well, using its coat to hide among the trees and snow.

Scales

One final type of body covering is scales. Scales serve a purpose different than that of fur and feathers. Scales serve mainly to protect a reptile from the environment. For instance, anacondas and other snakes have scales to protect their bodies from the variety of terrain they encounter. In the case of the anaconda, its habitat is largely made up of water. In the case of other snakes, the climate may be dry and the land sandy and rocky; so they cannot afford to lose water from their body. Scales help to keep that water inside their body. Scales help protect the body of the animal in an instance where skin, fur, or feathers would become damaged or destroyed. The scales on the underside of a snake are called scutes. These scutes are what allow the snake to slither from place to place. Other animals with scales include turtles, alligators, and lizards.

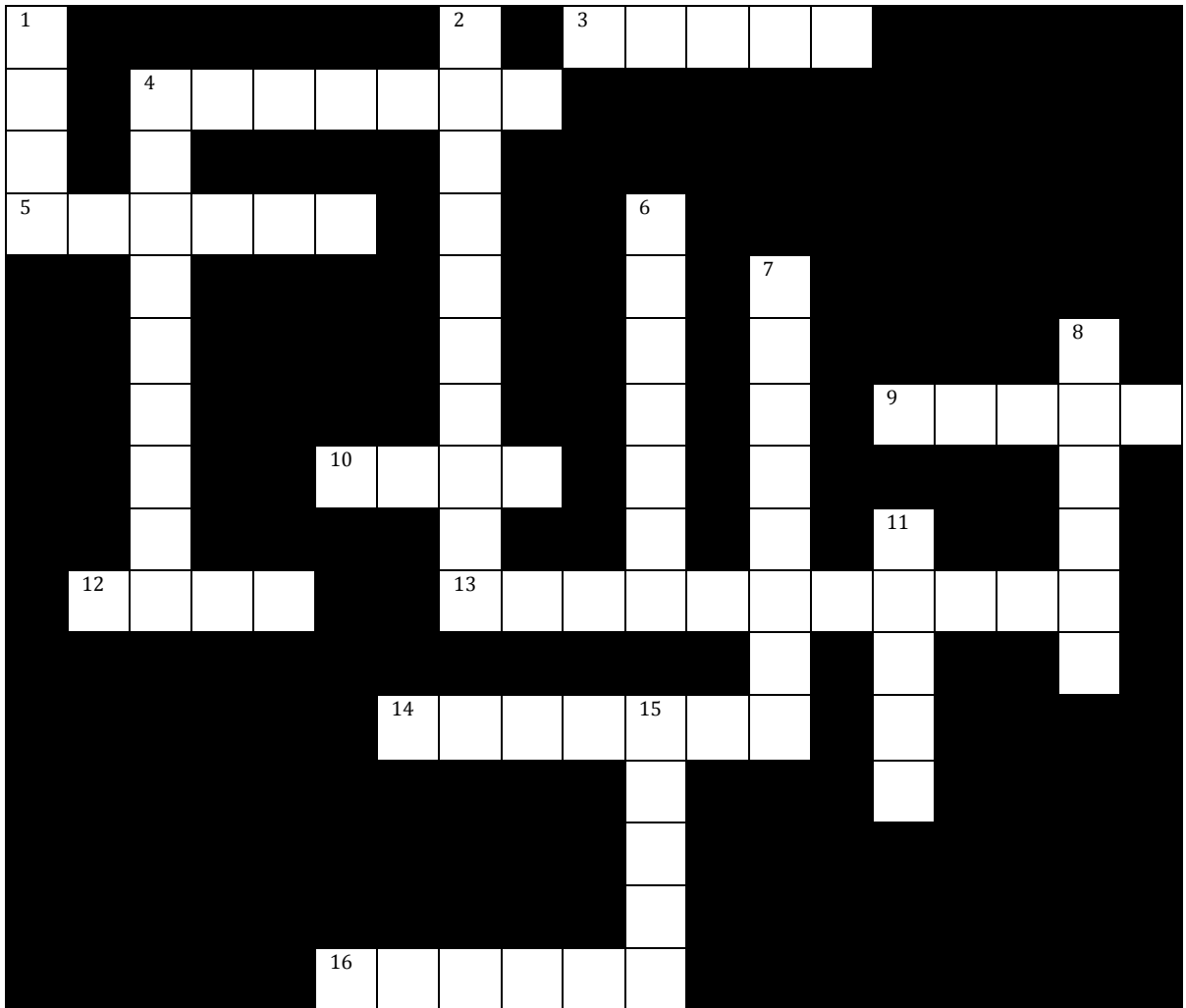
(Source: Zoological Society of Milwaukee County <http://www.zoosociety.org/>)

Amazing Adaptations Word Search

P R H Y R X T R S L S A S R S
M R N G T Y O C J F U D R Q W
A Y O K H T A I M C R A E H A
K W A T A L Q S A S V P H N L
H E J D E W H M W I I T T F C
B T E S W C O N I O V A A Z T
B R E D F U T P D L E T E W Z
P T E E F D E B B E W I F E Z
S L H L T S L L I G Q O C Q V
Q H A Q I P R E Y U A N A R T
M G K I O S R H A B I T A T W
E O C F I P N A J U A C I F U
F T N R K S X U H P B K T P J
R U T E K Y K J M S G E I Y Z
P L R R V V L X L F H P Y J F

ADAPTATION
BEAK
CAMOUFLAGE
CLAWS
FEATHERS
FUR
GILLS
HABITAT

PROTECT
SCALES
SHARP TEETH
SURVIVE
VENOM
WEBBED FEET
PREDATOR
PREY



Across

- 3. Some animals that are adapted to live in water use these to breathe
- 4. An adaptation is a behavior or physical feature that helps an animal to survive in its _____
- 5. This animal has a shell that it will hide inside when it feels threatened
- 9. Animals that have webbed feet are adapted to live in a habitat in or near _____
- 10. These kinds of teeth are adapted to eat plants
- 12. This mouthpart of a bird can come in many different shapes and sizes depending on what the bird eats
- 13. Arthropods have this hard outside body covering
- 14. Some animals have long sticky tongues that may use to eat this kind of food
- 16. Animals that have this protective body covering include snakes, turtles, and alligators

Down

- 1. Animals that have sharp pointy teeth are adapted to eat this kind of food
- 2. Animals often hide from predators or prey by using _____
- 4. An animal that eats only plant material is called what?
- 6. These animals have fur on their body to keep them warm, dry, and help camouflage
- 7. Birds have many layers of _____ to keep them warm, dry and help with camouflage
- 8. Some animals have quills or spikes on their body to _____ against predators
- 11. Some animals inject their prey with _____ by biting or stinging
- 15. Feet that have _____ are good for climbing, digging, or catching slippery prey

Answers to Crossword

Across

3. Gills
4. Habitat
5. Turtle
9. Water
10. Flat
12. Beak
13. Exoskeleton
14. Insects
16. Scales

Down

1. Meat
2. Camouflage
4. Herbivore
6. Mammals
7. Feathers
8. Defend
11. Venom
15. Claws

Answers to Word Search

P R H Y R X T R S L S A S R S
M R N G T Y O C J F U D R Q W
A Y O K H T A I M C R A E H A
K W A T A L Q S A S V P H N L
H E J D E W H M W I I T T F C
B T E S W C O N I O V A A Z T
B R E D F U T P D L E T E W Z
P T E E F D E B B E W I F E Z
S L H L T S L L I G Q O C Q V
Q H A Q I P R E Y U A N A R T
M G K I O S R H A B I T A T W
E O C F I P N A J U A C I F U
F T N R K S X U H P B K T P J
R U T E K Y K J M S G E I Y Z
P L R R V V L X L F H P Y J F

Diagonal in **RED**

Horizontal and Vertical in **BLUE**

Creative Animal Adaptations

Using both writing and drawing, students can create and describe their own imaginative animal. This activity can be adapted to be very basic for younger students or more challenging for older students.

Materials:

This activity requires paper and pencil, but markers, crayons, paints, sculpting clay, construction paper and glue, or papier maché could also be utilized to bring the created animals to life.

Procedure:

Explain to the students that they will each be designing their own original animal that is adapted to its habitat. Each student should consider the following –

Habitat (Where does it live?)

Body Covering (What does it look like? Does it have fur, scales, feathers, quills...?)

Mouthparts (What does it eat? Does it eat with flat teeth, sharp teeth, a beak, a long tongue...?)

Movement (How does your animal travel? Does it have feet, wings, flippers...?)

Other questions could include: Is your animal male or female? How does it raise its young? How does it defend itself against predators?

Once they have considered these questions, have the students name their animal and create their own original drawing (or painting, sculpture, mobile, collage, etc.).

Camouflage in the Classroom

Objective:

Students will demonstrate their understanding of camouflage by designing a butterfly that blends into a classroom "habitat."

Materials:

- Colored toothpicks or paper clips
- An outdoor grassy area or large piece of fabric or Astroturf
- Paper butterfly patterns for each student
- Markers, crayons, or colored pencils

Instructions:

1. Begin the lesson by presenting the students with a box of toothpicks or paper clips in assorted colors.
2. Count how many toothpicks or paper clips there are of each color. Write the total of each on the blackboard. (Be sure to have green toothpicks in your box.)
3. Spread the colored items randomly over a large area of green grass. (If you don't have a grassy area at your school, use a patch of bare earth with some tan toothpicks. OR, use a large piece of fabric that matches the color of the toothpicks.)
4. Give the students 10 seconds to collect as many colored items as they can find.
5. Count the number of each colored item that the students retrieved. Compare this to your original count. Which color items were the easiest to spot and collect? Which were less obvious? Why?
6. Introduce the concept of camouflage as an animal adaptation. Explain that many animals have colors or markings on their fur, feathers, scales, or skin that enable them to blend into their habitat (the place where the animal lives). Ask the students, "How might camouflage help an animal to survive?" Can they think of any examples? (A motionless green frog at the edge of a pond is almost impossible for predators and prey to spot. The drab feathers of most female birds help them go unnoticed as they sit on their eggs. The snowshoe hare changes color with the season, becoming white in winter and brown in summer.)

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Student Activity:

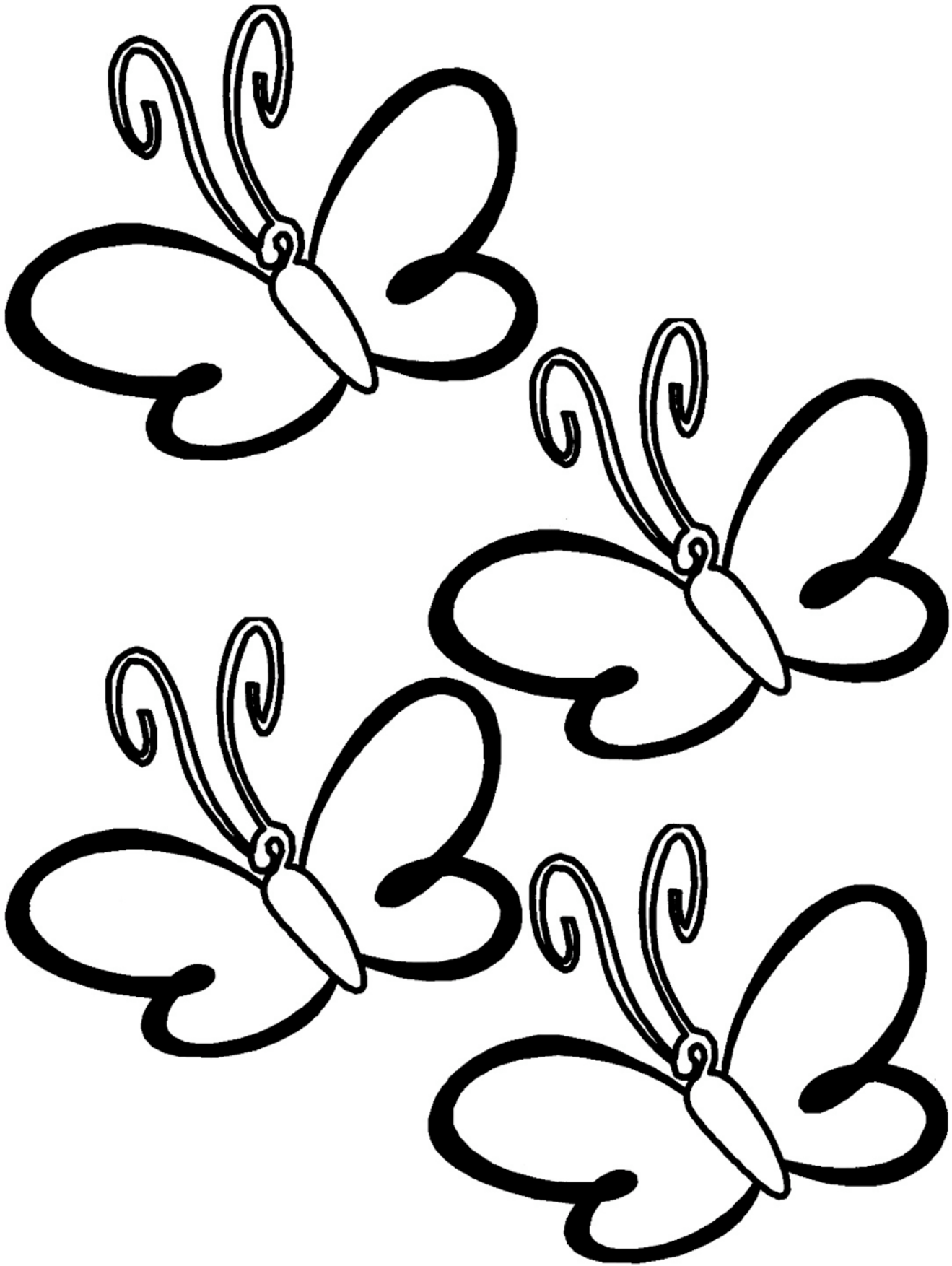
1. Give each student a copy of the butterfly pattern.
2. Ask the students to pretend your classroom is a butterfly habitat. Have each student look around the room and select a specific home or habitat for his or her individual butterfly.
3. Have each student color his/her butterfly pattern with markers, crayons, or colored pencils so that it will be camouflaged in this habitat.
4. Ask your students to place the butterflies in their habitat without burying them. The butterflies must be out in the open, but well camouflaged.
5. Invite students from another class to see how many of your butterflies they can find.

Extensions:

Sometimes an animal's coloration does the opposite of camouflage. Instead, its markings or color patterns may call attention to the animal. Coloration may issue a warning to other species (for example, the bright colors of the South American poison arrow frog warns possible predators that these amphibians are not good to eat), or help advertise for a mate (male peacocks use their impressive tail display to attract females.)

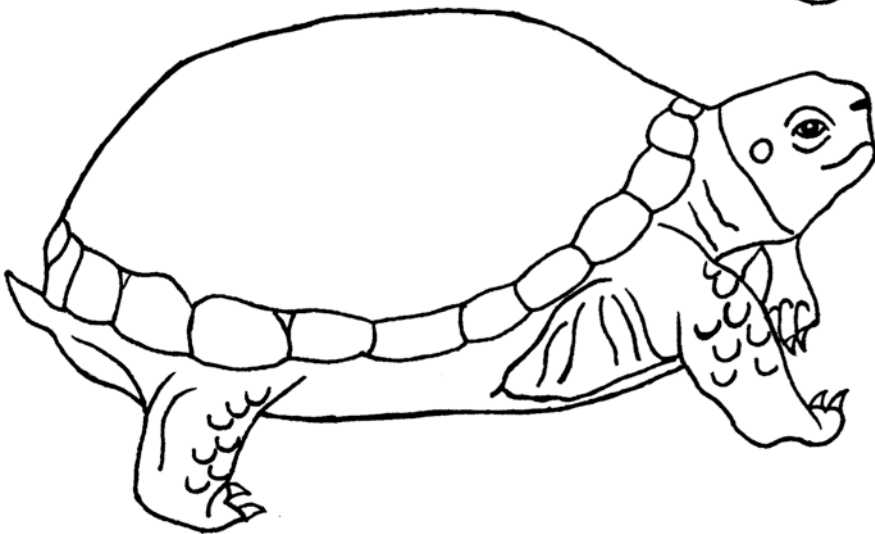
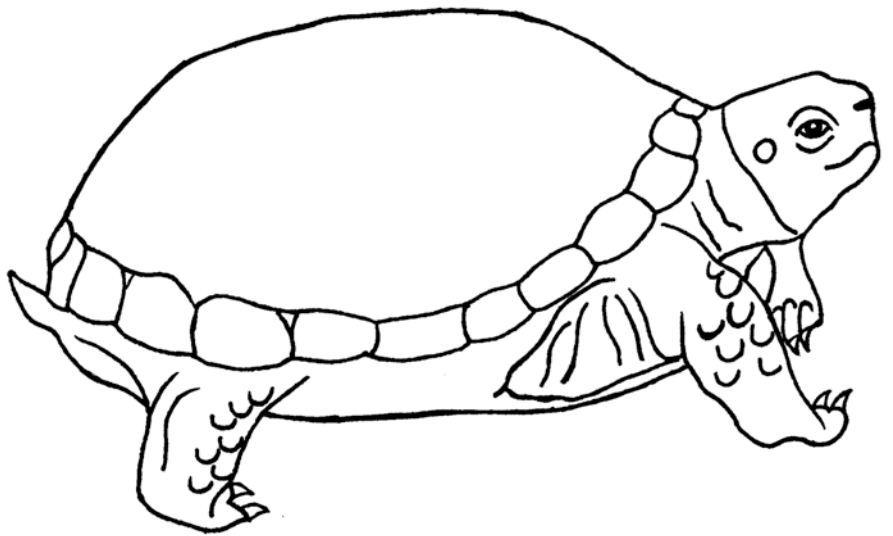
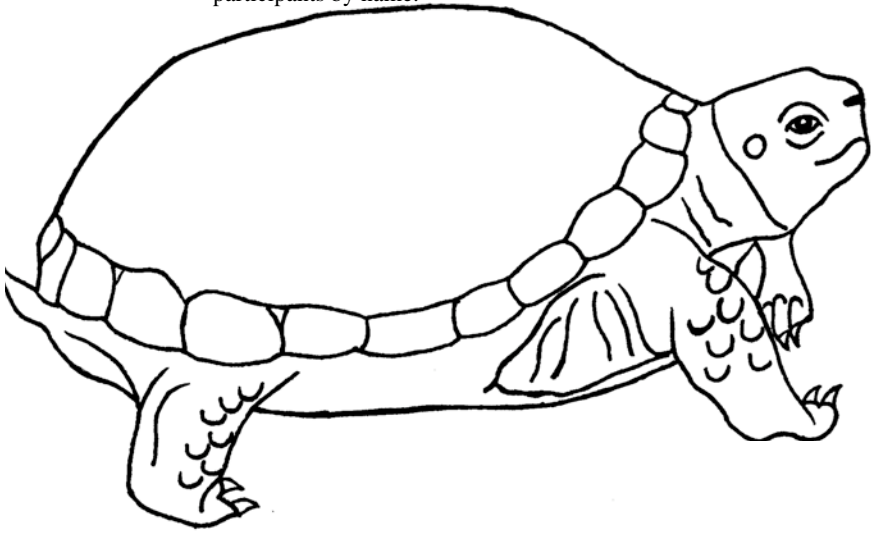
Repeat the Classroom Camouflage activity by having students design butterflies whose coloration does not blend into their surroundings. Since they cannot hide from view, what methods might each of these butterflies use to protect itself from predators? What are some of the advantages and disadvantages of camouflage compared to advertising or warning coloration?

(Source: Los Angeles Zoo Web site: <http://www.lazoo.org/camo.htm>)



Box Turtle Name Tags

Photocopy this page and cut out the Box Turtle nametags for your participants to wear! Nametags worn during a presentation help to excite students about animal adaptations and make it easier for the presenter to involve the participants by name.



Recommended Websites

This list of recommended websites contains information pertaining to the program you have ordered. These websites are not associated with the Chewonki Foundation and we are not responsible for the content or advertising found therein.

Brain Pop: <http://www.brainpopjr.com/science/animals/>

Notes: This is a fantastic interactive website that offers informative videos, games, activities, and more. However, it does require either a membership or trial membership.

DLTK's Crafts for Kids: <http://www.dltk-kids.com/animals/index.html>

Notes: Directory of animal crafts, activities, and projects that you can search by animal or habitat.

The Educator's Reference Desk: <http://www.eduref.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Animals/ANM0116.html>

Notes: Great hands-on activity "focus on bird beaks" designed to help students explore animal adaptations, namely the shape of a bird's beak in relation to the food they eat.

National Geographic Animals: <http://animals.nationalgeographic.com/animals/>

Notes: Great website for students who want to learn more about specific animals or cool new animal news.

Smithsonian National Zoological Park: <http://nationalzoo.si.edu/Audiences/kids/default.cfm>

Notes: Fun online activities and animal facts as well as printable coloring pages.

Teacher Vision: <http://www.teachervision.fen.com/ecological-adaptation/animals/6989.html>

Notes: Wonderful website provides teacher resources including lesson plans, activities, projects and printables.

University of Missouri eThemes: <http://www.emints.org/ethemes/resources/S00000219.shtml>

Notes: Great source for teachers to find lessons, activities, and games all related to animal adaptations.

Utah Education Network: <http://www.uen.org/themepark/habitat/animal.shtml>

Notes: This website provides more links and resources to help teachers support a unit on animals and adaptations.

Suggested Readings

Anderson, Sheila, 2010. What Can Live in a Desert? Lerner Classroom: Minneapolis, MN.

Notes: This book represents one in a series that looks at specific habitats and the animals that are adapted to live there. Great for students aged 4-8. Check out the forest, lake, grassland and others.

Chinery, Michael, 2008. Animal Habitats. Southwater Publishing.

Notes: This book brings to life the many different habitats around the world including grasslands, forests, rivers, and oceans and how animals have evolved to live in each special place.

Chinery, Michael, 2008. Birth and Baby Animals. Southwater Publishing.

Notes: Explore the role of adaptation in birth and raising young. This book examines insects, reptiles, birds, and mammals and follows them from birth until young adulthood.

Kalman, Bobbie and Walker, Niki, 2000. How Do Animals Adapt? Crabtree Publishing: New York, NY.

Notes: Many colorful photographs in this book help to illustrate the creative adaptations that different animals use to survive. This is a great book to read aloud to younger students or for older students to read on their own. Includes a glossary of scientific terms in the back.

Otto, Carolyn B. and Lloyd, Megan, 1996. What Color is Camouflage? Harper-Collins: New York, NY.

Notes: This is a great book for younger students to understand camouflage and the different animals that use it.

Settel, Joanne, 1999. Exploding Ants: Amazing Facts About How Animals Adapt. Atheneum: New York, NY.

Notes: Exciting book for students aged 9-12 explains many amazing and surprising things animals do to survive. This book uses the “gross-out” factor to its advantage and draws readers in to learn about these unusual behaviors and strategies.

Silverstein, Alan, Silverstein, Virginia B. Nunn, Laura Silverstein, 2007. Adaptation. 21st Century: Brookfield, CT.

Notes: If you are looking for a more comprehensive book that discusses adaptation this is it. Great for a teacher resource or for older students, this book uses more text to explain the how and why of animal adaptations while still including cool facts and examples.