Lesson 1: Adaptations For Survival

Animal Adaptations & Behavior

Name: _____

Date: _____

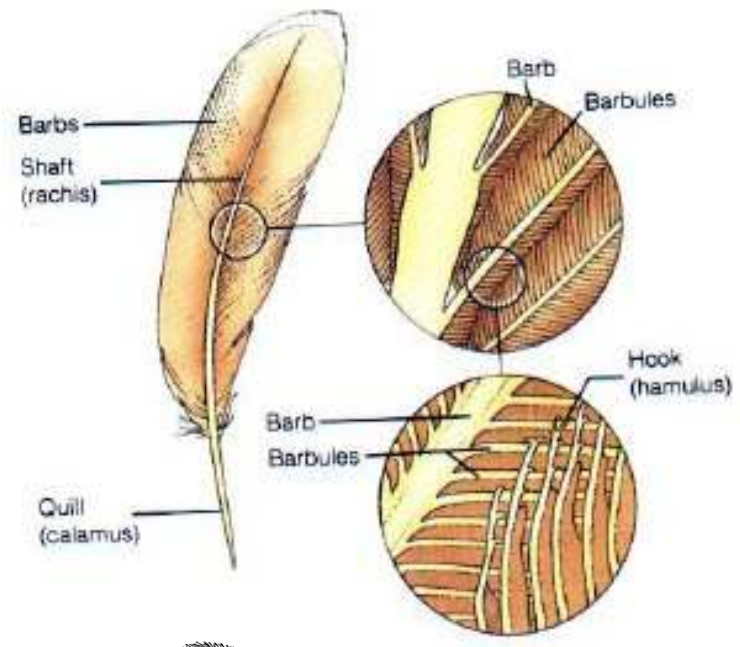
Adaptations for Survival
Lesson 1 Vocabulary

⇒ **Adaptation:** anything that helps an animal live in its environment
- can include body coverings and body parts

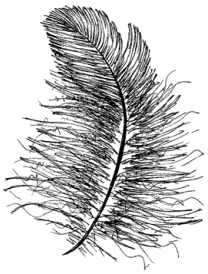
⇒ **Skin:** the outer covering of an animal's body
- forms an outer covering for protection of body organs
- Keeps the bodies of some animals at the correct temperature
- Sensitive to outside temperature change and pain
- Can hold water or release it depending on an animal's needs (amphibians)

⇒ **Scales:** small, thin plates that are part of the skin covering (some fish and reptiles)
- can be smooth, rough, or pointed
- added protection for the skin

⇒ **Feathers:** strong, lightweight outer body covering of birds
- parts of the feather lock together (hooklets) so hardly any air can pass through
- covered with a layer of body oil (oil waterproofs birds' feathers, keep a bird's skin dry, keep its body temperature correct, and help the animal float)



⇒ **Down:** soft, fluffy feathers on baby birds
- in older birds, down feathers are found close to the skin
- keep the bird's body at the correct temperature



down feather

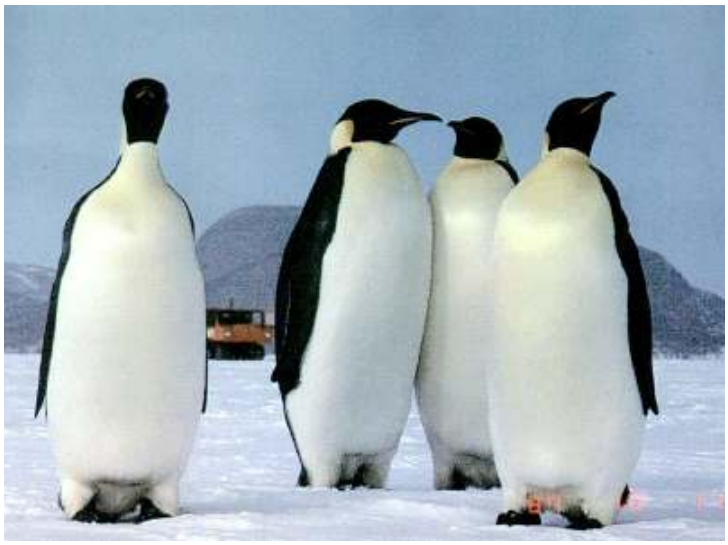
hooklet

⇒ **Fur:** covering of thick, soft hair
- thick fur traps air close to the animals body
- the air is warmed by the animals body, keeps the animal's body at the correct temperature

BODY PARTS FOR PROTECTION
Feet, Wings, & Mouthparts

⇒ **Feet & Wings**
- Find food to live in its environment (moves from place to place)
- **Examples:**
  - Badger: crawl around searching for food, have sharp teeth and claws for digging and tearing
  - Birds: fly in the air and some dive and swim in water
  - Eagle: large broad wings for soaring
  - Quail: stubby wings for quick, rapid flight
  - Penguin: flipper like wings for swimming
  - Sea lion: swallow food whole, flippers for swimming to catch food
  - Cat: padded feet for quietness, retractable claws for catching and tearing food
- Adapted for protection

badger



penguins

⇒ **Mouth Parts**

- Show adaptations for survival
- **Bill:** mouthpart of a bird
- **Examples:**
  - Woodpecker: strong, pointed bills, look like chisels, chisel into bark to find food
  - Finch: hard pointed bill like nutcrackers, eat seeds
  - Heron: long, spear-like bill to spear its food
  - Pelican: long, scoop-like bill to scoop its food
- **Teeth:** mouthpart that are used to tear, crush, and grind food
- **Examples:**
  - Cats, wolves, and dogs have pointed teeth to tear and crush meat they eat.
  - Giraffes, horses, and sheep have flat teeth to grind plants
  - Beaver has front teeth that keep growing longer, don't get longer because they gnaw and eat the inner bark of trees
  - A snake has curved teeth toward the back of its mouth, hold the food in the snake's mouth until the food is swallowed, snake can't chew its food, it stretches its jaw very wide to swallow its food whole

Woodpecker

Finch

Pelican

Heron

SUMMARY

- An animal must be able to protect itself and find food in order to live in its environment.
- Anything that helps and animal live in its environment is called an adaptation.
- Adaptations include body coverings and body parts.

What Adaptations Can You Observe? Activity

Materials:

construction paper	animal picture
index card	pencil
scissors	glue

What to do:

1. Cut out and paste your animal picture to your piece of construction paper.
2. On your index card write the following headings:
   - *Name Of Animal (top line)
   - *Environment (skip two lines)
   - *Adaptations: (skip one line)
3. Fill in the information on the index card
4. Glue the completed index card under the picture of your animal

What did you learn?

1. How does its body covering adapt the animal to its environment?

   _____
   _____
   _____

2. What body parts does your animal use for food getting? _____

   _____
   _____

What did you learn?

1. What body parts are used for both food getting and protection?

   _____
   _____
   _____

2. Explain how your animal could survive in another environment.

   _____
   _____
   _____

Feathers

Feathers cover the bodies of birds, which are the only animals with this kind of covering. Other vertebrates (animals with backbones) are covered with fur (mammals), scales (reptiles, fish) or smooth bare skin amphibians). Many invertebrates, such as mollusks, or crustaceans, have hard coverings like shells (snails, clams, oysters) or exoskeletons (lobsters, crabs, and insects).

Some scientists believe that feathers evolved from scales-such as those covering retiles. In fact, the feet of all birds and the legs of some are covered with scales instead of feathers.

Feathers protect birds by keeping their bodies warm. The feathers hold in body heat, insulating a bird's body against cold, outside air. In very cold weather, birds fluff their feathers to trap even more body warmth in the air space between feathers. Feathers also shed water, acting like "raincoats" for birds.

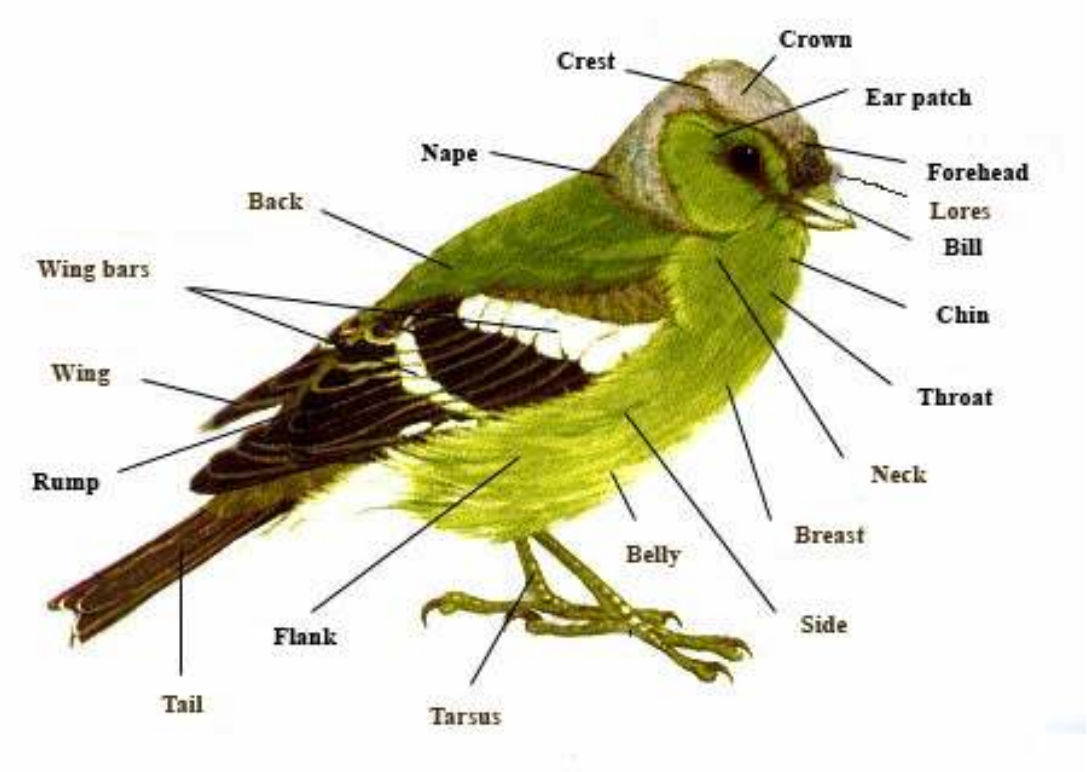
Colors and patterns of feathers provide protection from enemies through camouflage or warning coloration. These colors are used in the mating process, also.

Feathers greatly assist in fight, an adaptation, which allow birds to escape predators, protect their young by nesting high above the ground, or migrate to a different habitat to escape cold weather, breed or search for food.

Feathers consist of several parts. The main part of a feather is called the van, which is divided into two different parts that spread out from a hollow shaft running down the center of the feather.

Wings and Flight

Flight enables birds to move quickly from place to place. Many parts of a bird's body are adapted for flight, allowing it to resist the pull of gravity and move easily through the air. Its bones are hollow to reduce body weight. Its feathers are extremely light. It has no teeth inside its mouth to add extra weight. Its body has a streamlined shape to provide the least amount of wind resistance during flight. It has no outer ear to interfere with air currents. A bird's opened wings have an airfoil shape (curved upper surface, flat underneath) that keeps the bird aloft its boy has 175 different muscles, mainly in its chest, used to move its wings through the air. While all birds have wings, not are all capable of flight. An ostrich is too heavy to fly and relies on running instead. The penguin has small wings shaped like paddles and are used for swimming.



Feather Features Experiment

Materials:

feather	water
magnifying glass	strip of paper
eyedropper	paper towel

Question: What special features do feathers have to help a bird live in its environment? (land, air, water)

Hypothesis: I think that _____

_____

_____

_____

Procedure:

1. Examine a feather with a magnifying glass. Find the barbs, hooklets, and shaft. Rub them forwards and backwards. See how the parts lock together.

Observation_____

_____

_____

2. Blow on the strip of paper.

Observation_____

_____

3. With a partner, blow on the feather, holding the strip of paper behind the feather.

Observation_____

_____

_____

4. Fill the eyedropper with water. With a partner, drop one drop of water on the feather at a time, while holding it straight up and then tilting it.

Observation:_____

_____

_____

Conclusion

_____

_____

_____

_____

_____

Bills on Birds

Name: _____ Date: _____

Materials: FOR EACH PAIR OF STUDENTS:

2 clothespins, 2 flat pieces of wood about 4 inches long, 2 flat pieces of wood about 1 inch long, glue, drinking straw

Hypothesis: How does the size or shape of a bird's bill relate to the food it eats?

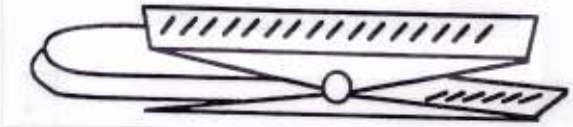
_____

_____

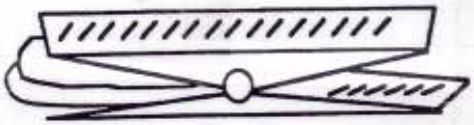
_____

Procedure:

1. Glue 2 long pieces of wood to one clothespin so that the clothespin "bill" can pick up the straw. Let it dry before using.



2. Glue 2 short pieces of wood to the other clothespin so that the "bill" can pick up the straw. Let it dry before using.



3. Try out the bills. Which one of the bills, the long bill or the short bill, crushes the straw? Explain your observation.

_____

_____

_____

_____

4. Gently try the bills on your finger. Which bill, the long bill or the short bill, presses harder on your finger? Explain your observation.

_____

_____

_____

_____

Conclusions:

1. Which bill would a seed eating bird most likely have? (Remember that seeds must be crushed) Explain.

2. Which bill would a berry eating bird most likely have? Explain.

3. Tell other information that you learned about bills from this experiment.

Bills & Feet Facts

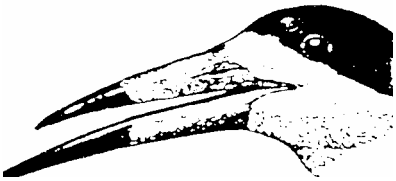
Bills: Are adapted to the ways in which birds get their food.

1. **<u>Spear Bills</u> are sharp and long.**

2. **<u>Predator Bills</u> are curved, heavy, and powerful.**

3. **<u>Chisel Bills</u> are pointed for cutting and drilling holes.**
   ex) woodpeckers

4. **<u>Scoop Bills</u> allow a bird to use the bottom half to scoop food out of the water.** ex) skimmers

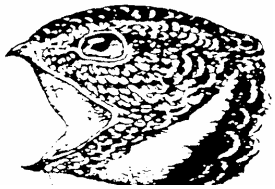


5. **<u>Strainer Bills</u> enable a bird to hold food while water is strained from it.**

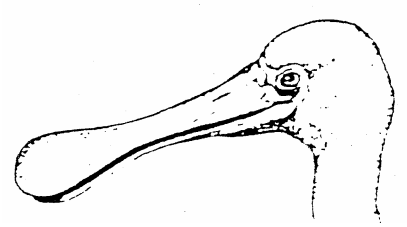
6. **<u>Cracker Bills</u> help birds break the hard shells of seeds.**
   ex) Grosbeaks

7. **<u>Prober Bills</u> helps birds probe the bark of trees for insects.**
   ex) Brown creepers

8. **<u>Trap Bill</u> opens wide & allows the bird to trap insects in midair.**
   ex) nighthawk



9. **<u>Detector Bill</u> use to sweep back and forth through the water to find food.**
   ex) spoonbill



Bills & Feet Facts

Feet: **Are adapted to help birds get their food and to allow them to move around when not in flight.**

1. **Swimmers-are webbed feet to help them paddle through the water in search of food.**

2. **Waders-help them search for food on the bottom of a marsh or bay while supporting them and giving them balance. Waders have long legs.**

3. **Climbers-have their toes facing in both directions. Their toes are like sharp claws which help them then climb trees looking for food.**

4. **Predators-curved, with sharp talons that allow them to catch and carry their food.**

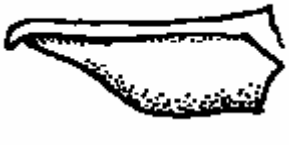
5. **Perchers-enable the bird to grasp a limb or branch. Each feet usually consist of three toes pointing forward and one pointing backward. The backward toe is as long as the front middle toe.**

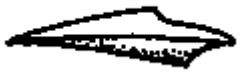
6. **Ground birds & Runners-their feet help them move through the undergrowth of the forest. Three toes point forward and the fourth toe is smaller and points backward.**

Bills & Feet Facts Activity

Directions: Refer back to the "Bills and Feet Fact" page you just read. Use this information to help you answer the questions below.

1. Name the type of beak pictured below.





_____ _____ _____

2. Which bill are best for spearing and chiseling? Explain _____

_____

_____

_____

3. Which bill is best for straining? Explain. _____

_____

_____

_____

4. Which bill is best adapted for tearing meat? Explain _____

_____

_____

_____

5. How can a bird's bill or beak tell us about what it eats? _____

_____

_____

_____

Bills & Feet Facts Activity Cont.

1. Name the type of feet pictured below.

_____ _____ _____

2. Which feet are best suited for swimming? Explain._____
_____
_____
_____

3. Why do wading birds have long legs? Explain._____
_____
_____
_____

4. Which feet are best suited to moving on the ground? Explain._____
_____
_____
_____

5. How can a bird's feet tell us about what the bird eats?_____
_____
_____
_____

How is the polar bear adapted to the environment?

Directions: Observe the drawing above and use your knowledge of science to answer the questions below.

1. Describe the polar bear's environment.

_____
_____
_____

2. Name two things the polar bear must be able to do to survive in its environment.

_____
_____
_____

3. How is the polar bear adapted to survive in its environment?

_____
_____
_____

Animals Adapt to the Seasons

When it gets cold, how do animals live? Look at the pictures below and read the statements about each animal. Write the correct animals name in the space provided in each statement.

Leopard Frog

Gray Squirrel

1. A snowy tree _____ lays its eggs before cold weather comes. It dies in freezing weather, but the eggs live.

2. The leopard _____ sins into the mud at the bottom of a pond. Here it spends the winter without moving.

3. The artic _____ fly 11,000 miles south in the winter. (many birds migrate to find food in the winter.)

4. The gray _____ is active all winter. It eats food it stored away during the fall.

Artic terns

Snowy Tree Cricket

Animal Adaption Review

Directions: **Name an animal for each example below. Name one adaptation of body covering or body part that helps the animal to survive in its environment.**

	Animal	Adaptation
1. Lives in the water.	_____	_____
2. Lives in a cold, icy climate.	_____	_____
3. Builds its nest in a tree.	_____	_____
4. Eats water plants and animals.	_____	_____
5. Feeds on grasses.	_____	_____

Animal	Body Covering	Body Part for getting food
		
		
		
		

Adaptations for Survival
Lesson 1 Questions

1. How do adaptations help an animal survive?

_____

_____

_____

2. What is skin?

_____

_____

_____

3. Name three added layers of body covering that come from skin tissue.

_____

_____

_____

4. Choose two birds. Explain how their bills are used to eat certain foods.

_____

_____

_____

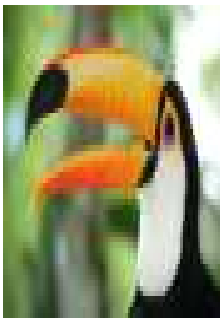
5. Think of one animal you know. What are its adaptations for food getting and protection?

_____

_____

_____

Adaptions For Survival Study Guide



<u>Adaptation-</u>is anything that helps an animal survive in its environment.

<u>Outer body coverings-</u>help an animal survive by:

1. **protecting its internal organs**
2. **helps regulate body covering**
3. **sensitive to temperature changes and pain**

Fish have <u>scales</u> for outer body coverings

Birds have <u>feathers</u> for outer body coverings

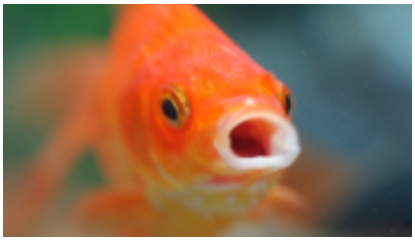
Bears have <u>fur</u> for outer body coverings

<u>Body parts used for protection:</u>

1. **Cats have <u>claws</u> for protection.**
2. **Wolves use their <u>teeth</u> for protection**
3. **Fish use their <u>scales</u> for protection**

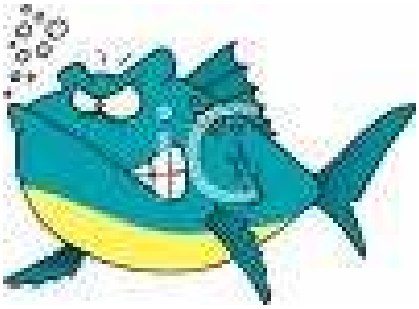
<u>Body parts use for food getting:</u>

1. **A bird uses its <u>bill</u> for getting food**
2. **A snake uses its <u>curved teeth</u> for food getting**
3. **A bear uses its <u>claws</u> for getting food**
4. **A fish uses its <u>mouth</u> for getting food**



Lesson 2: Special Adaptations

Animal Adaptations & Behavior



Name: _____

Date: _____

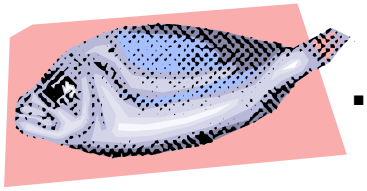
Lesson 2: Special Adaptations
Vocabulary

Camouflage: an adaptation for protection by being able to blend into the environment
- an animal is hidden from predators
- an animal is hidden from prey

⇒ **Protective Coloration:** a camouflage adaptation where animals are the same color as their surroundings
- Examples:
  - *Snowshoe hare*
  - *Ptarmigan:* in winter the bird becomes completely white except for some black on the tail

(ptarmigan)

⇒ **Counter Shading:** a camouflage adaptation in which the top side of an animal is a different color from the bottom side
- Examples:
  - *Most Fish:* when seen from above, the fish blend with the bottom of the lake, river or ocean, the bottom side is silver white, when seen from below, the fish blends with the water's surface and the sky
  - *Some Birds:* the underside is lighter than the top side



⇒ **Protective Resemblance:** a camouflage adaptation when animal looks almost identical to something in its surroundings
- Examples:
  - *Walking stick & Praying mantis*: looks like a twig on trees or shrubs
  - *Leaf butterfly*

⇒ **Mimicry:** kind of protective resemblance where one animal looks like some other animal
- a harmless animal will look like a more dangerous animal that has adaptations for protecting itself, predators are kept away
- Examples:
  - *Robber fly and Bumblebee:* Bumblebee has a painful sting for protection, robber fly does not
  - *King snake and Coral snake:* Coral snake has poisonous bite for protection, it has black bands surrounded by yellow, King snake has yellow bands surrounded by black
  - *Monarch and Viceroy butterflies:* Viceroys taste sweet, Monarchs have a bitter taste and predators spit them out, predators stay away from both because they look the same (mimicry)

- A predator might stay away from robber fly or king snake because they may mistake them for the dangerous animal because of the similar coloration

⇒ **Warning Coloration:** animals that stand out in their surroundings, have brightly covered body coverings
- bright colors warn predators to stay away
- Examples:
  - Monarch butterfly: has a very bad taste when eaten, has warning coloration
  - Bees and wasps

SUMMARY

- Animals that are the same color as their environment have *protective coloration*.
- *Counter shading* is an adaptation in which the top and bottom sides of an animal are two different colors.
- With *protective resemblance* an animal is almost identical to something in its environment.
- *Mimicry* is a kind of protective resemblance.
- Some animals that stand out in their environment have *warning coloration*.

QUESTIONS

1) What is camouflage?

_____

_____

2) How does a ptarmigan show protective coloration?

_____

_____

3) Name an animal with counter shading. _____

4) What adaptation for protection does a walking stick have?

_____

_____

5) Why is mimicry a helpful adaptation?

_____

_____

6) Why might a predator stay away from an animal with warning coloration?

_____