

3rd Grade – Plant & Animal Adaptations

Objective:

Students will learn about animal and plant adaptations. The experiments will be used to encourage students to think about various types of adaptations which occur in animals and plants and how these alterations increase their chances of survival in their environment.



LS4.A: Evidence of Common Ancestry and Diversity

- Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2)
- Comparison of the embryological development of different species also reveals similarities that show relationships not evident in the fully-formed anatomy. (MS-LS4-3)

LS4.B: Natural Selection

- Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)

LS4.C: Adaptation

Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

Docent Lab Guidelines:

1. Schedule a date and time with your teacher. Allow at least 1 hour if not more of class time.
2. Reserve the science room on the Science Lab Master Schedule. Please make sure you add 15 minutes of set up time and about 15 minutes of clean up time to the overall class time.
3. Safety glasses and aprons are not required.
4. There is a book called *Extreme Animals, the Toughest Creatures on Earth* by Nicola Davies which will be available if you would like to read about a couple of the animals in this book. The book will be left in the vertical files.
5. Give a 5-10 minute discussion about plant and animal adaptations or you can opt to show a video. There is a list of videos below. As part of the group conversation discuss that part of the activity will be handling real animal and plant parts. In the science world these are referred to as “Specimens” and are to be handled with care.

6. There are three stations for this session, so you will need at least three adults. The students will rotate between stations every 15 minutes.
 7. Carefully wrap the skulls and other specimens back up at the end of class and put them away in their containers.
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General Docent Information on Adaptations – For Reference

Types of Adaptation

- Anything that helps an organism survive in its environment is an adaptation.
- It also refers to the ability of living things to adjust to different conditions within their environments.
 - **Structural adaptation**
 - **Protective coloration**
 - **Mimicry**
 - **Behaviour adaptations**
 - **Migration**
 - **Hibernation**
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Structural adaptations

- A **structural adaptation** involves some part of an animal's body. Examples include: teeth, body covering and movement

Protective Coloration

- **Coloration** and **protective resemblance** allow an animal to blend into its environment. Another word is Mimicry.

Mimicry allows one animal to look, sound, or act like another animal to fool predators into thinking it is poisonous or dangerous.

Behaviour adaptations

- **Behaviour adaptations** include activities that help an animal survive.
- Behaviour adaptations can be learned or instinctive.

Migration

- This is when behavioural adaptation that involves an animal or group of animals moving from one region to another and then back again.

Animals migrate for different reasons.

- better climate
- better food
- safe place to live
- safe place to raise young
- go back to the place they were born

Hibernation

- This is deep sleep in which animal's body temp droops, body activities are slowed to conserve energy. Examples: Bats, woodchucks & bears.

Videos on Adaptation:

1. Adaptation of Artic Animals (2 minutes)
(<http://ca.pbslearningmedia.org/resource/nat15.sci.lisci.arctanim/adaptations-of-arctic-animals/>)
2. Animals in Extreme (Discovery Channel, run time 4 min. 7 sec.)
<https://www.youtube.com/watch?v=N56OrRvdH24>
3. Animal Adaptations (run time 2 min. 20 sec.)
<https://www.youtube.com/watch?v=fRX2JtKFUzk>

Introduction:

Estimated time: 5-10 minutes

Discussion: In order to survive, animals have adapted to their environment. Depending upon where they live and what they have access to determines how they protect themselves from the sun.

Ask “how does a(n)_____ protect itself from the sun?”

Insects- hide under leaves & plants

Desert animals (gophers, snakes, rodents, etc)- under sand or in sand tunnels

African animals (hippos, lions, etc.)- under shade

Animals w/Fur- fur covers their skin

Animals w/shells- hide inside shell

Activity #1: Identifying Plant and Animal Photos

Estimated hands-on time: 15 minutes

Work in groups based upon the number of photos sets available

Materials:

- Sets of Animal & Plant Cards
- Worksheets are available but not recommended (not enough time). Docents should use the answer key as a guide for discussion

Preparation:

- Before class starts set out the sets of photo cards
- Depending on where the class is on this topic they may need lots of guidance from docents.

Instructions:

1. Each photo is numbered to correspond with the worksheet.
2. Each photo lists the name and geographic location of the plant or animal.
3. Ask the students to identify each animal or plant. Then ask, "What special features does this have that help it to survive?" Using the answer key, then describe how each adaptation helps it survive in its environment. Try and identify as many as possible. Try to encourage the students to think beyond just camouflage.
4. There could be more answers than what is provided on the answer key. You may not be able to discuss each photograph—just get through as many as time allows.

Activity #2: Identifying Plant and Animal Specimens

Estimated hands-on time: 15 minutes

Work in table groups with 1 to 2 docents helping

Materials:

- Animal Specimens. Each specimen is tagged with a number (skulls, nests, quills, etc.)
- Worksheets are available but not recommended (not enough time)
- Docents will use the answer key to guide discussion of each sample

Preparation:

- Have the specimens out and ready to go.
- Before class arrives read the laminated chart about skull identification so you can help explain to the students how skulls are identified as either herbivore, carnivores or omnivores.
- Before class arrives docents should read the answer key for this activity. This will help guide the students when they have questions.
- Bring out specimens one or two at a time. The students can handle them and pass them around while you are discussing the adaption features
- The skulls are fragile and took lots of time to prepare. **Please make sure the students handle them with care.** Try not to mix up the skull pieces. The jaw bones are all numbered just in case they do get mixed up.
- There are drop clothes in the box. Have the students put the drop clothes on the table and place the skulls on the drop cloth when handling them.

- Please note Skull #1 – Coyote, has three unattached teeth. This is intentional. This allows the students to see the roots on the teeth and try to figure out where the teeth fit on the jaw bones.
- Please note the Bearded Dragon Skin #5 – needs to be passed around in the plastic bag. Do not take it out of the bag. It is too fragile to handle without it.

Instructions:

1. After observing each specimen student will think about the animal it came from and how that part of the plant or animal helped it survive. Ask, “How does this adaptation help the animal?” For example there is a porcupine quill specimen. The quill of the porcupine helps provide protection from predators.
2. Docents will be provided with an answer key. Help monitor this activity and help guide the students when thinking about adaptations. Explain the adaptations and the differences between the skulls. Ask the questions from the worksheet, let the students guess, and explain the answers.

Activity #3: Identifying Animal Tracks

Estimated hands-on time: 15 minutes

Materials:

- Animal footprint molds and reference chart
- Worksheets for identifying which footprint belongs to which animal
- Pencils
- Answer key
- Extra specimens from the box or back counter display that are not included in the other station

Preparation:

- Set out footprint molds and reference sheet
- Set out Copies of worksheet and pencils

Instructions:

- Give each student a copy of the worksheet and a pencil
- Have them write down their guesses as to which footprint belongs to which animal
- They can take turns handling the molds with care.
- When all the students have finished, use the answer key to tell them the correct answers
- Discuss the differences between the footprints—what does the pawprint tell you about the animal?
- Fill in any extra time with looking at extra specimens from the box or the back counter display items. Students can handle the items **carefully**.

Supply List

Plant and Animal Photo Cards

Photo Identification Worksheet and Answer Key (separate files)

Plant and Animal Specimens worksheet and answer key (separate files)

Footprint Molds, Reference Sheet, Worksheet, and Answer Key

(need a copy of footprint worksheet for each student)

Plant and Animal Specimens and Skulls