

Snakes Alive!

Students will be introduced to the idea of biodiversity and to teach the importance of all animals, even scary ones, in the web of life.

Grade Level : 4th Grade

Objectives:

- Student will be able to define biodiversity
- Students will be able to make a page for a snake field guide including information such as physical characteristics, habitat, range, speed, size, prey, predators, behavior, biology, etc.

Materials:

- Books on snakes
- Paper
- Pencils or pens
- Markers
- Snakes (optional)

Time Considerations

1-2 hours

Related Activities:

Animal Homes, Carrying Capacity, Biodiversity



Nevada Department of Education Standards

- **Organisms and Their Environment (Life Science Unifying Concept C)** A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.

Excellence in Environmental Education Guidelines

- **Strand 2.2-The Living Environment (A, C, D):** Learners understand basic similarities and differences among a wide variety of living organisms. They understand the concept of habitat, the basic ways in which organisms are related to their environment and other organisms and know that living things need some source of energy to live and grow.

Background

Here's the challenge: Imagine if you can, every single living thing on Earth. There are millions of species of plants, birds, reptiles, mammals, fish, amphibians, arachnids, insects and microorganisms such as bacteria and viruses. Try to imagine them all; a planet teeming with life. Don't forget to put yourself in your picture! Now think about what makes each one of those species different from the others. Got a

headache yet? Think about what makes them look and act different, what kinds of habitats and climates they all live in, what their needs are and how they interact with one another. If you can, imagine even what differences you'd see between them if you could look at each one through a very powerful microscope. If you can do this, you have a pretty good idea what the term biodiversity means. It's a mind-boggling concept because it covers all of

Earth's variety of life in all its forms and processes. Biodiversity is really about the ways that life is organized and how they interact on our entire planet. And that's a lot to think about!

Preparations

Why is biodiversity on Earth important? Here is a metaphor to help you understand. Imagine this: You are sitting on a plane that's getting ready to take off, looking out the window when a mechanic walks up to the wing and removes several of the screws that hold the wing on. You wonder what he's up to but then the plane takes off before you can find out. You figure a few less screws won't make that big of a difference. You have a layover and at the next airport two mechanics start removing more screws and you start to worry. But, again, the plane takes off before you can find out what's going on. When you land again, five mechanics start removing screws like crazy! Now you're really worried! How many screws can be removed before the wing falls off and causes the plane to crash? Before the plane takes off again you wake up and realize it was just a bad dream.



If you compare the screws to the species of animals on Earth you begin to realize how important each species (or screw) really is. Each screw plays an important role in keeping the wing on, just as each species plays an important role in the web of life. How many screws can be removed before the wing falls off? How many species can disappear forever before the life on Earth is irreversibly damaged?



Doing the Activity

As you can see, each species plays an extremely important role in the web of life, even the species that might be scary. What are some animals that scare us? Snakes are one species that have been given a bad reputation but snakes are actually very important! In what ways are snakes important? Garter snakes, for example, are completely harmless yet many people fear them. And yet these docile creatures play an important role in your garden's ecosystem - they eat earthworms, frogs, and mice, among other things. In turn, they provide an important food source for many birds and mammals. Hawks, in particular, relies on snakes to help feed their young during the nesting season. What would happen if there weren't any garter snakes? What would happen if we removed all snakes from the ecosystem?

As you can see, snakes are quite important!

Each of you is going to become a herpetologist. Does anyone know what a herpetologist does? A herpetologist is a person who studies reptiles and amphibians—they know almost everything there is to know about snakes. Divide the class into groups of four or five. Each group will do some research on a snake to create a class field guide to snakes. Assign a snake to each group to research. Students should find out as much as possible about their snake including the following:

1. Where does the snake live?
2. What does it eat?
3. Is it venomous?
4. What are its colors and patterns?

When the research is complete, have each student create a page for a field guide to snakes. Their page should include a drawing of their snake as well as a description of everything they uncovered in their research. If time allows, have students present their page to the class.



After students have had a turn to hold the snakes, review what you have learned about biodiversity and snakes. What is biodiversity and why is it important? How are snakes important in the web of life? What interesting facts about snakes have we learned today? Does today's lesson change your attitude about snakes? What can we do to educate others about snakes?

After the compilation of information for the snake field guide, allow each group to make a presentation to the class. Students should be encouraged to ask questions. Later on, to assess the level of understanding of students, teacher could ask following questions.

- Give general physical features of snakes.
- How much variation is seen in different species of snakes and how do these variations help snakes to survive in their varied habitats?



Coral Snake

- Identify a few distinct differences between poisonous and non-poisonous species of snakes.
- How one can distinguish between two species of snakes? When you are in an area with snakes, what can be done to protect yourself from snakes?

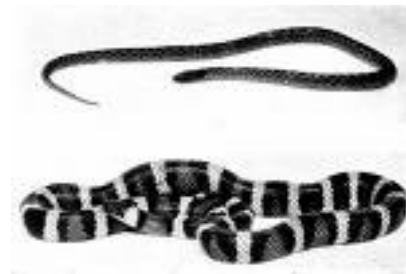
Extension Activities—

Bring out the snakes! As you bring out the snakes, it is important to remind students that they must stay in their seats so they don't startle the snakes and never approach a snake from above—

always pick up a snake from below. Discuss the ways that snakes warn animals and people. Why is it important to be careful in an area where snakes might live? Describe areas in your community where snakes probably live. What kind of precautions should you take to be safe?

Questions to discuss as you are showing the snake to students:

1. **What is molting?** Molting is the process by which snakes shed their old skin as they grow. When



this happens the dead skin peels off.

2. **How do snakes molt?** Snakes rub up against a rough object like bark or rocks to start molting. Then they crawl out of the old skin, usually shedding it in one piece.

3. **Why do snakes' teeth point backwards?** Snakes do not chew their food. The backward direction of their teeth allows the snake to pull the food into its mouth, which is swallowed whole and digested in the stomach.

4. **What is the substance that scales are made of?** Snake scales are made out of keratin, the same substance as your fingernails.

5. **How do snakes smell?** It's a trick question! Snakes use their tongue in a flicking motion to pick up particles of air, water, etc. The snake's tongue carries these particles to the roof of their mouth where they are analyzed by the snakes Jacobson's organ.

6. **If a snake with venom bites you, what does the doctor use to treat the bite?** The doctor uses an anti-venom, a venom antidote made from the venom of the snake that bit you. Venom is collected from poisonous snakes in order to create the medicine needed to treat snake bites.

Snakes in History—

Throughout history, snakes have been used by different cultures and groups—everything from Native American tribes to the American Medical Association—to symbolize a great many ideas. Have your students research snake symbolism at different periods in history. What have snakes stood for? Where do they appear in culture, politics, religion and other areas? When their research is complete, each student should prepare a brief description and illustration of the symbolic snake he or she has studied. The class can then work together to categorize their results by the qualities and ideas the symbols have embodied throughout history—some of which include eternity, evil, health, and change—and create a class compendium of snake symbols.

Snake Tiles—Draw an outline of a snake with a black marker or crayon. Using two, three, four or even five colors, design a repeated pattern for your snake's skin (make sure no two adjoining shapes have the same color). Classify and sort your class's snakes by similarities in color or pattern.

Vocabulary

Biodiversity: biological variety in an environment as indicated by numbers of different species of plants and animals

Keratin: a sulfur-containing protein that makes up hair and horny tissues

Ecosystem: a system made up of an ecological community of

living things interacting with their environment especially under natural conditions

Molting: to shed hair, feathers, outer skin, shell, or horns with the cast-off parts being replaced by a new growth

Herpetologist: a person who studies reptiles and amphibians

Sources—

<http://en.wikipedia.org/wiki/Snakes>