

3-5 Life Science
3-5 Earth Science
3-5 Nature and History



Southern Nevada Regional Professional Development Program

Desert Unit-Food Chains



www.saskschools.ca

INTRODUCTION

According to the Clark County website in 2006-1,912,654 people lived in Clark County. As desert dwellers, it is important for our students to develop an understanding and appreciation of the environment in which they live. Learning about our environment is a crucial part of our daily lives. We depend on all organisms, including plants, to survive from day to day.

WHERE'S THE SCIENCE?

All living things in our desert need energy in order to carry out the necessary functions to survive. An easy way to follow this energy pathway is through a **food chain**. The Sun is the primary source of energy in the desert food chain. Desert plants then take the energy produced by the Sun and use it to make their own energy (**producers**). Desert animals then eat the plants (**herbivores**), getting their energy from the plants they eat. The next step includes **carnivores**; animals that

consume other animals for energy. The final step in the desert food chain ends with **decomposers** that get their energy from plants and animals that have died.

MATERIALS

- Science notebooks
- Large sheets of chart paper
- Pictures of various desert food chains

PROCEDURES

Lesson One: Carnivores, Herbivores, & Omnivores - Part 1

1. Pass out science notebooks to the students and ask them to list what they ate yesterday. Instruct the students to get together with their group members and create a Venn diagram sorting what they ate according to whether it was a plant (apple), animal (bacon) or both (hamburger with lettuce and tomato).
2. Post the charts and allow groups to quickly share.
3. Introduce the terms: **carnivore** - an animal that eats other animals, **herbivore** - an animal that eats plants and **omnivore** - an animal that eats both plants and other animals. Ask students to discuss what these terms mean to them with their group members and to decide on an icon, picture or symbol to help them remember the terms. Ask the students to record the terms in their science notebooks while you post the terms on the science word wall. Select an icon for each term from the suggestions made by students.
4. Return to the Venn diagrams created by the students and label one circle containing only plants “herbivore”, the one containing just animals “carnivore”, and the intersection of the Venn diagram “omnivore”. Post, discuss and share out Venn diagrams.

Lesson Two: Carnivores, Herbivores, & Omnivores - Part 2

Tell the students that you are going to go outside and observe a section of the schoolyard habitat. Their job is to look for animals in the habitat and then to list whether they think the animal is a **carnivore**, **herbivore**, or **omnivore**. Take the students outside to a quiet location where you know **organisms** (plants, insects, birds, etc.) are present. An area with a tree and other plants is perfect.

- 1 After about five minutes return to the classroom and allow students to share their list with group members.
- 2 Pass out large sheets of poster paper and instruct the students to create a large group list that they will post and share.
- 3 As students finish, post list and allow each group to share their list. Questions about whether an animal is a carnivore, herbivore or omnivore will arise. List animals that the students are not sure about on the board. Then write the names of each on an index card and place in a paper bag. Shake the bag and have various groups of students select an animal to research and report back to the class. If you only have one or two animals then just assign students an animal to research.
- 4 Close the lesson by asking students to return to their science notebooks and record what they learned today. Allow time for a few students to share their new knowledge with the class.

Lesson Three: Introducing Food Chains - Part 1

1. Write the following term on the board “food chain”, and ask the students to discuss with their groups what they think the term means. Share out whole group.
2. Explain to the students that a **food chain** shows how living things interact to get food and energy. Post the following terms on the board: **producer**, **consumer**, and **decomposer**. Again,

- allow the students to discuss what they think these terms mean with their group members. Then share out and discuss.
3. Explain that in a food chain, **producers** make their food using energy from the sun. **Consumers** get their energy from eating plants and animals. **Decomposers** get their energy from plants and animals that have died.
 4. Ask the students to add these terms to their science notebooks along with a definition and icon to help them remember the terms. As students work, select icons or pictures to add to the terms and post on the science word wall.
 5. Tell the students that you are going outside to the same location you visited in the previous lesson. This time their job is to list or draw any producers, consumers, or decomposers that they find. They may list animals from the previous lesson as well.
 6. Return to the classroom and repeat steps 5-8 from lesson one.

Lesson Four: Food Chains - Part 2

1. Begin today's lesson by asking the students to review the terms they have learned with their groups.
2. Read "What is a Food Chain?" from the Delta Science Reader (see additional resources). Discuss the components in a food chain: energy (sun) producer (plants) and consumer (animals). Explain that consumers can be herbivores, carnivores, or omnivores.
3. Have the students return to their science notebooks and look over the data they collected from their previous visits to the schoolyard habitat. Instruct them to discuss with their group whether or not they observed a food chain. As the students work, move from group to group clarifying understanding and ensuring each group has a food chain they can present. **Note:** You may need to help them add a missing component to the food chain they observed.
4. Pass out chart paper to groups and ask them to sketch a diagram of a food chain they observed. As groups finish post and then

- allow time for groups to share out. Correct errors by posing questions to the groups. For example, if a group forgets to include the Sun as the first source of energy, ask “Where do the producer’s get their energy from?”
5. Post the charts and allow time for groups to share out. Save charts for lesson six.
 6. Close the lesson by asking students to draw a food chain from the schoolyard habitat study in their science notebook.

Extensions:

- Read *A Desert Habitat* (see additional resources) and discuss the food chain on pages 20-21.
- Read *Living in a Desert* (see additional resources) and discuss the difference between a food chain and a food web.

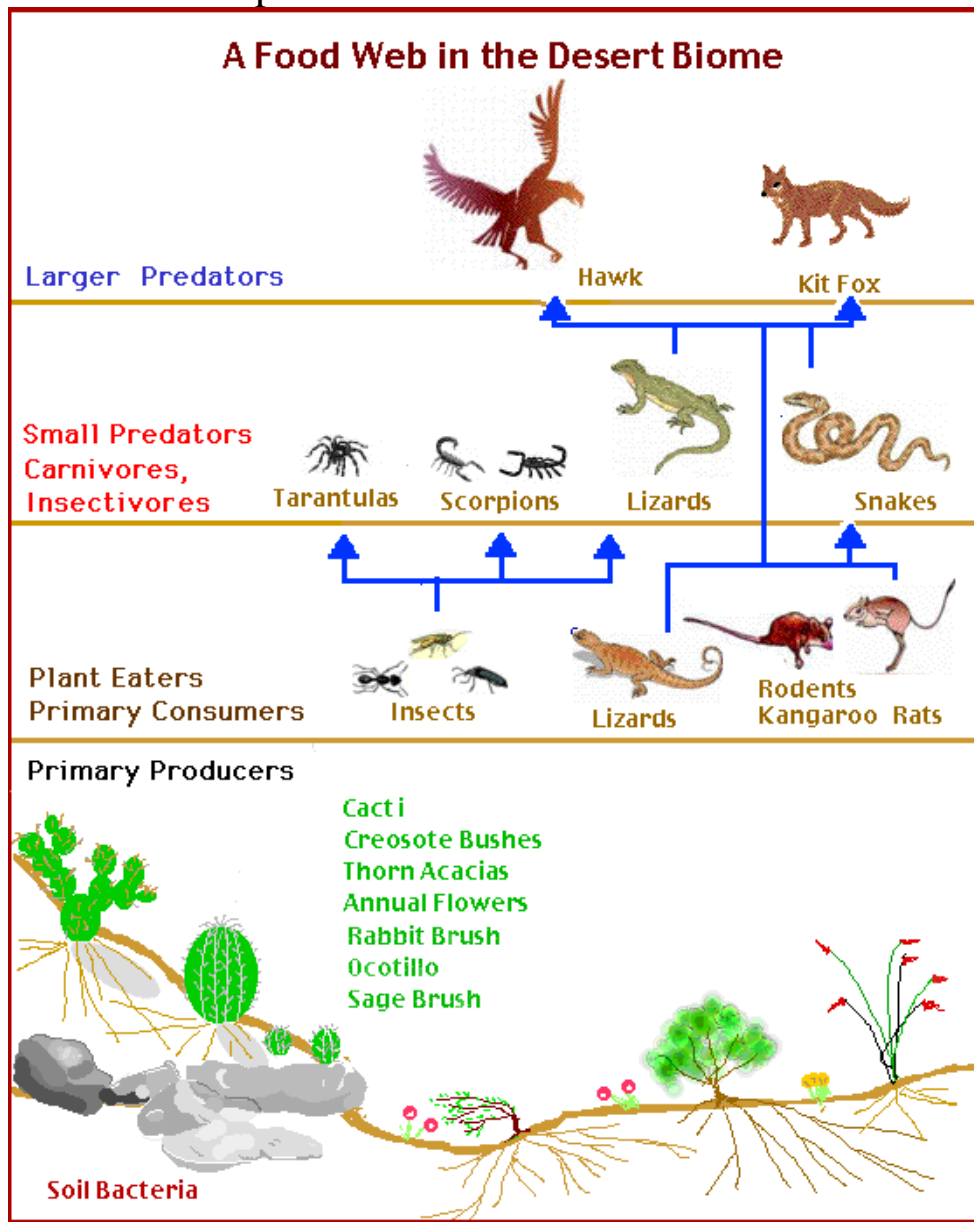
Lesson Five: Desert Food Chains

Note: To prepare for this lesson you will need to find pictures of various desert food chains. You will need one food chain per group. Cut the food chains apart and place the pictures in a paper bag.

1. Review with the students the elements in a food chain.
2. Explain that you will be passing out a paper bag to each group containing components of a desert food chain. Their job is to work with their group to arrange the food chain in order.
3. When each group is finished, have the students place their food chains in the center of their table and then ask them to walk around the room to view each group’s food chain. Each group should select a member to stay behind at their table to answer any questions class members may have about their food chain.
4. After students return to their groups ask them if they have any questions about another group’s food chain. Correct any misunderstandings.
5. Close the lesson by asking the students to draw their favorite desert food chain from today’s lesson in their science notebook.

Lesson Six: Food Webs

1. Review the term “food chain” with the students. Introduce the term “**food web**”. Explain to the students that often an ecosystem will have several food chains. All the food chains in an ecosystem connect to form a food web.
2. Post the desert food chains from yesterday and ask the students if they see connections between the food chains. Help them make connections between the food chains to create a desert food web.
3. Share an example of a desert food web with the students.



http://www.world-builders.org/lessons/less/biomes/desert/desert_chain.gif

4. Have the students meet in their groups and develop a desert food chain using organisms from their science notebooks. As students work move around the classroom and assist those needing help.
5. Pass out large sheets of poster paper to the groups as they finish and ask them to transfer their final food web to the chart. Post and share out.

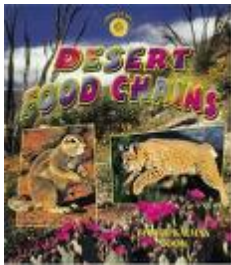
Lesson Seven: Effects on Food Chains

1. Review what the students have learned so far about the terms and food chains.
2. Post a large poster of a desert food chain. Take a sheet of colored paper and cover up one component of the food chain and pose the following question: “What would happen to this food chain if _____ was removed?”
3. Discuss ways humans have changed our desert environment. List changes the students share out. Have pictures available of various changes just in case students are not able to generate ideas. For example, pictures of new home construction, the building of the Hoover Dam, road construction, etc.
4. Ask the students to discuss with their groups how these changes have been both beneficial (positive) and detrimental (harmful or negative) to various organisms in the environment.
5. Show students pictures of changes to our desert environment that were caused by nature; for example, flooding, fires, or wind. Repeat step 4. **Note:** You might not need to complete this step if students bring up natural changes in step 3.
6. Instruct the students to select a food chain from a previous lesson and create a large poster illustrating the food chain, or you can pass out posters from lesson four. Discuss how one of the above changes had both a beneficial and detrimental impact on various members of the food chain. As students work, move

- from group to group checking understanding and clarifying the assignment.
7. Pass out another large sheet of poster paper to each group and ask the students to select one change from step 3 or 5 and list how their food chain could be affected by the change.
 8. Have groups post and share out.

Unit Extensions:

- Visit www.desertusa.com to view video clips of various stages of the desert food chain



- Read the book *Desert Food Chains*
www.thereadingnook.com

Additional Resources

Plant and Animal Populations Delta Science Reader

www.deltaeducation.com

Living in a Desert by Carol Baldwin Heinemann InfoSearch

Deserts by Gail Gibbons

A Desert Habitat by Bobbie Kalman www.crabtreebooks.com

Vocabulary

Carnivores: gets energy from eating other animals

Consumer: gets energy from eating producers

Decomposers: gets energy from eating plants and animals that have died

Environment: everything that surrounds and influences an organism

Environmental factor: one part of the environment, can be non-living, such as: water, light, temperature, or chemicals; or living, such as a plant or an animal

Food chain: shows how living things interact to get food and energy

Food web: all the food chains in an ecosystem connect to form a food web

Herbivores: eat plants for energy

Living: plants and animals grow, change and reproduce

Non-living: rocks, water and soil, doesn't grow or reproduce

Omnivores: eats both plants and animals

Organism: any living thing, including all plants and animals

Preferred environment: the set of environmental conditions that an organism appears to choose over other conditions

Producers: uses energy from the sun to make their own food, plants

Variable: something that can be changed

Safety Reminder

Students should wear safety goggles when working with soil samples.

Nevada State Science Standards

N5A3 Students know how to draw conclusions from scientific evidence. E/S

N5B3 Students know the benefits of working with a team and sharing findings. E/L

E5A1 Students know that the Sun is the main source of energy for planet Earth. E/S

L5C1 Students know the organization of simple food webs. E/S

L5C3 Students know that changes to an environment can be beneficial or detrimental to different organisms. E/S

L5C4 Students know all organisms, including humans, can cause changes in their environments. E/S

