

An integrated unit focusing on the management decisions regarding one of Arizona's major predators

Mountain Lions in Arizona



Lesson 2: The Lion as Predator – Feast of Plenty

LESSON OVERVIEW

In this lesson, students will learn the basics of a mountain lion's diet by researching one of its possible food chains and the subsequent food web. Each student will be assigned one of the mountain lion's prey species and asked to construct a food chain using that animal. Students will present their food chains to the class so they can all see the diverse resources required to keep mountain lions alive. Then, students will combine food chains to make a food web in order to understand how a small change in one part of the ecosystem can have a dramatic impact on all of the species.

SUGGESTED GRADE LEVELS

- 6 – 12

ENDURING UNDERSTANDINGS

- All energy in an ecosystem comes from the sun.
- Animals eat food to obtain the energy necessary for survival.
- Changes to one part of an ecosystem can affect all other parts of that ecosystem.
- Specialists are species that depend on one particular food to survive; generalists are capable of surviving on a variety of food types.

OBJECTIVE

Students will:

- Use the Internet to research specific information about an animal.
- Create a food chain for a mountain lion.
- Present a food chain.
- Create a food web.
- Analyze the effects of changes in the food web.

ARIZONA DEPARTMENT OF EDUCATION STANDARDS

Grade	Science	Social Studies
6	S4-C3-01	None
7	S4-C3-01; S4-C3-02; S4-C3-05; S4-C3-06	None
8	S4-C4-01; S4-C4-02	None
High School	S4-C3-01; S4-C4-04; S4-C5-04	None

Note: The full text of these standards can be found in Appendix A.



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TIME FRAME

- 3 days (45 minutes each day)

MATERIALS

- *Food Chain of a Mountain Lion* worksheet (1 per student)
- *Food Web of a Mountain Lion* worksheet (1 per student)
- Internet access or printouts of animal fact sheets
- Construction paper
- Markers, crayons, or colored pencils
- Scissors
- Glue and/or tape

TEACHER PREPARATION

- Make copies of both worksheets for each student.
- Gather art materials.
- If no Internet access is available to students, visit some of the Web sites to print out fact sheets on the assigned animals for students to use for research.

SUGGESTED PROCEDURES

1. Ask students: What types of food does a mountain lion eat? They can answer in the form of a journal entry or a class discussion. Discuss some student answers. Explain that scientists have discovered that mountain lions have a very diverse diet.
2. Hand out the *Food Chain of a Mountain Lion* worksheet.
3. Read the worksheet individually or as a class.
4. Assign each student one of the prey animals to research. Some animals may be assigned to more than one student. Explain that when they have become familiar with their animal, they will make a food chain with it that shows the mountain lion at the top and the foods that their prey animal eats at the bottom. They should illustrate their food chain with drawings or photos. Emphasize that they will be presenting this information to the class, so the food chain should be large enough for everyone to see easily. Appendix B provides suggested Web sites for student research.
5. Allow the students to work. If they do not finish in class, they can complete the assignment as homework.
6. When all students have finished, begin the presentations. Each presentation should include a brief description of the animal, its habitat, and an explanation of the food chain the student created. If several students are presenting the same animal, discuss any similarities or differences among their food chains.
7. After all presentations have been completed, allow time for students to answer the questions at the end of the *Food Chain of a Mountain Lion* worksheet. If they do not finish in class, they can complete the assignment as homework. Collect the worksheet when students have finished.
8. Begin the food-web component by handing out the *Food Web of a Mountain Lion* worksheet.
9. Read the worksheet individually or as a class.



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10. Explain that students will now make a food web by combining five food chains presented in class. One of the chains must be their own, but the other four can belong to any other student as long as four different organisms are used.
11. Allow the students to work on their food webs and answer the questions on the worksheet.
12. When all students have finished, discuss the questions. Be sure to emphasize that small changes to the environment can result in drastic changes to the entire ecosystem and the animals in it.
13. Collect the food webs and the *Food Web of a Mountain Lion* worksheets.

ASSESSMENT

- Student-generated food chain
- Student-generated food web
- *Food Chain of a Mountain Lion* worksheet
- *Food Web of a Mountain Lion* worksheet
- Class discussion

EXTENSIONS

- Students can research the diets of some of the other large predators found in Arizona (i.e., Mexican wolves, black bear, and jaguar) to see if they can determine the types of habitats in which each lives.
- Encourage your students to participate in the *Hot Topics Campfire Chat* with their parents at home.



Appendix A: Arizona Department of Education Standards – Full Text

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Science Standards

Grade	Strand	Concept	Performance Objective
6	4	3 – Populations of Organisms in an Ecosystem	1 – Explain that sunlight is the major source of energy for most ecosystems
7	4	3 – Populations of Organisms in an Ecosystem	1 – Compare food chains in a specified ecosystem and their corresponding food web 2 – Explain how organisms obtain and use resources to develop and thrive in predator/prey relationships 5 – Predict how environmental factors affect survival rates in living organisms 6 – Create a model of the interactions of living organisms within an ecosystem
8	4	4 – Diversity, Adaptation and Behavior	1 – Explain how an organism's behavior allows it to survive in an environment 2 – Describe how organisms are influenced by a particular combination of biotic and abiotic factors in an environment
High School	4	3 – Populations of Organisms in an Ecosystem	1 – Identify relationships among organisms within populations, communities, ecosystems, and biomes.
		4 – Biological Evolution	4 – Explain how a change in an environmental factor can affect the number and diversity of species in an ecosystem
		5 – Matter, Energy, and Organization in Living Systems	4 – Diagram the energy flow in an ecosystem through a food chain



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Appendix B: Suggested Research Web Sites

Below are some suggested Web sites that students may use for research. It is recommended that you review the Web sites before using them with students:

- *eNature* – your students will need to search the database for their selected animal
 - <http://www.enature.com/home/>
- *Desert Animal and Wildlife* – a general site where about half of the animals can be found
 - <http://www.desertusa.com/animal.html>
- *Southwest Wildlife Factsheets* – a general site where about some of the animals can be found
 - <http://www.southwestwildlife.org/factsheets/factsheets.htm>
- *Plant and Animal Abstracts* – scientific reports for some of the animals, but it is intended for an older audience
 - http://www.azgfd.gov/w_c/edits/hdms_abstracts.shtml



Appendix C: Worksheets and Overheads

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The pages that follow contain the worksheets listed below:

- A. *Food Chain of a Mountain Lion* – Provides directions for the students to research and create a food chain. Poses questions regarding food chains and provides space for answers. (1 page)
- B. *Food Web of a Mountain Lion* – Provides directions for the students to combine food chains to create a food web. Poses questions regarding food webs and provides space for answers. (1 page)

