Food Chain of a Mountain Lion

Although mountain lions tend to prey on large mammals, such as deer and elk, they will also eat smaller mammals, reptiles, and even insects if necessary. They have even been known to prey on livestock, such as cattle and pigs, if available. Table 1 shows a partial list of prey animals.

Table 1: Arizona Animals Preyed on by Mountain Lions

Mule Deer	Coyote	White-tailed Deer	Cottontail Rabbit	Elk	Skunk
Bighorn Sheep	Ground Squirrel	Pronghorn	Raccoon	Javelina	Woodrat
Porcupine	Coati	Black Bear	Wild Burro	Bobcat	Wild Turkey

Using the Web sites provided by your teacher or your own resources, research the animal that you have been assigned. You should be able to provide a description of the animal as well as its major habitat. You will also need to know which plants and/or animals your animal eats.

Based on this research, make a food chain starting with the mountain lion at the top. Be aware that your animal will probably eat more than one food item and you need to show all of those items on your chain. In addition, if any of those food items is also a predator, you must show the items that predator eats. For example, if the black bear eats fish you will also need to show what the fish eat. Be sure to include drawings or photos of the animals and plants that you have included on your food chain.

When all of the presentations have been completed, answer the following questions. If you run out of space, continue your answers on the back.

1. In an ecosystem, animals play various roles. Use any resources available to help you define the following roles: producer, consumer, primary consumer, decomposer, predator, and prey. Give an example of each one from the animals above.

2. Trophic (nutritional) levels are defined as the various levels of a food chain. Based on the roles above, what types of organisms are found at the highest trophic levels? What types of organisms are found at the lowest trophic levels?

3. Where do organisms at the highest trophic level get their energy? Where do organisms at the lowest trophic level get their energy?

4. Energy is lost as you advance through a food chain. Some estimates say that as you move up to the next trophic level, you lose 10% of the energy. Based on this estimate, how much energy is left by the time you reach the top of the food chain you created?

5. A mountain lion is referred to as a "top predator." What do you think this means?

Food Web of a Mountain Lion

In the previous activity, you saw the wide variety of food that the mountain lion can eat. In particular, you looked at one prey item. However, the mountain lion exists in an ecosystem that includes a number of animals and plants. Scientists have suggested that the addition or removal of an animal from an ecosystem can affect many other animals and plants. You will have the opportunity to explore this idea by looking at a mountain lion's food web. While a food chain is a sequence that shows the transfer of energy from one organism to another, a food web is a complex network of food chains that shows the relationship between multiple species in an ecosystem.

Choose five food chains that were presented in class (yours and four others). Create a food web that links all of these food chains together. Be sure to include all of the animals and plants that were shown on the original chains, and be sure all of the links are completed. For example, you may find that more than one animal eats grass. As a result, you should have more than one link to the grass.

When finished, answer the questions below. If you run out of space, continue your answers on the back of this page.

1. Animals can serve a variety of roles in an ecosystem. These include predator, prey, producer, consumer, primary consumer, and decomposer. Based on your food web, what roles does the mountain lion play in this ecosystem? How do you know?

2. If above-average precipitation occurred one year causing a significant increase in the amount of grass available, what effect would this have on the other animals and plants in the ecosystem?

3. If the mountain lion were removed from the ecosystem, what might be the immediate effects on the other animals and plants? What might be the long-term effects?

4. The mountain lion is a true survivor. For many years, the United States government endorsed a program to eliminate this large predator. Although the program met with limited success, the mountain lion is still common in the western states. Explain why its diverse diet helps it survive.

5. The black-footed ferret is a small mammal similar to a weasel. Like the mountain lion, the ferret is a predator. However, it feeds on only one animal — the prairie dog. The black-footed ferret is one of the most endangered mammals in North America. In fact, it was once thought to be extinct. Explain why its limited diet may have an impact on its survival.

6. "Generalist" and "specialist" are two words used to describe animals based on their food variety. What do you think these terms mean? Which word describes mountain lions? Which describes black-footed ferrets?