



Learning Set 3

Animal Interactions

Overview

Students will begin by reading two passages that discuss terms that describe the relationships among animals. They will make predictions about the roles of animals in food chains and will explore concepts relating to food webs, producers, consumers, predators, and prey. In the second lesson, students will investigate the animals living in one of their schoolyard habitats and will apply the knowledge gained from the reading exercises. The third lesson will ask students to build a food web with schoolyard animals and others they have found using Critter Catalog. Studying food webs will provide the basis for students to learn about how animals rely on each other, the consequences of the removal of one link, and how the web is affected by the addition of a foreign animal.

Lessons

Lesson 1: Who Eats What?

Students will learn about relationships among animals by making predictions, reading passages, and then critically assessing their predictions. By creating food webs according to the reading passages, students will learn to apply scientific information to a task. Post-reading questions will help students understand the main points of the author and a concluding scientific explanation activity will allow students to examine the nature of animal relationships in the food webs more closely.

Lesson 2: What are My Animal's Predators and Prey?

In this lesson student teams will select a habitat in which at least four animals were seen. Each student will research one of these animals using the Critter Catalog to build a food chain. Using this information, the worksheets will guide students in learning about predators, prey, consumers, producers, omnivores, carnivores, and herbivores.

Lesson 3: How do Animals Live with Each Other?

Students will make cards for the animals from their food chains in Lesson 1. Each team will then build a food web using animals from all four food chains. Teams are guided, by the worksheets, to add the sun and decomposers to the web. Worksheets then touch on a variety of issues related to the interdependence of the animals in the web. Finally, students address the fact that they did not necessarily see all of these animals in their schoolyard.



Learning Set 3

Animal Interactions

Before You Begin Learning Set 3



Lesson 1

- ☐ Read the *To The Teacher* section for Lesson 1 and Reference Section 6 entitled *Animal Interactions*.
- ☐ Decide if you would like to do both reading passages in one class setting or would like to divide the activities between two days. Another option is to do the first activity together as a class, and the “Isle Royale” reading individually at desks.

Lesson 2

- ☐ Read the *To The Teacher* section for Lesson 2 and Reference section 5 entitled *Animal Needs*.
- ☐ Arrange for students to use the computers with Internet access, or the BioKIDS CD, for 1 day. If computers are unavailable, you will need to print out Critter Catalog entries for each animal found in the chosen habitat.
- ☐ Arrange for students to use other resources such as field guides, library books, and online resources.
- ☐ Make sure each team has their copy of the CyberTracker Habitat Summary Table from Learning Set 2.

Lesson 3

- ☐ Read the *To The Teacher* section for Lesson 2 and Reference section 6 entitled *Animal Interactions*.
- ☐ Prepare food web supplies including poster boards, glue, and markers.
- ☐ Make sure each team has their copy of the CyberTracker Habitat Summary Table from Learning Set 2.



Lesson 1: Who Eats What?

To the teacher:

Lesson 1 Overview:

Students will read two passages and then engage in exercises that help them develop their critical reading skills.

1. Using Pre-Reading Activity

The Pre-reading activity is important because it introduces the idea of “predictions” to students, and encourages them to make decisions based on their current knowledge and then revisit their predictions after reading new information.

2. Using Information from Text

Encourage students to complete the worksheet entitled “Drawing a Food Web” by carefully reviewing paragraphs they read before. Students will gain practice in locating and reviewing important concepts in longer reading passages.

Driving Question

What roles do animals play in food chains?

Learning Goals

Content

- Students learn about the different roles animals have (producers, consumers, carnivores, omnivores, herbivores)
- Students learn about predator-prey relationships between animals

Inquiry

- Students read text to understand scientific concepts
- Students formulate explanations from evidence found in text

Time

2 class periods

Materials

- Student worksheets with reading passages and questions.

Lesson 1:

Who Eats What?

Pre-Reading Activity

Students should make their predictions on their own and then perhaps the class can make a chart of their choices with votes. After the reading, the class can come together again to see if they would change any of their predictions after using the knowledge gained from the reading. Or, the teacher can just go through this pre-reading activity with the entire class and ask for possible predictions and/or definitions of words like predator, prey, carnivore, herbivore, omnivore, producer and consumer before starting the reading. It is important to remind students that predictions are not right or wrong. Predictions help us make sense of things we already know and then learn more after we find out the right answers.

Directions: Before reading “Animal Roles in the Food Web” and “The Food Web on Isle Royale,” make predictions about the animals and plants listed below. Put a check in the column you think they belong in—be ready to explain your choices to your classmates.

Predictions				Do I still agree with my predictions?
	Predator	Prey	Both	
Bear				
Ant				
Robin				
Spider				
Wasp				
Squirrel				

What evidence did you use to make your predictions?

Predictions				Do I still agree with my predictions?
	Carnivore	Herbivore	Omnivore	
Bear				
Ant				
Robin				
Spider				
Wasp				
Squirrel				

What evidence did you use to make your predictions?

Pre-Reading Activity

Continued from previous Page

Predictions			Do I still agree with my predictions?
	Producer	Consumer	
Bear			
Ant			
Grass			
Spider			
Wasp			
Maple Tree			

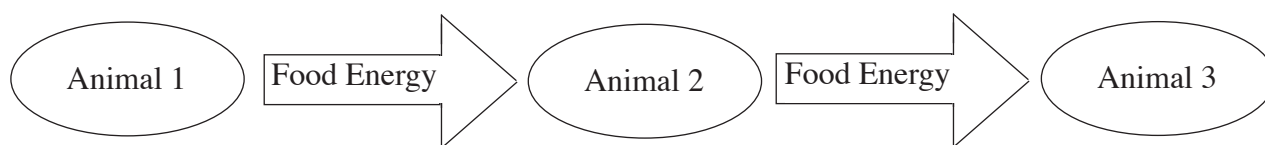
What evidence did you use to make your predictions?

Animal Roles in the Food Web Data Sheet 1

You already know a lot about predators and prey from watching animals in your schoolyard. What do you see? Ants? Spiders? Squirrels? Did you ever wonder what each animal eats or where animals get energy?

Think about what a hawk eats. A hawk eats robins and squirrels. The hawk is a **predator** because it is an animal that kills and eats other animals for food. What about robins? Robins eat worms and spiders, so robins are predators too. Prey are animals that are eaten by predators. So when a hawk is eating a robin, the robin is prey. When a robin is eating a spider, the robin is the predator and the spider is the prey. In nature, many animals can be both predators AND prey—it depends on who is eating who!

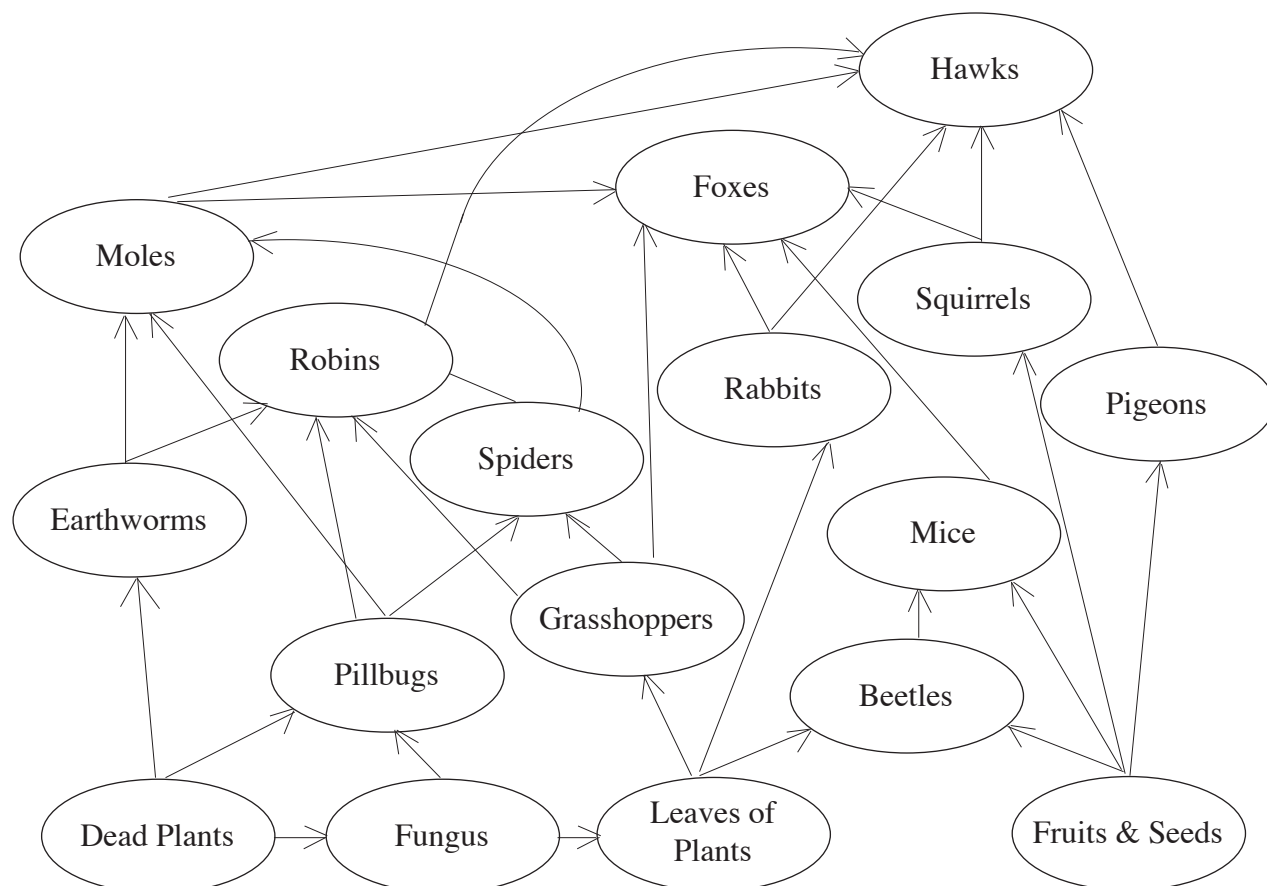
Animals eat to get energy, so when a robin eats a spider, the spider provides energy for the robin. Let's take a look at a simple **food chain** below, which describes what animals eat and what eats them. In this food chain, the arrows show where each animal is getting its energy:



Animal 3 is eating animal 2.
So animal 3 is getting energy from animal 2.
Similarly, animal 2 eats animal 1.

Animal Roles in the Food Web Data Sheet 2

Food chains are short and easy to follow, but there are more than just three animals in your schoolyard. When you put all the chains together, it ends up looking like a big web called a **food web**. Look at the food web below, which helps us describe more complicated relationships among predators and prey. Lots of predators and prey can make the food chain complicated to draw so you can make more than one food chain to make things easier.



Students can have trouble understanding the directions of the arrows in food chains and food webs. It often seems opposite from what they would expect. Be sure to remind students that the arrows show where an animal is getting its energy from and generally goes from the prey to the predator. Here are some questions you can ask the class to think about as they go over the food web above. The questions should help students read the web and understand arrows better before moving on to the next activity.

Checking for student understanding of food web arrows and energy flow:

- 1.) Where do grasshoppers get their energy from?

Leaves of Plants

- 2) Name three animals that are sources of energy for a hawk.

Pigeons, Moles, Robins

Animal Roles in the Food Web Data Sheet 2

Continued from previous page

Not all animals eat other animals. Squirrels mostly eat nuts and seeds and other part of plants, so they do not have prey. Animals that mostly eat plants are called **herbivores**. Animals that eat other animals are called **carnivores**. When animals such as humans and bears eat a mix of plants and animals, they are called **omnivores**. Every food web *must* have some animals that are not carnivores. Without herbivores and omnivores, the carnivores could only eat each other and all the animals would eventually starve!

What about plants? While very few plants are predators, many plants are eaten by animals, and so they are a very important part of the food web. Plants are called **producers** because they get their energy directly from the sun instead of eating animals. Herbivores, carnivores, and omnivores are called **consumers** because they get their energy from eating other living things.



Drawing a Food Web

Name: _____ Team Name: _____

Directions: Draw the food web described in the paragraph below. Write the name of each animal in a circle and draw arrows between the circles.

Hawks eat robins. Robins, along with eating spiders, also eat crickets and pillbugs for energy. Robins don't usually eat wasps, but wasps like to eat caterpillars and crickets. Crickets eat seeds and grass.

REMEMBER: The arrows in a food web tell you which way the energy is flowing (humans eat chickens, and get energy from eating chickens—so the arrow would point from the chicken to the human since the energy is going from the chicken to the human)

The Food Web on Isle Royale

One of the most famous food webs in the world is right here in Michigan on a large island in Lake Superior called Isle Royale. The island is twenty miles from land and there are not many kinds of wild animals there: no deer, no bears, no porcupines, no coyotes. Some beavers and rabbits live there, but not many.



About 100 years ago, some moose swam all the way to the island. Moose are animals that are similar to deer, but much bigger. They are herbivores who only eat plants, so the island was the perfect place for them—lots of food, and no predators! The moose lived on the island for many years, reproducing and growing until there were so many moose that they were eating too many plants too fast.

Soon there were not enough plants to feed all the moose. Then things got worse.

One winter, the surface of Lake Superior froze all the way from the island to the shore. The ice was thick enough for animals to walk across it to the island. Some wolves decided to walk all the way to the island and were excited to see the island filled with lots of delicious moose! Wolves are predators and carnivores, so the island was a perfect place for them to get food. After a few years of both moose and wolves living on the island, the wolves ate so many moose that there were not that many moose left on the island. This was good for the plants, because lots of moose were not eating them anymore, but it wasn't so good for the wolves. There were not too many other animals on the island besides moose for wolves to eat, so when the number of moose went down, the wolves got very hungry and some started to starve. Because of this pattern, the number of



moose and the number of wolves change every year, depending on how much and what type of food is available.

Scientists have been studying moose and wolves on Isle Royale ever since the wolves arrived. They try to count the number of wolves and moose each year. We can study the simple food web on Isle Royale as an example of how all food webs work, and what happens when the numbers of prey and the numbers of predators in a food web change over time.



Post Reading Questions

Name: _____ Team Name: _____

Check the statement(s) that are true based on the reading: **True**

1. Robins can be predators. ☐
2. Prey kill and eat other animals. ☐
3. Moose and wolves live on Isle Royale, an island in Lake Superior. ☐
4. Living things that get their energy from the sun, like plants, are considered producers. ☐
5. Moose are predators of wolves. ☐
6. Wolves and moose are living together on Isle Royale. ☐
7. All energy for living things comes from the sun. ☐
8. Spiders are only predators. ☐
9. Introducing a new animal to a habitat will probably not affect the existing food web. ☐
10. Herbivores are an important part of a food web because they provide a link between producers and carnivores. ☐



Focal Animal Analysis Sheet

Name: _____ Team Name: _____

Scientific question:

What happened to the moose population and the plant population when wolves arrived on Isle Royale?

← **What is the main science concept covered in this question?** *Sample: Food chain—describes what animals eat and what eats them.*

Scientific Explanation:

Claim: There one possible claim to be made here. Students need to show both PLANTS-MOOSE and MOOSE-WOLVES relationships.

Sample:

When wolves came over to Isle Royale, moose population decreased and plants increased.

Hint:

A claim is a complete sentence that answers the question.

Evidence: Students need to explain both relationships in the simple food web: wolves are carnivores or wolves eat moose; moose are herbivores or moose eat plants.

Sample:

#1 – Wolves eat moose.

#2 – Moose eat plants.

Hint:

Evidence is observations, data, or information that support the claim. Explanations need **two** or more pieces of evidence.

Reasoning: To link claim and evidence, here students should explicitly describe if all the animals relationships in the food web.

Sample:

When wolves came to the island, they ate moose. As a result, moose population decreased. There were not many moose left to eat plants. That is why plants increased.

Hint:

Reasoning tells why your particular evidence supports your claim.

Concluding Sentence: Therefore,

Here, students should reassert their claim.

Sample:

Therefore, moose population decreased and plants increased.

Hint:

Restate your claim in the Concluding Sentence.

Put it all together in a paragraph!

When wolves came over to Isle Royale, moose population decreased and plants increased.

Wolves eat moose and moose eat plants. When wolves came to the island, they ate moose.

As a result, moose population decreased. There were not many moose left to eat plants.

That is why plants increased. Therefore, moose population decreased and plants increased.



Lesson 2: What are My Animal's Predators and Prey?

To the teacher:

Lesson 2 Overview:

In this lesson, students work individually to develop a set of food chains for a local animal species from one habitat in their schoolyard. Using the Critter Catalog students will find out what their animal eats and which other animals eats theirs. As a class the students will talk about some examples of the food chains they built and begin to address the concepts of producers, consumers, predators, and prey. The food chains they build individually will be combined with those of their team members to create a food web for a habitat in Lesson 3.

1. Selecting A Habitat and Choosing Animals

Using the CyberTracker Habitat Summary Table, ask students to choose one of the habitats (e.g. *short grass*) where there have been at least 4 animals found by students during field data collection. A typical set of animals for *short grass* might be: (1) ant; (2) funnel-weaver spider; (3) pillbug; (4) pigeon. Have each team-member choose one of the four animals to research and write their assignments on the *Food Chain Data Sheet*. Then have students gather in animal groups based on their animal (e.g. ant group) for the research part of the lesson (this will allow students to more efficiently use computers).

2. Researching An Animal

Using the BioKIDS Critter Catalog, have students find their individual animal and determine what their animal eats and what animals prey on their animal. They can fill in the food chains on the *Food Chain Data Sheet* and check it with their other animal group members so they all agree on the food chain. If students cannot access the BioKIDS web site, you may wish to print the Critter Catalog entries they will need. When they are choosing which things to put in the circles to complete the food chains encourage them to include animals that were seen in their schoolyard and in particular those which other team members are researching (e.g., from the above 4 species the student doing the ant food chain should include spider as one of the animals that eats ants). Let them know that for some animals there may not be 5 things the animal eats, or 5 things that eat it, but to fill in as many spaces as they can.

Driving Question

What are my animal's predators and prey?

Learning Goals

Content

- Students learn about food chains in their schoolyard habitats.
- Gain understanding of the terms predators/prey, producers/consumers, and omnivores, carnivores, and herbivores.

Inquiry

- Students use appropriate tools and techniques to gather data.
- Students use appropriate tools and techniques to analyze and interpret data.
- Students formulate explanations from evidence.

Technology

- Students use technological tools to organize and transform data for analysis.
- Students use Internet resources to research background science knowledge to support claims.

Time

3 class periods

3. Analyzing the Food Chains

Have the students complete the follow-up questions on the *Food Chain Data Sheets* to learn about predators, prey, consumers, producers, omnivores, carnivores, herbivores, and decomposers.

After students have completed the *Food Chain Data Sheets*, have them return to the BioKIDS teams so they can compare their food chains to those of other animals made by other team members. You may want to discuss these food chains as a class to reinforce the concepts. Choose one of the animals to talk about as a class. Make sure it is an animal that is a primary consumer and eats plants, not a predator, as you want to be able to talk about producers as well as consumers. Have students who completed a diagram for that animal come up, explain which animals eat their animal and what their animal eats, and talk about the energy flow through the food chain. You can repeat this sharing for all animals if you want to emphasize students' presentation skills and reinforce the content.

4. Food Chain Follow-up Exercise

Use the *Food Chain Follow-up Exercise* as homework or bell work. Have students label the diagram with the key concepts discussed in class. This can provide reinforcement of the concepts and an assessment tool for you to determine students' understanding.

Materials

- One copy of the CyberTracker Habitat Summary Table per team.
- At least one computer with internet access or the BioKIDS Critter Catalog CD-ROM per team.

Lesson 2:

What are My Animal's Predators and Prey?



Food Chain Data Sheet 1

Name: _____ Team Name: _____

1. Using the CyberTracker Habitat Summary Table, as a team choose one habitat that has at least four different species.

Habitat: _____

2. Have each team member choose one of the animals to research.

Animal that was seen in that habitat	Assigned Team-member

predators animals that kill and eat other animals.

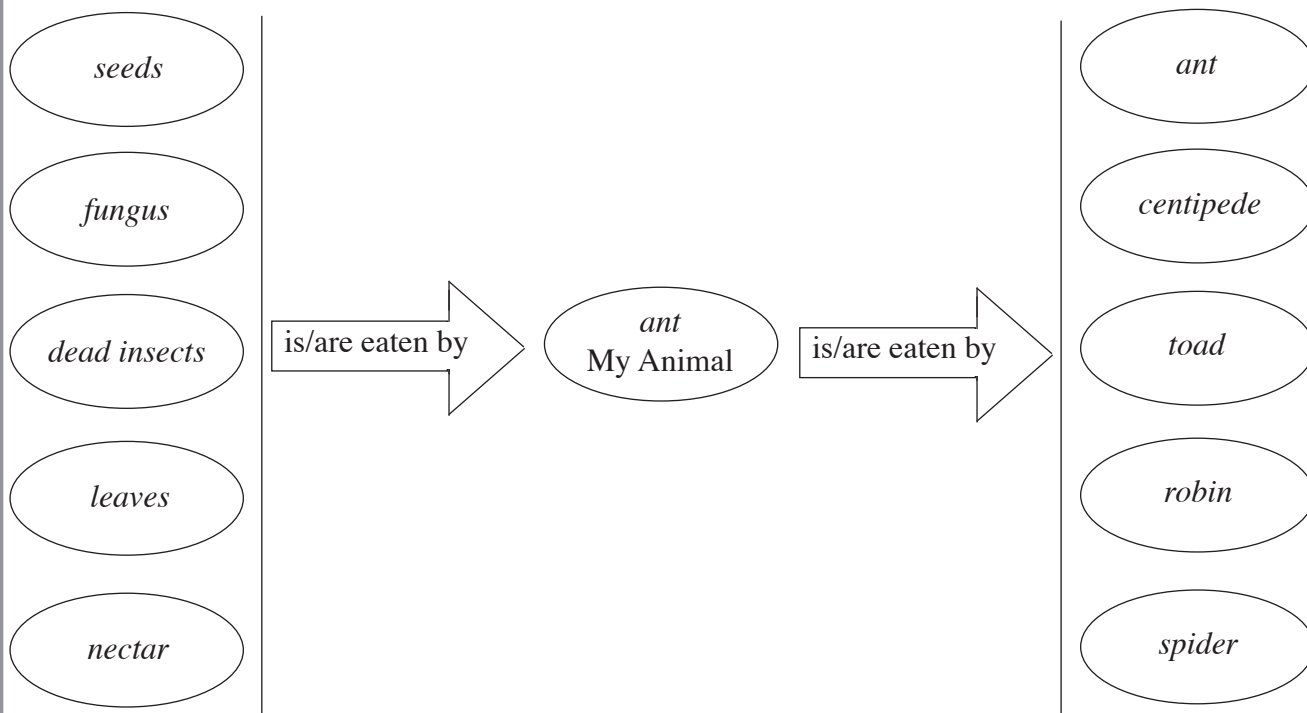
prey animals that are eaten by predators.

In a food chain, animals can be both predators and prey.
In addition to eating other animals (their prey), some animals also eat plants.

Food Chain Data Sheet 2

Gather information on your animal using the Critter Catalog to fill in the food chains below.

3. Place your animal's name in the middle circle.
4. Place animals or plants that your animal eats for food in the circles to the left.
5. Place animals that eat your animal for food in the circles to the right.



6. a. Look at your food chains. Is your animal predator, prey or both?

(circle one) predator prey both

- b. Describe how you know this.

The ant is only prey. It is eaten by other animals, but does not hunt other animals for food.

Food Chain Data Sheet 3

Food chains help biologists understand the flow of energy. In addition to predators and prey, organisms also have other roles in the food chain.

producers get their energy directly from the sun.

consumers get their energy through eating living things.

All living things are either producers or consumers.

7. a. leaves is/are a **producer** from my food chains on the previous page.

b. If there are no producers in your food chain, explain why.

8. a. Are you a producer or a consumer?

(circle one)

producer

consumer

b. Where do you get your energy? (Include one example.)

Food Chain Data Sheet 4

Consumers are grouped based upon the type of food they eat.

Herbivores: animals that mostly eat plants

Carnivores: animals that mostly eat other animals

Omnivores: animals that eat both plants and animals

9. Look at all four food chains made by your team. Determine if each is an herbivore, carnivore, or omnivore.

Animal	Circle the appropriate consumer type
	Herbivore / carnivore / omnivore
	Herbivore / carnivore / omnivore
	Herbivore / carnivore / omnivore
	Herbivore / carnivore / omnivore

Top predator a predator that is at the top of the food chain, one that is not often preyed upon by others.

10. a. Pick a top predator in your food chain.

Top predator in my food chain: _____



Food Chain Data Sheet 5

Name: _____ Team Name: _____

Scientific question:

If a volcano exploded and ash blocked the sunlight for one year, would Foxes survive?
(your top predator)

← **What is the main science concept covered in this question? Sample: Sunlight – sunlight provides energy for plants to grow.** _____

Scientific Explanation:

Claim: Claim should be complete sentence that answers the question, but does NOT contain any evidence.

Sample:

If a volcano exploded and ash blocked the sunlight for several months, foxes would not survive.

Hint:

A claim is a complete sentence that answers the question.

Evidence: Here students should describe the effect of having no sun on the food web.

Sample:

#1 – Without sun, plants would die.

#2 – Without plants, herbivores, like mice, would die.

Hint:

*Evidence is observations, data, or information that support the claim. Explanations need **two** or more pieces of evidence.*

Reasoning: Here, students need to explain how a food chain disruption affects their chosen animal.

Sample:

Without sunlight, the food of foxes will die and they will have nothing to eat.

Hint:

Reasoning tells why your particular evidence supports your claim.

Concluding Sentence: Therefore,

Here, students should reassert their claim.

Sample:

Therefore, if a volcano exploded and blocked sunlight for several months, foxes would not survive.

Hint:

Restate your claim in the Concluding Sentence.

Put it all together in a paragraph!

If a volcano exploded and ash blocked the sunlight for several months, foxes would not survive. Sunlight provides energy for plants to grow. If sunlight is blocked, plants would eventually die. Without plants, herbivores will have nothing to eat and eventually die. Without sunlight, the food of foxes cannot survive and foxes will have nothing to eat. Therefore, if a volcano exploded and blocked sunlight for several months, foxes would not survive.

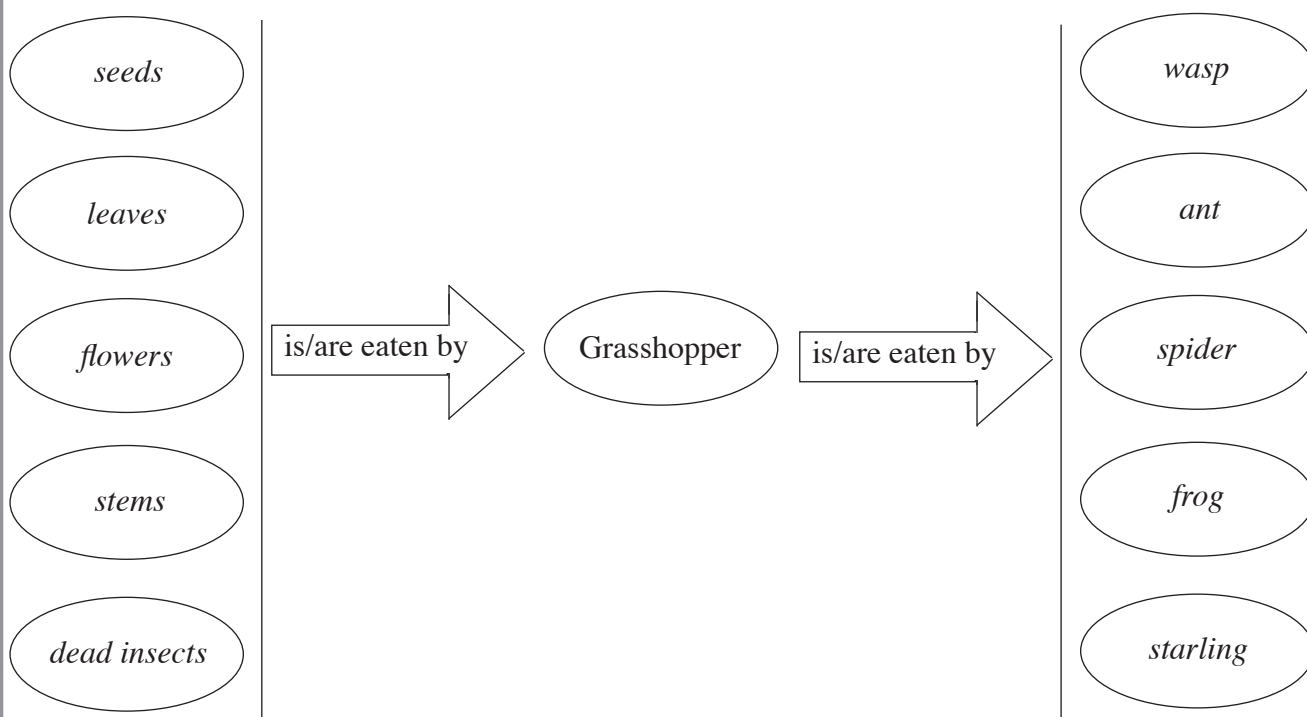


Food Chain Follow-up Exercise

Name: _____ Team Name: _____

Below is a set of food chains with a grasshopper in the center. Circle and label the following things in the diagram:

- (1) a predator
- (2) an animal that is prey
- (3) a producer
- (4) a consumer



In the blank food chain below fill in one food chain from diagram.

_____ → _____ → _____



Lesson 3: How do Animals Live with Each Other?

To the teacher:

Lesson 3 Overview:

In Lesson 2, students will combine the food chains they developed for their individual animals in Lesson 1 with those of their BioKIDS team members to create a food web for the habitat in their schoolyard. In this lesson, students will look specifically at the interrelationships of animals in one habitat. This will give students an opportunity to explore how an animal is connected to the other animals in its habitat, as well as the similarities and differences between animals in the same habitat. This lesson concludes with students making hypotheses about why they saw some animals from the food web but not others when they were collecting schoolyard data.

1. Create Organism Cards

For the students to create their combined food web they will use cards they make from the food chains they made in Lesson 1. If there are any duplicates from the different animals that team members used to build their food chains in Lesson 1, they need make only one card per team. Remind the students to mark any cards for animals they actually saw in the schoolyard with a large star (or *). Students may need to see the CyberTracker Habitat Summary Table to remind them of what animals were seen by all of the teams.

2. Building Schoolyard Habitat Food Web

Remind students that the food web they will build is for the one habitat in their schoolyard where they found the animals they made food chains for (e.g., short grass). Each team will then create a food web using the cards that the team members have prepared. Have students place the plants at the bottom of the poster board with the invertebrates above and the vertebrates on top. Student will be guided in adding the sun and decomposers to the web and drawing appropriate arrows showing the energy flow.

Driving Question

How do animals live with each other?

Learning Goals

Content

Students explore the concept that organisms do not live independently of other organisms, but are part of food webs.

- Students explain common patterns of interdependence and interrelationships of living things.

Inquiry

Students use appropriate tools and techniques to analyze and interpret data.

- Students formulate explanations from evidence.

Technology

- Students use technological tools to organize and transform data for analysis.

Time

4 class periods

3. Analysis of Schoolyard Food Web

The dynamics of the food web will then be examined through the *Food Web Data Sheets* in teams or as a class by addressing things such as competition for food, what would happen if one animal was added or removed etc. Students will explore how changes affect the ecological balance of their food webs.

The last thing students will do in this lesson is to make a claim about why they think there are not more animals in their schoolyard. This question should flow naturally out of the fact that while they were in the schoolyard they saw some of the animals in their food web and did not see others. It is important for students to understand that just because the prey of an animal is present in a habitat does not mean that everything the animal needs is there. Also, some animals move between habitats, like birds, and may not be seen by students even though they are present.

Materials

- One copy of the CyberTracker Habitat Summary Table per team.
- Large paper or poster boards for each team.
- Markers and glue sticks.

Lesson 3: How do Animals Live with Each Other?

Have each team member make plant, and animal cards to use when building a team food web.

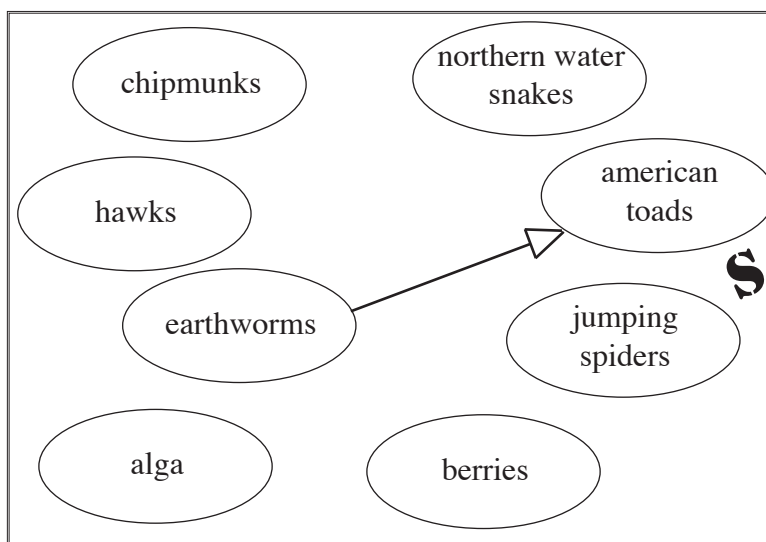
1. Create one card with your animal's name.
2. Create up to four cards with foods your animal eats including both plants and animals.
3. Create up to four cards with the names of predators that eat your animal.
4. Finally, mark any cards that are of animals you or your classmates saw in your schoolyard with a star (*), this includes plants or other things that you did not collect CyberTracker data on but did see.

My animal's name: <i>grasshopper</i> *	One food my animal eats: <i>leaves</i> *	One food my animal eats: <i>dead insects</i>
One food my animal eats: <i>stems</i> *	One food my animal eats: <i>flower petals</i> *	One predator of my animal: <i>frog</i>
One predator of my animal: <i>starling</i>	One predator of my animal: <i>wasp</i>	One predator of my animal: <i>spider</i> *

Food Web Building Instructions

Your team will create a food web of one habitat from your schoolyard to explore the interactions among the organisms in that habitat. Here is what you need to do:

1. In your team, organize the note cards that you created on your board like this:
 - Place all non-animal note cards including garbage, plant, and other vegetation note cards at the bottom of the board.
 - Above these cards place all invertebrate cards.
 - Above the invertebrate cards, place the reptile, amphibian, mammal, fish, and bird cards.



2. Draw arrows from each living thing (prey) to the things that eat it (predators) to show how energy flows through the food web. To help remember which way the arrow (and the energy flow) goes remember that the arrow goes from an animal into the mouth of the animal that eats it.
3. Continue connecting organisms until every predator/prey relationship is shown with an arrow showing the energy flow.
4. Your food web is not complete without a sketch of the original energy source for all living things – the sun. Add this to your food web.

5.

decomposers animals that eat the wastes and remains of other living things. They break down wastes and dead organisms and release nutrients that are food for plants. Pill bugs and worms are examples of decomposers.

In addition to using energy from the sun, the producers also need nutrients to grow. Decomposers release these nutrients after eating the wastes and remains of other living things. Place these decomposers and nutrients into your food web.



Food Web Data Sheet 1

Name: _____ Team Name: _____

Here are some questions to help you think about your food web, why your animal lives in this habitat, and how your animal is connected to the other animals in the habitat where it lives.

Scientists can use food webs to begin predicting how animal populations may respond to changes in the habitat.

1. What would happen to the food web if **you removed all of the plants** from the web?

The plants are at the base of the food web and are the original source of food for the web. All animals would eventually die.

2. If someone sprayed insecticide and **killed all the ants** in the habitat, how would this affect the ants' **prey**?

I think there would be more small insects because the ants wouldn't be there to eat as many.

3. If someone sprayed insecticide and **killed all of the ants** in the habitat, what would happen to the ants' **predators**?

I think there would not be as many spiders because they would not have as much food to eat.

4. What would happen to the other organisms in your food web if a **top predator is removed** from your food web?

In our web, the top predator is a hawk. Removing it would increase the number of mice in the area until they ran out of food from over population.

Food Web Data Sheet 2

Grey Wolves

A wolf's diet consists only of meat, and they can consume up to 20 pounds of meat at one meal. Wolves are among the most social carnivores in the world, living in family groups called packs. Wolf packs use their group to hunt large animals like moose, elk, bison, white tailed deer, and reindeer. By themselves, wolves hunt smaller prey, such as beavers, rabbits, and other small mammals.



Wolves usually move at night over large distances, so they need large spaces to live. Around town or cities, wolves might live in an area of about 100 square miles. In Alaska or Canada, where there are fewer people, wolves live in areas of up to 1000 square miles.

Wolves once lived throughout most of the United States. Now they remain in only a few places. In most states wolves are endangered due to habitat destruction. As human populations have grown the amount of wilderness where wolves can live has gotten smaller. Protecting the wilderness helps protect the wolf.

4. Wolves once lived in both the Lower and Upper Peninsulas of Michigan, but since their habitat has been destroyed, now they only survive in the Upper Peninsula. Imagine that wolves were reintroduced to the Lower Peninsula and into your food web.

a. Where would you place them in your web?

I would put the Grey Wolf at the top of the food web.

b. Give one reason why you placed wolves there.

I put them there because they are carnivores and consume a lot of large and small animals.



Food Web Data Sheet 3

Name: _____ Team Name: _____

5. Scientific question:

As a biologist, would you recommend reintroducing Grey Wolves to Southeastern Michigan?

← What is the main science concept covered in this question? *Sample: Grey wolves – Grey wolves are top predators that live in packs and needs lots of wilderness space to hunt and live.*

Scientific Explanation:

Claim: There is only one correct claim to be made in this case. Southeastern Michigan is too urban to safely reintroduce Grey Wolves.

Sample:

I do not recommend reintroducing Grey Wolves to Southeastern Michigan.

Hint:

A claim is a complete sentence that answers the question.

Evidence: Since the claim is that wolves NOT be reintroduced, the evidence used should indicate why SE Michigan is not a good place for wolves OR why wolves are not good for SE Michigan.

Sample:

#1 – There is not much open wilderness for hunting in southeastern Michigan.

#2 – There are too many people and not enough space for packs of wolves in southeastern Michigan.

Hint:

Evidence is observations, data, or information that support the claim. Explanations need two or more pieces of evidence.

Reasoning: Here students should explicitly describe either how SE Michigan doesn't provide wolves with a good place to live, OR why wolves would be dangerous here. That is the link between the evidence and the claim that reintroduction is not a good idea.

Sample:

Southeastern Michigan does not have the right habitat for grey wolves any longer.

Hint:

Reasoning tells why your particular evidence supports your claim.

Concluding Sentence: Therefore, Here, students should reassert their claim.

Sample:

Therefore, I do not recommend reintroducing Grey Wolves to Southeastern Michigan.

Hint:

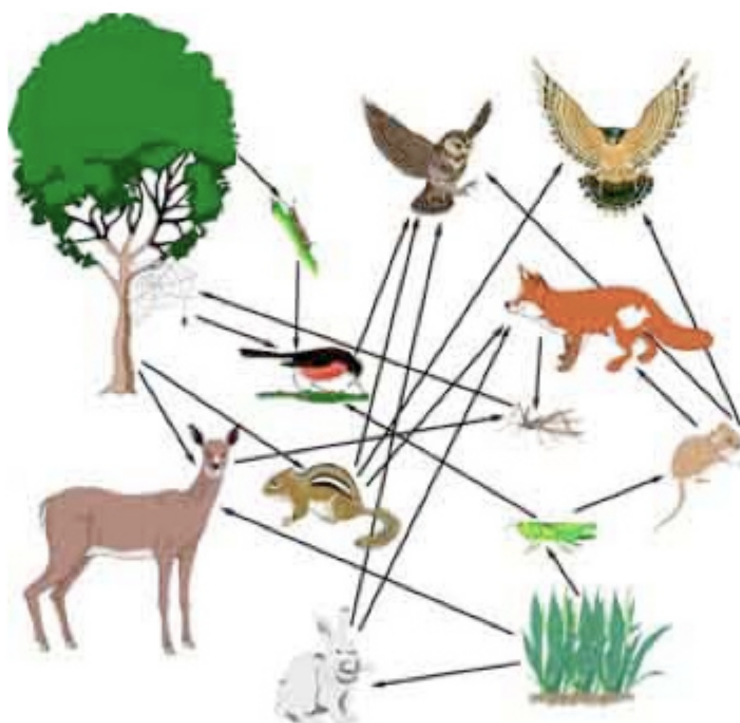
Restate your claim in the Concluding Sentence.

Put it all together in a paragraph!

I do not recommend reintroducing Grey Wolves into Southeastern Michigan. Grey Wolves are top predators that live in packs and need lots of wilderness space to hunt and live. There is not much open wilderness for hunting in southeastern Michigan. There are too many people and not enough space for packs of wolves in southeastern Michigan. Southeastern Michigan does not have the right habitat for grey wolves any longer. Therefore, I do not recommend reintroducing grey wolves to SE Michigan.

Food Web Data Sheet 4

Food Webs: The food web you have made shows many examples of both the predators and the prey of the different animals you observed in your schoolyard. Looking closely at your food web, you might notice that it contains some animals that you do not actually find in your schoolyard. Think back to our lesson on habitats. Animals need more than just a food source to be able to live in a place. For example, there might be a lot of fish in a little fresh water pond. Sharks eat fish, but you probably won't ever find any sharks in a little pond. Why not? Well, for one thing, a shark won't fit in a little pond, even though there's food there! For another, sharks live in the salty ocean; they would die in a fresh water pond.



Food Web from: www.bigelow.org/edhab/fitting_algae.html

Select an animal from your food web who is not found in your schoolyard, even though its food is found there: *Bears*



Food Web Data Sheet 5

Name: _____ Team Name: _____

Scientific question:

Even though there is bears 's food in
(your animal)

your schoolyard, why is the animal NOT
living there?

← What is the main science concept covered in
this question? Sample: Bears – bears are large

mammals that live in dense forests and need a lot of food..

Scientific Explanation:

Claim: There are many possible claims to be made here. The most common is that the schoolyard is not a good habitat for the selected animal. Another possible claim is that the animal is too dangerous to allow in urban areas.

Sample:

I do not see bears in my schoolyard because it is not a good habitat for them to live.

Hint:

A claim is a complete sentence that answers the question.

Evidence: This evidence will depend largely on the claim. If the claim is that the schoolyard is a bad habitat, evidence should include what the schoolyard doesn't provide for the animal that it needs. Look to the "definition" of the animal clues.

Sample:

#1 – There is no dense forest in my schoolyard.

#2 – There is not much food for bears in my schoolyard.

Hint:

Evidence is observations, data, or information that support the claim. Explanations need two or more pieces of evidence.

Reasoning: Here students should clearly state that the things the schoolyard lacks are required for the animal to survive. Or, if the claim is about safety, why dangerous animals cannot be allowed near people.

Sample:

The schoolyard does not have the things a bear needs, like shelter and food.

Hint:

Reasoning tells why your particular evidence supports your claim.

Concluding Sentence: Therefore,

Here, students should reassert their claim.

Sample:

Therefore, I do not see bear in my schoolyard because it is not good habitat for them to live

Hint:

Restate your claim in the Concluding Sentence.

Put it all together in a paragraph!

I do not see Bears in my school yard because it is not a good habitat for them to live.

Bears are large mammals that live in dense forests and need a lot of food. There is no dense forest in my schoolyard. There is not much food for bears in my schoolyard. The schoolyard does not have the things a bear needs to survive, like shelter and food.

Therefore, I do not see bears in my schoolyard because it is not a good habitat for them to live.