

Module 2 • Overview • Habitats

Brief Overview

This module provides an introduction to habitats within the context of urban ecosystems. Students will continue their exploration of basic ecological concepts and definitions as they explore their immediate surroundings. They will begin to understand how people can alter the habitats of other living things. Squirrels and rats will be introduced to demonstrate habitat needs of urban animals.

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Time

10-12 sessions (Each session is 1 – 1.5 hours)

Desired Outcomes

Students will:

- Develop an understanding of habitats and what living things need from their habitats to survive.
- Determine whether the schoolyard is a suitable habitat for squirrels.
- Learn about changing habitat features to get rid of urban wildlife that are NOT wanted (rats).

What You’ll Need

Materials

- Book:** “All Kinds of Habitats” by Sally Hewitt
- Drawing paper
- Chart paper
- Crayons
- Pens and pencils
- Hand lenses
- Live branches (if Lesson 1 will be performed indoors)
- Clipboards with pencils attached for small groups
- Paper for making Rat Bulletin or flyer

- PageMaker software (optional)

Worksheets and Handouts:

- *What Do People Need from Their Habitat to Survive?*
- *What Do Animals Need from Their Habitat to Survive?*
- *Orientation Map/Drawing of Schoolyard* (You will be making this!)
- *Rats! Rats! Rats!* Reading
- *Rat/Habitat*
- *Walking Map of Schoolyard Neighborhood*

Posters

The leader prepares posters by writing the ***title only*** across the top of a sheet of chart paper before the lesson.

- *What Students Need From Their Habitat*
- *What People Need from Their Habitat*

New Vocabulary ---

Abundance

Degree of how many there are of a specific animal or plant

Burrow

Hole or tunnel in the ground made by a rat, rabbit, fox, or similar animal for habitation and safety

Conditions

Characteristics of the environment that influence the survival of an organism; every organism survives within a range of environmental *conditions*; *ex:* a certain temperature range or chemical condition (salinity, dissolved oxygen, pH, turbidity, nitrogen level)

Foot Tracks

Tracks left by animals as they move; they can sometimes be used to identify the animal that made them

Gnaw

Chew on with the teeth; especially, to wear away by persistent biting or nibbling

Habitat

The place where an organism lives that provides all of its needs for survival

Indicator

Something observed or calculated that is used to show the presence or state of a condition or trend

Land cover

What is on the land; whether it is grass, trees, dirt, asphalt, etc.

Naturalist

A person who studies nature (including plants and animals) and natural history (how plants and animals have changed over time)

Plant Scientist

A biologist specializing in the study of plants

Resources

The materials and energy that living things need for growth and maintenance (water, oxygen, nutrients/food, sunlight)

Zoologist

A biologist that studies animals and all aspects of animal life

Careers

Students will learn about different occupations in ecology-related fields.

- Ecologist
- Plant Scientists
- Zoologist
- Naturalist

Preparing for the Lessons

Leaders will:

- Review the “Background for Teachers” section in the Leader Tools.
- Review the lesson sequences and the lesson preparation directions
- Prepare areas in the classroom and hallways for hanging student work
- Clean/remove “unsafe” objects from outdoor areas where students will investigate
- Review the information found in Leader Tools including sample answer sheets and rat prevention tips.
- **YOU WILL NEED TO MAKE AN ORIENTATION MAP/ DRAWING OF THE SCHOOLYARD FOR THE STUDENTS.**
Place the school building in the center of the map and indicate front and back. Divide the map into the schoolyard areas that you want the students to explore. Number each area. For each area have a checklist of habitat requirements: water _____, oxygen _____, food _____, nest site _____. Include an area for notes about any problem conditions: temperature, poisons, etc. that can be noted. (See Sample in Leader Tools)
- Identify potential parent or school adult volunteers if necessary
- Strategize about the feasibility of a school/community rat prevention campaign

- Identify possibilities for a culminating activity and arrange for any field trips or classroom visitors

Module 2 • Lesson 1 • Is That a Habitat?

Action Synopsis

Students will define the meaning of habitat and illustrate themselves in their habitat.

Time

1 session

Desired Outcomes

Students will:

- Define the term habitat.
- Identify themselves as a living thing that requires a suitable habitat.

What You'll Need

For Each Student

- Drawing paper
- Crayons
- Pen or pencil

For Whole Class

- Book:** “All Kinds of Habitats” by Sally Hewitt
- Chart paper

Preparing for the Lesson

Leaders will:

- Read the “Background for Teachers” section at the beginning of the lesson.
- Gather all materials needed for the lesson.
- Select 4 -5 habitats (including “In the City”) from the book “All Kinds of Habitats” to read to the students.
- Select an area **outside** as a possible location for reading the book at the beginning of the activity (if weather permits).

New Vocabulary

Habitat

The place where an organism lives that provides all of its needs for survival (i.e. food, water, shelter, and space).

Assessments

Student drawings will evaluate their understanding of the meaning of *habitat*.

Lesson Sequence

(If weather permits, bring the students outside at the beginning of the class and have them sit closely in front of you.)

1. Introduce the activity by explaining to students that we will be discussing habitats for the next few weeks. Ask the students if anyone knows what a habitat is? Allow for several answers.
2. Show the students the book, “All Kinds of Habitats” and ask the students to study the cover of the book. Study some of the pictures with the students, as well as the Table of Contents. Ask the students to PREDICT what information the book may reveal to the class about the word *habitat*. Allow for several answers.
3. Read the selections from the book to the students. Encourage students to pay close attention to what each animal needs that is the same.
4. Once the selections have been read, ask the students what all of the living things in each habitat needed that was the same. Ask the students:

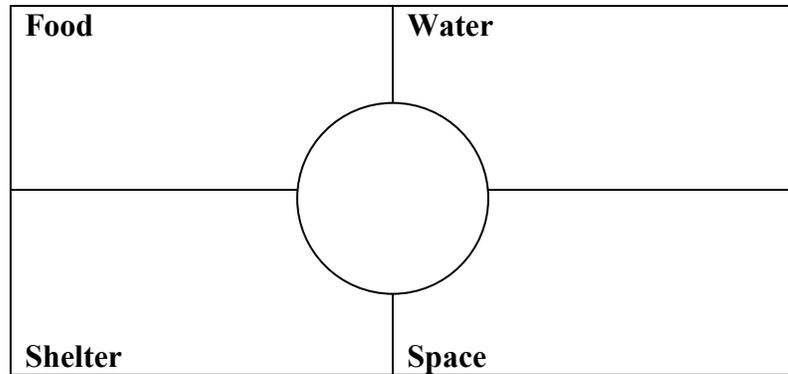
Do they all need food?
Do they all need a shelter?
Do they all need air/space?
Do they all need water?
5. Bring the students inside and have them sit in front of the chalk board. Based on student responses to the questions above, have the students come up with a definition for the word *habitat*. Write the students’ definition on the board and have the students read it aloud.
6. Ask students what would happen if part of an animal’s habitat was missing (no food, no water, no shelter, or no space)? Would it survive? (Answer: No)

Students should be able to explain that every living thing needs a habitat in order to survive. If something that an animal needs in the habitat is missing, it must find a new location for its habitat or it will not survive.

7. Ask students if they live in a habitat. If students are not sure, ask them the questions from above in order to help them realize that YES, they too are living things and therefore need a habitat in order to survive.
8. Have students go to their seats and distribute drawing paper and crayons. Have students draw a picture of themselves in their habitat.

Modification: For students who are having difficulty understanding “habitat,” create a graphic organizer by doing the following:

- Fold the drawing paper into 4 squares.
- Write each of the following words in the squares (one word in each square: food, water, shelter, space).
- Have the student draw him/herself in the middle of the paper.
- Then have the student draw a picture showing each word in each of the squares.



Maryland SC Standards (2nd and 3rd Grade): <i>Standards are presented in the following format: (Grade)Standard.Topic.Indicator.Objective – Objective Statement</i>	
Science	
Standard 1.0 Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.	<p>Constructing Knowledge (2)(3)1.A.1.b – Seek information through reading, observation, exploration, and investigations.</p> <p>Applying Evidence and Reasoning (2)(3)1.B.1.b – Develop reasonable explanations for observations made, investigations completed, and information gained by sharing ideas and listening to others’ ideas.</p> <p>Communicating Scientific Information (2)(3)1.C.1.a – Describe things as accurately as possible and compare observations with those of others.</p> <p>(2)(3)1.C.1.c – Draw pictures that correctly portray at least some features of the thing being described and sequence events (seasons, seed growth).</p>
Standard 3.0 Life Science: Students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.	<p>Ecology (2)3.F.1.a – Investigate a variety of familiar and unfamiliar habitats and describe how animals and plants found there maintain their lives and survive to reproduce.</p> <p>(2)3.F.1.b – Explain that organisms live in habitats that supply their basic needs.</p> <ul style="list-style-type: none"> • Food • Water • Air • Shelter

Module 2 • Lesson 2 • Resources and Conditions

Action Synopsis

Students will learn about the difference between needs and wants and apply this understanding to their own lives. They will learn about resources and conditions and place survival needs into these categories.

Time

1 session (Each session is 1 to 1 ½ hours)

Desired Outcomes

Students will:

- Practice differentiating between personal needs and wants.
- Demonstrate an understanding of resources and conditions by correctly listing survival needs in each of these categories.

What You'll Need

For Each Student

- Worksheet: *What Do People Need from Their Habitat to Survive*

For Whole Class

- Poster: *What Students Need from Their Habitat* (from previous lesson)
- Poster: *What People Need from Their Habitat*

Preparing for the Lesson

Leaders will:

- Copy Worksheet: *What Do People Need from Their Habitat to Survive?* (Enough copies for each student)
- Review sample answer sheet for Worksheet: *What Do People Need from Their Habitat to Survive* found in Leader Tools
- Be sure the previous lesson's poster: *What Students Need from Their Habitat* is up.
- On poster paper, write heading only: *What Do People Need from Their Habitat*. Make two columns underneath the title labeled: (1) Resources and (2) Conditions.

New Vocabulary

- **Conditions**
Characteristics of the environment that influence the survival of an organism; every organism survives within a range of environmental *conditions*: a certain temperature range or chemical condition (salinity, dissolved oxygen, pH, turbidity, nitrogen level)
- **Resources**
The materials and energy living things need for growth and maintenance (food, water, air)

Assessments

- Student responses on Worksheet: *What People Need from Their Habitat to Survive*

Lesson Sequence

1. Begin the lesson by having the students read over the poster from the previous lesson: *What Students Need from Their Habitat*. Ask the students to try to explain the difference between needs and wants. After they express their ideas, fill in the knowledge gaps; i.e., what do we (or any living thing) really need to survive? (Oxygen, water, food, nest site) Some of the possible student responses, such as television, money, electricity, friendship, and love should be considered *wants*. Discuss with the students the difference between needs for basic survival and what someone might like to have or want. (As items are noted to be wants, cross through them on the poster.) For people, wants can be very central to our being happy or having a sense of well-being. But they are not needed to survive!
2. Introduce two new concepts: resources and conditions. Write the New Vocabulary definitions on chart paper and post them, as the children may want to refer to them as they complete their worksheets.
3. Pass out the Worksheet: *What Do People Need from Their Habitat to Survive?* Have the students work individually. (While they are working, make space for

two columns on the board, headed *Resources* and *Conditions*. When the students are finished, ask for their responses. Write each response on the board as the student has classified it, either under Resources or Conditions. (Write exactly what the students say; don't do any correcting until you get all responses.)

- When you have all the students' responses, go down the list, discussing whether the item is in the right category (Resources or Conditions) and whether it is really essential for survival. (You can check Leader Tools for answers) Write the final lists on the poster: *What Do People Need from Their Habitat*.

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Standard 3.0 Life Science: Students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.	<p>Ecology (2)3.F.1.a – Investigate a variety of familiar and unfamiliar habitats and describe how animals and plants found there maintain their lives and survive to reproduce.</p> <p>(2)3.F.1.b – Explain that organisms live in habitats that supply their basic needs.</p> <ul style="list-style-type: none"> • Food • Water • Air • Shelter
Standard 6.0 Environmental Science: Students will use scientific skills and processes to explain the interactions of environmental factors (living and non-living) and analyze their impact from a local to a global perspective.	<p>Natural Resources and Human Needs (2)6.A.1.a – Describe natural resources as something from the natural environment that is used to meet one's needs.</p> <p>(2)6.A.1.b – Identify water, air, soil, minerals, animals, and plants as basic natural resources.</p> <p>(2)6.A.1.d – Identify ways that humans use Earth's natural resources to meet their needs.</p>

Module 2 • Lesson 3 • Urban Animals & Their Habitats

Action Synopsis

Students will apply what they have learned about habitats to urban wildlife. They will classify animal survival needs as either resources or conditions. They will also draw an animal in its habitat.

Time

1 - 3 sessions (Each session is 1 to 1 ½ hours)

Desired Outcomes

Students will:

- Demonstrate an understanding of resources and conditions by correctly listing animal survival needs in each of these categories.

What You'll Need

For Each Student

- Worksheet: *What Do Animals Need from Their Habitat to Survive?*

For Whole Class

- Drawing paper
- Crayons

Preparing for the Lesson

Leaders will:

- Copy Worksheet: *What Animals Need from Their Habitat to Survive* (Enough copies for each student)
- Review Sample Answer Sheet for Worksheet: *What Do Animals Need from Their Habitat to Survive?* found in Leader Tools
- Gather drawing paper and crayons

New Vocabulary

Burrow

Hole or tunnel in the ground made by a rat, rabbit, fox, or similar animal for habitation and safety

Foot Tracks

Tracks left by animals as they move; they can sometimes be used to identify the animal that made them

Gnaw

Chew on with the teeth; especially, to wear away by persistent biting or nibbling

Indicator

Something observed or calculated that is used to show the presence or state of a condition or trend

Zoologist

A biologist that studies animals and all aspects of animal life

Assessments

- Student responses on Worksheet: *What Do Animals Need from Their Habitat to Survive?*
- Student drawing of an animal in its habitat
(Look for what is included in the drawings and what is left out)

Lesson Sequence

1. Introduce the subject of urban animals. Ask the children to name animals that they see in their neighborhood, excluding pets such as dogs and cats. List the animals noted on the board. Separate pets from animals found in nature. Ask the children what they think about these animals. Are they good for the neighborhood or bad for the neighborhood or, in some ways good and other ways bad? Why?
2. Ask the students to name indicators of urban animals. Write their responses on the board. Explain that an animal indicator is something we can see that tells us an animal has been in the area. (Reference the New Vocabulary definition of indicator.) Elicit the words **gnaw**, **foot tracks**, and **burrow** as visual evidence of animal presence.
3. Remind the students of the previous discussion about habitats, resources and conditions.

4. Pass out the Worksheet: *What Do Animals Need from Their Habitat?* Have the students work individually. While they are working, label two columns on the board: (1) Resources and (2) Conditions. Be sure to have space to write student responses under these two columns. When the students are ready, ask for their responses. Write each response on the board exactly as the students have classified it, either resources or conditions. (Don't do any correcting until you get all responses.)
5. When you have all the students' responses, go down the list, discussing whether the item is in the correct category (resource or condition) and whether it is really essential for survival. This should go quickly as students will see that all animals (including humans) need the same basic things for survival.
6. Tell the students that for the remainder of the lesson, they will become Zoologists studying urban animals. Ask the students if they know what a Zoologist studies (reference the New Vocabulary definition of Zoologist). As Zoologists, the students must be able to describe in detail an animal of their choice, in its habitat. Students may also become a Plant Scientist and study a plant of their choice. This part of the lesson requires taking the students outside.
7. The students should take paper and clipboards with pencils attached outside. Each student should have their own clipboard. Allow the students to spend time observing the schoolyard ecosystem. Have them identify one living thing in the schoolyard (plant or animal). Using their knowledge of resources and conditions, have the students identify through observation, the resources that their living thing of choice needs to survive in its schoolyard habitat. Encourage the students to be as specific as possible. For instance, squirrels eat acorns, plants get nutrients from soil, birds eat worms or seeds. Have the students list these resources on their paper. Once the resources are listed, have the students brainstorm the types of conditions that each resource must meet in order for their living thing of choice to survive. For example, a tree requires water to survive. Water is a resource.

However, if the water is full of chemicals, has too high or low a pH, has too high

- or low of a temperature, than the conditions are not right for that resource to be helpful for the plant's growth and survival. Another example is for an animal. Animals need oxygen to survive. But if the oxygen or air is polluted (excessive car exhaust is something the students can observe and relate to), then the animal may become sick or die.
8. Allow students to choose a living thing that they are interested in. Have each student draw a picture of their living thing of choice in its habitat. Tell them to be sure to include and label the things the animal needs to get from its habitat to survive. When the students have finished, have them come up, one at a time. Have each of the children describe their pictures to the class. As the children go over their drawings and an item is mentioned, put a checkmark next to it if it is on the board from the previous activity. Otherwise write it on the board and discuss with the class whether it is really something that an animal or plant needs to get from its habitat to survive.
 9. By the end of the discussion you should have a list of student ideas about what animals or plants in nature need from their habitats in order to survive.

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<p>Standard 3.0 Life Science: Students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.</p>	<p>Ecology (2)3.F.1.a – Investigate a variety of familiar and unfamiliar habitats and describe how animals and plants found there maintain their lives and survive to reproduce.</p> <p>(2)3.F.1.b – Explain that organisms live in habitats that supply their basic needs.</p> <ul style="list-style-type: none"> • Food • Water • Air • Shelter

Module 2 • Lesson 4 • Squirrels in the Schoolyard

Action Synopsis

Students will go outdoors and, using a checklist, assess whether different parts of the schoolyard provide habitat for squirrels.

Time

1 – 2 sessions (Each session is 1 to 1 ½ hours)

Desired Outcomes

Students will:

- Demonstrate an understanding of habitat requirements by surveying the schoolyard and identifying areas that provide habitat for squirrels.

What You'll Need

For Each Small Group

- Handout: *Orientation Map/Drawing of Schoolyard*
- Clipboard with pencil attached

People Power

- Adult volunteers would provide adequate supervision for small groups to work in different areas of the schoolyard.

Preparing for the Lesson

Leaders will:

- Copy the *Orientation Map/Drawing* (Enough copies for each small group)
- Gather clipboards with pencils attached

New Vocabulary

Abundance

Degree of how many there are of a specific animal or plant.

Land cover

What is on the land; whether it is grass, trees, dirt, asphalt, etc.

Naturalist

A person who studies nature (including plants and animals) and natural history (how plants and animals have changed over time)

Assessments

- Student responses on *Orientation Map/Drawing* checklist for squirrel habitat requirements

Lesson Sequence

1. Introduce today's activity: We will be going outside in the schoolyard to identify areas of the schoolyard that provide good habitat for squirrels. Explain to the students that they will become Naturalists for the afternoon. Discuss the definition of a Naturalist. Discuss how some Naturalists devote their entire careers to studying one or a few plants or animals or some component of the natural world. Tell the students that today, they are going to be squirrel Naturalists. They will be studying the schoolyard habitat to determine if it is suitable for squirrels.
2. Quickly review with the students what squirrels need to survive. Then divide the students into small groups. Review the rules for going outside.
3. Pass out a clipboard & pencil, with *Orientation Map/Drawing* of the school to each group. Explain to the students how to complete the checklist. As they go from area to area the children will check off whether they find the basic habitat needs for squirrels: water, oxygen, food and nest site and briefly describe what they find. Ask students if they know the primary food source for squirrels (nuts, leaves, tree bark)? What kinds of nesting sites do squirrels like? (depends on type of squirrel but most commonly trees in the city)
4. Go outside with the students. All groups should stay together in the same area. (You can deviate from this if you have enough adult volunteers.)

5. When you have completed this activity go back inside. Compare each small group's results. Create a class bar graph using the results from the student checklists (see Leader Tools for example). Discuss any differences in findings. Talk about whether any squirrels were seen. Stimulate student thinking by asking: Have you ever been anywhere where there were lots of squirrels (introduce concept of abundance)? Why do you think there were so many squirrels there? What about the area attracted squirrels? If you were trying to create a habitat for squirrels what things would you add to the schoolyard (introduce concept of land cover)? Ask the students to identify, using the bar graph, which area has the best habitat for squirrels? Did the students see squirrels in this area? If not, why not?

6. If possible, go to a nearby park or large green space and repeat this activity there. Note differences in abundance of squirrels and see if you can relate it to features of the area's land cover. Are there more trees in the park than in the schoolyard? Are you finding more squirrels in the park near trees? If this part of the lesson will not be taught, introduce the vocabulary "abundance" and "land cover" in the previous sequence. Discuss land cover and how land cover may affect the abundance of squirrels in an area. Ask students to describe the land cover in each schoolyard area they visited. What was different about each area? Is one type of land cover better for squirrels than another? Ask the students the questions from sequence (5) to get them thinking about the connection between land cover and squirrel abundance.

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<p>Standard 3.0 Life Science: Students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.</p>	<p>Ecology (2)3.F.1.a – Investigate a variety of familiar and unfamiliar habitats and describe how animals and plants found there maintain their lives and survive to reproduce.</p> <p>(2)3.F.1.b – Explain that organisms live in habitats that supply their basic needs.</p> <ul style="list-style-type: none"> • Food • Water • Air • Shelter

Module 2 • Lesson 5 • Rats & Habitat

Action Synopsis

Students will begin by thinking about habitat for rats. They will then strategize about ways to remove rats' habitat conditions and resources from their neighborhood. Students will engage the community in one or more rat prevention activities.

Time

2 – 3 sessions (Each session is 1 to 1 ½ hours)

Desired Outcomes

Students will demonstrate an understanding of habitat requirements by identifying ways to manipulate the urban environment to get rid of rats. They will begin developing their community outreach skills.

What You'll Need

For Each Student

- Handout: *Rats! Rats! Rats!* Reading
- Worksheet: *Rat Habitat*

For Whole Class

For informational letter:

- Computer
- Desktop publishing software (if available)

For poster or flyer:

- Paper
- Crayons, markers, or paints

Preparing for the Lesson

Leaders will:

- Copy Handout: *Rats! Rats! Rats!* (Enough copies for each student)
- Copy Worksheet: *Rat Habitat* (Enough copies for each student)
- Review sample answer sheet for Worksheet: *Rat Habitat* found in Leader Tools
- Check out this website (if internet access is available for background information on rat prevention program ideas)

<http://www.baltimorehealth.org/vectorcontrol.html> and read over *Rat Prevention Tips* found in Leader Tools

Assessments

- Students' participation in activities
- Student responses to *Rat Habitat* worksheet

Lesson Sequence

1. Introduce today's activity: We will be thinking about habitat in a different way today! We've been working with habitats that are hospitable or welcoming to urban wildlife, like squirrels. Ask the children to remind you of the essential things a habitat must have to be suitable for a squirrel or any other living thing! (Elicit the conditions and resources that you've talked about in previous lessons.)
2. Ask the children to stop for a moment and think about an animal in the urban environment that we DON'T want to have in our neighborhood. Elicit their responses.
3. It is likely that "rats" will be a student response. If not, suggest rats. Ask the children for their thoughts on why we wouldn't want rats in our neighborhood. Add to the discussion additional problems associated with rats.
4. Now ask the children about what they see as the connection between rats and habitat. Pass out the *Rat Habitat* sheet and ask the students to fill it out. When the children are finished collect the sheets.
5. Elicit the students' ideas about what parts of a rat's habitat we can alter. Pass out the *Rats! Rats! Rats!* Reading and read it over with the children.
6. Lead the children in deciding what "action" your group would like to take. This lesson includes having the children write an informational newsletter or a one-

page flyer, depending on the childrens’ abilities, ages, and your access to software, computers, and copying.

7. Have the students develop these informational guides and post/distribute them among their community.

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Module 2 • Lesson 6 • Culminating Activities

This is an opportunity for you and your students to identify a culminating activity.

Guest Speaker

One option would be to invite a community organization who deals with rats in the city to send a representative to talk with the children. Perhaps a City Council representative might be interested in meeting with the children to talk about their survey and the City's Rat Prevention Programs.

Visit the Zoo

Arrange a fieldtrip to the zoo. This can give the students an opportunity to see some of the habitat requirements of different animals.

People Power

- You may want to enlist parent volunteers.

Preparing for the Lesson

Leaders will:

- Find out if your zoo provides zookeepers or volunteers to tour the zoo with after-school programs. Tell your guide you've been studying habitat requirements.
- Find out if there are special programs offered in the after-school hours.
- Pick up a zoo brochure/exhibit map or check their website
- Choose how many and which areas you can realistically visit in the after-school time frame.
- Do some pre-activities related to the areas/animals you've chosen to visit (The zoo may have some pre-visit activities. Otherwise come up with questions, read a book, watch a video, etc)
- Arrange for transportation.

Create Bird Habitat: Make a Bird Feeder! (Take into consideration the rats in your neighborhood, as it might be a poor choice in neighborhoods that have an obvious rat population)

This bird feeder template comes from FamilyFun.com

What You'll Need

For Each Feeder That You Make

- Empty ½ gallon cardboard milk carton (rinsed out well)
- Enough popsicle sticks to make a roof (see picture)
- Dowel about 12 inches long
- Wire hanger or other wire

General

- Scissors
- Non toxic paint (brown will look like part of a tree)
- Glue
- Bird seed

Preparing for the Lesson

Leaders will:

- Decide how many feeders you will be making
- Send home request for well-rinsed empty ½ gallon cardboard milk containers
- Gather your supplies
- Scout out a spot or spots where you can put the feeder(s)

Lesson Sequence

1. Cut openings on opposite sides of a clean carton and coat with nontoxic paint.
2. Glue Popsicle stick shingles onto the roof.
3. For a perch, poke holes below the openings and slip a dowel through the holes.
4. Fill the bottom of the feeder with birdseed mix. (You can make your own mix by combining a variety of nuts and seeds, such as sunflower seeds, millet, thistle seeds and yellow corn.)
5. Hang the feeder with wire in a spot that's easy to view but far enough away from fences or posts to thwart predators.



6. See if the children can figure out a way to catch any falling seeds and keep it from becoming rat food.

Module 2: Habitats

Worksheets and Handouts

Grades 2 and 3

Module 2 - Lesson 3

What Do Animals Need from Their Habitat to Survive?

Your Name: _____

Please fill out the chart below, thinking carefully about what things you think ANIMALS need to survive. Indicate whether the things are **Resources** or **Conditions**.

Animal’s Survival Needs

Resources	Conditions

Module 2 – Lesson 5

RATS! RATS! RATS!**Why Bother With Rats???**

Good question! Rats, dead or alive, spread diseases! They leave pee (urine) and droppings (feces) everywhere. They have sharp teeth that can bite people and destroy electrical wiring by gnawing.

How Do I Know If My Neighborhood Has Rats?

Rats are most active at night; so you may or may not actually see them. You can use your senses (sight) to find signs of gnawing. If rats are around, you likely will find their droppings. Outside you can look for burrows and foot tracks.

What Does Habitat Have To Do With Rats?

Think about what you've learned about the **conditions** that all living things need from their habitat to survive! (Food, water, nest site, oxygen) If you can make the right changes in the neighborhood, you can take away what the rats need to survive!

What Should We Do So The Rats Will Not Be Able To Survive?**Take away their food!**

- Put trash in sealed plastic trash bags and then put the bags in trashcans!
- Use metal trash cans or approved plastic cans with tight fitting lids!
- Be sure trashcans don't have holes in them!
- Always put the trash can lid on tight!
- Pick up pet food dishes as soon as your pet is finished eating!
- Clean up pet feces!
- Don't litter! Your food litter is a rat's feast! Put food trash in trash bags that are later put in sealed trashcans!

Take away their nest site!

- Look around your house for openings, cracks or holes and get them fixed! (Even a tiny space is enough room for a rat!)
- Store materials (wood, lumber, tires) off the ground (Try a simple platform)
- Clean up vacant lots with tall weeds, garbage and debris

Help educate your neighborhood!

- Make an informational newsletter or flier to let your neighbors know how to get rid of rats!
- Use a survey to find out if getting good trash cans is a problem for your neighbors (Logistics-wise getting to a store and getting the can home OR having the money to buy a good trashcan!)
- Work with your community and school to keep your community rat-free!

Module 2 – Lesson 5

Your Name: _____

RAT HABITAT



WHAT DO RATS NEED FROM THEIR HABITAT TO SURVIVE?

Resources	Conditions

Which resources and/or conditions can WE try to eliminate to KEEP RATS AWAY????

Module 2: Habitats

Leader Tools

Grades 2 and 3

Background Information for Teachers

A habitat is defined as the place where an organism lives that provides all of its needs for survival. Examples of resources that are essential needs for an organism include food, water, adequate temperature, oxygen, and minerals. In simpler terms, a habitat provides food, water, shelter, and space to a population of animals. While a habitat is the place where a population of living things exists, different populations can share a habitat. For example, birds and squirrels both use trees as a habitat. If a habitat is missing one or more of these components, the following may occur:

- the population will either move to a better habitat,
- individuals within the population will compete among each other (intraspecies competition) for the missing resource, or
- the population will compete against other populations of living things (interspecies competition) for the missing resource.

Within a habitat there are both beneficial and negative interactions between populations of organisms. An example of a beneficial relationship is the interactions between squirrels and trees. Squirrels often store food resources (acorns, other nut varieties) by burying them in the ground near their nesting area. Often this food is forgotten by the squirrel and is left buried in the ground. Consequently, the acorn or nut that has been buried develops into a tree sapling and later grows to become a mature tree. Squirrels provided a benefit to trees by dispersing seeds for the tree.

Negative interactions between populations also occur in a habitat. An example of this type of relationship can be shown between humans and rat populations in a city. Often, people leave trash exposed in city habitats which attracts rats to the area. While rats are being supplied with food resources that are important for their survival, rats carry germs and disease that have proven to be harmful to humans. While humans provide a benefit to rats, rats spread harmful germs to humans.

Useful websites:

The Franklin Institute

<http://www.fi.edu/tfi/units/life/habitat/habitat.html>

Module 2 - Lesson 2

What Do People Need from Their Habitat to Survive? (*Sample Answer Sheet*)

Your Name: _____

Please fill out the chart below, thinking carefully about what things YOU (and humans in general) need to survive. Indicate whether the things are **Resources** or **Conditions**.

People’s Survival Needs

Resources	Conditions
water	Acceptable temperatures
Air (oxygen)	No poisons or dangerous chemicals
Food/nutrients (energy)	Limited diseases
	Limited predators
	Shelter
	Space
	Low air pollution

Module 2 – Lesson 3

What Do Animals Need from Their Habitat to Survive?
(Sample Answer Sheet)

Your Name: _____

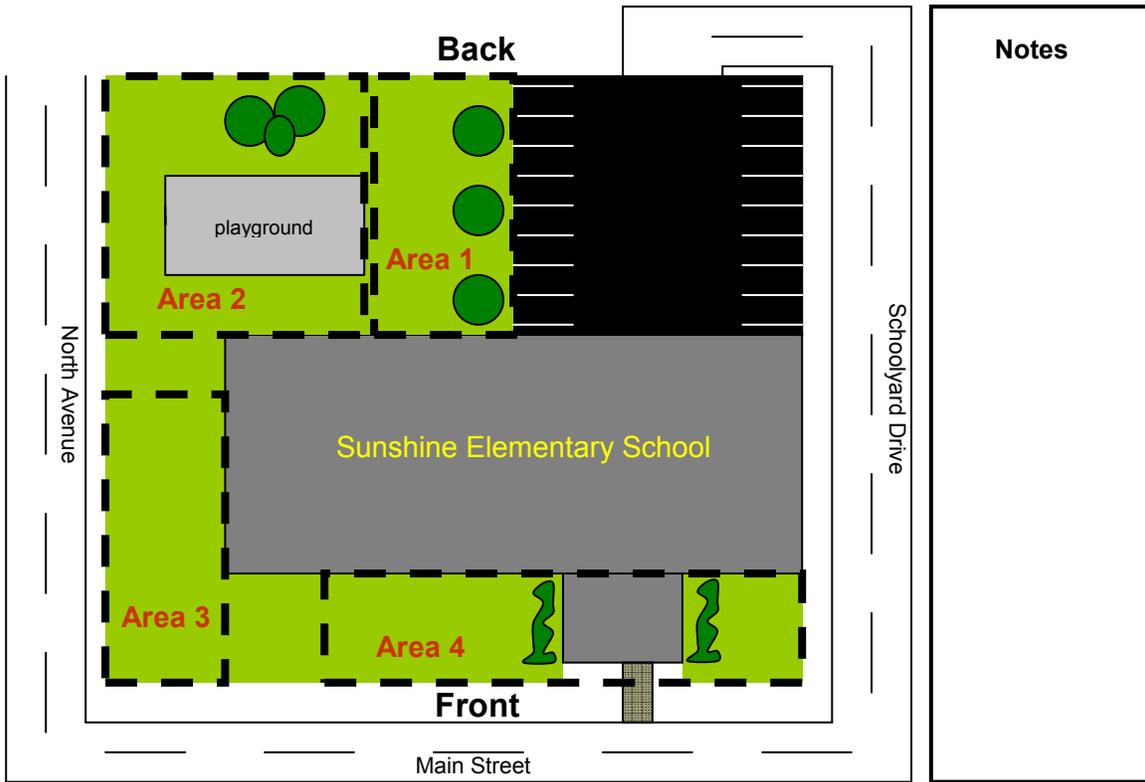
Please fill out the chart below, thinking carefully about what things you think animals need to survive. Indicate whether the things are **Resources** or **Conditions**.

Animal’s Survival Needs

Resources	Conditions
Water	Acceptable temperatures
Air (oxygen)	No poisons or dangerous chemicals
Food/nutrients (energy)	Limited diseases
	Limited predators
	Nest site
	Space
	Low air pollution

Module 2 – Lesson 4

Sample Orientation Map/Drawing of Schoolyard



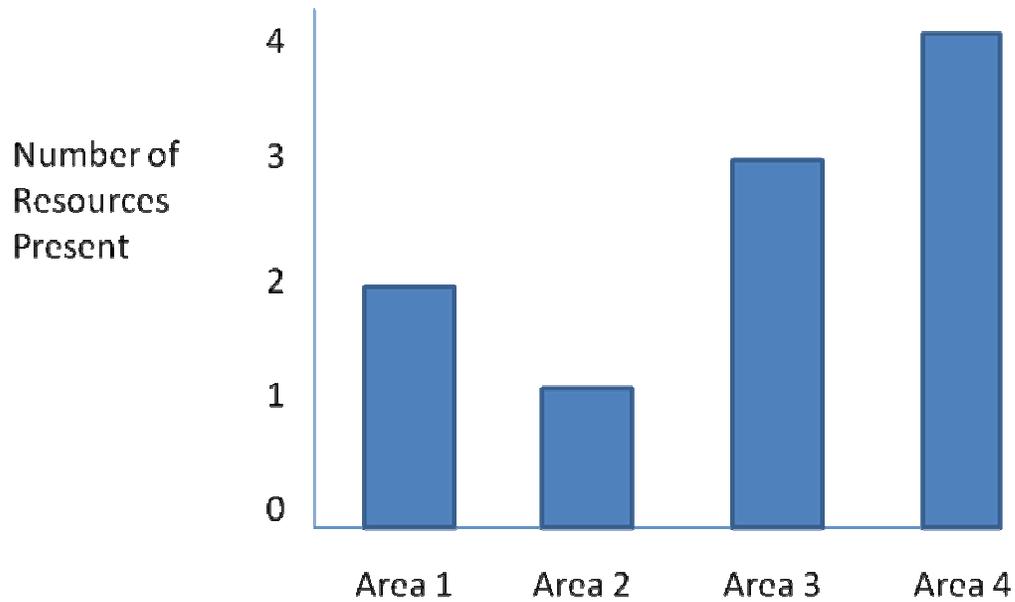
Group Member Names _____

Checklist			
Area 1	Area 2	Area 3	Area 4
<input type="checkbox"/> Water	<input type="checkbox"/> Water	<input type="checkbox"/> Water	<input type="checkbox"/> Water
<input type="checkbox"/> Oxygen	<input type="checkbox"/> Oxygen	<input type="checkbox"/> Oxygen	<input type="checkbox"/> Oxygen
<input type="checkbox"/> Food	<input type="checkbox"/> Food	<input type="checkbox"/> Food	<input type="checkbox"/> Food
<input type="checkbox"/> Nest Site			

Module 2 – Lesson 4

Sample Bar Graph

Which Schoolyard Area has the Most Suitable Habitat for Squirrels?



Module 2 – Lesson 5

RAT HABITAT



WHAT DO RATS NEED FROM THEIR HABITAT TO SURVIVE?

Resources	Conditions
Water	Acceptable temperatures
Air (oxygen)	No poisons or dangerous chemicals
Food/nutrients (energy)	Limited Diseases
	Limited predators
	Nest site

Which resources and/or conditions can WE try to eliminate to KEEP RATS AWAY????

WATER _____

FOOD _____

NEST SITE

Module 2 – Lesson 5**Rat Prevention Tips:**

A rat needs the three basics of life: food, water and shelter. If you prevent the access of these 3 things, your community will do well to prevent an infestation.

- Contain your garbage in a can with a tight-fitting lid.
- Never leave pet food out all day or all night. As soon as your dog is finished with the food, take the bowl inside. Rats just love dog food!
- Eliminate leaks from your hose bib.
- Eliminate any and all standing water from buckets, bird feeders, tables, etc.
- Cut your grass and remove all high weeds.
- Remove ivy and trim your shrubs.
- Get rid of that old, dilapidated shed you have not used in a while.
- Eliminate all bulk trash items from your yard. If everyone in your community can follow these few simple steps, your community will be on its way to being rodent-free.