

**Lesson Plan Title:** Urban Wildlife

**Topic:** Interactions between animals and their environment

**Teacher Name:** eMINTS National Center Staff

**Teacher Grade:** 3-8

**Teacher School:** Elementary or Middle School

**Teacher District:** Any school district

**Standards (Performance, Knowledge and NETS-S):**

**Performance Standards:**

Goal 1: Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.

Goal 2: Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.

**Knowledge Standards (Science):**

Strand III. Characteristics and interactions of living organisms.

1. There is a fundamental unity underlying the diversity of all living organisms

A. Organisms have basic needs for survival (3<sup>rd</sup>, 6<sup>th</sup>, 8<sup>th</sup> grades)

Strand IV. Changes in ecosystems and interactions of organisms with their environments.

1. Organisms are interdependent with one another and their environment

A. All populations living together within a community interact with one another and their environment in order to survive and maintain a balanced ecosystem (4<sup>th</sup>, 6<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> grades)

B. Living organisms have the capacity to produce populations of infinite size, but environment and resources are finite (6<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> grades)

C. All organisms, including humans, and their activities cause changes in the environment that affect the ecosystem (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> grades)

D. The diversity of species within an ecosystem is affected by changes in the environment, which can be caused by other organisms or outside processes (4<sup>th</sup>, 6<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> grades)

Strand VIII. Impact of science, technology and human activity on resources and the environment.

3. Science and technology affect, and are affected by, society

A. People, alone or in groups, are always making discoveries about nature and inventing new ways to solve problems and get work done (3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> grades)

B. Social, political, economic, ethical and environmental factors strongly influence, and are influenced by, the direction of progress of science and technology (6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> grades)

**NETS-S:**

1. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.

Students:

a. apply existing knowledge to generate new ideas, products or processes.

2. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

b. communicate information and ideas effectively to multiple audiences using a variety of media and formats

- d. contribute to project teams to produce original works or solve problems.
- 3. Research and Information Fluency: Students apply digital tools to gather, evaluate and use information. Students:
  - b. locate, organize, analyze, evaluate, synthesize and ethically use information from a variety of sources and media.
- 4. Critical Thinking, Problem Solving and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources. Students:
  - d. use multiple processes and diverse perspectives to explore alternative solutions.

**What concepts do you want students to understand after completing this lesson?**

Students will understand the relationship between animals and their environment.

**Essential Question:**

How do both species adjust to changes?

**Criteria for Success (How will you know students have gained an understanding of the concepts?):**

Students will demonstrate their understanding of an animal's place in its biome and predict what would happen if this animal left its natural habitat and moved into a suburb or town, as is happening across the United States. Students will suggest solutions to the urban wildlife issues affecting animals and communities.

**Resources (What resources will you and your students use?):**

**General Animal-Information Sites:**

- eThemes on Mammals: <http://www.emints.org/ethemes/resources/S00000421.shtml>
- eThemes on Foxes: <http://www.emints.org/ethemes/resources/S00000862.shtml>
- eThemes on Black Bears: <http://www.emints.org/ethemes/resources/S00000648.shtml>
- eThemes on Missouri Animals: <http://www.emints.org/ethemes/resources/S00000092.shtml>
- Animal World: <http://www.kbears.com/animals.html>
- Bears: <http://www.kbears.com/animals.html>
- Yahoo! Kids Mammals: <http://kids.yahoo.com/animals/mammals>
- Missouri Wildlife: <http://www.mdc.mo.gov/nathis/mammals/>

**Urban-Wildlife Sites:**

- Bear Facts: [http://www.wildlifemanagement.info/wildlife\\_mgt.htm#Black\\_Bears](http://www.wildlifemanagement.info/wildlife_mgt.htm#Black_Bears)
- Bear Smart Program: <http://www.env.gov.bc.ca/wld/bearsmart/bearsmintro.html>
- Foxes in the City: <http://www.kwhumane.com/html/foxes.asp>
- Fox and Human Interaction: <http://www.foxes.org/urbanfox/part3.html>
- Deer in the City: <http://mdc.mo.gov/conmag/1999/11/10.htm>
- Managing Deer Populations: <http://mdc.mo.gov/nathis/mammals/deer/populat.htm>
- City of Lakeway Deer Problem: <http://cityoflakeway.com/index.asp?NID=195>
- Outdoors (deer): <http://www.pcgazette.com/outdoors/2002/feb02/waw2-8.htm>
- Raccoons Invade German Town: <http://news.bbc.co.uk/1/hi/world/europe/2336797.stm>
- Urban Raccoons: <http://wdfw.wa.gov/wlm/living/raccoons.htm>
- City and Country Raccoon: <http://chicagowildernessmag.org/issues/summer2002/raccoons.html>

**Note:** Find an eThemes resource on this topic at the following website: <http://www.emints.org/ethemes/resources/S00001106.shtml>.

<p><b>Management (How will students share technology resources? How will you break up the lesson into segments-the number of hours or days?)</b></p>
<p>Students will work in teams of four using a jigsaw cooperative learning strategy to explore information on different animals. Computers will be shared between pairs of students. Each day listed below includes a 50 minute class period.</p> <p>Day 1 – Engage students through problem presentation, brainstorming and questioning.</p> <p>Day 2 – Assign students to groups of four and select animal experts in each group. Pair experts to begin conducting research.</p> <p>Day 3 – Research continues.</p> <p>Day 4 – Experts return to home group and present their information. Home teams begin outlining issues.</p> <p>Day 5 – Home teams create decision trees and begin to formulate a solution.</p> <p>Day 6 – Home teams develop their solution presentation.</p> <p>Day 7 – Home teams present their solutions to a wildlife expert.</p> <p>Day 8-9 – Home teams develop a website depicting their solution.</p>
<p><b>Learner Diversity (What diverse learner needs do you need to consider when selecting resources, grouping students or planning the culminating project? Are there any special considerations such as assistive technologies or second-language learning to take into account?)</b></p>
<p>Cooperative groups will be teacher assigned with a mixture of high, medium and low academic levels. Additional resources may need to be provided for second-language learners and students with below grade-level reading abilities.</p>
<p><b>Engage:</b> Capture the students’ attention, stimulate their thinking and help them access prior knowledge.</p>
<p>The teacher will conduct a Google image search for urban wildlife—animals outside their normal habitats—prior to the lesson and select several images to display on the SMART Board. After showing the images to the class, the teacher will lead a brainstorming session to determine student background knowledge about the images. Someone should record each response, using exact words.</p> <p>Brainstorming questions to ask the class include the following:</p> <p>What do all of these animals have in common?          Why would this issue become a problem for the animals?          Why would this issue become a problem for the people living in these towns?</p> <p>The teacher will provide students with a question prompt handout that is divided into five sections. The question prompts include Why...? What...? Where...? How...? When...? Students will use the question prompt handout to list questions about animals (deer, foxes, raccoons, black bears) and the issue of urban wildlife. Questions are compiled and recorded on a SMART Notebook page or chart paper, eliminating similar or repetitive questions. Group questions under two headings: questions about animals and their habitats and questions about the effects of animals moving into cities and towns.</p>
<p><b>Explore:</b> Give students time to think, plan, investigate and organize collected information.</p>

Place students in home groups of four. Each of the four members will select a unique area of expertise: deer, foxes, raccoons or black bears. Provide each expert with a handout or posted access to the student-generated questions. Animal experts will form expert teams (deer experts, fox experts, raccoon experts and black bear experts) and divide the list of questions between paired team members. Paired team members will begin conducting research about the animals based on questions they were assigned. Students record information they find from Internet resources on the handout.

After completing an exploration of resource information, all of the fox members will meet together to create graphic organizers about foxes. The bear students will meet and do the same, as will the raccoon and deer experts. Students will produce graphic organizers using graphic-organizer software. Students need to include information about their animals as well as the effects of those animals moving into cities and towns. Students will return to their home groups and present their information.

**Explain:**

Involve students in an analysis of their explorations. Reflective activities clarify and modify their understanding.

In their groups, students will use appropriate software to create a chart or graphic organizer, or use another information organizing tool of their choice to compile an outline of problems that occur when animals (foxes, bears, raccoons and deer) move into cities and towns. Using a decision tree or an alternate thinking tool, each group will develop plans for dealing with each of the four animals when they move into towns and cities.

Students will use their choice of formats, including electronic or non-electronic, to communicate their understanding of how these animals and their environments interact when the animals enter a city or town. Students will present a plan to resolve the issues that arise.

**Elaborate:**

Give students the opportunity to expand and solidify their understanding of the concept and/or apply it to a real-world situation.

Students will write a letter to the Missouri Department of Conservation and invite the wildlife officer in their area to listen to their solution presentations and give feedback on feasibility. They will then create a website depicting their solutions for towns to use as a resource.

**Evaluate:**

Evaluate throughout the lesson. Present students with a scoring guide at the beginning. Scoring tools developed by teachers target what students must know and do. Consistent use of scoring tools improves learning.

This lesson will include both formative and summative assessments as listed below.  
Formative Assessments

Expert Information Scoring Guide

Criteria and expectations for the top level on the scoring guide:

- Animal characteristics – Detailed information is included about the animal's characteristics, habitat and physical needs in the graphic organizer.
- Interaction with Community – Details are provided about what happens

when the animal moves into cities or towns.

- Organization – There are clear categories related to characteristics and interaction with the community.

#### Decision-Making Assessment tool

Criteria and expectations for the top level on the scoring guide:

- Problems – Problems were identified and placed in the decision-making tool by each expert.
- Solutions – It is clear each home team member participated in brainstorming possible solutions.
- Organization – There is a clear connection between problems and possible solutions.

#### Self-Evaluation Form (administered at the end of each class period)

Criteria and expectation:

- An item that rates how the individual participated in the home team, expert group or in class.
- A written item that describes what the individual was responsible for completing during the class period.
- An item that rates how well the home team or expert group functioned during class.
- An item to agree/disagree that all members of the home team or expert group participated during class.
- An item that provides the student a way to communicate to the teacher the need to discuss concerns or problems with the teacher.

#### Summative Assessment

##### Final Product

Criteria and expectations for the top level on the scoring guide:

- Problems – Problems that occur when each of the four animals move into cities and towns are included in the final product.
- Solutions – Possible solutions are provided for each problem that has been identified.
- Organization – The product is organized and easy to understand.
- Visual/Text elements – The product uses both visual and text elements in a complimentary manner. Images support text and help communicate the intended message.

The eMINTS staff has adapted this form from materials available at this website:

<http://www.mdk12.org/instruction/curriculum/science/5emodel.html>.