

Lesson 3: Using Environmental Clues to Teach Species Recognition

Build your students' observation skills through animal identification.

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Spotting animals in nature can be a rare experience depending on the species and environment. Scientists often home in on animal clues to help identify different species. Take concepts learned in the previous lesson to a deeper level by teaching students how to use environmental information to identify different species. Conclude the lesson with creating an animal-wanted poster.

Identifying Species Through Observations

This lesson is broken into two parts. The first part focuses on using environmental clues for animal recognition. The second part helps students improve their listening skills. Follow these steps:

PART 1: LOOKING FOR CLUES

Pre-Lesson Preparation: Leave objects belonging to an imaginary person around the classroom, such as a backpack, pencil holder, clothing, or water bottle.

1. Ask students to take out their NM data-collection form and to think about the section that asks how they have observed the animal. Brainstorm different ways to make observations, such as through sight and sound.
2. Ask students to form conclusions about the imaginary person from the objects you distributed throughout the classroom. Is the person male or female? How old? What are the person's hobbies?
3. Extend the idea to other species. Show animal silhouettes (owl, duck, squirrel, mole, swallow) one at a time. Discuss their differences.
4. Discuss habitats for each animal based on season, time of day, and temperature.
 - » Explain the difference between nocturnal (such as owl) and diurnal (such as duck) species.
 - » Explain migration and hibernation. For example, during the winter, some species migrate to the south (e.g., swallows), some hibernate (e.g., bears), and others move below the freezing line (e.g., moles).

LESSON OBJECTIVES AND MATERIALS

OBJECTIVES

- » Learn about different biospecies
- » Learn different bird calls and sounds
- » Create an animal-wanted poster
- » Build observation skills in the field

MATERIALS

- » NM data-collection form
- » Field guides or animal fact sheets
- » Animal silhouettes
- » Pictures of different birds
- » A 12- by 18-inch or 18- by 24-inch piece of construction paper
- » Pens and colored pencils
- » Field journals (bound scientific notebooks)

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Identifying Species Through Observations (continued)

5. Discuss the types of clues animals might leave that lead to recognition, such as tracks, feathers, markings, and scat. Ask the students
 - » Where are tracks found? For example, would a cougar walk out in the open looking for deer, or along the edge of the forest where it can hide?
 - » What would feathers tell us? What about in different environments? For example, if there are a lot of feathers on the ground beneath a tree, the bird might have been killed by a hawk. If there isn't a tree, the bird might have been killed by a mammal, such as a coyote or cat.
 - » What do different markings tell us? For example, a tooth or colored feather provides information about the animal's size and species.

PART 2: LISTENING FOR CLUES

1. Explain that animals, especially birds, make different vocalizations, such as
 - » Babies begging for food
 - » Alarm calls
 - » Territorial songs by males
 - » Courting calls
 - » Members of a flock checking in with one another
2. Ask students to form teams to act out different vocalizations.
3. Go outside, sit quietly, and listen for birds. Quietly discuss which vocalization you may be hearing. It may take up to twenty minutes for birds to start "talking" after humans arrive, so move to the listening spot very quietly.
4. Blow up drawings of the following birds, cut them up into separate puzzle pieces (the younger the student, the bigger the pieces), and write the bird's vocalization on the back of each piece:
 - » Great horned owl (*who, who*)
 - » Barn swallow (*eight... eight eight eight eight*)
 - » Northern flicker (*wick-a wick-a wick*)
 - » Common Grey Squirrel (*ack, ack, ack*)—alarm call
 - » American robin (*jeep, jeep*)
 - » Mallard (*quack, quack, quack*)
5. Ask students to put the puzzle pieces together and identify each bird, focusing on markings and shape, such as head shape, body shape, beak shape, legs, eyes, and tail.



GREAT HORNED OWL



AMERICAN ROBIN

COMMON TERMS

- » **Habitat:** The area or environment in which an organism or ecological community normally lives or occurs
- » **Nocturnal:** Active at night
- » **Diurnal:** Active during the day
- » **Migrate:** To pass periodically from one region or climate to another
- » **Hibernate:** To spend the winter in close quarters in a dormant condition

Identifying Species Through Observations (continued)

PART 3: ANIMAL-WANTED POSTER

This activity combines all the concepts students have previously learned about animal identification. Students will create an animal-wanted poster, and in doing so, they'll apply their science, English, and art skills. This finished product will suffice as the practical.

1. Ask students to create an animal-wanted poster. Encourage them to look through field guides and observe local wildlife to find ideas for choosing their animal.
2. Post a list of requirements for the animal poster. It must include
 - » The student's nature name
 - » The animal's common and scientific names. (Note that the NM code is made from the first two letters of each of the words in the animal's scientific name.)
 - » A life-size or to-scale pencil drawing of the animal, colored accurately with pencils
 - » A drawing or description of the animal's location and habitat
 - » A list of the sounds the animal makes
 - » Drawings of the animal's tracks, feathers, and scat
 - » The animal's physical description, including its size, color, and characteristic markings
 - » Why the animal is wanted (e.g., Is it a predator, prey, or invasive species?)
3. Discuss what other things students would like to include in the posters.
4. Explain the grading criteria of the project, and show the rubric as a basis. (See the Practical and Assessment section below.)
5. Work with students to create a model of the final poster, using an imaginary character, such as one from a cartoon or comic strip, for a demo.
 - » Use 12- by 18-inch or 18- by 24-inch construction paper for the background.
 - » Cut white paper into appropriate sizes for each of the parts of the poster so that one mistake won't ruin the entire poster.
 - » For older students, use software and graphics programs to create the poster.
6. Ask students to complete the poster. (For younger students, work as a class to develop the poster.)
7. Challenge older students by asking them to create clues about the animal before presenting the poster.
 - » Write five clues on different pieces of heavy construction paper.
 - » Cover the animal on the poster with the paper, and ask students to read each clue as they reveal different parts of the animal, bit by bit.
 - » Ask students to guess the animal after each clue is read. (You can see examples of this activity on the NatureMapping Web site at: http://depts.washington.edu/natmap/education/protocols/3_field_guide.html.)

CUSTOMIZATION TIP

Is the lesson too simple or advanced for your students? Here are some ways to customize the lesson based on grade level.

- » **Grades K-1:** Help students learn different bird sounds, and put the bird puzzle together as a group. Or make black-and-white copies of animal pictures and ask students to color the pictures while referencing field guides.
- » **Grade 2:** Ask students to choose a puzzle piece and practice its bird call, migrating toward other students who make similar calls.
- » **Grades 3-5:** Cut five strips of paper for each bird, with one side listing the vocalization of the bird and the other side a clue about the animal. Ask students to practice bird calls, find other students making the same call, and use field guides to identify the bird.
- » **Grades 6-8:** Ask students to listen to bird sounds online, and try to either identify the bird or draw the sounds as musical notes. Or create a drawing assignment that asks students to include color drawings of the bird in winter and breeding plumage.

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Practical and Assessment

Practical

Test your students' ability to draw and identify different animal species. Have your students create an animal-wanted poster as described above.

Student Assessment

How'd your students do? Use this rubric to help assess each student's poster. Circle the appropriate box for each category. Base the grade on the total points (18-20 points = excellent ; 15-17 points = good; 15 points or fewer points = proficient), or do it qualitatively.

CATEGORY	EXCELLENT (4)	GOOD (3)	PROFICIENT (2)
INFORMATION	All facts are accurate.	Most facts are accurate.	There are more than two mistakes in facts.
SCIENTIFIC LANGUAGE	Students use specific descriptive language.	Students use language that is mostly specific.	Students use language that is vague.
ILLUSTRATION	The illustration is to scale or life size and is colored accurately with colored pencils.	The illustration meets two of the three expectations.	The illustration meets one of the three expectations.
COMPLETENESS	Each section is included.	One section is incomplete	One section is missing.
OVERALL VISUAL APPEAL	Poster is visually appealing. It has neat writing and drawings. It doesn't show tape or glue, and the edges are tightly glued.	Project uses materials to achieve realism.	Project makes use of standard materials.
CONVENTIONS	Spelling, punctuation, and capitalization are correct.	Spelling, punctuation, and capitalization are mostly correct.	There are more than three mistakes in spelling, punctuation, or capitalization.

Links to Related NatureMapping Activities

If you enjoyed this lesson, check out these links to additional NM materials.

Field Guide Frenzy: Students learn to use a variety of field guides to identify species: depts.washington.edu/natmap/education/protocols/3_field_guide.html

Using Binoculars/Monoculars: Students learn about magnification, field of vision, and the use of binoculars and monoculars when observing wildlife: depts.washington.edu/natmap/education/protocols/4_binoculars.html

KEY POINTS

Blow up different animal pictures and place them around the room during the curriculum. Include the animal's scientific name, common name, habitat, and other characteristics listed in the field guides.

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Identifying Species Through Observations (continued)



GREAT HORNED OWL



BARN SWALLOW

Identifying Species Through Observations (continued)



NORTHERN FLICKER



COMMON SQUIRREL

Identifying Species Through Observations (continued)



AMERICAN ROBIN



MALLARD DUCK