

Amazing Animals!

Grade: 2nd
Group Size: 1 class

Season: Spring **Time:** 1-1/2 hours
Ratio: 1 adult to 5 students



For the Teacher:

Overview	Students conduct a field investigation about animal characteristics based upon their own questions. Through observing, collecting, and recording field data, they investigate prairie and wetland birds, invertebrates, mammals, and possibly other wildlife and their physical traits and behaviors. They use their observations and data to answer their questions and build their knowledge about how science works and about our amazing local animal life.
Subjects Covered	Science, Math, Language Arts
MN Academic Standards Supported	Helps support four standards in science and 12 in language arts. See sections "2009 Minnesota Academic Standards in Science" and "2010 Minnesota Academic Standards in Science" for details.
Skills Used	Questioning, classifying, grouping reflecting, synthesis, data collection, observation, comparing and contrasting, investigating, exploring, identifying, team work, following directions, listening, respectful treatment of animal homes and animals
Performance Objectives	After completing this activity, students will be better able to... <ul style="list-style-type: none"> • Define the word "characteristic" as a typical feature of an animal such as a body part or behavior • Match pictures and written names of animals with at least three observed animals. • List two characteristics of at least three animals observed. • Explain one advantage for survival of those two characteristics. • Name one reason how characteristics help people understand animals. • Enjoy observing prairie wildlife.
Vocabulary	Characteristic, trait, feature, behavior, mammal, insect, bird, amphibian, reptile, invertebrate, bird, habitat, prairie, wetland, exoskeleton

For the PWLC Instructor:

PWLC Theme	The Prairie Pothole Region
Primary EE Message	The prairie pothole region is valuable and in need of restoration and protection.
Sub-message	Wildlife: The prairie pothole region is home to a variety of resident and migratory wildlife.
PWLC EE Objective	Identify the components and functions of a given ecosystem by observing, counting, and describing the animals and plants in that ecosystem. (Wildlife and Habitat)
Materials	Clipboards, paper, pencils, laminated photos of 13-lined ground squirrels and plains pocket gophers (several copies so each chaperone has one)
Locations	<u>Indoors:</u> Classroom space <u>Outdoors:</u> Barn lawn and Mallard Marsh bridge or Adams Pond dock

Background Information

The purpose of this investigation is for students to identify animal characteristics which help them then cluster animals into larger groupings like mammals, birds, insects, etc. During this field investigation, students have the opportunity to search for, observe, and collect data about springtime animals and their characteristics. Students also have the

opportunity to ask and answer their own questions about local animals and their characteristics.

Take a moment to think about just a few of the animals that live right here at the Prairie Wetlands Learning Center.

- Which prairie mammal can move more than 2-1/4 tons of soil per year digging its burrows? (the plains pocket gopher)
- Which wetland invertebrate carries its young in a pouch under its body called a marsupium and releases them by shedding its exoskeleton? (the scud)
- Which prairie insect jumps 115 times its body length? (the spittlebug)
- Which migratory bird travels up to 6,800 miles back to nest at the PWLC each spring from Bolivia, Brazil, and Argentina? (the cliff swallow)

Animals truly are AMAZING! Many of their characteristics are MIND-BLOWING! Most humans would need machines to achieve these feats, not to mention two layers of skin. With all of the triumphs of man, it is humbling to realize just how many things animals have achieved with only their bodies and behaviors. Probably none of us could move 2-1/4 tons of dirt each year with just our fingernails and teeth. Or fly even one mile by jumping up and flapping our arms to take flight. Not one of us would survive shedding our skin! Studying animal characteristics is connected to the concepts of adaptations and survival. Adaptations are the physical and behavioral characteristics which help an organism survive in its environment. The many incredible characteristics of animals are important, even vital, for their survival as adaptations.

Animal characteristics are also helpful to humans in organizing the 8.7 million+ species of animals on earth into various groupings so we can study and understand them more easily. Each year, researchers discover about 15,000 more species based upon examining their characteristics and can then add them to existing groups or create new groups. Kingdom, Phylum, Class, Order, Family, Genus, and Species are the names of some basic groupings scientists use to separate plants, animals, fungi, and other living things into increasingly more specific sets based upon similar traits.

Animals can be identified and grouped based upon common physical and behavior characteristics. The chart below lists some of the animals 2nd graders typically observe in the very exciting spring season at the PWLC and some of the characteristics we look and listen for.

Animal	Type	Behaviors	Legs	Skin Covering	Mouth	Habitat
Goose	Bird	Fly, swim, honk	2	Feathers	Bill	Water, air
Duck	Bird	Fly, swim, quack	2	Feathers	Bill	Water, air
Swallow	Bird	Fly, nest, chirp	2	Feathers	Beak	Air, building
Blackbird	Bird	Fly, perch, sing	2	Feathers	Beak	Cattails
Ant	Insect	Crawl, carry, quiet	6	Exoskeleton	Jaws	Prairie
Water bug	Insect	Swim, paddle, quiet	6	Exoskeleton	Mouth	Wetland
Gopher	Mammal	Dig, crawl, hide	4	Fur	Teeth	Prairie
Muskrat	Mammal	Swim, eat, dive	4	Fur	Teeth	Wetland

Frog	Amphibian	Sing, sit, jump	4	Bare skin	Mouth	Wetland
------	-----------	-----------------	---	-----------	-------	---------

Appreciating our prairie and wetland animals and their characteristics is an invitation and opportunity to fill our cups with fresh wonder. When we can observe characteristics, identify animals, and study their habits, we can become better hunters, photographers, artists, farmers, gardeners, naturalists, homeowners, tourists, teachers, students, business people, and many more, people who care about, benefit from, and enjoy our wild animal neighbors.

Teacher Preparation

- We highly recommend conducting one or more of the suggested extensions before your visit in order to integrate this field investigation into the classroom study of animals, mammals, life cycles, adaptations, prairie, habitat, or other topics. We believe such integration enhances student motivation for learning in other curricular areas. Please see section, “Teacher-Led Extensions/Adaptations/Assessment Ideas.”
- To maximize outdoor classroom time at the PWLC, teachers may
 - Conduct steps 2 through 5 in the section “Field Investigation Procedure” at school. Upon arrival at the PWLC, teachers may provide PWLC staff with a written list of what students know and wonder for quick review before heading out into the prairie.
 - Organize students into small groups at school, each led by one chaperone, and everyone wearing nametags.
- Please help save paper. Bring your students’ science notebooks or journals to record their field data and discoveries in. You may wish to print, photocopy, and tape the last page of this lesson to the cover of the notebook, and attach a pencil to each notebook with string or yarn. If science notebooks are not available, please inform the PWLC staff that you will need paper and clipboards when booking your date.

PWLC Staff Preparation

Gather and organize materials.

Field Investigation Procedure

1. In the amphitheater or classroom, welcome students, teachers, and chaperones to the Prairie Wetlands Learning Center. Review rules for the trail.
2. Explain to students that they will have the opportunity to investigate animal characteristics outside today by observing real, live, wild animals.
3. To start the investigation, ask students what they already know about the characteristics of animals living in the prairie and wetlands. Begin a KWHL chart on the white board and ask the teacher to record their answers under the K column. Make a t-chart with the headings of Animals and Characteristics. Some helpful prompting questions might include: what kinds of animals live here?

What are their characteristics? What do they look like? Sound like? What have you seen them doing?

4. Ask the students what they would like to find out about animal characteristics today. What do they wonder about them? The teacher can record their questions in the Wonder column. Again, create a t-chart with the headings of Animal and Characteristics. If needed, remind students that questions could start with the following words, what, where, how, do, and others. A few possible questions they might think up are: *What kinds of animal will we see? What kinds of characteristics do they have? What do they look like?* Tell students that when we go outside, we are going to see which of these animals we can find and which characteristics we can observe.
5. What kinds of tools should they bring outside to conduct the investigation? Tools can be recorded under the H column (for How will we find out the answers?). Provide students with the Animal Adaptations Checklist found at the end of this lesson plan.
6. Provide needed equipment and explain its appropriate use. Distribute equipment to chaperones to provide to their small groups. Possible equipment includes clipboards, rulers, hand lenses, meter sticks, and photos of animals.
7. Line up in small groups at the door. Before heading out, review the rules of respect for the trail – just the same as at school, plus special trail rules (such as no picking plants, follow the leader, be kind to animals, stay on the trail, etc.) Also ask, what should we do if we actually get to see one of these animals? (be quiet and still, sit down, watch, wait, wonder)
8. Take a walk to search for animals and to observe their characteristics. Possibilities include 13-lined ground squirrels at the barn, plains pocket gopher mounds in the prairie, swallows under the deck, ducks and geese in the water, and insects on the soil, plants, and in the water.
9. At the barn, everyone can search for holes. Allow chaperones to guide their small groups in examining, measuring, counting and describing the burrow entrances and trails. Then ask each group to step about 15 big steps away from one of the holes, sit quietly, and watch and wait for gophers to appear. If any are observed, are they adults or young or both? What do they do? (run, hide, eat, watch, chatter) What could they be doing underground? Help them use their sense of wonder to fully appreciate these interesting creatures. If none are observed, provide chaperones with laminated photos of 13-lined ground squirrels so students can complete any data recording if necessary. Wonder together why they did not see any of the 13-lined ground squirrels? (Students were too fidgety and loud, it was raining, they are resting in their burrows, etc.)
10. Repeat the procedure in step 9 using plains pocket gopher mounds. Students should be careful not to sit or walk on the mounds. They may carefully feel and smell the soil and note its color or smudge a small pinch of soil on their paper.
11. Return to the classroom. To wrap-up, share discoveries, review their checklists, and answer the questions students generated for the investigation. Ask students if they think characteristics like fur, feathers, and flight are important for these animals? If so, why? How might observing animal characteristics help us as people? How do they think the animals we observed might be important to

the prairie and people? Collect materials and thank them all for coming!

Weather Alternatives

Field investigations take place rain or shine. Everyone should dress appropriately for the weather. In the event of unsafe weather (lightning, high winds) or pouring rain, everyone must come indoors. PWLC staff makes every effort to make your travel worthwhile despite the weather and prepare indoor, age-appropriate plans. PWLC staff welcomes teacher input into these plans. Some possible alternatives might include:

- Go outside for a very short amount of time, even if only between the deck and barn, to search for animals and their evidence to examine.
- Tour the exhibit area and watch prairie wetlands videos with the objective of observing animals. Use the checklist to mark off which animals they observed, their characteristics, and behaviors.
- Read about Laura and Mary's observations of "brown striped gophers" in Little House on the Prairie, the chapter called "Prairie Day." Prompt discussion with questions. Which animal did the girls see, 13-lined ground squirrels or plains pocket gophers? How do you know? What characteristics do they have? How could the author have written such an accurate description of the gophers? Who are the predators in the story? (Mary and Laura and the hawk) What adaptations helped the gophers survive its predators? (speed, burrows) How do they think the gophers knew when the hawk was gone and it was safe to come out?
- For more possibilities, see section, "Teacher-Led Extensions/Adaptations/Assessment Ideas."

Teacher-Led Extensions/Adaptations/Assessment Ideas

- Walk to a local, wooded park and expand this investigation to include a third habitat. Make fresh copies of the checklist to record your data there. Compare and contrast the results of this excursion with those gathered at the PWLC. How is the woods different and similar to the prairie and wetlands at the PWLC? Did you find the same kinds of animals in both locations? Did they have the same characteristics? Why or why not?
- Visit the PWLC during the month of February with your class to crawl through a cardboard burrow in the barn and to search for signs of active winter wildlife. What are animals doing in the winter? Call 218-998-4480 to book your reservation.
- Use the animal characteristics observed and recorded at the PWLC to write animal riddles. Students should start with general characteristics and end with the most obvious characteristic before giving the answer. For example: I am a bird. I have a long neck. I swim in wetlands. I have webbed feet. My cheeks are white. I honk a lot! (I am a goose.)
- Ask students if they could be any animal, which would they rather be and why? They may write or share their thoughts orally and include characteristics of their chosen animal in their response.
- Research other animals that live on the prairie. Possibilities include Formica and

other ants, monarch butterflies, dragonflies, kangaroo mouse, kangaroo rat, bull snake, plains garter snake, tiger salamander, painted turtle, badger, and bison. How might they be important to the prairie?

- Read books or visit internet sites to learn more about these animals. See section, "References and Resources," for ideas. Your class may wish to write and illustrate a class book about prairie and wetland animals and their characteristics to share with other classes.
- Provide computer lab time for students to write and submit Animal Adaptations Reports on the Scholastic web site, <http://teacher.scholastic.com/dirtrep/animal/index.htm>
- Provide blankets for students to hide under and pretend they are one of the prairie rodents. How will they detect danger? How will they communicate with each other if there is danger? Where will they hide? How will they move from hole to hole? Who in the class is wearing the striped or dotted pattern of the 13-lined ground squirrel in their clothes? The brown color? Use paper grocery bags to make a "shirt" with scissors. For 13-lined ground squirrels, use markers to make stripes and dots.
- Draw two pictures, one of the 13-lined ground squirrel and one of the plains pocket gopher, each in its appropriate habitat. Label some of the characteristics of each animal. Compare and contrast the characteristics of each animal.
- Everyone in class remove one shoe and place them in a big pile. Mix them around. Now sort them out into smaller groups by the different types of characteristics they have. Which characteristics can help you locate your own shoe? Do animals have any of these same kinds of characteristics? If so, which ones? How can characteristics help you learn about animals? (their identification, other similar animals)

2009 Minnesota Academic Standards in Science

This lesson helps support the following state standards.

Strand 1 The Nature of Science and Engineering

Substrand 1 The Practice of Science

Standard 2 Scientific inquiry is a set of interrelated processes incorporating multiple approaches that are used to pose questions about the natural world and investigate phenomena.

Benchmark 1 Raise questions about the natural world and seek answers by making careful observations, noting what happens when you interact with an object, and sharing the answers with others.

Substrand 2 The Practice of Engineering

Standard 2 Engineering design is the process of identifying a problem and devising a product or process to solve the problem.

Benchmark 3 Explain how engineered or designed items from everyday life benefit people.

Strand 4 Life Science

Substrand 1 Structure and Function in Living Systems

Standard 1 Living things are diverse with many different observable

characteristics.

Benchmark 1 Describe and sort plants into groups in many ways, according to their physical characteristics and behaviors.

Substrand 2 Interdependence Among Living Systems

Standard 1 Natural systems have many components that interact to maintain the system

Benchmark 1 Recognize that plants need space, water, nutrients and air, and that they fulfill these needs in different ways.

2010 Minnesota Academic standards in Language Arts

This lesson helps support the following state standards:

Strand READING

Substrand Informational Texts K-5

Standard Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

Benchmark 2.2.1.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

Standard Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Benchmark 2.2.3.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

Standard Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

Benchmark 2.2.4.4 Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

Standard Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

Benchmark 2.2.5.5 Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

Strand WRITING

Substrand Writing K-5

Standard Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

Benchmark 2.6.7.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).

Strand SPEAKING, VIEWING, LISTENING AND MEDIA LITERACY

Substrand Speaking, Viewing, Listening and Media Literacy K-5

Standard Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

Benchmark 2.8.1.1 Participate in collaborative conversations with

diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).

b. Build on others' talk in conversations by linking their comments to the remarks of others.

c. Ask for clarification and further explanation as needed about the topics and texts under discussion.

d. Cooperate for productive group discussion.

e. Follow two- and three-step oral directions.

Standard Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Benchmark 2.8.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Standard Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Benchmark 2.8.3.3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issues.

Standard Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

Benchmark 2.8.4.4 Tell a story or recount an experience with appropriate facts and relevant, descriptive details, avoid plagiarism by identifying sources, and speak audibly in coherent sentences.

Standard Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Benchmark 2.8.6.6 Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

Strand LANGUAGE

Substrand Language K-5

Standard Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Benchmark 2.10.1.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

a. Use collective nouns (e.g., group).

b. Form and use frequently occurring irregular plural nouns (e.g., feet, children, teeth, mice, fish).

c. Use reflexive pronouns (e.g., myself, ourselves).

d. Form and use the past tense of frequently occurring irregular verbs (e.g., sat, hid, told).

e. Use adjectives and adverbs, and choose between them depending on what is to be modified.

Standard Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Benchmark 2.10.6.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts,

including using adjectives.

References and Resources

Books and Web Sites for Adults

- Animal Tracks by Olaus J. Murie (Peterson Field Guides)
- Aquatic Project Wild, Aquatic Education Activity Guide by the Western Association of Fish and Wildlife Agencies and the Council for Environmental Education.
- Mammals by William H. Burt and Richard P. Grossenheider
- Minnesota's Natural Heritage, an Ecological Perspective by John R. Tester
- Prairie, a Natural History by Candace Savage
- Science, A Closer Look for 4th and 5th grades, by McGraw-Hill Companies.
- "How Many Species? A Study Says 8.7 Million, but It's Tricky" by Carl Zimmer, The New York Times, August 23, 2011, http://www.nytimes.com/2011/08/30/science/30species.html?_r=0
- Neotropical Migratory Bird Basics, How Far Do They Travel? http://nationalzoo.si.edu/scbi/migratorybirds/fact_sheets/default.cfm?fxsh=9
- Managing Pocket Gophers, <http://www.ext.colostate.edu/pubs/natres/06515.html>

Books and Web Sites for Children

- Animal Characteristics by Sue Barraclough
- A Sea of Grass, the Tallgrass Prairie by David Dvorak, Jr.
- Claws, Coats, and Camouflage, the Ways Animals Fit Into Their World by Susan E. Goodman
- Cows Sweat Through Their Noses: and Other Freaky Facts About Animal Habits, Characteristics, and Homes by Barbara Seuling
- Extreme Animals, the Toughest Creatures on Earth by Nicola Davies
- Little House on the Prairie by Laura Ingalls Wilder
- Animal Olympics, Ranger Rick, <http://www.nwf.org/Kids/Ranger-Rick/Animals/Mixture-of-Species/Animal-Olympics.aspx>
- Investigate and Report on Animal Adaptations, Scholastic, Dirtmeister <http://teacher.scholastic.com/dirtrep/animal/index.htm>

Credits

This field investigation was developed and written by Prairie Wetlands Learning Center Staff, U.S. Fish and Wildlife Service. Thanks to Prairie Science Class naturalist Deb Strege for reviewing this lesson. Thanks to the following teachers for reviewing this lesson plan: Barb Bratvold, 2nd grade, Evansville Elementary; Renee Larsen, Lynn Hjelman, and Barb Sullivan, 2nd grade, Adams Elementary School, Fergus Falls; and Gay Eckberg, West Central Area Schools.

Student material follows.

Animal Characteristics Checklist



Your Name _____ Date _____

Name of Animal	Type	Behavior	Other Characteristics
Canada goose 			
Duck 			
Swallow 			
Red-winged blackbird  			
Ant 			
Water boatman 			
13-lined ground squirrel 			
Frog 			