

Habitat Basics

Grade: 1st
Group Size: one class

Season: Fall **Time:** 1½ hrs
Ratio: 1:5, adults to children



For the Teacher:

Overview	During an investigation, students ask and answer their own questions about prairie and wetland plants and animals. Students then search for plants and animals in the prairie and a wetland. Using movements, they vote on the level of food, water, shelter, light, and air each plant and animal needs. Lastly, they review which animals and plants were found in which habitats and why.
Subjects Covered	Science, Language Arts
MN Academic Standards Supported	Helps support 18 standards. See section “2009 Minnesota Academic Standards in Science” and “2010 Academic Standards in Language Arts”
Skills Used	Critical thinking, observation, listening, team work, following directions, team work, exploration, discovery, matching, questioning, using senses, compare and contrast, concluding
Performance Objectives	After completing this activity, students will be better able to... <ul style="list-style-type: none"> • Differentiate between prairie and wetland habitats • Name one animal and one plant that lives in the prairie • Name one animal and one plant that lives in a wetland • List five basic needs of prairie and wetland plants and animals (food water, shelter, light, and air) • Enjoy exploring prairie and wetlands in winter
Vocabulary	Habitat, prairie, wetland

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	Habitat: The prairie pothole region is a unique and rare ecosystem.
PWLC EE Objective	Describe and apply basic ecological concepts such as energy flow, community, biodiversity, change, interrelationships, cycles, and adaptations.
Materials	<ul style="list-style-type: none"> • Laminated prairie and wetland animal and plant photos • Clipboard, paper, pencil for PWLC staff person
Locations	<ul style="list-style-type: none"> • Indoor classroom • Tatanka Trail (one-mile in length) for both prairies and wetlands • Wetland habitat: Mallard Marsh bridge or Adams Pond dock • Prairie habitat: Mallard Marsh Trail or prairie on the big hill or prairie between the barn and Adams Pond.

Background Information

In this field investigation, students will observe and make connections between organisms’ basic needs for life and two habitats where they might meet those needs. Habitat may be defined as the place where living things obtain their requirements for life: food, water, shelter, and air in the appropriate arrangement or amount. Habitats found at the Prairie Wetlands Learning Center primarily include prairie and wetlands. Since the Prairie Wetlands Learning Center is located in the tallgrass prairie (grassland)

biome and within the prairie pothole region of North America, our field investigation will focus on our local prairie and wetlands.

Examples of Most Commonly Observed Fall Prairie Wetlands Plants and Animals

Prairie Plants	Wetland Plants	Prairie Animals	Wetland Animals	Both Habitats
Stiff goldenrod	Cattail	Ant	Goose	Dragonfly
Big bluestem	Willow	Grasshopper	Leech	Mink
Grey-headed coneflower	Coontail	Cricket	Water boatmen	Tiger salamander
Common milkweed	Duckweed	Sparrow	Duck	White-tailed deer
New England aster	Pondweed	Goldfinch	Scud	Ring-necked pheasant
False sunflower	Reed canary grass	Butterfly	Snail	Leopard frog
Compass plant	Northern water milfoil	Millipede		Weasel
Cup plant	Dogbane	Spider		Snapping and painted turtles

Prairie and wetland plants and animals must obtain their basic needs from their habitats in order to survive, grow, and reproduce. The most significant difference between prairie and wetlands for most plants and animals is the presence or absence of water.

Examples of Basic Needs of Prairie and Wetland Plant and Animals

	Prairie Plants	Wetland Plants	Prairie Animals	Wetland Animals
Air	Cold air in winter for some seeds to sprout; wind to help disperse some seeds	Wind to help disperse some seeds	Need air to breathe oxygen	Breathe oxygen from water or air
Water	Lower levels of moisture	Need higher levels of moisture	Need lower levels of moisture	Need higher levels of moisture
Food	Full sunlight	Full sunlight	Need plants and animals for food	
Light	Full sunlight	Full sunlight	For warmth, to find food, digestion of food (reptiles and amphibians)	
Shelter	Roots in ground, rest of plant in open, somewhat protected by each other	Somewhat sheltered in water or by each other	Underground or in grasses and flowers	Underwater, in ground, in houses, or within plants

Some plants and animals are found only in one habitat because their needs for life and related adaptations are specific to that habitat. For example, many prairie plants would not survive wetland moisture conditions but most wetland plants are adapted with weak, hollow, and flexible stems, and stomata on the top side of their leaves to prevent drowning. Prairie habitat is far too dry for most of these wetland plants to survive in; however, many prairie plants have deep and extensive root systems to find moisture and leaf adaptations which allow them to prevent moisture loss.

Some animals may be found in both habitats, such as dragonflies, leopard frogs, mallards, and white-tailed deer. As these animals' needs vary with the seasons, they may move from one habitat to another to complete their life cycle, or find food or appropriate cover. For example:

- Dragonflies lay their eggs in water, wetland soil, or in aquatic plants. The eggs hatch and the larvae live in the water as predators. They leave the water to metamorphose into adults which fly in the air over both prairie and wetland habitats defending a territory, hunting, and mating. Adult females return to wetlands to mate and lay their eggs, possibly with males protecting them, and the cycle begins anew.
- Leopard frogs lay globular masses of black eggs in shallow water. The eggs hatch and tadpoles emerge, living in the water as omnivores and breathing dissolved oxygen with gills. They develop lungs to breathe atmospheric oxygen and legs, and then leave the water to live on land as predators, especially in wet meadows and tallgrass prairies near ponds and lakes. They prefer grasses six to 12 inches tall to allow cover for hiding but short enough to allow adequate movement. Leopard frogs over winter on the bottom of deep ponds, lakes, and streams. By the spring thaw, they are moving overland to breeding ponds, and the cycle begins anew.
- Painted turtles and snapping turtles spend most of their life foraging for food and finding shelter in ponds. However females move away from the pond into the prairie to dig a nest and lay their eggs. The eggs may hatch that same year with the young turtles emerging from the nest right away. Or if the eggs are laid late in the season, the hatched young will over-winter in the nest, emerging in spring. Young turtles travel overland to a pond to feed, find shelter, and mature.
- Mallards build nests in prairie associated with small ponds where they are better protected from predators by upland grass cover. After their eggs hatch, hens move their broods to the ponds to feed. As the season progresses to hotter, drier weather and small ponds dry up, hens move their broods to deeper wetlands to feed. Once ducklings grow flight feathers and adults complete their annual feather molt, they can fly to upland fields to feed on waste grain, to upland grasses for cover and loafing, and to other wetlands to feed and loaf (including during fall migration and at wintering areas). In spring mallards return and the cycle begins anew.
- White-tailed deer are land mammals which also forage aquatic plants and seek cover in cattails from blizzard conditions and hunters. Likewise ring-necked pheasants are land birds which seek food and cover in cattails.

From an ecological standpoint, the matrix of prairie and wetlands are important to wildlife and plants, because it is their home, their habitat, where their basic needs for life are found. Without these habitats, wildlife must find other places to live, if possible. Grassland and wetland restorations, prairie gardens, rain gardens, and other such sites, provide new alternatives for wildlife and plants alike.

Teacher Preparation

- To maximize outdoor classroom time at the PWLC, teachers may
 - Conduct steps 2 through 4 in the section “Field Investigation Procedure” at school. Upon arrival at the PWLC, the PWLC instructor may conduct a quick review before proceeding, allowing for more time in the outdoor classroom.
 - Organize students into small groups, each group led by a chaperone, everyone wearing nametags. Each chaperone is responsible for helping their students to follow-through with directions and with dispersal and collection of

materials. Their job is not to provide the answers but to guide students to make their own discoveries. The PWLC staff person's job is to manage and guide the entire large group, distribute equipment to chaperones, and provide trail leadership.

- 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, plants, living/non-living things, basic needs, habitats, 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."

PWLC Instructor Preparation

Prepare and organize photos of prairie and wetland animals and plants that are easily observable on that day, particularly bugs and plants.

Field Investigation Procedure

1. In the classroom, welcome students, teachers, and chaperones to the Prairie Wetlands Learning Center. Review rules for the trail.
2. Ask students what every animal and plant needs to live? (air to breathe, water to drink, food to eat, shelter to rest or hide in, light) Review the meaning of the word "habitat" with them as an animal or plant's neighborhood where it finds its basic needs for survival (air, water, food, shelter, light).
3. Do they know the names of the two habitats at the PWLC? (prairie and wetlands)
4. Ask them what they already know about prairie and wetland plants and animals? What kinds of animals live in those habitats? Find out what questions they have about prairie and wetland plants and animals. Write down these questions on the clipboard.
5. Explain that in each habitat, they will explore and look for plants and animals and find the answers to their questions. They will also decide how much food, shelter, water, air, and light each plant and animal needs to live.
6. In each habitat, first prompt them with questions to examine the air, water, and light. Model how to use the sense of touch, sight, and smell:
 - Squeeze the soil between your fingers for moisture and smell it – is this habitat dry or soggy?
 - Feel the air/wind against your cheeks as you turn in a circle – is it windy or calm? Both, if you sit and stand?
 - With eyes closed, turn in a circle again – where is the sun the brightest? Is this habitat shady or sunny? Both, if you sit and stand?
7. Next, in each habitat, ask students to vote. Their choices are: SIT (has a little), KNEEL (has some), or STAND (has a lot). For each habitat, ask them to show you how much air, light, and water it provides to plants and animals.
8. Last, in each habitat, search for a few plants and animals (or evidence of animals). Show photos of them as well. Wonder what kind of food this animal or

plant eats – can they find any? Wonder where this animal finds shelter – can they find any?

9. Back at the amphitheater or classroom, allow students to share their discoveries. To wrap up as a whole class, review the photos – which animals and plants were found in the prairie? In the wetland? Were any found in both? Ask them what we could now say about these animals and plants? (Some live in wetlands, some in the prairie, and some in both possibly.) Could New England aster survive in a wetland? Could a leech survive in the prairie? Why not? Are prairies and wetlands important? If so, why? Review the original questions they had about prairie and wetland plants and animals and provide answers as time allows. How can they be a friend to prairie and wetland plants and animals?
10. Thank the class, chaperones, and teachers for coming. Invite them to come back again to visit.

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 make every effort to make your travel worthwhile despite the weather and prepare indoor, age-appropriate plans. PWLC staff welcome teacher input into these plans. Some possible alternatives might include:

- Go outside for a very short amount of time, even if only under the deck, to observe the prairie and small animals like insects and their needs for life.
- Tour the exhibit area and watch prairie wetlands videos with the objective of finding examples of prairie and wetland animals and their needs for life.
- Using large cut-out letters, challenge students to unscramble the mystery word which means the place where an animal or plant finds its basic needs for life (habitat).
- Read *Squish! A Wetland Walk* by Nancy Luenn and Ronald Himler. Look for examples of wetland plants and animals and their basic needs for life.

Teacher-Led Extensions/Adaptations/Assessment Ideas

- To maximize outdoor classroom time at the PWLC, teachers may conduct steps 3 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 completing the remaining steps.
- Allow students to create hand-drawn pictures or paintings of animals that use the prairie and wetlands. Using these images, make a collage or giant mural of animals that live in the prairie and wetlands habitats. Students could paint the background for each habitat and then add their plant and animal, and even the pictures of basic needs (food, water, shelter, air, light) around the background mural. This could be displayed in the hall for other classes to see, or displayed at the PWLC for a time.
- Before and after your visit, ask students to draw two pictures, one of prairie, one of wetlands. Ask them to include animals and plants that live in those habitats.

They should also draw examples of the basic needs that those plants and animals have for life and if they are found in those habitats.

- Back at school, challenge students to include conjunctions in concluding statements about their visit, such as "before, after, although, while, or, when, but, except, since, because, whenever," etc., to further their logical thinking process. They could be written on the whiteboard and copied for concluding statements for everyone to take home and share with families.
- Make pop-up 13-lined ground squirrels by adapting "Pop-up Prairie Dog" in the book *Animal Habitats!* by Judy Press and Betsy Day.
- Provide magazines or photos to students of animals and plants that live in the forest (such as burr oak tree, maple tree, paper birch, grey squirrel, eastern cottontail rabbit, eastern chipmunk, jack-in-the-pulpit, wild grape, white-tailed deer, house wren, black-capped chickadee, downy woodpecker, great-horned owl, etc.) What is the name of the habitat they live in? How is that habitat different from the prairie and wetlands?
- Make a life-sized outline of each student's body using end roll newsprint or other large format paper. Ask each student to color in their face and clothing. Then ask each student to write or draw their basic needs for life in the background. Ask them to draw or write the name of the habitat they live in.
- Invent a new kind of habitat and create a creature adapted to living in that habitat based upon its needs for life. Use arts or crafts materials to depict the habitat and to construct the animal. Name the plant and animal.

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 1 Scientists work as individuals and in groups to investigate the natural world, emphasizing evidence and communicating with others.

Benchmark 1 When asked "How do you know?" students support their answer with observations.

Strand 3 EARTH AND SPACE SCIENCE

Substrand 1 Earth Structure and Processes

Standard 3 Earth materials include solid rocks, sand, soil and water. These materials have different observable physical properties that make them useful.

Benchmark 2 Describe similarities and differences between soil and rocks.

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 animals 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 animals need space, water, food, shelter and air.

Benchmark 2 Describe ways in which an animal's habitat provides for its basic needs.

2010 Minnesota Academic Standards in Language Arts

This lesson helps support the following state standards.

Strand READING

Substrand Reading Informational Text K-5

Standard 3 Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

Benchmark 1.2.3.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.

Standard 4 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 1.2.4.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.

Standard 5 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 1.2.5.5 Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text.

Standard 6 Assess how point of view or purpose shapes the content and style of a text.

Benchmark 1.2.6.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

Standard 7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

Benchmark 1.2.7.7 Use the illustrations and details in a text to describe its key ideas.

Standard 10 Read and comprehend complex literary and informational texts independently and proficiently.

Benchmark 1.2.10.10 With prompting and support, read informational texts appropriately complex for grade 1, as well as select texts for personal enjoyment, interest, and academic tasks.

Strand READING FOUNDATIONAL SKILLS

Substrand Reading Foundational Skills K-5

Standard 0

Benchmark 1.3.0.4 Read with sufficient accuracy and fluency to support comprehension.

a. Read grade-level text with purpose and understanding to promote oral and silent reading fluency.

c. Use context and other cues (e.g., phonics, word recognition skills, prior knowledge) to confirm or self-correct word recognition and understanding, rereading as

necessary.

Strand SPEAKING, VIEWING, LISTENING AND MEDIA LITERACY

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

Standard 1. 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 1.8.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

- Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).
- Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
- Ask questions to clear up any confusion about the topics and texts under discussion.
- Listen to others' ideas and identify others' points of view.
- Follow two-step oral directions.

Standard 2 Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Benchmark 1.8.2.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media (e.g., stories, poems, rhymes, songs).

Standard 3 Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Benchmark 1.8.3.3 Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.

Standard 4 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 1.8.4.4 Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.

Standard 6 Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Benchmark 1.8.6.6 Produce complete sentences when appropriate to task and situation, and respond to stories, poems, rhymes and songs with expression.

Strand LANGUAGE

Substrand Language K-5

Standard 1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Benchmark 1.10.1.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

- Produce and expand complete simple and compound declarative, interrogative, imperative, and exclamatory sentences in response to prompts.

Standard 5 Demonstrate understanding of figurative language, word relationships and nuances in word meanings.

Benchmark 1.10.5.5 With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings to develop word consciousness.

a. Sort words into categories (e.g., colors, clothing) to gain a sense of the concepts the categories represent.

b. Define words by category and by one or more key attributes (e.g., a duck is a bird that swims; a tiger is a large cat with stripes).

c. Identify real-life connections between words and their use (e.g., note places at home that are cozy).

d. Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings. With guidance and support from adults, demonstrate understanding of word relationships and nuances in word meanings to develop word consciousness.

Standard 6 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 1.10.6.6 Use words and phrases acquired through conversations, reading and being read to, and responding to texts, including using frequently occurring conjunctions to signal simple relationships (e.g., because).

Resources

Book and Web Sites for Adults

- Animal Habitats! Learning About North American Animals and Plants Through Art, Science, and Creative Play by Judy Press and Betsy Day.
- <http://www.dfr.state.nc.us/stewardship/wwwildlife/www13.htm>
- <http://www.scienceclarified.com/Bi-Ca/Biosphere.html>
- <http://www.enchantedlearning.com/biomes/grassland/prairie.shtml>
- <http://www.lethsd.ab.ca/mmh/grade5/wetlands/page4.htm>
- <http://www.rbnc.org/schoolunits/forestbiome.htm>

Wetland Resource Books for Children

- America's Wetlands, Guide to Plants and Animals by Marianne D. Wallace
- Around the Pond by Ann Cooper
- One Small Square Pond by Donald M. Silver

Prairie Resource Books for Children

- America's Prairies and Grasslands, Guide to Plants and Animals by Marianne D.

Wallace

- America's Prairies by Frank Staub
- A Walk on the Prairie by Rebecca L. Johnson
- An American Safari, Adventures on the North American Prairie by Jim Brandenburg

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 Tia Thysell for contributing to and reviewing this lesson plan. Thanks to the following teachers for reviewing this lesson plan: Deborah Strege, licensed teacher, Fergus Falls; Tricia Hamann, Heart of the Lakes/Dent Elementary Schools; Gay Eckberg, West Central Area Schools; and Renee Larsen, Adams Elementary in Fergus Falls. Thank you to PWLC volunteer Rita Loftness for reviewing this lesson. Thanks to Beth Franklin and Laura Handergaard, Underwood Elementary, for informally field testing this lesson.

Student material follows.

Habitat Basics – 1st Grade - Fall



Names of students: _____

Name of ANIMAL: _____

Food Eats animals Eats plants Eats both


Where Found Prairie Wetland Both

Water





No water Some water A lot of water!

Air  Calm – breezy -- windy
 Hot -- warm -- cool – cold
 Breathes air -- breathes underwater



Name of PLANT: _____


Where Found: Prairie Wetland Both

Water





No water Some water A lot of water!

Air  Calm – breezy -- windy
 Hot -- warm -- cool – cold
 Breathes air -- breathes underwater

Light  Full sun  Shade & sun  Full shade