Prairie Wetlands Learning Center

Nature Detectives

Preschool – Exploration Series

Grade Level:
3- to 5-year-olds

Time:
1 hour

Season:
Winter

Objectives:
Students will be better able to...
- Notice tracks of a common winter animals (such as mouse or rabbit)
- Name two animals that live at the Prairie Wetlands Learning Center during winter
- Enjoy exploring outside in winter

Skills Used:
Observing, questioning, investigating, reflecting, interpreting data, using curiosity, socializing in an outdoor or group setting

Materials:
- ❑ *Making Tracks* book
- ❑ Clipboards, pencils, and paper for chaperones
- ❑ Paper and crayons for children

Summary

Students help tell a short story about animal tracks, and then go outside for a field investigation. They become detectives, look for evidence left behind, use their curiosity and make discoveries about animals that live at the Prairie Wetlands Learning Center in winter. Students then reflect upon what evidence they found and conclude which animals live here during winter.

Background

"Snow is the great revealer. It cannot keep a secret. All through the woods around us it was filled with the gossip of the night."
-- Edwin Way Teale, *Wandering Through Winter*

The purpose of this lesson is to provide students with the opportunity to use their sense of wonder to explore the world they live in, specifically the local prairie wetlands environment in winter. Through an outdoor field investigation, students explore and practice being naturalists. A naturalist exhibits many positive qualities useful indoors and outside. Naturalists are observant, respectful, curious, patient, and full of wonder, qualities that children can apply in other settings their whole life long.

The outdoor classroom is a perfect place for early childhood education even in winter. At the Prairie Wetlands Learning Center, preschoolers make discoveries and draw conclusions about the natural world with guidance from adults. The focus is not on information being learned but on the experience each child gains. In her book *The Sense of Wonder*, Rachel Carson spoke about this need for discovery, "It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate."

Minnesota Academic Standards

Subjects Covered:
Science and Language Arts

This lesson helps support 19 indicators in the Scientific Thinking Domain. For details: see section "Early Childhood Indicators of Progress: Minnesota's Early Learning Standards for 3–5-Year-Olds."

Background, *continued*

Winter Animals	Most Common Evidence at Prairie Wetlands Learning Center
chickadees, crows	calls
great horned owls	pellets, kill sites
deer	tracks, buck rubs, browse
muskrats	huts
mink	tracks, snow tunnels, snow slides
weasels	tracks, snow tunnels
mice	tracks, snow tunnels, scat, urine
grey squirrels	nests
rabbits	tracks, trails, browse, scat, urine
fox, coyotes	tracks, trails, scat

During winter, colder temperatures, snow, and ice force animals and plants to adapt to this dramatically different season. Animals respond in mainly three ways: by leaving the area in fall (migration), by hibernating, or by staying active (resisting). The list below provides examples of animals found at the Prairie Wetlands Learning Center which remain active all winter. Preschoolers search for these animals and most often actually find the signs they leave behind.

Just how do some of these amazing animals survive in the harsh winter prairie?

• **Black-capped chickadees** are often found in the oak savanna, protected from wind. They form mixed flocks with nuthatches and downy woodpeckers where each individual spends less time and energy looking for food and predators. Chickadees survive the night by finding their own little shelter to sleep in. Their bodies go into a regulated hypothermia which requires less energy to keep warm.

• **Coyotes** change their diet, so they eat mainly mammals in winter due to the lack of other food sources. They tend to scavenge carcasses that they find rather than use up energy to hunt down prey.

• **Deer mice** spend the winter in underground burrows they make under the snow, nesting together for warmth. Instead of shivering, they gain brown fat, which they can use directly as a heat source. Their diet consists mainly of seeds as fresh green plants now lie dormant.

• **White-tailed deer** eat woody twigs and buds in winter because green vegetation is not available. The coat of the deer changes in winter, becoming thicker and lighter in color, camouflaging them with trees, bare shrubs, and dried grasses. Their hollow hairs provide insulation from the cold, trapping dead air space in each strand.

From searching for tracks in snow and examining each shape and size to imagining who walked or hopped there earlier and hoping to see a winter animal -- there are many opportunities for preschoolers to “keep alive their inborn sense of wonder” (as Rachel Carson writes) while they become nature detectives and solve animal mysteries during the colder winter months.

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 animal life. (See section, "Teacher-Led Extensions/Adaptations/Assessment Ideas.")

• To maximize your time at the Prairie Wetlands Learning Center, please organize students into small groups with chaperones prior to your arrival and with everyone wearing nametags.
• Upon arrival at the Prairie Wetlands Learning Center, you may provide Prairie Wetlands Learning Center staff with a written list of what students know and wonder for quick review before heading out into the prairie.

Prairie Wetlands Learning Center Staff Prep

Organize and prepare materials. Select trail route and check for ice safety according to the Prairie Wetlands Learning Center ice safety plan.

Field Investigation Procedure

Introduce the Topic

1. Greet and welcome everyone to the Prairie Wetlands Learning Center.

2. Assemble students into their small groups, each led by a chaperone. Give each chaperone a clipboard, paper and a pencil.

3. Inform students that they will be nature detectives today. Ask students what a *detective* does. What does a *detective* do? (solves mysteries using clues). What does a *nature* detective do? (looks for clues left behind by animals What kind of clues do animals leave behind? (tracks, scat, homes, etc....)

4. Read *Making Tracks* by David Hawcock to the class. Invite them to guess the identity of each animal picture. Show them how the book unfolds into a circle. Read it together again (unfolded).

5. What kind of clues do they predict they will find today outside? Give chaperons the opportunity to record each child's predictions on their clipboards and share aloud with the whole group.

7. After lining everyone up at the door in their small groups, ask them how should they behave in the field? (Follow the field leader, walk on trail, be quiet, stay with your adult, and be respectful, curious, patient.)

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Procedure, *continued*

Explore Outside

8. In fresh snow near the barn, make a circle with the children and walk around inside the circle while they stay put. How many footprints are made for each complete set of tracks? (two) Are the tracks close together or far apart? (close) Is the pattern a straight line or zigzag? (straight) Run in the circle – how do the tracks change? (far apart)

9. Play Follow the Leader! Each child must try their best to step in the footprints in front of them. Vary the steps for walking, long strides, tip-toe, hopping, and running. Reflect together: what did they discover? How might they apply their discoveries to animal tracks?

9. On the trail or pond, stop the children and make a new set of footprints. Challenge them to watch and walk next to the footprints without stepping on them. Check with the last person in line – did they see your footprints?

10. Next, search for evidence left behind by animals. (Examples may include owl pellets, fur, scat, tracks.) Chaperones can record their observations. While searching ask students prompting questions, such as, who do they think left the clues behind? Which way were they going? Do they look like old clues or fresh ones? What might the animal be doing right now? (Hiding, sleeping, hunting, eating) can they notice similarities and differences between tracks? Avoid discussing species identification which can be difficult and frustrating for young children.

Reflect Together

11. Return to the classroom and allow each group a chance to share their discoveries. Briefly review their questions -- which can they now answer?

12. In reflection, ask them a few questions such as, what did you discover about animals in winter? What clues did you use? What surprised you? What did you enjoy most? What new questions do you have? Why might the prairie be an important place? Invite the children to create drawings and dictate words to a chaperone to write on their papers. They may take these drawings home to share their experience with their parents.

13.Thank everyone for coming to the Prairie Wetlands Learning Center and invite them to return again. Encourage them to keep going outside in winter to explore, make discoveries, and solve animal mysteries! With permission from a responsible adult, you can do this in your own yard at home.

Weather Alternatives

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

Weather Alternatives, *continued*

• Go outside for a very short amount of time, even if only under the deck, to investigate and search for clues in the prairie around Center Pond.

• Bring tubs of snow inside for students to make tracks in using the latex track sets.

• Read a second story about tracks called In the Snow: Who's Been Here? by Lindsay Barrett George. Students create their own Prairie Wetlands Learning Center track guide with latex tracks to use in future exploration. They could include a drawing of each animal as well.

• Read *Making Tracks or In the Snow: Who's Been Here?* and include animal furs that students can touch and see during the story. Give them large magnifying glasses for up-close examination. Provide time after the story for students to ask questions about the differences and similarities between the furs.

Vocabulary

detectives, tracks, prairie, wetlands, clues, winter

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Teacher-Led Extensions and Assessments

Try these activities at school to extend your visit.

School Connections

- Make predictions and then blow bubbles outside. What happens to the bubbles?
- Read *Stranger in the Woods* by Carl R. Sams II and Jean Stoick. Make your own "stranger." Use spray bottles filled with water and food coloring to color the snow man. Watch who comes to have a snack.
- Bring a pan or cups of snow inside and observe. What happens to the snow? Does it look perfectly clean? Does the melted water take up as much space as the snow? Make snowballs and put some in the freezer, others in the refrigerator. What happens? Save the freezer snowballs to play with outside on a hot day!
- Catch falling snow on mittens and closely examine the shapes and sizes. Count the points. Can you find any that are *exactly* the same? Back inside, draw pictures of them in a snowflake journal, repeating every time there is snowfall. Is each *snowfall* the same?
- Chickadees survive the night by finding their own little shelter to sleep in. Their bodies go into a regulated hypothermia which requires less energy to keep warm. Invite your students to stand or sit in a sheltered. Ask them to close their eyes and pretend they are a chickadee going to bed at night and slowly slowing down their heart rates, now their legs get tingly, then their wings, then they fall into a deep sleep,,,, and use less energy.... They can ONLY do this because the shelter protects them from the wind and cold air. Allow them to slip into nap time or guide them into sunrise and waking up and reversing the process. Lastly, it's daytime and they can be hungry, active chickadees "flying" around the classroom, looking for their snack!
- Read the picture story about going outside in winter found on page 88 in the book *Nature for the Very Young, a Handbook of Indoor and Outdoor Activities* by Marcia Bowden. Read the first part when getting ready to go outside and students can put on their gear as it is described. Then read the rest of the story outside and students can do each of the actions described. Repeat this many times to help children learn the routine of dressing well for winter conditions and for enjoying winter outdoors.

Prairie Wetlands Learning Center Connection

- Encourage students to bring their parents to the Prairie Wetlands Learning Center on the weekend and search for clues.

Home Connection

- Ask students to carefully examine their pet's feet. Do they have claws? Pads? How many? Can they walk or hop like their pet?

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For the Prairie Wetlands Learning Center Educator

Prairie Wetlands Learning Center Theme – the Prairie Pothole Region

Primary Environmental Education 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.

Prairie Wetlands Learning Center Environmental Education Objective– Identify the components and functions of a given ecosystem by observing, counting, and describing the animals and plants that live in that ecosystem.

2017 Early Childhood Indicators of Progress: Minnesota's Early Learning Standards for 3 to 5-Year-Olds

This lesson supports the following indicators in the Scientific Thinking domain that are set out in the Minnesota Early Indicators of Progress.

Domain: Scientific Thinking - Cognitive

Components ST1-2: Discover

Subcomponent ST1 Observe and question: Child demonstrates awareness and engagement with phenomena, materials, and environment

3-4 years old ST1.5 Notices differences or similarities among materials, objects and phenomena

3-4 years old ST1.6 Uses experiences to stimulate questions

4-5 years old, K Readiness ST1.7 Verbally identifies obvious differences and similarities

4-5 years old, K Readiness ST1.8 Expresses curiosity and/or formulates questions of complex concepts

Subcomponent ST2 Investigate: Child actively shows wonder by demonstrating curiosity of self, others and surroundings

3-4 years old ST2.8 Explores with the intention of finding out something specific

4-5 years old, K Readiness ST1.7 Verbally identifies obvious differences and similarities

4-5 years old, K Readiness ST1.8 Expresses curiosity and/or formulates questions of complex concepts

4-5 years old, K Readiness ST2.10 Starts with a useful, general approach to investigation even if details may be lacking

4-5 years old, K Readiness ST2.11 Uses discernment to inform exploration

Components ST3-4: Act

Subcomponent ST3 Experiment: Child develops and completes a process based on a question, interest or anticipated outcome, adjusting as needed.

3-4 years old ST3.13 Attempts to make a prediction of an expected outcome

4-5 years old, K Readiness ST3.16 Makes a prediction when prompted

Subcomponent ST4 Evaluate: Child analyzes, examines, critiques, and synthesizes outcomes in order to draw conclusions

4-5 years old, K Readiness ST4.12 Reflects upon evidence and draws reasonable conclusions using data gathered

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Early Learning Standards, *continued*

Components ST5-6: Integrate
Subcomponent ST5 Communicate: Child effectively verbalizes thinking and share thoughts, ideas, conclusions with self and others
3-4 years old ST5.9 Verbally expresses ideas/thought process
3-4 years old ST5.12 Uses drawing, writing, models, or other creative expressions to present ideas
4-5 years old, K Readiness ST5.14 Talks with others about questions, actions, ideas, observations or results
4-5 years old, K Readiness ST5.15 Articulates and shares aloud explanations based on reasoning and evidence
4-5 years old, K Readiness ST5.16 Uses more detailed drawing, writing, models, or creative expressions to present ideas
Subcomponent ST6 Apply: Child leverages and uses knowledge unprompted or in a new situation.
3-4 years old ST6.5 Recalls and uses information in new/ different experiences
4-5 years old ST6.8 Compares findings to predictions or expected results

References and Resources

Books for Children

- *Big Tracks, Little Tracks: Following Animals Prints* by Millicent E. Selsam
- *Everyone Poops* by Taro Gomi
- *In the Snow; Who's Been Here?* by Lindsay Barrett George
- *Making Tracks/A Circular Pop-up Story* by David Hawcock
- *North Country Night* by Daniel Souci
- *Someone Walks By: The Wonders of Winter Wildlife* by Polly Carlson-Voiles
- *Stranger in the Woods* by Carl R. Sams II and Jean Stoick

Books and Web Sites for Adults

- *A Guide to Nature in Winter* by Donald Stokes
- *Book of Family Nature Activities* by Page Chichester
- *Explore Winter! 25 Great Ways to Learn About Winter* by Maxine Anderson
- *Field Guide to Tracking Animals in Snow* by Louise R. Forrest
- *Nature for the Very Young, a Handbook of Indoor and Outdoor Activities* by Marcie Bowden
- *The Sense of Wonder* by Rachel Carson
- *Wandering Through Winter* by Edwin Way Teale
- *KinderNature* web site

Credits

This field investigation was developed and written by U.S. Fish and Wildlife Service staff at the Prairie Wetlands Learning Center in Fergus Falls, Minnesota.

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