

# K-5 FIELD TRIP PROGRAMS



Cedar Creek Ecosystem Science Reserve

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UNIVERSITY OF MINNESOTA

# K-2 FIELD TRIP PROGRAMS



## K-2 Guided Hikes

All guided hikes last approximately two hours. Any two hour program can be combined with a guided hike to create a four hour field trip.

## Biomes of Minnesota

Time: 2 hours

Season: year-round

The Cedar Bog Lake trail is a unique experience that lets students walk through natural representations of all three biomes present in Minnesota before emerging at the shores of Cedar Bog Lake. Deciduous forest, tallgrass prairie and boreal coniferous forest, as well as swamps and a lake – they all contribute to make this a “Walk Across Minnesota!” Total distance is ~1 mile.

## Power of Observation

Time: 2 hours

Season: April - November

The most important tool in a scientist's toolkit is their ability to look closely at the world around you. Hone your students' observation skills with a color-based scavenger hunt in nature! We will read a story, then go on a nature hike armed with paint chips and work together to see how many different shades and colors we can find. Hike will occur along the Minnesota Ecology Walk near Lindeman Center.

## Leaves and Forests

Time: 2 hours

Season: September - November

Students will explore two of Minnesota's forest types along the Cedar Bog Lake hike, learn how to identify trees, and collect fallen leaves and sort them to compare the differences between each forest. Wrap up the day with a leaf art project or a game of forest tag. Total distance is ~1 mile.

## Focus on Food Webs

Time: 2 hours

Season: year-round

Did you know the first scientist to study how energy moves through food webs worked here at Cedar Creek? Expose your students to Lindeman's legacy through Food Web Tag, and then take an approximately 1 mile hike to his research site (Cedar Bog Lake).

## Want to learn more?

Visit our website: [cbs.umn.edu/cedarcreek](https://cbs.umn.edu/cedarcreek)

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# KINDERGARTEN PROGRAMS

Any two hour program can be combined with a guided hike to create a four hour field trip.

## One Small Square

Time: 2 hours

Season: Mid-April to November

*MN State Science Standard Connection: 0L.1.2.1.2. Make observations of plants and animals to compare the diversity of life in different habitats.*

Students will have the opportunity to explore and compare four different native Minnesota habitats through a short, quarter mile, hike. At each stop, students will practice their skills of observation to compare and contrast the prairie, oak savanna, deciduous forest, and coniferous forest. After exploring the four habitats, students will have an opportunity to look even more closely. In pairs or trios, students will get their own "small square": a kid-sized quadrat that sections off the perfect amount of land for little hands and eyes to explore. Armed with magnifying glasses and other scientific tools, students will count, measure, draw, collect data in one of the four habitats. We'll come back together as a group to share the most exciting and surprising things from our squares.

## Animal Needs

Time: 2 hours

Season: Year-round

*MN State Science Standard Connection: 0L.3.1.1.1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.*

Ever wonder about where and how different birds and animals build nests? All animals need food, air, water, and shelter to live, but each animal uses different methods, materials, and preferences to fulfill these needs. In this program, we explore the birds and animals living at Cedar Creek and learn more about their needs and where they may live. Highlighted species will vary by season.

## Plant Needs

Time: 2 hours

Season: Mid May - October

*MN State Science Standard Connection: 0L.3.1.1.1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.*

All plants need water, sunlight, and air. Most plants also need soil. However, different plants need different levels of water, sunlight, and soil to survive. This program explores the differences between plant needs within the prairie, wetland, and forest and the unique characteristics plants have within each of these habitats.

## Nature Sort

Time: 2 hours

Season: Year Round

*MN State Science Standard Connection: 0P.2.1.1.1. Sort objects in terms of natural/human-made, color, size, shape, and texture, then communicate the reasoning for the sorting system (cause and effect).*

Natural objects have unique properties. There are different colors, sizes, patterns, and textures. In this program, students will explore along a path and collect natural objects. Then, we will think about different properties and descriptive words. Finally, students will have an opportunity to sort their nature treasures by properties and share their sorting system with their classmates.

## Create A Program

Have a specific state standard or unit connected to ecology, nature, or other science not listed above? Reach out to our education coordinator and they will work with you to customize a field trip program that connects with your education goals and needs. Additional lead time and fees may apply.



## First Grade Programs

### Amazing Plant Parts

Time: 2 hours

Season: Year-round

*MN State Science Standard Connection: 1L.3.1.1.1. Develop a simple model based on evidence to represent how plants or animals use their external parts to help them survive, grow and meet their needs.*

It can be difficult being a plant. You cannot move, yet you need water, sunlight, soil, and air to survive. You also need to fend off herbivores and pests and survive through cold Minnesota winters. In this inquiry-focused program, students will explore how plants use their parts (roots, stems, leaves, flowers) to survive. *Note: Program can be combined with guided hike to create a full-day program.*

### Wildlife Sounds

Time: 4 hours

Season: year-round

*MN State Science Standard Connection: 1P.2.1.1.1. Identify and describe patterns obtained from testing different materials and determine which materials have the properties that are best suited for producing and/or transmitting sound.*

Animals communicate in many different ways. Sometimes, animals call; other times animals use other materials to talk to each other. In this inquiry-focused field trip, students will think about sound and how animals use sound to communicate. Students will go on a sound hike, listening for different creatures and nature sounds along the way. Then, they will become woodpeckers to determine the best materials for communicating messages with others.

### Beavers and Ants: Environmental Engineers

Time: 4 hours

Season: April - November

*MN State Science Standard Connection: 1E.4.1.1.1. Construct an argument based on observational evidence for how plants and animals, including humans, can change the non-living aspects of the environment to meet their needs.*

Many animals transform the environment to meet their needs. In this program, students will learn about some of the amazing animal environmental engineers in Minnesota and think about how their behaviors transform the environment to help them survive. Program includes a hike around Cedar Creek to see evidence of animal engineers in action. Species highlighted will vary by season.

### Create A Program

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## Second Grade Programs

### Wonderful Weather

Time: 2 or 4 hours

Season: year-round

*MN State Science Standard Connection: 2E.2.1.1.1. Represent data to describe typical weather conditions expected during a particular season.*

Weather is important for all ecosystems, yet the weather can be different on location. Through hands-on experiences, students will learn about how scientists measure weather. Then, they will put their technique to the test, comparing and contrasting the weather in different ecosystems at Cedar Creek. Four hour programs will also explore the ideas behind weather and climate.

### Traveling Seeds

Time: 4 hours

Season: August - November

*MN State Science Standard Connection: 2L.3.2.2.1. Engineer a device that mimics the structures and functions of plants or animals in dispersing seeds or pollinating plants.*

Through observation and exploration, students will learn more about seeds, the role they play in ecosystems, and different strategies seeds use to travel from one place to another, and the advantages and disadvantages of each of these strategies. Then, students will have the opportunity to craft their own wind dispersed seed through an engineering activity. This program is rooted in both western and Indigenous scientific knowledge.

## Water, Water, Everywhere

Time: 4 hours

Season: year round

*MN State Science Standard Connection: 2E.4.2.1.1. Obtain and use information from multiple sources to identify where water is found on Earth and that it can be solid or liquid.*

Learn about the importance of water to people and nature through a game, an observational hike and a hands-on demo. Students will experience the water cycle through stories and a game of water cycle tag. They will then visit either a wetland or a swamp, and spend some time observing and drawing what they see. Students will be tasked with building houses along a model watershed and making real-world engineering decisions related to flood control, development, and landscaping.

## Create A Program

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# 3-5 FIELD TRIP PROGRAMS

## 3-5 Guided Hikes

All guided hikes last approximately 2-hours. Any two hour program can be combined with a guided hike to create a four hour field trip.

## Biomes of Minnesota

Time: 2 hours

Season: year-round

The Cedar Bog Lake trail is a unique experience that lets students walk through natural representations of all three biomes present in Minnesota before emerging at the shores of Cedar Bog Lake. Deciduous forest, tallgrass prairie and boreal coniferous forest, as well as swamps and a lake – they all contribute to make this a “Walk Across Minnesota!” Total distance is ~1 mile.

## Big Biodiversity Experiment

Time: 2 hours

Season: April – November

Dr. Dave Tilman’s Big Biodiversity experiment is known worldwide for its insights into the way plant communities function and its role in helping scientists, policy makers, and the general public understand and appreciate biodiversity. Explore this enormous experiment using a guided scavenger hunt that encourages students to figure out Dr. Tilman’s main results on their own. They’ll leave with an appreciation for biodiversity and science that’s hard to replicate anywhere else! Bus required.

## Sort Like a Scientist

Time: 2 hours

Season: year-round

Students observe and/or collect a variety of items from around Cedar Creek and use their observational skills to sort them and come up with a basic classification scheme (dichotomous key). They then test out their key with a handful of surprise items or a visit to a novel area. Older groups can refine existing keys or create their own key, and learn why and how to identify specific groups of plants like trees or grasses in our experimental plots.

## FABulous Forests

Time: 2 hours

Season: April - October

Explore forests and forestry science in Minnesota! Students will take a short hike around the Minnesota Ecology Walk and compare different types of forests, and then learn more about how scientists study trees and forests through a tour of the Forests and Biodiversity (FAB) experiment at Cedar Creek. During the program, students will also have an opportunity to test their tree identification skills with a dichotomous key. Bus required.

## Power of Observation

Time: 2 hours

Season: April - November

The most important tool in a scientist's toolkit is their ability to look closely at the world around you. Hone your students' observation skills with a color-based scavenger hunt in nature! We will read a story, then go on a nature hike armed with paint chips and work together to see how many different shades and colors we can find. Hike will occur along the Minnesota Ecology Walk near Lindeman Center.

# Third Grade Programs

## Life Cycles

Time: 4 hours

Season: Late April - October

*MN State Science Standard Connection: 3L.3.1.1.2. Develop multiple models to describe how organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.*

Insects have interesting and complex life cycles. After getting into waders and using dip nets to collect aquatic insects at Fish Lake, students will then identify and explore different aquatic creatures and consider different types of life cycles found within aquatic ecosystems. Bus required.

## Outrageous Insects

Time: 4 hours

Season: June - September

*MN State Science Standard Connection: 3L.4.2.1.1. Obtain information from various types of media to support an argument that plants and animals have internal and external structures that function to support survival, growth, behavior and reproduction.*

Experience the wonderful world of insects! Students will put on their entomologist hats for the day as they explore the structures that allow particular species of insects to thrive in specific habitats. Back in the classroom, they'll learn the basics of structure and function, as well as how to classify insects into broad categories. Then, armed with sweep nets, they will work in teams to sample insects in the prairie and the woods. The day wraps up with teams sorting their insects by type, then collectively building a bar graph using their physical samples and discussing patterns in what insects live where.

## Animal Adaptations

Time: 4 hours

Season: year-round

*MN State Science Standard Connection: 3L.4.1.1.1. Construct an argument about strategies animals use to survive.*

What animals live in Minnesota, and what makes them unique? Students will learn how to reconstruct the story of our local wildlife by looking for clues on a nature hike, and will investigate some of the adaptations found in Minnesotan animals. We'll play games, design our own adapted animals, look at skulls and pelts, go tracking and more!

## Create A Program

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# Fourth Grade Programs

## Minnesota's Spheres

Time: 4 hours

Season: April - November

*MN State Science Standard Connection: 4E.3.1.1.1. Develop a model based in part on student observation or data to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.*

In this program, students will have an opportunity to explore how different spheres interact within different ecosystems. Using scientific tools, students will collect data on the geosphere, biosphere, hydrosphere, and atmosphere. Then, they will compare and contrast two ecosystems and sphere interactions. Finally, students will have the opportunity to see more examples of how spheres interact through hands-on activities and demonstrations.

## Dendrochronology and Environmental Differences

Time: 4 hours

Season: year round

*MN State Science Standard Connection: 4L.4.1.1.1. Construct or support an argument that traits can be influenced by different environments.*

Different environments influence the growth rate of trees. In this interactive program, students will think about the growth needs of trees. Then, they will visit three areas with white pine, comparing the relative size of each of these trees. Back at the lab, students will have an opportunity to look at and explore tree rings from trees in all three environments, thinking about both the age of the tree and rate of growth. Then, they will use the data collected to make predictions about the approximate age of the trees based on the environmental conditions. Bus required.



## Water, Water, Everywhere

Time: 4 hours

Season: Year Round

*MN State Science Standard Connections: 4E.3.2.2.1. Generate and compare multiple solutions to reduce the impacts of natural earth processes on humans; 4E.2.2.1.1. Interpret charts, maps and/or graphs of the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth; 4E.1.1.1.2. Ask questions about how water moves through the Earth system and identify the type of question.*

Learn about the importance of water to people through a game, an observational hike and a hands-on demo. Students will experience the water cycle through stories and a game of water cycle tag. They will then visit either a wetland or a swamp, and spend some time observing and drawing what they see. They will also get to get their hands wet using our stream table, where a naturalist will demonstrate the way water shapes landscapes through processes like erosion and deposition. Students will be tasked with building houses along the watershed and making real-world engineering decisions related to flood control, development and landscaping.

## Create A Program

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## Fifth Grade Programs

### Biodiversity and Ecosystems

Time: 4 hours

Season: Mid-April - November

*MN State Science Standards Connections: 5L.4.1.2.1. Evaluate the merit of a solution to a problem caused by changes in plant and animal populations as a result of environmental changes.*

Humans have large impacts on the environment. In this program, students will explore biodiversity and its role in ecosystem function. In addition, students will explore how habitat fragmentation and other environmental impacts influence biodiversity and the survival of various plants/animals. Bus required.

### Cycling of Matter and Food Webs

Time: 4 hours

Season: April – October

*MN State Science Standard Connections: 5L.3.1.1.3. Create an electronic visualization of the movement of matter among plants, animals, decomposers, and the environment; 5P.3.1.1.2. Use models to describe that the energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.*

Did you know that the first scientist to study how energy moves through food webs worked here at Cedar Creek?

Expose your students to Lindeman's legacy through exploring and tracing energy through a forest and a prairie ecosystem, a food web tag, and a hike out to his research site (~1 mile total).

## Radio Telemetry: Energy Transfers in Action

Time: 4 hours

Season: Year Round

*MN State Science Standards Connections: 5P.2.1.1.1. Analyze and interpret data to show that energy can be transferred from place to place by sound, light, heat, and electric currents; 5P.3.2.2.1. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*

Did you know radio telemetry, attaching a collar to an animal to track movement, was invented at Cedar Creek in the 1960s? In this program, students will be introduced to radio telemetry technology and explore the energy transfers within the technology. Students will then become wildlife biologists and use authentic radio telemetry in the field to find a radio transmitter.

## Create A Program

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