



# Ecology Bus Programs

Ecology Bus programs are designed to run 3 hours, including travel time. Upon request, we can offer longer/shorter programs. Most classes require some kind of natural area. Details of programs will vary with the site, season and age of participants.

## AQUATICS:

### Water Quality

Grades 4-12

What is "water quality" and how do we measure it? Does water quality really affect us? Use scientific test kits and biological indicators to assess the water quality of lakes and streams in your region. (Requires a pond, lake or stream with safe student access.)

### Benthic Macros Investigation

Grades 6-12

Benthic (bottom dwelling) macros are excellent indicators of water health. Macros (short for macroinvertebrates) are those creatures without a backbone such as insect larvae, crayfish, leeches, snails, etc. Students will improve their skill in the areas of analysis, classification, observation, computation, as well as dexterity and confidence in the use of water sampling equipment. Students will learn about the adaptations, niches and the life cycles of common stream insects to find the water quality index and diversity of creeks or streams. (Requires a pond, lake or stream with safe student access.)

### Stream and Lake Ecology

Grades 4-12

Discover the life in streams and lakes using dip nets, hand lenses and a microscope. Learn about the food chain and insect metamorphosis. (Requires a lake or stream with safe student access.)

### Wetland Science: Water, Soils & Plants

Grades 4-12

Slosh through a wetland to unearth its many secret roles such as water purifiers, flood preventers, erosion controllers, pollution busters, and more! Students grasp what makes a wetland a wetland through their unique combination of water, soils and plants.

### Wetland Wildlife

Grades K-12

Amazing animals, big and small, call the watery environment of marshes and swamps home. Wetland diversity is comparable with the richness of tropical ecosystems. Observe and learn how animals are specially suited to these wild and wet worlds and how they are interconnected to the surrounding environments.

## FORESTS:

### Forest Ecology

Grades K-12

Uncover the mysterious methods plants have for growing and making sugar. Grasp what really is going on inside a tree. Learn how to read the forest like a book to discover how forest plants and animals are interconnected.

### Forest Wildlife

Grades K-5

Become a forest detective to discover what animals are living nearby. Identify animals by the tracks, trails, scat, bite marks, and homes they leave behind and uncover the stories they tell us. Understand how the smallest of the forest creatures are connected with the biggest.

## PRAIRIES:

### Prairie Ecology

Grades K-12

Immigrants settling in this region had to cross two oceans. One was of water, the other of six-foot tall prairie grasses! Students search for & identify prairie animal signs and determine how both plants and animals have adapted to this hot, dry environment. Studying remnant and restored prairies enables students to better understand why this region is part of the nation's "bread basket".

### Prairie Plants

Grades 4-12

Discover the rich world of texture, pattern, size, and smell of the prairie lands. Prairies can be harsh environments with recurring fires and hot, dry, windy weather. Observe how prairie plants survive and thrive in this landscape. Learn how prairies built the rich soil we depend upon today!

## **EARTH SCIENCE:**

### **Ecosystem Inventory**

Grades 4-8

Explore different habitats and use soil corers, wind meters, thermometers and scientific observation to find the similarities and differences among these habitats. Understand what that means for the plants and animals that live there. (Requires a natural area with at least two; preferably three different habitats nearby.)

### **Soils: The Dirt on Dirt**

Grades 3-8

Is all dirt the same? Not at all! "Unearth" differences in soil types and how the soil was formed. Students take core soil samples and learn how different soil properties affect water movement and plant growth and what that means for farmers in SW Minnesota.

### **Science of Soil**

Grades 9-12

Where would we be without the ground beneath us? Land use and Mother Nature impact soil and its formation and erosion in numerous ways. Students study properties of soil types & their relation to how we utilize our landscape. Students leave with a better understanding of soils through chemical, mechanical and physical testing of this amazing substance beneath our feet!

## **OTHER:**

### **Insects & Other Things That Bug Us**

Grades K-8

Discover the amazing variety in the insect world! Learn what is and is not an insect. Capture these mini-beasts and learn to classify them to family groups while studying their unique characteristics.

### **Avian Adventure (Bird Ecology)**

Grades K-12

Our feathered friends are as varied as the environments in which they live. Discover the adaptations that enable them to live in Minnesota and their relationships with other creatures in their habitats. Learn their calls, songs and identifying characteristics that will help you recognize them in the field.

### **Introduction to Microscopes**

Grades 4-8

Working in pairs with their own microscopes, students learn the basics of the micro-world from the parts of a microscope to studying prepared slides and those they make themselves from plant and animal parts.

### **Introduction to Cell Biology**

Grades 6-8

Take a close-up look at the building blocks of life. Students will work in pairs with their own microscopes to observe and document animal and plant cells and learn how they are alike and different.

### **Nature Interpretation Through Art**

Grades 3-8

Explore the realms of nature with a different eye—an artists eye! Students learn techniques for both drawing and observing their surroundings. Using what nature provides, students utilize "tools" collected at the site to create painted works of art. Since we work with paint, students should wear "paint" clothes!

## **WINTER SEASON ONLY:**

### **Winter Animal Adaptations**

Grades 6-12

Students will learn first-hand how animals cope with sub-zero temperatures. Simulations and experiments will teach students how animals are physically and behaviorally adapted to Minnesota winters. Students will observe which animals are active during winter months and learn what clues to look for if the critters aren't present at the time.

### **Animal Tracking by Snowshoe**

Grades K-8

Students are introduced to the ages-old method of traversing the snow on their own snowshoes as we seek to uncover the mysteries of wildlife in winter! Tracks, burrows, scat and scent marks all tell a story about the animals that live there. Become a detective and hone up on observation and problem-solving skills! (\*\*K-2 students will be on foot, not snowshoes)

### **Winter Birding**

Grades K-8

Not all birds have flown south for the winter! How do birds survive the cold and snow? Where do they hang out and how can we attract them to our yards and school grounds? Learn how birds make a living during our crisp winters and how to identify these winter neighbors through hikes and activities.

### ***Is there something we missed?***

Is there a program topic that interests you but is not listed? Let us know what you would like to see offered! Call **(507) 662-5064** or email us at:

**[ecologybus@ecologybus.org](mailto:ecologybus@ecologybus.org)**

**[www.ecologybus.org](http://www.ecologybus.org)**