



Laramie County Conservation District
1923 Whitney Road – Cheyenne, WY 82007 – Phone (307) 772-2600

Thank you for your interest in the Laramie County Conservation District Education Program. Our programs are geared toward middle school students. Adjustments can be made for older or younger students, on a case-by-case basis. Our goal is to provide meaningful, hands-on educational programs that meet Wyoming's Content & Performance Standards while at the same time, introducing students to science-based topics that are fun and engaging.

Any questions can be directed to the LCCD Outreach & Education Coordinator, Jacki Bakker, at 307-772-26023 or lccdoutreach@lccdnet.org.

Water

Clean Water (Testing and identification)

This program is an opportunity for a small group of youth or adults to understand how Hydrology professionals check for clean water. This includes testing for Dissolved Oxygen, pH, Turbidity, Ammonium Nitrogen, and Temperature. Together, these tests can indicate water quality issues and support further testing by water officials. This takes about **60 minutes** with groups doing different tests at the same time.

Project Wet:

- *A Drop in a Bucket (Water Conservation)*

This activity is great for helping students and adults understand the real amount of water we have available to us as humans on the planet. The understanding is that we have as much as the dinosaurs had, but a majority is no longer useful to us. It is a quick presentation, **about 20 minutes** total and can be attached to other programs or done individually.

- *Macroinvertebrate Mayhem (With Macroinvertebrate Investigation)*

This investigation involves water, bugs, and a lot of squeals and excitement! Students and adults will obtain, observe, and identify macroinvertebrates (insects and worms that live in water), to help identify clean water based on the invertebrates that they find. They will also understand that certain macroinvertebrates indicate clean water as they are intolerable to polluted water and vice versa. This investigation takes about **60 minutes**.



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- *RiverTalk (With Watershed Enviroscope)*

This program involves looking at a normal landscape and how water and pollutants move through our environment. It also looks at how we are all downstream from someone.

Between these two discussions, students and adults will come to understand that normal activities can pollute our water, but they also could keep our water clean, both in our community and communities downstream. This activity can take **45 TO 1 hour**.

- *Incredible Journey*

This activity involves the water cycle and a bunch of laughter and learning. This program can take anywhere from **30 minutes to 2 hours** depending how far you want to go.

Students and adults will roll die in groups to see where they end up in the water cycle, while earning beads or threads to put on a bracelet to show where they have been. Water conservation is forefront in this activity as it shows where water goes and how it becomes usable or non-usable to living things on our planet.

Soil

Chemical make-up of soil (testing)

This program combines physical science, chemistry, and biology to understand soil and its chemical make-up. Under the watchful eye of a soil scientist, students will study soil to understand why and how we test soil and best ways to interpret your own soil testing. We will also review ways to understand your soil better, including digging and analyzing a soil pit, and soil layers. This investigation can take from **45 minutes to 1 hour**, depending on time allotted. It can also be expanded to ½ a day

What is soil (making soil for growing)

Soil health is key to being able to grow food. In this program, students will review soil particles (sand, silt, clay), identify what soil is made up of, define what soil is, and examination the functions of a healthy soil, horizons, and Wyoming state soil (the Forkwood). This investigation takes about **30 minutes**.



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Silt and Sediment in streams: helpful or hurtful?

Water quality is an important topic, and it overlaps heavily with soil education. In this program, students will be introduced to the concept of aggregate stability, or erosion, and its importance as it relates to water quality. Students will participate in a hands-on experiment, looking at how erosion happens and strategies to lessen the impact of erosion on streams and water quality. This activity takes about **30 minutes**.

Earthworms/Microorganisms and Soil: Soil Food Web

Everyone loves to talk about worms! In this program, students will learn about the soil food web and each trophic level, along with where energy goes in the food web. Similar to the Energy Food Web in our Wildlife programs, this program looks at soil food web inhabitants (plants, organic matter, bacteria, fungi, nematodes, arthropods, birds, animals), and how they each organism works to keep soil healthy and plants growing. This investigation takes **30-45 minutes**.

Water & Soil: The Mystery of pH

Soil and water have many things in common, but the most common is pH. In this program, students will review the pH scale and discuss pH effects on soil health and nutrient uptake in plants. They will participate in hands-on activities to review soil pH of this area and how parent material affects pH. This activity takes **30 minutes**.

Soil Texture: Which texture is best for what crop

Who doesn't like to play in the dirt? In this program, students will have an opportunity to handle different types of soil and identify through feel and visual cues what is meant by sand, silt, or clay as identifiers for soil classes. Further, students will understand how water moves through different parts of soil and how water is becomes available in soil to plants and animals. This activity takes **30-45 minutes**.



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Wildlife

Skins and Skulls: Adaptations for different locations

This program uses animal pelts, skulls and antlers/horns, and scat and tracks to show how animals have adapted to their environment and acclimatized to different habitats. Students will observe how pelts have developed for hot and cold locations, how teeth and mouths adjust for diet, how tracks show evolution in hunting skills, and how scat reflects the diet of each animal. This program can be **30 minutes to 1 hour**.

Energy web/Food Web (how energy and animals work together to survive)

This “game” illustrates how the sun's energy drives the food cycle for animals and humans. Discussion surrounds producers, primary, secondary, and apex consumers, scavengers, and decomposers, and how they are interconnected in a web. This activity can be up to **1 hour** long.

Ecosystems/ Native plants and Erosion (Dustbowls and roots)

This program allows students to use real plant samples to observe and describe different root systems from different plants. This includes comparing native plant root structures with non-native plant root structures. This comparison helps students recognize how differing root structures help or hinder soil erosion. We will discuss implications of the historic dust bowl, agricultural tillage practices, and how over-manipulation of our landscape causes erosion. This program lasts between **30-45 minutes**.

The Birds and the Bees: Identifying our flying friends

There are about 25,000 species of bees and about 11,000 recognized bird species in the world but how do you tell them apart? While there are many guides to help identify our flying friends, we make it simple for students. Activities include observing and studying body and wing shapes, habitat, and food choices. Also included is an activity concentrating on habitat and nutrient intake of various species. This program lasts about **45 minutes**.



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Protecting Pollinators

With populations of pollinators declining worldwide, it is important to understand how to help pollinators. This program will explain what a pollinator is, the importance of pollinators, pollinator habitats, and pollinator conservation. Students will use observation and hands-on activities to identify how they can be part of the conservation efforts to bring pollinators back to our community. This program lasts about **45 minutes**.

Trees

Keying Wyoming Trees

Living on the shortgrass prairie means the only trees we really have are those that are planted or grow in the western part of our state. Because of that, it is important to know how to identify trees, both native and non-native. Using books created by the Arbor Day Foundation, students and adults will pair up to identify trees using a Tree Key, after having types of leaves, needles, twigs, and fruit shown and discussed. This activity is both gratifying and fun, as students and adults will never look at trees the same way! This is a **45-60 minute** activity.

Trees Measure Up

This activity looks at ways to identify how old a tree is by looking at height, diameter, and tree rings. Students and adults will look at tree cookies and count years and measure their own trees (if available) to identify what age the tree is. This activity helps students and adults understand how trees live and why they are important. This activity is about **45-60 minutes** in length.

A case for Tree conservation (Tree Life and Conservation)

This activity can be used with Trees Measure Up or by itself. This is a discussion-based activity using observational skills and the scientific method to understand how trees are worthy of conservation and attentiveness by our community. This is about a **30-minute** activity.



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Orienteering

Maps and compasses

"How do we get there? I don't know! I don't have my phone or GPS!!!" That is the subject of this course! Students and adults (yes, adults) will learn how to read and use a map to get from point A to point B. They will also learn the symbols and keys of a physical map and which way is north! Further, they will become familiar with compass's and how to orient them to show them the direction to go. Finally, students and adults will follow a "verbal map" blindfolder, narrated by their peers on how to get from one point to the other. This is about a **60-minute session**, with lots of "ah-hahs!" and laughter as the straight line becomes anything but!

Bird watching with Bino's

We all know the regular birds...American Robin, Blue Jay, Bald Eagle, and Prairie Hawk. But have you seen them far away up close? This course will teach students and adults how to use basic binoculars and learn to identify birds through sight and possibly sound. Using Birds of Wyoming Identification books, participants will learn about birds while learning how to use binoculars! This is about a **45-60-minute** activity.