

A Unique New Educational Resource For Public & Private Schools





“The Best Programs in America to Support Science, Technology, Engineering, Math (STEM) Education in Middle and High School.”

Larry Zabar, V.P., New England Council



Making Science FUN – For EVERY Student





Standards-Based Curriculum

**Applies and Integrates
Math * Science * Technology Applications
Language Arts**

Gets Students Excited About Learning Math and Science



The Cave



The Lake

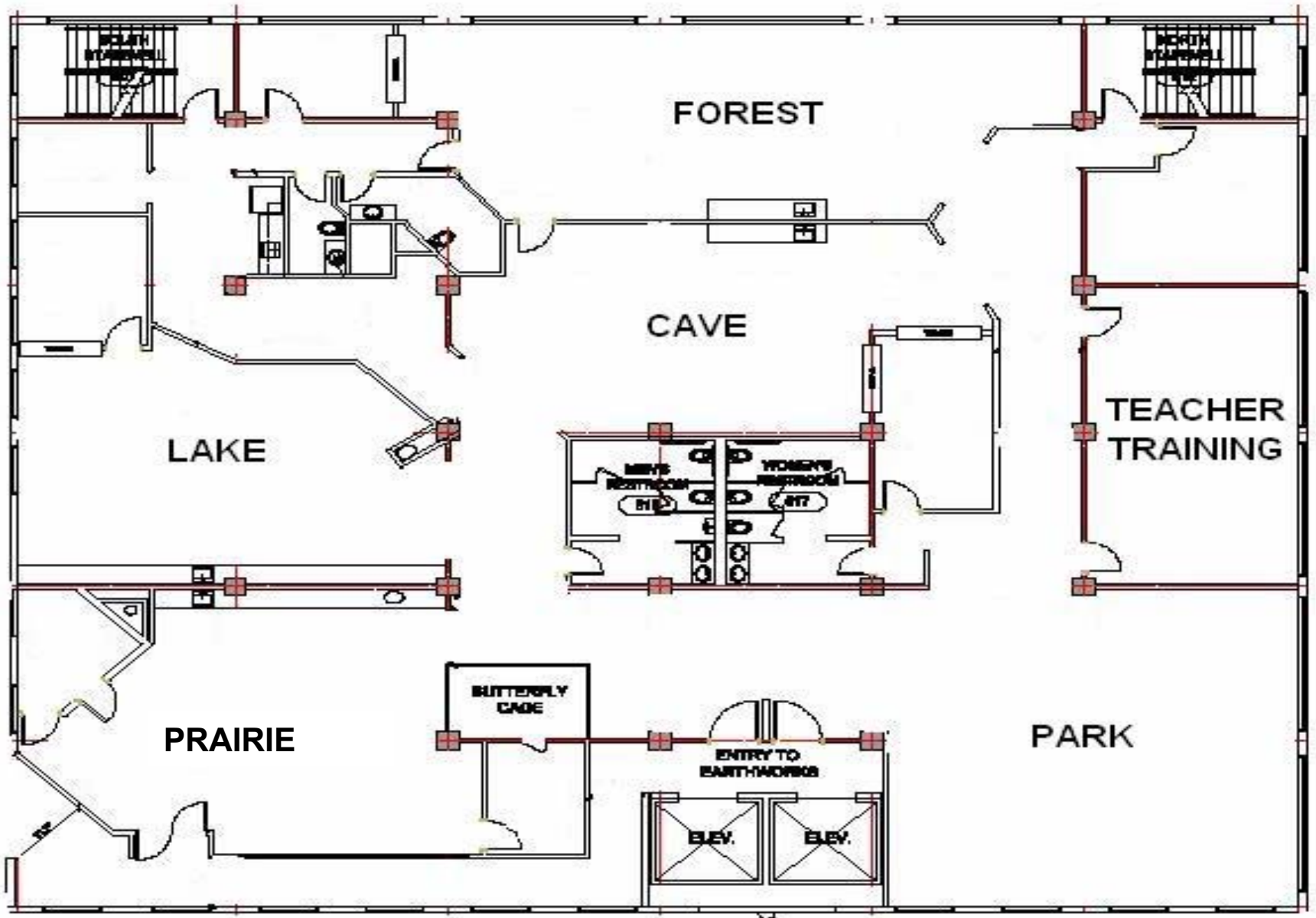


The Grassland



The Forest

A 10,000 Square Foot Science Laboratory in New Hampshire



How EarthWorks Works Hand in Hand with Teachers

Designed for elementary and middle school students (4th, 5th and 6th Grade).

7-week (30 hrs) in-school program taught by the students' regular teachers.

The math and science filled curriculum is about challenges inherent in Creating sustainable environments.

The one day visit to EarthWorks occurs as a field trip in the 6th week of study.

Every student has an opportunity to become a specific type of scientist.

Students conduct experiments and investigations and work with wildlife.

Students encounter and react to a surprise natural event.

Scientists make presentations to other scientists.

**EarthWorks Annual Site Capacity – School Year Only
15,000 9-12 year-old Students, 1,000 Teachers & 20,000 Parents**

Timeline of EarthWorks Student Experience

Two Weeks (10 Hrs) of Environmental Science Concepts

Team Building-How Scientists Work-Habitats-Food Webs-Energy-Water-Variables

Two Weeks (10 Hours) of Environmental Science Concepts

Recording Data-Air-Pollution-Soil-Biosphere-Testing-Observing-Analysis

Two Weeks (10 Hours) of Job Preparation

Sites-Recycling-Science Careers-Job Interviews-Teams-Web Research-Needs

**FULL DAY SPENT AT EARTHWORKS “IMMERSIVE
LEARNING” CENTER**

Two Weeks (10 Hours) of Follow-up Concepts and Extension Activities

Web Connections-Food Webs-Evaluations-Visual Presentations-Open House

Lunch Recycling Activities



The Grassland Habitat

Grassland Habitat

The Grassland Habitat, replicating the natural grassland/meadow terrain found throughout Michigan, consists of indigenous plants, animals, soil and eco-structure of the region. Survival of plant and animal life, habitat construction for animals and insects, life cycles, water flow and effects of pollution are just a few of the issues to be monitored and studied by the Grassland Scientists.

The Natural Event:

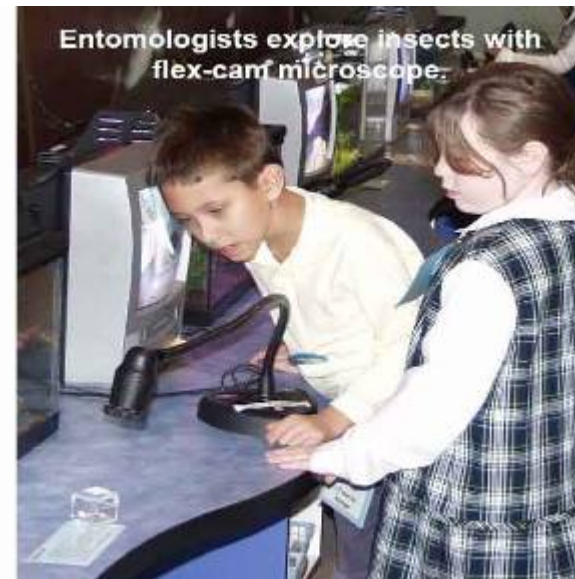
A “raging” fire occurs damaging all the natural grass and plant life, putting the eco-system in a seriously imbalanced state.

Careers:

Botanist, Entomologist, Herpetologist,
Horticulturist, Mycologist, Physiologist,
Watershed Manager, Scientific Illustrator



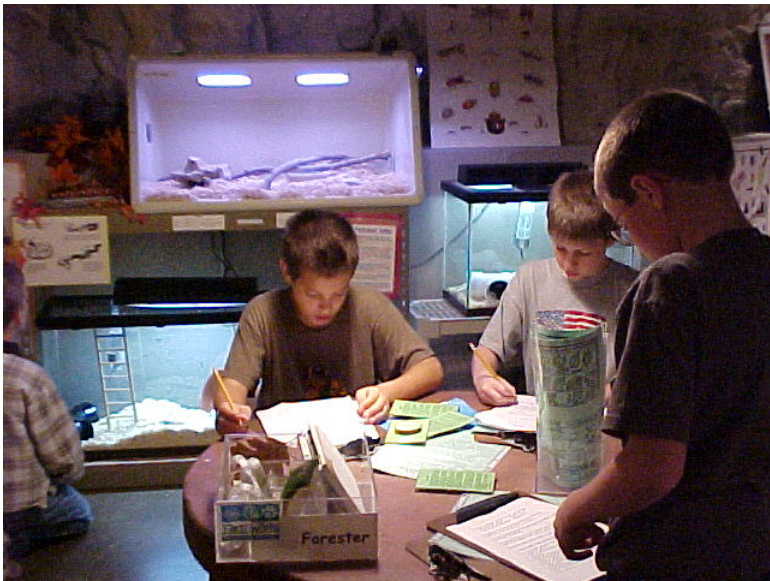
Hydrologists test for water pollution.



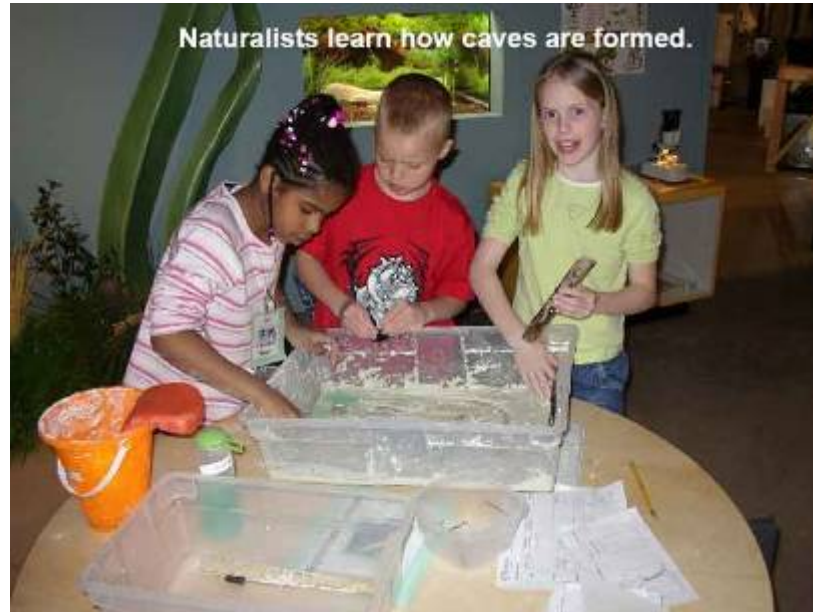
Entomologists explore insects with flex-cam microscope.

GRASSLAND HABITAT SCIENTISTS

- **Botanist.** Botanists study the way that plants live. EarthWorks Botanists learn more about how plants live in the wild and what they look like and what they need to survive
- **Entomologist.** Entomologists are scientists who know all about insects and keep learning more. EarthWorks Entomologists design and build a habitat for an insect
- **Herpetologist.** Herpetologists study amphibians and reptiles. EarthWorks Herpetologists study the special characteristics of amphibians and reptiles and how these characteristics allow these animals to live in a special habitat
- **Horticulturist.** Horticulturists study how plants are able to move to make a good habitat for themselves. EarthWorks Horticulturists figure out how seeds travel from place to place to find a habitat.
- **Mycologist.** Mycologists study fungi such as mushrooms and yeast. EarthWorks Mycologists study mushrooms and the effect pollution has on how yeast lives in a habitat
- **Watershed Manager.** Watershed Managers examine the way water flows through a habitat. EarthWorks Watershed Managers create a watershed and change how water moves through it.



The Cave Habitat



CAVE HABITAT SCIENTISTS

- **Geologist.** Geologists study the rocks and minerals that make up the Earth. EarthWorks Geologists identify and classify the rocks that are part of their habitat.
- **Hydrologist.** Hydrologists study surface water. They learn how water moves and ways to keep water clean. EarthWorks Hydrologists work to clean a polluted habitat.
- **Interpretive Naturalist.** Interpretive Naturalists are scientists who are able to explain nature to others and become experts about how caves are formed.
- **Invertebrate Zoologist.** Invertebrate Zoologists study animals without backbones. EarthWorks Invertebrate Zoologists will study invertebrate animals to discover how they use their senses.
- **Mammalogist.** Mammalogists study mammals. EarthWorks Mammalogists study the special characteristics of a mammal and how these characteristics allow these animals to live in many habitats.
- **Microbiologist.** Microbiologists look at the earth's smallest living things called microorganisms. They use microscopes to study these creatures. EarthWorks Microbiologists study how chemicals effect microorganisms.
- **Paleontologist.** Paleontologists study the remains or fossils of plants and animals that lived here many years ago. EarthWorks Paleontologists explore this information and how it relates to our world today.



The Lake Habitat

Lake Habitat

Naturally reflecting the importance of lakes to this entire region, the Lake Habitat gives scientists a variety of ways to study this vital, indigenous ecosystem. Observations and discoveries will be made around issues such as the role of chemicals, pollutants and parasites to the system, as well as the importance of freshwater, fisheries and air to the lake environment.

The Natural Event:

The Lake Scientists will all have the opportunity to watch a full blown algae bloom take over the lake, impacting seriously the plants, fish and other animals that all depend on a balanced, freshwater ecosystem for survival.

Careers:

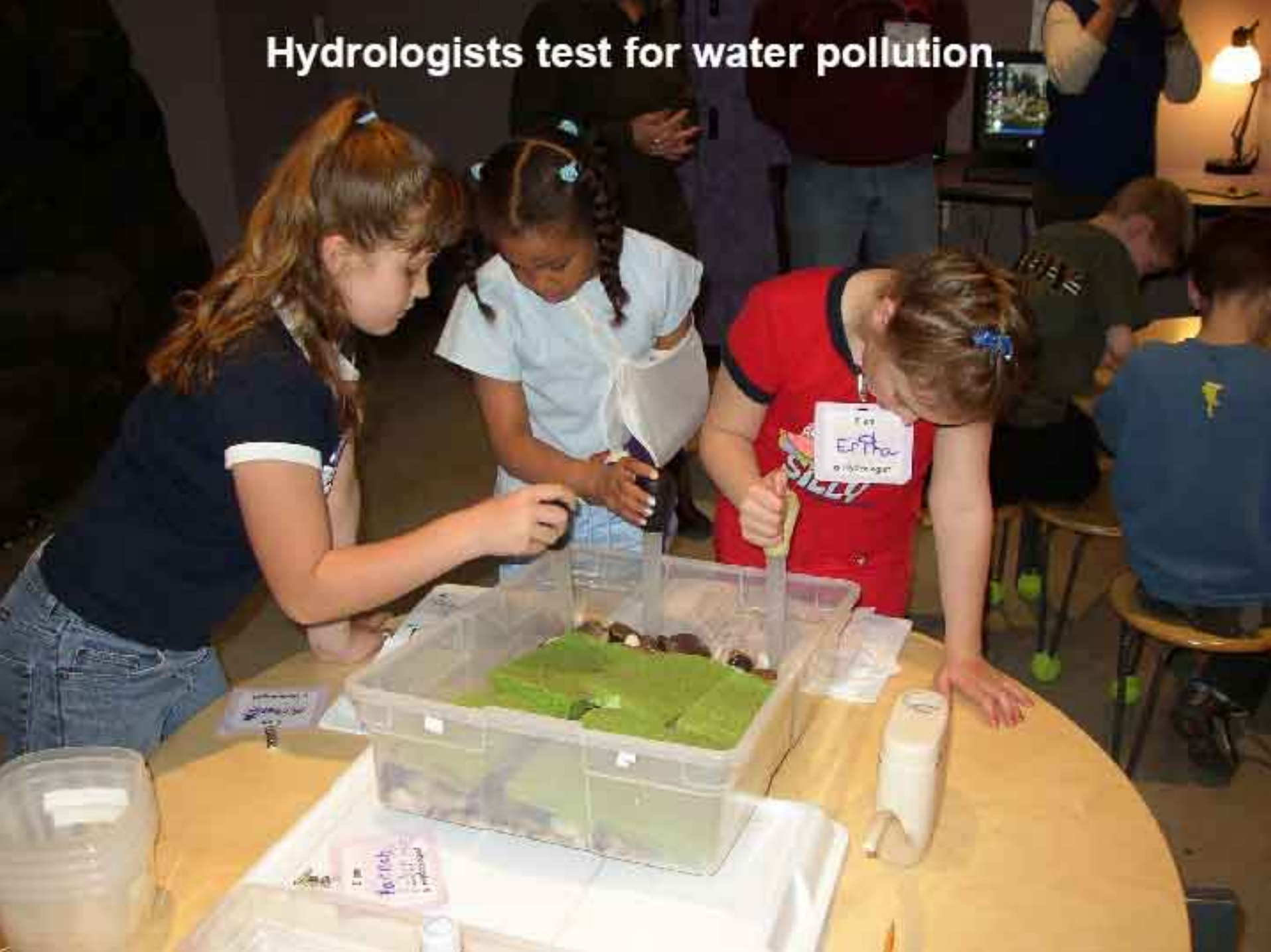
Air Scientist, Biochemist, Fisheries Manager, Limnologist, Ornithologist, Parasitologist, Zoologist, Scientific Illustrator

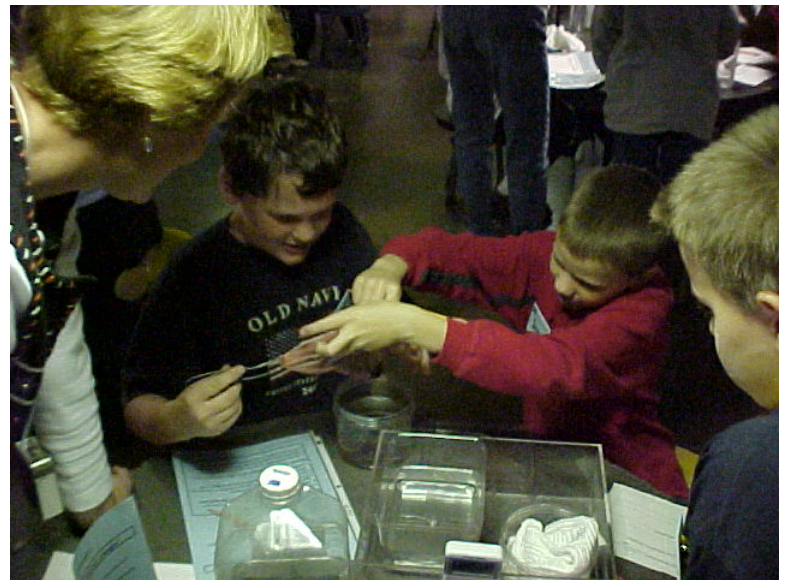


LAKE HABITAT SCIENTISTS

- **Air Scientist.** Air Scientists study the importance of air in all habitats. EarthWorks Air Scientists study how air is made and how forceful it is.
- **Biochemist.** Biochemists look at the role of chemicals in all living things. EarthWorks Biochemists study the effects of harmful chemicals in a habitat.
- **Fisheries Manager.** Fisheries Managers keep a good habitat for fish in our ponds and lakes. They must know lots of information about fish to be successful. EarthWorks Fisheries Managers study how fish survive in a habitat.
- **Ornithologist.** Ornithologists study birds. EarthWorks Ornithologists study water birds and the effect of pollution in their habitats and on their flights.
- **Parasitologist.** Parasitologists study parasites which are animals and plants whose habitats are other animals and plants. EarthWorks Parasitologists study one parasite to discover how it uses its senses in its habitat.
- **Zoologist.** The job of the Zoologist is to study animals. EarthWorks Zoologists study animals and their unusual ability to move through their habitats.

Hydrologists test for water pollution.





The Forest Habitat



FOREST HABITAT SCIENTISTS

- **Earth Recycling Coordinator.** These scientists study how matter is recycled in the earth and used as nutrients. EarthWorks Earth Recycling Coordinators will examine a small habitat filled with recyclers
- **Forester.** Foresters study the way the sun's energy becomes food for living things. EarthWorks Foresters learn how to identify the trees and seeds in the forest
- **Scatologist.** EarthWorks Scatologists study body wastes of animals for clues about their hunting and eating habits.
- **Soil Ecologist.** Soil Ecologists study soil and the animals that live there. EarthWorks Soil Scientists study animals that make their habitats in the soil.
- **Wildlife Biologist.** Wildlife Biologists study how animals live in the wild. EarthWorks Wildlife Biologists become experts on the tracks and behaviors of wild animals.
- **Scientific Illustrator.** Scientific Illustrators are artists who know enough about science to draw informative pictures of the environment. EarthWorks Scientific Illustrators develop an art project that will share what they have learned.

Zoologists track an organism's movement.



What Students Are Saying

This is the best program in the whole world!

EarthWorks teaches you as much stuff as it is fun!

It was a great experience and I learned a LOT!

I wish I could come back to EarthWorks every year.

Without us scientists the earth would be torn to shreds.

**I think all students should have a chance to be
EarthWorks scientists.**

EarthWorks is the best and I mean the very best!

EarthWorks makes science fun.

My day at EarthWorks was the best day of my life!



What Parents Are Saying

These kids will never forget this day & will take what they have learned with them forever.

Taking the role of a scientist performing hands-on experiences brought the field of science to life.

It allowed all the children, no matter what level, a chance to become excited about learning.

A great additional part of our curriculum. We need these new types of learning throughout our system.

You have a wonderful program. I see nothing but success in your future. I think this was the best program my child has ever participated in.

EarthWorks is a great program. I feel lucky that my school is able to participate.

What Teachers Are Saying

In EarthWorks, some of our low readers could suddenly read!

You can't put into words how valuable this experience was & what the students learned. I was impressed & proud to see my students succeeding!

Priceless! These children were able to gain knowledge they otherwise would never experience.

Can't wait to do it all over again next year. Loved everything about it.

Students 'lived' the curriculum. They learned more in this program (and remembered) than in months of just bookwork.

Great example of 'rigor and relevance'!

I loved the hands-on learning, the excellent staff & the way my students responded to the EarthWorks curriculum.

The whole EarthWorks experience is amazing! Thank you for this wonderful program.

We will come back to EarthWorks every year.



This log belongs
My scientific job is
I will bring my log

EACH DAY Exchange City and EarthWorks Have

200 Students in state-of-the-art labs

**ALL LEARNING MATH, SCIENCE,
LANGUAGE ARTS,
TECHNOLOGY SKILLS
AND ENJOYING IT!!**

www.exchangecity.org