FALL 2015 EDUCATORS NEWSLETTER

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Walking trails are open to the public every day from dawn to dusk.

Bunker Interpretive Center (BIC) hours

Academic year: M–F 9 a.m.–5 p.m.

Summer: M–F 8:30 a.m.–4:30 p.m.

Closed weekends and holidays.

Admission to the trails and BIC is free.

1750 East Beltline Ave. SE
Grand Rapids, MI 49546

www.calvin.edu/go/preserve
(616) 526-7600

REGISTER TODAY FOR FALL PROGRAMS

Fall program topics for Pre-K to 6th grade include: Sensory Adventures, Amazing Animals, Terrific Trees, and Beech Maple Forest Exploration. These programs provide information about our local ecosystem and the flora and fauna of West Michigan, encourage stewardship, and help students develop a sense of place.

Fall programs run through November 6. Programs are 90 minutes in length, and cost $3 per student. Currently, National Heritage Academy schools are eligible to attend our programs free of charge, thanks to a funding grant.

For more information visit our website, or contact Julie Wilbourn to register your class. To register, we will need your name and school, desired program topic, grade level, number of students and adults, preferred dates/times, and the best way to contact you.

Like our programs? Forward this e-mail to your fellow educators! Thank you for spreading the word that exploring science in nature is a powerful learning experience.

INSPIRING IDEAS FOR THE CLASSROOM

Each newsletter, we will share with you some of our favorite ways to get students outside learning about the natural environment. You do not need to have forests or fields surrounding your
school; school yards can work just as well for experiential learning. Our school yard activities are hands-on, require few supplies, and are easily adaptable to meet your students’ needs. We will also share with you some of our favorite storybooks, art projects, and other resources to enhance learning in the classroom. Additional ideas and photos of art projects and storybooks can be found on our Pinterest page.

NATURE'S RECYCLERS

Many of us may cringe at the thought of creepy-crawling millipedes, mold, or wiggling worms; however, as nature’s recyclers, these creatures play a very important role in food webs. Known as decomposers, they can be found in lots of places—on the apple core in the trash, under a rock in your schoolyard, or on a fallen tree in the woods. By breaking down detritus (things once part of living plants or animals), decomposers release nutrients and minerals back into the soil, air, and water. We invite you to learn more about the agents of decomposition known as the FBI: Fungi, Bacterium, and Invertebrates using the resources below.

FBI PROFILES

Department: Fungi

Job Description: Often found in dark or damp environments, fungi thrive in areas rich with decaying materials from plants and animals. Fungi first release proteins that break down detritus. Once the material is broken down into smaller elements, members of the fungi department can then absorb nutrients.

Agents: Slime molds, jelly fungi, puffballs, bracket fungi, morels, yeast, and many more.

Department: Bacterium

Job Description: There are many agents within the department of bacterium who do their best decomposing work at varying temperatures. Although they may not all be working at the same time, each agent helps contribute to the end goal of fertile soil, rich in released nutrients and
minerals.

**Department: Invertebrates**

**Job Description:** Known as ecosystem engineers, invertebrates help make nutrients like phosphorus and nitrogen more easily accessible to plants, by breaking down detritus into small bits and by digesting fragments of the soil. Many invertebrates also burrow within soils; this allows for aeration and water infiltration of the soil.

**Agents:** Earthworms, millipedes, slugs, snails, beetles, spiders, ants, sow bugs, and many more.

**EDUCATIONAL WEBSITES & RESOURCES**

Here are some great ways to learn more about the members of the FBI. Go to our [Pinterest](#) page for even more ideas!

**Decomposition:**

- Watch a video about the important work that decomposers do! This video produced by NOVA is recommended for grades K-5, and is available in both English and Spanish.

- Read the Young Naturalist’s guide, [NATURE’S recyclers](#), for more interesting facts and information about decomposers.

**Fungi:**

*Fascinating Fungi of the North Woods* by Cora Mollen and Larry Weber is a wonderful field guide to learn about some of the most unique fungi that live in Michigan. Beautiful illustrations and lots of natural history information make it a great classroom resource.

**Invertebrates:**

- Since the 1990s, there has been an increase in earthworm awareness. Using [Great Lakes Worm Watch](#), learn about previous studies that other citizens, universities, and agencies have conducted, and find out how your class might be able to join in the research. This site also offers great inquiry-based lesson plans for teachers.

- Read *Earthworms of the Great Lakes* by Cindy Hale. This book will not only help you identify 16 species of
earthworms that are found in the ground beneath your feet, but it will also educate you as to their role in our forest ecosystems. An excellent classroom research tool, this book also includes methods for collecting worms and keys to identifying your finds.

- With your students, explore the Adventures of Herman, an interactive website that teaches children about worms.

SCHOOL YARD ACTIVITIES

FBI Close-Up:

**Materials needed:** Search sheets, hand trowels, hand lenses, bug boxes

Take a hike around your school yard or local park to discover and observe FBI agents in action. Provide each small group of students with a search sheet to guide their exploration, and simple tools like a hand trowel, hand lens, and small bug box. Some of the creatures you might find include: earthworms, slugs, snails, a variety of mushrooms, slime molds, millipedes, pill bugs, etc. Encourage them to look under rocks, lift logs, or dig holes to discover and observe decomposers. Show them how to gently hold these creatures and invite them to ask questions about them. Depending on the age, they can journal about their discoveries. To extend the activity, check out the book Creepy Crawlies and the Scientific Method: More than 100 Hands-On Science Experiments for Children by Sally Kneidel. This amazing resource shows teachers how to use a full spectrum of insects and other invertebrates, along with slime molds, to teach children the five steps of the scientific method: question, hypothesis, methods, result, and conclusion. This hands-on inquiry book is classroom tested, easy to use, and adaptable for grades K-12.

A Decomposition Experiment:

**Materials needed:** Pumpkins

After Halloween, put your classroom pumpkins to use in this smelly experiment! Invite your students to predict and observe what happens when they leave pumpkins outside in your school yard. A couple times a week, plan for the students to visit the pumpkins and record the changes in the appearance of the pumpkins through drawings, words, photos, and/or videos. Look for evidence of FBI agents at work (worms, mold, beetles, fungus, and other decomposers), and discuss their role in decomposing the pumpkin and turning it back to soil. As a class, review the
predictions and records over the course of time and discuss. A note: your pumpkins probably will not decompose completely here in Michigan until next spring/summer. Many decomposers slow down or die as the weather gets colder, slowing the process of decomposition. If possible, leave the pumpkins out all winter long and check back in the spring to watch the final stages of decomposition. Once the pumpkins are gone or mostly gone, continue to visit the spot to see if new pumpkin plants begin to grow. This experiment can also be done in the classroom to speed the rate of decomposition, or if you do not have an appropriate outside space to use. To set up the experiment indoors, cover the bottom of a large Rubbermaid container with a layer of soil and rotting leaves (1-2 inches deep) that you find outside. The soil/leaf mixture will contain a host of decomposers. Add a pumpkin or two to the container and place the lid on top.

**FAVORITE BOOKS**

Books are wonderful tools to introduce students to science topics. Information about these books can be found on our [Pinterest](#) page. Many of them have accompanying teacher’s guides on the publisher’s homepage.

Below are some of our favorite storybooks and non-fiction books about the process of decomposition or members of the FBI.

- *Diary of a Worm* by Doreen Cronin
- *Pass the ENERGY, Please!* by Barbara Shaw McKinney
- *A Log’s Life* by Wendy Pfeffer
- *Nature’s Yucky!* by Lee Ann Landstrom & Karen I. Shragg
- *Around One Log* by Anthony D. Fredericks
- *Under One Rock* by Anthony D. Fredericks

**ART PROJECT: Mushroom Spore Prints**

Looking for a cool art project to go along with your study of decomposers and fungi? Check out our [Pinterest](#) page to learn how to make mushroom spore prints.

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