

FIELD NOTES



Baby tooth moss (*Plagiommium cuspidatum*)
is a common species of moss in Ohio.

Image: Robert Klips

Beautiful Bryophytes

BY AVA-ROSE BEECH '21,
BFEC POST-BACCALAUREATE FELLOW

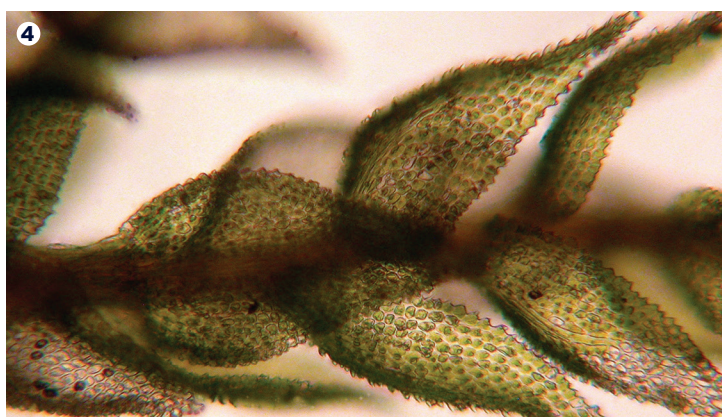
Spring brings with it the return of bright shades of green, from budding tree leaves to croaking bullfrogs. One spectacular plant that contributes to the spring green palette is moss. But interestingly, that green moss remained green all winter long. Mosses frequently provide a much needed burst of green within snow-covered forests.

It is no surprise that these non-flowering bryophytes can survive freezing winters, as they are among the oldest plants in existence. They were the first plant to evolve on Earth, originating around 450 million years ago, and have sustained life throughout dramatic shifts in temperature and climate, including multiple ice ages. In fact, these extraordinary plants are able to photosynthesize all year, even if

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Moss, up close and personal

These detailed photos by Robert Klips of the Ohio Moss and Lichen Association show common Ohio mosses tangled thread moss (*Amblystegium varium*, 1 and 2) and common fern moss (*Thuidium delicatulum*, 3 and 4).

they are covered in snow. Mosses are so well equipped to survive in a wide range of climates and ecosystems that they grow on every continent. They are able to survive in frigid temperatures as low as -15 degrees Celsius (5 degrees Fahrenheit), as well as desert and prairie regions with temperatures as high as 40 degrees Celsius (104 degrees Fahrenheit).

You may have noticed these lush, green cushions covering a multitude of surfaces ranging from the side of trees and rocks, to roof shingles and doormats. How does this happen? Mosses are unique from all other plants in that they have no true roots. Rather, mosses adhere to surfaces using rhizoids, tiny hair-like structures. Mosses absorb moisture and nutrients through osmosis. Moss “leaves” (actually called phyllids) are only one or two cells thick and do not have a cuticle (hard outer surface). This structure allows them to absorb water and nutrients. With no need to root down into soils, it is no wonder these plants can survive in an array of harsh conditions.

Mosses also play a key role in regulating ecosystems. These spongy plants absorb rainwater, retain soil moisture and humidity, and help maintain optimal temperatures by cooling soil in warm climates and warming soil in regions such as the arctic. They are also a colonizer species, meaning that after a destructive environmental event such as forest fire, natural disaster, or deforestation, mosses are the first on the scene to begin rehabilitating the ecosystem. They help create healthy, moist soil surfaces that enable other, more sensitive plants to move in.

But it gets even better. Mosses around the world actually remove more carbon from the atmosphere than all the trees in the world combined, and their absorbent properties make them an ideal bioindicator of air and water pollution in surrounding landscapes. So, like the lowly, modest salamander, perhaps mosses will help save the world (refer to the salamander article on page 5).

Of the approximately 25,000 species of mosses on Earth, you can expect to find around 420 species growing in Ohio. Walking around the BFEC, you can expect to see species including the tangled thread moss (*Amblystegium varium*), recognizable by its irregular branching patterns and found on the ground in damp areas. Another moss you might see on your next spring hike is common fern moss (*Thuidium delicatulum*). Common fern moss gets its name from its fern-like growth habit. You can find this moss forming a carpet atop logs, stumps and rocks. A particularly recognizable Ohio moss is the baby tooth moss (*Plagiommium cuspidatum*), which you can spot growing on rotten logs, at the bottom of trees, on rocks and in other shady spots in the woods.

There is so much to enjoy with the return of spring — the air is filled with birdsong, and fields are filled with bright colors of violets, bluebells and wild geranium. But the damp, rainy spring days are also an ideal time to admire these beautiful bryophytes. Mosses serve as a reminder to stop and take a closer look at the tiny worlds that exist around us.

Cottonwood and Dandelion Seeds: The Snow of Spring

BY EMMA RENEE COFFMAN '22, BFEC STUDENT MANAGER

Snow in spring — it's a common occurrence in Ohio. But look closer. What you might be seeing isn't snow at all, but seeds floating down to the ground.

Cottonwood trees, or eastern poplars, are large, fast-growing trees. They don't actually produce cotton, but their seeds are issued on the wind with many frizzy, delicate, white strands collectively referred to as a "parachute." These seeds set sail in mid- to late-May, and the effect looks like a sky full of snow. A single cottonwood tree can disperse up to 25 million seeds.

Because cottonwood trees love moist soil, they can often be found growing along rivers. The seeds are designed for wind and water dispersal. The cottony fibers float on water so the seeds can travel downstream quite effectively. Because water levels may be dropping this time of year, a few lucky seeds may land in the soft, moist, exposed soil of a streambank. These few seeds will then quickly germinate, and begin to grow. Cottonwoods grow quickly — up to eight feet every year — so it won't be long before the new tree is reaching up into the sky.

Some of the "springtime snow" may come from a much smaller plant. I'm sure you've made a wish on a bright white dandelion, blowing its white fluff all over the ground. Each tiny dandelion seed has a long stem, topped with parachute-shaped fibers known as the pappus. The pappus, like the cottonwood seed fiber, works as a tiny parachute carrying one seed until it lands and takes root. These plants can grow and spread very quickly, too. One flower can spread up to 174 seeds that might each germinate in as little as a week.

The cheerful fluff drifting on the breeze may look beautiful, but it can cause problems. Cottonwood seeds can clog drain

pipes, especially when the seeds get wet and clump together. The tree and its deep roots can also cause significant damage if the roots grow into underground pipes. Dandelions, as we all know, are considered pesky weeds. They multiply so quickly and survive so many conditions that it makes it hard to control where and when they grow. In just a few weeks, a yard can become filled with the bright yellow blossoms.

Are these fast-growing, seed-throwing plants really nothing more than a nuisance? Not even close! Cottonwood trees' deep roots can be put to good use to stabilize the soil along rivers and streams, preventing erosion. Their fast growth also makes them great choices for shade trees, as their leaves fill in quickly. Dandelions are helpful, too. Their taproots help to secure and aerate the soil, which benefits your lawn. Their leaves also make great salads and tea and are full of vitamins and medicinal properties that have been used around the world and throughout history. The dandelion, while not native to North America, is a well-loved flower that has been cultivated by many cultures. In fact, if we lived in France, we would pay our neighbor for all of their dandelions.

This spring, be sure to appreciate the cottonwood "snow" and then go pick a dandelion covered with its white seeds, make a wish, and disperse some seeds yourself.

Not just weeds

Often seen as a nuisance, dandelions help secure and aerate soil with their long taproots — even if their ubiquitous, fluffy seeds sometimes resemble a springtime snow.



Earth Day and Old Forests: Celebrate Both at the BFEC

BY NOELLE JORDAN, BFEC MANAGER

The BFEC's Earth Day Festival returns this spring after a two year hiatus. We are so pleased to offer this free family event to the Knox County and Kenyon communities. Join us on Saturday, April 16, from noon to 4 p.m.

This year, our event will feature a guided hike and discussion by Dr. Joan Maloof, the director of the Old Growth Forest Network. Maloof is a writer, ecologist and conservationist with a unique voice in today's times. She has studied and worked with plants her entire life. Her formal education includes a bachelor's degree in plant science, a master's degree in environmental science and a doctorate in ecology. She is a professor emeritus at Salisbury University in Maryland, where she taught biological sciences and environmental studies.

Maloof has published numerous research articles in publications such as *Ecology*, *American Journal of Botany* and the *International Journal of Environmental Studies*. Her books include "Teaching the Trees" (2005), "Among the Ancients" (2011), "Nature's Temples: The Complex World of Old-Growth Forests" (2016), "The Living Forest: A Visual Journey into the Heart of the Woods" (2017) and "Treepedia: A Brief Compendium of Arboreal Lore" (2021).

Maloof founded the Old-Growth Forest Network in 2011 with the goal of creating a network of protected forests across the U.S. According to the network's website, "only a few remnant old growth forests exist in the U.S. — under 5% remain in the west, and less than 1% in the east." The ecological benefits of old growth forest cannot be found in forests of other age classes. Old growth forests provide a multitude of microhabitats that in turn promote biodiversity — they create topsoil, sequester carbon, and improve water and air quality.

To date, the network has dedicated over 100 mature forests, 13 of which are in Ohio, including Mount Vernon's own Knox Woods State Nature Preserve. The other forests in Ohio include Crall Woods at Pine Hill Park and Clear Fork Gorge State Nature

Preserve in Ashland County, Dysart Woods in Belmont County, Hueston Woods State Nature Preserve in Butler County, Dav-ey Woods State Nature Preserve in Champaign County, A. B. Williams Memorial Woods in Cuyahoga County, Goll Woods State Nature Preserve in Fulton County, Fort Hill State Memorial Highland County, Camp Oty'Okwa Old-Growth Forest in Hocking County, Flint Ridge Ancient Quarries and Nature Preserve in Licking County, Secor Metropark in Lucas County, and Baker Woods State Nature Preserve in Mercer County.

In addition to our guest speaker, this year's festival will include many hands-on workshops, like creating a container garden, making seed bombs, mending your old clothes and nature sketching. Games and other children's activities will be found in the kids' corner, and guests will be able to build a bluebird box or bat house in the do-it-yourself tent, sponsored by Keim Lumber.

Local fiber artist Raeschell Noonan will oversee the creation of a community weaving. In this project, everybody who attends the event will have an opportunity to contribute to the weaving. Community partners will have information booths and hands-on activities, and vendors will be on hand to sell local honey, beekeeping supplies and more. Food trucks and live music will round out the event.

We hope to see you there!

Earth Day Festival

WHERE

Brown Family Environmental Center,
9781 Laymon Road in Gambier

WHEN

April 16, Noon – 4 p.m.



Speaking for the trees

Joan Maloof, the founder and director of the Old-Growth Forest Network, will be the featured speaker at the 2022 Earth Day Festival. Through her organization, Maloof has created a network of more than 100 protected mature forests across the United States.

Salamanders: They Just Might Save the World

BY SHANE MCGUIRE, BFEC LAND MANAGER/NATURALIST

Most people know about salamanders, but very few people can claim that they have seen one. Salamanders hide under rocks and logs or in and around small streams. Some salamander species are adapted to living in terrestrial ecosystems, preferring moist areas on the forest floor under leaves and logs. Other salamander species are aquatic species requiring water.

In spite of their secretive habits, salamanders play an important role in their ecosystems. They are prey to species like birds, mammals and snakes but are predators to many different invertebrates like mosquitoes, mayflies, dragonflies, worms and spiders. Since salamanders are both predator and prey, they act as indicators for ecosystem health. Anything that disrupts the lifecycle of their prey or their predators will affect salamander populations. In addition, salamanders act like the proverbial canary in the coal mine. Because some salamander species breathe through their skin, they are particularly sensitive to pollution. Conservation professionals can use this to their benefit by frequently monitoring salamander populations. When they see a decline with certain species, they examine the ecosystem more closely to address problems before more wildlife are impacted.

Salamanders that live in forests play an interesting role in carbon sequestration, which means they help to reduce the impacts of climate change. Here's how it works. Beetles, snails, ants and worms live in the leaf litter on the forest floor. These invertebrates eat the leaves and, by doing so, release carbon into the atmosphere. But salamanders keep these critters in check by eating them, thus ensuring that carbon remains sequestered in the leaf litter. A study conducted in 2014 by the U.S. Forest Service and Humboldt State University sought to determine the extent of salamanders' impact on carbon sequestration. The study concluded that "the potential magnitude of the effect of woodland salamanders on carbon sequestration is staggering and poses a provocative new perspective on the contribution of biodiversity in general, and woodland salamanders in particular, to forest and global sustainability."

As if saving the world isn't enough, salamanders help humans in other ways. For starters, they regulate invertebrate populations by eating the eggs, larvae and adults of many different pest species, like mosquitoes and ticks.

Here at the BFEC, we are fortunate to have several species of salamanders on the property. Kenyon classes have identified spotted salamanders, northern dusky salamanders, northern two-lined salamanders, longtail salamanders and redback salamanders. And our state scenic Kokosing River is home to the endangered eastern hellbender. Hellbenders are Ohio's largest salamander, and they live strictly in large streams or small rivers. The Kokosing River is one of the few watersheds in Ohio that still have hellbenders. The Ohio Department of Natural Resources works with many partners to breed and release hellbenders to ensure their future.

If you would like to help conserve salamanders and their habitats, there are many things you can do. You can support efforts to establish and protect natural areas. If you own land, keep portions of your property in natural conditions by not mowing. Reduce the use of fertilizers and pesticides in your yard or garden. Try not to remove rotting logs from your property because salamanders will use them for shelter and as foraging sites. When you explore local streams, be careful where you step and try not to flip over the rocks, in order to protect any salamanders that may be sheltering underneath. If each of us does these few things, we may help our local salamander populations, and they, in turn, just may save the world for us.



An endangered resident

The eastern hellbender — Ohio's largest salamander — is an endangered species and also the state's largest salamander. The Kokosing River is one of the few watersheds in Ohio in which hellbenders still live.

UPCOMING PROGRAMS AND EVENTS

An Afternoon with Poet Sara Borjas

APRIL 9, 2–4 P.M.

Poet Sara Borjas brings her talents to the BFEC as part of the public library's NEA Big Read program for 2022. Join us for a reading of Borjas' work, followed by a writing workshop. This is an indoor program; all attendees must wear a well-fitting mask that covers the nose and mouth at all times during this event. Seating is limited. To reserve a spot, email knoxwrites1@gmail.com or call (740) 392-BOOK, ext. 259. Visit the library's website at www.knox.net for more information.

Earth Day Festival

APRIL 16, NOON–4 P.M.

Celebrate Earth Day with this FREE event, featuring live music, food trucks and lots of hands-on workshops. Make and take a bluebird box, bat house, container garden and more. The director of the Old Growth Forest Network, Dr. Joan Maloof, will join us for a special talk.

Earth Week Talk: Monsanto's Past and Our Food Future, with Author Bartow Elmore

APRIL 20, 5:00 P.M.

Winner of the 2020 Anthony Lukas Work-in-Progress Award, "SEED MONEY: Monsanto's Past and Our Food Future" is the definitive history of Monsanto. Ohio State University historian Bartow J. Elmore traces Monsanto's evolution from a chemical startup to a global agribusiness powerhouse. Elmore examines the company's past and exposes a huge concern about genetically engineered crop systems: whether they will actually produce the food we need to feed our families in the decades to come. Meet at the BFEC Picnic Shelter.

Wildflower Walk

APRIL 23, 10 A.M.

Join us as we search for spring ephemerals — those delicate wildflowers that complete their life cycle before trees leaf out. We will unplug and use old-fashioned field guides to identify some of these beauties. Field guides will be provided. Meet at the BFEC Picnic Pavilion (next to the Resource Center).

Bird Walk with Ray Heithaus

MAY 7, 10 A.M.

Enjoy an early morning stroll and learn how to identify the jewels of the sky. Kenyon Professor Emeritus of Biology Ray Heithaus will share some tricks for spotting migrating songbirds. Some binoculars will be available. Meet at the BFEC Resource Center.

Basics of Plein Air Painting: Working with Oils

MAY 28, 1–4 P.M.

Plein air painting is all about painting outside while enjoying nature. Join longtime painter Nancy Vance to learn the basics of choosing subject matter, mixing color and applying oil paints on canvas. All equipment and supplies will be provided. Seating is limited. To register, email jordan2@kenyon.edu or call 740-427-5052.

Stream Quality Monitoring Workshop

MAY 28, 2 P.M.

Can you tell if a stream is healthy or not? Join the experts from ODNR for a free guided exploration of the state scenic Kokosing River. Learn to identify animals and habitats that indicate good water quality and what you can do to protect them. You have the option to wade in the river. Meet in the canoe access parking lot on the corner of Laymon Road and Route 229.

VOLUNTEERS AND DONORS

WINTER 2022

While Kenyon supports the BFEC, it is largely through the generosity of volunteers and donors that the center has been able to grow. We are indebted to the following individuals for recent donations of time, materials and funding.

If you would like to make a gift or volunteer for a project, please call the BFEC at 740-427-5052.

VOLUNTEERS

Bethany Hankinson
Ella Hankinson
Dick Hall
Eric Schott

BENEFACTOR

Jay and Sonia Corrigan
Douglas Givens
Buffy and Bob Hallinan
Margo de Camp and
David Marietta

W.G. and E.R.

Mather Fund
Richard Mulligan
David and Kim Newell
Peter Newell

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Gene Bailey
Geoffrey and Lori Brown
Chris and Kathy Gillen
Marita King and
James Hofferberth
Brian and Olivia Kane
George and
Diane Kopsick

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Dianne and
Douglas Mack
James and
Miriam Niederman
Rob Reach and
Anna Duke Reach
Clifford L. Slayman
Greg and Susan Spaid
Dennis and Patricia
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Leslie Sude and
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Jim Dunham
Judith Fisher
James Garman
Scott Garson
Bill and Joan Heiser
Noelle Jordan
Dave Snyder

FAMILY

Anonymous
Chris Bickford and
Karen Bagne

Outdoor Yoga at the BFEC

EVERY TUESDAY AND THURSDAY,
MAY 3 - OCTOBER 27

12:10 - 12:55 P.M.

Use your lunch break to de-stress with an outdoor yoga class. Bring your kids, grandkids, friends, etc. — open to all ages. Bring your own mat or use ours. Free. *Meet in the BFEC garden (behind the white house).*

Basics of Plein Air Painting: Working with Pastels

JUNE 7, 5–7 P.M.

Spend an evening at the BFEC learning how to paint outside. Longtime painter Wendy Feters will teach the basics of composition and working with pastels. All equipment and supplies will be provided. Space is limited. *To reserve your seat, email jordan2@kenyon.edu or call 740-427-5052.*

Solstice Labyrinth Stroll

JUNE 21, 8 P.M.

Celebrate the longest day of the year with an evening stroll through the BFEC labyrinth. Labyrinths have only one path that leads to the center and back out again. They are frequently used for moving meditation. You can use this time to solve a problem, ponder the meaning of life or simply relish the last rays of sunshine on the longest day of the year. *Meet at the Kokosing Gap Trail parking lot on Laymon Road.*

An Environmental Leader

The Knox County Chamber of Commerce honored the BFEC and its environmental work with the Environmental Sustainability Award for 2021. This award, presented at the chamber's annual dinner on March 10, 2022, honors the Knox County business or organization that has done the most during the year to introduce sustainable practices into its operations or to promote awareness of sustainable practices and encourage their use.



Phillip and Barbara

Bentz
Emma Garschagen
David Greer
Michael and
Karen Keough
Jim Leitz
Bill and Pat McCulloh
Jesse Okie
Charlie Otting and
Miriam Dean-Otting
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Eric and Sharon Schott
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Beth Waller

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Jana Stewart

STUDENT

Suzanne Crow
Anna Lee and John
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Juliette Moffroid
Jenny Sutcliffe
Emily Zeller

DONOR

Richard Marinos and
Cari Ficken

SUPPORTING ARTISTS

Last summer, the BFEC hosted an art exhibit for regional plein-air artists. The following artists sold paintings during the exhibit and donated a portion of the proceeds to the BFEC.

Sue Ann Simon
Tim McGlothlin
Candice Vanschoyck
Helen Neumann

Patty Pettis
Rodney Hayslip
Wendy Feters
Jim Leitz
Donna Nesbitt

Brown Family
Environmental Center
Kenyon

bfec.kenyon.edu | 740-427-5050



BROWN FAMILY ENVIRONMENTAL CENTER | 9781 LAYMON ROAD | GAMBIER, OH 43022-9623

OUR MISSION

The Brown Family Environmental Center exists to support the academic goals of Kenyon College, to provide opportunities for education and research, to engage Central Ohioans of all ages with nature, and to conserve the natural diversity of the Kokosing River valley.

OUR STAFF

Ava-Rose Beech '21, *Post-Baccalaureate Fellow*
Jill Kerkhoff, *Facilities Coordinator and Office Administrator*
Shane McGuire, *Land Manager Naturalist*
Noelle Jordan, *Manager*

Help Us Grow

TO MAKE A GIFT, PLEASE FILL OUT THE INFORMATION BELOW, DETACH THE SHEET AND SEE MAILING INSTRUCTIONS.

There are many reasons to give, including the satisfaction of knowing you're a part of critical environmental education and conservation programs. Receive preferred access to workshops, a hard copy of our newsletters, and a discount on bird seed. **Use the form below to send your contribution today.**

name (first, middle, last)

address

city state zip/postal code country

phone email address

Your donation is tax deductible as allowed by law. The Brown Family Environmental Center at Kenyon College is a 501(c)(3) nonprofit organization.

Membership level:

- ☐ Student \$20 ☐ Individual \$35 ☐ Family \$50
☐ Friend \$100 ☐ Patron \$250 ☐ Benefactor \$1000+

Amount enclosed: _____

☐ My check, payable to Kenyon College, is enclosed

☐ Please bill my ____ Visa or ____ Mastercard
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Mail to: BFEC, P.O. Box 508, Gambier, Ohio 43022