

EECO

Environmental Education Council of Ohio



Fall/Winter 2022



Photo Mark Giuliucci

Keystone Species: American Beaver

By Gia Giammarinaro, Park Naturalist,
Explore Nature

Just what IS a keystone species? “Keystone species are those which have an extremely high impact on a particular ecosystem relative to its population. Keystone species are also critical for the overall structure and function of an ecosystem, and influence which other types of plants and animals make up that ecosystem.” (www.biologydictionary.net)

Imagine a landscape that has recently been ravaged by wildfire. A hilly, barren, charred moonscape of a place. It appears nothing could possibly have survived, and certainly nothing could live there now.

UNLESS...

Allow your eyes to follow that barren, charred out, post-apocalyptic landscape. Let your eyes wander down the hill, to what looks like it might be a ravine. Look closer. That ravine is actually a wetland. That wetland is a pond, and that pond has bog plants and shrubs and even trees that survived the fire!

Look even closer. Right in the center of that wetland is a dam and a domed beaver lodge. Around that lodge is a small, surviving wetland that is teeming with life: fish, insects, reptiles, other mammals. All of whom survived the fire. All of whom will live on to play their part in the regeneration of the forest that burned around them.

Continue on next page

Save the Date

OEEF Grant deadlines

Letter of intent, January 10, 2023

Grant application, January 17, 2023

For grant writing workshops, please see page 6.

WINTER Snow Conference

January 27-28, Camp Nuhop, Perrysville, Ohio

www.eeco-online.org

Call for proposals deadline

Student Wildlife Research Symposium

February 1, 2023

39th annual Wildlife Diversity Conference

March 1, 2023.

At the Ohio State University's Ohio Union in Columbus.

Student Wildlife Research Symposium

April 13, Deer Creek State Park, Mt Sterling, Ohio

<https://ohiodnr.gov/discover-and-learn/education-training/environmental-education/student-wildlife-research-symposium>

EECO Annual Conference

April 13 -16, Deer Creek State Park, Mt Sterling, Ohio

www.eeco-online.org

The American beaver, *Castor canadensis*, has very few rivals when it comes to the degree to which it is able and compelled to alter the natural environment to fit its own needs. In fact, they're right up there with humans on this. Like us, beavers are on the search for a good home. A place with plenty of food, space, a nice place to build, and someone to raise a family with. Drawn to the sound of running water, beavers find a spot where they can slow that water down by damming it up, thus raising the water level before the dam and creating a nice place to build a lodge. Once the water level of their pond is to their liking, beavers start to build their home. This can be a family affair. Beaver can build a free standing lodge, or burrow into a streambank and build a bank lodge. We have both types of lodges in the Cincinnati area.



Photo: David Drucker

The damming and building of a new family home is really just the beginning. Once the pond is constructed and the lodge built, they then continue to live their lives. They cut down more trees with their perpetually growing, iron reinforced teeth. Some of these trees are used mostly for food. Some get cached in the pond for later. Some get whittled down further to file down their teeth, and the pieces

used to patch up or add to their homes. As they move about their range, beavers continue to tweak the flow of water to their liking, adjusting dams and digging channels to move about even further. Beavers can move on land or water, but water is safer and faster for them. This lifetime of work has a drastic effect on the landscape.

When beavers take down trees to eat from and build with, they open up the canopy of the forest. More light penetrates the forest floor. This forest management by beavers "wakes up" the seed bank already in the ground. New plants and trees start to sprout almost immediately; and grow quickly with all the new sunlight and space. Animals are attracted to this newly diversified ecosystem. Herbivores find more flavors of plants to eat. Predators are attracted to the abundance of herbivores.



Photo: Bernard Farrell

Beavers, driven to live their best lives, drawn to the sound of running water, are compelled to alter the landscape in such a drastic way that they create whole new habitats within their home range. This new habitat is teeming with life: fish, birds, new plants, even algae and protozoa. Their dams and channels slow and stabilize water flow and help prevent erosion. This slower flow through mud and sticks filters and purifies water. This in turn helps all living things, including us. It's truly remarkable.

Other Resources

The Nature Guys podcasts:

- <http://natureguys.org/firefighting-beavers/>
- <http://natureguys.org/beavers/>
- <http://natureguys.org/>

Articles:

National Geographic article and pictures on beaver habitat as firebreaks

<https://www.nationalgeographic.com/animals/2020/09/beavers-firefighters-wildfires-california-oregon/>

Beavers as wetland architects

<https://stormwater.wef.org/2020/06/study-beavers-transform-forests-into-wetlands-over-many-decades/>

Winter Snow Conference

Creative Ways to Teach STEM in the Winter

January 27-28, 2023

Nuhop: 1077 Hanover Twp. Rd. 2916, Perrysville, OH 44864

Presentation topics are diverse and if possible relate to winter, but typically relate to one of the following: STEM, Arts, Environmental Literacy, 21st Century Skills or Careers and the Environment.

Full schedule and session information can be found on the EECO website alongside the registration information at <https://eeco.wildapricot.org/event-5063398>

Cost: Full conference (Friday-Saturday, 2 meals, snacks, & lodging) : Member \$55 & Non-member \$85
Saturday Only (2 meals no lodging): Member \$40 and Non-member \$75
Student Full Conference: \$25 ; Sat Only \$10

Questions: Contact Brenda Metcalf ASAP at director@eeco-online.org

EECO 2023 Annual Conference

April 14-16 • Deer Creek State Park

More information including registration will be made available later in the year at <https://eeco.wildapricot.org/>

Conference Strands

Ohio's Natural History: Presentations can span different disciplines that cover Ohio rivers and waterways, animals, fungi, and plants interacting with their natural environment and each other, Native Americans and Nature, and native flora and fauna.

Technology in Careers & Nature: Presentations focus on programs and projects that implement the use of technology and other STEAM disciplines in nature and encourage students to pursue environmental career paths and the resources available to make connections to existing and future careers.

Strategic Growth for Organizations: Presentations should focus on strengthening, improving, and sustaining organizations including: funding, staff, volunteers, and program development. What works for your organization and how can that be translated to others?

Populations, Climate, and Outdoor Education: Presentations exemplify opportunities that use the outdoor classroom as a teaching tool to learn more about the connections between climate change and human/non-human population trends.

Inclusive World of EE in the Outdoors: Presentations should focus on EE opportunities that encourage diversity of race, age, ability, and more.

Environmental Education for



Low-cost Treatment of Turkey Processing Wastewater Protects the Environment

**By Karen Mancl, Professor Food, Agricultural & Biological Engineering,
Ohio State University**

During the holidays, the news shows turkey farms growing the meat for your family celebration. But how does the turkey get from the farm to the supermarket? The birds must first be processed. In Ohio, a family-owned turkey processor, Whitewater Processing, near Cincinnati, Ohio is busy preparing for the holiday rush.

In 2000, Whitewater Processing was facing closure. Processing each turkey creates about 20 gallons of wastewater that contains fat, blood, and cleaning agents that is five-times stronger than domestic sewage making it difficult and expensive to treat before discharge into Ohio's waterways. They were under orders from Ohio EPA to change the way they handled their wastewater. They explored abandoning the smelly lagoon system they were permitted to use for years to connect to the city treatment plant but it was too expensive.



Through industry – university – government cooperation starting in 2000, a new way to treat their wastewater was developed, saving the company. The Ohio EPA agreed to allow Whitewater Processing to work with Ohio State University to study using sand bioreactors to treat the high-strength, high-fat content wastewater. After a 2-year lab study in the Department of Food, Agricultural and Biological Engineering at OSU using the meat processing wastewater, the simple technology was tested in a small pilot plant built by the meat processor.

The pilot plant success led to obtaining a permit to construct a full-scale sand bioreactor treatment plant

in 2010. The meat processor was able to build the 200,000 gallon per day plant themselves on 4 acres that went into operation in August 2012.



Neighbors' concerns

The reaction of the neighbors was surprising. The residents in the subdivision of homes across the road from the treatment plant were understandably concerned about odors. In November 2012, the company owner visited nearby homes to thank the neighbors for their patience and offered them a turkey in apology for the construction dust. The neighbors asked if the plant would smell when it went online. The company owner happily informed them that the system had already been operating for 3 months and no one noticed. The special OSU design created no noise and no odor.

Cost saving

City treatment plants need to assess a surcharge to companies, like food processors, that discharge high-strength wastewater. The cost is justified, as their wastewater can be difficult to treat. Before they could connect to the city system, the meat processor would need to remove most of the fat from the wastewater by constructing and operating a \$1 million pre-treatment plant. Those expenses would be in addition to paying a surcharge of \$10.56 for every 1000 gallons they sent to the city plant.

Instead, the sand bioreactor system developed by OSU does not require pre-treatment to remove the fat. The system was specially designed to treat the high-strength, high-fat wastewater as is. After operating the plant for ten years now, the costs to build and operate the sand bioreactor system are \$3.90 per 1000 gallons, and saved the company \$10 million.

Celebrate World Soil Day

... a little belatedly

Soil health decline is driving many of the most persistent food nutrition, access, and security issues for communities across the globe. World Soil Day 2022 (#WorldSoilDay) and its campaign "Soils: Where food begins" aims to raise awareness of the importance of maintaining healthy ecosystems and human well-being by addressing the growing challenges in soil management and encouraging societies to improve soil and ecosystem health.

The Environmental Professionals Network in collaboration with the Foods For Health Research Initiative and CFAES Rattan Lal Center for Carbon Management and Sequestration (C-MASC) at Ohio State, held an event. The event celebrated healthy soils, food, and agricultural systems and educated about an emerging collaborative community of farmers, scientists and researchers, engineers, farm service providers, and food companies committed to improving soil health and advancing agriculture's ability to become a solution to climate change.

You can watch the following speakers in the session recording <https://epn.osu.edu/events/past-events>

- Christina Allen, Ohio State's 2021 President's Prize Winner, founder, Food Leads.
- Rattan Lal, PhD, distinguished university professor of soil science and director, CFAES Dr. Rattan Lal Carbon Management and Sequestration Center, Ohio State.
- Dorn Cox, PhD, farmer and research director, Wolfe's Neck Center for Agriculture & the Environment, Maine.
- Jennifer Garner, RD, PhD, registered dietitian and assistant professor of food and nutrition policy, affiliated faculty, Food for Health Research Initiative, Ohio State.



Support EECO

...by making a donation

Would you like to help further environmental education in Ohio? Consider contributing an amount of your choice to EECO. All donations are tax-deductible and will help increase awareness of environmental issues in Ohio. You can donate through our annual campaign <https://givingtuesday.mightycause.com/story/j7ag1g>. Or you can send a check made payable to the Environmental Education Council of Ohio to PO Box 1004, Lancaster, OH 43130. Or you can donate through the website by filling out the information at <https://eeco.wildapricot.org/support>

Other ways to support EECO:

- Start your shopping at [Amazon Smile](#). Be sure to select the "Environmental Education Council of Ohio" as your designated charity. Log into Amazon Smile every time you shop at Amazon.
- You can also shop hundreds of popular retailers at [Goodshop](#), and your purchase will benefit EECO.
- You can easily make a direct donation through your Google account. Your full donation amount will go directly to EECO.
- Consider making a legacy donation to EECO's endowment fund at [The Columbus Foundation](#).



Ohio Environmental Education Fund

The OEEF was created by the General Assembly in 1990 to enhance Ohio citizens' awareness and understanding of environmental issues. It is administered by the Director of the Ohio Environmental Protection Agency (Ohio EPA) and provides approximately \$1 million annually in grants to support environmental education efforts within the state of Ohio. The OEEF derives its funds from one-half of the civil penalties collected from violations of Ohio's air and water pollution control regulations. <https://epa.ohio.gov/oeef/>

Grant Applications

The Ohio Environmental Education Fund (OEEF) invites applications for mini grants (\$500 - \$5,000) and general grants (\$5,000 - \$50,000) for education projects targeting pre-school through university students and teachers, the general public, and the regulated community. Prospective applicants can start the application process by opening an account in Ohio EPA's eBusiness Center at <https://ebiz.epa.ohio.gov/>

Ohio EPA encourages OEEF applicants to discuss their proposal ideas with OEEF staff members before completing their applications. OEEF staff members will be happy to provide a pre-review of draft applications as they are under development in the online grant service.

Electronic Letter of Intent Deadline is due in early January

Application Deadline is due mid January

Grant Writing Workshops

The Ohio EPA Office of Environmental Education typically offers grant writing workshops around the state throughout the year.

- **Grant Writing 101:** Finding the Right Funder. Prospecting tips to help you identify foundations, corporations, and government grant programs, and how to approach different kinds of grantmakers.
- **Grant Writing 102:** Writing a Winning Proposal. How to avoid common mistakes applicants make, and develop realistic objectives, activities, and budgets. OEEF will be referred to during this session.
- **Grant Writing 103:** Becoming a Grant Reviewer. Want to become a better grant writer? One of the best ways to improve your grant writing skills is to review proposals from other organizations.

Upcoming Grant Writing Workshops

Registration is required for these FREE workshops. For questions, please email Heather Lauer at Heather.Lauer@epa.ohio.gov

Registration Deadline will be the Friday before each workshop or until the workshop is full.

Lunch will not be provided.

Grant Writing 103

- SW Ohio, Dayton - December 15, 2022 from 10a – 2p. At the Southeast Branch of the Dayton Public Library, 21 Watervliet Ave., Dayton.
- NW Ohio, Twinsburg, Thursday, February 16, 2023, 10 a.m. to 2 p.m. <https://www.eventbrite.com/e/in-person-workshop-oeef-grant-writing-103-becoming-a-grant-reviewer-tickets-484572698987>

Grant Writing 101 & 102

- NW Ohio, Lima - April 27, 2023, 10 a.m. to 4 p.m. <https://www.eventbrite.com/e/in-person-workshop-ohio-environmental-education-fund-grant-writing-tickets-484486601467>
- NE Ohio, Twinsburg, May 25, 2023, 10 a.m. to 4 p.m. <https://www.eventbrite.com/e/in-person-workshop-ohio-environmental-education-fund-grant-writing-tickets-484563210607>
- Central and SW Ohio, Circleville, Sept. 14, 2023, 10 a.m. to 4 p.m. <https://www.eventbrite.com/e/in-person-workshop-ohio-environmental-education-fund-grant-writing-oeef-tickets-484566480387>
- SE Ohio, Zanesville, Oct 5, 2023, 10 a.m. to 4 p.m. <https://www.eventbrite.com/e/in-person-workshop-ohio-environmental-education-fund-grant-writing-tickets-484567844467>

Ohio Environmental Education Fund

New General Grant Awards, Fall 2022

For the fall 2022 grant cycle, Ohio EPA awarded six general grants for a total of \$200,000.

Groundwork Ohio River Valley, “Groundwork Green Team Youth Education Program,” F-23G001, \$37,985.28, Hamilton County, Audience: Pre-School-University (high school), Contact: Alan Edwards, aedwards@groundworkorv.org, (513) 301-0310.

The Green Team Youth Education Program utilizes a unique approach for engaging students in community projects that reflect STEM curriculum laid out by Project WET and the US EPA. Working with community partners, school groups and Groundwork’s young adult workforce development program (the Green Corps) allows our education program to provide exposure to jobs and hands-on educational experiences while creating sweat equity through service to the community. Through this work/play, sweat-equity model, Green Team offers unique educational and cultural experiences to low-income, minority youth that are often left behind due to lack of access, funding, and programming.

City of Akron Watershed Division, “Upper and Middle Cuyahoga River Watershed Hydrology Crowd Sourcing as a Tool for Watershed Education,” F23G013.

\$14,772.00, Portage County, Audience: Pre-school to University - Secondary, General Public - Primary, Regulated Community – Secondary.

Contact: Megan Smith, Mmsnith@akronohio.gov, (330) 678-0077.

Using crowd sourcing, this project aims to educate students and the public regarding river hydrology, riparian protection, stormwater impacts, water quality and safety on the Upper and Middle sections of the Cuyahoga River. Three transects of the Cuyahoga River will be identified by the City of Akron Watershed Division staff. Utilizing signage containing QR codes placed at these locations, trained individuals will be enabled to use their cell phones to create accurate, research-level flow and water quality datasets. This data will be uploaded in real time to an associated website, with the intention of providing an educational, public health, and public safety tool.

Junction Coalition of Toledo, “This is Where We Live: Youth Environmental Education and Engagement,” F23G004.

\$21,637.00, Lucas County, Audience: Pre-school to University - Primary, General Public – Secondary.

Contact: Marya Czech, mczech1946@gmail.com, (419) 913-9789.

The environmental education of a core city community begins most effectively with youth environmental training and engagement. This is Phase 1 of a multi-year project which hopes to produce a cadre of residents able to advocate for safe, clean, and affordable residential water. The grant will equip place-based studies of the Swan Creek and Maumee River watersheds, and the Western Basin. Water quality monitoring, sustainable landscaping, community gardening, and other hands-on learning lab activities are included. Our program objectives include youth leadership, job skills training, and increased knowledge of urban water topics with a focus to the Great Lakes Basin.

University of Findlay - Chemistry Program, “Igniting Ohio’s Agricultural Workforce: Biodiesel Education for Future Renewable Energy Leaders,” F23G003.

\$37,684.00, Hancock County, Audience: Pre-school to University - Primary, General Public – Secondary.

Contact: Nathan Tice, tice@findlay.edu, (419) 434-5890.

The University of Findlay (UF) seeks to improve students’ understanding of the sciences and strengthen Ohio’s agricultural workforce pipeline by providing workshops for 20 middle and high school science teachers in Northwest Ohio. These workshops, which will take place on UF’s campus at the Mazza Museum’s new Conda STEAM Education Center, will expand teachers’ knowledge of alternative energy and equip them to integrate innovative hands-on experiments in their classrooms, impacting approximately 500 students. During the semester following the workshops, participating teachers will also be supported as they incorporate lessons aligned with Agriculture / Environmental Science strands.

Mill Creek Alliance, “Mill Creek Alliance Outdoor Environmental Education Program,” F23G014.

\$49,880.00, Hamilton County, Audience: Pre-school to University - Primary, General Public – Secondary.

Contact: John Dwyer, jdwyer@themillcreekalliance.org, (513) 563-8800.

The Mill Creek Alliance Outdoor Environmental Education Program will provide a unique opportunity for students to observe, collaborate and analyze active and completed stream restoration projects. MCA will provide hands-on ecological field studies of various Mill Creek riparian zones through a total of 12 field excursions. During these events, students will gain hands on experience with water quality sampling methods, analytical equipment (e.g., chemical, biological, and physical assessments), analysis of water quality data, computation of basic hydrologic engineering calculations, while also covering topics such as soil erosion.

Cleveland Museum of Natural History, “Education Natural History Green Space,” F23G006.

\$38,041.72, Cuyahoga County, Audience: Pre-school to University - Secondary, General Public – Primary.

Contacts: Renata Brown, rbrown@cmnh.org, (216) 232-4600; [Lance Collie, lcollie@cmnh.org](mailto:Lance.Collie@cmnh.org), (216) 231-4600.

As part of a larger transformation project, the Natural History Green, an outdoor learning, and community gathering space will aim to educate the public about the interconnectedness of human life and the natural world. The Green’s design is inspired by the over 12,000 acres of nature preserves across Ohio that CMNH currently protects. The space will contain 7,000 plants of nearly 50 different species, showcasing the beauty of native Ohio plants and their importance to natural systems and human well-being. “The Green” will include Grassland, Wet Meadow, and Woodland environments to explore. Additionally, it will connect with a new Natural Areas Gallery.

New Mini Grant Awards Fall 2022

Ohio EPA announces new mini grants awarded to the following six projects for a total of \$20,944.

Maple Heights City Schools - Maple Heights High School, “Bugs and Water Quality in Maple Heights,” F23M-001.

\$940, Cuyahoga County, Audience: Pre-school to University (Grades 9-12).

Contact: Erin Pekar, erin.pekar@mapleschools.com, 216-438-6400.

The project will involve taking two classes of 30 students each to two streams within their local watershed to sample chemical, physical, and biological parameters to determine the quality of each stream using the qualitative habitat evaluation index, chemical, and macroinvertebrate testing. The project will further environmental education by providing students the opportunity to gain valuable experience in field work and inquiry-based learning activities. Not only will the students benefit from the field experience, but the Maple Heights community will benefit from the students’ monitoring efforts.

Circleville Juvenile Correctional Facility (CJCF) - Ohio Dept. of Youth Services, “CJCF - Greenhouse Mini-Grant 2022,” F23M-002.

\$4,500, Pickaway County, Audience: Pre-school to University.

Contact: Christine Kohler, Christine.kohler@dys.ohio.gov, 614-752-7606.

This grant would allow us to purchase a portable greenhouse for the Circleville Juvenile Corrections Facility, which includes Ralph Starkey High School. The current greenhouse is scheduled to be demolished in the Fall of 2022 due to age and facility planning. As a result of the demolition, we will not be able to provide our youth the educational opportunities related to sustainable growing, composting, and environmental stewardship. With the approval of this grant, it would allow us to purchase a replacement greenhouse and continue our horticulture vocational education. Our high school students and those youth who graduated high school and are under 21 years of age, historically have been involved in learning about the “green industry,” and we would like to sustain that positive momentum without dramatic interruption.

Antioch College – Science Division, “Self-Guided Sustainability Tour of Campus Landscape,” F23M-006.

\$5,000, Greene County, Audience: Pre-school to University.

Contact: Kim Landsbergen, klandsbergen@antiochcollege.edu, 937-319-0139.

Antioch College will establish a self-guided campus tour that educates students and the public about our sustainable campus landscape. The tour will be designed by an Antioch student and will include 11 stations with signs and QR codes that link to website explanations of important environmental issues and the steps that Antioch College is taking to address them. The tour will feature concepts such as forest restoration, bioretention methods, pollinator gardens, reduced mowing, and soil conservation. The College’s 92-acre campus is open to the public and is

a frequent destination for community members and visitors to Yellow Springs. Accordingly, this project has two audiences: 1) Students who will learn by designing and experiencing the tour; 2) The public who can openly engage with the tour. This project meets 3 OEEF priorities by educating about habitat restoration and stormwater management while also encouraging students to pursue environmental science careers.

SonLight Power, “Solar School 2023: Solar Energy Training for Community Members,” F23M-007.

\$2,775, Hamilton County, Audience: General Public.

Contact: Clay Luna, clayluna@sonlightpower.org, 513-285-9960.

SonLight Power’s annual “Solar School” workshops provide both classroom and hands-on training for community members in Greater Cincinnati seeking to learn more about solar energy and energy poverty. Held at least once a year in a day-long format, the Solar School curriculum begins with an introduction to the science behind solar energy and its benefits and concludes with a period of hands-on training that allows students to work with real solar equipment. Our workshops enjoy a broad audience, including high school or university students interested in energy careers, representatives from non-profit organizations looking to employ solar energy in their community service, and individuals seeking information about solar energy for their own homes.

Community Life Collaborative, “Micro Habitat Biodiversity Forum,” F23M-008.

\$4,000, Cuyahoga, Geauga, Portage and Summit Counties, Audience: General Public.

Contact: Suzanne Taber, admin@communitylifecollaborative.org, 440-708-1961.

Within the research and teachings of Douglas Tallamy, through expanding upon the Community Life Collaborative “Our Nature” programming, this hands-on workshop along with curation of materials for our multi-platform forum in creating a series that puts the attendees in active stewardship of a Native Garden. This will include spring, summer, and fall programming with partners that encompasses seed collection, ecosystem service education, environmental scientist led biodiversity pairings and host plant education, and hands on education on how to implement these practices on the attendees’ respective properties.

Ohio Wetland Association, “Integrating Project WET, Wetlands & H2Ohio into 7th Grade Curriculum,” F23M-010.

\$3,729, Franklin, Lucas, and Putnam Counties, Audience: Pre-school to University (Grade 7).

Contact: Laura Manns Arcuino, laura.manns@outlook.com, 206-530-0102.

This application is an expansion of previous grant project and aims to reach five additional schools through a six to seven week learning module that integrates a minimum of 9 Project WET units into the 7th grade curriculum. This project brings together existing resources into a cohesive learning module that instruct students on both core content, as well as multiple water concerns being addressed in our state as part of H2Ohio. The module is designed using a systems approach to foster conceptual change around freshwater. Topics covered include: the water cycle; watersheds; surface and ground water; stormwater; H2Ohio agricultural BMPs, wetlands, and drinking & wastewater infrastructure; changes in our water and water cycle, and a concluding project at each school. Through field trip and presentation, students will have the opportunity to meet professionals working in the field, connect with local resources, and be empowered to engage in local water quality issues.

Environmental Career Ambassadors

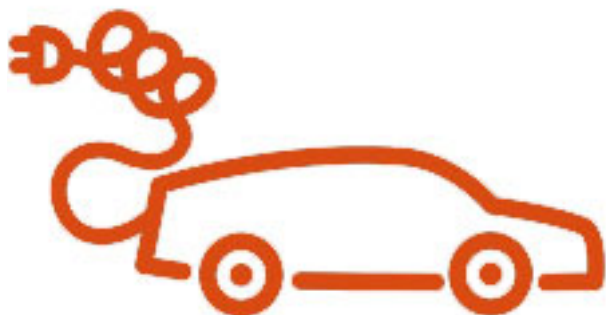
Environmental Career Ambassadors are environmental professionals willing to make classroom or school career fair presentations for middle and high school grades about their careers and/or provide shadowing, internship, field trip, and scholarship opportunities to Ohio students. <https://eeco.wildapricot.org/eca>

For Schools- If you would like to have a Career Ambassador come to your classroom or event, please contact the EECO Executive Director director@eeco-online.org.

For Environmental Professionals - If you would like to be more involved by volunteering to be a Career Ambassador, please contact the EECO Executive Director director@eeco-online.org. You can also check out the Environmental Professionals Network (EPN) hosted by the School of Environment and Natural Resources The Ohio State University. <https://epn.osu.edu/>.

How to Make Batteries Last Longer as the Days Get Shorter

By Maggie Hirt, Program Coordinator, Drive Electric Ohio program
at Clean Fuels Ohio



All cars struggle a bit in cold weather due to the increased amount of energy that is required, and EVs are certainly no exception. EV range decreases 10-12% in the winter, and up to 40% if the heater is on full blast (American Automobile Association, 2019). This change wouldn't affect most daily drives, but if you're one for winter road trips or if you have a longer commute, you might consider EV models with extended range or plug-in hybrids that would allow you to run on gasoline if you ran out of charge.

Drivers should also utilize features such as heated seats and steering wheels since these things are much more efficient than running the heating system. If you're traveling on rough winter roads, you may want to consider an EV with all-wheel drive, an extended battery pack, as well as snow tires. Electric vehicles tend to test well in crash and rollover scenarios due to battery weight, making them very safe and suitable for winter driving conditions. While driving with less range is inevitably a factor to consider in the wintertime, here is a list of best practices for restoring or preserving some of that range, published by Drive Electric Vermont (Drive Electric Vermont, 2022):

Driving Speed

- Reducing travel speed is one of the most effective ways to boost range in any condition. Setting the cruise control and slowing down 5-10 mph can provide an additional 10-20% or more of range, depending on the model and conditions.

Preheat your vehicle

- Warming the cabin of the car while still plugged in means more energy is left in the battery for range. This can usually be controlled with smartphone apps and/or key fobs and generally works best on higher powered Level 2 chargers.

Schedule your departure time

- Many EV models will allow you to schedule a departure time that will finish a charging session just before you need to go. This is a great way to get the battery warmed up.

Staying warm

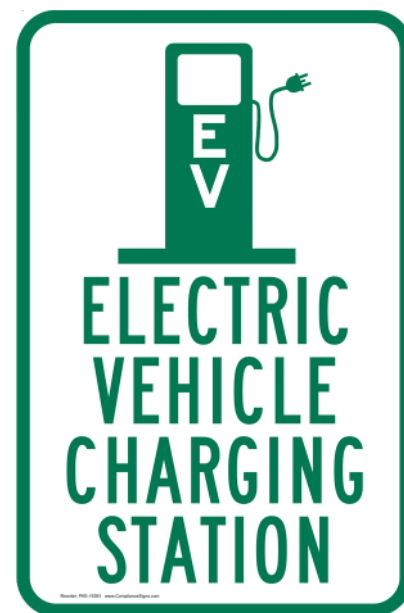
- Using heated seats and/or steering wheels is usually much more efficient than operating the cabin heat. Some drivers will use a lap blanket or wear jackets and other well insulated clothing to avoid using the cabin heat on longer distance trips.

Tire Pressure

- Cold temps increase the density of air, which commonly leads to lower tire pressures. You can find the recommended tire pressure on a sticker located on the driver's door jamb. Check pressure and add air regularly to increase winter efficiency.

Eco-Driving

- Some vehicles have "eco" or economy modes. Also, following eco-driving principles like accelerating slowly, braking slowly, letting off on the accelerator as you crest a hill, and slowing down will help maximize the use of regenerative braking systems that put energy back in the battery instead of wasting it with mechanical brakes.



Have more questions about electric vehicles?

Contact Drive Electric Ohio program at Clean Fuels Ohio

- Maggie Hirt, maggie@cleanfuelsohio.org, Coordinator.
- Olivia LoGuidice, olivia@cleanfuelsohio.org, Coordinator.
- Braedyn Dorn, braedyn@cleanfuelsohio.org, Program Assistant.
- Jake Schwemlein, jacob@cleanfuelsohio.org, Director.

Electric Vehicle Resources Provided by Clean Fuels Ohio

- Drive Electric Ohio <https://cleanfuelsohio.org/drive-electric-ohio/>
- Drive Electric Columbus <https://driveelectriccolumbus.org/>
- Drive Electric Dayton <https://driveelectricdayton.com/>
- <https://plugstar.com/>
- <https://www.plugshare.com/>

Article references:

Electric Vehicles in Winter." Drive Electric Vermont
<https://www.driveelectricvt.com/blog/winter>

Cold Weather Issues for Electric Vehicles in Alaska." Alaska Center for Energy and Power
<https://acep.uaf.edu/media/304144/Cold-Weather-Issues-for-EVs-in-Alaska.pdf>

AAA Electric Vehicle Range Testing" American Automobile Association
<https://www.aaa.com/AAA/common/AAR/files/AAA-Electric-Vehicle-Range-Testing-Report.pdf>

Volunteers

The Environmental Education Council of Ohio is in search of leadership for various committees and tasks. We also are looking for Environmental Career Professionals that can "chat" with students about their careers. If you would like more information please contact the EECO Executive Director at director@eeco-online.org

EECO is also seeking volunteers to assist at the Annual Conference, April 14-16 at Deer Creek State Park. If you are interested in helping at the check-in, being a driver for a fieldtrip, or assisting in the silent auction, please contact Ann Drake at drakea@brookvilleschools.org



VOLUNTEERS NEEDED!

If interested please email director@eeco-online.org

EECO
Environmental Education Council of Ohio

"Be the change you want to see in the world."

MAHATMA GANDHI

New in the World of EE!

Meet Heather Lauer, Ohio EPA

Heather Lauer has joined Ohio EPA's Office of Environmental Education to serve as a grant coordinator and assist with Project WET. Heather has 22 years of experience working at Ohio EPA both as a public information officer and hearing officer. She came to the Agency with more than 10 years' experience as a reporter for newspapers and magazines. In addition to working with grantees, Heather will partner with veteran educator, Dennis Clement, to put on education and grant-writing workshops.

If you plan on attending the OEEF grant workshop in Dayton this month, you will get a chance to meet Heather face to face.

Join EECO on congratulating Heather on the new position, and welcome her into the world of EE.



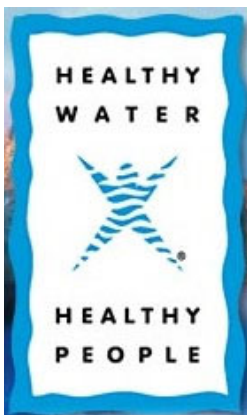
Water Quality Monitoring Credible Data Program Level 1 Training

Thursday, May 18, 2023
8:00 a.m. – 4:30 p.m.

Broken Timber Outdoor Education Center

42722 St. Rt. 7, Hannibal, OH 43931

This training will be hands-on with all participants getting in the water to learn techniques for biological, physical and chemical water quality monitoring. This is an entry level training intended for participants who desire basic water quality information. Level 1 was designed with educators in mind and may be appropriate for Soil & Water Conservation Districts, Park Districts, Health Departments, or anyone with an interest in Ohio water quality. The purpose of Level 1 is primarily to promote public awareness and education about surface waters of the state. Approval of Level 1 QDC will be automatic by the Ohio EPA after completion of this training. Healthy Water, Healthy People Curriculum will be used in this training.



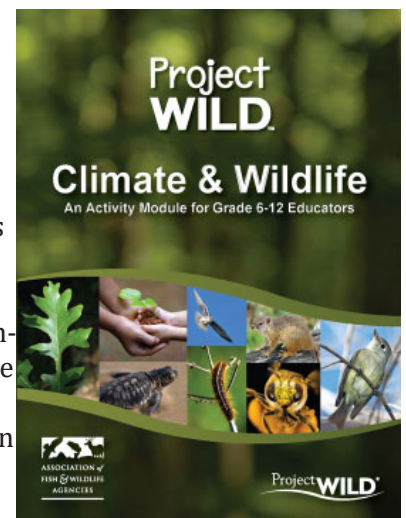
For information, contact Dennis Clement, dennis.clement@epa.ohio.gov 614-644-2048.

For registration <https://www.eventbrite.com/e/training-water-quality-monitoring-credible-data-program-level-1-oeef-tickets-484016876507>

Climate and Wildlife Workshops

The Ohio Division of Wildlife is now offering workshops on its latest high school module, Climate and Wildlife. These workshops help educators use wildlife as an integrating context to make teaching about climate change more concrete. Participants will be shown best practices in climate change education and gain access to high quality, science-based, wildlife management

principles that address this complicated issue. You and your students will be outdoors, interacting with one another and the community, and learning from trusted sources. For more information on the new Climate and Wildlife module, go to <https://projectwild.org>. To find or schedule a workshop near you, contact the Ohio Project WILD Coordinator at outdoor.education@dnr.ohio.gov



ASSOCIATION of
FISH & WILDLIFE
AGENCIES





Is Your Organization in the Environmental Directory?

EECO is working with Go Green Go to create a comprehensive database of Environmental Organizations in Ohio. Is your organization already listed on gogreengo.org? GREAT!! If not PLEASE fill out this survey. Also, if your organization's information has changed from what is on the site. Let us know!

<https://gogreengo.org/survey/>

Threatened and Endangered Plant Spotlight

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)



Image: Joshua Mayer, Flickr

Ohio: Threatened

U.S.: Threatened

Appearance: 8 to 14 inches tall with an upright leafy stem with a flower cluster called an inflorescence. Each plant has one single flower spike of 5 to 40 creamy white flowers. Each flower has a three-part fringed lip and a tube-like structure.

Habitat: It occurs in a wide variety of habitats from prairie to wetlands. It requires full sun and a grassy habitat with little or no woody plants. It has a symbiotic relationship with soil fungus called mycorrhizae which it needs to establish seedlings. It also relies on a specific pollinator: night flying hawk-moths.

Why is it threatened? Its initial threat was elimination of its habitat which was cleared and drained for agricultural use. Additional threats include the succession of woody plants and invasive species.

This information, and more about other endangered Ohio plants, can be found on the Project Learning Tree website under Educational Resources <https://ohiodnr.gov/discover-and-learn/education-training/environmental-education/project-learning-tree>

Join the Environmental Education Council Of Ohio

By joining EECO, you will receive:

- A network of professional educators exchanging new ideas, resources, and techniques in EE
- An informative quarterly EECO newsletter
- Periodic email newsletters with links to events, job opportunities, and updates about EE in Ohio
- Outstanding EE publications and resources
- Annual statewide and regional conferences
- Regional professional development workshops
- Special member rates for conferences, workshops, and publications as specified
- An opportunity to participate in a variety of committees & activities to promote innovative EE in Ohio
- Peer recognition of professional efforts through EECO's Awards program



Diversity in Water Speaker Series

Thursday, January 12, 2023
5:30pm EST

Brought to you by the Ohio Section American Water Works Association's (OAWWA) Diversity and Inclusion Committee and Young Professionals.



KESHIA KINNEY

City of Dayton's Division of Water Supply and Treatment

Diversity in Water Speaker Series: Keshia Kinney

Thursday, January 12, 2023 at 5:30 PM, ET

The event will be held virtually via Zoom; to receive the meeting link, please RSVP at <https://diversity-in-water-jan-2023.eventbrite.com>.

The Diversity in Water Speaker Series invites leaders in Ohio's water industry from diverse backgrounds to discuss their careers, lend us their life lessons, and help lead the discussion on championing diversity within the water industry and in our day-to-day lives.

Keshia Kinney is currently the Manager of the City of Dayton's Division of Water Supply and Treatment. She started with the City of Dayton in 2006 as a Water Bacteriologist Chemist. The Division has 117 personnel responsible for managing the City's two well fields, two 96 MGD treatment plants, 800 miles of distribution piping, 12 booster stations, two main pump stations, and the Lime Reclamation Facility. In addition, she has served as an OAWWA Southwest district representative and OTCO trustee, along with teaching water courses. Ms. Kinney is an Ohio Water Class IV Operator. She graduated from Wright State University with a bachelor of science in Environmental Science and a Master of Science degree in Pharmacology and Toxicology.

Empowering Climate Change Action: Guidelines for Excellence

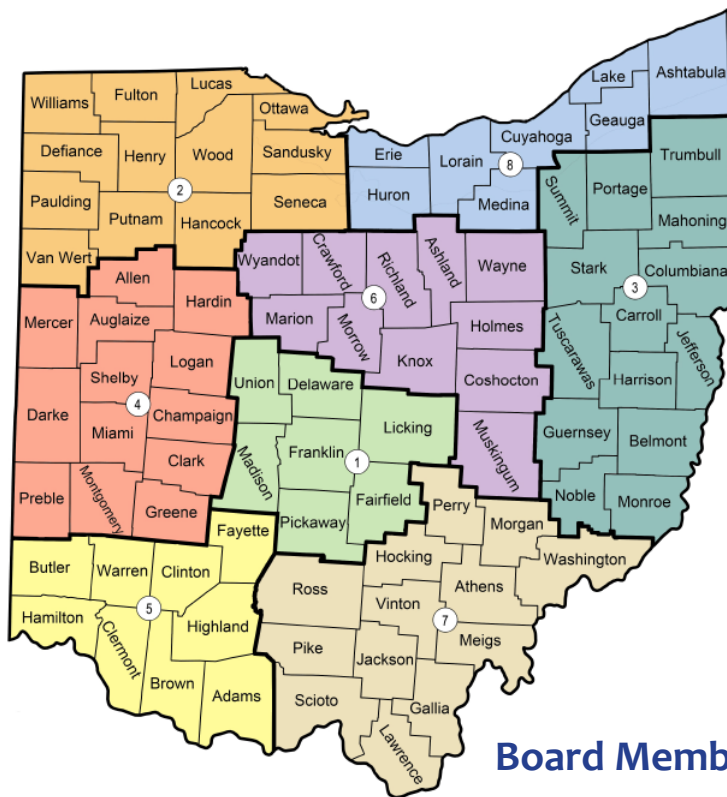
North American Association of Environmental Education (NAAEE) is in the early stages of developing a set of guidelines focusing on climate change education and climate justice as part of the Guidelines for Excellence series. We envision that this set of guidelines will provide a set of recommendations for developing and implementing community-driven, climate education that is centered on climate justice and empowers climate action.

NAAEE hopes that when they are completed, this set of guidelines will serve a broad range of individuals and organizations interested in using education, in its different forms and in varying settings, as a tool for working with communities to find climate solutions. Educational activities may be formal, nonformal, or informal. They may take place in schools, museums, aquariums, nature centers, religious organizations, and community centers.

As with all of the others sets of guidelines, these will be developed using a public participatory process involving opportunities to review and provide input. If you would like to learn about updates in our process and provide input into drafts as they become available, please complete the following Google form and we'll put you on our list: https://docs.google.com/forms/d/e/1FAIpQLSeg6SLR6PmA8UD_j8uA5hR-izR7NXBgrkT2FE9HtAA6WMgoig/view-form?usp=sf_link

Contact EECO

Partnerships strengthen EE in Ohio, leading to a more environmentally literate population and a healthier environment. You are welcome to become a partner and friend to EECO. Please contact any of our regional directors, officers, advisors, and board members to find out more about becoming a part of EECO.



Regional Directors

Region 1 - Central Ohio

Linda Pettit, Franklin SWCD
lpettit@franklinswcd.org

Region 2 - NW Ohio

Jennifer Elsworth, Metro Parks of the Toledo Area
jennifer.elsworth@metroparkstoledo.com

Region 3 - NE Central Ohio

Sheila Cubick
SheilaC@zoominternet.net

Region 4 - SW Central Ohio

vacant

Region 5 - SW Ohio

Errin Howard, Riverworks Discovery
errin@riverworksdiscovery.org

Region 5 - SW Ohio

Gia Giammarinaro, Cincinnati Parks
gia.giammarinaro@cincinnati-oh.gov

Region 6 - N Central Ohio

Karen Pryor
kpryor@richlandcountyoh.gov

Region 7 - S Central Ohio

Joe Brehm, Rural Action
joe@ruralaction.org

Region 8 - NE Ohio

Dawn Wrench, Yavne High School
sunnywrench@att.net

Officers & Advisors

Executive Director

Brenda Metcalf
director@eeco-online.org

President 2021-22

Amanda Kriner
akriner@richlandcountyoh.us

Past President 2021-22

Josh Dyer
jdyer@crawdordparkdistrict.org

Vice President 2021-22

Jeff Montavon
jeff.montavon@epa.ohio.gov

Treasurer

Vacant

Secretary

Jenny Adkins
jennya@madscientistassociates.net

Advisor- OEE, OEPA

Carolyn Watkins
carolyn.watkins@epa.ohio.gov

Advisor- ODE

Lydia Hunter
Lydia.Hunter@education.ohio.gov

Advisor- ODNR

Jen Dennison
Jen.Dennison@dnr.state.oh.us

Board Members

Ann Drake
drake@brookvilleschools.org

Kassie Charnley
kcharnely09@gmail.com

Denise Natoli Brooks
denise.natoli.brooks@gmail.com

Ebony Hood
ebonynhood@gmail.com

Bill Troy
bill@troyresearch.com

Lynn White
whitelr@butlercountyohio.org

Advisory Council

Chairs

Paul Khacherian
khachp@hotmail.com

Allison Shaw
allison.shaw@gmail.com

Webmaster

Josh Flory
administrator@eeco-online.org

Newsletter

Lynn White
whitelr@butlercountyohio.org

Social Media

Brenda Metcalf
director@eeco-online.org