EECO

Environmental Education Council of Ohio

Fall/Winter 2018

Photo: ODNR

Trimble Tanangers

By Joe Brehm, Rural Action

The fifth grade students and their teacher stared silently at the bright red Scarlet Tanager perched a few feet above the clear shimmering creek. The bird was uncharacteristically still and easily observed—most bird watchers will tell you it's difficult to get a good look at a Scarlet Tanager because they spend most of their time in the treetops, even their bright red and rich black colors obscured by the canopy. With all things, however, there are outliers. Fortunately, for these dozen or so fifth grade students from Trimble Elementary on a field trip, they were able to bear witness to this one.

We watched the bird in the mid-canopy and I exclaimed then about how lucky they were to see this bird so close. To my amazement, the tanager came down even closer, perched right along a small tributary of Sunday Creek, in the midst of an excited bunch of kids. Surprisingly, in a delightful way, the kids stopped to watch. Some of them approached it to get a better look, using the slow cautious approach of experienced hunters, and the tanager hardly rustled a feather. Curt Moore, their enthusiastic and caring teacher, had his phone out to capture the moment and the bird's striking colors. From downstream another student came tearing around the creek bend and yelled, "GUYS! We found a crawdad!" The bird flew off, the students moaned their disapproval, and I chuckled. It was a perfect end to a moment that wouldn't last forever, no matter how patient the students were.

Continued on page 3

Save the Date

OEEF Grant Deadlines
Letter of Intent Jan 8 & Application Due Jan 15

Grant Writing Workshops
March 5, Logan County & March 21, Parma
www.epa.ohio.gov/calendar/oee

Future City Competition
Jan 12, Groveport
https://futurecity.org/ohio

Winter Snow
Feb 1-2, 2019, Camp Nuhop, Perrysville

Project WET
Feb 23, Fernald Preserve, Ross, Ohio
www.hcswcd.org/wet.html

Growing Up WILD
Miami County, Jan 16
Lorain County, Jan 19
Butler County, March 16
See *wildlife.ohiodnr.gov/*

Annual Conference
April 4-7, 2019, Mohican State Park

EECO Awards

Awards will be presented during the 51st EECO Annual Conference. If you would like to submit a nominee, please complete the form found at *https://eeco.wildapricot.org/event-3146255* by February 28.

Finlay-Johnson Award
- given to an EECO member for making a significant or outstanding contribution to EECO.

Christy Dixon Award
- given to a young professional who has contributed significantly to environmental education in Ohio.

Outstanding Environmental Educator in the field of formal education
- given to a preschool, elementary, middle school, high school or college teacher, administrator or curriculum specialist for outstanding contributions to environmental education in Ohio.

Outstanding Environmental Educator in the field of nonformal education
- given to a nonformal educator for outstanding contributions to environmental education in Ohio.

Outstanding Volunteer Award
- given to a volunteer who has made a significant or outstanding contribution to environmental education in Ohio.

The Charley Harper Award
- given to a artist who has made a significant or outstanding contribution to environmental education in Ohio through various forms of art.

Organization Award
- given to a business or organization that has made a significant contribution to environmental education in Ohio.

Publications Award
- given to a publication that has made a significant contribution to the public understanding of an environmental issue(s).

Ohio Alliance for the Environment Award
– given to a business or industry that is dedicated to fostering a climate of cooperation for resolving environmental problems.

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.

This career initiative was created to address various needs in Ohio. For instance, there is an emerging need to prepare students in fields emphasizing Science, Technology, Engineering and Mathematics (STEM) for careers in today's high-tech economy. This initiative will also aid employers looking to hire professionals in environmental science and engineering as there is a reported shortage of qualified applicants.

Teachers: If you are interested in fidning out about the Career Ambassadors available in your area, please contact us at *director@eeco-online.org*.

New Career Ambassadors Needed: If you would like to be more involved by volunteering to be a Career Ambassador you can fill out this form and email back to us at *director@eeco-online.org*.

The Environmental Career Ambassador (ECA) Initiative was created by the Environmental Education Council of Ohio (EECO) and the Ohio Environmental Protection Agency with the assistance of the Ohio State University School of Environmental and Natural Resources. Find out more at *https://eeco.wildapricot.org/eca*

Thanks & Congratulations for 15 years

....and hopefully many more to come. There have been many changes with EECO over the years, but fortunately for us Brenda has not been one of them. Brenda Metcalf, EECO's Executive Director, has been with us for15 years this year! The EECO Board sends their love and appreciation to Brenda for all that she does.

Help EECO Grow

Would you like to help further environmental education in Ohio? Consider contributing to EECO. All donations are tax-deductible and will help increase awareness of environmental issues in Ohio.

Find out more at *https://eeco.wildapricot.org/support*

Other ways to support EECO:

- ***Amazon Smile***. Select the "Environmental Education Council of Ohio" as your charity. Log into Amazon Smile every time you shop at Amazon.
- ***Goodshop.*** You can also shop hundreds of popular retailers at Goodshop, purchases will benefit EECO.
- ***Direct Donation***. You can make a direct donation through your Google account. Your full donation goes directly to EECO.
- ***Legacy Donation***. Consider making a legacy donation to EECO's endowment fund at The Columbus Foundation.

Trimble Tanangers Continued

This moment is etched in my mind as significant, but why? The students are bright and a few of them may even remember the bird's name. Most will probably remember that they saw an unusual and beautiful red bird for a second. With time the Tanager's red and black colors will merge with the students' other field trip memories of orange fires started from dried moss, the whites and purples of blooming wildflowers they jumped over, browns of the creek stirred up after they jumped in with their friends, greens of emerging spring foliage, and the yellows of two-lined salamanders they caught in the stream.

The moment is special to me because the Scarlet Tanager's beauty is representative of the students' rightful natural heritage. They deserve the opportunity to frolic through big patches of trillium and blue cohosh, to turn over flat rocks in a clear headwater stream and find two-lined salamanders guarding eggs. They deserve to have Cerulean Warblers breeding amongst the big white oaks and grapevines of their land labs, and to have close encounters with stunning tanagers. They deserve to take field trips that introduce them to the stunning beauty and diversity in their backyards, to know how beautiful their homeland is, and to be proud of it.

We live in a region juxtaposed with beauty and hardship; the tanager's beauty will not feed hungry children, repair streams impacted by legacy mining, or cure addiction. But it reminds us of three important things. First, that Appalachia is resilient. The forest now harboring breeding tanagers and cohosh was likely over-farmed then logged several times, yet still recovered. This resilience is also within the humans of this region. After all we are, as John Trudell said, "shapes of the earth." Second, that our hope of a sustainable future in Appalachia includes the health of our ecosystems. If we can help guide some of these students through their academic journey to a career in ecotourism or natural resources management, the tanager's beauty may actually help them put food on their future tables.

Lastly, the tanager reminds us of the importance, as Michael McMurray writes, of being in awe of natural beauty. This feeling is at the core of what makes us human. Everyone has the capacity and birthright to experience this feeling of intense appreciation for the mysteries of life, no matter our socioeconomic status. Regardless of the challenges our region faces, we can't go wrong raising a next generation that knows beauty—in themselves and their surroundings. There are many wonderful organizations and teachers working hard to do just that.

May it be beautiful before me
May it be beautiful behind me
May it be beautiful below me
May it be beautiful above me
May it be beautiful all around me *-N Scott Momaday's House Made of Dawn*

Beyond Trashing Our Planet

By Lynn White, Butler Soil & Water Conservation District

Apparently we're not content with just filling our rivers, streets, and landfills with trash, we've moved onto earth's orbit. Space may seem remote, but it's really not that far away. If you could drive your car straight up, in just a few hours you'd reach the altitude at which the ISS flies. The popular orbits for satellites begin twice as far up—about 400 miles above our heads. The only satellites that are truly distant from Earth are the several hundred in geosynchronous orbit, a tenth of the way to the moon. We have created so much space junk that it is becoming a major issue for current and future space missions.

Zombie satellites, rocket shards and collision debris are just some of the pieces of junk. Some of it is very large, such as burnt-out rocket stages, dead spacecraft, and a few tools lost during spacewalks. However, most of it is much smaller. In 1963 the Air Force released 400 million tiny antennas about the size of needles into orbit in order to see if radio waves would bounce off them. Though communications satellites soon made the antennas obsolete, they still float in lethal clumps 1,500 miles overhead.

Many of the objects released into space in the lowest orbits, like tools lost at the International Space Station (ISS), have fallen back to Earth. The upper atmosphere, where the space shuttle flies, gradually slows objects down; they re-enter the atmosphere and burn up within a few months or years. But a few hundred miles higher the atmosphere is so thin that it is ineffective for clean-up.

Today, telescopes and radar are monitoring more than 12,000 pieces of junk down to 10 cm in size. Many millions of pieces are too small to be recorded, such as flecks of paint and dust. Normally, these would not be a threat, but in space, debris travels at high speed. Even dust particles act like tiny bullets.

Earlier this year, a $160 million dollar European Space Agency satellite monitoring ice on earth was at risk space junk hurtling uncontrollably towards it. Mission control was forced to fire the thrusters to boost the satellite into higher orbit to avoid collision. These safety maneuvers are becoming increasingly common as out

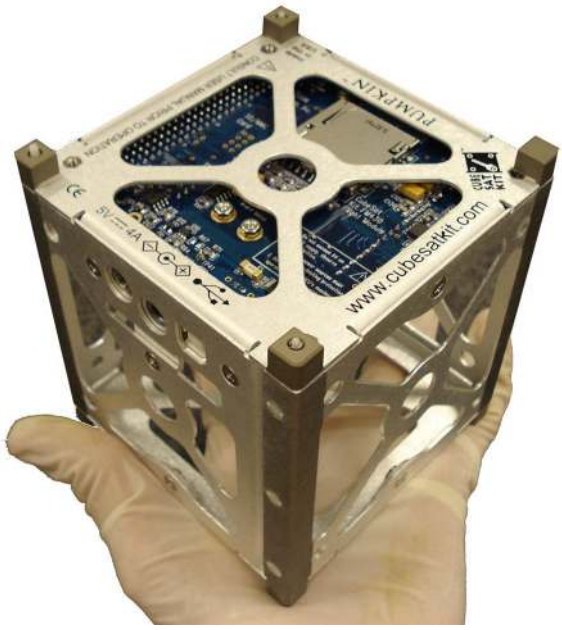
skies become more trashed. However, satellite operators can't steer away from all potential collisions, as each move consumes fuel.

In 2009, a US commercial satellite smashed into an inactive Russian communications satellite, creating thousands of new pieces of space shrapnel that now threaten other satellites in low Earth orbit — the zone stretching up to 2,000 kilometers in altitude. There is referred to as Kessler Syndrome: a space sickness in which low-Earth orbit is so overpopulated that collisions cascade into more collisions, which create more debris that causes more collisions that cascade into more collisions. Just a few uncontrolled space crashes could generate enough debris to set off a runaway cascade of fragments, rendering near-Earth space unusable.

The ISS shielding is limited to objects less than about a half an inch across. NASA, working with the Department of Defense's Space Surveillance Network, can track anything larger than about two inches, which covers about 21,000 objects. "There's a gap between what they are shielding for and what they can track," says Gene Stansberry, program director of NASA's orbital debris office.

Due to basic physics, even small debris can cause huge problems. Looking at the CubeSat which is only about

a 4" cube,. This 1 kg sat travels at 7.7 km a second, thus giving it the kinetic energy of 7 tons of TNT!



Just how much bigger will the problem get? SpaceX alone plans to send up nearly 12,000 small internet-beaming objects over time. OneWeb has designs on some 700 similar sats. Planet just launched around 100 that take pictures of the Earth's entire landmass every day. And those are just the heaviest hitters. Government regulations covering orbital debris are still rudimentary. For now, the federal agencies that have authority over commercial launches are waiting to see if the private sector can deal with the problem on its own. But de-orbiting rockets and satellites is expensive. A satellite could keep operating for several additional months if it didn't need to reserve fuel for de-orbiting. The companies are all aware that a public-relations disaster would ensue if a piece of a shattered satellite smacked the ISS.

Remediation remains politically fraught. In 2007, for instance, China decided to de-orbit one of its defunct weather satellites ... by firing a missile at it. This created a flume of debris that flung toward the Space Station in 2011. In February 2008, the US Navy launched its own projectile at a spy satellite toward its own satellite. Many interpret these action as militarily, or gun-flexing. Both countries showing they can take down each other's satellites.

So instead of blowing up space junk, scientists are focusing on new ideas. Now a consortium of universities and aerospace companies has begun testing a suite of technologies that could address the growing problem of space junk. On Sept. 16, scientists with the consortium successfully tested a net designed to snag orbiting debris and drag it down into Earth's atmosphere, where it would burn up harmlessly. Other missions aim to catch junk with robotic arms, spear them with harpoons, or slow them with sails or tethers. Others aim for smaller pieces with lasers or stick to them with adhesive.

Resources

Videos

Space Debris 1957-2016
https://youtu.be/O64KM4GuRPk

See a satellite net collect space junk
https://www.cnn.com/videos/cnnmoney/2018/09/19/satellite-net-space-junk-lon-orig-ge.cnn

Lesson

Danger - Space Debris, from NASA for grades 4-6
https://www.nasa.gov/offices/education/programs/national/summer/education_resources/physicalscience_grades4-6/PS_space-debris.html

Space Junk: Fast Trash Stem in 30
https://cet.pbslearningmedia.org/resource/86dabcaa-2aef-4f5c-b228-fbf4a14c1387/space-junk-fast-trash-webcast/

Save the Date

EECO 2019 Annual Conference

"Say Yes to New Adventures"

April 4-7, 2019 • Mohican State Park

Conference Strands:

- Stewardship, Conservation and Responsibility
- STEAM (Science, Technology, Engineering, Art, and Math), Outdoor Learning, & Careers
- Strategic Growth for Organizations
- Adventure and Outdoor Skills

More information including registration will be coming soon to *https://eeco.wildapricot.org/*

Moon Phases and Eclipses

7th and 8th grade Lesson

Outcome (standard):
"The relative patterns of motion and positions of the Earth, moon, and sun cause solar and lunar eclipses, tides, and phases of the moon."

Lesson Objective:
1) Students will model and sketch relative positions of earth, moon, and sun that produce particular phases of the moon.

2) Students will model lunar and solar eclipses.

Materials:
- giant earth ball
- styrofoam balls on pencils
- bright light source (lamp)

Instruction:
Day 1
1) Ask students to refer to their sketches of the moon-what questions do you have? What did you observe? Why do we observe changes in the moon??? How would you explain it with only your observation (like people did before technological advances)?

2) Prepare students to watch a short video that asks Australians to explain moon phases:

2a) Ask the students to listen for explanations that support their observations and those that do not

2b) Present a cultural story or two about why the moon changes (Philippines); present idea of lunar calendar.

3) Show the video clip and stop before it begins to explain moon phases; *http://www.youtube.com/watch?v=-Jip3BbZBpsM*

4) Ask students to write down their own explanation of why we observe differences in the moon (phases)

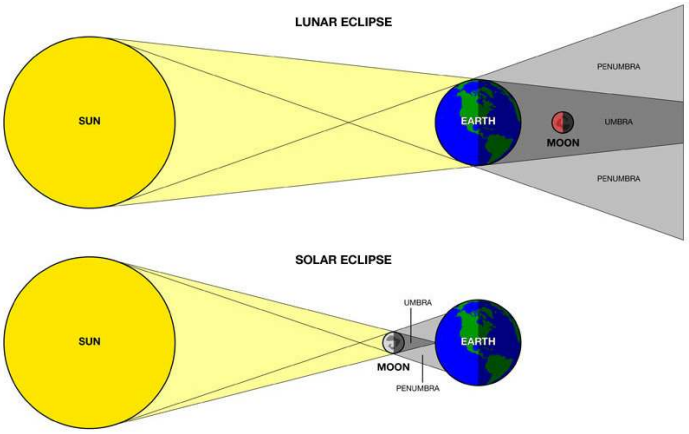
Using the Earth Ball:

5) After explaining the earth ball and setting ground rules, explain that we will be modeling the earth's orbit around the sun and moon's orbit of the earth.

5a) With students in a circle around a sun in the center, students slowly pass the earth ball around the orbit

5b) If students can do this carefully, add in the earth's revolutions--how many in a year? 365

5c) Ask students about the force holding the earth in orbit--gravity.



6a) Ask students how far apart the moon and earth would be at scale of earth ball and volleyball (110 ft).

6b) Students model the moon's orbit around earth. Two students will spin the earth on its axis as the moon travels one day further in its 28-day orbit.

7) If students do well with this, try to create the entire system--earth orbiting sun and spinning with moon running around the earth.

Day 2

8) Give each student a white styrofoam ball on the end of a pencil or other stick. Ask them to find a comfortable place standing up and within reach of your light source, which will represent the sun.

9) Darken the room except for one strong light source. Explain that the light is the sun, the styrofoam ball is the moon, and each students' head is the earth, and one trip around their head is a full orbit. Ask them to rotate counter-clockwise through a full orbit and observe the changes they see. Ask them to describe what they observe.

10) Guide students more slowly through each phase of the moon--new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, last quarter, waning crescent, and back to new moon. The terms are not important but they may need to know first quarter, full, last quarter, and new for the state exam.

11) Ask students if they observed any eclipses and to show you that position that produced it. Ask why we do not have eclipses during every orbit of the moon.

12) Explain that the moon's orbit is slightly different than the earth's orbit around the sun and either show a picture or draw a sketch on the board. Incorporate this into the modeling with styrofoam by elevating the moon slightly above their heads during the full moon and slightly below their eye-line during the new moon.

13) Questions? Challenges? May need to repeat 8-12 a few times. Does this model support your observations of the moon?

14) Students work in small groups to recreate first quarter, full moon, last quarter, and new moon using modeling balls.

15) If the moon phase today is Waning Gibbous, draw what the moon will look like tomorrow

What are the students doing?

--They should have completed some sketches of observations of the moon

--Students will discuss their observations of the moon and raise questions that emerged during their observation

--As students watch a short video or immediately after, they will write down their explanation of why we observe phases of the moon

--Class discusses hypotheses

--Students stand in a circle around an earth and pass a ball around the circle to model the moon's 28 day orbit

--Students guess how far apart the earth and moon would be if the former were a basketball and the latter a tennis ball

--Students, guided by the teacher, model the relationship between earth, moon, and sun with a styrofoam ball on the end of a pencil, moving counter-clockwise

--Students theorize about what causes eclipses and why we do not have them twice/moon orbit

--Students adjust individual orbits with styrofoam ball to account for difference in orbits

--Students recreate various phases of the moon using worksheets and small model earth, moon, sun

--Students refer back to original moon observations--does what we've done in class jive with these observations?

Assessment/Evaluation:

Day 1:

- Students use the earth ball and volleyball moon to model earth and moon orbits accurately as a group;
- Students work well and safely together during earth ball activities

Day 2:

- Students successfully model positions of earth, moon, sun individually using styrofoam balls and lamp to produce new moon, full moon, and eclipses;
- Students can sketch positions of earth, moon, and sun that produce full moon, new moon, quarters.

Winter Snow Conference – Creative Ways to Teach STEM

February 1 & 2, 2019

Camp Nuhop, Perrysville Ohio

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

Conference rates, schedule, and registration can all be found at *https://eeco.wildapricot.org/event-3136319*

Saturday Keynote: The Iditarod Adventure by Tom Roig, Owner/Operator Valley Road Outfitter's

Nothing says "Winter Snow" like dog sledding and the Alaskan Iditarod! Join Tom Roig of Valley Road Outfitters in Shreve, Ohio for a fascinating talk about his 20,000 miles of dog sledding experience that included qualifying for the world-famous Iditarod which he completed twice. Tom has had extensive experience guiding wilderness dog sled tours in the north, as well as canoe adventures in Florida. Experience the dogs, sled, equipment, stories and the thrill of the ride.

Friday Evening - A night down on the Farm with ants! Carrie Elvey, Senior Naturalist at the Wilderness Center Fun, interactive night of ant Farms! Ants are everywhere, easily collected, and make great classroom study animals. Learn to build an ant farm and identify the main groups of ants. Explore a variety of ant activities to enhance your curriculum for grades k-12.

Geauga Park District's Observatory Park

By John Kolar, Geauga Park District

Geauga Park District's Observatory Park appears suddenly during a drive through the countryside of Montville Township, Ohio.

Its location is intentional – this distance from the bulk of light pollution in Northeast Ohio was the reason why researchers built Nassau Astronomical Station here in 1957, and why it more recently received the distinction of International Dark Sky Park.

Today the park's main campus and historic Nassau building, just a short hike through the woods or drive down the street, provide visitors with a most memorable experience exploring Nature from the ground to the galaxies.

At 1,100 acres, Observatory Park offers five trails totaling 3.82 miles. Numerous site features include a trail with interactive pods representing each planet proportionate to the sun, a trail with interactive stations representing ways to study weather, life-sized cornerstones of the Great Pyramid of Giza, a human sundial, weather and seismic stations, a meteorite display, earthen mounds, henge stones, the Robert McCullough Science Center for programming and the Cygnus Shelter for reservations.

Additionally, the Oberle Observatory and its sizable Newtonian reflector telescope are used during public programs whenever the weather cooperates.

Making this park exceptional was its funding, primarily comprised of donations from community leaders and organizations that value dark night skies and related Nature education.

Grounds are open daily 6 a.m. till 1 p.m. Memorial Day through Labor Day and till 11 p.m. Labor Day through Memorial Day.

Observatory Park protects the watershed of the Cuyahoga River and contains a diversity of habitats, such as old growth forest, wetlands and open fields. Important species include the rare Five-lined Skink and the endangered Red Swamp Current.

Unlocked for special programming, Nassau Astronomical Station was built by the Warner & Swasey Company of Cleveland and used by researchers at Case Western Reserve University through the '80s.

Geauga Park District teamed with CWRU to offer public Astronomy Nights at Nassau from 1994 to 2005, and

after CWRU discontinued research at the station due to encroaching light pollution, it sold the facility to Geauga Park District in 2008.

Upon its restoration and reopening to the public in 2017, Nassau's 36" Warner & Swasey telescope became one of the largest research-grade public viewing scopes in the state of Ohio. Today's facility also includes the addition of museum features, redecorated historic living quarters, wheelchair accessibility to the upper telescope floor and restrooms.

This facility is unlocked only for Nassau programming only. Watch the location among program listings online *www.geaugaparkdistrict.org/park/observatory-park*

Resources

International Dark Sky Park
http://darksky.org/idsp/parks/

Geauga Park District's Observatory Park
www.geaugapark-district.org/park/observatory-park

Observatories in Ohio
www.go-astronomy.com/observatories-state.php?State=OH

GEAUGA PARK DISTRICT

ida INTERNATIONAL DARK-SKY ASSOCIATION

Student Wildlife Research Symposium

April 4, 2019

Mohican State Park Lodge

- Are you a teacher currently conducting research related to wildlife and/or wildlife habitats with middle and/or high school students?
- Are you a middle or high school student involved in wildlife-related research?
- Would you be interested in presenting your research to an audience of fellow student researchers, biologists, and wildlife management agencies?

Then we want you! The 3rd Annual Ohio Student Wildlife Research Symposium is a place to present your research in a professional and supportive environment. You can choose to present as a paper or a poster session. Paper sessions are 25 minute sessions in front of an audience. Poster sessions are in a group with other poster presenters.

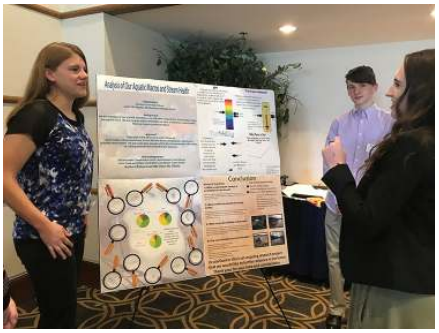
The Research Symposium will take place April 4, 2019 at Mohican State Park Lodge. We will, again, be partnering with the Environmental Education Council of Ohio's Annual Conference (EECO), which will follow from April 5-7th at Mohican State Park as well.

The call for proposals for the SWRS is now available and will be accepted until January 11, 2019. Registration will open mid-December and can be found at *www.eeco-online.org*

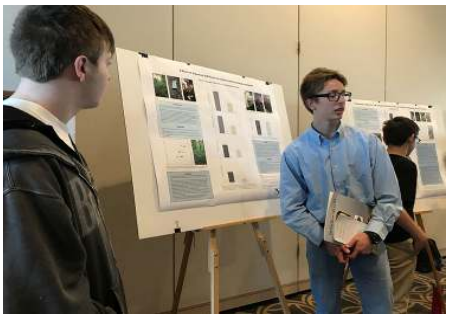
Presentations from the 2018 Student Wildlife Research Symposium

Hilliard HS

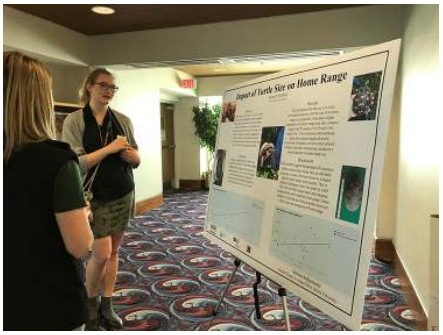
Pettisville HS



Buckeye Local SD

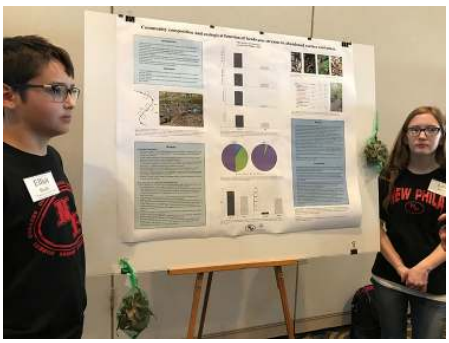


New Philadelphia HS



West Clermont HS

Reynoldsburg HS



Joseph Welty Middle School

University School

GreatOaks Land Lab

Ohio Environmental Education Fund

The Ohio Environmental Education Fund (OEEF) invites applications for mini grants ($500 - $5000) and general grants ($5,000 – $50,000) for environmental education projects targeting pre-school through university students and teachers, the general public and the regulated community. The Request for Proposals for the July 2018 grant cycle is now open and the application guidelines are posted at *http://www.epa.ohio.gov/oee*. Please review the application guidelines, and the OEEF Grant Preferred Characteristics for projects targeting the three different audiences before completing an application.

Prospective applicants can start the application process by opening an account in Ohio EPA's eBusiness Center at *https://ebiz.epa.ohio.gov/*. Electronic letters of intent to apply must be submitted in the OEEF online grant service no later than 5:00 p.m. on Jan 8, 2019. Completed proposals must be submitted in the OEEF online grant service no later than 5:00 p.m. on Jan 15, 2019.

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.

Letter of Intent Deadline is Jan 8, 2019 at 5:00 PM

Application Deadline is Jan 15, 2019 at 5:00 PM

Grant Writing Workshops

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

- ***Grant Writing 101***: F**inding 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.

Upcoming 101/102 Workshops

To Register: Registration is free and limited to 30 participants. To register, email your name and the contact information where you can best be reached to *dennis.clement@epa.ohio.gov*. Please specify which workshop you want to attend. Visit *https://www.epa.ohio.gov/calendar/oee* for additional workshops.

March 5, 2019 9:30 AM – 3:30 PM
Logan County Health District, 310 South Main Street, Bellefontaine, Ohio 43311
register by March 1 for this workshop.
Sponsored by Environmental Education Council of Ohio (EECO) Region 4, Logan County Health District (host location only) and the Ohio EPA, Office of Environmental Education.

March 21, 2019 9:30 AM – 3:30 PM
Watershed Stewardship Center at West Creek, 2277 West Ridgewood Drive, Parma, OH 44134
Register by March 15 for this workshop.
Sponsored by the Northeast Ohio Regional Sewer District, Environmental Education Council of Ohio (EECO), Region 8, and Ohio EPA, Office of Environmental Education.

General Grants Awards, Fall 2018

In the Fall 2018 grant cycle, Ohio EPA awarded the following six general grants, for a total of $175,000.

Arthur Morgan Institute for Community Solutions, "Soils for Life, Southwestern Ohio," $49,479

Audience: PreKindergarten – University, Clark and Greene Counties
Contact: David Diamond, *daviddiamond@communitysolution.org*, (937) 286-2511

The project will provide a two-day training for at least 35 schoolteachers in southwestern Ohio about new developments in soil science and the agricultural and land-use practices that build healthy soils. Teachers will then work with up to 800 students to teach them about soils in place-based activities that engage and empower them. Up to 300 of students from Yellow Springs, Springfield, and Xenia will participate in field trips to Agraria, a 128-acre farm that is being converted into a research facility, resource for famers and educational center. While there, they will have the opportunity to view the restoration of Jacoby Creek, participate in soil and water sampling, and learn how to use equipment related to testing. Parent and community nights at the end of school sessions will enable students to present their projects and findings to the public.

Clermont Soil and Water Conservation District, "Southwest Ohio Agricultural Conservation Menu," $17,141

Audience: Regulated Community, Brown, Clermont, Clinton and Highland Counties
Contact: Becky McClatchey, *rmcclatchey@clermontcountyohio.gov*, (513) 732-7075

Soil and Water Conservation Districts will collaborate to develop a web-based platform to communicate information on conservation programs and to help local farmers understand the connection between, nutrient management, watershed health and Harmful Algal Blooms. The platform will be a highly organized, user-friendly clearinghouse of information on conservation programs. The SW Ohio Conservation Menu will provide additional features, including access to a locally-developed web application that provides fertilizer recommendations based on soil quality test results. The platform will also provide interactive modules for local farmers to share information and discuss various issues relating to agricultural BMPs. Soil and water quality test kits will be distributed during two fertilizer app training sessions. The project's goal is to reach 200 farmers in the East Fork watershed during the project, with this number increasing annually as the partners continue to promote and improve the Menu.

Boys & Girls Clubs of Cleveland, "Nature in the 216," $25,935

Audience: Pre-school to University, Cuyahoga and Lake Counties
Contact: Renata Brown, *rbrown@clevekids.org*, (216) 883-2106

The project will utilize museum programs, assets, and expertise to explore a 4.5-acre nature preserve being installed at the Boys & Girls Club facility. Professional development focusing on topics that include Cleveland Museum of Natural History's (CMNH) Nature in the City curriculum will be provided for all Boys & Girls Club of Cleveland (BGCC) K-8 instructors and Mound STEM School teachers. CMNH will provide educational programs to Boys & Girls Club students, including a Neighborhood Wildlife assembly and an Ohio Birds of Prey assembly. BGCC staff will also create a learning kit with teaching materials on ecological areas and biodiversity for clubs to borrow. Students will also will learn about Environmental Engineering Careers as restoration activities take place on the Morgana Run Nature Preserve. CMNH will also host a Career Day to learn about environmental careers, such as curators, researchers, educators, and others.

Cuyahoga River Community Planning dba Cuyahoga River Restoration, "Win the War on Weeds: Invasives Detection and Control for Communities," $38,205

Audience: Regulated Community, Cuyahoga, Geauga, Lake, Lorain, Portage and Summit Counties
Contact: Carolyn Krause, *krausec@cuyahogariver.org*, (216) 241-2414

The project will equip public land managers, grounds keepers, and contractors across Northeast Ohio with training on invasive weed control using alternatives to toxic chemicals. The project will feature two identical workshops and site demonstration tours, one on the east side and one on the west side of Cleveland's metro area. A comprehensive database of invasive weed control practices and policies of northeast Ohio communities will be compiled. Participants in the workshops will review a draft and provide input on a new invasive species identification and control guide/handbook specifically geared toward their needs, then published and distributed at the end of the project. Two webinars will be presented and recorded so that others who could not attend, or who operate in other areas can benefit and replicate the work. An anticipated 900 people will be reached through the program.

General Grants, Fall 2018

Mill Creek Alliance, "Mill Creek Alliance Water Quality Education and Monitoring," $29,341

Audience: Pre-school to University, Butler and Hamilton Counties

Contact: Alan Edwards, *alan@groundworkcincinnati.org*, (513) 731-8400

The Water Quality Program will educate citizens, students, and elected officials on the quality of water throughout the Mill Creek watershed so as to better inform them on best management practices and strategic watershed planning. Updating the program through adoption of new testing parameters (Chlorophyll and Optical Brightness) and technology (adoption of electronic data storage in lab and streamlining of electronic data collection in the field) will bring it in line with our sister programs throughout the region. The creation of the Blue Team youth workforce development program will strengthen Mill Creek Alliance's Green Corps workforce development program through the addition of hands-on education regarding scientific procedures from both the field sampling and laboratory testing to training and certification in level 2 surface water chemistry. The Blue Team would also allow for a closer collaboration with the University of Cincinnati, exposing students to hands-on field science and careers.

Rural Action (Upgrade Ohio), "UGO Energy Ed," $14,899

Audience: General Public, Athens, Muskingum and Ross Counties

Contact: Sarah Conley-Ballew, *sarah@ruralaction.org*, (740) 591-1990

The project will introduce local energy experts to library patrons, examine the impact of GHG emissions on air quality, and discuss alternative energy job opportunities. During 12 educational sessions and three Clean Energy Expos, participants will learn how the Ohio EPA measures air quality from four county monitoring stations in southeast Ohio. Students will also be exposed to three DIY demos and clean energy projects created by citizen scientists. Local representatives will talk about renewable products and technologies that are being developed in Southeast Ohio. Sessions will encourage participants to evaluate their role in the clean energy economy and explore direct connections to employers; clean air and emissions reduction; and employment in electric vehicle infrastructure, EV repair and renewable energy products / manufacturing.

Awarded Mini Grants Fall 2018

Clermont Northeastern Local Schools – Clermont Northeastern High School, "Conservation Career Training through Turtle Telemetry," $4,580

Audience: Pre-School - University (High School), Clermont County

Contact: Scott Wells, *wells_s@cneschools.org*, 513-625-1211

The goal of this program is to engage 30 Ohio high school students in activities that will encourage them to develop career skills while working with mentoring science professionals. Students will work as researchers completing authentic field research and data analysis using Eastern box turtles as study subjects. Working alongside professionals students will gain valuable skills that lead to career opportunities in the fields of; Geographic Information Systems (GIS), habitat evaluation, conservation and restoration, and spatial analysis of land usage. This collaborative culture will allow students to develop a network of contacts, and an understanding of what it takes to be career ready in these scientifically demanding fields. This will be accomplished with the use of radio telemetry to track the movement of eastern box turtles and the application of GPS and GIS technologies to analyze the turtles' use of their habitat.

Highland Youth Garden, "Highland Goes Green," $4,994

Audience: Pre-School – University (Grades K-5), Franklin County

Contact: Lisa Mollie Hobson, *hyouthgarden@gmail.com*, 614-205-0207

Highland Youth Garden will demonstrate stewardship of the watershed by installing a cistern to collect rain water from our high tunnel and use that water to irrigate the garden. Installation of a small rain garden will capture overflow. We will educate students who learn and work in the garden about innovative storm water management practices. The garden educator, already working with an estimated 500 young people over the course of the year, will use lessons from Project Wet and Project Wild to help students explore issues related to storm water, conserving resources and sustainability. Signage will explain the system to visitors and the practice will be shared with other community gardeners. As a member of Central Ohio's Growing to Green organization and as a Hub Garden of the Franklin Park Conservatory our opportunities to share and learn with others are vast. The installation of the cistern will reduce use of city water and make the garden itself more sustainable.

Awarded Mini Grants, Fall 2018

In the Fall 2018 grant cycle, Ohio EPA awarded the following six mini grants, for a total of $27,009.

Lake Soil and Water Conservation District, "Reshaping Watershed Education with the Augmented Reality Sandbox, $3,762

Pre-School – University (Grades 2, 4, 7 and 8), Lake County

Contact: Natalie Gert-Young, *ngertz-young@lakecountyohio.gov,* 440-350-2730

AR Sandboxes are tools that allow for the visualization of topography, water movement through a landscape, as well as plate tech tonics and vulcanism. An understanding of these concepts is needed to meet state education standards in Grades 4, 7, 8 and Environmental Science's Earth Systems concepts. The fun and interactive qualities of the AR Sandbox also increase engagement and ultimately understanding of these concepts. In Lake county, Lakeland CC recently built an AR Sandbox for use in its GIS department, and Willoughby Eastlake Schools built 2, one to remain at Willoughby Eastlake School of Innovation and another to move throughout the district. These only reach around 8,000 of the over 31,000 K-12 students in the county. The purpose of this grant is to build an additional portable AR Sandbox, adapt curriculum and align activities to Ohio Science Standards, and work with W/E School of Innovation and Lakeland CC to provide training workshops and opportunities for K-12 educators.

Milford Exempted Village School District – Milford Junior High, "Conservation Career Training through Turtle Telementry," $4,543

Audience: Pre-School - University (Junior High), Clermont County

Contact: Rachelle Rapp-Dickerson, *rapp_r@milford-schools.org*, 513-368-3388

The goal of this project is to collaborate with mentoring professionals to engage students in experiences with many of the skills necessary for a career in science or conservation and teach them how to be good stewards of the Earth. Students from Milford High School and Milford Junior High School will work with students from West Clermont High School, Sycamore High School, and Clermont Northeastern High School to extend the West Clermont turtle telemetry research being done at Cincinnati Nature Center. This project will occur on Valley View Foundation's 190-acre nature preserve and involve Milford students locating wild box turtles, fitting them with telemetry devices, monitoring and recording the turtle movement weekly, analyzing the data in several ways including GIS mapping, using the data to answer student inquiry questions, and sharing the results in a variety of forums. The project is intended to last multiple years beyond the life of the grant and will reach approximately 450 students.

Sandusky City Schools – Regional Center for Advanced Academic Studies, "Serving Senior Soldiers," $4,523

Audience: Pre-School – University (Grades 3-5), Erie County

Contact: Cari Ritzenthaler, *carir@bgsu.edu*, 419-357-3583

Our project, Serving Senior Soldiers, will bring together students and elderly veterans, two groups that rarely interact within the community of Sandusky, Ohio, through the common goal of restoring habitat for local pollinators. Students and veterans will work together to design a pollinator garden that both benefits our native wildlife, increases the science literacy of our community members, and improves the environment for the veterans.

Sycamore Community Schools – Sycamore High School, "Conservation Career Training through Turtle Telemetry," $4,607

Audience: Pre-School - University (High School), Hamilton County

Contact: Jennifer Lynn Scheidler, *scheidlerj@sycamore-schools.org*, 513-417-2252

The goal of this program is to involve 24 Ohio students in developing career skills by collaborating with mentoring science professionals in authentic field research and data analysis and help them understand what it means to be a good steward of the Earth. Working alongside these professionals, students will gain skills that lead to career opportunities in the fields of Geographic Information Systems; and habitat evaluation, conservation, and restoration as we build a network and culture of career possibility. This will be accomplished with the use of radio telemetry to track eastern box turtles and researching the Eastern Box Turtle's interactions with their habitat. Students at Sycamore High School will work with students from 3 other area high schools to extend the West Clermont HS turtle telemetry research being done at the Cincinnati Nature Center. For Sycamore students, this project will occur at the Benedict Nature Preserve owned and overseen by the University of Cincinnati.

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, adivisors, 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 Toledo
jennifer.elsworth@metroparkstoledo.com

Region 3 - NW Central Ohio
Sheila Cubick
SheilaC@zoominternet.net

Region 4 - SW Central Ohio
Donna Lewis, Clark County Park District
dlewis@clarkcountyparkdistrict.org

Region 5 - SW Ohio
Errin Howard, Riverworks Discovery
errin@riverworksdiscovery.org

Region 5 - SW Ohio
Gia Giammarinaro
mycelium22@gmail.com

Region 6 - N Central Ohio
Joanne Mudra
jcmudra@gmail.com

Region 6 - N Central Ohio
Janet Ellsworth, retired, Mansfield City Sch
wellsworth@neo.rr.com

Region 7 - S Central Ohio
Sarah Fisher, Rural Action
sarah@ruralaction.org

Region 8 - NE Ohio
Dawn Wrench, Earth Day Coalition
dwrench@earthdaycoalition.org

Officers & Advisors

Executive Director
Brenda Metcalf
director@eeco-online.org

President 2017-18
Allison Shaw
shaw@metroparks.net

Past President 2017-18
Joe Brehm
joe@ruralaction.org

Vice President 2017-18
Josh Dyer
jdyer@crawdordparkdistrict.org

Treasurer 2017-19
Amanda Kriner
akriner@richlandcountyoh.us

Secretary 2016-18
Sue Matz
sgmatz13@gmail.com

Advisor– OEE, OEPA
Carolyn Watkins
carolyn.watkins@epa.ohio.gov

Advisor– ODE
David Schklar
David.Schklar@education.ohio.gov

Advisor– ODNR
Jen Dennison
Jen.Dennison@dnr.state.oh.us

Board Members

Sophia (Fia) Turczynewycz
fia@cincinnatizoo.org

Tracy Cindric
tracy.cindric@ode.state.oh.us

Ken Green
Green4680@msn.com

Ebony Hood
HoodE@neorsd.org

Lija Kaleps Clark
lija@theenergycoop.com

John Kurtz
johnk@kurtz-bros.com

Dave Moran
dmoran@daytonymca.org

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

Abby Rhodebeck
arhodeb@rei.com

Laura Schetter
lauramschetter@gmail.com

Lynn White
whitelr@butlercountyohio.org

Joshua York
Joshua.York@metroparks.org