A Quarterly Publication to Advance Environmental Literacy



**Education Center** 

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Pocono Environmental Education Center 538 Emery Road Dingmans Ferry, PA 570 • 828 • 2319 peec@peec.org www.peec.org

### **Brood X**By George Johnson

The year is 2004. Back then I was just an awkward freshman trying to survive my first year of high school. It doesn't seem like much time has passed, but a lot of time has passed since then. I finished high school, went to college, and even earned a master's degree. I've lived in three different states, NJ, NY, and now PA. My family has even expanded as I have little nieces and newly arrived nephews. 17 years have occurred since 2004 and a lot has changed since then...

But why am I talking about 2004? What is so special about that year? Well, 17 years ago the previous generation of periodical cicadas in brood X (ten) laid their eggs. This is the year that the young emerge from the ground to continue their cycle of reproduction. However, it's not just one or two that come out at a time. It's by the literal millions that will all pop out at



once. They will swarm by the millions to try and find mates to reproduce. It's theorized that they will all emerge at once to essentially over satisfy any potential predators. When there are only a few predators, but millions of potential options, the odds that the predator will choose you to eat is fairly slim.

These periodical cicadas are not quite like their yearly cousins that are around for every summer. They have bright red eyes, are slightly smaller, and have orange markings on their wings, sticking out like a sore thumb on a tree. The dogwood cicadas that come out every summer are much better camouflaged, dark eyes, green wings, and a brown body. I will rarely find an adult dogwood cicada throughout the summer, but it's impossible to miss the periodical cicadas once they are out in force.

Most insects in the wild barely survive a single year, so how to these cicadas manage to live for 17 years? They do so by staying entirely underground the entire time. They'll live below the frost zone, level within the soil that doesn't freeze at all during the winter, and will feed on the roots of mature trees. They have a mouthpart not so different from a mosquito that they use to stab into the roots of trees. Once they've bitten in, they'll drain the water and nutrients from the tree for themselves. Don't worry about the tree though. Studies have found that the cicadas don't seem to negatively impact the trees' health.

After about 17 years of drinking from tree roots, they finally decide to grow up and emerge into their adult forms. Typically, the signal for everyone to come out is just after a rainfall and the ground temperature has risen to about 60° F. The cicadas are actually so sick of tree roots that their adult forms don't even have any mouthparts at all (not really the case, but I like to think that it is).

Sadly, we at PEEC are just a little too far out of their native range. So we, unfortunately, likely won't see any this summer. With that being the case, they will be not that far from PEEC. Just a little south of here is where you should start to find them, around the Leigh Valley area and across NJ.

Summer Solstice 2021



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### Message from the Executive Director By leff Rosalsky

Recently Dr. Olivia Carducci's East Stroudsburg University Math 425 mathematical modeling class created a mathematical model examining the economics and practicality of installing greywater systems on the PEEC campus. A greywater system reuses sink and shower water to fill toilet tanks and to irrigate gardens; tasks which are usually done with fresh potable water.

While we at PEEC, in northeast Pennsylvania, are fortunate to have abundant natural rainfall and clean full aquifers from where most of us draw our well water, that is not the case in much of the rest of the world. We are used to turning on the tap and having fresh drinkable water flow in abundance and we use that same water for everything. As such, there is a sense that there is zero

cost for the water. The reality is that the water still needs to be pumped up from wells using electricity and then pumped back into septic systems to dispose of the waste water. For every gallon of water saved in a greywater system, the electricity cost of pumping it twice is saved. The pumps themselves work less and last longer, the well life is extended and septic systems don't have to be cleaned out as often. Dr. Carducci's class demonstrated that while greywater systems have expenses associated with installation and operation, in many instances they save enormous amounts of water. The hidden costs of water usage and waste are real, as are the savings attainable. The elegance of the ESU model is that many assumptions can be varied allowing costs and savings to be seen across a range of scenarios.

One of the students' most basic suggestions for PEEC was a device that diverts used sink hand washing water to automatically refill toilet tanks. If retrofitted in the PEEC main building, just one of these devices would save thousands of gallons of water and the associated pump electricity per year. The upfront costs were low and the payback period was short. Other solutions were more complex and costly to implement, but the model itself can be applied to new greywater solutions as they become available.

The students did an outstanding job constructing their model and answering my barrage of questions, but most importantly it forced us all to focus on the wise use of resources. Too often we repeat what we have been doing for decades, just because it has always been done that way. The more the human race taxes the resources of this planet, be they water, food or energy, the more essential it becomes to increase our conservation efforts. Sometimes small thoughtful changes, like those suggested by the Math 425 class, can have enormous benefits with limited costs.

### **Did You Know....?**

Many employers have matching gift programs that will allow your donation dollars to stretch further. Philanthropic companies have provided 'donation match programs' as an employee benefit for years. If you make a charitable donation to PEEC, be sure to check with your employer to see if they have a charitable match program that could potentially double your contribution to environmental and sustainability education.



#### Can You Clone a Snake?

By Emma Roth

In 2018 Garrett, PEEC's resident Eastern Rat Snake who was previously assumed to be male, surprised us all by laying her first clutch of eggs. Since then, every year in late April or early May, a new clutch comes around. While we know Garrett has never mated with a male snake, and so far her eggs have not been fertile, I remembered hearing about reptiles being able to reproduce asexually through a process called parthenogenesis. Essentially, this means a female clones herself to produce identical offspring.

Asexual reproduction is actually very common in nature. It is particularly common in plants. Many plants have the ability to produce offspring by breaking off parts of the parent plant and allowing the pieces to establish a new organism. Other plants have both male and female characteristics on the same plant and can fertilize themselves.

While common in the plant world, asexual reproduction is much less common in animals, but not unheard of. One of the most famous examples of this is the Whiptail Lizard in Mexico. In this species, male lizards have become extinct, and the entire population is sustained through parthenogenesis. There have also been confirmed cases of hammerhead sharks raised in captivity who have reproduced asexually.



So I decided to look into parthenogenesis in snakes to find out if there is a possibility that at some point we'll have little Garrett clones. As it turns out, there is one known species of snake that, similar to the whiptail lizard, only reproduces asexually. This is the brahminy blind snake, native to Africa and Asia. There have also been reports from snake breeders and zoos of captive snakes reproducing asexually. However, I was not able to come across a confirmed case of an Eastern Rat Snake. While I don't think we'll have little cloned Garretts anytime soon, I will still be eager to check her clutch each year, just in case.





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# Exploring the Trails at PEEC By Derek Scott

If you're reading this newsletter, there's a pretty good chance that you've probably spent some time out on the trails at PEEC. With over 10 miles of trails to explore, there's a lot to see whether you've hiked them all just once or even several dozen times. While the answer to the

question, "What is your favorite trail at PEEC?" might vary from person to person, often times the response is overwhelmingly "Tumbling Waters." Despite the attractions along trails like Scenic Gorge and Fossil Trail, it's hard to compete with the spectacular view of the waterfalls on Tumbling Waters. That was, until recently...

If you asked PEEC staff which of our trails is the least traveled, regardless of who you asked, the answer would be Ridgeline. At 3.63 miles, and the longest trail at PEEC, Ridgeline lacks the iconic views of Tumbling Waters or the appeal of a shorter stroll along Two Ponds, Scenic Gorge, or Fossil Trail. As a result, for the longest time many felt there wasn't any appeal or reason to hike Ridgeline. However, in 2019, the Delaware Water Gap National Recreation Area Trail Crew installed a ½ mile connector trail from Ridgeline to the Hornbecks Creek trail, which is north of PEEC within the park. Not only was this offshoot the first integration of PEEC into park trails, but the connector joins into Hornbecks Creek right where the most spectacular waterfalls are on the trail. With storm damage from Winter Storm Riley closing access to



these falls from Route 209 in 2018, Ridgeline is now the only way to take in the scenery besides hiking in from the lesser known trailhead for Hornbecks Creek along Emery Road.

So whether you're a veteran of our trails, or have only hiked here a few times, consider taking the trail less traveled and exploring Ridgeline the next time you find yourself at PEEC.

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In Memory







We were saddened to hear of the passing of our friend and former coworker Ryan McLaughlin this past spring. Ryan worked at PEEC from 2009 to 2011 and 2015 to 2019; he shared his love and appreciation for the outdoors with thousands of students and visitors during his time here. In his memory, we have added a bench to the Scenic Gorge trail and planted a memorial tree on the PEEC campus. We hope both of these memorials cultivate an appreciation for nature in the same way Ryan was able to during his time working at PEEC.









# Crinkly Paper and Cats By Kirsten Larick

At Pocono Environmental Education Center, we like to recycle EVERYTHING possible -- from the normal cans, cardboard, and plastic bottles to plastic wrap, bubble wrap, bottle caps, and CRINKLY PAPER!

I am the receiver of crinkly paper at PEEC. The reason you ask? My cats – Itty Bitty, Eevee, and Marco (aka Chunk of Love). Throw crinkly paper in a box and they are entertained for hours. Add some fuzzy toys and catnip? They can be there all day!

An ordinary item can be recycled for many uses if you use your imagination. Milk jugs, soda bottles, and toilet paper rolls make great bird feeders. Speaking of toilet paper rolls did you know they could be amazing cord holders or binoculars? Slap a toilet paper roll onto an old tissue box, add some rubber bands, and suddenly the children have a guitar! Flowers, vegetables, and fruit have the ability to bloom in just about anything that could hold dirt! Imagine egg cartons, bottles cut in half, or the can from your favorite soup. CD's could be hung in your garden to deter animals from munching on your plants or even be made into funky mosaic pieces of art. Imagine all the uses for an old K- cup!

My cats find it entertaining, as do I, to practice hiding and pouncing techniques on each other. The dogs never have a chance! When the crinkly paper no longer crinkles and holes puncture the entire roll, I use it to start a fire while my cats watch mourning their favorite toy. So what will you do with your toilet paper rolls, cardboard, and crinkly paper?



### Mysteries in the Park By Stephanie Sherman

Every year I feel like I learn another new mystery from within the Delaware Water Gap National Recreation Area. The borders of this park contain thousands of years of human history, as well as millions of years of ecological and geological time. From my first year, learning about how the park was created and up to this very day, I continue to uncover little tidbits of previous histories that could easily have been overlooked without knowing the context of the land. I decided to pull together a few interesting time capsules that I've noticed over my few years here.

Bedrock of Ages: We can easily take for granted the stones under our feet, but each time I hike the trails I am reminded of how old the Appalachian Mountains are. Mudstone is a wonderful cross section of life in prehistoric times. The shells of brachiopods and small discs of crinoid stems are so old they actually predate the formation of boned organisms on land. These can usually be found where the layers of bedrock are chipped away and exposed. If you see flat bedrock on a trail, look for deep parallel grooves that were carved by glaciers 25 thousand years ago that eventually melted to help create the Delaware Water Gap.

A Civil War Ghost Town: The Conashaugh Creek's claim to fame comes from the Battle of Conashaugh of 1780. However, the origins of the town and its name dates back to the Civil War. Conashaugh is a Native American name, but it is not from our first residents the Lenni Lenape. The name is actually Cherokee for "grass," which was possibly brought to the area by Union Army deserters from the Georgia-Tennessee border region of Conasauga. Since then, this area has now become a hiking trail area just south of Raymondskill and Cliff Park where you can catch glimpses of the old town's foundations.

A Solar House Ahead of Its Time: Henry Wright, no relation to Frank Lloyd Wright, was a man ahead of his time as an architect. His work included being an advocate for many early plans of city green belts in St. Louis, Missouri and helping to design Sunnyside Gardens in Queens, NY. In 1944, Wright breathed new life into a colonial house near Raymondskill to create America's second ever passive solar house. Now titled the Ramirez Solar House, this house has been studied by architects for its blending of traditional and modern style while pioneering eco-friendly designs.

Cores from the Army Corps: Nestled on the New Jersey side of the park may be one of the most infamous mysteries of the park. Long rock cores can still be found off the Rockcores Trail, which is across from the entrance to Worthington State Forest. Left by the Army Core of Engineers in the 1960s, these cores were one of several defining factors in the end of the Tocks Island Dam project. The Delaware Water Gap National Recreation Area was originally designed to be flooded into a 40-mile-long reservoir, but these cores proved that bedrock could not be found to hold an earthen dam of that extent. Eventually the plan that created the Recreation Area was decommissioned in 1992, but these cores remain as mysterious reminders of a bygone plan to tame the Delaware River.

The Delaware Water Gap National Recreation Area is literally filled with lifetimes of history. Each year I find another small fraction of the centuries of human and evolutionary stories to be shared. What is even more concerning is how quickly these small stories can be lost if we do not seek to learn them. Last year, the Delaware Water Gap NRA ranked in the top 10 of the most visited national parks in the country. We have such an amazing story to share; I hope this inspires others to keep looking for more mysteries in the park. Happy Hiking!



Bring your friends and family to experience the best of what PEEC has to offer. Nature hikes, animal presentations, swimming, canoeing, campfire and more!

Price includes three nights lodging and meals from Friday dinner to Monday lunch.

#### Cost:

Adults \$225

Child, Commuter & Day Rates Available



0.828.2319

POCONO ENVIRONMENTAL EDUCATION CENTER 538 Emery Road • Dingmans Ferry, Pennsylvania 18328

PEEC is close to home, where learning comes naturally!

PEEC is located off of Route 209 inside the Delaware Water Gap National Recreation Area in Dingmans Ferry, PA.

# SUMMER PROGRAMS SETAWAYS

PRE-REGISTRATION REQUIRED Unless otherwise indicated.

TO REGISTER: Call PEEC at 570-828-2319

#### **JULY**

July 4th Family Camp Weekend July 2nd – 5th Adults \$225 / 10% off ages 11-13/25% off ages 7-10 / 50% off ages 4-6 Free ages 3 & under

Bring your friends and family to experience the best of what PEEC has to offer. Nature hikes, animal presentations, swimming, canoeing, fireworks, campfire and more! Price includes three nights lodging and meals from Friday dinner through Monday lunch.



Bridge the Gap: Evening Pond Paddle
Friday, July 9th | Free 6pm-8pm
Come join us for a free paddle on our ponds!
Beginners are welcome—we will teach
you everything you need to know! Dress
appropriately—you may get wet. Spaces are
limited; call to reserve a canoe or kayak!
\*Lead support is provided by the
William Penn Foundation.\*



Bridge the Gap Edible & Medicinal Plant Walk Saturday, July 10th | Free 10am-12pm Nature provides food & natural remedies for us in the form of many plants. Join us on a hike focused on wild edible & medicinal plants. No collecting or consumption will be done during the program. \*Lead support is provided by the William Penn Foundation. \*

Ecozone Discovery Room!

Sunday, July 11th | \$2 per person 1pm-4pm

Climb into a bald eagle's nest, crawl into a bat cave, explore a beaver lodge, and dig in a fossil pit! Explore this indoor discovery room and enjoy hands-on exhibits on natural history, sustainability and the local environment. No registration required. \*Limited to 15 people at a time\*

Bridge the Gap: Pond Paddle
Sunday, July 18th | Free 10am-12pm
Join us for a paddle around our ponds! Beginners are welcome – we teach you everything you need to know! Dress appropriately – you may get wet.
Call in advance to reserve a boat. \*Lead support is provided by the William Penn Foundation.\*

Bug Exploration
Sunday, July 18th | \$5 1pm-3pm
Bugs are everywhere! Come join us as we go
discover some insects on our trails and learn about
what makes them so unique. Don't worry; they're
not as scary as they look!

Wilderness Walkabout
Saturday, July 24th Free for PEEC Members
\$5 for Non-PEEC Members I pm-3pm
Get out and explore PEEC! Join Paul Kovalski, aka Dr. Dinosaur, as we hike one of our trails and discuss the natural history of our park.

Farm to Table Dinner
Saturday, July 24th | \$30/person 6pm-8pm
Welcome the coming of summer with PEEC's
5th Farm to Table Dinner. This dinner features
local produce perfect for the season! Bring your
friends & family to enjoy this refreshing evening.
Payment is required at registration. Sold out in
2019 & 2020 - call early to reserve your seat!

Sunday, July 25th | \$10 9am-3pm
Join us for this paddle down the Delaware! Bring a lunch, water bottle, and don't forget to dress for the weather. We will provide extra water and snacks. Choose between a canoe or kayak. Preregistration is required and begins at 8:30am on June 25th. \*Lead support is provided by the William Penn Foundation.\*

Bridge the Gap: River Paddle

Frog Frolic
Saturday, July 31st | \$5 1pm-3pm
Spend the afternoon with us at our ponds and streams! Learn about some of our frog friends as we gently catch and release these hopping

amphibians. Wear boots and plan on getting

Bridge the Gap: Evening Pond Paddle
Saturday, July 3 Ist | Free 6pm-8pm
Come join us for a free paddle on our ponds!
Beginners are welcome—we will teach
you everything you need to know! Dress
appropriately—you may get wet. Spaces are
limited; call to reserve a canoe or kayak! \*Lead
support is provided by the
William Penn Foundation.\*

#### **AUGUST**

wet and muddy.



Saturday, August 7th | \$5 10am-12pm Nature provides food & natural remedies for us in the form of many plants. Join us on a hike focused on wild edible & medicinal plants. No collecting or consumption will be done during the program.

Edible & Medicinal Plant Walk

Continued on Page 10

### SUMMER PROGRAMS AND GETAWAYS

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#### **AUGUST**

#### Nature Photography Saturday, August 7th | \$5 | pm-3pm

Learn some beginner techniques on how to frame a picture, and we'll take you out to practice those skills on our campus. Great for children and those starting from scratch. Participants will need a camera for pictures, even a phone camera will do!

#### Nature Walk

#### Sunday, August 8th Free 10am-12pm

Take a hike with one of our knowledgeable staff and learn about our forests. We never know what exactly we'll find out there, so don't be afraid to ask plenty of questions along the way.



#### Ecozone Discovery Room! Sunday, August 8th \$2 per person I pm-4pm

Climb into a bald eagle's nest, crawl into a bat cave, explore a beaver lodge, and dig in a fossil pit! Explore this indoor discovery room and enjoy hands-on exhibits on natural history, sustainability and the local environment. No registration required.

\*Limited to 15 people at a time\*

#### PEEC Adventure Weekend August 13th - 16th | \$300

The Delaware Water Gap has a lot of sights and activities to do in a single weekend. We can streamline your visit as we do all the planning for the best experiences in the whole park. We'll go canoeing/kayaking in the river, hike the trails with the best views, and spend some time relaxing by the campfire. Meals, lodging, and equipment included in pricing. Call for day and commuter rates.

#### Wilderness Walkabout Saturday, August 14th | Free for PEEC Members/ \$5 for Non-PEEC Members 1pm-3pm

Get out and explore PEEC! Join Paul Kovalski, aka Dr. Dinosaur, as we hike one of our trails and discuss the natural history of our park.

#### PEEC in the Kitchen

Sunday, August 15th | \$10 1pm-3pm

PEEC in the Kitchen is a cooking class series that will offer participants a peek into the PEEC Dining Hall's Kitchen for a fun and creative cooking experience with Chef Erin Taylor. Participants will learn basic kitchen skills, tips and tricks of the trade, and make easy, delicious, family friendly meals to satisfy the gourmet culinarian, pickiest eaters, or even strictest dietary concerns. Each class will include an informational hands-on cooking demonstration, recipes for participants to take with them, and a family style meal of the items prepared in class.

#### Bridge the Gap: Overnight Experience Saturday, August 21st - Sunday, August 22nd \$10 11:15am Sat. arrival at PEEC

Spend the day canoeing/kayaking on the Delaware River and then camp overnight in one of the sites along the river. Make sure to bring your own water bottle and sun screen. Meals and tent supplies will be provided by us. Registration starts on July 21st at 8:30am. Call in advance to reserve a boat and tent. \*Lead support is provided by the William Penn Foundation.\*



#### Bridge the Gap: Fishing for Beginners Saturday, August 28th | Free | pm-4pm

There are plenty of fish waiting to be caught in our ponds! Spend the morning learning some of the basics for fishing with a rod and reel and see how many you can get. All equipment will be provided. Strictly catch and release! Call ahead to reserve your spot. Participants over 16 must have a valid fishing license. \*Lead support is provided by the William Penn Foundation. \*

#### Nature at Night Saturday, August 28th | \$5 8pm-9:30pm

A pleasant summer evening is the perfect time to head outside. Take a walk in the woods to listen for owls, look at stars, and enjoy the music of the night. Enjoy fun activities that test your night vision. We recommend you bring a flashlight!



#### Bug Exploration Sunday, August 29th | \$5 10am-12pm

Bugs are everywhere! Come join us as we go discover some insects on our trails and learn about what makes them so unique. Don't worry; they're not as scary as they look!

### Bridge the Gap: Pond Paddle Sunday, August 29th Free 1 pm-3 pm

Join us for a paddle around our ponds!
Beginners are welcome – we teach you
everything you need to know! Dress
appropriately – you may get wet. Call in advance
to reserve a boat. \*Lead support is provided by the
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