Pennsylvania Natural Heritage Program

information for the conservation of biodiversity

WILD HERITAGE NEWS

Fall 2019

Inside This Issue

Photo Banner:
EYE Con participants search a quadrat for terrestrial salamanders

Miranda Crotsley

Field Learning Experiences for Young Scientists

by

Danielle Forchette and JoAnn Albert

Engaging with the work of scientists is a critical component of developing science literacy. By providing opportunities for young people to "do science," PNHP staff leverage real-world projects, field experience, and depth of expertise to strengthen science education experiences, build awareness of careers, and encourage interest in biodiversity conservation.

Natural Heritage staff share valuable scientific expertise through educational activities, and we maximize our impact through partnerships with schools and other educational organizations. For example, in 2018 and 2019 Pete Woods supported the Pittsburgh Parks Conservancy's Young Naturalists program, offering a unique experience exploring moth populations in the Laurel Highlands and Pittsburgh. By sharing his expertise and passion for his work, Pete helps develop the Young Naturalists' fascination with and observation of the local diversity of moth species.

Molly Moore and Anna Johnson, created an ecological impact simulation for a group of high school girls through the University of Pittsburgh's Investing Now program, which introduces students to STEM (Science Technology Engineering and Mathematics) career fields. In this simulation, students were presented with a potential development scenario and given the tools and knowledge to enable them to survey for biological indicator species in a mock development location. Molly and Anna guided students through the scenario and challenged them to consider the impact that development could have on

Pittsburgh Parks Conservancy

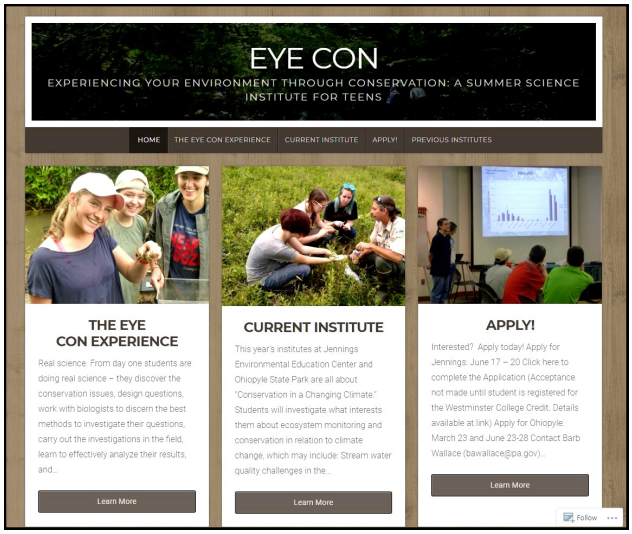
Pete Woods discusses moth ecology and identification to a group of Young Naturalists. Over 100 moth species were attracted to this lighted sheet.

the indicator species, giving the students an overall appreciation for how decisions can impact the environment. Upon reflection, students wrote that they would, "be more observant of their environment, start going outside more in nature, and work to preserve more plants and animals."

Danielle Forchette

Students practice using Seek to identify species on Washington's Landing as part of an ecological impact simulation. The Seek app is a free citizen science tool that students downloaded onto their cell phones.

Experiencing your Environment through Conservation (EYE Con), a four-day institute for high school students, is a cornerstone learning activity for the Heritage Program. EYE Con emerged as a strategy to address STEM education needs, providing opportunities for students to have field-based learning experiences while working side-by-side with science professionals. From day one students are doing real science, honing their skills of observation, inquiry, investigation, and analysis. Multi-day immersive experiences like EYE Con allow students to dive deeper into a topic, develop more in-depth connections, and gain confidence to share what they've learned.



EYE Con webpage https://eyeconcamp.wordpress.com/

Jennings Environmental Education Center, our original state parks partner, was integral to launching and establishing the EYE Con program. State parks provide essential resource management examples for EYE Con, along with facilities for both classroom and field studies. Park education and management staff partner with Heritage staff to plan, schedule, and co-teach the program. In the past two years, we expanded the program to include Raccoon Creek and Ohiopyle state parks. Barbara Wallace, Ohiopyle State Park Environmental Education Specialist shares how the experience helps them deepen their educational reach:

"The EYECON camp is a great opportunity for us to provide long-term learning experiences for students. Usually we only see students for a few hours or at most one day. EYECON gave us the opportunity to get to know the students and provide them with a real, longer term experiment."

JoAnn Albert

Ohiopyle State Park educator, Amos Ludwig, and Westminster College professor, Helen Boylan-Funari guide students through a study of stream invertebrates.

In 2018, Westminster College became a partner, adding a higher education experience to EYE Con. Through Westminster's Early College program, high school students participating in EYE Con are able to earn two college credits. According to Helen Boylan Funari, Director of the Center for the Environment at Westminster College:

"For the students, it was a great opportunity for them to be able to put a field study into the context of park management decisions. The Early College program included an additional academic aspect, allowing the students to experience both the lab (field) and class components of a college science course. With the EYE Con Early College experience under their belts, these students will be well prepared for college coursework."

JoAnn Albert

PNHP zoologist Joe Wisgo helps students weigh a white-footed mouse that was live trapped during a survey of small mammal populations at Jennings Environmental Education Center.

Each partner organization brings a strength of knowledge, perspectives, and skills that provide participants with a well-rounded experience. Students see how the institute's facilitators are generating knowledge through research and utilizing that knowledge in real time to make resource management decisions; they get a front-row seat to the interdependent and cooperative nature of those working in environmental science fields. Many of the students are planning to study science in some form in college but may lack a full awareness of career options within conservation science. By working directly with scientists, resource managers, and educators, students get a chance to learn about these professions and ask the facilitators about their career and background.

Amos Ludwig

Students work with PNHP zoologist, Ryan Miller, to identify and measure stream salamanders at Ohiopyle State Park. In one 20 meter transect students collected six species of larval and adult salamanders.

In planning each year's program, partner organizations meet to identify a current park resource management priority that utilizes the expertise of the partners and lends itself to discussion around the issue of climate change. In 2019, the resource management focus at Jennings was their recent prairie expansion project, which led to an exploration of small mammal populations, their relation to invasive plant species, and tick populations. At Ohiopyle, the management practice of treating hemlock trees for hemlock wooly adelgid led to a study of the moderating effects of hemlock on forest and stream temperature and the relation of hemlock to terrestrial salamanders.

JoAnn Albert

Jennings Center Manager, Wil Taylor, explains the prairie expansion project, which will create more habitat for the endangered massasauga rattlesnake.

On the first day of the program, students learn about the resource management priority and develop potential research questions related to that priority. Program facilitators help the students narrow the focus to what can be accomplished in the time available. Students are trained in an example protocol and then work with biologists to develop the best methods to investigate their questions. In the remaining days, they carry out their investigations in the field.

Although students drill down to study a few specific questions, we incorporate big picture connections throughout the program. Facilitator led presentations are built-in to provide a broader picture of the ecosystem or related management activities. For example, students experienced a massasauga tagging demonstration, viewed wildlife caught on a trail camera, and examined otter scat to identify what they eat.

EYE Con Student Voices

We use surveys as one tool to assess student learning and how well we are meeting program objectives. Asking participants what experiences they found to be the most valuable helps us plan and improve future programs. A sample of 2019 participant responses are listed below.

"I learned so much about field work techniques, which gave me a better understanding of what I might do if I go into a career in biology."

"I plan to talk to more people about climate change and spread my knowledge."

"This experience has really locked me into being a biologist. It was a great opportunity to me and it really was everything I love."

"I learned that scientific investigations require careful data collection and paying close attention to detail."

"I took away knowledge of the diversity of my home state and an idea of how to make things better in the world."

"I loved how we went in depth with creatures we don't really see everyday."

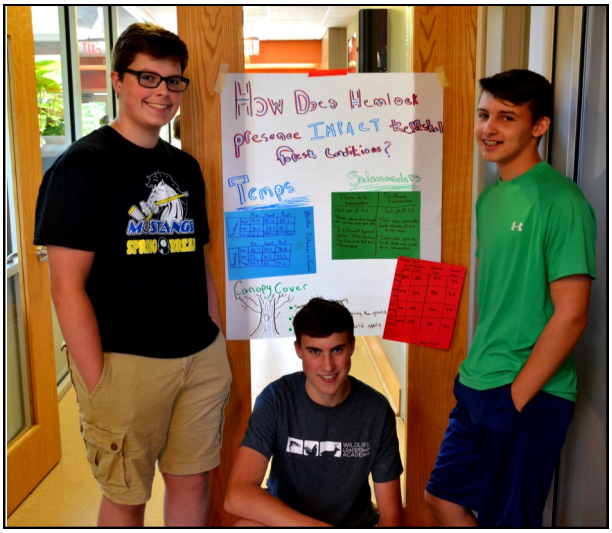
JoAnn Albert

Throughout the EYE Con program students are given increased autonomy over their study.

Amos Ludwig

Students rafted to an area frequently visited by otters where they learned about their need for clean water. These types of activities are a fun way to gain a broader view of park resources and ecosystem management.

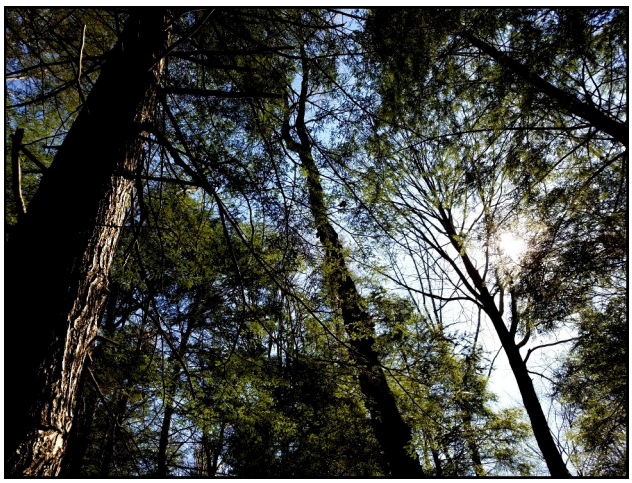
After they conclude their field studies, students work in teams to analyze data and draw conclusions that allow them to make management recommendations to park staff. For their final project students present their findings and recommendations to facilitators, park staff, and the public. Their presentations often reveal exciting connections and discoveries made during the institute experience.



Danielle Forchette

Students developed posters and presented the results of their field study to facilitators and park staff.

Throughout this process, the students gain new knowledge and directly apply it to resource management issues within the park. Students cited specific considerations for what makes a good field study and the importance of careful data collection, demonstrating a deeper understanding of field study design and protocols. In each of the institutes, students reported an increase in confidence in their ability to conduct a field study.



JoAnn Albert

Students investigated the effects of hemlock tree presence on terrestrial forest conditions at Ohiopyle and discussed the potential local impacts to their study area from climate change.

The backbone of EYE Con is building skills, knowledge, and habits of mind for the students to conduct their own field study related to climate change. To equip students to tackle a topic as large in scale and daunting as climate change, we explore it from the perspective of local impacts in their state parks. The Westminster College course work, including readings, multimedia, and writing assignments, also supported the students' learning around climate science. By making observations in their own communities, students were able to articulate specific, local examples of climate change as evidence of the global issue.

Danielle Forchette

EYE Con provides an opportunity for students to spend time with peers and professionals who share their interest in science and passion for conservation.

Key components of EYE Con – strengths-based collaboration, career exposure, academic rigor, building a community of learners, local resonance to the global issue of climate change – will likely continue to guide future institutes. Wil Taylor, Center Manager at Jennings Environmental Education Center shares what he considers to be the highlights of EYE Con:

"EYE Con has had a truly lasting benefit to the resource management efforts at Jennings. Dynamic partnerships and a fresh perspective to our management issues have been fostered through the planning and facilitation of this valuable program. The curiosity and energy of the students, the expertise of the scientists, and the resources of academia have coalesced to provide a meaningful, hands-on experience for the students and innovative approaches to many climate related, resource management issues facing Pennsylvania State Parks. I am proud to have hosted the institute and look forward to many more in the future."

About the Authors

Danielle Forchette has been the Education Coordinator for the Western Pennsylvania Conservancy since January 2018. In this role, Danielle focuses on fostering partnerships with schools and other educators to help develop young conservationists in Western Pennsylvania.

JoAnn Albert joined PNHP in 2010 and currently serves as Operations Manager. She enjoys encouraging interest in conservation science and the PNHP program through education. When in the field, her projects focus on vernal pool communities and helping landowners understand and conserve them.

From Observation to Conservation Decision-Making

by

Anna Johnson

The Pennsylvania Natural Heritage Program provides the scientific information and expertise to guide conservation efforts in Pennsylvania. Our mission supports Pennsylvania in carrying out the Conservation and Natural Resources Act of 1995, which states—in part—that the Department of Conservation and Natural Resources (DCNR) must "*undertake, conduct and maintain the organization of a thorough and extended survey of this Commonwealth for the purpose of inventory, survey and elucidation of the ecological resources of this Commonwealth, to gather and digest information from sources within and outside this Commonwealth and to put the results of the survey into a form convenient for reference*." While we often talk about the survey and inventory work of PNHP biologists in these newsletters, in this article we will be focusing on the less-discussed "form convenient for reference" portion of our mandated work.

Which data do we collect?

Lists of species in our state that are rare and should be actively tracked and managed are key resources provided by PNHP. We currently track plants, mammals, birds, fish, reptiles, amphibians, butterflies, moths, dragonflies, damselflies, and a subset of other invertebrates, mosses, and lichens. The tracked species lists which we publish may seem definitive and straightforward, but they represent the product of many field and office hours from many experts. Determining which species to actively track is an iterative process. Our field biologists conduct field surveys, work with museum collections, consult taxonomic experts and partner organizations, and then use this information to determine how well species are doing. Sometimes species increase in abundance to such a degree that they become delisted, and no longer require us to monitor their populations. Other species show startlingly swift declines, and require us to increase our monitoring and management efforts.

Steve Gosser

The bald eagle (*Haliaeetus leucocephalus*), is an example of a once-endangered species which had such a successful recovery that it was delisted by federal agencies, although it is still tracked by PNHP and as an SGCN.

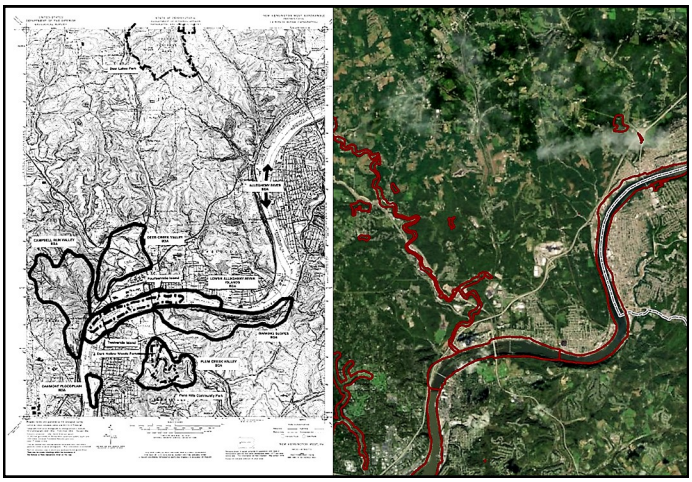
PGC, Jacob Dingel
Frode Jacobsen

While the scarlet tanager (*Piranga olivacea*), left, is considered a Species of Greatest Conservation Need (SGCN) and an indicator of mature forest habitat, it is not tracked by PNHP because it remains relatively common in Pennsylvania. However, the northern waterthrush (*Parkesia noveboracensis*), right, is both an SGCN and tracked by PNHP, because it is considered vulnerable to decline in Pennsylvania as a result of threats to its habitat, forested wetlands.

This constant back-and-forth work involved in inventorying and categorizing species leads to a sometimes-confusing layer of terms, especially when agencies with differing goals collaborate on conservation. For example, a set of birds in Pennsylvania are identified as Species of Greatest Conservation Need (SGCN) by the Pennsylvania Game Commission: these are a total of 90 species which are considered to be already rare or experiencing significant declines, or for which Pennsylvania supports a substantial portion of their range. PNHP, however, formally tracks only 66 bird species: these are the species we consider most indicative of specialized habitats and most imperiled in Pennsylvania. While many of these species have been assigned a legal status of Pennsylvania-endangered (PE) or Pennsylvania-threatened (PT), we also track species which are not considered threatened or endangered but which PNHP biologists recognize as rare and more vulnerable to decline than most species. The complexity of how species are categorized reflects the reality that there is a lot of uncertainty with regards to the abundance, stability, and future trajectory of many of our rare species. Some of this uncertainty comes from a lack of data, and some comes from our naturally dynamic and variable ecological systems.

A form convenient for reference—past, present, and future

How do we make our data accessible to the general public and useful for conservation planning projects? Over the years, our approach to sharing our data products has evolved. Our County Natural Heritage Inventories (CHNIs) have long been a PNHP core data product. These sets of written narratives and maps describe the discrete locations—Natural Heritage Areas (NHAs)—determined to be critical habitat for species or natural communities of concern within each county in Pennsylvania. The spatial information (mapped areas where rare species or communities occur) included in CHNIs has become much more precise since PNHP first started publishing them more than 25 years ago. NHA boundaries can now be drawn digitally, based on high resolution aerial photography and maps describing land cover, topography, and stream networks, ensuring that NHA boundaries are biologically realistic and limited to the habitat essential to support the target species or communities of concern. Additionally, field staff use GPS units, and increasingly accurate ones at that, compared to the standard tools of map and compass used 20 years ago.



One of the hand-drawn maps (left) from a CHNI published in the early 1990s, prior to having access to the sophisticated spatial data and computing tools that PNHP now employs. On the right, a current view of the same area with more precise boundaries indicating Natural Heritage Areas that support unique components of Pennsylvania's biodiversity.

As PNHP data collection procedures have grown more precise, our data storage and reporting tools have also grown more sophisticated. For example, the most recent CHNI reports provide users with detailed and specific information describing each rare species or community present at a given site and conservation threats specific to each NHA, as well as suggested management approaches to address each individual issue and target species or natural community.

Anna Johnson

PNHP biologists collect information about rare species and communities in the field. Once this data is entered into our databases, it feeds into conservation planning products such as Natural Heritage Areas.

While these NHA reports will remain a core conservation planning product of PNHP, in the near future the development of new analysis and reporting tools will allow updates to occur more continuously and fluidly. As Pennsylvania's Environmental Review (ER) process moved online, PNHP also shifted its data sharing to the more dynamic interface of Conservation Explorer. This online mapping and reporting tool allows users to screen a project area for potential impacts to rare species and natural communities, based on PNHP data. Conservation Explorer also has the capability to provide users access to more frequently updated NHA information. Migrating our data from static CHNI print reports and downloadable PDFs to this more dynamic digital interface ensures that the conservation data products that we share publicly better match our most up-to-date understanding of species distributions and habitat quality. For example, NHA updates are currently underway for the southwest regional counties, many of which have not had a CHNI update published since the early 1990s, even though field data has been collected in this area continuously over the last 25 years. We will not publish new full CNHI reports for these 10 counties but will add the new data and revised NHAs to the CNHI map layers in Conservation Explorer.

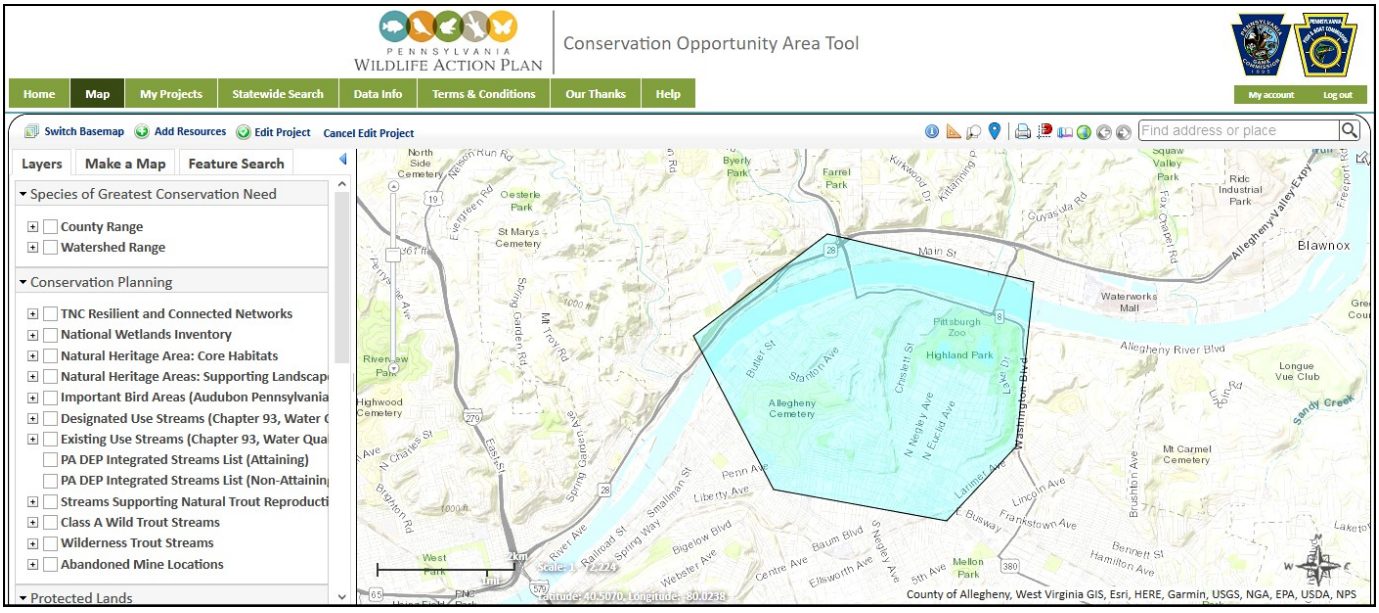
PNHP scientists have also been integral to the release of a new data product, the Conservation Opportunity Area (COA) tool. This online mapping and reporting tool is a window into the 2015-2025 Pennsylvania Wildlife Action Plan, providing essential, geographically specific information for SGCN species across the state.

Unlike the NHA data products, the COA tool only provides information on wildlife and their habitats; rare plants and natural communities are not included in this tool. Also, the COA tool conveys the likelihood of an SGCN species being present; Conservation Explorer deals with only known locations of rare species. Like the Conservation Explorer's conservation planning reporting function, the COA tool allows users to define an area of interest in Pennsylvania and then produce a report. The reports provide species and habitat lists for the area of interest, as well as recommended conservation actions, research, and survey needs for all associated SGCN species. In contrast, the Conservation Explorer planning reports provide information on sites already delineated as NHAs. The COA tool also provides range maps for the SGCNs and allow users to download data in forms convenient for further analysis (tabular results or shapefiles), in addition to in PDF form.

This new tool represents the direction that PNHP conservation planning products are moving towards: simplifying the data which has been collected and vetted by PNHP and allowing users to get site-specific information along with clear, actionable steps for protecting Pennsylvania's ecological resources.

About the Author

Anna Johnson began working for PNHP in 2018 as a conservation planning communication specialist. While a plant and pollination ecologist by training, since joining PNHP she has been mostly in the office, developing conservation tools. She loves finding ways to make complex ecological issues, stories, and data more accessible to more people. She received a BA in liberal arts from St. John's College and a PhD in Geography and Environmental Systems from the University of Maryland, Baltimore County.



An example of the interactive mapping interface of the new Conservation Opportunity Area (COA) tool, which allows users to define areas of interest and generate detailed, actionable wildlife conservation reports.

Notes from the Field

PPCN Organizes Event to Save Rare Plant

Kristina Allen

There is a tendency to view the rapid loss of biodiversity as some far-off, geographically distant problem. The reality is that in our home state of Pennsylvania, we are seeing significant decline in native species due to habitat fragmentation, invasive species, and deer browse (among other factors).

Ladybird Johnson Wildflower Center
Alan Cressler

Glade spurge (*Euphorbia purpurea*)

For example, glade spurge (*Euphorbia purpurea*) is a globally vulnerable plant that is critically imperiled in Pennsylvania. This perennial herb has been documented historically in some southcentral and southeastern counties of the state. It grows in seepages, swamps, bottomlands, and on stream banks. Fewer than 10 populations, most of them with only a few individuals, are currently known.

Kristina Allen

Carol Loeffler and Andrew Rohrbaugh place a wire cage around glade spurge.

On August 8, the Pennsylvania Plant Conservation Network (PPCN) coordinated its first volunteer day. Working at State Game Lands 170 in central Pennsylvania, folks from the Department of Conservation and Natural Resources, Pennsylvania Game Commission, Pennsylvania Master Naturalist Program, Pennsylvania Outdoor Corps, and Dickinson College joined forces to protect glade spurge by placing wire-mesh exclosures over individual plants and fencing off a larger wooded section to prevent deer from browsing. According to Carol Loeffler from Dickinson College, "*This is a terrific boost for this population, which is the largest glade spurge population left in Pennsylvania and hopefully now will remain the largest. Putting up the fences will not only keep the deer off them but allow us to get competing vegetation away from them without making them too obvious to the deer.*"

Buffalo Moth

Pete Woods

Lizard tail (*Saururus cernuus*) is an odd plant, vaguely resembling a tropical Philodendron, except for the dramatic floppy spike of white flowers which gives this plant its name. It is uncommon in Pennsylvania, being found mostly in the northwest and southeast corners of the state, where it grows in forested swamps and along large rivers. Lizard tail is the only host of the buffalo moth (*Parapaemea buffaloensis*), whose caterpillar bores into the stems of the plant. Within Pennsylvania, the moth was known from only Pymatuning Swamp in Crawford County and from Allegheny County, but it hadn't been seen for over 50 years.

Pete Woods

Lizard tail in seed. This moth is a lesser maple spanworm, not the buffalo moth.

Pete Woods

The first buffalo moth seen in Pennsylvania in over 50 years.

Pymatuning Swamp has changed dramatically since the moth was found there, with most of the wetlands lost when the reservoir was built in the early 1930s. Nonetheless, large wetlands remain, and some of those support patches of lizard tail. In late August PNHP biologist Pete Woods put out moth traps in several of those patches. One of those traps caught two buffalo moths, proving that the species is still present in Pennsylvania. In future years, we hope to continue searching for the moth to determine how widely distributed it is.

Pete Woods

A blacklight moth trap set up in a large stand of lizard tail.

Timber Rattlesnake Assessments

Kathy Gipe

In the fall of 2016, after many years of study and assessment, the Pennsylvania Fish and Boat Commission (PFBC) removed the timber rattlesnake (*Crotalus horridus*, S3S4) from the list of candidates for potential threatened or endangered species listing in the state. The status assessment determined that the rattlesnake appeared secure in the state, retaining an extensive distribution across the commonwealth, with large populations remaining in many areas. Nevertheless, the snake remains on the list of Species of Greatest Conservation Need (SGCN) in the state, due to the importance of Pennsylvania to its range-wide status and the threats posed to its ongoing security. The PFBC is thus committed to ongoing long-term management and monitoring of timber rattlesnake populations in the commonwealth to ensure that the populations do not decline and prompt a future listing.

As part of the long-term efforts, the site assessment and inventory project that helped determine its status in 2016 is ongoing. This project includes efforts to identify "critical habitats" for the rattlesnake, defined as both overwintering sites and basking sites where gestating females spend the summer prior to giving birth to live young. The information gathered helps identify priority sites for habitat management, in particular vegetation clearing at gestation sites to maintain the sun exposure for the snakes. In 2019 to date, 37 site assessments were completed by a combination of PFBC staff, PNHP staff, and long-time project volunteers. The data for these sites is now being entered into an online portal designed by the Mid Atlantic Center for Herpetology and Conservation (MACHAC) through the Pennsylvania Amphibian and Reptile Survey. They will then be reviewed and added to the dataset of occupied sites maintained by the PNHP and PFBC. An additional piece of the ongoing monitoring is being carried out by East Stroudsburg University with funding from a State Wildlife Grant to establish methodologies for long-term monitoring of timber rattlesnake populations across the range in Pennsylvania. Through efforts such as these and others, the PFBC hopes to be able to recognize any significant changes in the status of the snake going forward and to continue to maintain it as a healthy component of our Pennsylvania wilds.

Kathy Gipe

Jacob Cramer, Fisheries Biologist Aide with PFBC, assesses habitats for timber rattlesnakes (*Crotalus horridus*) in 2019. Note the placid timber rattlesnake at his feet; this species is known for its non-aggressive nature.

Kathy Gipe

A gestation site for female timber rattlesnakes (*Crotalus horridus*) was assessed in 2019.

iMapInvasives Search for Three Noxious Weeds in Pennsylvania

Amy Jewitt

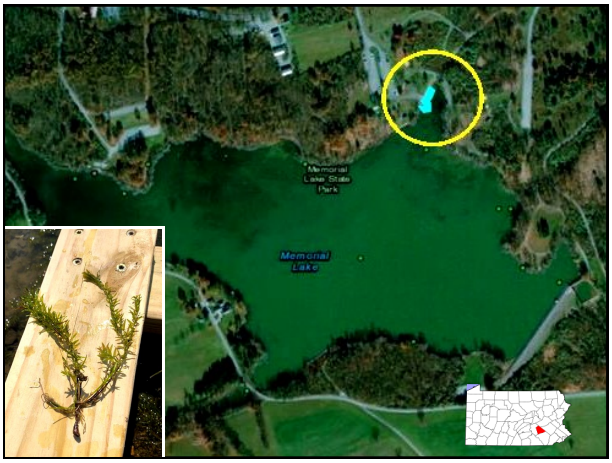
In July 2019, the Pennsylvania iMapInvasives program hosted a special event called the Three-Part Species Search Challenge. This event encouraged natural resource professionals and citizen scientists to search for and report their findings, both presence and absence, of three noxious and invasive weed species in Pennsylvania: water chestnut (*Trapa natans*), hydrilla (*Hydrilla verticillata*), and wavyleaf basketgrass (*Oplismenus undulatifolius*).

Participation in the 2019 Challenge was open to natural resource professionals, citizen scientists, registered iMapInvasives users, and the general public. Participating individuals in the 2019 Challenge represented the Department of Conservation and Natural Resources, the Department of Environmental Protection, and the Bucks County Conservation District.

Megan Rogalus

A new location of water chestnut discovered in an unnamed waterbody in Bucks County.

The event resulted in two important discoveries. Water chestnut was previously known to exist in several locations in Bucks County, but from the 2019 Challenge, one new (unnamed) waterbody in the county was discovered to contain this invasive aquatic plant, near Sideline Road in Pleasant Valley. Secondly, hydrilla was previously known from 26 counties in Pennsylvania, but at the completion of the 2019 Challenge, one additional county (Lebanon County) was added to the list based on a finding of hydrilla in Memorial Lake near Fort Indiantown Gap.



Megan Rogalus

Hydrilla was discovered for the first time in Lebanon County, Pennsylvania in Memorial Lake.

If you'd like to learn more about the highlights and results of the 2019 Three-Part Species Search Challenge, a full report of the event and the data that was captured can be found at https://bit.ly/2Bv2xLM

Case's Ladies'-tresses Confirmed in Clermont Tract

Jaci Braund

The Clermont tract in Elk State Forest was acquired by WPC and transferred to DCNR in 2015. It is located in McKean County and encompasses over 17,000 acres. Before becoming public land, the Clermont tract was owned by a private timber company and had a long history of resource extraction with timber harvest, strip mines, and more recently natural gas infrastructure development. Currently, the Clermont tract is a mix of active timber harvest, well pads, young forest, and extensive wetlands. PNHP was contracted by DCNR to survey this large piece of land for any plants, animals, and natural communities of conservation concern.

Of the species of concern within the Clermont tract, there is a record in the PNHP database for Case's Ladies'-tresses (*Spiranthes casei*) from the early 2000s.

Jaci Braund

Case's Ladies'-tresses (*Spiranthes casei*)

Spiranthes casei is found in the northern tier of Pennsylvania and is listed as endangered. Outside of Pennsylvania, it is mostly found in the Great Lakes region and otherwise has a more boreal distribution into Canada. The genus *Spiranthes* is notoriously difficult to identify to species and tends to be quite variable with suspicions of hybridization. Fortunately, the *Spiranthes* key was recently rewritten in 2017 (Systematic Botany (2017), 42(4): pp. 640–669 © Copyright 2017 by the American Society of Plant Taxonomists DOI 10.1600/036364417X696537).

Coincidentally, the Clermont tract was acquired a few years before this key was rewritten and DCNR foresters were doing routine surveys on this tract during this time. A forester, who happened to notice some small white flowers, was interested in what species they were and collaborated with PNHP on the species. Knowing there was a record for *S. casei*, DCNR and PNHP brought in Dr. Peter Zale with Longwood Gardens to help identify the species and collect seed. During this visit, Dr. Zale identified one population as a separate species, *Spiranthes ochroleuca*. He also visited other populations of *Spiranthes* in the area with DCNR and did not find *S. casei*. At that point, Dr. Zale was suspicious of the existence of *S. casei* in Pennsylvania at all.

Jaci Braund

Botanist Rachel Goad keys out *Spiranthes* at the Clermont Tract

With the Clermont project underway, the *Spiranthes* populations were of high priority to survey. We especially wanted to observe Dr. Zale's identification with the newly written key and to survey additional populations. Surprisingly, the first population we visited had both *S. ochroleuca*, which Dr. Zale identified, and *S. casei* with 14 plants total, only two of which were *S. casei*. Since orchids in general tend to be cryptic in which years they appear above-ground it is possible that those few *S. casei* plants were simply not visible during his visit.

We surveyed nine populations of *Spiranthes* during our Clermont trip. One other population had *S. casei* with only four plants. The rest of the plants observed that day were *S. ochroleua*, *S. arcisepala*, and a fourth undetermined species.

Moving forward, it will be important to keep monitoring these few *S. casei* plants in Clermont and develop a conservation plan for these populations. Due to the high level of natural gas development and continued timber harvest, *S. casei* is adjacent to direct threat and will need to be carefully monitored.

Change of Guard

Jeff Wagner

Adam Hnatkovich

The people who are part of the Natural Heritage Program Network tend to have long tenures, which isn't surprising considering the uniqueness and specialization of the work. The same is true here at PNHP. At the end of this year, Rocky Gleason will retire from the program after 18 years. During his time with PNHP, first as part of The Nature Conservancy's science office and then with WPC after the program united in 2006, Rocky has made a mark as a tireless inventory biologist. His specialty is botany but as an inventory biologist, he has dealt with all taxa. He coordinated the County Natural Heritage Inventory effort for a number of years but wanted to spend all the

time he could in the field, tracking down rare species and visiting new sites. So several years ago, he stepped down as coordinator to focus on getting to all the places he felt deserved a look. Hundreds of records later, he's still working at it.

Jeff Wagner

We will miss Rocky, his dedicated work, and always on time write-ups and products! His focus and no nonsense approach to our work have always been refreshing and respected. We hope to stay in close touch with Rocky and continue to collaborate on some projects after he retires. From all of our staff, thank you Rocky!

Not Looking Good for Barbara's Buttons

Steve Grund

The Youghiogheny River Gorge is one of the most important areas for plant biodiversity in Pennsylvania. This is due to a number of factors, most significantly the geographic position at the northern edge of a number of Appalachian endemics, including several of global significance, and the presence of a high-gradient whitewater river and the accompanying scour systems that host highly specialized plant species due to the harshness of the environment. The most celebrated of these scour species in the Youghiogheny River Gorge is *Marshallia grandiflora* (Barbara's buttons, or large-flowered marshallia).

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Marshallia grandiflora growing in a cobble scour. It also grows in crevices of horizontal sandstone ledges that are scoured by the river.

There are clear indications of decline. We found no *Marshallia* in recent surveys at 9 of our 21 sites, and at another 4 sites we could find only a single clump. One of the sites with only a single clump once hosted our largest population, with 149 clumps. We do have several sites where populations appear to be stable, but there is clear cause for concern.

It is not clear why the species is declining. It may be that we are seeing a continuation of a decline that began with the construction of the Youghiogheny Dam in 1944; we have no data from before the dam was built. We know that operation of the dam changes the timing and intensity of the flood events that maintain scour habitat. The U.S. Army Corps of Engineers, who manages the dam, have indicated a shared concern about maintaining river ecosystem function, and have expressed willingness to consider changes in management as long as they can maintain the primary functions of the dam to prevent floods and provide drinking water. We are currently working with the U.S. Army Corps of Engineers and The Nature Conservancy on a project to look at flow regimes in the Allegheny River and may have an opportunity to do the same for the Youghiogheny River.