

A close-up photograph of a cluster of pink columbine flowers (Aquilegia vulgaris) with green, lobed leaves. The flowers are in various stages of bloom, some fully open and some as buds. The background is a soft-focus green, suggesting a natural outdoor setting. The text is overlaid on the image.

Wildlife Activist

Celebrating the 15th
Anniversary of
Our Refuge

Autumn 2018/Early Winter 2019 Calendar

*All activities begin at the Osprey House unless otherwise noted. For directions and more information on these events, and to find out about **additional activities**, contact the Center or visit lgnc.org.*

October 13 – Hawk Watching at BOK

Visit to Bake Oven Knob to see migrating sharpies and falcons. Meet at the Osprey House at 8:30 a.m., or go directly to the lookout.

October 14 – Speaker Series: Wildland-Urban Interface

3:00-4:30 p.m. Germansville Fire Department Deputy Chief Randy Metzger will discuss forest fire safety and prevention, focusing on the risks of living in wooded areas known as the “wildland-urban interface.”

October 20 – LGNC and Allentown Hiking Club Autumn Refuge Hike

1:00 p.m. Hike with us along the Prairie Grass and Chestnut Oak trails. Wear sturdy shoes, and bring water. This will be a six-mile hike with a 600-foot elevation gain. Great views.

October 21 – Speaker Series: Celebrating D&L's 30th Anniversary

3:00-4:30 p.m. D&L Executive Director Elissa Garofalo will talk about the first 30 years of the Delaware & Lehigh National Heritage Corridor with emphasis on the trail. She will also give us a glimpse of what is coming in the next few years.



November 2-11 – Nature in Art Exhibition

Our 6th annual juried art exhibition. View and/or purchase works from local artists. Vote for People's Choice Award. Artists' reception November 11.

November 3 – Fall Campfire and Astronomy

6:30 p.m. Join us for a campfire, s'mores, and stars.

November 10 – More or Less 10K Trail Run (and 2-Mile Scamper)

See www.lgnc10k.com for more info.

November 15 – Cabin Fever Book Club

10:00 a.m. We will be discussing the book *Vulture* by Katie Fallon.

November 15 – Speaker Series: Superfund Restoration at Lehigh Gap

7:00-8:30 p.m. Ecologist Jen Lansing will discuss LGNC's restoration efforts and present on the current status on the Superfund remediation as a whole.

November 29 – Speaker Series: The Hidden Charcoal Industry of 19th Century Blue Mountain

7:00-8:30 p.m. Muhlenberg College archaeology professor Dr. Ben Carter and his students will describe how they have employed remote sensing and field work to identify more than 700 charcoal hearths, a network of roads, and seven collier's huts along the Kittatinny Ridge in the Lehigh Gap vicinity.

December 1 – Holiday Open House

1:00-3:00 p.m. Join us for holiday crafts, and explore nature in winter. Bring some goodies to share, and make a holiday decoration for your home.

December 20 – Cabin Fever Book Club

10:00 a.m. We will be discussing the book *John James Audubon* by Richard Rhodes.

January 17 – Cabin Fever Book Club

10:00 a.m. We will be discussing the book *Lone Wolf* by Jodi Picoult.

January 17 – New Jersey Zinc Company History

7:00-8:30 p.m. Join us for another installment of historian Peter Kern's continuing saga of the history of Palmerton and the New Jersey Zinc Company.

January 19 – Winter Bird Survey

7:15 a.m.-Noon Work in teams to bird a rectangular area around Bake Oven Knob. Join us at Mama's Pizza at 12:15 p.m. to tally results and have lunch.

Lehigh Gap Nature Center Administration and Management

The day-to-day operations of the Lehigh Gap Nature Center are managed by the Executive Director, Dan Kunkle, and two Program Specialists, Chad Schwartz and Brian Birchak. Kate Brandes runs our Landscaping for Communities and Wildlife program. Governance of the organization rests with the volunteer Board of Directors. A Board of Advisors serves in various advisory capacities on an as-needed basis to the Executive Director and the Board of Directors. Anne Zagarella and Jane Borbe are the Information Specialist team leaders. Jim Gabovitz is our Trail Specialist. Lee Sivak serves as our Financial Secretary, and Donna Gasser is our Membership Coordinator.

Many thanks to our dedicated volunteers!

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Ron Kline, Ph.D., Secretary	
Robert Hoopes, Treasurer	
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Frederic Brock	Nelson Markley, Ph.D.
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WILDLIFE ACTIVIST

*A Newsletter Devoted to Wildlife and Habitat Protection and Restoration
at Lehigh Gap on the Kittatinny Ridge and Beyond.
Published by the Lehigh Gap Nature Center*

Autumn 2018, Number 83

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Prairie Warbler, original painting by Brad Kunkle

**PLEASE TELL US WHAT YOU
THINK OF WILDLIFE ACTIVIST**

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Website: <http://lgnc.org> | Also on Facebook

***Front Cover: Wild Bleeding Heart at
LGNC by Lynn Shupp,
Design by Brad R. Kunkle***

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This issue of *Wildlife Activist* commemorates the 15th anniversary of the Lehigh Gap Wildlife Refuge, which was officially opened to the public in May 2003.

Executive Director's Message:

Fifteen Years and Counting

This year, Lehigh Gap Nature Center has been celebrating our 15th anniversary of our opening to the public as a community nature center. It was May 3, 2003 when we gathered on the decks of the Osprey House to announce that opening and to acknowledge our partners and friends who had helped us acquire the 756 acres from three different property owners.

The story of the founding of Lehigh Gap Nature Center begins in 2001 when Board of Directors member Grant White started gathering information about properties on the Kittatinny Ridge around Lehigh Gap and talking to me about establishing our refuge there. At that time, we were looking for an old farm or some other property to establish an environmental education center. Grant convinced me, and then we convinced the remainder of the Board, that it was a good idea to try to purchase land and establish our environmental center at Lehigh Gap – land that was part of the Palmerton Superfund site.

The first step in that process was a critical one. We met with Bill Mineo, then Land Manager for the D&L Trail that was to be built through Lehigh Gap eventually. Our refuge would be situated between the D&L Trail along the Lehigh River and the Appalachian Trail on top of the ridge on the west side of Lehigh Gap. Grant, Bob Hoopes, and I met with Mineo in February of 2002. Halfway through the meeting, I thought we

were done for, as Bill sat there quietly stone-faced. It turned out that he was astonished that someone wanted to help solve the biggest environmental challenge along the entire 165-mile D&L Trail. He suddenly stopped us and proceeded to tell us how we were going to succeed. He helped us plan our fundraising strategy and gave us the key idea for restoration of

the moonscape that was Lehigh Gap at the time – warm-season grasses (native prairie grasses).

With Bill's support, and knowing that the D&L Trail would be built through the Gap in the next few years, we began approaching three landowners who owned the 756 acres we selected to make up the refuge. All three agreed to sell and by 2003, we had acquired all three properties and opened them to the public in May of that year.

When we went to the first landowner (the critical property with a house that would become our headquarters) in April 2002, Kathie Romano, Hoopes, and I walked up to the door on a cold

call and knocked. As we approached, we watched an Osprey circle over the Lehigh River in front of the house and we nicknamed it the Osprey House – a name that stuck. The owners were astonished that we asked to buy their house, because they had just advertised it for sale on the internet, but did not have any signs outside. We ended up making a deal with the owners. Agreements of sale on the other two properties followed and, by December 2002, we were ready to move our office from a rented storefront in Slatington to the Osprey House.



This past May marked 15 years since we dedicated the Lehigh Gap Wildlife Refuge (above). Today, the refuge flourishes with life!



It was a very cold December 7 that we moved with the help of volunteer members. Board member Hoopes organized the move with military-style precision (befitting a West Point grad) and in less than a day, our entire operation (library and all) had been moved to our new headquarters at Lehigh Gap. Two other land deals were completed in early 2003, and our May celebration opened the refuge to the public.

The Board wrestled with names. We were and still are the Wildlife Information Center, our official IRS name. But our new land needed a name and it was called the Lehigh Gap Wildlife Refuge.

By 2005, the Board members and I realized that we needed a name for the organization that reflected our location. However, there were numerous reasons why changing the corporate name was not the best option. So we registered a “doing-business-as name” with the Pennsylvania Department of State and began operating as the Lehigh Gap Nature Center.

There is a lot more to this story, but that is for another time and place. Meanwhile, happy anniversary to our refuge and nature center!



President's Column

by Anita Collins

My contribution from the first day I visited LGNC related to a survey of native bees. This is managed by Sam Droege, a scientist at US Geologic Survey (they do more than study rocks and volcanoes). Sam knew Dan Kunkle through a songbird survey effort, heard about Lehigh Gap Nature Center, and dragged me over. And for better or worse, here I have stuck. And as I've said before, having friends and companions who talk about all the great things they have done with Mother Nature in her many forms is just wonderful.

My last eight months or so have been focused on identifying the 3500 native bees we have collected in the local surveys. Most of the collection is from LGNC, with lots of help from the Naturalist Club and other volunteers. But I also have two study sites in the Poconos: Lacawac Sanctuary and Promised Land State Park. The 2017 collections were the tenth year for LGNC, and I'll do year ten for the other two sites next summer.

Since I volunteered to help USGS, I've been broadening my horizons beyond the honeybee, *Apis mellifera*. I did just learn that of all our bees, the honeybee is the only species with hair on their compound eyes. Is this the origin of the term “giving someone the hairy eyeball”? Those are two large eyes positioned on the sides of the head. Bees also have three small ocelli (simple eyes) on their foreheads that respond to light and dark. These sometimes come into play during identification: how far apart are they and how far to the top of the bee's head from the ocelli.

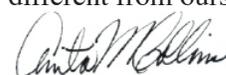
I am having so much fun seeing all of these bees under a microscope. They are beautiful! Lots of different colors. Hah, you thought all bees were black and yellow. Nope, there is a big group that is bright metallic green and another batch that is dark blue or

green and just a bit metallic. Black ones with lots of white or yellow markings. Red and yellow ones called *Nomada*. And lots of them that are mostly just black. My favorite ones at the moment are *Mellisodes bimaculata*. They are totally black, including their lustrous black hair on body and legs, with just two tiny bright white clusters of hair midway down the sides of the abdomen. Lots of them have hair on their faces, lovely sprays of dark, light or orange hair that give them character. And even some orange mustaches. Sam Droege and friend recently published a book with photos of bees as seen through a microscope.

Bees use hair primarily to collect and move pollen. The pollen is their protein source for rearing young, and the side effects are pollination of the plant to produce seed. You know, of course, that flowers and the nectar and pollen they carry are the plants' advertisements to pollinators. Karl von Frisch determined that bees respond well to blue, yellow, and white flowers that reflect ultraviolet. They don't see red, as their eyes don't “see” that short a wavelength.



They see the longer wavelength ultraviolet. And no, I can't tell you what that looks like, since humans don't see into the ultraviolet. But with the right film and camera, we can get photos that are dark where ultraviolet is reflected from the flower. Often there is a pattern of lines or spots that help the bee find the nectar, especially on white flowers. Bees see a world that looks rather different from ours.



Return to the Refuge

Celebrating the Revival of the Lehigh Gap After 15 Years



From Superfund...



... to Super Habitat

In 2002, a group of local birders launched an ambitious effort to breathe life into a dismal landscape. Seeking property for a new wildlife refuge, these members of Wildlife Information Center (WIC) boldly purchased hundreds of acres of barren, moon-like mountainside in the Lehigh Gap, with the goal of restoring its ecological health and beauty. So began a grassroots effort (in all senses of the term) to create what is today the Lehigh Gap Nature Center (LGNC).

Interviewed by the Morning Call amid WIC's fundraising campaign in September 2002, Dan Kunkle humorously remarked "*We're buying a mountain...I keep pinching myself saying, 'We're buying a mountain.'*" Only eight months later, the Lehigh Gap Wildlife Refuge was officially opened to the public. Yet, raising nearly \$1 million to

purchase the land and open the Refuge was only the first of many challenges to come. Although its location on the Kittatinny Ridge and along the Lehigh River was ideal for environmental education and recreation, much of the land was devoid of all life – including even the hardiest bacteria and fungi. Despite all of this, WIC's doggedly determined volunteers maintained an optimistic motto: "*We are confronted with insurmountable opportunities.*"

Lacking an instruction manual for revegetating 'the moon,' WIC (now operating under the name LGNC) opted to use nature as its guide. We heeded the advice of former D&L Land Manager Bill Mineo and planted a variety of native, warm-season grasses known to grow in similar ecological conditions. Mixed with a precise recipe of soil amendment, determined through careful experimentation, the



... and Super Fun!

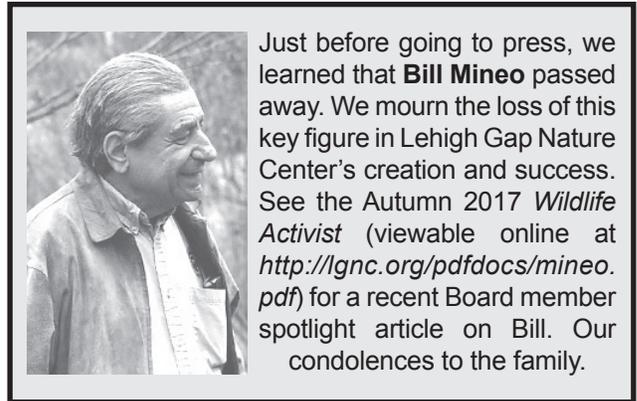
grasses began to grow! ...And the rest is history. The impact of the Lehigh Gap Restoration Project has since extended well beyond merely revegetating the mountainside. Once habitats were reestablished, numerous other species returned to the site. First arthropods, then birds, mammals, reptiles, and amphibians, and (of course) humans.



The Lehigh Gap Wildlife Refuge is itself a monument to the vision and dedication of our many members and volunteers. Thanks to all who have been a part of our first decade and a half!

More than just a center for education, research, and recreation uniquely built on a Superfund site, the Refuge is today a living, breathing conservation success story. In restoring the mountain, we have restored hope within the local communities that, for decades, were confronted with

an environmental liability. Moreover, LGNC's story exemplifies what everyday people can accomplish when they care deeply about a cause and a place. When explaining in an autumn 2002 *Wildlife Activist* article why WIC would purchase a dead mountain instead of a more pristine parcel, Board member Bob Hoopes asked, "Why not focus our efforts on Lehigh Gap? Why not create a legacy for future generations? Why not??" With the support of our members and volunteers, LGNC's conservation legacy – like its grasses – will only continue to grow well into the future. 🌱



Just before going to press, we learned that **Bill Mineo** passed away. We mourn the loss of this key figure in Lehigh Gap Nature Center's creation and success. See the Autumn 2017 *Wildlife Activist* (viewable online at <http://lgnc.org/pdfdocs/mineo.pdf>) for a recent Board member spotlight article on Bill. Our condolences to the family.

Reflections on LGNC's History by an Old/Newcomer

by Marilyn Jordan, Ph.D.

My first visit to the Lehigh Gap Nature Center (LGNC) was the weekend of May 4-5, 2013 for our ten-year anniversary celebration. Although my reflections on LGNC's history only go back five years, my experiences at Lehigh Gap go back to 1967 (51 years!). That was the year of a field trip to Lehigh Gap for a soil science course I took while a graduate student at Rutgers University. The east and west slopes of Lehigh Gap, and north slopes of Blue Mountain, looked like barren moonscapes. They were almost devoid of life and littered with stumps, rocks, and fallen dead trees.

I soon decided that my Ph.D. thesis subject would be an investigation of the role played by decades of zinc smelter pollution in the destruction of the forest at Lehigh Gap. At that time there was no easy way to get to the lower slope on the west side of Lehigh Gap, so my research was done on the east side of the gap, and east and west along the top of the Kittatinny Ridge. I received my Ph.D. degree in October

1971, and did one year of postdoctoral research on zinc tolerant soil bacteria and fungi in 1972.

Fast forward – In April 2013, I met Dan Kunkle and Diane Husic at a meeting of the Society for Ecological Restoration in Maryland. Although I had known about the existence of LGNC since 2007, I did not know about the amazing restoration work accomplished there until

I heard their talks. After extended conversation, I promised to donate my thesis and all of my research materials to the LGNC library (see pages 19-20). I had to see this place!

So on May 4, 2013, my husband John Gallagher and I arrived. Dan and Diane gave us a personal tour of the restoration area. The next day, more than 100 volunteers were present for the ten-year anniversary celebration. We talked with some of the dedicated volunteers and enjoyed the chamber music concert.

Afterwards we explored the refuge and marveled at the lovely wild bleeding hearts along the trails. By then John



Marilyn Jordan joined the LGNC Board of Directors in 2016.

and I were sure that we wanted to become involved with the extraordinary group of people at LGNC.

We attended the “Community Perspectives” gathering in June 2014 and were inspired and moved by the deep feelings expressed by attendees. We went to Bake Oven Knob for hawk watching and were amazed at the foolhardy hawk counters and photographers standing nonchalantly at the edge of a more than 1,000 foot drop to the farmland below. But I was the one who fell backwards flat onto my back, my head narrowly missing a rock. That taught me not to lean too far backwards when tracking a hawk flying straight over my head.

Early in my “getting to know people” phase, I recall a pleasant lunch meeting with the friendly and welcoming gardeners Kathy Romano, Barb Egerton, and Cheryl Novak. I am still amazed by the lovely, well-tended native plant gardens around the Osprey House. On June 4, 2015, I gave a talk on my Ph.D. research as part of the Speaker Series. I had a ball giving that talk, sharing my field and lab efforts with people who knew the history of the area well. No grass grows in Palmerton!

John and I both retired in 2014, and started house hunting in the Lehigh Valley in 2015. We considered only areas that were less than a 45 minute drive to LGNC. We moved from Long Island, NY to Bethlehem Township in the fall of 2015, and became members of LGNC.

I was honored by an invitation to join the LGNC Board in April 2016. The Board, working in partnership with the Executive Director, is responsible for providing leadership and governance to ensure that LGNC remains true to its vision and mission, operates successfully, and remains on sound financial footing. Attending Board meetings (held every two months) has given me the opportunity to see how carefully the Board makes decisions, gives advice, and supports the staff and volunteers who manage LGNC operations. On the rare occasions, when there was some disagreement or uncertainty, Board members have been respectful, open and honest, and issues were resolved amicably.

In August 2016, I had the good fortune to have a long conversation with Board member Bill Mineo and his wife Lorraine, while we were waiting to give our testimony to the Federal Energy Regulatory Commission about the Penn East Pipeline. Bill’s early advice and participation was instrumental in helping Dan Kunkle and the Wildlife Information Center successfully raise funds, purchase the land and begin restoration efforts.

Helping Donna Gasser manage an LGNC table at a Step Outdoors event in Bethlehem in June 2017 was a crash course in how to organize and display brochures, maps and fliers so they wouldn’t blow away, how to

talk to the public about LGNC, how to engage young children in nature-related arts and crafts projects, and how to pack up quickly when it starts to rain. These lessons were reinforced at the Walnutport Canal Festival and another Bethlehem Step Outdoors event in 2018.

I’ve seen the library become more organized, and appreciate the professional handling of the “Marilyn Jordan” accession which contains all of my Ph.D. materials, including my thesis, books, maps, photographs, documents and field equipment. Never in my wildest dreams did I ever think I would be back at Lehigh Gap decades later in retirement, participating in the “Miracle at Lehigh Gap.”



Marilyn Jordan reconnected with Lehigh Gap in 2013 when she met Dan Kunkle and Diane Husic at a conference in Maryland.

I am pleased to be here, and I appreciate the hard work of the many people who have made the Lehigh Gap miracle possible. Thus I am gratified that I was able to get a grant from the Green Mountain Energy’s “Sun Club” to install 65 solar panels on the Osprey House in May 2018, making it completely sustainable. These panels will provide 100% of our electricity for about 30 years.

I end my reflections with a memory from July 7 of this year. John and I brought three of our grandchildren (ages 6, 9 and 11) to the first ever LGNC “Watershed Workshops.” The main attraction was a survey of macroinvertebrates in the Lehigh River. Eager children (and some adults) waded into the river, turning over rocks and using nets to catch any insects or crayfish they found. This was a new opportunity for me too, and I was happy to finally find a small crayfish. Older children later accompanied Chad and Brian into deeper water to use a seine to catch fish. The workshop concluded with a tally of the number of macroinvertebrate species found. There were more than enough species that require clean water to declare that Lehigh River water was high quality.

On the ride home after the workshop our grandchildren emphatically declared that “*this is the best nature center ever!*” I wholeheartedly agree. 🐸

Getting Involved at LGNC

by Janet Maurer, Board Member

As one of Lehigh Gap Nature Center's most recently appointed board members, I have some unique reflections to share with you. Like you, as regular members, my husband and I loved coming to the Center, either to hike, to observe nature, or sit down for a nature related program. Often while we were at LGNC, we would run into Dan Kunkle, who is the director of the Center. If you have not yet met Dan, you need to! Dan is a font of environmental knowledge, and we would save up our "nature questions" for Dan, so we always hoped that we would see him, and we so often did. Dan never disappointed. He always took the time to answer our questions, and made us feel so welcome at the Center. So, after we took advantage of whatever opportunity was offered that day, we would leave and travel back to our daily lives and responsibility.

Can you relate to this kind of relationship with LGNC? Well, if it sounds familiar, you are NOT getting the full benefits of your membership. Here's the secret we learned — if you want your FULL benefits of LGNC, you must take a step further and become involved!

So what does "getting involved" mean? There is so much more available to you than just renewing your membership! First, think about where your personal strengths and interests lie. For example, you could volunteer to help maintain the beautiful native plant habitat gardens. (It takes many loving hands to keep these gardens contained, maintained, and restrained.) Perhaps you could help lead or co-lead a student educational field trip. If the thought of leading students on a field trip feels like too much, you could simply assist another adult

going along with the group, helping to keep the students together with an eye on their safety.

All of the special programs we offer to our members take planning and support, and we would love to have different input and perspectives and ideas. There are so many ways in which you are needed and could help our growing and worthwhile organization.

I must also call to your attention the two newest members of our staff, Chad and Brian, two very knowledgeable naturalists. They have done so much to stimulate new interest to our youngest

members, as well as the general membership. Their enthusiasm is contagious!

So take away this: if you truly want to reap the full benefits of your LGNC membership, you must first understand what ultimately makes this organization "tick". It's you—the members—when you decide to become actively involved volunteers. 🦋



One of LGNC's most active members, Donna Gasser is an Education Team volunteer, Information Specialist, and serves as Membership Coordinator (and much more!).



Gerry Madden cares for LGNC's pet corn snake, Maize, and is a member of our Education Team. He is pictured here teaching students about red-spotted newts in the lab.

What's Growing in LGNC's Gardens?

by Brian T. Birchak

After approximately six months into my position at LGNC as a staff member, I was approached by Dan Kunkle to take over the lead of the Garden Group and subsequently the maintenance of our beautiful habitat gardens. At first, I was taken aback by this request, but I was reminded of my past experiences with botany, horticulture and native plant gardening. I am by no means an expert in any of these fields and gradually a low level anxiety began to set in. Not a negative anxiety, but the kind of anxiety that pushes us to learn and takes us out of our comfort zone, which we need every now and then.

I was given plenty of time to prepare myself for this new responsibility. This was not needed at all. The "anxiety" I felt was unfounded due to the hard work of our Garden Group volunteers and, more specifically, the hard work and dedication of one person in particular, **Kathie Romano**. Kathie Romano has been volunteering with LGNC for years and has done an absolutely fantastic job leading the Garden Group and overseeing the maintenance of our habitat gardens. This hard work and dedication on her part made my transition into this position seamless and almost too easy. Thank you, Kathie. Thank you for your hard work, time, and sweat in getting our gardens to the beautiful state they are in today.

Certain circumstances appear in our lives that we cannot plan for, but must attend to. Although Kathie could no longer devote the time to the administrative responsibilities of the gardens and Garden Group, she

still comes out on workdays to play in the gardens. This love for all things that grow is what, I would imagine, brings her out on hot, sunny days to our gardens. Kathie is just one of many dedicated volunteers who work tirelessly to ensure that our gardens remain the healthy and beautiful habitats we enjoy today.

Words cannot describe how touched I was on our spring cleanup day. So many folks showed up to help and work! Everyone knew exactly what to do and where everything was. All I had to do was stay out of the way and pick a spot in the gardens to work. Scheduled workdays followed, and our gardens reflect the love and devotion that the volunteers poured into them. The plants know – believe me, they know.

I am proud to report that the status of the LGNC habitat gardens is excellent! As you walk through the gardens surrounding the Osprey House, you are greeted by lush, thick vegetation busy with life as they provide the habitat that only native plants can supply to the wildlife they attract. Our gardens are not the type you will find in a typical suburban, well-managed landscape. Those gardens are there mostly for people to enjoy. No, our gardens serve a higher purpose. Our gardens are habitat gardens maintained with wildlife in mind. They still need to be managed, just not in the sterile way that many folks are used to. They're the way they should be, brimming with life, both for the wildlife that inhabits them and the people that walk through them.

As summer winds down and autumn sets in, our gardens will also transition. Coneflowers and all



We thank Kathie Romano for her service as coordinator of the Garden Group! Kathie has overseen the growth of LGNC's habitat gardens and continues to lend her expertise as a garden volunteer.



With over 200 native plant species, LGNC's gardens not only provide habitat for wildlife, they are also a fantastic outdoor laboratory.

other spring/summer vegetation will go to seed. Asters will begin to bloom. By winter, all vegetation will be finished with its work for the year, but its job is yet to be complete. In the dead of winter, perennials still provide an important ecological role as habitat. Their seeds provide a valuable winter food resource for the many organisms that do not migrate each year! The gardens also provide shelter for countless organisms – not just mammals and birds, but also native bees and other insects that overwinter as eggs, larvae, or pupae inside or on the surface of plant stems. Many people cut their plants back at the end of the season to



prepare for next spring, but leaving them still standing not only provides winter interest for our gardens, it also provides an ecological value.

Next year will provide new opportunities for folks to work in our gardens, and hopefully, new folks to join us in this endeavor. Dedicated volunteers are the most important and necessary ingredient for the success of our habitat gardens. We would love for you to join us in this experience. If you are interested in helping out with the gardens next year, please contact me. We are always looking for a smiling face who shares our love of plants! 🌿

Volunteer Spotlight: Allentown Hiking Club

by Dan R. Kunkle

One of the major assets on our refuge at Lehigh Gap is the wonderful trail system that carries hikers throughout various habitats on our 750+ acres. That trail system moves through wetlands, along ponds, through riparian forest, grassland, scrub and upland forest, and goes from river level to the top of the Kittatinny Ridge, more than 1,000 feet above. Hikers come from nearly a 100-mile radius to enjoy the great hiking and tremendous views offered at Lehigh Gap. How did this trail system come into being and how is it managed and maintained?

Early in the history of Lehigh Gap Nature Center, **Janet Goloub** approached me, asking me to come to speak to the members of the Allentown Hiking Club at one of their meetings. I accepted the invitation and it turned out to be one of the most important speaking engagements of the many I did. The club members were very excited about the possibilities for hiking trails at Lehigh Gap.

We invited Ms. Goloub to be part of our Master Site Planning task force in 2003 and that plan, published in January 2005, included a section on trails. With the location of our land on the Kittatinny's north

slope between the Appalachian Trail (AT) on top of the ridge and the proposed Delaware and Lehigh (D&L) Trail along the Lehigh River, the potential for hiking on our refuge was tremendous. While some of our trails were developed from abandoned railbeds and haul roads from the restoration work, other trails envisioned in the plan needed to be scouted out, flagged, and then built – a daunting task for an organization with such a tiny budget and so much to do.

This is where that speaking visit to the Allentown Hiking Club (AHC) became so important. Not only did

a lot of them become members of LGNC, but many also became involved in designing and building our trail system. AHC member **Jim Gabovitz** became very interested and spearheaded the club's efforts at Lehigh Gap. Other notable AHC members who became involved over time included **Anne and Carl Griffin, Barb Wiemann, Nick Rosato, Dick Snyder**, Goloub and many others.

It started with the need to improve the LNE Trail from the driveway around the Osprey House to the abandoned railbed at the west side of the former trestle that once spanned Lehigh Gap. A group of volunteers on



The Allentown Hiking Club constructed much of LGNC's 15-mile trail system, including the scree slope descending to the LNE railbed.

a “day of caring” from Air Products had built a small section of that trail across a scree slope, but much more needed to be done. In the summer of 2004, AHC members came out and widened the LNE Trail, digging with tools called Pulaskis. A much larger contingent from the club followed up with a day spent building the rock steps that still stand and help hikers to descend from the scree slope trail to the railbed.

The abandoned Lehigh and New England Railroad became the spine of our trail system – now called the LNE Trail after the former railroad. A haul road created during the restoration became the Prairie Grass Loop that arches uphill then returns to the LNE spanning nearly two miles. Now a critical trail was needed to connect these trails on the north slope of the ridge to the AT and its spur, the North Trail on the top of the ridge. AHC members and I started scouting the area and marking possible trail routes. Jim Gabovitz really adopted this project and started looking more seriously for the most feasible and accessible route up the mountain. He went to the west end of Palmerton and looked at the mountain through binoculars and found a faint line of a trail up that ascended the mountain gradually.

Jim was excited about this new possibility and we went to investigate. What Gabby had found was the remains of an old charcoal road that mule-drawn carts once traveled to bring charcoal down the mountain to

the old iron furnaces and other markets in the region. The old cart road passed alongside six old charcoal pits, easily recognized because they are the only level ground on the mountainside. The route was flagged and the club members turned it into the Charcoal Trail that ascends gradually up the mountain from the Prairie Grass Trail to the North Trail. It has become many a hiker’s favorite trail on the refuge.

That gave us a way to get up to the AT system on the north side of the ridge, but there was no connection on the south side to complete the loop. By this time, Girl Scout Gold Awardee Marcy Barr and Eagle Scout Doug Beam had completed a trail project just upslope from the Osprey House under the power line. We named it the Prairie Warbler Trail after the small songbirds that inhabit the scrub area but are somewhat rare otherwise in our region. This trail has become our most important educational trail as many thousands of early elementary students have walked this pathway on field trips.

Seeing an opportunity, Gabovitz, Carl Griffin and other AHC members gathered and built a new trail from the Prairie Warbler Trail to the AT. This new Woodpecker Trail completes the loop made possible when the Charcoal Trail was completed. It also connects hikers to the loop created by the AT and the North Trail. Hikers can now hike more than a dozen miles and end up back at their cars without retracing their steps. These loops are most popular with hikers

LGNC’s Record Hiker

It is a rare day that one does not encounter veteran hiker **Jeff Moser** out on LGNC’s trails! Rain, sleet, snow, or sun, Jeff is often out on the refuge, enjoying the scenery that comes with each season. Jeff loves to share his exciting observations each time he stops by the Osprey House for a brief rest. Although we don’t keep an official record book for LGNC trail users, it is fair to say that few, if any, have come close to matching Jeff’s personal records:

- Most **miles** hiked in a **day**: 18
- Most **days** hiked in a **month**: 30
- Most **miles** hiked in a **month**: 256
- Most **days** hiked in a **year**: 271
- Most **miles** hiked in a **year**: 2,116
(nearly the distance of the Appalachian Trail!)



while our LNE Trail and the D&L Trail are great for biking and walking.

Meanwhile, on the north side of the refuge, things were happening. The D&L Trail was constructed in 2009, paralleling the river and the LNE Trail upslope. But even before it was constructed, we were using the unimproved path as a trail. A haul road became the link that completed a 2.2 mile loop, and this link was named the Bobolink Trail for a bird we hoped would be attracted to the grasslands on the refuge.



Members of the all-volunteer trail crew hard at work in 2009

At the west end of the refuge, there were few trails, so on a hike one day, Board member Bob Hoopes flagged a potential trail that would connect the upper section of the Prairie Grass Trail to an existing trail that had been built when the new turnpike tunnel was constructed decades ago. AHC members once again sprang into action and built out this trail that Bob had marked. The new Chestnut Oak Trail connected to the GG loop at the far west end of the refuge to make that area accessible to hikers. In addition, we built trails around the ponds in the wetland area at the base of ridge in this same area and called them the Three Ponds Trail system.

It is one thing to build trails, but it is another to maintain them. When the landscape was a barren moonscape, this was not an issue. But with the restoration work, tall, thick grasses were growing everywhere, including in the paths that were our trails. Thus arose the need for a team to weedwhack and trim brush along the extensive trail system. Once again, Allentown Hiking Club members stepped up and volunteered. On regular dates throughout the growing season, Gabovitz would organize a crew to go out and weedwhack for a couple of hours. Anywhere from two to five of us would go out and trim the grass and brush on and along the trails. The most regular volunteers were the Griffins, Wiemann, Rosato, and Gabby. A few other young people from the

Nature Center volunteered throughout the summers, as well, including Wyatt Trantham and Kelci Knirnschild.

There are other miscellaneous maintenance items that were performed along the way, such as replacing trail signs and posts. Jim, Nick and Carl performed many of those tasks as well.

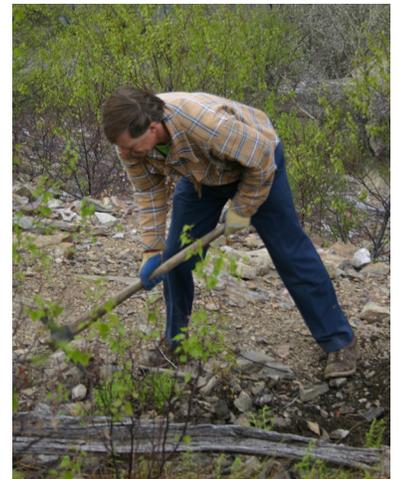
Fifteen years later, the refuge's trail system has become one of our major assets and it still needs to be maintained. Unfortunately, our trail maintenance volunteers are aging and/or have other related obligations that make it impossible for them to continue to maintain our trails. It is time for a new trail crew to form – volunteers who can take over where the AHC members have mostly had to leave off. Anyone interested in helping should contact us about helping with trail maintenance.

Fifteen years is a long time to have a dependable, expert group of volunteers to do anything. The physical work required of maintaining our trail system makes it a difficult task – one that has been performed superbly by a small group of volunteers. We salute and thank these volunteers and celebrate our partnership with the Allentown Hiking Club.

In Memory of Carl Griffin and Janet Goloub

Janet Goloub was the first person from AHC to make contact with the Lehigh Gap Nature Center staff. Her vision for hiking at the Gap made her a prime candidate for our Master Site Planning Task Force on which she so ably served. She passed away in 2015, leaving a substantial bequest to the LGNC Endowment Fund.

Just before publication, we learned that Carl Griffin passed away after a battle with ALS. Carl was a stalwart trail volunteer and, during a period of unemployment a few years back, was an almost constant presence at the Gap with his good friend Jim Gabovitz. That year, we gave a special award to Carl and Jim for all their service. Carl's wife Anne has also been a major volunteer on our trails and in our gardens. Our condolences to Anne and our thanks to both Carl and Anne for their many hours of service to LGNC annually. 🐾



Carl Griffin in 2005

Spotlight Species: Big Bluestem

by Brian T. Birchak



While hiking through the refuge on one of the many trails meandering along the mountainside, a steady hum resembling a swarm of angry hornets can often be heard, especially in the late summer. Relax, it is not thousands of angry Hymenoptera waiting to attack around the next bend. More likely, it is our Trail Crew tirelessly working to free our beautiful trails from the grasp of the many grasses found on the slopes of the mountain at LGNC. These grasses, however, are a good thing and just doing what they're supposed to – grow, a lot. If it were not for our warm-season prairie grasses populating the mountain, there would be no refuge, or restoration for that matter. We love our native prairie grasses.

These are not the cold-season, monoculture, turf grasses we have planted in our yards. Those grasses would not work in the Gap. The grasses found on the refuge are a special blend of warm-season grasses that thrive in dry, rocky, barren, and hot conditions found in the otherwise sterile substrate that our mountain once was. “Skull Mountain,” “Mars Mountain,” “The Moon”... These were some of the nicknames for our beloved mountain before 2002. But not anymore, thanks to the mix of twelve native, warm-season grasses we planted.

Of all of the prairie grasses planted as part of the restoration efforts, I would like to call your attention to *Andropogon gerardi*, also known as beardgrass, turkey foot, or big bluestem, a member of the grass family Gramineae. Here on the refuge, it is most commonly referred to as big bluestem and turkey foot due to its blue

coloration in early to mid summer, and the resemblance of its flower inflorescence to a turkey's foot. In late summer and early autumn, the whole plant will undergo a color transformation to a red/brown or purple.¹ It is quite a sight to witness this color shift throughout the summer and autumn months along the trails of LGNC.

As spring ends and summer begins, big bluestem will begin to send up small shoots barely resembling the two-to-five-foot tall mature plant that will cover the mountainside by August. May through late summer is the optimal growing season for big bluestem and the other warm-season grasses. They like it hot and begin growing when soil temperatures reach 70-90 degrees Fahrenheit. Their affinity for hot, arid conditions is one of the primary reasons that this grass was chosen to be a part of our restoration efforts.



The flowering period is typically July to October.

Big bluestem is native to large parts of North America, with a range including the Great Plains and much of the U.S. (except the Pacific Northwest), northern Mexico, and southern Canada. Preferred soil types range from clayey to sandy and wet, but well drained conditions.² Big bluestem was once the dominant species found within the tall grass prairie of the Midwest, but has since been plowed under to make way for agriculture. It still persists sporadically throughout the Midwest and the East in dry, open places, roadsides, fields, prairies, and, of course, the mountainside of LGNC. There is also an interest in this grass for a garden landscape, due to its coloration and seasonal variations and usefulness in erosion control.

As you hike along the trails, especially the Prairie Grass Trail, be sure to pay attention to the grasses. They are the unsung heroes of the mountain and the warriors of our restoration. Without them, we would still be looking at a martian landscape.

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Snow: A Changing Winter in a Warming World

by Bruce Rabenold

It all starts in the atmosphere, where water vapor converts directly into ice without first becoming liquid water. Each single snow crystal has molecules arranged in a hexagon – but with incredible diversity within that framework. These crystals merge, or don't merge, with others to form snowflakes, which fall, covering the earth with a white mantle. W.A. Bentley took the first micro-photographs of snowflakes at his family's Vermont farm in January 1885 and revealed to the world the incredible intricate structure of these crystals. By the billions, they cover the woods and fields and roads, and by uncountable trillions they create glaciers around the world and the snowcaps of Greenland and Antarctica.

One third of the earth's land surface is covered by snow for some part of the year, and all life in that snow scape is influenced and challenged by those tiny crystals. This is the defining feature of the lives of much life and a source of wonder and magic for many of us. From the Polar Express to the winter trails, snow is a part of our consciousness and our yearly rhythm of life. But there is a real hard edged practical effect on human existence produced by these tiny ice crystals, as well.

This snow cover reflects 90 percent of the sunlight hitting Earth, providing a seasonal break from continuous warming. The high elevation snowpack provides a measured release of drinking and agricultural water for billions of people around the world – many of whom have never seen a snowflake. Melting snow is

released slowly, providing a flow of life-giving water later in spring and during the summer. It is, in effect, an irrigation system provided to us by nature for free. The Sierra Nevada has been described as a 400-mile-long reservoir that holds in cold storage a summer supply of water for California. Water from snow feeds the Colorado River basin, which supplies 40 million people in seven states. In what seems to be a now redacted NOAA study, the simple equation was, "*SNOW = WATER = LIFE.*"

Snow insulates the ground, creating and supporting diverse natural and agricultural systems, allowing animals to reach unfrozen forage, and provides shelter for a variety of creatures, from grouse to voles to humans. The presence of snow over millions of years has created ecosystems that are irreplaceable. Snow influences both wildlife and vegetation; the snowshoe rabbit and the boreal forest are two easy examples.

From Stone Age hunters to present day ice road truckers, snow provides a pathway where no roads exist. The Russian troika and Currier and Ives prints of New England winter travel are only removed from the present by a couple of generations. Of course we play in the snow as well, from kids making a snowman in the backyard to worldwide travel to find the perfect ski slope. Winter sports now adds over \$70 billion dollars to the U.S. economy, employing (directly and indirectly) 700,000 people.



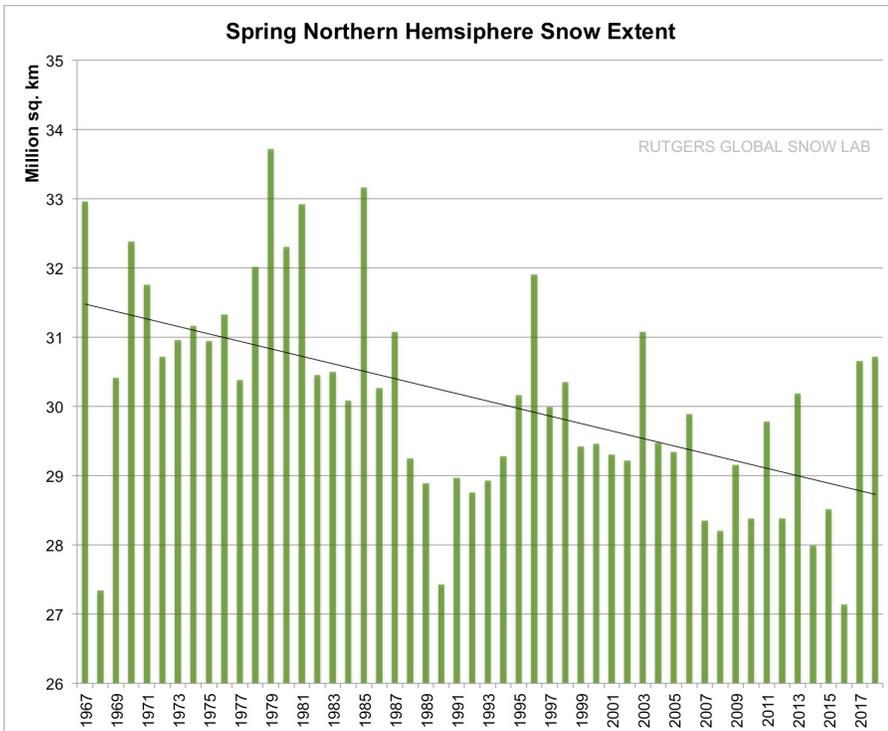


Fig. 1. Annual measured spring snow extent in the Northern Hemisphere, 1967-present. According to the Rutgers Global Snow Lab, an average of 2.5 million square kilometers of spring snow cover has disappeared in the last 47 years.

But snow is disappearing – slowly, inexorably, and right before our eyes. Of course life will continue, snowshoe rabbits will be replaced, and XC skiers can learn to play ping-pong. And maybe giant desalination plants can provide water to California. But will we like the changes? And what are the unintended consequences of those changes? This is not a change in the human planning sense; it is a loss, a loss which diminishes our world as we know it. Snow is disappearing now, and changes are already underway.

Telling someone that snow is disappearing is difficult when the response may be that they need to shovel two feet of ‘global warming’ out of the driveway. When we talk about snow disappearing, we are really talking about three things: amount, extent, and duration. First, the **amount** of snow that comes down in any individual storm may not be any less, at least in the near future. As the Earth warms, the air warms, and warm air holds more moisture than cooler air. This is a relative, not absolute, quality. For instance, scientists noticed, and some were encouraged, that snowfall was increasing in parts of Antarctica. The atmospheric air might be cold but it was less cold – i.e., warmer – than previously. So the air held more water vapor and the snowfall increased. However, this

did nothing to prevent the overall thawing trend for the continent.

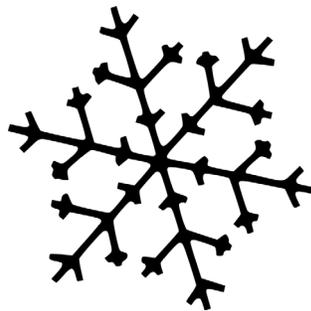
Next is **extent**. Since 1967, photographs from space have been used to measure maximum terrestrial snow cover. The maximum extent of this snow cover varies greatly. ‘Extent’ does not imply ‘continuous,’ as increasingly, there are mid-winter thaw areas.

Finally, the most significant loss has been in snow cover **duration**. Spring snow is disappearing earlier in the year than it did in the past. A study published by *climate.gov*, describes a severe loss of spring snow cover. The Rutgers Snow Lab graph (Fig. 1) charts the yearly variation: in the last 47 years, 2.5 million square kilometers of spring snow cover, on average, has disappeared from the northern hemisphere. Simply put, snow is melting sooner and in greater extent. This affects the length of the

growing season, the timing of the watershed runoffs, and the additional time that the ground can absorb solar radiation and thus warm earlier than before.

Effects on natural systems are occurring now. As the snow blanket is lost, Arctic permafrost melts, which is already displacing entire Alaskan communities. The devastation caused by the western bark beetle has killed thousands of acres of trees in North America, which has opened up the ground to sunlight, causing in turn the earlier melting of snow and exacerbating the above problem. The total water runoff may actually be greater, as the trees are no longer using water themselves – but the resulting runoff will be quicker, earlier, and less beneficial to maintaining summer stream levels.

The EPA has estimated that from 1955 to 2016, the snowpack in the western U.S. declined at 90 percent of monitored sites. The ski industry has long recognized the dearth of snow – 88 percent of American ski resorts now depend at least partly on artificial snow making. Despite almost unbelievable efforts around the world, like putting blankets on European glaciers, many former Winter Olympic host cities will never again be able to



hold the winter games. International cross country ski races are sometimes now run on a ribbon of artificial snow across otherwise barren terrain. This early thaw, or mid-winter thaws, also can set up a melt/freeze/re-melt cycle that changes the character of the snow cover to a darker crusty ice. This has consequences for human skiers, early flowers, and starving caribou. It also accelerates the complete disappearance of the total snow cover.

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What You Can Do to Stop Climate Change

by Marilyn Jordan, Ph.D.

The spring issue of *Wildlife Activist* included an article I wrote about "A Climate Change Solution: Carbon Fee and Dividend." My focus was on climate change basics: (1) It's warming. (2) It's us. (3) We're sure. (4) It's bad. (5) We can fix it. (<https://350.org/science/>).

The LGNC Board agreed that future issues of the *Wildlife Activist* will contain more articles about climate change, with the next article – this one – to be about how we as individuals and communities can contribute to climate solutions. First, let's briefly revisit the urgency of climate solutions.

Atmospheric carbon dioxide (CO₂) concentrations today are 400 parts per million (ppm).



The last time CO₂ levels were this high was three million years ago.¹ We are already seeing dangerous effects of climate change – and the rate of warming and sea level rise are increasing. Even

Senator James Mountain Inhofe may try to refute global warming by bringing a snowball into a hearing room, but it's not that simple. We can endlessly argue, discuss, and research a variety of climate change issues, but the bottom line is that snow is disappearing now as the earth heats up. And that one change alone – the disappearance of snow – will change Earth and its inhabitants in profound ways.

if we could stop all fossil fuel burning tomorrow, the earth's temperature would continue to rise for the next 100 years, due to the thermal inertia of the ocean.² Just five more years of carbon emissions at current levels will virtually wipe out any chance of restraining temperatures to a 1.5°C increase and avoid runaway climate change.³ According to *350.org*, "80% of fossil fuel reserves need to stay in the ground for us to stay below 2°C of warming." It is too late to avoid serious impacts of climate change, but there may still be time to prevent the most catastrophic consequences. Action to reduce carbon emissions is urgently needed at all levels, from individual to local, regional, national and global.

The four most important actions to reduce your individual carbon emissions (carbon footprint) are listed below, along with emissions reduction per year in metric tonnes (1.1 US tons) of CO₂ equivalents.⁴

- 1) Have one fewer child (avg. for developed countries).....58.6 tCO₂e
- 2) Live car-free..... 2.4 tCO₂e
- 3) Avoid airplane travel (per roundtrip transatlantic flight)..... 1.6 tCO₂e
- 4) Eat a plant-based diet..... 0.8 tCO₂e

I calculated from Figure 1 in Wynes and Nicholas that, in the U.S., buying a more efficient car is about

30% as effective as living car-free, and buying “green energy” was 45% as effective (I presume generating your own solar electricity is comparable). All other commonly promoted strategies save much less carbon (e.g., washing clothes in cold water, comprehensive recycling, and changing lightbulbs).

Beef production (per calorie) causes five times more carbon emissions overall than producing dairy, poultry/pork, or eggs (listed in decreasing order), and also requires 28, 11, and 6 times more land, irrigation water, and nitrogen fertilizer.⁵ Data from another study indicates beef production (per 100 grams) produces 2.3 times as much carbon emissions as poultry and three times as much as pork.⁶ Eating a lot less (or no) beef is clearly much better for the environment, and also better for your health. Wasting less food is another way to reduce carbon emissions regardless of diet.

You can estimate your household’s carbon footprint and compare it to similar households at: <https://www.nature.org/greenliving/carboncalculator/?redirect=https-301>

You will need to know:

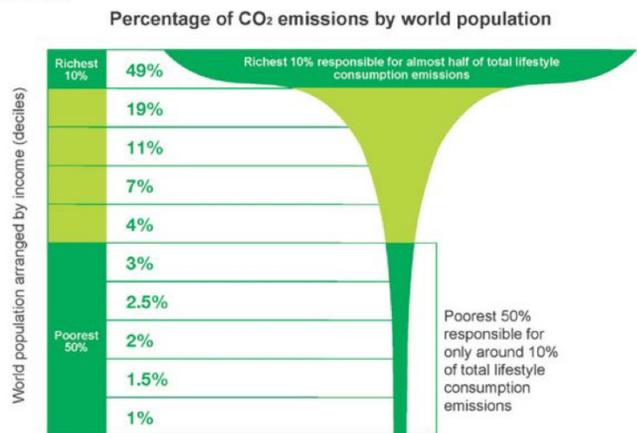
- Approximately how many miles you travel by car, bus, train and plane.
- The energy usage in your home.
- How much you spend shopping.
- The composition of your diet.

Although reducing your individual carbon footprint won’t make much difference on a global scale, it is still meaningful, especially on a local and regional scale. “By driving less, eating less meat, and producing less consumer waste, you can help reduce local/regional air and water pollutants and improve local/regional ecosystems. Being frugal with resources is worthwhile regardless of climate change.”⁷

The most controversial suggestion made by Wynes and Nicholas (2017) was limiting family size. It is true that reducing the rate of population growth is a powerful way to reduce future carbon emissions.^{8,9} Wealthier people across the world tend to have fewer children. The best way to reduce global population growth is by providing family planning and educating girls in the developing world. “The developing world is full of women who have more children than they want to have, because they fear losing children to illness, their husbands force them to, or they need help with manual labor. Giving them greater control over their family size – by educating them and providing them with family planning services, especially contraception – is the fastest route to slowing population growth.”⁷

Climate change and economic inequality are inextricably linked. The richest 10% globally are responsible for almost half of total lifestyle consumption emissions (Figure 1; Oxfam 2015). This disparity also holds within countries, especially the U.S. Oxfam conservatively estimates that the average emissions of a person in the poorest half of the global population is 11 times less than emissions of the average person in the richest 10%. The climate crisis “...is driven by the ‘haves’, which hits the ‘have-nots’ the hardest... If there is to be any justice in the deal in Paris, governments must deliver something for the have-nots, wherever they live.”¹⁰

Figure 1: Global income deciles and associated lifestyle consumption emissions



Source: Oxfam
According to Oxfam (2015), lifestyle consumption emissions of CO₂ increase with household income.

A key point here is that not all individual choices are equal. Choices of developed-world citizens matter more than choices of (say) India or China, and the choices of wealthy developed-world citizens matter most of all. As Roberts (2017) puts it: “The rich, in other words, are the ones that should be getting hassled about their choices...for now, and for the foreseeable future, carbon emissions rise with wealth.”

A very effective approach to addressing the role of individual choices in climate change is to tax consumption. Putting a price on carbon that reflects the costs of climate impacts makes fuel and energy more expensive. Increased costs are passed along in the cost of goods and services, which is effectively a tax on consumption. The market then operates as an efficient means to cut emissions, fostering a shift to a more affordable clean energy economy and driving innovation in low-carbon technologies. Complementary renewable energy and energy efficiency policies are also critical to cost-effectively drive down emissions.¹¹



Beef production is a major source of carbon emissions.

Carbon pricing could be accomplished in two broad ways. With a cap-and-trade program, laws or regulations would limit or ‘cap’ carbon emissions from sources in some or all sectors of the economy, and allowances (permits to emit carbon) would be issued to match the cap. Allowances could be bought or sold with market forces determining the price.¹¹

With a carbon tax, laws or regulations establish a fee per ton of carbon emissions, in some or all sectors of the economy. Those owners of emission sources who can cut emissions cost-effectively reduce their tax payments. The degree and rate of emissions cuts are determined by the level of the tax or cap and its rate of increase (for a tax) or decline (for a cap) over time.¹¹

If cap-and-trade and a carbon tax are well-designed, they are similar. However, a carbon tax has significant advantages: It covers all fossil fuels and emitters, is simpler and easier to implement, requires less bureaucracy, has lower costs, and is more predictable. In practice, cap-and-trade systems tend to be much more complex.^{12, 13}

Both a carbon tax and a cap-and-trade program with auctioned allowances can generate significant revenues. How these revenues are used is critically important for distributional fairness, social justice, and economic growth. Since 2009, a dozen different national carbon pricing proposals/bills have been introduced.¹⁴ Suggested uses for generated revenue include deficit reduction, reduced payroll taxes, reduced corporate income taxes, equal per capita household rebates, monthly payments to low-income and middle-class households, benefits to coal workers, or a combination.^{14, 15}

The most equitable options would return revenue to low and moderate income households. They

should not bear an unfair financial burden for reducing climate change. If equal monthly per-person dividend payments were made to all American households, the tax would be progressive and revenue neutral. Lower income households would receive far more in rebates than they paid in additional taxes. Middle income households would come out slightly ahead or break even. High-income households (top 20 percent) would pay 0.4–0.6 percent more in taxes.¹⁵

Low income and minority communities often suffer the most from pollution from fossil fuel burning power plants and industries. That pollution can be reduced by pairing a carbon pricing policy with investments in local clean energy and efficiency initiatives, tighter controls of ambient air and water pollutants and toxics, and incentives for retiring coal-fired power plants.¹¹

What about the economy? Some modeling studies find effects of a carbon tax on U.S. Gross Domestic Product (GDP) of plus or minus less than 0.5 percent per year depending on how carbon tax revenues are used.¹⁵ However, these models omit the economic benefits of avoided regulations, reduced air pollution, health benefits, and stimulated technological progress. When models are run for a completely revenue-neutral carbon tax, with 100% of net carbon fees (less administrative costs) returned to households, a steep annual increase in the tax per ton of carbon, and a border tariff adjustment (as proposed by CCL CF&D), results are much more positive. National jobs are created, lives are saved due to reduced air pollution, GDP increases, Americans are richer, and carbon dioxide emissions decrease by 52% after 20 years.¹⁶ These models do not consider the economic cost of inaction – which would be catastrophic.

Despite the obvious urgency for major climate action, any kind of new taxes and regulations will require major political and governmental actions, and face great opposition. **Therefore, the most important thing you can do is to get involved in politics and policymaking – make your voice heard!! – while still taking individual actions.**

Actions you can take to push for climate solutions that are effective, efficient and fair include:

1. Become a better informed citizen by learning more about climate change and the types of solutions available. This article is a start, but there is much more to learn. Check out the sources and websites listed at the end of this article and explore.

2. VOTE in all state and federal elections (primaries, mid-terms, etc.) for candidates with good environmental records/platforms who support climate action.
3. Urge your legislators and candidates for elected offices to support action on climate through letter writing, Town Hall meetings, and other opportunities.
4. Write letters to the editor of your local newspapers in response to new climate change stories, responses to other letter writers, or directly expressing your concern and demand for government action.
5. Respectfully explain issues to your friends, neighbors, and family.
6. Share your concerns about the climate crisis widely with your social networks.
7. Support/join organizations that advocate for climate action, education for women and girls, family planning, and economic opportunity:
 - The Lehigh Valley Chapter of Citizens' Climate Lobby meets on the second Tuesday of the month at 6:00 p.m. for a potluck followed by the meeting at 6:30. Location is the Lehigh Valley Friends Meeting House, 4116 Bath Pike, Bethlehem, PA 18017 <https://citizensclimatelobby.org/>
 - <https://350.org/> – Online campaigns, grassroots organizing, mass public actions; 188 countries in its network. Founded by Bill McKibben.
 - <http://climatehawksvote.com/> – Small-scale, grassroots-funded super-PAC that supports candidates and elected officials who make climate change a top priority.
 - League of Conservation Voters – Top priority: climate change. <http://origin.lcv.org/>
 - <https://www.care.org/> – Healthcare, education, and economic opportunity.
 - <https://www.engenderhealth.org/> – Family planning, sexual and reproductive health.
 - <http://www.technoserve.org/> – Help people lift themselves out of poverty.
 - The Malala Fund – Secondary education for girls. <https://www.malala.org/>
8. Find out if your local municipality has an Environmental Advisory Council (EAC) and attend a meeting. Find out what their interests are, and bring your own concerns to the table. Is your local EAC developing a Climate Action Plan? If not, urge and help your local government to create an EAC and/or your local EAC to develop a Climate Action Plan.

“It is too late to avoid serious impacts of climate change, but there may still be time to prevent the most catastrophic consequences. Action to reduce carbon emissions are urgently needed at all levels, from individual to local, regional, national and global.”

Your Feedback Sought

What should I address in my next article about climate change? Would you like to help write the next article, or write your own? Would you like some help learning how to write a letter to the editor about climate change?

Let me know at mjordan.eco@gmail.com.

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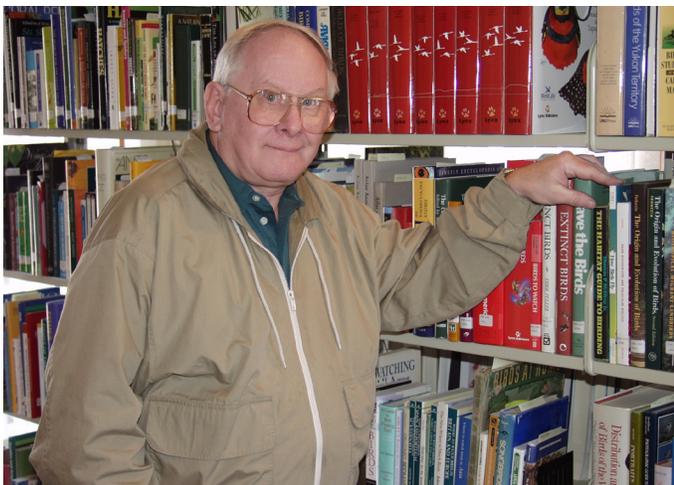


The Heintzelman Conservation Library

A Hidden Gem of the Osprey House

by Chad Schwartz

Tucked away in a quaint corner of the Osprey House is one of LGNC's greatest educational resources – the Donald S. Heintzelman Conservation Library. Featuring approximately 6,000 books, numerous periodical series, and eleven archival collections, the library is a treasure trove of information on local, regional, and global ecology. All materials are non-circulating, but available for LGNC members and researchers to reference by appointment. Speaking to the collection's depth and breadth, LGNC archivist Barb Wiemann says, "if you're looking for it, you might be able to find it here!" Catalogues of all of the library's collections are available on our website at this link: <http://lgnc.org/resources/library/>.



Ornithologist Donald S. Heintzelman stands alongside LGNC's extensive research library that bears his name.

LGNC's extensive natural history book collection was started by the library's namesake, Wildlife Information Center founder Donald S. Heintzelman. From the 1980s to 2002, Heintzelman and others gradually assembled a wide-ranging collection of reference books, mostly relating to ornithology. Since then, the collection has grown immensely through regular donations by LGNC members and the community. In addition, LGNC receives review copies of the latest ecology and conservation books from notable publishers, which are added to the library as they are reviewed for *Wildlife Activist*. Although ornithological texts still make up over a third of the collection (reflecting Heintzelman's background in ornithology), LGNC is continually adding texts on

all subjects relating to our mission, from botany to climate science and restoration ecology.

The library also has volumes from over 150 periodical series, many of which are complete or nearly complete and cover broad time periods. The oldest journals, including the ornithology series *Cassinia*, date back to the late 19th century. Other local, national, and international periodicals – from the PA Game Commission's *Keystone Wild! Notes* to *Noticias de Galapagos*, published by the Charles Darwin Foundation for the Galapagos Islands – cover a wide array of conservation subjects. The periodical collection is invaluable, as it is abundant with historical data that may shed light on ecological changes over time and place.

Over the years, a number of researchers and naturalists have donated their collections to LGNC's archives. The library currently houses the following eleven archival collections:

1. **Collection 1: Wildlife Information Center** – Organizational records and publications of Wildlife Information Center/Lehigh Gap Nature Center.
2. **Collection 2: Donald S. Heintzelman** – Personal and professional files of ornithologist Donald S. Heintzelman, including field research, field notes, and field journals from the U.S. and abroad, as well as photographs dating from the 1950s through the 2000s.
3. **Collection 3: Ann Rehrig** – Phenological records for various locations dating from 1975 through 1985.
4. **Collection 4: Lehigh Gap Area Historical Material** – Historic files, photographs, and other items documenting the Lehigh Gap prior to the Lehigh Gap Restoration Project (2002). Includes written histories and personal accounts, environmental studies, and records on early Superfund remediation efforts.
5. **Collection 5: Marilyn Jordan** – The complete collection of ecologist Marilyn Jordan's research on the environmental impacts of zinc smelting on the Lehigh Gap area during the 1970s, including Ph.D. thesis and all research materials. Features original datasets, photographs, and a large

Children's Lending Library

Separate from the research library is LGNC's **Children's Lending Library**, a free resource available to members and their families. We welcome you to peruse our collection of children's nature books in the Great Hall, and borrow out a book or two. Simply sign your name in the log and return the book to the Osprey House within a month. We thank Doug Burton for his many children's book donations.



collection of journal articles, mostly pertaining to heavy metal pollution and its environmental impact.

6. **Collection 6: Bob MacClay 183 Hawk Watch Records** – Hawk migration count records for the Rt. 183 Hawk Watch, dating from 1975 through 2008.
7. **Collection 7: Roy Christman** – A collection of 127 35mm slides featuring images of the New Jersey Zinc Company, Palmerton, and other local areas, mostly during the 1970s. Some slides are arranged chronologically to document environmental conditions and restoration efforts between 1975 and 1979.
8. **Collection 8: Bake Oven Knob Hawk Watch** – Hawk migration count records for the Bake Oven Knob Hawk Watch, dating from 1961 through present. Also includes data analyses and charts, as well as Bake Oven Knob history, publicity, volunteer records, and memorabilia.
9. **Collection 9: Paul Handwerk** – A collection of biologist Paul Handwerk's research on freshwater mussels, including publications and research materials.
10. **Collection 10: Rexford D. Lord, Jr.** – A collection of biologist Rexford D. Lord's research on mammalogy and equine encephalitis in South and Central America, including publications, data, and research materials (English and Spanish).

11. **Collection 11: Collected Research** – A collection of miscellaneous research not conducted by Wildlife Information Center/Lehigh Gap Nature Center. Includes Franklin Township, Carbon County wildlife surveys (1978-2001) and Lehigh Valley area bird records (1923-2000).

Collections 2-11 have all been archived and catalogued for researchers to reference. Collections 4, 5, and 7 are of particular value to anyone conducting research on the ecology and restoration of the Lehigh Gap. LGNC is interested in archiving any research collections that fit our mission. *If you are looking for a home for your research, contact us!*

The unsung hero of LGNC's research library – who has single-handedly organized all of its thousands of contents – is volunteer archivist **Barb Wiemann**. After working for 42 years as a cataloguer at the Easton Area Public Library, Wiemann began donating her time and skills in LGNC's library in 2014, with the goal of making LGNC's collections available for researchers to use. Barb recalls Dan Kunkle looking at our collection prior to its organization, asking, "*Are we going to have enough shelves for all of this?*" In four years, Barb has not only fully catalogued and shelved the collection (with plenty of room to spare!), she continues to manage the archives on a weekly basis.



Barb invites all LGNC members to experience and utilize the extraordinary resources in our research library. Pointing out that libraries often throw out the old to make room for the new, Barb recognizes the importance of preserving materials that others may not value. "*People didn't see much value in this denuded mountain, but now they do.*" In the same sense, she says, you never know how many countless people might someday benefit from LGNC's collections.



Lehigh Gap Nature Center News and Events

LGNC Holds Anniversary Celebration, Premieres Video

Marking the 15th anniversary of the Lehigh Gap Wildlife Refuge, LGNC hosted a special gathering on August 18 to reflect on the past, present, and future of our organization. The afternoon of fellowship drew a crowd of about 50 people, each with their own special connection to LGNC. A new mini-documentary chronicling LGNC's history was debuted during the event, and a photo exhibition featuring the work of local photographer Lynn Shupp was on display.

Program Specialists Brian Birchak and Chad Schwartz opened the event with a slideshow on LGNC's history, discussing changes in the landscape from colonial times through the present day. Incorporating some fun 'special effects' into the program, Birchak and Schwartz offered a preview of the interactive presentation they developed to introduce visiting school groups to the Nature Center. The audience laughed as an image of the DeLorean of *Back to the Future* fame transported them into the Lehigh Gap's past, and as the green *Toy Story* martians marched across a photo of the 'moonscape' that LGNC restored.

The introductory presentation was followed by the debut of a new LGNC mini-documentary, entitled "Lehigh Gap Nature Center: Our Story." Produced by TV-13 and sponsored by the Pennsylvania Council on the Arts and Dr. James Kintzel, the video documents the first 15 years of LGNC through the first-hand accounts of Executive Director Dan Kunkle, Board President Anita Collins, Board Vice President Diane Husic, Treasurer Bob Hoopes, and Palmerton Area Chamber of Commerce President Peter Kern. The six-minute video also features a selection of historic and contemporary photos of the Gap, stunning new footage of the refuge filmed from TV-13's drone, and scenes from a school field trip. The video has been viewed nearly 200 times since it was posted online in August. Visit lgnc.org to see it for yourself!



LGNC member Tommy Davies offers his perspective on the past 15 years during the August 18 celebration.

Birchak and Schwartz followed the video debut with an update on LGNC's growing education program, which benefitted nearly 10,000 school students last year. The program update included photos of LGNC's school programs, camps, clubs, and community programs, and paid homage to the many volunteers who have made it all possible. Representing LGNC's Color of Nature program, intern Jose Reyes reflected on his past six years leading bilingual education programs.

Kunkle concluded the celebration by leading an impromptu roundtable reflection with the audience. Since the event was attended by many people key to LGNC's creation and growth, Kunkle called on select



The new LGNC video includes breathtaking shots of the refuge filmed by a drone.

audience members to offer their perspectives on the past, present, and future. Trail Team leader Jim Gabovitz, Board member Marilyn Jordan, and long-time supporter Tommy Davies were among the many members and volunteers who offered their poignant thoughts.

After the program, the audience enjoyed an ice cream social and marveled at the extensive collection of New Jersey Zinc Company photos on display by Palmerton native Lynn Shupp. Shupp's collection, called "NJZ Remains: The West Plant," featured scenes from the abandoned zinc smelting facility prior

to its demolition. The exhibition remained on display through the end of August, and attracted many visitors to the Nature Center.

Although a celebration of LGNC's accomplishments, the 15th anniversary event was even more so a celebration of the people involved. "*I always find the care and dedication of all who are a part of our community to be awe inspiring and motivating,*" says Birchak. "*This could not be more evident than in our survival and successes as an organization and a community.*" 📷

Palmerton Receives Historic Designation! Now Listed on National Register of Historic Places

by Peter Kern

More than ten years ago an informal visit was made to Palmerton by representatives of the Pennsylvania Historical and Museum Commission (PHMC). They had come to determine whether the town had sufficient historical significance to justify an application for listing by the National Park Service on the National Register. As one of the first planned communities in Pennsylvania, Palmerton warranted a closer look.

Thus began a ten-year long process that culminated on January 19, 2018, with Palmerton's official inclusion in the National Register of Historic Places. To be eligible, the town had to meet standards involving its "age, integrity and significance." It had to be at least 50 years old and look much the same as it did in the past – and it had to be associated with significant architectural or engineering achievements. The unique relationship between the town and The New Jersey Zinc Company certainly met that last criterion.

Preparation of a nomination required the assistance of a Historical Preservation Consultant. To help underwrite the cost, the Society obtained a state grant to complete the photography and documentation necessary for the submission.

In 2012 the formal submission was forwarded to the PHMC for its review. Additional meetings were held and minor revisions were necessary before the application could be approved and forwarded to the Interior Department in Washington, D.C.

Here the process stalled for two years as additional changes had to be made. The original submission had included parts of the Zinc Company's East Plant and these had to be removed before it could be approved. This left an area roughly bounded north and south by Harvard Avenue and Tomb Street as the official historic district.

Revised documentation was provided and with the invaluable assistance of Keith Heinrich of PHMC, and the National Park Service gave its approval and formally announced it in the Federal Register on January 26, 2018. The Palmerton Area Historical Society has received official documentation from Washington and banners designating Palmerton's new status are being installed on Delaware Avenue. 📷

Editor's Note: This article was republished with permission from *The Scribe*, the newsletter of the Palmerton Area Historical Society.



The historic Borough of Palmerton, as viewed from the LNE Trail. LGNC congratulates Palmerton on its designation.

2018 Nature in Photographs Exhibition

Last spring's fifth annual photogtaphy show featured 69 entries by 32 photographers! Thanks to Anita Collins, Phil Campbell, and Jeannie Carl for judging the entries, and **Dan's Camera City** for sponsoring prizes.

Check out our website for details on the 2019 show, which will take place March 8-17. The categories will be:

-  Humans at LGNC
-  Raptors & Reptiles
-  Pollinators & Plants
-  Youth



People's Choice and 1st Place, Water
"Ripples" by Scott Keys



1st Place, Youth
"Dragonfly" by Rhiannah Funk



1st Place, Lehigh Gap Nature Center
"Deadly Embrace" by Brenda Lindsey



President's Prize
"Regrowth" by Nancy Thatcher



1st Place, Black and White
"Hooded Mergansers in Fog" by Scott Keys

LGNC Hosts Three-Day Watershed Experience

by Chad Schwartz

As a leading member of the Alliance for Watershed Education of the Delaware River (AWE), LGNC had a special opportunity to showcase the Lehigh River Watershed this past summer. From August 21 through 23, LGNC hosted a Watershed Professionals Institute (WPI) – an intensive professional development experience for staff from the 23 environmental centers comprising the Alliance. Over the course of the three days, participants took part in activities and attended presentations that sought to enhance knowledge, inspire innovation, and foster collaboration within the network. AWE was created by the William Penn Foundation with the goal of improving the quality and quantity of water in the Delaware River, the drinking water source for five percent of the country's population.

Held twice annually, each WPI has a unique theme pertaining to the Delaware River Watershed and the field of environmental education. The product of over a year of planning coordinated by Dan Kunkle, Lee Sivak, Angie Wenger, and the other members of the AWE Network Development Team, the August 2018 WPI introduced 70 AWE members to Lehigh Falls, Lehigh Gap, and the Lehigh Valley. But why focus on the *Lehigh* River for this Delaware River Watershed initiative? The Lehigh River (once known as the West Branch of the Delaware)

happens to be a major tributary to the Delaware River! Therefore, what happens on the land around the Lehigh ultimately affects the quality and quantity of water in the Delaware.



The WPI began with a tour of Lehigh Falls, the only waterfalls on the Lehigh River.

Participants enjoyed a whirlwind tour of the full length of the Lehigh River, from its northernmost reaches in the Poconos on day one to a site near its confluence with the Delaware in Easton on day three. Along the way, rafting, hiking, biking, snorkeling, and archaeological

explorations highlighted the watershed's ecological and historical wonders. Amid this busy schedule, various speakers (including representatives of LGNC, Wildlands Conservancy, William Penn Foundation, the Palmerton Area Historical Society, D&L National Heritage Corridor, and Lehigh Valley Greenways Conservation Landscape) presented model programs that have bettered the quality of life and the environment across the Lehigh River Watershed. Other speakers led storytelling sessions that taught participants how to effectively connect diverse audiences with the watershed. See the reflections of LGNC Watershed Fellow Jose Reyes on the following two pages for a more detailed rundown on the week's events.

Since most of centers in AWE are located in Philadelphia, New Jersey, and Delaware, this WPI provided an in-depth look into a waterway unfamiliar to many in attendance. Yet, it also reinforced the connectedness of the various centers which, though geographically distant, all share the goal of fostering the stewardship of the Delaware River. *"This WPI showed the urban members of the alliance that, from ridges to rivers, we are all connected,"* says Kunkle. *"They now understand an important source of the water flowing through Philadelphia and Camden."*

For more information on AWE and its 23 member centers, visit watershedalliance.org. 🐾



LGNC's Darien Rivera assisted AWE leader Don Baugh with a water quality assessment at the Lehigh Gap boat launch.

Experiencing the Alliance for Watershed Education

by Jose Reyes



Having worked at LGNC for five years, Reyes was eager to embark on a new journey as a Watershed Fellow in 2018.

This summer, I was given the opportunity to be a part of the Alliance for Watershed Education (AWE). I had experienced it a little last summer while my co-worker Anais Martinez was a part of AWE's Fellowship program. It was exciting to see so many people working together in different communities looking for the same outcome at the end. After working five plus years at LGNC through the Color of Nature program, this year, Darien Rivera and I had the opportunity to follow in Anais' footsteps and represent the Nature Center as AWE Fellows. Having been with LGNC for so long, we had an advantage over the other Fellows; it was surprising to see how much I had actually learned over the years. The Fellowship was a new experience overall – one I would gladly and proudly have again. The people running the show were very helpful and involved, making it feel like we were each doing something meaningful. Sarun Chan, Tykee James, and Mica McCullough really helped me throughout this Fellowship with advice and more opportunities.

As part of the Fellowship, we had to work on a capstone project to increase awareness about watershed stewardship. At first, Darien and I had decided to build another Chimney Swift tower at our center, but that idea changed. While at Pocono Environmental Education

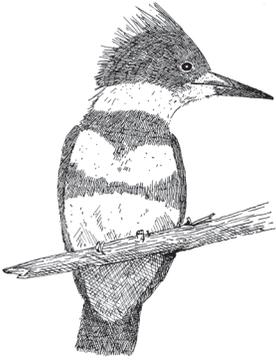
Center for orientation, we were inspired by their obstacle courses on their trails. We sat down with our director Dan Kunkle and supervisors Chad Schwartz and Brian Birchak to talk about switching our capstone project. We decided to work on a nature exploration trail, focusing this summer on building a swinging bridge to put on one of our trails. From planning to actually starting to build it was an amazing experience. At the end, we had a summit to showcase our project, and seeing everyone else's hard work was unbelievable. Each of the 43 other Fellows had a different idea, and everyone really put their all into their projects.

The Fellowship as a whole taught me so many things and also gave me the opportunity to meet new people. It gave me new places to visit as well, including other nature centers and other natural landmarks. I also had this feeling of togetherness every time all the Fellows got together. We all wanted our centers to be more inclusive, and we also wanted protect our watershed.

Later in the summer, I also had the opportunity to be part of AWE's Watershed Professionals Institute (WPI). Participating in the WPI was an AWESOME experience. I got to meet new faces and also saw some familiar ones. Many Fellows from AWE and their supervisors were there. We did so many things and visited many different places during the three-day experience. The first day, we went to the falls at the Lehigh River in Stoddartsville, PA. The old ruins and the way the water moved was astonishing. Words cannot explain the beauty of the scene and how you can experience the history by just standing



Reyes (right) and Darien Rivera (left) lead a macroinvertebrate survey during the Conservation Leadership Academy, as part of their Fellowship with the Alliance for Watershed Education.



there. One big theme throughout the WPI was storytelling. Aseel Rasheed and Keith Williams shared stories about their experiences with nature. After their beautiful words, we went rafting and, halfway, we stopped to do different activities – snorkeling, visiting a dig site, and exploring a wetland. I love water, so I decided to do the snorkeling. Snorkeling was amazing because I got to experience

the life underwater up close and personal. The second half of rafting was fun because it started to rain and the water moved a little faster. At the end of the night we ate at a place with history called Molly Maguires.

The second day, we rafted again down from Leighton to Lehigh Gap – a stretch of the Lehigh River I am a very close friend with. At one point we stopped to use our iNaturalist app and explain the different features. Another storyteller came to speak to us, and this time it was Peter Kern, a New Jersey Zinc Company historian. Kern's words took me back in time and really gave me a new perspective on LGNC's story. Then it was my time to shine and to be the narrator of my experiences at LGNC. Darien and I took some of the WPI members on a small walk on one of our trails where we talked about LGNC's history.

By day three, I did not want the WPI to end. We made our way to Canal Park in Allentown.

There, Wildlands Conservancy took us on a bike trip ending at Bethlehem's Sand Island. In Bethlehem, we visited a very historic waterworks and saw a replica on how its machinery worked during colonial times. Afterward, we went to Hugh Moore Park in Easton, where speakers talked about Lehigh Valley Greenways Conservation Landscape. We also reflected on the past couple of days and the future. During the reflection, I was able to share my summer experiences with the Fellowship and the WPI. Lastly, we did a group exercise where we were encouraged to speak to someone from a different generation. With my partners, I talked about how we have the power to teach younger generations and inspire them to keep our land and water clean. Overall, the WPI was a fun, empowering, and educational experience.

I am so thankful and grateful to have been able to be a part of both the AWE and the WPI. Each taught me new things and also improved me as a person. As someone who leads programs, I now have more knowledge to talk about many different things while leading walks or school programs. I thank my supervisors Chad Schwartz and Brian Birchak, as well as Dan Kunkle for giving me this opportunity and allowing me to experience new communities and places. Also, I thank Darien Rivera for sharing the Fellowship experience with me and the whole Color of Nature team for all the help this year.



Introducing "Very Basic Biology Classes"

A FREE series! We will meet at the Osprey House every other Tues. beginning Nov. 13th.

Do you wish you had taken biology in high school so you could keep up with the news? Didn't have the time because you were in band, didn't need it as you were not going to college, or hated science? Well now you have the opportunity to learn a bit in **Very Basic Biology**. Guaranteed no quizzes, no exams, no grades, but there might be some homework. **Dr. Anita Collins**, retired USDA bee geneticist, will be sharing her love of biology this fall and winter, starting Tuesday, Nov. 13, 10-noon and meeting every other week. Topics to include: The Cell and its Organization, Genetics and DNA, Ecology, Microbiology, Behavior, and other topics of interest chosen by participants.

Class limited to 20 participants. Register at this link: http://bit.ly/LGNC_Biology_Classes.



Classes will be taught by LGNC Board president and retired USDA bee geneticist Anita Collins.



An Interview with Award-Winning Author Richard Louv

by Genevieve Leet

Editor's Note: During the February 2018 WPI, AWE had the honor and privilege of welcoming Richard Louv, author of the groundbreaking book *Last Child in the Woods*, to speak on the importance of environmental education. Genevieve Leet, Director of Special Projects for Upstream Alliance and an advisor to AWE, interviewed Louv after the WPI. The following interview was originally published on the William Penn Foundation's *Penn-ing Progress* blog. For more information, visit www.william penn foundation.org/blog.

Genevieve Leet (GL): Richard, it's been a great joy to get to know you over the last couple of days. You've got a great perspective on the nexus of relationships between health, the environment, and the human heart. My first question for you is about technology. I found that in popular culture, technology is often idolized, but in the environmental movement it tends to be more vilified. *What are your thoughts on how technology relates to environmental education?*



“If we're not careful, environmentalists will carry nature in their briefcases and not in their hearts.” (Richard Louv)

Richard Louv (RL): It's an equation: the more high-tech our lives become, the more nature we need. It's a balancing agent. Studies show that the very parts of the brain that get burnt out when we are spending too much time in front of screens are the same parts of the brain that are relieved of stress and really revived by time spent paying a different kind of attention – and that kind of attention often happens outdoors. So nature is a healing agent.

GL: *What can the environmental education movement here in the U.S. do to engage with the cultural capacity, treasures, and perspectives of diverse communities?*

RL: We need to know a lot more about how different cultures connect [with nature], and what immigrant groups bring to the United States. So often we are talking about people from other cultures or other races as if they have some kind of deficit when it comes to nature, and often the opposite is true. They have wonderful ways of connecting with nature. It's just people who look like me don't ask them how they do it.

GL: *In a similar vein, what have you seen with the opportunities and challenges of connecting to nature in an urban environment?*

RL: Conservation is no longer enough. Now we need to create nature, as strange as that sounds. As of 2008, more people in the world live in cities than in the countryside. That's the first time in human history. It's unprecedented. It changes everything. As we continue to urbanize, either we will lose whatever remaining connection as a species that we have to the natural world, or we'll create a new kind of city: a city that is permeated with nature. I don't call this a “sustainable city,” in other words, nothing is getting worse. I call it a city that is “nature rich,” with nature rich schools, nature rich places, nature rich neighborhoods and homes.

GL: *What can you tell us about how connecting to nature as kids or adults leads to stewardship behavior?*

RL: The studies of conservationists and environmentalists show that many people who identify themselves as a conservationist later in life had some kind of transcendent experience with nature when they were a child. There will always be environmentalism. But if we're not careful, environmentalists will carry nature in their briefcases and not in their hearts. And that's a very different kind of environmentalism, and I don't think it's sustainable. On the other hand, what the Alliance for Watershed Education is doing by placing the emphasis on people and their connection to this water and how it flows through everything, what you're doing is you're reviving conservation in addition to reviving the watershed. You're one of the first who's doing that.



Autumn Education Update

by Chad Schwartz

Fifteen years since the Lehigh Gap Wildlife Refuge was opened to the public, establishing the first and only nature center on a Superfund site, LGNC continues to teach and inspire thousands of people annually through its education programs. Every day we use the refuge as a 'living laboratory' for visitors of all ages. In addition, we are continually broadening our outreach into underserved communities through our Color of Nature program and our partnerships with urban schools and nonprofits. Through a variety of new programs and partnerships, LGNC reached its largest, most inclusive audience to date this year.



School programs make up the largest part of LGNC's educational outreach. About half of the classes we teach are from urban communities.

School Programs

Word of LGNC's school programs is spreading! As a result, requests for programs are coming in from even more schools across the Lehigh/Carbon/Northampton area. Through the dedication of our talented team of volunteer educators and the addition of full-time staff member Brian Birchak to the Education Team, we have been able to meet the demand, while ensuring that we maintain the quality of our outreach. LGNC is on track to teach over 10,000 students from eleven school districts (and many colleges, universities, and early child learning centers) by the year's end.

As we further seek to engage students from financially disadvantaged communities, a growing percentage of LGNC's field trips and in-class programs is subsidized by grants. Generous grant support from several sources allowed us to offer new watershed education field trips for students from Allentown's

Harrison-Morton Middle School and Bethlehem's Northeast Middle School in spring. Also with grant support, LGNC is offering its five-part PSSA science curriculum to 19 Allentown fourth-grade classes during the 2018/19 school year. Roosevelt Elementary School will be participating in the PSSA program (consisting of four interactive in-class lessons and one field trip to LGNC) for the first time.

Another exciting partnership between LGNC, the Allentown School District, and the Lehigh Valley Audubon Society (LVAS) will provide ornithology-based science education to about 150 third graders at Ramos Elementary School in the months ahead. Allentown School District Gifted Program Coordinator Sally Wolfe approached LGNC and LVAS with a request from a teacher hoping to incorporate birds into her curriculum. A meeting with the entire third grade department launched a grade-wide initiative that will include two in-class science lessons, a field trip to LGNC, and a tour of Muhlenberg College's ornithology museum (led by LVAS President Peter Saenger). A CollidEscape workshop, aimed at preventing bird-window collisions on the school, is also being planned.

Watershed Camp

As the 2017/18 school year came to a close, LGNC again began its busy summer camp season. New this year was our **Watershed Camp**, a week-long day camp dedicated to the conservation, ecology, and history of the Lehigh River Watershed. In 2017, LGNC successfully piloted River Camp, which taught students in grades 6-12 about the Lehigh River through kayaking, canoeing, and rafting experiences. This year's Watershed Camp focused more on the watershed itself – that is, the *land* that directly impacts the quality of the Lehigh River.

To start the week, the campers learned about the science behind watersheds and explored the Lehigh Gap by bike and raft with Pocono Whitewater/Pocono Biking. On Tuesday, the campers studied macroinvertebrates and water quality as they conducted biotic surveys at the Three Ponds and Trout Creek. The campers spent a sunny Wednesday learning about the restoration of the Lehigh Gap as they hiked four miles over the mountain on LGNC's trails. On Thursday, the Army Corps of Engineers hosted a tour of Beltzville Dam and gave us special permission to study fossils from an ancient sea.

Watershed Camp concluded with a day of fun rafting the Lehigh Gorge with Jim Thorpe River Adventures.

If you have a child in grades 6-12 who is interested in participating in Watershed Camp next summer, email mail@lgnc.org for more information!

Color of Nature Program

This past summer, LGNC's Color of Nature program welcomed several new leaders to continue our bilingual outreach in the Lehigh Valley. With long-time Color of Nature interns Antonio and Anais Martinez both having graduated college, LGNC sought new interns to follow in their footsteps. We didn't have to search far! **Alex Bonilla** and **Angel Torres** have participated in LGNC's Conservation Leadership Academy since the beginning and were eager to formally apply the knowledge and leadership skills that they gained through that experience. In addition, Antonio and Anais' cousin, **Abbey Torres**, was interested in joining the Color of Nature team. Finally, **Ana Mejia**, a Dieruff senior who the LGNC staff had worked with on numerous occasions, was excited about the opportunity to do environmental education in her community. By the beginning of the summer education season, LGNC officially hired Alex, Angel, Abbey, and Ana as new Color of Nature interns.

Color of Nature veterans **Darien Rivera** and **Jose Reyes** also returned this year (as Watershed Fellows through the Alliance for Watershed Education) and played an integral role in training and mentoring the new interns.

From May through August, the team of six Color of Nature leaders was involved with field trips, in-school programs, camps, and community programs, mostly for students and families from inner-city Allentown. Every day brought a new adventure, whether hiking on the Appalachian Trail or taking our corn snake Maize into an elementary school. Among the many partnerships that form the foundation of the Color of Nature program, a new partnership with the Allentown-based nonprofit *Community Bike Works* recruited the Color of Nature leaders to guide nature-themed bike rides at Keck Park, Jacobsburg State Park, and LGNC. The Color of Nature team also helped Community Bike Works remove invasive species and plant native vegetation near their Allentown facility. A summer's worth of learning and on-the-ground education and conservation work culminated in the interns co-leading the Conservation Leadership Academy in August. It is our hope that some of this year's Academy participants will also be future Color of Nature leaders!



The 2018 Color of Nature Team (clockwise from top left): Jose Reyes teaches the Academy campers about the Lehigh River; Ana Mejia guides the Ecology Campers along the Charcoal Trail; Abbey Torres helps with a macroinvertebrate study; Angel Torres demonstrates safe paddling skills; Darien Rivera leads a pond water activity in the LGNC lab; and Alex Bonilla teaches students to identify poison ivy.

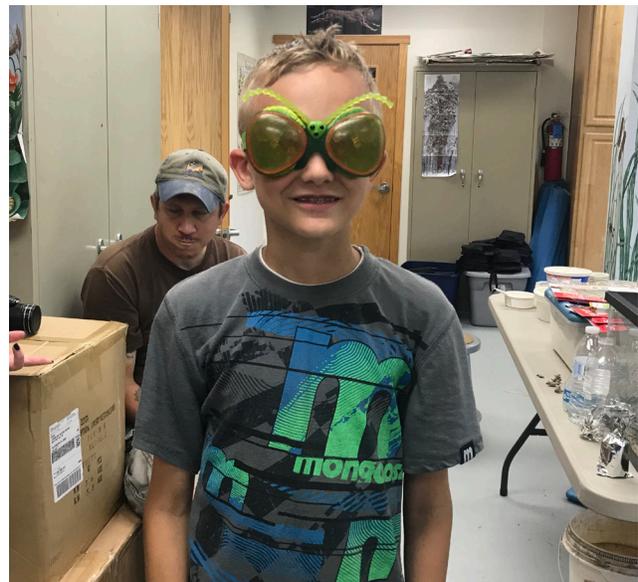
LGNC Events and Highlights



Counterclockwise from above: Evoke Solar of Hellertown installs LGNC's 65 new solar panels, thanks to the support of Sun Club; the RCCS Environmental Science Club sows the seeds in their new hand-built raised vegetable garden; Ashlyn and Willow show the crayfish they caught while wading in the Three Ponds.



Above: Bonnie Pancoast's pollinator display showcases many of LGNC's native bees, butterflies, and moths; Right: Logan transforms into a bug at Ecology Camp.



LGNC Events and Highlights



Clockwise from above: Germansville Fire Department Deputy Chief Randy Metzger teaches the Ecology Campers about forest fires; the Ecology Campers search for aquatic critters in Trout Creek; the Academy campers kayak at Beltzville; Darien and Jose discuss the Color of Nature program at an AWE summit in Philadelphia.



Above: Cherlyn proudly holds the sunfish she caught (and released) in the Lehigh Canal during the Academy; Left: Ashlyn and visitors tag monarchs at Migration Fest.

Wildlife Book Reviews

Fritz H. Brock (FHB), Donald S. Heintzelman (DSH), and Robert E. Hoopes (REH)

National Park Science: A Century of Research in South Africa by Jane Carruthers. 2017. Canvas. 512 pages. Cambridge University Press, New York, NY. \$84.99.

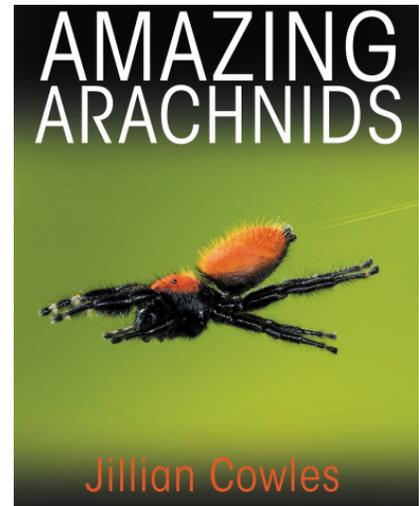
South Africa passed the National Parks Act 56 in 1926, establishing the Kruger National Park as the first protected area under the control of the new National Parks Board of Trustees. Today South Africa has 19 National Parks. Different from historical game preserves, intended to exclude public access, national parks are intended to provide public access. Early management of these areas (prior to 1960) reflected a “protect, preserve and propagate” philosophy. This gave way, during the 1960-1990 period, to a philosophy of active measuring, monitoring, and manipulation to facilitate the health of the species within by ensuring that the number of animals remained in equilibrium

with the food supply. Post 1990, conservation management gave way to integration, innovation, and internationalization. The information age made possible the integration of much science that was previously developed in discrete silos, thereby leading to management breakthroughs in numerous areas benefitting the animal populations in South Africa. This book documents the evolution of conservation science and management in South Africa, highlighting the fact that “*conservation science is a malleable discipline that changes over time.*” REH

Amazing Arachnids by Jillian Cowles. 2018. Cloth. 328 pages. University of Princeton University Press, Princeton, NJ., \$45.00.

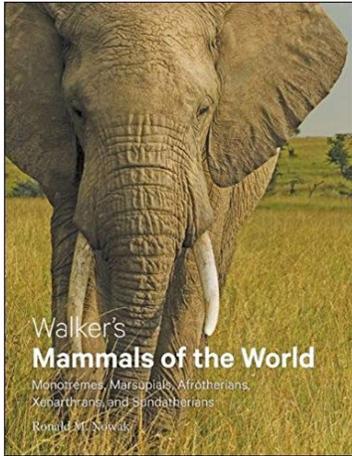
More than 300 different kinds of arachnids from eleven taxonomic orders found in the

southwestern United States are featured in this book. Scorpions; pseudoscorpions; vinegaroons; short-tailed whipscorpions; tailless whipscorpions; microwhisporscorpions; harvestmen; wind spiders; ticks and other mites; spiders; tarantulas; trapdoor spiders and their kin; orb weavers; irregular web builders; crevice weavers; ground weavers and sheet web builders; jumping spiders; lynx spiders; crab spiders; sand spiders and wolf spiders; ghosts, goblins, pirates, and other wandering hunters; fishing spiders; and spitting spiders all will entertain you within the pages and 750 stunning color photographs of this book. Describing every aspect of arachnid biology, the author also discusses the natural selection process that has perfected their sensory mechanisms, defenses, reproduction, and hunting methods. They are not pretty but they are interesting, as detailed in this book. REH



Walker’s Mammals of the World: Monotremes Marsupials, Afrotherians, Xenarthrans, and Sundatherians by Ronald M. Nowak. 2018. Cloth. 757 pages. Johns Hopkins University Press, Baltimore, MD. \$99.95.

Ernest P. Walker (1891-1969) was the assistant director of the National Zoological Park in Washington, D.C. He, along with six co-authors, published the first addition of *Walker’s Mammals of the World* in 1964. The third addition in 1975 was the last for which Walker is considered the primary author (interestingly six years after his passing, reflecting his continued work in the field late in life). Ronald Nowak was co-author on the fourth edition and author for the fifth, sixth, and this current seventh edition. This volume covers the **Monotremes** (egg laying mammals), **Marsupials** (mammals giving premature birth and then continuing development of the newborn while



attached to the nipples on the mother's lower belly), **Afrotherians** (a clade of mammals living in Africa or of African origin, including golden moles, elephant shrews, tenrecs, aardvarks, hyraxes, elephants and sea cows), **Xenarthrans** (anteaters, tree sloths and armadillos), and **Sundatherians**

(treeshrews and colugos: shy, nocturnal, solitary animals found in the tropical forests in Southeast Asia). This seemingly eclectic selection of mammals reflects the five earliest clades (organisms believed to have evolved from a common ancestor) to diverge from ancient mammal stock. This volume provides highly detailed accounts of the various mammals included in these groups, and is well illustrated with color photographs of many of the included mammals. *REH*

The Dama Gazelles: Last Members of a Critically Endangered Species, Edited by Elizabeth Cary Mungall. 2010. Cloth. 218 pages. Texas A&M University Press, College Station, TX. \$40.00.

The Dama gazelle's range once spanned from the Atlantic Ocean east to near the Nile River in semi-deserts and Sahel grasslands bordering both north and south of the Sahara Desert. Today, its range is limited to just five small areas, two in Niger, two in Chad, and one in Mali. Its remaining numbers in the wild are estimated to be between 100-200. In

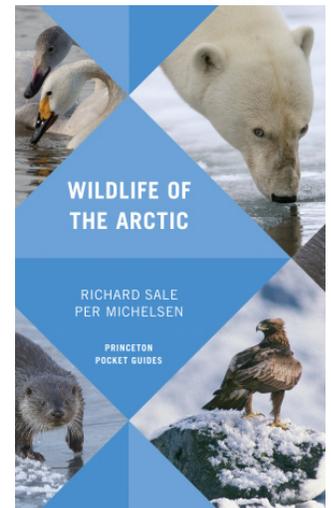
captivity, 500-600 are located in zoos and similar enclosures, with another 1,000 maintained on several Texas ranches with habitats and climate similar to those found in North Africa. Mungall has assembled in this volume a series of 20 essays from various experts on



the Dama gazelle, covering its history over time, an overview of the species, its management in zoos, parks, and on ranches, and its transition from and to the wild. Several recent attempts have been made to reintroduce this beautiful animal back into wild areas in Morocco, Senegal, and Tunisia. The results of these efforts are being monitored. Challenges include widespread instability and security in the region, poaching, overhunting, habitat loss, rising temperatures, and expanding desert conditions. This book is nicely augmented with color maps, sketches, and photographs of the region and the Dama gazelle. *REH*

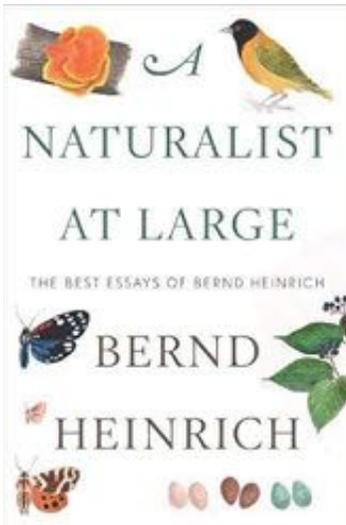
Wildlife of the Arctic by Richard Sale and Per Michelsen. 2018. 335 pages. Paper. Princeton University Press, Princeton and Oxford. \$19.95.

This pocket-sized guide features more than 800 color photos illustrating more than 250 bird species, 60 land mammals, and 30 seals and whales. The first 34 pages cover a definition of the arctic, time at the poles, aurora and parhelia, avoiding freezing, and the future of the arctic. This section is supported by some photographs, charts, and maps. If you intend to get this book, you better have excellent close vision because the text is extremely small. This may have been done to cram a lot of information in a very limited space. Most of the book is devoted to the birds, mammals, insects, and plants to be found in the arctic. A photograph of each species is presented on the right side and a written description is located on the left. The photographs are very nice. *FHB*



Naturalist at Large by Bernd Heinrich. 2018. 288 pages. Cloth. Houghton Mifflin Harcourt, Boston and New York. \$26.00.

Mr. Heinrich is an acclaimed scientist and author of numerous books. This enjoyable book contains some of his best essays. The first series of essays covers plants, trees and insects. One of my favorites was an account of how, at age eleven, he and a friend used bee-

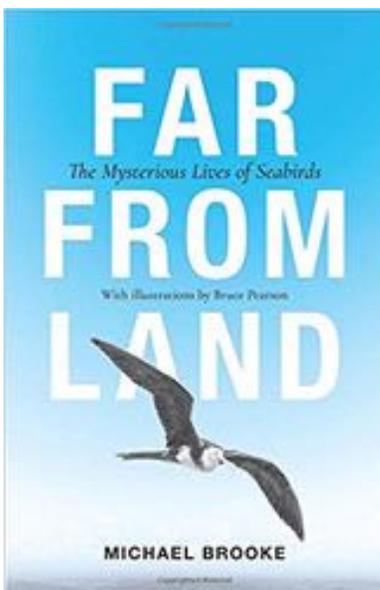


lining to find honeybee hives. His essays on mammals range from the habits of red squirrels at his home in Maine to his adventures in the Okavango Delta in Africa. There is even an essay on the coloring of bird eggs, part of which deals with parasitism by Brown-headed Cowbirds. Cowbirds are known to parasitize more than 350 species and subspecies of birds

with a varying degrees of success. Up to 78% of Song Sparrow nests in some areas have been victimized by cowbirds. Much of this has to do with the fact that Song Sparrow and cowbird eggs are similar in size and appearance. Gray Catbirds and American Robins have immaculate light blue eggs and rarely accept cowbird eggs in their nests. *Naturalist at Large* is both easy reading and educational. *FHB*

Far From Land: The Mysterious Lives of Seabirds by Michael Brooke. 2018. 249 pages. Cloth. Princeton University Press, Princeton and Oxford. \$29.95.

In October 1978, I got to take my first pelagic birding trip. Steve Smith, Rick Wiltraut, Brad Silfies, and I joined a group of New York birders for a 20-hour trip from Montauk, Long Island, to

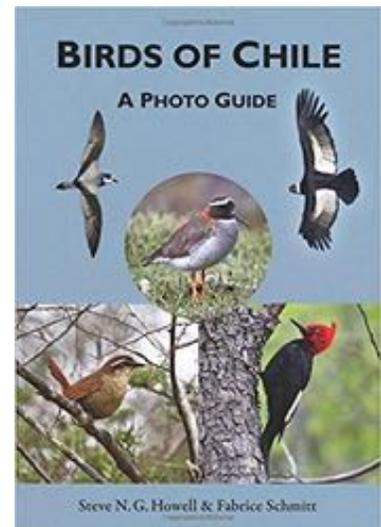


the Hudson Canyon, almost 100 miles to the south. It was cold and windy, and the ocean was anything but smooth, but we got to see some great birds that are rarely seen from shore. On the return trip, the Greater Shearwaters following our boat often touched the ocean with the tip of their wings. Possibly this is how they got their name.

Until recent years much of the lives of seabirds remained a mystery because they spent so most of their time at sea. Thanks to the development of increasingly sophisticated and miniaturized devices that can track their every movement and behavior, it is possible to observe the lives of these creatures as never before. The author has visited every corner of the world in pursuit of seabirds. He draws on his own experiences and insights, as well as the latest cutting-edge science to shed light on the elusive seafaring lives of albatrosses, frigatebirds, petrels, penguins, and other ocean wanderers. *Far From Land* contains a number of maps and photos, and some great illustrations by renowned artist Bruce Pearson. What this reviewer found most amazing are the things scientists can do with miniaturized devices. It seems like every page reveals a fact about seabirds that was not known twenty years ago. The book is a must read for anyone with an interest in seabirds. *FHB*

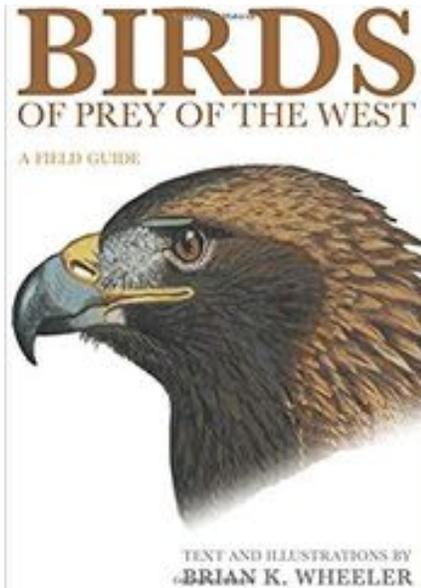
Birds of Chile: A Photo Guide by Steve N. G. Howell & Fabrice Schmitt. 2018. 240 pages. Paper. Princeton University Press, Princeton, New Jersey. \$29.95.

This guide covers the birds found regularly on the Chilean mainland, adjacent islands, and marine waters that can be reached within a day trip. The inside cover and first three pages offer a pictorial overview to help get you to the right group of birds. The introduction covers distribution, and this is supported by a few useful maps and some nice photographs. The species accounts show more than 1,000 real-life photos and facing-page text that makes bird identification easy. Key ID features are highlighted in pale yellow text. There are no range maps, but the distribution of each species is covered in the text. This is probably adequate if it is used with the maps of the country. *Birds of Chile: A Photo Guide* is small and would be easy to carry into the field. I recommend it to anyone who will be birding in Chile. *FHB*



Birds of Prey of the West by Brian K. Wheeler. 2018. 360 pages. Paper. Princeton University Press, Princeton, New Jersey. \$27.95.

Here is a question for you: how many more books on birds of prey does a raptor enthusiast need? Just one more or, in this case, two. Brian Wheeler



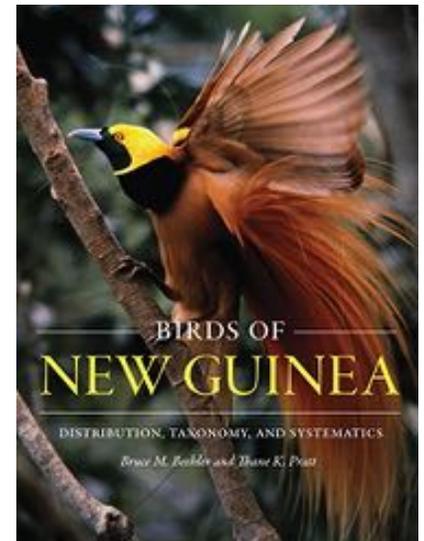
has authored and illustrated what I consider to be the best two books on birds of prey. Wheeler needed two books because of the volume of information and the number of illustrations he wanted to present. The Mississippi River is used as the demarcation line for the two

books. *Birds of Prey of the West* is the larger book because it covers more species of raptors. The results are the most comprehensive and authoritative field guides to North American birds of prey. What I really like are the full page range maps. These maps show a raptor's permanent, summer, and winter ranges plus supplemental information that includes such things as irregular nesting, irregular distribution, winter dispersal, and all season

dispersal. The maps also pinpoint many cities and major raptor migration sites such as Cape May. In my opinion, these are the best range maps I have seen in any bird field guide. The text is limited to conserve space, and covers habitat, status, nesting, movements, and comparison to similar species. I recommend these two books for raptor enthusiasts. They probably contain much more information than many birders need, however. *FHB*

Birds of New Guinea: Distribution, Taxonomy, and Systematics by Bruce M. Beehler and Thane K. Pratt. 2016. 668 pages. Cloth. Princeton University Press, Princeton, NJ. \$75.00.

Nearly 800 bird species occur in New Guinea, of which 350 are endemic there. This book provides up-to-date descriptions and taxonomic details of New Guinea's avifauna. It is not intended to be a field guide to New Guinea birds, and there are no color or other species illustrations. The book is intended mostly for professional ornithologists. Recommended. *DSH*



AMAZON SMILE Program

If you purchase items from Amazon and you participate in the Amazon Smile program, LGNC gets a half percent of everything you spend if you designate us for the donation. When you designate us, you need to use our official IRS name: **Wildlife Information Center, Inc.** Use this web address to connect to Amazon on behalf of LGNC/Wildlife Information Center: <http://smile.amazon.com/ch/22-2741693>. If you bookmark the page and click on it each time you shop at Amazon, it will automatically load the page that directs the donation to the Nature Center. Thanks!

Thrivent Financial Customers

For any LGNC members or friends who are also members of Thrivent Financial (formerly Lutheran Brotherhood and AAL), please note that you can direct your Thrivent Dollars to Lehigh Gap Nature Center. Our official IRS name is **Wildlife Information Center, Inc.** and that is the name listed on the Thrivent website. Log on to your account at Thrivent.com and click on "Memberships and Benefits" and "Thrivent Choice." Thrivent must make donations from their profits to nonprofit organizations. The funds do not come from your account. Please direct your Thrivent Choice Dollars to Wildlife Information Center (Lehigh Gap Nature Center), Slatington, PA.

New Members and Special Donations

Thank you to everyone who renewed their membership with LGNC. Your support really makes a difference at the Lehigh Gap. The following renewed above the basic or family level or contributed to a special fund:

New Members

Leopoldo Fernandez
Michael Radcliffe (gift from
Michael Stershic)

Renewed/Sustaining Level

Kevin & Sandra Artz
Joseph & Elizabeth Bechtel
Becky's Drive-in
Juanita Carra-Budzek
Elizabeth Collins & John Weeks
Dave Cundall & Fran Irish
Barb & John Egerton
Fran Gough
Harry & Ruth Hill
Robin Huszar
Dave Krammes & Mary Cook
Trudy & James Kunkle
Kenneth & Marjorie Lauer
Sandra Magill
Barbara Malt
Frances & Susan Mullane
Frank & Paula Muzopappa
Daniel Poresky
Bruce Rabenold

Willard Richards
Jeannine Siegmond
Roxanne Snyder
Dave & Claudia Steckel
Mike & Sybil Stershic
Carol Thomas
Win & Marie Tweed
Christina Van Gelder
Wagner's Auto Body
Constance White
Fritz & Belva Williams

Renewed/Patron Level

Kenneth Leffler

Renewed/Golden Eagle Level

John Higgins

Library Fund

Herman Smale

Education Fund

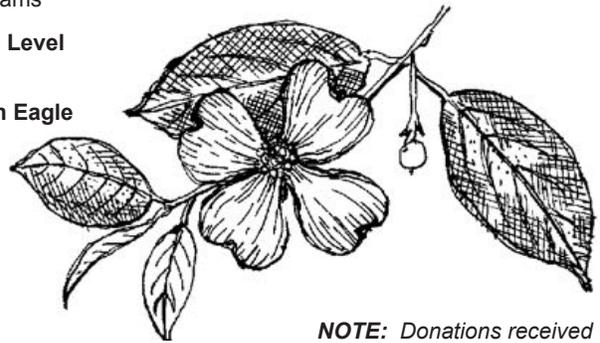
Kenneth Leffler
Herman Smale

Research Fund

Herman Smale
Frances & Susan Mullane

Lehigh Gap Fund (donations)

Rodney Fritzing (monthly)
Herman Smale
Betsy & John Mescavage
David Stech & Jill Youngkin
Christina Van Gelder



NOTE: Donations received after August 31 will be acknowledged in the next Wildlife Activist.

Donations

Grants and Contributions

\$10,000 or more

- Alliance for Watershed Education
- Fowler Family Foundation (Color of Nature)
- Sun Club (solar panels)
- William Penn Foundation (Alliance for Watershed Ed.)

\$5,000 to \$9,999

- Air Products Foundation (Color of Nature program)
- Lehigh Valley Greenways (Color of Nature training)
- National Wildlife Federation (Alliance for Watershed Ed.)

\$2,500 to \$4,999

- Lehigh County Quality of Life (community programs)

\$1,000-\$2,499

- Alliance for Watershed Education (River Days)

Up to \$1,000

- Anonymous
- BSA Troop 41 (\$300)
- Concourse Club of Palmerton

Business/Special Donations

- **Liza Ovington** donated two photographs.
- **Donna Gasser** donated a telescope.
- **Christina Dolan** donated birding books/workbooks, a bird bath, and three feeders.
- **Mike Shafer** donated a new chair for the Info Desk.

- **Cheryl Novak** donated three bags of soil for the planters and a bird feeder.
- **Louise Knoll** donated nature-themed Beanie Babies.
- **Mike McGavin** donated 240 pounds of birdseed.
- **Bonnie Pancoast** donated furniture and supplies for two interactive children's areas.

In-Kind Donations

- **Rodney Fritzing** continues to donate \$5 to the Lehigh Gap Fund for every car he sells at Rentschler Chevrolet, Chrysler, Dodge, Jeep.
- **Stacy Hein** donates all LGNC yoga class profits.
- **Bonnie Pancoast** donated materials for the Budding Naturalist Book Club.
- **Attorney Holly Heintzelman** provides legal services.
- **Reading Escapades & Math Explorers, Inc.** (**Christine Allen**) sponsors LGNC's EcoArt After School program each month.
- **Yalcin Adar** made Prairie Warbler mugs for the gift shop.

Library Donations

Donations of books and/or periodicals for the library, and newspaper clippings and other items for our vertical files were received from:

- Doug Burton
- Dan Kunkle
- Don Heintzelman
- Tommy Davies

Volunteer Service

The Lehigh Gap Nature Center gratefully acknowledges the volunteer service of the following individuals *from April 1-August 31*: **Jane Borbe** and **Anne Zagarella** for coordinating the Information Specialist team and to all the Info Specialists listed below; **Kathie Romano** and **Deb Hamburger** for leading the Habitat Gardening group; **Dave Husic** for IT support; **Donna Gasser** for serving as Membership Coordinator, for retrieving and processing the mail on a regular basis, and *many* more things; **Bob Hoopes** for serving as our Controller in his role as Treasurer; **Lee Sivak** for serving as our Financial Secretary; **Nancy Taras** for leading the Cabin Fever Book Club and **Lee Sivak** for providing breakfast for the group; **Kathie Romano**, **Barb Egerton**, and **Donna Gasser** for serving as the events planning team; Maize keepers – **Gerry Madden** and **Joe Mock**; **Erna Lake** for embroidering LGNC apparel items for the gift shop; **Barb Wiemann** for serving as our Archivist; **Ed Newcomb** for recruiting speakers and coordinating the Speaker Series, and to those speakers who have donated their time; **Barb Egerton**, **Donna Gasser**, **Pam Hoffner**, **Jan Maurer**, **Diana O'Brien**, **Bonnie Pancoast**, **Kathie Romano**, **Lee Sivak**, **Nancy Taras**, and **Anne Zagarella** for leading and assisting with field trips; **Doug Burton** for leading the 4B Walks; **Bonnie Pancoast** and **Deb Siglin** for leading the Budding Naturalist Book Club; **Patty Passick** and **Carol Mickey** for leading our monthly EcoArt classes; **Dan Ahrens**, **Donna Gasser**, and **Dave Husic** for serving on the Communications Team; **Trevor Bennyhoff** for making nest box kits for the camps; **Randy Metzger** for doing two forest fire presentations for our summer camps; **Anita Collins** for coordinating the photo show, and **Jeannie Carl** and **Phil Campbell** for judging the entries; **Eileen East**, **Deb Hamburger**, **Janet Minnich**, **Bonnie Pancoast**, and **Kathie Romano** for organizing and conducting the National Pollinator Week Celebration; **Joren Husic**, **Kelci Knirnschild**, and **Gerry Madden** for helping with summer educational activities; **Erna Lake** and **Joe Mock** for leading the Fit Walks; **Marilyn Jordan** for applying for the Sun Club grant to fund our new solar panels; **Bonnie Pancoast** for assisting with bee research and educational programs; **Anita Collins**, **Bob Hoopes**, **Diane Husic**, and **Peter Kern** for being part of the new mini-documentary, and **Dr. James Kintzel** for supporting this project; **Bob Hoopes** for training the new hawk watch intern, **Krista Botting**; **Jennifer Brock** for proofreading/editing the *Activist*; and, of course, our **Board of Directors**

and **Board of Advisors**. It is difficult to thank all our wonderful volunteers enough – you are the heart and soul of Lehigh Gap Nature Center.

NOTE: *With all this activity, we are likely to miss some of our volunteers – let us know if we did, and we will add the names to the next Activist volunteer page.*

Scout Projects

Sam Arnold – turtle platforms
 Alex Hill – bee habitat garden
 Dalton Hoffman – mile markers
 Egan Bellesfield – new entrance sign
 Mike Martineau – arboretum plantings and gate
 Ben Connelly – picnic table for LNE Trail

Trail Crew Volunteers

Jim Gabovitz	Nick Rosato
Anne Griffin	Barb Wiemann
Carl Griffin	

Garden Group

Anita Collins	Ed & Jan Maurer
Barb Egerton	Janet Minnich
Linda Finley	Cheryl Novak
Linda Frederick	Leon Rodenbach
Deb Hamburg	Kathie Romano
John Hoffer	Joan Strong

Education Team

Doug Burton	Bonnie Pancoast
Barb Egerton	Kathie Romano
Donna Gasser	Deb Siglin
Pam Hoffner	Lee Sivak
Jan Maurer	Nancy Taras
Diana O'Brien	Anne Zagarella

Information Desk Volunteers

The following individuals have served as Information Specialist volunteers in the past six months:

Dan Ahrens	Lynne and Andy	Mike Shafer
Tim Banford	Harakal	Steve Shaud
Debbie Barr	Janet Hermann	Tim Sidor
Jane Borbe	Georgia Hodyl	Lee Sivak
Mary Coover	Pam Hoffner	Nancy Taras
Sara Ertl	Lish Howard	Nancy Thatcher
Donna Gasser	Gary Nagy	Marie Tweed
Dennis George	Bruce Rabenold	Charlie Uhler
Donna Hartenstine		Anne Zagarella

Endowment Fund Update

Thanks to numerous donations, memorial gifts, bequests, leaf tile sponsorships, designation of Thrivent Dollars and Amazon Smiles purchases, quilt raffle proceeds, and a major donation to the Endowment Fund from an anonymous source, the LGNC Memorial/Endowment Fund now *exceeds \$1 million* in value. We have reached our medium-term goal for the Fund, and now have our sights set on a long-term goal of \$2 million. The current Board and staff are very interested in building a sufficient Endowment Fund to ensure the long-term sustainability of Lehigh Gap Nature Center. Donations go to the main Endowment Fund unless designated for one of our two special sub-funds – **Internship** and **Arboretum/Gardens**.

Memorial/Endowment Fund donations were received from the following: Kenneth Leffler, The Estate of Janet Goloub, Herman Smale, Francis Fischer, Eric O. Pettit, Anita Collins (50 shares of appreciated IBM stock worth over \$7,100), Dr. Donald Molde *in memory of Ben Sinclair and Hope Ryden*, Diane Mellen *in memory of Paul Hoopes*, Mary Polakovits *in memory of Mike Polakovics*, and Johnson and Johnson match to Liza Ovington donation.

Anyone can help build the Endowment Fund by making donations in memory or honor of family members and friends. **Please consider naming the Lehigh Gap Nature Center as the charity of choice for memorial donations, or to honor someone on a birthday, holiday, or special occasion.**

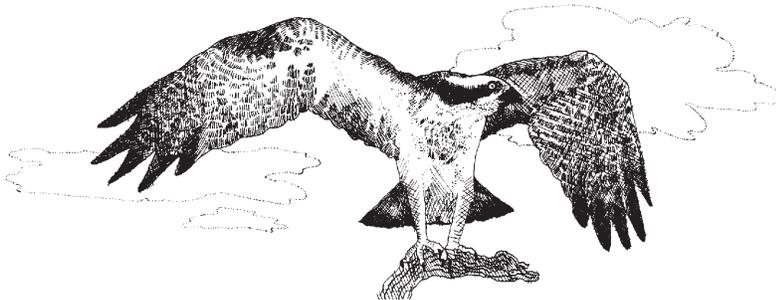
Individuals can obtain significant tax benefits from donations of such items as appreciated stocks, real estate, whole life insurance policies or other valuable assets that would be taxable if sold or redeemed by the owner. You may also want to talk with us about

charitable remainder trusts and other planned giving opportunities that allow you to donate assets in return for a lifetime annuity. A couple who are members of LGNC recently informed us that they have set up a trust and that the Nature Center will receive the capital invested in 2020.

Another way of helping the financial needs of the Lehigh Gap Nature Center is to include our organization in your will. Donations can include anything of value such as real estate, stocks and bonds, works of art, or coin and stamp collections. Suitable language could include the following: “I give, devise and bequeath to the Lehigh Gap Nature Center (Wildlife Information Center, Inc.), a nonprofit corporation exempt under Internal Revenue Code Section 501(c)(3), whose present address is P.O. Box 198, Slatington, PA 18080-0198, the sum of \$_____ and/or (specifically describe property).” Or you may decide to designate a percentage of your estate as a bequest to LGNC.

Members and friends who have included us in their wills or made us a beneficiary of a trust or insurance policy become members of the **Osprey Society**. Please let us know if you have named LGNC as a beneficiary, and we will acknowledge that future donation by naming you as a member of the Osprey Society. Current Osprey Society members are Dan Kunkle and Stephen Boudreau.

Endowment Fund donations are gifts that permanently help generate income for the Lehigh Gap Nature Center’s operations. **This is one of the most important ways you can help LGNC – donate to the Endowment Fund now and/or make a bequest to us in your will. Thank you for your support.**



NOTE: Donations and memberships received after August 31, 2018 will be acknowledged in the next *Wildlife Activist*. We are currently receiving donations in memory of Bill Mineo and Carl Griffin.

LGNC is approved and eligible for donations from businesses under the Pennsylvania Educational Improvement Tax Credit (EITC) Program.

Lehigh Gap Nature Center Business Members - 2018

Supporters

Attorney Holly Heintzelman, Lehighton, 610-377-3111
BB&T, Walnutport, Lehighton, Palmerton
Bechtel's Pharmacy, Slatington, 610-767-4121
Becky's Drive-in, Walnutport, 610-767-2249
Bennett Dodge, Lehighton, Bennett Pre-owned, Palmerton, 610-377-2642
Blue Mountain Ski Area, Palmerton, 610-826-7700
Carbon Surgical Associates, Palmerton, 610-826-4595
Dan's Camera City, Allentown, 610-434-2313
Edge of the Woods Native Plant Nursery, Orefield, 610-395-2570
Hallman Service Station, Slatington, 610-767-7667
Key Bank, Slatington, Palmerton, Lehighton
George I. LaRose Insurance Ltd., Palmerton, 610-826-2397
Livengood Excavators, Walnutport, 610-767-5073
PenTeleData, www.ptd.net, 1-800-281-3564
Pocono Whitewater Rafting, Jim Thorpe, 570-325-8430
Rentschler Chevrolet Chrysler Jeep Dodge Ram, Slatington, 610-767-1171
William G. Schwab & Associates, Attorneys at Law, Lehighton, 610-377-5200
Service Construction Company Inc., Lehighton, 610-377-2111
Shea's Hardware, Inc., Palmerton, 610-826-2412
Sherry Dental PC, Lehighton, 570-386-6910
Shulman & Shabbick, Attorneys at Law, Palmerton, 610-826-3122
Steckel and Stopp: Attorneys at Law, Slatington, PA 610-767-3861
St. John Neumann Regional School, Palmerton/Slatington, 610-826-2354
T.K. Thomas Funeral Home, Palmerton, 610-826-2270
Tribe Yoga, Fogelsville, 484-239-8711
Wagner's Auto Body, Orefield, 610-398-3166
Wild Birds Unlimited, Allentown, 610-366-1725

Members

Cornerstone Therapeutic Massage & Bodywork, Lehighton, 484-347-6228
Hager Furniture, Palmerton, 610-826-2900
Reading Escapades & Math Explorers, Inc., Palmerton, 610-826-7323
Campton-Schisler Funeral Home, Palmerton, 610-826-2377

***We encourage our members to support these local businesses that support
Lehigh Gap Nature Center.***

Support the Lehigh Gap Nature Center

The Lehigh Gap Nature Center is a member-supported conservation organization. The mission of Lehigh Gap Nature Center is “to protect the wildlife and enhance the habitats of our Refuge, the neighboring Kittatinny Ridge, and the Lehigh River Watershed through conservation, education, research, and outdoor recreation to improve the quality of life of present and future generations.” Our office is located in the Opsrey House at the Lehigh Gap Wildlife Refuge, our 750+ acre wildlife sanctuary. Our research projects, education programs, library, and internship programs need special support. Memorial fund donations will be permanently invested to produce interest to help operate the Center. All dues and donations are federally tax deductible to the fullest extent allowed by law.

“Friends” receive “Lehigh Gap Update” newsletter twice a year. All other members receive *Wildlife Activist* two times per year and an annual issue of *American Hawkwatcher* with the year’s Bake Oven Knob Hawk Count.

Thank you for supporting LGNC

Membership Form

Renewal

New Member

Donation Level

- | | | |
|---------------------------------------------|---------|----------------|
| <input type="checkbox"/> Friend of LGNC | \$25 | Name: _____ |
| <input type="checkbox"/> Individual | \$40 | Address: _____ |
| <input type="checkbox"/> Family | \$50 | _____ |
| <input type="checkbox"/> Sustaining | \$100 | _____ |
| <input type="checkbox"/> Contributing | \$250 | Phone: _____ |
| <input type="checkbox"/> Patron | \$500 | Email: _____ |
| <input type="checkbox"/> Golden Eagle Donor | \$1,000 | |

Please mail this form with check payable to:
Lehigh Gap Nature Center, P.O. Box 198, Slatington, PA 18080

ADDITIONAL SPECIAL DONATIONS

- \$ _____ **Lehigh Gap Capital Fund** -- supports improvements/maintenance on Refuge
- \$ _____ **Memorial/Endowment Fund** -- interest used to operate Nature Center
- \$ _____ **Educational Fund** -- supports the Center’s education programs and internships
- \$ _____ **Library/Archives Fund** -- funds subscriptions, books, archival storage
- \$ _____ **Research Fund** -- supports the Center’s wildlife research projects/internships

Gift Membership Offer

Members who renew at the Sustaining (\$100) or higher level may name a family member or friend for a gift membership to LGNC. Help us spread the word by nominating someone for a gift membership with your generous renewal.



**LEHIGH GAP
NATURE CENTER**

(Wildlife Information Center)
P.O. Box 198 • Slatington, PA 18080
610-760-8889 • www.lgnc.org • lgnc@ptd.net

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