



Spring Newsletter 2021

HIGHLANDS BIOLOGICAL FOUNDATION

265 N. 6TH ST. | P.O. BOX 580, HIGHLANDS, NC 28741
(828) 526-2221 WWW.HIGHLANDSBIOLOGICAL.ORG



Photos courtesy of Dylan Lytle

Spring: A Time of Renewal & Growth

Charlotte Muir, Executive Director, HBF

As spring ephemerals emerge throughout the Highlands Botanical Garden, we are reminded that even after the longest of winters, life and beauty prevail. Your support over the past year has allowed us to find new ways to accomplish our mission. Hopefully, you have enjoyed these efforts as much as we have enjoyed creating them for you!

We are planning for a wonderful summer of camps, lectures, and programs. Some (we hope!) will be in person, and some will continue virtually as we await a safe time to welcome larger groups.

Our Highlands Biological Foundation community still thrives, even when we are not gathered in person. This year has shown us that, more than ever, our common interest in learning about and protecting this beautiful part of the world unites us no matter where we may be.

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Gearing Up to Drawdown

Paige Engelbrektsson, Education Specialist, HBF

This past year, the Highlands Biological Foundation launched our very first book club. We read through portions of *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*. The hundred solutions included in the text are designed either to reduce the emission of greenhouse gases or to help draw them out of the atmosphere and store them. The goal is to eventually reach a point where more greenhouse gases are coming out of the atmosphere than entering it, creating a “drawdown.” An ambitious goal? For both the book and for hosting a book club, perhaps! But projections suggest that we are running out of time to reach it, meaning that talking – and taking action – is vital now more than ever before.

In the course of our meetings, we covered ideas ranging from plant-based diets to solar panels and more.

With a little bit of background knowledge and a wide range of personal experience, we asked: What can we as individuals do to help? What can we as a society do?

Both of these questions are critical. While the answers didn't always apply to Highlands – high speed rail, anyone? – there are quite a few that did. We came away with resolutions as varied as the solutions that inspired them, from recycling correctly to encouraging the Town of Highlands to be proactive in their sustainability practices.

If you are interested in learning more, my personal recommendation is a podcast called *How to Save a Planet*. In addition to covering the science and culture behind solutions, it also includes actions listeners can take themselves and resources for more information. Every bit counts! We are all in this together – and together we can all make a difference.

Celebrating 20 Years with Kernel the Corn Snake!



Kernel, the Corn Snake, has been greeting Nature Center visitors for 20 years! In 2001, Roger Skillman, the Nature Center's Summer Supervisor, brought Kernel to the Nature Center where he has since served as one of our most popular animal ambassadors. This year, we are celebrating the 20th anniversary of Kernel's arrival and the vital role he has had in our educational programming over the past two decades. See below for how to reserve a time to visit Kernel and our other Nature Center animal ambassadors this summer.

Reserve a Time to Visit the Highlands Nature Center

After more than a year of closure, the Highlands Nature Center is now open to visitors!

To ensure the safety of our community and beyond, visiting the Nature Center will look a little different this year. As part of our COVID-19 measures, we have implemented a free reservation system to ensure that only one extended household or group is in the Nature Center at a time. Masks are required of all guests, and hands-on exhibits (including our Kids Discovery Room) are currently closed. Learn more about our visiting guidelines online at highlandsbiological.org.

Sign up for our weekly emails or like us on Facebook for updates on Nature Center programs. The Highlands Nature Center is free to the public thanks to the generous support of our HBF members.

Spring hours:

Friday & Saturday
10 a.m. to 4 p.m.

Summer hours (beginning May 31st):

Monday - Saturday
11:15 a.m. to 4 p.m.

Hours subject to change.

Visit our website to see updates.



Scan this QR code with your smartphone's camera or visit calendly.com/highlandsnaturecenter/ to reserve your free visit.

Melanie with her husband, Tom.



Meet an HBF Trustee!

Melanie Mauldin has played an instrumental role in HBF's success since she joined the Board in 2018. This past year, she spearheaded a total revamp of the Highlands Nature Center gift shop and became a founding member of our *Drawdown* book club. Her ties to Highlands, and the Nature Center in particular, include four generations of her family, beginning with her grandparents who visited from New Orleans and extending to Mauldin's own children who split their summer vacation time between Highlands and Mexico. Learn more about Mauldin and her ties to our community and organization below.

Can you describe some of the ways you are involved with HBF?

"I was on the Development Committee for a few years and realized the Nature Center gift shop could be improved. I have extensive background in retail as I owned a retail business for 25 years, so revamping the gift shop seemed like a natural fit for me. People come back to the Nature Center year after year because they love it so much and it's such a tradition. Now, the gift shop will add a fun spark and some new life to our museum.

Last year, the Nature Center and gift shop were closed, but right before the pandemic began, we ordered some new things and we hosted a few pop up shops outside during the fall. The pop ups were very successful, and people loved the new merchandise. Many of the products are about loving and appreciating nature with a focus on learning. There are new children's books, games, and puzzles highlighting topics like insects, pollinators, and more. For adults, we have new botany and hiking books as well as tea towels, soaps, and fun items for hostess gifts. The t-shirts have been redesigned, and there are new collections for all ages. The new merchandise will be available inside this year when the Nature Center is open, but we also plan to host some pop up shops again."

Reserve a time to visit the Nature Center to browse our new gift shop merchandise!



What have you gained from being involved with HBF?

"HBF is a community within a community. The Nature Center is a gem right in our own backyard. Being a part of that, developing and nurturing its growth, adds a dimension in my life. It links me back to my past and history. There's a fulfillment in coming full circle, and it's nice to give back to something that gave so much to me. I can give back to what helped me grow and what fed me physically and spiritually as a child.

I hope that others, whether they have a history of visiting the Nature Center or if it's their first time, can know the same kind of magic that I've experienced there all my life. Whether it's walking through the museum or wondering through the gardens, it's a special place with a magical quality."



***Caterpillars Count!* helps researchers link insect food availability to songbird health and survival**

Jason Love, Associate Director, HBS

Last summer, the Highlands Biological Station (HBS) partnered with the Blue Ridge Bird Observatory (formerly Southern Appalachian Raptor Research) to initiate a long-term MAPS (Monitoring Avian Productivity and Survivorship) bird banding station on our campus. MAPS is a continent-wide research program aimed at better understanding songbird demographic trends, which is important given recent research findings showing that bird populations in North America have plummeted nearly 30% since the 1970s.

This summer, a former Highlands Field Site student named Lauren Whitenack will be returning to HBS to lead our MAPS bird banding station. In addition to bird banding, Whitenack will be implementing *Caterpillars Count!* at HBS and three other banding stations run by the Blue Ridge Bird Observatory. *Caterpillars Count!* is a **citizen science project** developed by Dr. Allen Hurlbert, an ecology professor at UNC-Chapel Hill, to better understand how plants, insects, and birds are responding to climate change. In particular, we know that insects, especially larval insects like caterpillars, are critical food items for both adult songbirds and their young; a shortage of caterpillars means lower survivorship of nestlings. Are insects abundant when birds are nesting, or has climate change altered this?

We will use *Caterpillars Count!* to quantify the abundance and biomass of insects from trees on our campus. Researchers will then correlate the *Caterpillars Count!* data with data collected from birds that we capture and band, such as songbird body fat index and the number of fledglings and juvenile birds captured. This will help address the question of whether climate change has affected the number of caterpillars available during nesting and fledging. If caterpillars emerge before chicks hatch due to increased temperatures in early spring, for example, their decreased availability could be contributing to songbird population declines. We hope to have our Nature Center summer campers assist with *Caterpillars Count!*, and you can contribute to this **citizen science project** as well. Review the information in the box below to learn how to get started.

HBS's MAPS bird banding and *Caterpillars Count!* projects are made possible thanks to funding from the Highlands Biological Foundation. This is one of the many ways your donations contribute to local, relevant scientific research and education. For more information about HBS's MAPS bird banding station, visit www.highlandsbiological.org/data/



How does Caterpillars Count! work?

Anyone can participate in *Caterpillars Count!*
Visit caterpillarscount.unc.edu to get started.

Select a leafy branch of a tree and identify the insects found on that branch to Order (e.g. moth, beetle, fly), estimate the length of each insect, and count the number of insects on the branch. You can also place a white cloth or "beat sheet" below the branch, shake the branch, and collect data on the insects that fall on the sheet.

UNC's Highlands Field Site Program Returning to the Station

Winter Gary, Communications & Events Coordinator, HBF

Did you know that the Highlands Biological Station serves as a field site for the Institute for the Environment at UNC Chapel Hill? The Highlands Field Site (HFS) program began in 2001 as an immersive, semester-long opportunity for students to explore real-world environmental issues through a combination of course work, field trips, group research projects, and internships with local organizations. This program was paused in 2019 to revamp the curriculum and will be returning to the Station this year!

This fall, a new cohort of HFS students will arrive at the Station to explore the ways humans affect the natural environment and the tools used to measure, understand, and communicate these impacts. Over the course of the semester, they will be immersed in various field experiences, gaining knowledge and skills to prepare for future careers in Environmental Science, Biology, Journalism, Public Health, and more.

The Highlands Biological Foundation has committed to helping the HFS program return to the Station. We have already begun by providing \$100k of funding this year to support a new Field Site Director charged with leading this program. They will also be implementing research projects at the Station that students will participate in each fall. By supporting the Foundation, you contribute to programs such as this – programs that are focused on the future of students AND the environment.

You don't have to look far to gauge the success of the HFS program. Over the years, a number of former students have returned to the Station to complete internships at the Nature Center, attend summer courses, conduct research projects, and to assist staff in teaching new cohorts of field site students. Even I was an HFS student back in 2017! Get to know three other alumni below.



MICHELLE RUIGROK **HFS 2010**

Ruigrok returned in 2011 as the Station's Program Assistant and played a fundamental role in the HFS program for the next several years, mentoring students on a daily basis. Ruigrok lent her expertise to the HFS program in 2017 and 2018 as co-leader of the students' Capstone research project.

Ruigrok currently works as a technician for a long-term study at the Coweeta Hydrologic Lab. At Coweeta, she and HBS Associate Director Jason Love conducted a stream macro invertebrate study that they plan to finish over the next year, thanks to funding from HBF.



KELDER MONAR **HFS 2011**

Monar returned in 2013 as the Station's Horticulturist and later served as a mentor to HFS students while working for Mainspring Conservation Trust (formerly Land Trust for the Little Tennessee). Kelder now works as Mainspring Conservation Trust's Stewardship Manager/GIS Specialist and still visits the Botanical Garden on occasion.



LAUREN WHITENACK **HFS 2016**

During her semester at HBS, Whitenack partnered with NC Audubon to study Golden-winged Warbler breeding habitat in western NC. After graduating in 2018, she returned to Highlands to present her research to the Highlands Plateau Audubon Society.

She will be returning to HBS this summer as the lead MAPS songbird bander for the Blue Ridge Bird Observatory. Along with banding, Whitenack will be studying insect abundance in relation to songbird breeding ecology. See previous page to learn more.



Susan Cohen, Associate Director, Institute for the Environment at UNC Chapel Hill

"UNC is known for its exceptional undergraduate research efforts and the field sites really set the standard – students work with cutting edge scientists and see the application of their work through capstone projects and internships. It is a great addition to student resumes for jobs or graduate studies, and really sets them apart from their peers. There are so many instances where students tell me their experiences at the field sites were the most impactful of their time at the university and helped them define their next steps in life. It is a big experience."

HFS students visit Fontana Dam on the Little Tennessee River during the fall 2017 semester. This is the tallest dam east of the Rockies!



Photo courtesy of Jim Costa

Member-Supported Research Grants

Congratulations to the following for receiving HBF's 'Grants-in-Aid' of scientific research this year:

Joseph R. Burger (Assistant Professor, University of Kentucky)
Biogeography and conservation of southern Appalachian mountaintop "island" biodiversity

Zeb C. Hull (MS student, WCU)
Biotic and abiotic influences on habitat use of a rare North Carolina salamander, *Necturus maculosus* **Bruce Family Scholarship in Herpetology**

Rachel Jordan (PhD student, 3rd year; University of Wisconsin)
How will our native conifers respond to winter warming?
Lindsay S. Olive Memorial Scholarship

Justin Jorge (PhD student, 3rd year; Duke University)
Environmental effects on the biomechanics of seed ejection in the fruits of *Hamamelis virginiana* **W. C. Coker Fellowship**

Radmila Petric (Postdoc, UNC-Greensboro)
The effects of water quality on bat activity and community structure in freshwater along a developmental gradient **Ralph M. Sargent Memorial Scholarship**

Lauren Whitenack (PhD student, 1st year; University of Nevada-Reno)
Analysis of arthropod diversity, abundance, and biomass in relation to songbird breeding ecology in western North Carolina **Martina Wadewitz Haggard Memorial Scholarship**

Learn more about our GIA program online at highlandsbiological.org and see how your donations contribute to local, relevant scientific research.



Photographs featuring some of our 2021 grant recipients:
1. Radmila Petric
2. Lauren Whitenack
3. Rachel Jordan



Zahner Conservation Lecture Series

Our annual Zahner Lecture Series continues this summer! Featured speakers include Dr. Hilary Swain of Archbold Biological Station, Dr. J. Drew Lanham of Clemson University (pictured), Owen Cox of Equinox Environmental, and more.

Lectures will be offered virtually each Thursday evening from July 15th to September 9th. Stay tuned to our social media pages or sign up for our biweekly emails for more details regarding speakers, dates, and potential in-person opportunities.

HBF's Inaugural Carpenter Lecture

Good news - we plan to schedule our inaugural "Carpenter Lecture" for this fall! Our featured speaker will be renowned author, strategist, and teacher, Dr. Katharine Wilkinson (pictured). She was Senior Writer of *Drawdown* — the New York Times bestseller on climate solutions — which has been the featured text in HBF's book club. Stay tuned for more details on this lecture.



What's Blooming this Spring?



Devil's bit
(*Chamaelirium luteum*)



Bleeding heart
(*Dicentra eximia*)



Mayapple
(*Podophyllum peltatum*)



Bluets
(*Houstonia serpyllifolia*)



Jack-in-the-pulpit
(*Arisaema triphyllum*)



Yellow-root
(*Xanthorhiza simplicissima*)

Photos courtesy of Paige Engelbrektsson & Winter Gary



See HBS's 2021 summer course and workshop offerings online at highlandsbiological.org

Coral honeysuckle
(*Lonicera sempervirens*)

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You can also follow us on social media.



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Stimulating, promoting, and supporting biological research and education in the southern Appalachians.



Your membership supports:



Nature Center programming and summer camps



Research in the southern Appalachians



Community outreach and education



The Highlands Botanical Garden

Ways to Give

- Use the enclosed envelope to send a gift
- Call our office and renew your membership
- Donate or set up a recurring donation online at highlandsbiological.org
- Send a stock gift
- Contribute through a donor-advised fund
- Introduce your family and friends to the Nature Center and Botanical Garden

Leave a Legacy

that will inspire present and future generations to preserve and protect the unique environment of the Highlands Plateau. Please remember the Highlands Biological Foundation in your will.



For additional giving opportunities, contact Charlotte Muir at (828) 526-2221.