

# HUBBARD BROOK RESEARCH FOUNDATION

# Annual Report

November 2020



Hubbard Brook is home to one of the longest records of migratory bird populations in North America, a dataset that enables scientists to investigate the lives of forest birds and chart the ripple effects of environmental changes around the globe.

➤ Sara Kaiser, Hubbard Brook Field Ornithology Program Leader at the Cornell Lab of Ornithology (see page 8)



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After 12 consecutive years of dedicated service, **Steven Hamburg** rotated off the Board of Trustees in July. We are deeply grateful for Steve's friendship, commitment, and leadership.

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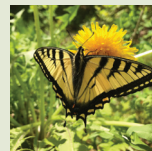
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Wellesley College

Cover photo by Ben Silberfarb

## THE HUBBARD BROOK COMMUNITY



For more than half a century, long-term studies of air, water, soils, plants, and animals at the 7,800-acre Hubbard Brook Experimental Forest have led to landmark discoveries including acid rain; the effects of lead, salt, and nitrogen pollution in streams and lakes; and the factors affecting migratory songbird abundance. Hubbard Brook is a network of environmental thinkers, including scientists, communicators, educators, stakeholders, and engaged citizens.

## Hubbard Brook Research Foundation

### *Administrative Offices*

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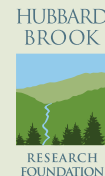
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Operated by the USDA Forest Service

### *Ian Halm, Site Manager*

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[www.hubbardbrook.org](http://www.hubbardbrook.org)





## From Our Executive Director

### 2020: The Year of Perfect Vision



Back in January, none of us could have imagined how the promise of this year would unfold, but the combined crises of the pandemic, racial injustice, and climate change opened our eyes to the rigged and rickety systems that jeopardize our society and environment.

At Hubbard Brook, we've been soul-searching, identifying and addressing the weaknesses in our own workplace culture and rebuilding for diversity, equity, inclusion, justice, and creativity.

At the same time, we are finding new ways to offer science in service of real-world issues. We are boosting the at-home curriculum by connecting scientists with K-12 students for live Zoom presentations. We elevated the climate conversation and informed the electorate during our NH Youth Climate and Clean Energy Town Hall for U.S. presidential candidates (see page 6). We are empowering and amplifying the next generation through our *Young Voices of Science* initiative (see page 7).

Thanks to your stabilizing support, we are regrouping around core community values in order to advance environmental solutions.

It felt like the earth rocked on its axis more than once in 2020, but we pivoted, rebalanced, and stand ready for the challenges ahead. We could not have done this without your participation, and I am forever grateful for it.

A handwritten signature in black ink, reading "Anthea Lavallee".

Anthea Lavallee  
HBRF Executive Director



*Above: Female  
black-throated blue  
warbler. Photo by  
Ben Silberfarb  
Right: Overbird nest.  
Photo by Geoff Wilson*



## Tyler Edwards

*Duke University Junior; Biology Major; Science & Society Certificate  
Founding Class Member of HBRF's Young Voices of Science Initiative*

Tyler studies aquatic insect emergence in streams as a function of algae, light, and temperature. This means spending hours poring over sheets of sticky yellow paper, counting and identifying the tiny specks trapped on them. For Tyler, finding creative ways to share knowledge is just as important as the research itself, and her communication goals take her well beyond the lab. Tyler has dabbled in spoken word and playwriting as science communication tools and, when COVID threw a wrench in her plans to spend the summer at Hubbard Brook, she decided to try her hand at podcasting. Available now on Spotify, *Gather, Share, Teach* tells the behind-the-scenes story of the Hubbard Brook water record. "I definitely see science communication as my future," Tyler says. "I think that my generation of scientists has the ability and the desire to change the paradigm that we have around communication completely."

In July, Tyler made an indelible impression at an HBRF science briefing for U.S. Congresswoman Ann Kuster. Tyler is also in the inaugural cohort of HBRF's *Young Voices of Science* initiative. Stay tuned to this gifted scientist and communicator in the beginning phases of a remarkable career!

**"I definitely see science communication  
as my future." — Tyler Edwards**



*Above: In the lab with insect traps  
from Hubbard Brook  
Right: Collecting spiders*





## Dr. Steven Hamburg

*Chief Scientist, Environmental Defense Fund*

Dr. Steven Hamburg recently stepped down from the HBRF Board of Trustees after 12 years.

That decade-plus of service is just the latest chapter in a story that began in 1978, when Steve was an incoming doctoral student under Hubbard Brook Ecosystem Study Co-Founder, F. Herbert Bormann. The highlight of Steve's tenure on the Board, he says, was helping to shepherd Hubbard Brook from its first half-century into its second. He hopes that the community will build upon the strong foundation of innovation and intellectual capital laid down in the first 50 years, while embracing new questions and challenging old understandings. "The Hubbard Brook of today looks very different than the Hubbard Brook I joined 42 years ago," Steve says. "It's a more diverse community. Diverse in terms of the individuals and their backgrounds and diverse in terms of the intellectual areas of interest. That's a great thing." Steve says Hubbard Brook is particularly well positioned to use cutting-edge science to effect positive environmental outcomes. According to Steve and thanks, in large part to his contributions, "Hubbard Brook has never been more relevant than it is today."



*Photo courtesy  
Environmental Defense  
Fund*

**"The Hubbard Brook of today looks very different  
than the Hubbard Brook I joined 42 years ago."**

**— Dr. Steven Hamburg**



*Top: On the cutting edge of science:  
constructing Hubbard Brook's Sandbox  
Experiment with Herb Bormann*

*Bottom: A legendary scientific lineage:  
Steve (second from right) with advisor,  
Herb Bormann (second from left),  
and advisee, Matt Vadeboncoeur (far left)*



## Dr. Andrew Reinmann

*Assistant Professor, Environmental Sciences Initiative,  
CUNY Graduate Center and Geography, Hunter College*

**I**t was a day playing hooky that set Dr. Andrew Reinmann on a life-long path of scientific inquiry. At age 16, he and some friends skipped school to take a hike at Harriman State Park. Growing up in suburban New York, Andy had never spent much time in the forest. “Right away, I was hooked,” he says. Now an Assistant Professor at the City University of New York, Andy studies forest ecosystems and how human activities are altering them. At Hubbard Brook, that’s included snow removal experiments and researching how a warming climate is affecting the carbon and nitrogen cycles. Andy loves giving his students the same kind of eye-opening introduction to ecology that he himself experienced. “That is the single most fun and rewarding part of my job,” he says. “The way you learn about ecology is to get outside and look at it, smell it, feel it, and hear it. Being able to expose students to familiar ecosystems in New York City while also providing some opportunity to visit research sites in more rural environments is really important from both an educational and life experience perspective.”

**“The way you learn about ecology is to get outside  
and look at it, smell it, feel it, and hear it.”**

**— Dr. Andrew Reinmann**

*Andy and colleagues working on a snow removal experiment. Photo  
by Pamela Templar*




## Dr. Jaclyn Hatala Matthes

*Assistant Professor of Biological Sciences, Wellesley College*

With an interdisciplinary Ph.D. in Environmental Science, Policy, and Management, Dr. Jaclyn Matthes connects her scientific research to larger questions about how we care for the places we love. Jackie works in the rapidly evolving field of ecological data science, using big datasets to answer ecological questions at a variety of scales. At Hubbard Brook, Jackie and her team of Wellesley students partner with the vegetation crew to understand shifts in forest composition using long-term data. They also use ecosystem modeling to forecast ecosystem changes in the next decade—an ideal

timeframe for informing management decisions. “Hubbard Brook has always been an amazing place to do science and in ways that are connected with policy,” she says. Students are often attracted to the Matthes Ecolab’s research framework, but Jackie also welcomes students who come with new ideas of their own. “I get the most satisfaction in my job from creating space for students to have research experiences where they feel like they’ve done something really cool and have a sense of pride in what they’ve accomplished.”

*Jackie Matthes (in plaid) with students in front of the Hubbard Brook*



“Hubbard Brook has always been an amazing place to do science.” — Dr. Jaclyn Matthes

## NH Youth Climate and Clean Energy Town Hall for Presidential Candidates

On February 5, in Concord, NH, HBRF co-hosted a Youth Climate and Clean Energy Town Hall for U.S. presidential candidates. The public, non-partisan event featured:

- 6 presidential candidates
- 20 environmental science and energy student panelists from NH high schools, colleges, and universities
- 72 media representatives from 40 regional, national, and international outlets
- 500+ in-person audience participants and 952 unique viewers via the live streaming link

Together with co-hosts from the Tuck School of Business at Dartmouth and Stonyfield Organic, we elevated the climate conversation at a crucial decision point, informed the electorate, and provided a platform for young science and energy students to share their knowledge, concerns, and hopes for the future.

***“These are literally the best questions I’ve ever had at a forum.”***

– Senator Amy Klobuchar

***“Today was the greatest and most immersive experiential learning opportunity I have had in my life.”***

– Kevin Yuan, Student Panelist





## Hubbard Brook Science and Program Updates

- Hubbard Brook avian ecology was featured in *Northern Woodlands'* Resilient Forest video series. The short film was accepted to the Wildlife Conservation Film Festival. <https://www.youtube.com/watch?v=7p03Mz8bz6E>
- HBRF and UNH collaborators released a Winter Climate Change Science Links report. <https://hubbardbrook.org/confronting-our-changing-winters>
- In March, HBRF staff and Forest Service collaborators hosted an Ice Storm Experiment stakeholder symposium and exhibit at the McAuliffe-Shepard Discovery Center in Concord. <https://hubbardbrook.org/articles/ice-storm-stakeholder-symposium-and-exhibition-concord>
- HBRF and Forest Service educators developed spring and fall phenology and summer caterpillar activities for elementary students.
- In July, HBRF organized a science briefing for U.S. Congresswoman Ann Kuster featuring the work of Lindsey Rustad (Ice Storm Experiment), Alix Contosta (Winter Weather Whiplash), Charley Driscoll (Carbon Scenarios for Air Quality), and Tyler Edwards (Hopes/Concerns for Our Social/Environmental Future).
- HBRF worked with academic partners across the Northern Forest to restore the Northeastern States Research Cooperative, a competitive funding program for applied forest research in the Northern Forest. The request for proposals was issued in September.
- In October, HBRF launched *Young Voices of Science*, a series of expert-led science communication workshops and public engagement opportunities for environmental graduate and undergraduate students.

*Wanda Rice, citizen scientist volunteer on the Sugar Maple Regeneration Project with the Forest Society.*



## A Training Ground for Fledgling Ornithologists

*The Cornell Lab of Ornithology Initiates a New Field Program at Hubbard Brook*

In an era of environmental sensors transmitting millions of data points automatically and wirelessly to researchers' computers, the Hubbard Brook bird study remains a hands-on affair. Behind each measurement of the last 50 years is not only a person, but a whole team of people who spend their spring and summer living in the forest, meticulously counting each individual bird in the study area, banding and tracking warblers, finding and monitoring nests, measuring vegetation, and counting caterpillars.

"When you have your boots on the ground in the forest, day in and day out, that makes a big difference," says avian ecologist and HBRF Trustee, Nick Rodenhouse. "For young researchers and students, these are unforgettable, life-changing experiences."

Thanks to a new field training program run by the Cornell Lab of Ornithology, more undergraduate students will tap into these experiences early in their research careers. Led by research ecologist Sara Kaiser, the program will support undergraduate researchers from Cornell, enabling them "to learn how to be ecologists and to gain an appreciation for the complexity of that work," according to Kaiser.

"The full field immersion of this program is super valuable," Kaiser said. "They have to learn how to function within a field crew—to learn interpersonal skills and do all those things you do in a tight community. I just don't think any other kind of field course really provides that."

*Cornell Ph.D. student, Alicia Brunner, holds a black-throated blue warbler. Photo by Ben Silberfarb*

**"For young researchers and students, these are unforgettable, life-changing experiences."**

**— Nick Rodenhouse, HBRF Trustee**





## THANK YOU FOR YOUR SUPPORT *The following list gratefully acknowledges donors who contributed to Hubbard Brook between October 1, 2019 and September 30, 2020*

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*In honor of Gene E. Likens<sup>6</sup>*

#### **Spring Angel Donor Appeal<sup>7</sup>**

Given the economic strains of COVID-19, we issued a much smaller spring appeal to our Trustees and select donors only. We asked them to consider special spring gifts, to lift the burden from the rest of our donors. A small group of Angel Donors heard the call, and the response was tremendous! Over a six-week period, we received more than \$76,000 from 33 donor households who were inspired by a generous matching challenge from an anonymous foundation. HBRF is deeply grateful to these incredibly generous friends who carried the spring appeal,



stabilizing our programs and operations through these uncertain times.

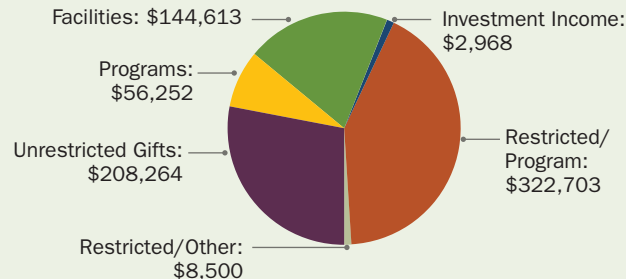
We are grateful for support through the pandemic from the U.S. Small Business Administration, Paycheck Protection Program and the State of NH, Governor's Office for Emergency Relief and Recovery.

*Our community lost two of its greatest forest champions in 2020, Put Blodgett and Harold Janeway. We are deeply grateful for their support and friendship over many years and send our heartfelt condolences to their families.*

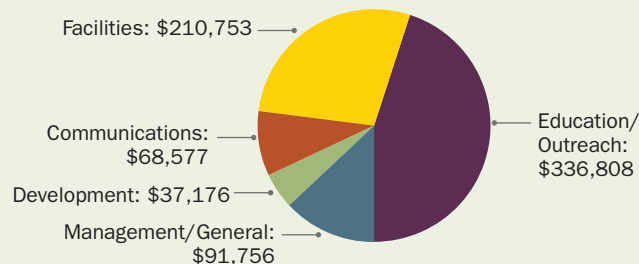
## **Hubbard Brook Research Foundation**

October 1, 2019 – September 30, 2020

### **Revenues: \$743,300\***



### **Expenses: \$745,070**



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