

HUBBARD BROOK RESEARCH FOUNDATION E-NEWS

June 2023

Promoting the understanding and stewardship of forest ecosystems through scientific research and monitoring, policy outreach, and education

***Greening STEM* at Hubbard Brook** NH Students tour forest, engage with Artist Xavier Cortada



This Spring, Hubbard Brook participated in the National Environmental Education Foundation's (NEEF) [Greening STEM](#) program, serving as an outdoor classroom for more than 120 6th and 9th-grade NH students. Dr. Lindsey Rustad, Hubbard Brook investigator and Director of the USDA Northeast Climate Hub, envisioned and coordinated the program of activities aimed at "Integrating Science, Art & Music to Understand Water Cycle Science and Monitoring." Greening STEM promotes place-based learning by bringing students to environmental education centers, parks, and forests to cultivate a sense of connection and stewardship with their local ecosystems.

Before visiting the forest, students engaged with Hubbard Brook data through a series of six water cycle-themed classroom activities, developed by Lindsey and participating teachers.

Students also met virtually with a panel of Hubbard Brook scientists, educators, and artists.

The field trip agenda featured the art-sci activity, "Conversation with the Forest," led by Miami-based environmental artist and Hubbard Brook collaborator, Xavier Cortada. Xavier facilitated the art-sci module with assistant Adam Roberti and HBRF Communications Specialist and artist Raisa Kochmaruk. Students also joined Hubbard Brook educators Brendan Leonardi and Amey Bailey for a tour of the weirs and watersheds and received an inside view of the data sensors from Forest Service Facility Manager Ian Halm.



Above: (top) 6th-graders from Nashua, NH, at Hubbard Brook; (right) Artist Xavier Cortada leads 9th-graders in art workshop. Photos by Raisa Kochmaruk.

HBRF's Spring Appeal in Full Swing

Join the chorus of donors celebrating science!



The theme of this year's spring appeal is inspired by bioacoustic monitoring at Hubbard Brook. Lately, the woods have been buzzing with the sounds of black throated green warblers, ovenbirds and mosquitoes.

Going, Going, Almost Gone!

Give today to maximize your contribution through our spring matching challenge.

Gifts in any amount from first-time donors or friends who made their last contributions more than twelve months ago get a \$250 bump from a generous supporter! Matching opportunities are limited to the next 16 qualifying gifts. If you haven't given before (or in a while), \$1 turns into \$251!

[ADD \\$250 TO MY GIFT](#)

Outreach Highlight

Young Voices of Science Celebrates 6th Student Project Showcase

Hubbard Brook's free science communication training program, *Young Voices of Science*, celebrated the graduation of its **6th student cohort** on May 25, 2023.

During the celebration, participants showcased their outreach projects, including op-eds,

podcasts, and story times for children. Check out a selection of their projects by clicking the links or screenshots below!



Organization: THEM in STEM
Transforming Hearts, Enriching Minds
By Sara Rivera
theminstem.com

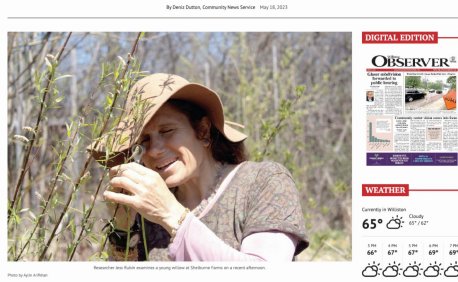


Podcast: Sippin' on Science
By Molly Kennedy
[Spotify.com](https://www.spotify.com)



Video: I Like Science... What now?
Chat with a STEM coordinator
By Victoria Dearman
[YouTube.com](https://www.youtube.com)

Can fungi curb phosphorus pollution?



Op-ed: Can fungi curb phosphorus pollution?
By Deniz Dutton
[The Williston Observer](https://www.willistonobserver.com)



Above: Screenshot of the Spring 2023 Young Voices of Science student cohort.

Visit the [YVoS website](http://YVoS.org) to learn more about the program and this celebration.

Young Voices of Science is made possible through the generous support of an Anonymous Foundation, the Bailey Charitable Foundation, the Cotyledon Fund, the Emily Landecker Foundation, and the National Science Foundation.

Saving the forest for the trees

Invasive species are decimating old-growth species that have survived for half millennium. There are ways to stem the destruction before it's too late.

By David Orwig Updated May 29, 2023, 3:00 a.m.



All Voices of Science!

HBRF and Harvard Forest recently teamed up to offer a virtual op-ed writing module to scientists at all career stages, led by longtime YVoS trainer, [Dr. David George Haskell](#). In May, an essay about forests and invasive pests by participant David Orwig, Harvard Forest Senior Ecologist and Forest Ecologist, was published in *The Boston Globe*.

Science Feature: Phenology



A freezing event of <26 degrees F spanning more than 6 hours on the night of May 17 caused widespread damage to red oaks and beech trees in the Hubbard Brook vicinity. Above: the crown of a red oak after the frost. Photo by Matt Ayres.

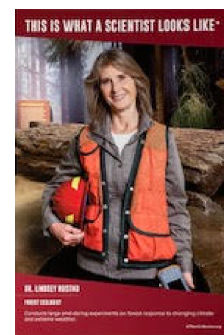
Hubbard Brook maintains a meticulous [record](#) of spring and fall tree phenology. Phenology is the study of seasonal changes that occur in an ecosystem, including the timing of bud burst and leaf expansion in the spring and the senescence of leaves in the fall. In 1989, the Forest Service team began visually documenting the timing of leaf-out and leaf fall on plots throughout the Hubbard Brook Valley. They developed a "phenology index" to standardize assessments of leaf color and noted leaf emergence and senescence in space and time and from year to year. In 2010, Forest Service staff adopted remote phenology cameras, or "phenocams," to capture the changes in the forest canopy by snapping daily (or hourly) photos of the plots.

Variability among tree species in the timing of leaf-out and leaf fall is natural. However, there is increasing evidence that leaf-out is occurring earlier, as buds receive more light and heat sooner in the season. Disruptions in leaf growth, such as late-season frosts or extended periods of drought, are signs of "climate unsettling" and a hot topic of conversation among scientists who investigate forest phenology over the long-term.

You can access the real-time photos taken by Hubbard Brook's phenocams [here](#).

IF/THEN Comes to the Montshire Museum of Science

Lindsey Rustad features prominently in the Montshire Museum of Science's current [IF/THEN exhibit](#). [IF/THEN](#) works to increase visibility of women in STEM fields as a source of inspiration for young women and girls.



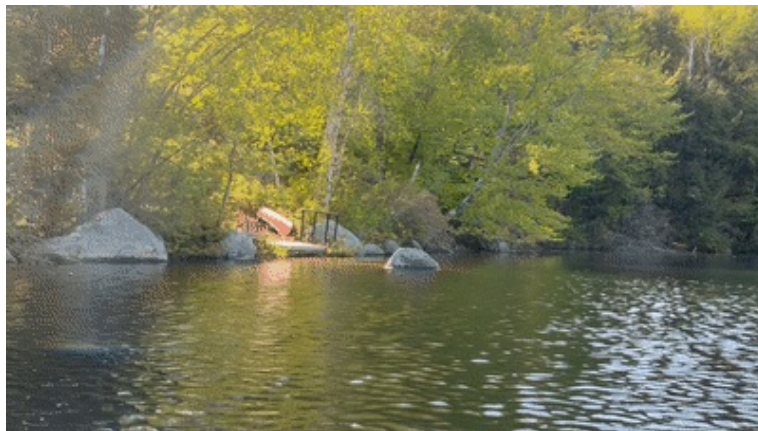
Parting Shots

From the Porch at Pleasant View Farm



For 30 years, Science Night has been a summer tradition for mixing science and socializing in the relaxed atmosphere of the Pleasant View Farm porch – [a site with a rich history](#). Weekly speakers, representing a variety of disciplines and career stages, share their knowledge and expertise with summer student residents. Presentations are casual and conversational and often followed by food, frisbee, and volleyball.

Above: Geoff Wilson leads the first Science Night of 2023 at Pleasant View Farm. (Below) A view of Mirror Lake from a kayak. Photos by Raisa Kochmaruk.



As always, thanks for your interest in Hubbard Brook. Please feel free to contact us with any questions, ideas, or suggestions, and help us to spread the word by forwarding this email to a friend.

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The Hubbard Brook Research Foundation is a nonprofit organization dedicated to supporting the Hubbard Brook Ecosystem Study.

