

**HUBBARD BROOK ECOSYSTEM STUDY**  
**60<sup>th</sup> ANNUAL COOPERATORS' MEETING**  
Plymouth State University, Merrill Place Conference Center, Plymouth, NH

<b>Day 1: Wednesday, July 12, 2023</b>		
7:30 – 8:30		<b>Breakfast available for purchase, Prospect Dining Hall</b>
8:30 – 8:45	John Campbell et al.	Welcome & Announcements
8:45 – 9:50	<b>SESSION 1: WATERWORLD (1995): Precipitation, Streams, and Groundwater</b>	
8:45 – 8:50	Geoff Wilson	Some surprising observations from a stream litter decomposition study
8:50 – 9:00	Scott Bailey	Soil distribution across the Hubbard Brook valley; the surprising role of streams in lateral soil development
9:00 – 9:05	Chris Solomon	Changes in dissolved organic (and inorganic?) carbon export in Hubbard Brook streams
9:05 – 9:07	Emily Bernhardt	State of the Watershed Report from HBWater
9:07 – 9:12	Audrey Thellman	How dish sponges overturned our understanding of Hubbard Brook stream ecosystems
9:12 – 9:17	JP Gannon	Does the changing seasonality of snowpack affect groundwater storage and evapotranspiration?
9:17 – 9:22	Amanda Pennino	Catchment structure regulates hydrodynamic drivers of chemical weathering in shallow forest soils
9:22 – 9:27	John Morgan	Subsurface controls on flow permanence in headwater streams
9:27 – 9:32	Ian Halm	How we measure snow at HBEF
9:32 – 9:37	John Campbell	Paired watershed studies: How long do they last?
9:37 – 9:42	Tristan Coffey	Compartmentalization of fracture networks and groundwater flow in fractured bedrock beneath the Mirror Lake watershed, Woodstock, New Hampshire
9:42 – 9:50		<b>Discussion, Session 1</b>
9:50 – 10:00		<b>Introductions</b>
10:00 – 10:30		<b>Break</b>
10:30 – 11:25	<b>SESSION 2: MULTIPLICITY (1996): The MELNHE Project</b>	
10:30 – 10:40	Ruth Yanai	Still fertilizing after all these years: Results from the world's longest-running NxP experiment in a temperate forest
10:40 – 10:47	Kelley Gilhooly	Lose weight fast! The impacts of N and P on leaf litter decomposition over 3 years
10:47 – 10:54	Jacob Beidler	What's at stake with wood decomposition? Woodn't you like to know?
10:54 – 11:01	Erin Cornell	Fixated on N fixation! Free-living N fixation in soil, leaf litter, and dead wood
11:01 – 11:08	Erica Albertson	Living the wood life: Closing the N budget with N fixation in dead wood
11:08 – 11:15	Lindsay Holland	It's a beautiful day in the neighborhood: The power of knowing tree location
11:15 – 11:25		<b>Discussion, Session 2</b>
11:25 – 12:10	<b>SESSION 3: PAY IT FORWARD (2000): Engagement and Outreach</b>	
11:25 – 11:35	Dayna de la Cruz	Community-building at Hubbard Brook
11:35 – 11:40	Steven Hamburg	Observing forest change over 45 years, satellites, and driving change globally
11:40 – 11:45	Anneke Huynen	Preserving the past for the future: The Sample Archive at Hubbard Brook
11:45 – 11:55	Anthea Lavallee	Welcome to the Woods: Forest Outreach for Covid, Climate, and Political Migrants
11:55 – 12:00	Mary Martin	Highlights from Information Management at Hubbard Brook
12:00 – 12:10		<b>Discussion, Session 3</b>
12:10 – 1:15		<b>Group Photo, then Lunch – Prospect Dining Hall</b>

<b>1:15 – 2:05</b>	<b>SESSION 4: HOW GREEN WAS MY VALLEY (1941): Trends in Forest Structure and Composition</b>	
1:15 – 1:25	Nina Lany	Foliar chemistry at the Hubbard Brook Experimental Forest, 1992 - 2021
1:25 – 1:30	Matthew Vadeboncoeur and Zach Hooper	Salvage dendrochronology of white ash at Hubbard Brook
1:30 – 1:40	John Battles	Trends and drivers of biomass accumulation in response to an experimental replacement of soil Ca -- a 20 year summary
1:40 – 1:45	Christy Goodale	Contrasting long-term responses to calcium addition: Hubbard Brook W1 and Woods Lake, NY
1:45 – 1:55	Nat Cleavitt	Northern red oak seedling ecology at Hubbard Brook and beyond
1:55 – 2:05		<b>Discussion, Session 4</b>
<b>2:05 – 3:06</b>	<b>SESSION 5: DEADFALL (1968,1993,2012): Change and Disturbance in the Green Web</b>	
2:05 – 2:15	Liz Studer	The ASH Project (1): Do tree species matter?
2:15 – 2:20	Farrar Ransom	The ASH Project (2): Fungi Frenemies
2:20 – 2:22	Tianxiao Wang	The ASH Project (3): Orcas of the brown food web
2:22 – 2:24	James Hardat	Exploring invertebrate abundance and nutrient impact on a changing forest landscape.
2:24 – 2:29	Frances Brubaker	Investigating drivers of Lepidoptera population fluctuation in the Hubbard Brook Forest
2:29 – 2:31	Wyatt Cummings	Insects in an aging forest: Causes of decline in the green food web
2:31 – 2:41	Sophie Harris	Identifying drivers of Beech Bark Disease in northeastern aftermath forests
2:41 – 2:51	Raquel de Castro Portes	Evaluating the impact of whole-tree harvesting on soil redistribution rates in the Hubbard Brook Experimental Forest using <sup>239</sup> + <sup>240</sup> Pu isotopes.
2:51 – 2:56	Lindsay Rustad	The Hubbard Brook Ice Storm Experiment: The Frozen Forest Chronicles
2:56 – 3:06		<b>Discussion, Session 5</b>
<b>3:06 – 3:36</b>		<b>Break</b>
<b>3:36 – 4:23</b>	<b>SESSION 6: RUNNING ON NP (1988): Nitrogen and Phosphorus Dynamics</b>	
3:36 – 3:46	Garrett Higgins	Changes in watershed N retention during a period of low stream N export
3:46 – 3:56	Linda Pardo	Can we predict peaks in streamwater nitrate?
3:56 – 3:58	Colin Fuss	Do the dynamics of stream nitrogen and phosphorus export during high-flow events change as forests age?
3:58 – 4:03	Chris Johnson	Some preliminary observations on soil phosphorus at Hubbard Brook
4:03 – 4:13	Catalina Mejia	Temperature and denitrification at a Hubbard Brook climate gradient
4:13 – 4:23		<b>Discussion, Session 6</b>
<b>4:23 – 4:30</b>		<b>Announcements</b>
6:00 onward		<b>Dinner, Games, and Entertainment – USFS Hubbard Brook Barn</b>

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<b>Day 2: Thursday, July 13, 2023</b>		
<b>7:30 – 8:30</b>	<b>Breakfast available for purchase, Prospect Dining Hall</b>	
<b>8:30 – 8:40</b>	Announcements	
<b>8:40 – 9:24</b>	<b>SESSION 7: THE BIRD[S] (1963): Black-throated Blue Warblers</b>	
8:40 – 8:45	Braeden Thomson	Oxidative costs and constraints of territory quality on reproductive effort in male Black-throated Blue Warblers
8:45 – 8:47	Grace Guo	Spatial patterns in perceived nest predator hotspots, nest site selection, and nest success in the Black-throated Blue Warbler
8:47 – 8:49	Brian Hofstetter	Paternity and male nest defense in the Black-throated Blue Warbler
8:49 – 8:54	August Davidson-Onsgard	Signaling function of the female supercilium in the Black-throated Blue Warbler
8:54 – 9:04	Jackson Hutchison	Post-fledging survival, habitat use, and movement of migratory black-throated blue warblers in high- and low-risk habitat
9:04 – 9:09	Amaya Bechler	Characterizing variation in gut microbiome composition and diet from breeding through molt in the black-throated blue warbler
9:09 – 9:14	Alicia Brunner	The timing of breeding influences fall migratory behavior of the Black-throated Blue Warbler
9:14 – 9:24	<b>Discussion, Session 7</b>	
<b>9:24 – 10:00</b>	<b>Break</b>	
<b>10:00 – 10:49</b>	<b>SESSION 8: ANIMAL KINGDOM (2010): Not Black-throated Blue Warblers</b>	
10:00 – 10:10	Miranda Zammarelli	Annual variation in territory size and abundance of forest songbirds: 50 years at Hubbard Brook
10:10 – 10:12	Hannah Pryor	Geographic song variation and subspecies recognition in the Yellow-rumped Warbler complex
10:12 – 10:14	Todd Jones	Post-fledging ecology in a changing world
10:14 – 10:19	denise burchsted	The multi-threaded Hubbard Brook
10:19 – 10:24	Nick Rodenhouse	Atlantic Multidecadal Oscillation and Hubbard Brook
10:24 – 10:29	Eric Lyons	Where do we go from here? Directional dispersal in the Northern Spring Salamander
10:29 – 10:39	Winsor Lowe	Outbreeding reduces survival during metamorphosis in a headwater stream salamander
10:39 – 10:49	<b>Discussion, Session 8</b>	
<b>10:49 – 11:56</b>	<b>SESSION 9: THE FOUR SEASONS (1981): Effects of Changing Seasonality</b>	
10:49 – 10:59	Andrew Reinmann	Effects of climate change across seasons on northern hardwood forest soil CO <sub>2</sub> fluxes
10:59 – 11:09	Emma Conrad-Rooney	Interacting effects of growing season and winter climate change on forest carbon sequestration
11:09 – 11:19	Pamela Templer	Changing seasonality and changing nitrogen in the northern hardwood forest
11:19 – 11:29	Peter Groffman	Overwinter mineralization and nitrogen oligotrophication in the northern hardwood forest
11:29 – 11:34	Stephen Caron	Spring snowmelt timing and nitrogen cycling in the northern hardwood forest
11:34 – 11:44	Ryan Shipley	Changing seasonality and nitrogen availability in the northern hardwood forests: Litter quality
11:44 – 11:46	Alejandro Asencio, Wilson Deng, Peter Manos, Kyla Savino	Tree growth phenology across a climate gradient at Hubbard Brook

11:46 – 11:56	<b>Discussion, Session 9</b>	
<b>11:56 – 1:00</b>	<b>Lunch – Prospect Dining Hall</b>	
<b>1:00 – 1:59</b>	<b>SESSION 10: LONG STORY SHORT (2021): Long-term Ecosystem Responses</b>	
1:00 – 1:10	Connor Olson	Changes in organic soil mercury concentrations over 50 years at the Hubbard Brook Experimental Forest
1:10 – 1:15	Torsten Berger	Trends in soil and soil solution chemistry of sugar maple stands (1995-2022) manipulated by additions of Ca and Al
1:15 – 1:25	Charles Driscoll	Changes in atmospheric deposition and recovery of soil and surface waters from historical acidification at Hubbard Brook and the eastern U.S.
1:25 – 1:27	Faraz Gorginpaveh	Future projections of soil and stream chemistry under a changing climate at Hubbard Brook using the PnET-BGC model
1:27 – 1:32	Alix Contosta	Vanishing winters, lengthening springs, and growing-season soil carbon fluxes
1:32 – 1:37	Darby Bergl	Land-atmosphere carbon dynamics in a changing climate: Insights from two decades of eddy covariance data in the Bartlett Experimental Forest
1:37 – 1:47	Mark Green	Heat, water, and CO <sub>2</sub> fluxes during the vernal windows of 2018-2020
1:47 – 1:49	Caitlin Pries	CO <sub>2</sub> production throughout the soil profile with and without roots
1:49 – 1:59	<b>Discussion, Session 10</b>	
<b>1:59 – 2:05</b>	<b>Closing Announcements</b>	

**Meeting location: Merrill Place Conference Center at Plymouth State University**

**14 Merrill St., Plymouth, NH**

The meeting will be held at the Merrill Place Conference Center, shown with the red marker below.

Those with cars will be required to park at Hyde Parking Lot #304.

Lunches will occur at the Prospect Dining Hall, where breakfast will also be available for purchase.

