

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

<b>Day 1: Wednesday, July 13, 2022</b>		
<b>7:00-8:20</b>		<b>Breakfast</b>
<b>8:30-8:45</b>		Welcome & Announcements
<b>8:45-9:30</b>	<b>SESSION 1: Creatures Great and Small</b>	
8:45-8:55	Lynn Christenson	Activity and occurrence of wildlife at Hubbard Brook
8:55-9:00	Miranda Zammarelli	Habitat selection and density dependence of nesting migratory songbirds
9:00-9:02	Pooja Panwar	Using automated recording units for long-term bird monitoring at Hubbard Brook Experimental Forest
9:02-9:04	Frances HurstBrubaker	Macroinvertebrate biodiversity and abundance in an aging forest ecosystem
9:04-9:14	John Deitsch	Artificial light at night increases top-down pressure on caterpillars: experimental evidence from a light-naïve forest
9:14-9:16	Avery Cox	High resolution imaging of ectomycorrhizal fungi
9:16-9:21	Renata Ontman	Surprising relationships between soil pH and microbial biomass and activity in a northern hardwood forest
9:21-9:30		<b>Discussion, Session 1</b>
<b>9:30-9:45</b>		<b>Introductions</b>
<b>9:45-10:15</b>		<b>Break</b>
<b>10:15-11:00</b>	<b>SESSION 2: Nuts about Nitrogen</b>	
10:15-10:25	Emma Conrad-Rooney	Trends in urban and rural deposition from the National Atmospheric Deposition Program Network
10:25-10:35	Peter Groffman	Evidence, causes, and consequences of declining nitrogen availability in terrestrial ecosystems
10:35-10:40	Pamela Templer	Changing seasonality and changing nitrogen in the northern hardwood forest
10:40-10:50	Christy Goodale	Feeling gassy? Delving into controls on N gas losses from Hubbard Brook
10:50-11:00		<b>Discussion, Session 2</b>
<b>11:00-11:45</b>	<b>SESSION 3: Engagement within &amp; beyond HBEF</b>	
11:00-11:05	Anthea Lavallee	The view from the Foundation: HBRF updates, progress, and plans
11:05-11:15	Sarah Garlick	Linking science and policy in the Northern Forest: examples from the Northeastern States Research Cooperative (NSRC) and the Northern Border Regional Commission (NBRC)
11:15-11:20	Raisa Kochmaruk	Communications and Community Development at Hubbard Brook
11:20-11:22	denise burchsted	Hubbard Brook Land Acknowledgement
11:22-11:24	JP Gannon	Data visualization and analysis web apps by undergraduate capstone students
11:24-11:34	Mary Martin	Information Management at Hubbard Brook - the year in review
11:34-11:36	Alex Young	Visualizing the data stream of long-term records for the online book
11:36-11:45		<b>Discussion, Session 3</b>
<b>11:45-12:50</b>		<b>Group Photo, then Lunch</b>
<b>1:00-2:00</b>	<b>SESSION 4: Going with the Flow</b>	
1:00-1:02	Emily Bernhardt	The Watershed Report: updates from the Hubbard Brook Watershed Ecosystem Record
1:02-1:07	Audrey Thellman	Moving beyond anecdotes: Measuring and understanding algae at Hubbard Brook
1:07-1:09	Jessee Steele & Misaki Foster	Stream moss biogeochemistry and impact on aquatic insect abundance

1:09-1:14	Emma Rosi	An update on stream macroinvertebrates in Hubbard Brook watersheds
1:14-1:24	denise burchsted	The multiple channels of Hubbard Brook, restored by natural dams
1:24-1:34	Jessica Lawton	The Most Unusually Usual Brook
1:34-1:39	Ruth Yanai	Less than obvious: How should we treat concentrations below detection limits?
1:39-1:44	Jeff Pu	Uncertainty in stream loads
1:44-1:49	Tristan Coffey	Groundwater hydrology in fractured bedrock beneath the Mirror Lake watershed
1:49-2:00		<b>Discussion, Session 4</b>
<b>2:00-2:45</b>	<b>SESSION 5: VIBs (Very Important Birds) of HBEF: Black Throated Blue Warblers</b>	
2:00-2:10	Lindsey Forg	DNA metabarcoding reveals within-season variation in the diet of the insectivorous black-throated blue warbler
2:10-2:20	Alicia Brunner	The timing of breeding completion impacts fall departure date and migration rate of Black-throated Blue Warblers
2:20-2:25	Stella Hao	Variation in female breast feather coloration in the black-throated blue warbler
2:25-2:27	Sara Kaiser	Variation in female resistance to oxidative stress as a predictor of double-brooding
2:27-2:29	Amaya Bechler	Changes in gut microbiota from breeding to molt
2:29-2:31	August Davidson-Onsgard	Signaling function of the female supercilium
2:31-2:33	Jackson Hutchison	Post-fledging movements, survival and habitat use of juveniles
2:33-2:35	Sophie Rabinowicz	Effect of nest visitation on flight initiation distance of incubating females
2:35-2:37	Eryn Woernley	Timing of breeding effects on post-fledging parental care and survival
2:37-2:45		<b>Discussion, Session 5</b>
<b>2:45-3:30</b>		<b>Break</b>
<b>3:30-4:25</b>	<b>SESSION 6: Vegging Out</b>	
3:30-3:40	Matthew Vadeboncoeur	How does white ash affect stand-scale biogeochemistry and ecohydrology in northern hardwoods?
3:40-3:42	Charlie Polanco	Ash tree coring and dendrochronology
3:42-3:47	Liz Studer	The loss of ash may result in reduced diversity and homogenization of subcanopy vegetation
3:47-3:49	Roxanna Gates, Ashley Mercado, Myron Huang & Malik Caston-Donatien	Tree growth phenology across a climate gradient at Hubbard Brook
3:49-3:51	Jackie Matthes	Pushing the envelope: Red oak seedling survival at the center and edge of the species range
3:51-3:53	Robert Fahey	Canopy structure and forest growth response in the Ice Storm Experiment
3:53-4:03	John Battles	The dead wood cycle: Insights from the birdline monitoring transects
4:03-4:13	Nat Cleavitt	Ode to Tom Siccama: Life and death on the B-lines
4:13-4:15	Sophie Harris	Contributions of drought, beech bark disease, landscape, and calcium treatment in inducing individual beech mortality
4:15-4:17	Ana Suppe	Sugar maple regeneration at Hubbard Brook
4:17-4:22	William Keeton	Remnant old trees enhance large woody debris loading in low-order streams at the Hubbard Brook Experimental Forest
4:22-4:30		<b>Discussion, Session 6</b>
<b>4:30-4:35</b>		<b>Announcements</b>
<b>6:00-10:00</b>		<b>Cook-out and Tent Dance, Pleasant View Farm</b>

**HUBBARD BROOK ECOSYSTEM STUDY**  
**59<sup>th</sup> ANNUAL COOPERATORS' MEETING**  
Plymouth State University  
Plymouth, NH

<b>Day 2: Thursday, July 14, 2022</b>		
<b>7:00-8:20</b>	<b>Breakfast</b>	
<b>8:30-8:40</b>	Announcements	
<b>8:40-9:35</b>	<b>SESSION 7: Something's in the Air: Climate Change &amp; Deacidification</b>	
8:40-8:50	Charles Driscoll	Ecosystem response to climate change at LTER sites
8:50-8:55	Torsten Berger	Soil recovery from acid rain between 1995 and 2022, manipulated by additions of Ca and Al
8:55-9:00	Chris Johnson	Forest floor mass and chemistry on W1 and W6
9:00-9:10	Decheng Xu	Long-term stream chemical response to watershed calcium silicate treatment
9:10-9:20	Nicholas LoRusso	Stoichiometry of cations and low molecular weight organic acids (LMOAs) in calcium-treated and reference watersheds.
9:20-9:22	Kaura Reyes	The role of nanoparticles and low molecular weight organic acids in the development of Hubbard Brook Experimental Forest
9:22-9:27	Connor Olson	Analysis of trace metal cycling at Hubbard Brook Experimental Forest
9:27-9:32	John Campbell	A recent unexplained increase in the concentration of dissolved organic carbon in precipitation
9:32-9:45	<b>Discussion, Session 7</b>	
<b>9:45-10:15</b>	<b>Break</b>	
<b>10:15-11:00</b>	<b>SESSION 8: What the flux is up with ecosystems? Energy &amp; Carbon</b>	
11:00-11:02	Dan Evans	Instrumentation progress at the Hubbard Brook Flux Tower Intensive Monitoring Station
11:02-11:07	Mark Green	Exploring advective heat flux in the Hubbard Brook energy budget
11:07-11:12	Eric Kelsey	Synoptic scale patterns associated with evapotranspiration and carbon flux in HBEF
11:12-11:17	Andrew Ouimette	A below canopy eddy covariance system at Hubbard Brook
11:17-11:19	Hennecys Perez Castro	Soil respiration
11:19-11:24	Alix Contosta	Vanishing winters, lengthening springs, and growing-season soil carbon fluxes
11:24-11:34	Angela Possinger	Symptoms of a changing carbon cycle: Exploring environmental controls on soil respiration at Hubbard Brook
11:34-11:45	<b>Discussion, Session 8</b>	
<b>11:00-11:50</b>	<b>SESSION 9: Beyond the limits: multiple element interactions</b>	
11:00-11:10	Jenna Zukswert	The Latest on Leaves in MELNHE: Nutrients and Stomates
11:10-11:15	Scott Dai	What's up with herbs? Response of the herbaceous layer to long term NxP fertilization
11:15-11:20	Finley O'Connor	Rootin' around in the MELNHE plots: root:shoot ratios in the herbaceous layer
11:20-11:25	Jacob Beidler	Location, location, location: mapping stems to evaluate the neighborhood
11:25-11:30	Sandip Rijal	A satellite-eye view of growing-season length under nutrient addition
11:30-11:35	Tiantian Zhu	Does soil moisture, not temperature, explain long-term increases in soil respiration?
11:35-11:40	Erin Cornell	The 40-year search for N fixation at Hubbard Brook
11:40-11:50	<b>Discussion, Session 9</b>	
<b>11:50-12:00</b>	<b>Announcements</b>	
<b>12:00-1:00</b>	<b>Lunch</b>	
<b>Afternoon</b>	<b>Informal Field Trips at Hubbard Brook</b>	