

**HUBBARD BROOK ECOSYSTEM STUDY  
56TH ANNUAL COOPERATORS' MEETING  
234 Mirror Lake Road  
North Woodstock, NH 03262**

		<b>Wednesday, July 10, 2019</b>
8:00	Lindsey Rustad, John Battles, Pam Templer	Welcome and Announcements
	<b>Session I</b>	<b>Multiple Element Limitation</b>
8:10	Fahey, Tim	Response of root growth and mycorrhizal colonization to N and P enrichment
8:20	Abbott, Sarah	Belowground C allocation estimated as soil respiration minus aboveground litter inputs
8:27	Butler, Samuel	Something about N-15 Tracing of Soil Transformation
8:32	Kostro, Cody	And You Thought There Were No Earthworms in Our Forests!
8:34	Young, Alexander	Sugar Maple Leaf and Twig Traits Vary With Height in the Canopy and Nutrient Addition
8:39	Hong, Dan	The Timing of Senescence Affects Foliar N and P Resorption
8:46	Dillon, Gretchen	Invasive beech scale insects may have been favored by N pollution
8:50	Mann, Thomas	Infant Mortality in the MELNHE Stands
8:55	Congress, Sarah	Space Wars and the Fight for Light in Young and Mid-aged Stands
9:00	Giovati, Amy	Mycorrhizal mushrooms respond to N and P additions
9:05		<b>Discussion, Session I</b>
	<b>Session II</b>	<b>Green Water</b>
9:10	Dong, Zheng	Hydrological response of high elevation watersheds in the conterminous United States to climate change under the Representative Concentration Pathway scenarios
9:20	Kirchner, James	Seasonal partitioning of precipitation into discharge and evapotranspiration, inferred from end-member splitting analysis
9:30	Green, Mark	Quantifying short-term controls on evapotranspiration
9:40	Kelsey, Eric	Synoptic-Scale Weather Pattern Regulation of Evapotranspiration
9:45	Vadeboncoeur, Matt	The effect of tree size and position on wood carbon isotopes varies across species
9:55	Ollinger, Scott	Disentangling the role of photosynthesis and stomatal conductance on rising forest water-use efficiency
10:00		<b>Discussion, Session II</b>
10:05	Rustad, Lindsey	<b>Introductions</b>
10:25		<b>Break</b>
	<b>Session III</b>	<b>Rotting Rocks &amp; Heavier Biogeochemistry</b>
10:55	Bailey, Scott	What Makes a Watershed Tick? Hints from C-Q & X-Y-Z
11:00	Bower, Jenny	Between a Rock and a Soil Place: Examining Lateral Weathering Gradients Using a Whole-Regolith Approach
11:05	Ross, Don	The art and science of micro-images from the bedrock of Watershed 3
11:10	Rasnake, Nathaniel	Topographic Influences on Spatial Variation of Podzols across Hydrologic Gradients
11:12	Duston, Stephanie	Efficacy of anion exchange resins in sorption and desorption of dissolved organic matter
11:17	Peterson, Delaney	Using soil type and topography to predict variability in groundwater and stream chemistry
11:19	Possinger, Angela	Organo-mineral interactions and soil carbon mineralizability with variable saturation frequency

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11:29	Driscoll, Charles	Changes in the speciation of aluminum in space and time
11:39		<b>Discussion, Session III</b>
11:44		<b>Announcements, Photo, and Lunch</b>
	<b>Session IV</b>	<b>Hubbard Brook and Beyond</b>
13:20	Woodall, Christopher	Hubbard Brook Experimental Forest within the larger context of the US Forest Service
13:30	Besley, John	The Culture of Engagement at Hubbard Brook (and Harvard Forest), Round 2
13:40	Garlick, Sarah	Embedding Public Engagement with Science at Hubbard Brook: Insights from Year 2 of an NSF- funded Research-Practice Partnership
13:50	Lindt, Nikki	Tumbling Forests of North
13:52	Lovett, Gary	Imported Forest Pests: Progress on Policy and Stakeholder Engagement
14:02	Kosiba, Alexandra	Leveraging Hubbard Brook data for regional compilations and syntheses
14:04	Martin, Mary	Hubbard Brook Information Management Update
14:07		<b>Discussion, Session IV</b>
	<b>Session V</b>	<b>Responses to Heat and Ice</b>
14:12	Templer, Pamela	Effects of warmer growing season temperatures and a reduced winter snowpack on carbon fluxes in a northern hardwood forest
14:22	Harrison, Jamie	Effects of climate change across seasons on water uptake dynamics in a northern hardwood forest.
14:32	Pries, Caitlin	How freezing and warming affect respiration across the soil profile
14:37	Reinmann, Andy	Response of Soil Respiration to Chronic and Extreme Climate Manipulations at Hubbard Brook
14:42	Asbjornsen, Heidi	Double Drought Dare – Pushing Thresholds of Northern Hardwood Forest Response to Drought?
14:47	Rustad, Lindsey	Cool Response Round-up and Conundrums from ISE (Hubbard Brook Ice Storm Experiment)
14:57	Campbell, John	Development of a low-cost ice accretion measurement methodology for a volunteer observation network
15:07	Likens, Gene	Unusual Sequence of Ice Cover Formation on Mirror Lake
15:12		<b>Discussion, Session V</b>
15:17		<b>Break</b>
	<b>Session VI</b>	<b>Bugs, Gases, and Lighter Biogeochemistry</b>
15:45	Stewart, Anthony	Taking a breath at depth: Soil oxygen in Hubbard Brook soils
15:50	Denison, Whitney	Variation in Traces Gas Fluxes
15:52	Kreitinger, Liz	Are deep soils denitrification hotspots?
15:54	Fisher, Nathaniel	Controls on Denitrification at Three Soil Depths West of Watershed 6
15:59	Uribe, Angelina	Soil denitrification potential and N <sub>2</sub> flux two decades following experimental calcium additions; preliminary results
16:04	Lang, Ashley	Variability in leaf litter decomposition along a mycorrhizal gradient
16:14	Palmer, C	Molecular characterization of mycorrhizal fungi
16:16	Vietorisz, Corinne	Canopy tree species and soil type impact ectomycorrhizal community composition and function
16:21	Groffman, Peter	Microbes and pH: A new synthesis
16:31		<b>Discussion, Session VI</b>

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	<b>Session VII</b>	<b>Those With Feet; Some with Wings</b>
16:36	Christenson, Lynn	Where the Wild-life are
16:38	Kovari, Stephen	Using Camera Traps to Study Wildlife at Hubbard Brook
16:48	Hallworth, Michael	Spatial and temporal trends in bird abundance in the HBEF
16:58	Rodenhouse, Nick	How studies of bird food at Hubbard Brook became key global data sets
17:08	Ralston, Jessica	Monitoring bat activity over Mirror Lake
17:13		<b>Discussion, Section VII</b>
17:18	Rustad, Lindsey	<b>Announcements</b>
18:00		<b>Dinner and Tent Dance</b>

		<b>Day 2: Thursday, July 11, 2019</b>
8:00	Rustad, Lindsey	<b>Announcements</b>
	<b>Session VIII</b>	<b>The Wetter Side of Hubbard Brook</b>
8:15	McDowell, William H.	Long-term, continuous stream chemistry records provide new insights into watershed function
8:20	Zietlow, David	Hydrologic Checkpoint
8:30	Burchsted, Denise	Tracking logs in the headwaters of Hubbard Brook
8:35	Thellman, Audrey	Variable windows of metabolic opportunity and altered light patterns may introduce algae in the Hubbard Brook stream ecosystems
8:40	Vought, Olivia	Long-term dynamics of moss at Hubbard Brook: A fifty-year study
8:42	Lowe, Winsor	Mechanisms of phenotype-environment matching in a stream salamander
8:52	Swartz, Leah	Hydrologic variability decreases survival through metamorphosis in a stream salamander
9:02	Warren, Dana	Where are the fish in the Hubbard Brook stream network, and is their distribution changing?
9:07	Barton, Chris	Modeling Fracture Networks and Bedrock Flow in the Mirror Lake Watershed
9:12		<b>Discussion, Session VIII</b>
	<b>Session IX</b>	<b>Processing Elements Six and Seven</b>
9:17	Pardo, Linda	Identifying controls on nitrate sources and flowpaths using a hydrogeological framework
9:27	Fakhraei, Habibollah	Nitrate and Potassium Response to Land Disturbance in Watersheds of the Hubbard Brook Experimental Forest
9:37	Goodale, Christine	Nitrogen Pools and Isotopic Composition over a Chronosequence
9:42	LoRusso, Nicholas	Dissolved organic matter transformation in calcium-treated and reference watersheds at HBEF
9:52	Shanley, Jamie	Carbon cycling - scaling up from Sleepers River
9:54		<b>Discussion, Session IX</b>
9:59		<b>Break</b>

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	<b>Session X</b>	<b>Seeing the Forest for the Trees and Understory</b>
10:30	Battles, John	Forty years of forest dynamics in an old-growth northern hardwood forest
10:40	Fraser, Olivia	Stand Density and Biomass in relation to LiDAR-derived Topographic Metrics at HBEF and BEF, NH
10:45	Fuss, Colin	Modeling forest soil and ecosystem C and N dynamics during succession or species composition change
10:55	Matthes, Jackie	Forecasting future forest dynamics at Hubbard Brook
11:05	Ding, Alex	Monitoring sugar maple regeneration throughout New Hampshire using citizen science
11:07	Cleavitt, Nat	Life's a beech: 20 years of tree dynamics in the HB Valley
11:17	Wentzell-Brehme, Sage	Establishing baseline for understory conditions and tree regeneration pre-hemlock woolly adelgid
11:19	Schaberg, Paul	The DEN tree-ring database is "live" and includes Hubbard Brook data
11:24	Hoy, Joann	Valleywide flora
11:26	Studer, Liz	Trouble with Trillium: Modeling spring ephemeral populations under four canopy trees
11:31	Berry, Eric	Population Dynamics of Round-Leaved Orchids <i>Platanthera macrophylla</i> and <i>P. orbiculata</i> in the Hubbard Brook Experimental Forest
11:41		<b>Discussion, Session X</b>
11:46	Rustad, Lindsey	<b>Announcements</b>
11:56		<b>Lunch</b>