2025 Northeast Natural History Conference Poster Abstracts

Listed in alphabetical order by first-listed presenter. Authors in bold are the presenting authors. Code at the bottom of each abstract indicates when in the conference schedule the presentation will be given: Day -Poster # (thus, for example, Sun-21 indicates the presentation will be poster #21 in the morning and afternoon Sunday poster sessions).

Improving Methods for Analyzing Changes in Antibiotic Resistance In Soil During Mouse Decomposition

Jessica Antunes (Curry College, Milton, MA) and Emily M. Nowicki (Curry College, Milton, MA)

Abstract - Antimicrobial resistance (AMR) is a global health challenge that begins when bacteria become antibiotic-resistant. Changes in soil chemistry, including potassium, phosphorus, pH, calcium, magnesium, and nitrogen, can significantly influence the soil microbiome, including increasing or decreasing numbers of antibiotic-resistant bacteria in the soil. When bacteria are exposed to antibiotics or other stressors that alter gene expression in the environment, these microorganisms become resistant via horizontal gene transfer or by mutations. Few research groups have studied antibiotic resistance during the decomposition of organisms in the soils. Examining the changes in resistance during the decomposition of organisms can be a valuable tool to look at soil chemistry and better understand what factors influence the spread of antibiotic resistance in the environment. During this experiment, we analyzed the changes in antibiotic-resistant bacteria in soil during decomposition in a controlled laboratory environment over 70 days. To conduct this experiment, we prepared 20 microcosms by adding sieved soil samples and comparing control soil-only microcosms to those with a mouse placed on top of the soil. We incubated the microcosms at room temperature and sampled periodically throughout the experiment using a serial dilution plating method. We then counted the colonies and performed calculations to determine the percentage of antibiotic resistance at each point. We hypothesized that antibiotic-resistance levels would fluctuate in response to mammalian decomposition. Overall, we developed an efficient method to test changes in antibiotic resistance of soil bacteria during decomposition. This experiment will be repeated to further validate the methods used and provide more conclusive data to support or refute our hypothesis.

Sat- 2

Diversity and Functional Roles of Arthropods Within Heterogeneous Habitats in the Anthony Lawrence Wildlife Preserve, Southeastern Massachusetts

Leah Arnold (Wheaton College, Norton, MA) and Jessie L. Knowlton (Wheaton College, Norton, MA)

Abstract - Arthropod biodiversity has been declining globally due to human-driven changes within ecosystems. This decline is problematic because arthropods play many functional roles in ecosystems, as herbivores, predators, parasites, pollinators, and detritivores. Beta diversity, which is the ratio between regional (gamma) and local (alpha) diversity, is an important tool used to measure levels of species turnover, which can then be used to assess levels of diversity between habitats. This study focused on assessing the beta and alpha diversity and functional roles of arthropods within 3 different southern New England habitats. We collected our data at the Anthony Lawrence Wildlife Preserve in South Attleboro, Bristol County, MA. The preserve consists of upland forest, open freshwater marsh, and riverine habitats. Four technicians censued arthropod communities within five 5 m x 5 m plots in each habitat type by collecting any invertebrates they could find in 1 hour, using bug vacuums and arthropod nets. We placed arthropods in vials under ice and then, after 30 minutes, took macro photos of the specimens and released them. The results of this study showed relatively equal Shannon and Simpson index values for each habitat type, indicating relatively equal patterns of alpha diversity across habitats. The results of a non-metric multidimensional scaling analysis showed moderate beta diversity between the habitat types, with the most arthropod turnover between riverine and upland forest. As our analyses continue, we will also determine the number of generalists, specialists, and the types of functional roles within each habitat type. This study contributes to a better understanding of the distribution and habitat needs of arthropods in Massachusetts, which are often overlooked despite their central importance to ecosystem function.

Sat- 50

Using LiDAR to Quantify Shrub Layer Response to EAB Caused Ash Mortality

Thomas Back (SUNY Geneseo, Geneseo NY), Bryan Friedel (SUNY Geneseo, Geneseo NY), and Brian Hoven (SUNY Geneseo, Geneseo NY)

Abstract - *Agrilus planipennis* (Emerald ash borer [EAB]) is an invasive wood-boring beetle first identified in New York in 2009. EAB is responsible for the massive *Fraxinus* (ash) die-off in ash-dominated wetlands common in western New York. In the short-term, EAB has likely had a profound influence on these ecosystems, but long-term impacts are not well understood. One hypothesis is that increased resource availability due to canopy ash mortality will result in shrub-layer expansion. This scenario is problematic since many of these wetlands are dominated by the invasive shrub *Rosa multiflora* (Multiflora Rose). A significant expansion in Multiflora Rose cover could have negative ecological, economic, and social repercussions, due to the importance of the wetlands for recreation, water quality, and wildlife habitat. Our study utilizes historical LiDAR layers from 2011 and 2019 to quantify ash loss in Livingston County. If sources indicate a strong inverse relationship between shrub layer and canopy cover, we can make inferences about changes in the shrub layer. This model has the potential to aid in management efforts to control invasive shrub spread in ash-dominated wetlands.

Sun- 29

Powerline Rights of Way: Current Management Techniques and How they Affect Biodiversity

Zach Baldwin-Way (SUNY Delhi, Delhi, NY) and Jack T. Tessier (SUNY Delhi, Delhi, NY)

Abstract - Powerline rights of way (ROWs) are maintained canopy gaps that are important in helping provide reliable electrical service by ensuring that damaging branches and trees are a safe distance from hanging powerlines. Landowner interest in reducing herbicide exposure led to this study's goal of comparing 3 management techniques in regards to their effectiveness in protecting the powerlines as well as their effectiveness in supporting biodiversity and species richness within the ROW. Beginning in 2018, we have annually sampled 3 sites across Delaware County, NY to calculate changes in species richness, plant diversity, count/size of danger stems, and invasive species richness. Each site contained 1 span of each of the 3 following management methods: integrated vegetation management, basal oil, and hand trim. After statistical analysis, no significant differences existed among any management method in any category, suggesting that any of these 3 methods will both protect powerlines and promote plant species diversity. This presented poster serves as a data update in this ongoing study, which will be concluded in the year before the next scheduled cutting treatment.

Sun- 7

A Tale of Two Rivers: Integrating Art and Science to Highlight the Stories of Two Rivers in Connecticut

Kirsten Martin (University of Saint Joseph, West Hartford, CT), **Christopher Croucher** (Letting the Land Lead, Leominster, MA), and **Todd Bartel** (The Cambridge School of Weston, Weston, MA)

Sat- 39

Good and Weevil: Impacts of Varying Bog Conditions on Herbivorous Coleoptera Abundance

Keira Beckford (SUNY Plattsburgh, Plattsburgh, NY), Stephen Langdon (Shingle Shanty Preserve and Research Station, Tupper Lake, NY), Annie Arnold (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Boreal peatlands house multitudes of arthropods varying in size, order, and effect on the ecosystem. Not only do they play an integral role in maintaining the food web by mitigating smaller pests, they participate in decomposition of animal corpses, pollination, and waste reduction. Their sensitivity to changes in the environment makes them important bioindicators of ecosystem health. This role may be particularly important in peatlands at their southern range margin in the boreal–temperate ecotone (BTE) where climate-change impacts are most notable. Coleoptera are noted as the most diverse insect order with >400,000 different species including ones that are carnivorous, saprophytic, herbivorous, pollinators (e.g., weevils), or decomposers (e.g., carrion beetles). Along with their assistance in plant pollination, herbivorous coleoptera additionally aid in nutrient recycling by consuming plant and animal waste. Our goal was to determine herbivorous coleoptera abundances across the forested to open-bog gradient to determine habitat preferences. We collected terrestrial arthropods at the Shingle Shanty Preserve and Research Station, in the western Adirondacks of New York, located at the southern range of the North American BTE. We collected arthropods monthly in 3 peatland sites from June to September in 2023. At each site, we established transects in the forested, transition, and open bog, with 3 plots located along each transect (total 27 plot locations). We identified all specimens to family. We subset herbivorous beetles from the overall data and categorized them as specialist or generalist based on literature searches. We assessed abundance across the forested to open-bog gradient. We found 21 coleoptera families, 9 of which were herbivorous. Of the 2 sites analyzed to this point, there were 24 and 53 individual beetles, respectively. Differences in abundance were also seen along the open to forested gradient with 31 herbivorous beetles found in the open bog, 30 in the forested bog, and, 15 in the transition bog. We will further explore these between-site and within-site gradient differences by looking at family life-history characteristics and collection methods. These results will further our understanding of herbivorous beetles role in these important ecosystems.

Sat- 55

Examining the Change in Antibiotic Resistance of *Pseudomonas putida* in Soil Extract vs. Mueller–Hinton Media

Emmy Bedard (Curry College, Milton, MA) and Emily M. Nowicki (Curry College, Milton, MA)

Abstract - Antibiotic resistance is a complex global issue that results in infections becoming increasingly difficult to treat. This issue does not just impact people in healthcare settings but also occurs in animals and in the environment, including locations with little to no human activity. Clinical antibiotic resistance is tested using a standardized growth medium called Mueller–Hinton. This non-selective, consistently formulated medium has few inhibitors that interfere with the growth of microorganisms, making it an ideal choice for antibiotic susceptibility testing. Although using a standardized medium allows for easy comparison between labs regardless of location, antibiotic susceptibility is not currently tested using a medium that more closely resembles the environment where the resistant organism is usually found. This problem is true for both infectious bacteria as well as antibiotic-resistant bacteria isolated from the environment. The goal of this project was to prepare a soil-extract broth to represent the nutritional composition of soil and to use this medium to compare bacterial susceptibility to antibiotics to that in Mueller–Hinton medium. We conducted this research using *Pseudomonas putida*, a Gram-negative, rod-shaped, metabolically versatile bacterium that is found in many different soil and water sources and is intrinsically resistant to certain antibiotics. We found that *P. putida* had a higher tolerance to tetracycline and colistin, 2 commonly used antibiotics, when grown in the soil-extract broth. One possible explanation for this result could be the presence of humic acids in the soil extract, which have been shown to chemically change the antibiotic-resistance gene expression in bacteria living in soil. When humic acids were titrated into the Muller–Hinton medium, *P. putida* colistin tolerance increased to levels similar to those seen in soil-extract broth and was higher than the colistin tolerance observed when tested in Mueller–Hinton without the addition of humic acid. We are currently testing the hypothesis that gene expression changes in putative antibiotic-resistance genes are contributing to the observed differences between each growth medium.

Sat- 1

Finding Refuge Between a River and a Road: Wildlife Habitat Assessment of Floodplain Forest Habitat (Longmeadow, MA)

Chase Belisle (University of Saint Joseph, West Hartford, CT) and Kirsten Martin (University of Saint Joseph, West Hartford, CT)

Abstract - In Fall of 2024, we conducted an intensive habitat assessment and wildlife survey of an area of riparian floodplain forest located within the Fannie Stebbins Memorial Wildlife Refuge (Longmeadow, MA). The Fannie Stebbins Unit of the Silvio O. Conte National Fish and Wildlife Refuge is the largest unfragmented area of natural floodplain vegetation in the Connecticut River Watershed. Within the study area, we established 4 survey grids and 5 survey locations within each grid. We recorded vegetation characteristics including tree species, height, dbh, and percent canopy coverage at each location and observed wildlife presence and behavior via track plates, satellite wildlife cameras, and direct observation. We will report on our habitat data and wildlife observations, which are ongoing into spring of 2025.

Sat- 19

Earthworms, Slugs, and Salamanders: Community Interactions in a Massachusetts Forest

Emmalee Bent (Bridgewater State University, Bridgewater, MA), Olivia Quintin (Bridgewater State University, Bridgewater, MA), Alex Reed (Bridgewater State University, Bridgewater, MA), Grace Santos (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - Earthworms (Order: Opisthopora) have several important interactions with *Plethodon cinereus* (Eastern Red-backed Salamander). For the salamanders, earthworms can be nutrient-rich and easy-to-digest prey or ecosystem engineers of burrows. Indirectly, earthworms can be competition for other microinvertebrate prey species that salamanders prefer to eat. These factors make understanding the interactions between earthworms and salamanders valuable for broader understanding of forest communities. We tested various earthworm-sampling methods at the 8 long-term salamander research plots in Great Hills Forest on the campus of Bridgewater State University. These methods included mustard vermifuge, hand sampling, and worm grunting. Overall, these methods produced few earthworms, but drier conditions at the time of sampling may have impacted their success. While sampling, we observed that slugs were numerous. Literature suggests that slugs can also fulfill many ecosystem-engineer roles similar to earthworms. Given this, we compared slug and earthworm abundance to a number of environmental (e.g., soil chemistry) and salamander factors (e.g., mean snout–vent length) in order to better understand the distribution of slugs and earthworms at our site. With different distribution patterns, these interactions could play a role in the favorability of particular forest microhabitats for Red-backed Salamanders. Red-backed Salamanders are thought to be a keystone species of northeastern North American forests, and understanding the interactions of the salamanders, worms, and slugs will allow us to better predict factors that may limit salamander abundance. Future research is suggested to further sample and identify the slugs and earthworms found in the Great Hills Forest at Bridgewater State University and continue to compare that data with ongoing salamander research.

Sat- 5

Status of a Disjunct Population of the Circumboreal *Alnus crispa* (Green Alder) in the Southern Appalachians

Giacomo Borso (UNC Asheville, Asheville, NC) and Irene Rossell (UNC Asheville, Asheville, NC)

Abstract - *Alnus crispa* (Green Alder) is a circumboreal species that occurs throughout Canada and the northeastern US. A disjunct population also occurs at Roan Highlands in the southern Appalachians, where it is the keystone species in a globally rare high-elevation community (Grassy Bald, Alder Subtype). Our objective was to assess the woody plant composition of alder balds to gain a better understanding of the status of this isolated Green Alder population. We surveyed 114 plots established in 2015 to investigate changes over the last decade. Our results showed modest increases in the areal coverage of Green Alder, with new root sprouts documented in most plots. There was little change in the cover of *Vaccinium* spp. (blueberry), but the cover of *Rubus* spp. (blackberry) increased, with some canes reaching heights that may be competing with Green Alder for sunlight. No tree encroachment was observed in the alder balds, and we documented the death of scattered *Abies fraseri* (Fraser Fir). Strategic blackberry management may help ensure the long-term stability of Green Alder at Roan Highlands, and continued monitoring would be useful in the face of shifting climate conditions that could threaten this rare disjunct population.

Sat- 9

Puny Predators of the Peatlands: Determining Predatory Beetle Abundances in Southern Boreal Peatlands

Sophia Bosley (SUNY Plattsburgh, Plattsburgh, NY), Stephen Langdon (Shingle Shanty Preserve and Research Station, Tupper Lake, NY), Annie Arnold (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Boreal peatlands provide rare habitats, ecosystem services, and support high biodiversity. Climate change is impacting these systems, particularly at their southern extent in the boreal–temperate ecotone (BTE). Warming temperatures coupled with other abiotic shifts (e.g., hydrology, soil chemistry) have led to increased rates of tree encroachment into historically open (unforested) bog environments, potentially changing ecosystem services and functions associated with these systems. Terrestrial arthropods within boreal peatlands are valuable to trophic interactions and are early bioindicators of ecosystem change as acute responders to climatic shifts. Coleoptera (beetles) are an important and significant component within the overall arthropod community. Not only do beetles provide a wide range of ecosystem services (i.e., decomposition, herbivory, food source), they span multiple trophic levels. Here we focus on the role of predatory beetles in peatland ecosystems at the Shingle Shanty Preserve and Research Station in the western Adirondacks of New York, located at the southern range limit of the North American BTE. The objectives of this study were to (1) identify and catalog predatory beetles within the peatland, (2) analyze how family abundances shift across an open-to-forested bog gradient, and (3) determine life-history characteristics of those families based on collection method (i.e., Berlese funnel [soil], ground surface sweep, aerial sweep, or Lindgren funnel [aerial]), and position along the gradient. We collected beetles monthly in 3 peatland sites from June to September in 2023. At each site, we established transects in the forested, transition, and open bog, with 3 plots located along each transect (total of 27 plot locations). We gathered ground vegetation and placed it in Berlese funnels to collect ground-dwelling arthropods. We performed ground and aerial sweep-netting at four 90° angles, 5 m from the plot center. We set Lindgren funnel traps at the middle plot of each transect at each site (totaling 9 traps). Ongoing analyses will identify predatory families and examine differences in abundance across the forested-to-open bog gradient, and assess how the different sampling methods capture these beetles. This work will help contribute to the growing body of knowledge of arthropod communities within boreal peatland ecosystems.

Sat- 53

Species and Sex Differences in Wild Social and Solitary Bee Learning

Kendall R. Brainin (Bowdoin College, Brunswick, ME) and Patricia L. Jones (Bowdoin College, Brunswick, ME)

Abstract - To forage efficiently, pollinators may benefit from rapid learning of floral traits such as color, shape, pattern, and nectar reward. An individual's life history may affect how much selection pressure there is on their learning abilities. For example, female bees generally provision offspring more than males such that females may be under stronger selection to learn floral traits. Similarly, social bees that forage for an entire colony may be under stronger selection than solitary bees that forage for a small number of offspring. We assessed whether life-history traits are associated with learning abilities in social versus solitary bee species and males versus females within each species. We caught male and female *Bombus sandersoni* (Sanderson's Bumble Bee), *Megachile inermis* (Unarmed Leafcutter Bee), *Megachile frigida,* (Frigid Leafcutter Bee), and *Megachile melanophaea* (Black-and-grey Leafcutter Bee) on Kent Island, NB, Canada, and tested their learning ability using an associative color-learning task. We found significantly better performance by females during choice trials. We found no species differences in performance. Our results suggest that the additional foraging pressures on female bees may have selected for more efficient learning abilities, but we do not have evidence to support differences in sociality affecting learning abilities.

Sun- 1

Salamander Population Changes Over 27 Years in Groton, Massachusetts

Mimi Burnett (Groton School, Groton MA) and David Black (Groton School, Groton MA)

Abstract - Groton ecology students have collected data on *Plethodon cinereus* (Red-backed Salamander) and *Ambystoma laterale* (Blue-spotted Salamander) over 27 years, beginning in 1997 from 13 separate bodies of water within a 1-mile radius of Groton School. The bodies of water varied from permanent, semi-permanent, to vernal pools. The students collected data on the abundance of salamanders and the environment of Groton's wetlands. Wooden boards were placed on the ground near bodies of water in early fall and then data were collected in late spring. The students observed the number of salamanders per board, salamander size based on snout–vent length (SVL) and determined the amount of overlying tree canopy coverage for each board. The weather patterns for Groton during these years were determined based on the national weather database. Our data analyses included changes in salamander number and size over time for each salamander type. We also analyzed the relationship between pool type (e.g., permanent, semi-permanent, or vernal) proximity and salamander size/number as well as the relationships between annual weather pattern and salamander size/number. Based on the results of this study, we concluded that salamander population and sizes varied based on proximity to different pool types and the pool hydroperiods. Over time, salamander densities have changed dramatically, notably in that there has not been a Blue-Spotted Salamander observed since 2014 while Red-backed Salamanders have had a consistent density over time. Differences in preferred habitat, breeding tendencies, and tolerance to temperature in each stage of life for the species could contribute to these changes.

Sun- 50

Beaver Tree Damage Promotes Regeneration in Riparian Woodlands While Increasing Food for Deer

Reed Campbell (Bard College, Annandale-On-Hudson, NY) and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - *Castor canadensis* (North American Beaver, hereafter Beaver) is a keystone species and an ecosystem engineer native to freshwater habitats in North America. Beavers are large, semiaquatic, and herbivorous rodents that drastically alter wetland ecosystems within forested landscapes by damaging woody deciduous trees. They do so primarily for food and materials to construct and refurbish their lodges and dams. Beaver damage to trees of a variety of diameters and species can promote regrowth in the form of secondary regeneration shoots that often emerge, similar in nature to the coppicing of trees. These secondary shoots may also provide potential forage for *Odocoileus virginianus* (White-Tailed Deer, hereafter Deer). The effect of Beavers on the riparian woodland landscape at the Edmund Niles Huyck Preserve and Biological Research Station (Rensselaerville, NY), specifically around Lincoln Pond, has yet to be documented. Thus, we designed an observational study in which we quantified trees with and without Beaver damage, assessing tree species, diameter, number of secondary regeneration shoots, and the number of those shoots that exhibited visual evidence of Deer browse. We found that previously Beaver-damaged trees had a higher average number of secondary regeneration shoots than non-Beaver-damaged trees, showing that Beavers promote riparian woodland regeneration at Lincoln Pond. The secondary shoots observed were all accessible to Deer, providing them with potential food. Moreover, there was visual evidence of deer browse on the secondary shoots of Beaver-damaged trees. However, Deer were indifferent to the secondary shoots on trees with and without Beaver damage. Deer showed a preference for tree species in their selection of secondary shoots, with a notable distaste for *Alnus incana* (Speckled Alder) secondary shoots. Ultimately, Beavers promote landscape heterogeneity and indirectly increase forage resources for Deer. Understanding how Beaver and Deer herbivory transforms riparian woodlands is essential in assessing forest regeneration and informing future forest management at the Huyck Preserve.

Sat- 15

Personality, Morphology, and Intraspecific Interactions in the Ant-Mimicking Spider, *Myrmarachne formicaria*

Theodore Charlap (SUNY Geneseo, Geneseo, NY), **Colton Judd** (SUNY Geneseo, Geneseo, NY), and Jennifer L. Apple (SUNY Geneseo, Geneseo, NY)

Abstract - The Eurasian ant-mimicking spider *Myrmarachne formicaria* (Salticidae) is a relatively new arrival to North America and has spread throughout the Great Lakes region. *M. formicaria* has evolved a remarkable ant-like appearance and behaviors. A distinctive feature of male *M. formicaria* is their unusually enlarged chelicerae. These exaggerated mouthparts may be critical in competitive interactions as they often spread them wide in confrontations with other males. The outcomes of these encounters could significantly impact courtship success. Our study aims to explore 3 main questions: (1) Do *M. formicaria* exhibit consistent variation in behavior that could be characterized as differences in personality? (2) If these spiders do exhibit consistent personalities, are these traits linked to physical features such as overall body size and chelicerae size? (3) Does personality influence the results of intraspecific interactions? To address these questions, we carried out several behavioral assays, each repeated twice, to quantify potential personality traits. We measured voracity, defined as the intense drive to feed, as the time elapsed before attack on fruit flies in a petri dish arena. We assessed aggression levels as the time spiders spent displaying in front of a mirror in timed trials. Finally, we assessed intraspecific interactions using a male–male duel assay that quantified aggression towards an opponent, time spent displaying, and retreat and pursuit events. Alongside these behavioral tests, we made measurements of body size and chelicerae size. We analyzed the relationships between chelicerae size, behavioral traits like aggression and feeding drive, and the outcomes of intraspecific encounters. Understanding these relationships could reveal how physical and behavioral traits influence reproductive success, as larger chelicerae and aggressive or voracious behaviors may play a role in female preferences and male-courtship outcomes.

Sun- 26

Case Study: Trout in the Classroom and Dry Brook, Cheshire, MA

Corey Charron (Hoosac Valley High School, Cheshire, MA), Logan O'Connell (Hoosac Valley High School, Cheshire, MA), and Lindsay McGinnis (Hoosac Valley High School, Cheshire, MA)

Abstract - The Trout in the Classroom program, sponsored by MassWildlife, is an innovative educational initiative designed to foster environmental stewardship and enhance awareness of aquatic ecosystems among students, while promoting the conservation of local populations of *Salvelinus fontinalis* (Brook Trout). Hoosac Valley High School is a host of this project involving cultivating 200 Brook Trout in a controlled classroom environment, with the goal of later releasing these juvenile fish into Dry Brook, a local waterway. This program is run by students at Hoosac Valley High School who are tasked with providing care and maintenance to the fish and aquarium set-up. To ensure optimal growth conditions, we conducted comprehensive water-quality assessments for both the classroom tanks and Dry Brook. Four strategically positioned stationary sensors in Dry Brook continuously monitored key parameters such as temperature and dissolved oxygen (DO) levels. In the classroom, we measured and closely regulated parameters including pH, nitrates, nitrites, ammonia, and water hardness. We implemented systematic water treatments and adjustments to provide a stable, healthy aquatic habitat. Daily care practices, such as cleaning the tank and feeding the trout, promote their health and provide students with hands-on experience in aquaculture and fisheries ecosystem management. This project highlights the critical role of water quality in both controlled and natural environments and emphasizes essential ecological interactions. The data collected aims to demonstrate the effectiveness of active engagement in ecological conservation as a learning tool, fostering a sense of responsibility toward local aquatic ecosystems. Ultimately, the program exemplifies the intersection of hands-on learning and scientific inquiry, preparing students to become future environmental stewards.

Sun- 42

Wildlife Use of Beaver Dams as Aquatic Crossings

Samantha Cronk (Pace University, Pleasantville, NY), Mike Rubbo (Pace University, Pleasantville, NY), and Matthew Aiello-Lammens (Pace University, Pleasantville, NY)

Abstract - *Castor canadensis* (North American Beaver) play a vital role in shaping the environment. Their alterations to the areas they inhabit create new niches increasing biodiversity. However, the wetlands they create can also fragment terrestrial habitat and alter the migratory corridors of local wildlife. Conversely, the dams Beaver build may serve as crossings facilitating wildlife movement over aquatic barriers, potentially minimizing this fragmenting effect. To determine if wildlife use beaver dams to cross aquatic systems, we conducted a study using camera traps. We selected 13 beaver-dam sites across 6 properties in the Hudson Valley region of New York, ensuring that the dams completely spanned a water system and connected to upland areas on both sides. These sites were compared to areas with fallen logs that spanned streams (i.e., control sites). Cameras were deployed for a minimum of 15 weeks from June to November 2024. We categorized the camera events into bird and non-bird species and organized the species by taxonomic family. Preliminary analysis indicates that specific species, primarily *Odocoileus virginianus* (White-tailed Deer) and *Procyon lotor* (Raccoon), preferentially used beaver dams to cross streams. We are currently conducting an analysis to refine patterns of species use of dams as well as to identify the specific physical attributes of dams that enhance their use by wildlife.

Sun- 38

Determining Potential Benefits of Natural Soil Inclusion in *Solanum tuberosum* (Potato) Production

Emmalee A. Davis (Dickinson College, Carlisle, PA)

Abstract - I designed this study to determine beneficial relationships of natural forest-soil microbiomes in the growth of *Solanum tuberosum* (Potato). I collected soils from 2 different forest ecosystems (each with visible mycorrhizal fungi networks present) and 1 organic agricultural field (Dickinson College Farm). I then stratified these soils with a control soil in growing containers. The control soil purchased for this experiment was Frey Group brand Mix 300, which is composed of processed pine bark fine, sphagnum peat moss, coconut coir, perlite, limestone, gypsum, a starter nutrient charge, and a wetting agent with no added fertilizer. This soil had no visible mycorrhizal networks. The stratified soil type mixtures served as 3 different treatments of soil beds in which the potatoes were grown. I also established a fourth treatment bed containing only the purchased control soil. My preliminary literature review supports the assertion that the addition of native microbial communities to compost mixtures and garden soil benefits plant communities' overall growth. The specific use of arbuscular mycorrhizal fungi (AMF) to benefit plant growth in previous studies has shown positive results of added biomass in treated plant species. However, the species treated and grown in these studies typically received an inoculation of a specific strain of a single type of AM fungus before they were planted. In contrast, the results of this research are intended to help ascertain whether passive exposure to entire microbial communities transplanted from forested ecosystems (some containing observable mycorrhizal structures) shows any comparative benefit in added biomass in the tuber growth of Potatoes. Results are anticipated in March of 2025 and will be presented. If proven beneficial, the inclusion of forested soil with native microbiomes in small-scale agricultural production and gardens could be used as an alternative to synthetic or transplanted commercial soils with microbiomes and nutrient cycles that are not self-sustaining and require the continual addition of fertilizers.

Sat- 3

Same Peak, Different Birds? An Exploratory Analysis of Long-term Avian Community Monitoring on Mount Mansfield, Vermont

Kevin Dernier (SUNY Plattsburgh, Plattsburgh, NY), Danielle Garneau (SUNY Plattsburgh, Plattsburgh, NY), and Desiree Narango (Vermont Center for Ecostudies, White River Junction, VT)

Abstract - High-elevation bird communities are one of the groups most vulnerable to the effects of climate change, but there are still few long-term studies tracking demographic shifts within them. One potential outcome of climate change is that traditionally lower-elevation species may encroach upslope, competing with or replacing high-elevation species over time. Most analyses of elevational shifts have relied on passive surveys (e.g., point-count data), which can detect species presence but cannot disentangle the finer-scale demographic processes at play. Since 1992, The Vermont Center for Ecostudies has been banding and monitoring high-elevation birds on the ridgeline (1100–1250 m) of Mount Mansfield, VT. We will present an exploratory analysis of these data investigating trends in capture rates of breeding females and juveniles for different species over the years. This analysis will provide new insight into community turnover in this habitat to complement passive surveys. Monitoring the demography of high-elevation avian communities can reveal finer-scale temporal shifts in response to climate change and help forecast which species may be most at-risk.

Sun- 33

Time After Time: Using Point Dendrometers to Assess Fine-Scale Growth Trends of Black Spruce in a Southern Boreal Peatland

Olivia Devito ((SUNY Plattsburgh, Plattsburgh, NY), Steve Langdon (Shingle Shanty Preserve and Research Station), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Boreal peatlands are crucial global carbon sinks. At their southern range limits, they also contribute to regional diversity by providing habitat for plants and animals otherwise only found further north. Changes in climate, atmospheric deposition, and land use threaten the function of these ecosystems, particularly those at their range limits. Research conducted at the Shingle Shanty Peatland complex, located in the western Adirondacks at the southern limits of the North American Boreal–Temperate ecotone, has characterized vegetative cover and growth trends among conifer species. Previously collected tree cores from *Picea mariana* (Black Spruce) have assessed growth trends in response to shifts in climate and atmospheric deposition. Models have shown that Black Spruce annual growth is negatively related to maximum summer temperatures and positively related to winter minimum temperature. These results suggest that summers may be getting too warm for optimal growth, while warming winter temperatures are allowing the trees to opportunistically photosynthesize. While these records provide insight into annual growth trends and significant climatic variables, they are limited in determining when the trees are actually growing throughout the year. Dendrometers can record tree growth at fine-scales by consistently measuring changes in radius at hourly intervals, thus providing far greater insight into tree growth over the course of a year. To better understand fine-scale growth patterns of Black Spruce in peatland ecosystems, we will deploy 40 point dendrometers at Shingle Shanty to monitor hourly changes in radial growth. Our objectives are to determine radial growth trends including the following: when growth is occurring and the rate it is occurring at; how tree diameter fluctuates throughout the day due to transpiration; and how these fine-scale results compare to prior models developed from annual-growth increments. This research is particularly valuable at the southern range limit of Black Spruce and boreal peatlands. It's critical that we understand growth trajectories of these peatland species due to their unique diversity and ecosystem services.

Sat- 21

Camera vs. Live Traps: Comparing Methods for Small-Mammal Detection

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Abstract - Studies of small mammals rely on live trapping to collect data, but risk trap bias brought on by the types of traps used. Camera traps are increasingly being used for the detection of small mammals due to their ease of use and potential to reduce trap bias. However, they have not been directly tested against traditional live-trapping methods thus far. To test their comparative efficacy, we deployed bucket-style camera traps concurrently with 4 styles of live traps over eight 3-day trapping periods spanning from July to October. During these periods, we also collected standard measurements from both camera images and in-hand specimens from live traps to test if the cameras could accurately collect standard measurements. The bucket camera was able to reliably capture clear images of small mammals that were consistently identifiable to a species level. The camera trap also captured a higher richness of mammals and showed a higher capture-success rate than any live-trap type tested. However, measurements collected from the camera trap do not appear to be reliable. The design's ability to reduce trap bias is unclear; while it did show high richness, it is unknown if it accurately represented the true relative abundance of species on the site. Given their high capture success and relatively low cost, the bucket-style camera trap shows high potential for use in a variety of applications including site surveys and long-term monitoring.

Sun- 37

Earthworm Abundance in Natural Deciduous Forests vs. Planted Red Pine Forests

Abbie Donnelly (Edmund Niles Huyck Preserve, Rensselaerville, NY), Priscilla Cummings (Edmund Niles Huyck Preserve, Rensselaerville, NY), and Sabine Manske (Kenyon College, Gambier, OH)

Abstract - The impacts of Lumbricidae (earthworms) on forest communities have been well-documented. The forests of the Edmund Niles Huyck Preserve in Rensselaerville, NY, are comprised of naturally regenerated forest following historic agriculture as well as planted conifer forest originating in the 1920s and 1930s. Earthworms prefer soil with a high water-holding capacity, a neutral pH, a silty texture, and a high amount of organic matter and leaf litter. Natural conifer forests are not ideal habitats for earthworms because of their soil conditions. We compared earthworm populations in naturally regenerated hardwood forest with those in planted conifer forest. We hypothesized that based on ideal conditions for earthworms such as a neutral soil pH and an abundance of leaf litter, a naturally regenerated hardwood forest would support a greater abundance of earthworms compared to a planted *Pinus resinosa* (Red Pine) forest. We identified 2 natural forest sites and 2 planted forest sites. We then created 3 60 cm x 60 cm subplots, equally spaced, 5 m from the plot center. At the center of each subplot, we measured leaf-litter depth, organic-layer depth, soil pH, and soil moisture. In each subplot, we used vermifugation with a mustard-powder solution to draw up earthworms for collection over the course of two 5-minute intervals. Overall, our results supported our hypothesis. We found twice as many earthworms in our hardwood sites than our planted-conifer sites (28 and 49, respectively). Hardwood sites had higher soil moisture than planted-conifer sites ($P < 0.05$), and higher soil moisture was correlated with higher earthworm abundance. Soil pH was significantly higher (closer to neutral) at hardwood sites compared to planted-conifer sites ($P < 0.05$), and soils with a pH closer to neutral were correlated with higher earthworm abundance. Surprisingly, leaf-litter depth was significantly greater ($P < 0.05$) in planted-conifer sites compared to natural hardwood sites, and higher earthworm abundance was correlated with lower leaf-litter depth. This research improves our understanding of the underlying drivers of earthworm habitat preferences.

Sat- 8

The Effects of Climate-Induced Shifts in Water-Column Temperature on North Atlantic Right Whale Presence and Prey Population Health at Mount Desert Rock, Maine

Will L. Draxler (College of the Atlantic, Bar Harbor, ME), Bailey Tausen (Eagle Hill Institute, Steuben, ME), Andrea Quets (College of the Atlantic, Bar Harbor, ME), Ellie Gabrielson (College of the Atlantic, Bar Harbor, ME), Dan DenDanto (Allied Whale, Bar Harbor, ME), and Sean Todd (College of the Atlantic, Bar Harbor, ME)

Abstract - The waters surrounding Mount Desert Rock (MDR), a remote island 40 km off the coast of Maine, are a prominent location for nutrient upwelling and high phytoplankton productivity. Historically, the area has also been cited as a hotspot for high-caloric-value copepods *Calanus finmarchicus*, and their predators, including *Eubalaena glacialis* (North Atlantic Right Whale [NARW]). While not the leading cause of population decline in NARWs, reports of animals in poor body condition (both live and those found deceased) indicate that inadequate nutrition may be a factor, as well as a driver of changes in spatial distribution. Sightings of NARWs from the Blair Marine Research Station at MDR have decreased significantly in the past decade, possibly because climate-induced changes in oceanographic regime are changing the composition and nutritional quality of zooplankton. In this study, we relate the decline in NARW sightings at MDR to changes in oceanographic productivity and examine if decreases in the abundance or nutritional quality of zooplankton prey no longer justifies residency in these waters. During each summer field season 2019–2024, we studied zooplankton productivity at 3 locations varying in depth and bathymetry in feeding grounds around MDR, collecting weekly plankton tows and CTD profiles from each site. From 2019 to 2022, we found an increase in water-column temperature of 1.2 °C on average and in surface temperature of 2.3 °C on average. We also analyzed individual copepods for their prosome and lipid-sac, finding a significant decrease in stage V *Calanus* spp. prosome length after 2019 ($P < 0.001$). In this study, we correlated these changes with longitudinal observational surveys of cetacean presence, including NARW, that have been conducted at MDR during the summer field season for the past 40 years. Continuing collection of these 2 longitudinal data sets will provide insight to the effect of climate-induced shifts in zooplankton productivity on local NARW presence.

Sat- 31

Nutrient Levels and Prey Density: Drivers of Carnivory in Aquatic *Utricularia*

Shannon Driscoll (Norwich University, Northfield, VT) and Lindsey Pett (Norwich University, Northfield, VT)

Abstract - We investigated the influence of environmental nutrient concentrations and prey dynamics on *Utricularia macrorhiza* (Common Bladderwort), in lakes/ponds across the state of Vermont over varying N and P concentrations. Our study examined the effect of lake nutrient concentration and prey density on Common Bladderwort plant-tissue nutrient content and morphological attributes associated with carnivory, such as bladder trap size and count. Our findings revealed a significant negative relationship ($P < 0.001$) between historical nitrogen levels and bladder count per leaf. We also found a significant negative relationship ($P < 0.001$) between historical phosphorus levels and bladder size. However, we found no relationship between nutrient concentration in the water and in Common Bladderwort tissue. Seasonality had a significant impact on both bladder count and size, displaying a negative correlation ($P < 0.001$, $R^2 = 0.28$), as both count and size of bladders decreased with sampling date. Zooplankton prey density did not significantly impact bladder morphology or bladder count. This works provides evidence that Vermont's enriched waters may be altering the morphology of a common carnivorous macrophyte.

Sat- 38

Mid-survey Results Using the AHDriFT Method for Passive Detection of North American Least Shrew (*Cryptotis parva*) in Pennsylvania

Charlie Eichelberger (PA Natural Heritage Program, Harrisburg, PA) and Lauren Sherman (PA Natural Heritage Program, Harrisburg, PA)

Abstract - *Cryptotis parva* (North American Least Shrew) is listed as an endangered species in Pennsylvania, where it has only been detected a handful of times in recent decades. Common methods for surveying small mammals, including the use of pitfall traps and snap traps, have been largely unsuccessful in capturing North American Least Shrews. In a revived effort to determine presence and distribution of the species in Gettysburg National Military Park and the Eisenhower National Historic Site, we are utilizing the minimally invasive adapted-Hunt drift fence technique (AHDriFT) method to capture images of North American Least Shrews on standard trail cameras. Using a series of AHDriFT arrays, we began surveying across 19 patches of potential habitat (grassland areas in close proximity to streams or wetlands) in October 2024 and will continue our efforts to November 2025. To date, we have surveyed 7 of the 19 identified habitat patches, standardizing the number of arrays by patch area. Of the 7 patches we have collected data on, 4 have successfully detected North American Least Shrews. While this project is ongoing and less than halfway complete, these results reflect positively on the efficacy of the AHDriFT method and on our ability to effectively inform future conservation efforts for this historically data-deficient species.

Sun- 36

Habitat Associations of Wood Turtles (*Glyptemys insculpta*) in the Catskill Mountains, New York

Tara M. Ewers (Great Hollow Nature Preserve and Ecological Research Center, New Fairfield, CT; Clemson University, Clemson, SC), Sarah C. Deckel (Great Hollow Nature Preserve and Ecological Research Center, New Fairfield, CT), John D. Foley (Great Hollow Nature Preserve and Ecological Research Center, New Fairfield, CT), and Chad L. Seewagen (Great Hollow Nature Preserve and Ecological Research Center, New Fairfield, CT)

Abstract - *Glyptemys insculpta* (Wood Turtle) is an imperiled North American freshwater turtle species that has declined by ~50% since the mid-1900s across its range. Successful Wood Turtle conservation and management requires a sound understanding of where extant populations occur as well as the local- and landscape-scale habitat characteristics with which they are most closely associated. Wood Turtle habitat associations in the Catskills region of New York and in montane systems in general are poorly understood. We surveyed twenty-eight 1-km segments across 20 streams in the Catskills region in the spring of 2024 for Wood Turtle presence/probable absence and stream and floodplain habitat characteristics. We characterized landscape-scale habitat within a 150-m buffer around each surveyed stream segment using the National Land Cover Database (NLCD). We then used logistic regression in an AICc framework to identify local- and landscape-scale habitat characteristics that are important predictors of presence/probable absence. We documented a total of 23 turtles across 11 of the surveyed stream segments. At the local scale, percentage of ground-cover vegetation was the only terrestrial variable that emerged in the top model as an important predictor of presence and was greater where Wood Turtles were present. At the landscape scale, deciduous forest and wetlands were the NLCD land-cover types that were important predictors of Wood Turtle presence. Segments in which Wood Turtles were found tended to have less deciduous forest cover and more wetland cover than absent segments. Many occupied segments were at much higher elevation than is typically reported in the literature, suggesting that montane systems are potentially overlooked for their role in supporting Wood Turtles across their range. The results of our study will help managers prioritize streams within the Catskills region for protection and management, and better predict presence or absence of Wood Turtles in other regional streams based on their habitat characteristics.

Sun- 56

Birds Show Neutral Preference for Spotted Lanternfly, *Lycorma delicatula*, in a Mix Missing Their Red Coloration

Modesto Fontanez III (Purchase College SUNY, Purchase, NY), Ashlee Streete (Purchase College SUNY, Purchase, NY), Brendon Truex (Purchase College SUNY, Purchase, NY), Daniela Korbeci (Purchase College SUNY, Purchase, NY), and Allyson K. Jackson (Purchase College SUNY, Purchase, NY)

Abstract - *Lycorma delicatula* (Spotted Lanternfly [SLF]), is an invasive species that is steadily expanding its range across the eastern US. SLF are able to sequester toxins from certain tree species, especially when it feeds on *Ailanthus altissima* (Tree of Heaven)—another invasive species. All SLF develop aposematic coloration as late stage nymphs and adults to signal potential toxicity to predators, but it is unclear if SLF that feed on non-toxic tree species are actually toxic and unpalatable. In October 2024, we set up a study on the Purchase College (NY) campus to test if SLF caught on non-toxic campus trees actually are unpalatable to birds. We tested bird preferences by offering them 2 bird seed mixtures: one made from crushed SLF, which prevents them from seeing the lanternfly's red warning coloration, and another from crushed mealworms. We recorded the food dishes using video-recording trail cameras and were able to quantify how many times the birds took bites out of each dish. Initially, the birds seemed to prefer the SLF, but further observations indicated they were indifferent to it. This result indicates that SLF that feed on non-toxic trees may be palatable to birds, making it possible that birds could be effective biocontrols.

Sun- 30

Too Hot to Handle? Effects of Climate Change on Growth of *Pinus banksiana* 305 Kilometers South of its Natural Range Limit

Zoe Fox (SUNY Plattsburgh, Plattsburgh, NY) and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Species range margins may be dictated by abiotic factors such as temperature and precipitation that are shifting due to ongoing climate change. However, a species' realized niche is often further constrained by biotic factors making it difficult to determine what the actual climatic thresholds are. Transplant experiments of a species beyond its current range margins are beneficial for understanding its actual fundamental niche limits. *Pinus banksiana* (Jack Pine) is a North American boreal tree species that reaches its southern range limit at the Altona Flat Rock in northern New York. Previous work on this species at that location has shown little to no growth response to climate change. Here, we studied ~100-year-old Jack Pine planted ~305 km (~190 mi) south of its natural boundary at the Huyck Preserve in central NY. This population allows us to assess the influence of climate on the growth of these trees south of their natural range. Our objectives were to analyze growth trends in Jack Pine located at the Huyck Preserve, model growth trends as a function of regional climate variables and compare results from the Huyck population to growth trends at the Altona Flat Rock. We hypothesized that climate, and especially temperature variables, will have a greater negative influence on Jack Pine growth in the Huyck population than at the more northern location. We collected cores from 20 Jack Pine and measured and crossdated them using standard dendrochronological techniques. We modeled annual-ring width against temperature, precipitation, and North Atlantic Oscillation (NAO) data to determine what factors were influencing growth over time. Results indicate growth remained relatively constant across the latter half of the 20th century, decreased over the first 2 decades of this century, and then increased again in the last several years. Model results (R^2 = 0.28) show that growth is influenced predominately by both current- and previous-year temperature variables, while precipitation and NAO variables have minimal effect. This study will further our understanding of how Jack Pine is responding to climate change and will aid in management decisions concerning species range limits.

Sun- 15

Shedding Light on Water Clarity: The Impact of Stained Water on Light-Based Trapping of *Hemimysis anomala*

Kevin Frost (Hobart and William Smith Colleges, Geneva, NY)

Abstract - *Hemimysis anomala* (Bloody Red Shrimp) is an invasive mysid shrimp that has spread throughout freshwater systems in North America, raising concerns about its ecological impacts. Light-based trapping is a method for monitoring Bloody Red Shrimp, especially during early detection, yet the effectiveness of this approach may be influenced by water clarity. In this study, I evaluated the impact of water staining on Bloody Red Shrimp capture rates by deploying funnel traps in both clear and tea-stained water under controlled conditions. Capture rates were similar between clear and stained water conditions ($t_3 = 0.755$, $P = 0.505$), suggesting that trap efficiency may not be strongly influenced by water clarity. No significant differences in shrimp demographics were detected between treatments ($\chi^2_4 = 67.16$, $P = 1$). These initial findings highlight that light-based trapping for monitoring Bloody Red Shrimp may be successful in a variety of conditions. Future research should explore how diel cycles, light wavelengths, and additional environmental factors interact with water clarity to influence trap performance.

Sun- 44

Climate Impacts, Social Vulnerability, and Opportunities for Adaptation and Mitigation in Albany, NY

Charles Gaffney (Siena College, Department of Environmental Studies and Sciences, Loudonville, NY) and Katherine Meierdiercks (Department of Environmental Studies and Sciences, Siena College, Loudonville, NY)

Abstract - Climate change is adversely affecting New York State and its residents through flooding, rising temperatures, poor air quality, and a number of other effects. Although the causes of climate change are on a far larger scale, it is necessary to build community resilience to withstand these impacts, which are based on an understanding and analysis of hyper-local networks and social vulnerabilities. In this initial step of a multiphase project, we used ArcGIS Pro to identify potential hazards in the City of Albany, as well as socially vulnerable groups that may be negatively impacted by these threats. By downloading, adding, and mapping GIS datasets, we were able to identify potential areas of hazard throughout Albany. We noted that there is a noticable correlation between socially vulnerable groups and flood-hazard risks. Additionally, in contrast to other studies, we saw a positive correlation between formally redlined areas in the city and greenspaces/parks. This project provides the foundation for flood-resiliency planning in collaboration with the City o Albany and diverse stakeholders in the region.

Sun- 62

Beaver Buffet: An Investigation of Beaver Tree Preference

Lucas Gillikin (Edmund Niles Huyck Preserve, Rensselaerville, NY), **Laurel Rhoads-Goodman** (Edmund Niles Huyck Preserve, Rensselaerville, NY), **Zoe Sweeney** (Edmund Niles Huyck Preserve, Rensselaerville, NY), Reed Campbell (Bard College, Annandale-on-Hudson, NY), and Carlina Velicer (University of Rochester, Rochester, NY)

Abstract - *Castor canadensis* (North American Beaver) were first documented at the Edmund Niles Huyck Preserve in Rensselaerville, NY, in 1939 after statewide reintroductions in the early 19th century. Beaver activity in the forests surrounding the main research pond has been increasing in recent years. Beavers harvest trees to consume foliage and inner bark and to use tree material for dam and lodge construction. Past studies have shown that Beavers prefer softer, less dense wood and trees of smaller diameter. We wanted to determine if Beavers fell trees based on density and palatability. We created twelve 10 m x 10 m plots in areas with high Beaver activity. Within each plot, we identified and measured the diameter of all trees >5 cm dbh and determined the degree of Beaver activity (fully-felled versus gnawed) for each tree. We found that Beavers had a preference for *Fraxinus americana* (White Ash) and *Ostrya virginiana* (American Hophornbeam) while actively selecting against *Pinus resinosa* (Red Pine). We also found the type of Beaver activity to vary with tree species: *Carpinus caroliniana* (American Hornbeam), American Hophornbeam, and White Ash tended to be fully felled, while *Tsuga canadensis* (Eastern Hemlock) and *Fagus grandifolia* (American Beech) were gnawed but not felled. Our data also showed that Beaver activity was less common as tree diameter increased and was more common in trees with higher specific gravities. These results suggest that Beavers choose trees based on palatability, and palatable trees are felled based on a tradeoff of diameter and specific gravity.

Sat- 16

What Bugs Love: A Study of Macroinvertebrates as Water Quality Indicators of Urbanization Through the Ashuelot River

John Stanway (Keene State College, Keene, NH), **Lena Goins** (Keene State College, Keene, NH), **Abigail Haskins** (Keene State College, Keene, NH), and **Zach Leno** (Keene State College, Keene, NH)

Sat- 36

Detection and Succession Properties of Vernal Pool Communities with eDNA Metabarcoding

Harrison Goldspiel (University of Maine, Orono, ME), Jacob Kubel (Massachusetts Division of Fisheries & Wildlife, Westborough, MA), Erin Grey (University of Maine, Orono, ME), and Noah Charney (University of Maine, Orono, ME)

Abstract - We conducted a pilot study of environmental DNA (eDNA) metabarcoding for monitoring biodiversity of forested vernal pools in the northeastern US. We collected 223 water samples from 12 vernal pools in Indiana, New York, and Massachusetts in 2020 and 2021, employing different sampling protocols to estimate spatial and temporal variation in detection, diversity, and community composition of eukaryotic taxa in pools. We used 4 sets of metabarcoding primers to characterize different types of vernal pool communities from eDNA, including all eukaryotes (18S), animals and invertebrates (COI), and vertebrates (12S). We detected a wide variety of taxa from all 4 metabarcoding assays, with 18S amplicons consisting largely of microorganisms, including various protists (e.g., ciliates), COI amplicons comprising various arthropod groups, and 12S amplicons consisting mostly of amphibians, but also various bird, mammal, and select turtle species. Many sequences could not be identified to lower taxonomic classifications, likely due to a combination of incomplete genetic references, sequencing error, and eDNA degradation. Vernal pool indicator taxa (i.e., *Eubranchipus* sp. [fairy shrimp], pool-breeding amphibians) were successfully detected from COI and 12S metabarcoding, with eDNA abundance peaking in May for fairy shrimp and June–July for *Lithobates sylvaticus* (Wood Frog) and *Ambystoma* spp. (mole salamanders). Detection of certain amphibian species was generally consistent with historical data from sites, and metabarcoding successfully distinguished cryptic members of the unisexual *Ambystoma* complex: *A. laterale* (Blue-Spotted Salamander), *A. jeffersonianum* (Jefferson Salamander), and unisexual *Ambystoma*. Pools displayed strong spatial heterogeneity in eDNA of individual taxa and communities, with replicate samples showing weak to insignificant spatial autocorrelation. In contrast, we observed strong temporal dynamics of eDNA, with communities experiencing varying degrees of ecological turnover every 15–30 days. These results highlight the broad capacity (and limitations) of eDNA metabarcoding for studying natural phenomenon of vernal pool biota, including cryptic taxa, and emphasize how different aspects of eDNA study design, including sampling and sequencing methods, may result in different ecological inferences from forested pools.

Sun- 49

Natural Logjams as Pathways for Terrestrial and Semi-Aquatic Wildlife Biodiversity on Purchase College Campus

Robyn Graygor (Purchase College SUNY, Purchase, NY), Christina Murphy (US Geological Survey, Maine Cooperative Fish and Wildlife Research Unit, Orono, ME), and Allyson Jackson (Purchase College SUNY, Purchase, NY)

Abstract - Large wood is generally acknowledged as an important component of stream-restoration initiatives around the world. Since the 1980s, large wood has been introduced to watersheds due to its vital role in river ecosystems and maintaining functional riparian zones. Fluvial wood has been observed supporting stream processes through maintenance of floodplain connectivity, stabilization of riverbanks, and its influence on fluvial geomorphology, sediment deposition, and fish and macroinvertebrate habitats. Only a handful of studies have examined the ways that large wood supports terrestrial animals as they traverse riparian ecotones. We examined wildlife biodiversity and behavior across 10 log complexes along the Blind Brook Stream at Purchase College, NY, using trail-camera imagery from 20 October –14 December 2024. Our footage captured a variety of rodents, small–medium-sized mammals, meso-carnivores, birds, and semi-aquatic species, some of which have not been previously documented through terrestrial camera traps on Purchase campus. The most common behaviors exhibited by animals associated with large-wood complexes included crossing, brief contact, food handling, and foraging. Although resting, grooming, excreting, mating, scent marking, and interspecific interactions were also observed. Our findings suggest that in-stream wood supports wildlife biodiversity and activity along a narrow urban stream, underscoring the potential importance of large-wood additions in watersheds.

Sat- 18

Distribution and Reproduction of American Chestnut Three Years Following Canopy Disturbance Event

Joshua A. Harkness (College of the Atlantic, Bar Harbor, ME)

Abstract - *Castanea dentata* (American Chestnut) was an important tree species in eastern deciduous forests until the introduction of *Cryphonectria parasitica* (Chestnut Blight) in 1904, which resulted in the functional loss of American Chestnut as a reproductive species. In 2021, an outbreak of invasive *Lymantria dispar* (Spongy Moth) in northwest Connecticut resulted in widespread defoliation and subsequent canopy-tree mortality. I examined the impact of this disturbance event on American Chestnut on a 473-ha (1169-ac) wildlife sanctuary. I used grid-stratified sampling with nested plots to record the distribution, size, vigor, and reproductive status of American Chestnuts across the sanctuary. I estimated a population size of 3326 ± 1643 individual American Chestnut trees and identified a significantly clumped spatial distribution along with positive and negative associations with several dominant tree species. I documented 140 American Chestnut seedlings, most of which predated the 2021 defoliation event, indicating that American Chestnut has successfully been reproducing at this site for >16 years while responding positively to recent canopy disturbance. These findings not only provide inferences into the distribution and reproduction of a "functionally extinct" tree species in the wild and its response to an invasive forest pest but can potentially inform forest management to ensure the continued presence of American Chestnuts on the landscape.

Sun- 20

Pollinator Biodiversity of an Exotic Apple Woodland in Downeast Maine

Joshua A. Harkness (College of the Atlantic, Bar Harbor, ME)

Abstract - The Pike Lands are 2 conserved parcels in Downeast Maine vegetated partially by woodlands consisting of several exotic species and hybrid *Malus* (apples), which were introduced during the mid-20th century. Located on a peninsula in Cobscook Bay, this site is surrounded by coniferous forest and open water, indicating its possible significance as an "ecological island" for pollinating insects. I conducted a series of pan-trap and hand-collection surveys during May and June 2024 to compare differences in pollinator communities between the apple-dominated woodlands and surrounding coniferous forest. My results indicate that pollinator assemblages differ significantly between subsites, with Hymenopterans found primarily in apple-dominated subsites and Microdipterans found in greater abundance in coniferous forest subsites, though some taxa, such as *Bombus* spp. (bumblebees), employ both subsites as foraging/nesting habitat. In apple-dominated subsites, I identified at least 18 species of Anthophila (bees), including the threatened *Bombus terricola* (Yellow-banded Bumblebee), indicating the importance of this exotic apple woodland for native pollinators.

Sat- 58

Discovery and Conservation of *Scleria pauciflora* (Papillose Nut-sedge) at Camp Edwards

Erin Hilley (MA Army National Guard [MAARNG] Natural Resources Program, Camp Edwards, MA), Sophia Roemer (MAARNG Natural Resources and Training Lands Program, Camp Edwards, MA), and Sean Rigney (MAARNG Natural Resources and Training Lands Program, Camp Edwards, MA)

Abstract - The recent discovery of a state-listed endangered sedge species at Camp Edwards, an Army Training Site at Joint Base Cape Cod, MA, presents a unique opportunity for conservation and study. *Scleria pauciflora* var. *pauciflora* (Papillose Nut-sedge) is a rhizomatous perennial associated with uplands in disturbance-dependent habitats. Since its first discovery at Camp Edwards in the fall of 2023, Papillose Nut-sedge has been identified in 4 separate locations, all characterized by a history of soldier training and land management including range firing and brush mowing. This history highlights the plant's adaptability to these unique, disturbed environments. One of these 4 locations accounts for over 99% (estimated 82,000 plants) of the total number of individuals counted at Camp Edwards in 2024 and is the largest population of Papillose Nut-sedge in the region. Our observations and survey results combined with an investigation of other occurrences in Massachusetts underscore the importance of early successional landscapes in the conservation of rare plant species and offer valuable insights into land use and management practices that support their persistence. This poster will present observations of habitat conditions, survey methods and results, and management outcomes. A primary goal is to raise awareness of the ecological significance of military conservation and disturbance-dependent habitat. An additional goal is highlighting a subtle yet fascinating species contributing to our natural heritage and the importance of sandplain grassland and related plant communities.

Sat- 46

Invasive Japanese Knotweed in Massachusetts and Sustainability Pillars

Preston Hnatonko (Hoosac Valley High School, Cheshire MA and MCLA, North Adams, MA)

Abstract - *Reynoutria japonica* (Japanese Knotweed) is an invasive plant in Massachusetts and throughout the world. This case study discusses the implications of Japanese Knotweed in Massachusetts and its impact on the 3 pillars of sustainability: environmental protection, social equity, and economic vitality. As an invasive species, it causes severe damage to the ecosystems in riparian areas by choking out native plants. Through similar means, it damages agricultural crops. Japanese Knotweed roots and rhizomes can also cause severe damage to pipes, making it so people may not have water. Invasive species like Japanese Knotweed cause 324 billion dollars in damages per year worldwide. Without an effective way to manage it, Japanese Knotweed is of great environmental concern especially due to the damages to infrastructure and the monetary costs that it can accrue.

Sun- 10

The Effects of *Frangula alnus* Invasion on Seed Ecology in a New England Forest

Mary E. Hodge (Wheaton College, Norton, MA)

Abstract - *Frangula alnus* (Glossy Buckthorn) is one of the most common invasive plants in Massachusetts, largely due to the species' extremely high fecundity, resistance to various management techniques, and ability to inhibit the growth of native vegetation. In this study, I examined the age demographics of the Glossy Buckthorn population within a secondary New England forest and investigated the impact of Glossy Buckthorn on the seed ecology of the surrounding forest. I conducted a census of woody plant species within 15 plots across 3 areas of differing Glossy Buckthorn abundance and measured the biodiversity present in the seed rain and soil seed bank in each of these areas. To assess seed-rain biodiversity, I sampled the seed rain in each plot and identified the collected seeds. I evaluated soil seed-bank biodiversity by collecting and germinating soil samples from each plot. Additionally, I dated cross-sections of randomly selected Glossy Buckthorn individuals in each plot to establish an average age for each stand. For the Glossy Buckthorn stands included in this study, I found that the density of a stand was positively correlated with the average age of individuals within the stand. I expect to find that the biodiversity of species present in the seed rain will be negatively correlated with Glossy Buckthorn abundance, and that the abundance of seeds within the soil seed bank will also be negatively correlated with Glossy Buckthorn abundance. These results could contribute to a better understanding of how Glossy Buckthorn communities are established over time, and how management techniques can account for the species' impact on the seed ecology and resulting ecological resilience of the surrounding ecosystem.

Sun- 12

Exploring Great Duck's Natural History Through Art

Naoma Huta (Washington, DC) and John Anderson (College of the Atlantic, Bar Harbor ME)

Abstract - Off the coast of Maine lies Great Duck Island, a 90-ha island that is home to a wide variety of species, including *Larus argentatus* (Herring Gull), *Oceanodroma leucorhoa* (Leach's Storm Petrel), and *Halialeetus leucocephalus* (Bald Eagle). I spent 7 weeks of the summer studying and illustrating the biodiversity of Great Duck Island in order to learn how to draw attention to important scientific discoveries. Over the course of my time on Great Duck, I utilized graphite, colored pencils, pens, and watercolors to encapsulate the wide variety of life. I determined that illustrating the natural history and ecology of a system can lead to more public interest in an area or discipline that would otherwise go unnoticed.

Sat- 29

Does Naturally Occurring Genetic Diversity Within Duckweed (*Lemna* sp.) Influence Phytoremediation of Heavy Metals

Julia Jeune (Curry College, Milton, MA), Elizabeth Wade (Curry College, Milton, MA) and Nathan Lanning (Curry College, Milton, MA)

Abstract - Heavy metals are naturally occurring trace elements that are toxic in varying doses. While many are essential in small or trace amounts, larger accumulations of heavy metals can damage and inhibit the mechanisms that affect the cells, DNA, and proteins of an organism. Heavy metals persist in the environment, bioaccumulate up the food chain andare hard to degrade; therefore strategies are needed to effectively and sustainably remove their excess doses without creating more toxic sludge. *Lemna* sp.(duckweed) is a small, free-floating aquatic plant that can be found in ponds and lakes. Duckweed has shown a potential in phytoremediation, which is the use of plants and their mechanisms to contain, destroy, or extract contaminants from the environment. While scientists have conducted experiments testing if duckweed can uptake certain pollutants and heavy metals, more research is needed to understand the mechanisms and capabilities that allow duckweed to phytoremediate heavy metals and pollutants. How does duckweed tolerate varying heavy metal concentrations and does genetic diversity influence duckweed heavy uptake are the research questions our experiment aims to investigate. Insights from our research could help inform the way in which duckweed is cultivated for the purpose of phytoremediation, as well as lead to a better understanding of the mechanisms and traits that affect duckweed abilities to uptake heavy metals.

Sun- 40

Flower Visitation by Bumble Bees (*Bombus* spp.): Insights from Community-Collected Data

Amber Jones (Staff Biologist, Vermont Center for Ecostudies, White River Junction, VT), and Desirée L. Narango (Conservation Scientist, Vermont Center for Ecostudies, White River Junction, VT)

Abstract - Plant–pollinator interactions can reveal crucial information about resource use that can be used for conservation and restoration. Traditional methods of collecting interaction data are time-intensive, labor-intensive, and very localized. iNaturalist, a US-based community-sourced observation database housing over 225 million observations worldwide, offers a rich source of interaction data at large spatial and temporal scales. However, leveraging these existing observations in iNaturalist for new insights into plant-pollinator relationships requires evaluating their reliability, utility, and potential. Here, we describe the Pollinator Interactions on Plants (PIP) project, a community science program implemented in iNaturalist to synthesize plant–pollinator interactions across the northeastern US. Using *Bombus* spp. (bumble bees) as a case study, we will address the following objectives: (1) Do Bumble Bees frequent particular flower species relative to availability? (2) Do Bumble Bees visit native plant species more than non-native? (3) Do flower preferences differ by region? and (4) Does flower visitation data from community scientists differ from traditionally collected data? We will present preliminary analyses examining these questions and discuss considerations and limitations of using community-collected interaction data. Results from this study will help determine how community-collected data can be incorporated into conservation strategies and enhance our understanding of floral preferences and resource needs to support vulnerable pollinators.

Sat- 60

Effects of Urbanization on Spring Ephemeral Phenology

Peter Kaires (East Stroudsburg University, East Stroudsburg, PA) and Emily Rollinson (East Stroudsburg University, East Stroudsburg, PA)

Abstract - Urban landscapes can change microclimate conditions experienced by plants through addition of impermeable surface areas and urban “heat island” effects. Such changes in temperature and moisture may cause phenological shifts in reproductive events like flowering time. Spring ephemeral species may show particularly strong phenological changes under such conditions due to their already early season emergence and rapid development. Many studies using herbarium specimens and other occurrence records have demonstrated phenological shifts in response to climate change. Here we explore the use of the field observation app iNaturalist and spatial data on land development to identify the effects of urbanization on flowering time of 3 spring ephemeral plant species in Pennsylvania: *Erythronium americanum* (Yellow Trout Lily), *Trillium erectum* (Red Trillium), and *Podophyllum peltatum* (Mayapple).

Sun- 8

Scientific Illustrations of Pennsylvania Treehoppers

Adrianna Kaplinski (East Stroudsburg University of Pennsylvania, East Stroudsburg, PA), Matthew Wallace (East Stroudsburg University of Pennsylvania, East Stroudsburg, PA), and Darlene Farris-LaBar (East Stroudsburg University of Pennsylvania, East Stroudsburg, PA)

Abstract - Treehoppers (Insecta: Hemiptera: Membracidae) are a diverse group of insects known for their elaborate pronotal structures, which likely play a role in camouflage and mimicry. As part of an upcoming field guide on Pennsylvania treehoppers by Matthew Wallace, we created a series of 11 individual illustrations and a cover image. Each of the 11 illustrations highlights a different distinct pronotal shape that can be used as a guide to help determine different species found in the northeastern US. The illustrations, created with digital and traditional techniques, emphasize key features of morphological diversity. With the rise in AI generated images, it is important to not take shortcuts when presenting images and graphics of biological specimens, while also ensuring the accuracy of illustrated morphological features. Involving artists in scientific work not only allows for ensured accuracy but also preserves the interpretive and adaptable aspects that come with art and scientific imagery.

Sat- 56

Effect of Industrial Construction Noise on Bird Diversity in an Adjacent Wildlife Refuge

Gabrielle Kennelly (Department of Environment and Sustainability, University at Buffalo, Buffalo, NY) and Isabel Porto-Hannes (Department of Environment and Sustainability, University at Buffalo, Buffalo, NY)

Abstract - The Science, Technology, and Advanced Manufacturing Park (STAMP) Project in New York is a manufacturing mega-site involving the construction of large-scale developments that encroach on and disrupt local wildlife. The site is located in the center of multiple wildlife management areas, the Iroquois National Wildlife Refuge, and the Tonawanda Seneca Nation. Construction and high vehicular traffic flow generate substantial noise pollution, a problem recognized as detrimental to wildlife, especially bird species. Birds rely on acoustic signals for communication, predator avoidance, and detecting food sources, making them particularly vulnerable to noise pollution. This study investigates whether noise pollution from construction and traffic affects bird diversity. We assessed and compared bird diversity on days with and without construction using field observations and acoustic monitoring. Our findings suggest that areas with higher, prolonged sound levels experience decreases in bird diversity; on average, construction days had higher levels of noise pollution and low levels of bird diversity. In contrast, areas with low traffic such as Iroquois National Wildlife Refuge show high levels of bird diversity. These observations show that noise pollution caused by construction and vehicular traffic may negatively affect birds. Consequently, bird diversity is expected to continue decreasing if construction and operations at STAMP persist. These findings show the importance of considering the effects of noise pollution on wildlife management areas, home to many protected bird species. Understanding the impact of noise pollution is critical for mitigating habitat disruption and promoting biodiversity conservation.

Sat- 25

Stream Water Quality in Wyoming County, New York: A Comparison of Trends by Watershed

Cris Kenney (SUNY Geneseo, Geneseo, NY) and Suann Yang (SUNY Geneseo, Geneseo, NY)

Abstract - Wyoming County, NY, lies on the boundary between the Lake Ontario and Lake Erie watersheds, and contains small headwater streams for both lakes. We examined existing water-quality data for the county and found that on average, water quality remained relatively stable, with few issues of concern. However, we identified clear differences between the 2 watersheds, with water quality being consistently better in the western (Lake Erie) than in the eastern (Lake Ontario) watershed. Data indicates that bank vegetation has been declining slowly on the eastern side of the county over the past 15 years, while remaining unchanged on the western side. Along with this slow decline, we see significantly higher pollution levels, higher pollution tolerance among macroinvertebrate communities, and slightly lower oxygen levels in the eastern streams than in the western. As the eastern side of the county contains much more densely settled land and heavier agricultural use than the western side, these results are consistent with the interpretation that human land use on the eastern side of the county is slowly but steadily degrading local stream quality. If left unchecked in the long term, this has concerning implications for both the eastern streams in their own right, and the larger system into which they flow.

Sun- 43

Trends in Body Size and Sex Ratio of the Asian Shore Crab in Southern New England

Caroline Kleimola (Bridgewater State University, Bridgewater, MA), **Solomon LeFrancois** (Bridgewater State University, Bridgewater, MA), Zachary Cabral (Bridgewater State University, Bridgewater, MA), Mallory Morrison (Bridgewater State University, Bridgewater, MA), and Christopher P. Bloch (Bridgewater State University, Bridgewater, MA)

Abstract - *Hemigrapsus sanguineus* (Asian Shore Crab) is an invasive species that became established in North America in the 1980s and is now the dominant crab species in rocky intertidal habitats on the coast of Massachusetts and Rhode Island. These crabs are active predators that readily deplete abundances of their preferred prey, such as *Mytilus edulis* (Blue Mussel). In this study, we conducted quadrat sampling of Asian Shore Crabs at 4 rocky intertidal sites from 2014 to 2024, and at another (Sandwich, MA) from 2003 to 2024. During field sampling, we collected, measured, and sexed crabs. Mean body size of Asian Shore Crabs showed no consistent pattern among sampling sites, and was not significantly correlated with abundance over time. Sex ratios were male-biased at most sites in most years. It remains unknown whether this pattern is consistent between primary and secondary sex ratios. Understanding the drivers behind this skewed ratio may be useful for predicting long-term population dynamics and ecological impacts of Asian Shore Crabs.

Sun- 57

Exploring Fern Abundance in Relation to Tree Fall Pits and Mounds

Maxim Kuperman (Edmund Niles Huyck Preserve, Rensselaerville, NY), Harlow Bonocora (Edmund Niles Huyck Preserve, Rensselaerville, NY), and Calder Raio (SUNY ESF, Syracuse, NY)

Abstract - Ferns are a common feature of northeastern forests and are found growing in clumps or spreading as single fronds across the forest floor. Ferns can also grow in treefall pits and mounds. We wanted to see if pits and mounds support different fern abundances. Past research done at the Edmund Niles Huyck Preserve in Rensselaerville, NY, has shown there is a difference in the composition of the soil and the abundance of plants on mounds versus pits. Our hypothesis was that ferns would be more abundant on mounds due to an increase in organic material and soil particle size, and a decrease in soil moisture and pH. We randomly selected 10 treefall sites in a mixed hardwood forest stand and 10 treefall sites in a planted *Pinus resinosa* (Red Pine) stand and recorded percent abundance of ferns on the pit and in the mound at each site. We also measured depth of leaf litter and the organic layer and collected soil samples to test soil moisture, texture, pH, and NO_3-N in the lab. Our results showed higher fern abundance on mounds compared to in pits. Soil and forest-floor conditions were significantly different between pits and mounds: mounds had lower soil moisture, and thinner litter and organic-material layers. Fern abundance was highest in loamy soils and lowest in soils with a high clay content, suggesting that soil particle size impacts fern habitat suitability. This study shows that soil characteristics play an important role in where ferns grow on a forested landscape with pit and mound topography.

Sat- 22

Solar Farm Siting in Albany County: Exploring Options to a Greener Future

Kendall LeVasseur (Siena College, Dept. Environmental Studies and Sciences, Loudonville, NY) and Mary Beth Kolozsvary (Siena College, Dept. Environmental Studies and Sciences, Loudonville, NY)

Abstract - Renewable energy enables us to reduce carbon emissions and air pollution from energy production, and is a sustainable solution to oil and coal consumption due to their natural and self-replenishing technology. New York State sets a goal of reaching 70% clean-energy generation by 2030 and net-zero emissions by 2050. To reach these targets the state must find optimal locations to put renewable energy (e.g., solar farms, wind power, bioenergy, hydroelectricity) sources. Renewable-energy siting requires examining multiple factors to determine suitable locations with the least negative impact socially, economically, and environmentally. Our goal was to apply recommended criteria to assess potential locations for solar farms in Albany County, NY. We located 3 different types of sites that meet these requirements and used a ranking scale to determine the best location for solar siting. The 3 types of sites that we examined and ranked were solar carports (in parking lots), rooftop solar panels, and solar panels on wasteland: Crossgates Mall parking lots, Walmart Supercenter roof, and Albany Landfill. Out of the 3 sites researched and ranked, the Crossgates Mall parking lots was the most efficient project for producing electricity not only for the mall, but also to produce overlay that can be generated to the closeby transmission line that passes through the parking lots. The Walmart Supercenter roof ranked second in efficiency, although it would only produce energy for the store itself. A landfill is a great option for solar panels, yet the Albany Landfill has layering technology that alters the suitability to hold infrastructures and would cause differential settlement to any installed panels; thus, we considered it to be a poor site. We recommend that New York State and Albany County prioritize installing a solar farm to the Crossgates parking lot to produce clean energy for the shopping mall and surrounding transmission lines (grid). Moving forward with a feasibility study for energy production and a financial analysis, as well as conducting a regulatory and legal review for zoning and permitting alongside with the New York State Energy Research and Development Authority, will allow the project to be advanced toward production.

Sun- 6

Territoriality of the Eastern Red-Backed Salamander (*Plethodon cinereus*) in the Forests of Maine

Brendan Lewis (Undergraduate, College of the Atlantic, Bar Harbor, ME) and Susan Letcher (College of the Atlantic, Bar Harbor, ME)

Abstract - Territorial behavior is well studied in the southern populations of *Plethodon cinereus* (Eastern Red-Backed Salamander), but remains understudied in their northern range. We conducted a controlled introduction study of territorial interactions involving 20 Eastern Red-Backed Salamanders collected from local woodlands. We recorded each subject's responses to male and female invaders to assess the degree of territorial response individuals from this region exhibit. We noted several novel behaviors, and preliminary results indicate different behavioral patterns than those noted in the species' southern range. A difference in behavior could imply that selective pressures influencing territoriality benefits and costs vary across Eastern Red-Backed Salamander's range. In northern landscapes, lower average temperatures and greater soil moisture could reduce the need of individuals to secure access to a stable microclimate, and abundant prey may limit the benefit garnered by protecting food resources; these factors could reduce selection for territory defense in northern populations.

Sat- 43

Conservation of Forest Bird Communities Across a Gradient of Silvicultural Systems in Southwestern New Hampshire

Chris Liazos (Antioch University New England, Keene, NH) and (Antioch University New England, Keene, NH)

Abstract - Forest bird communities (FBCs) in the northeastern US are declining due to threats such as underrepresentation of both young forest and structurally complex mature forest. The region's predominantly second-growth, mid-successional forests that limit habitat diversity for FBCs, including species of greatest conservation need (SGCN) such as *Setophaga discolor* (Prairie Warbler) and *Hylocichla mustelina* (Wood Thrush). Silviculture can act as a conservation tool, but information is needed to determine which silvicultural system best promotes FBC conservation. In southwestern New Hampshire, we conducted a case study evaluating FBC conservation values across silvicultural systems. During the breeding season, we surveyed 90 points at 9 forest sites using point counts and vegetation surveys. Sampling included clearcuts, low-density shelterwoods, standard shelterwoods, thinnings, and untreated stands. We generated conservation-value indexes using Partners in Flight metrics and examined the influence of basal area and canopy cover on community conservation values using generalized additive mixed models. Our findings revealed nonlinear relationships, and basal area was a stronger predictor than canopy cover. Low-retention systems, such as clearcuts and low-density shelterwoods, had the highest conservation values, followed by mid-retention systems. Untreated stands had the lowest conservation values. Our study supports silviculture as a conservation approach for breeding FBCs and avian SGCN. Continued research on this project will examine individual species abundance with N-mixture models, sample more canopy-cover conditions, and consider conservation value during the post-fledging season. Overall, silviculture remains a sustainable conservation practice for supporting FBCs during the breeding season in southwestern New Hampshire and throughout the northeastern US.

Sun- 34

Identities and Nesting Patterns of Cavity-Nesting Bees and Wasps

Julia Lingenfelter (SUNY Geneseo, Geneseo, NY), **Sophia Stang** (SUNY Geneseo, Geneseo, NY), Carly Wick (SUNY Geneseo, Geneseo, NY), Daniel Lemon (SUNY Geneseo, Geneseo, NY), Emma Parker (SUNY Geneseo, Geneseo, NY), and Jennifer L. Apple (SUNY Geneseo, Geneseo, NY)

Abstract - Cavity-nesting bees and wasps will lay eggs in hollow stems or other pre-made cavities and provision their larvae with food to overwinter until their emergence in spring. To observe the nesting patterns of these insects, we placed nesting boxes containing "bee tubes" made of hollow reeds in 5 locations around the SUNY Geneseo campus and photographed the tubes once a week over the summer as the tubes were gradually sealed off by insects to form larval cells. We took note of the type of material used to fill the tubes and then analyzed the trends in the phenology and site preferences of the various fill types using the photographic record. Over the spring of 2024, we dissected the bee tubes and made observations to identify the immature occupants based on their morphology and materials used to provision the young. This fall, we pinned the voucher specimens and identified them using online tools. With all of the bees preliminarily identified, some of the more commonly observed taxa include *Megachile pugnata* (Pugnacious Leafcutter Bee), *Megachile rotundata* (Alfalfa Leafcutter Bee), *Megachile relativa*, and *Osmia caerulescens* (Blue Mason Bee). In this study we connected the identities of occupants to the cavity fill type, site preferences, and timing of occupation. This information gives us a better understanding of our local native bee and wasp ecology and the conservation efforts necessary to support their populations.

Sun- 2

Branching Growth Patterns Across Wave Exposures in the Rockweed *Ascophyllum nodosum*

Graham F. Lucas (Bowdoin College, Brunswick, ME), Patricia L. Jones (Bowdoin College, Brunswick, ME), and Liam U. Taylor (Bowdoin College, Brunswick, ME)

Abstract - Waves impose large forces on intertidal organisms through a combination of the acceleration reaction force and the drag forces. The relative strength of these forces correlates with changes in the morphology of intertidal organisms. For algae, branching not only creates an opportunity for increased photosynthesis, but also increases the drag coefficient. We hypothesize that highly branched algae occur in protected, low wave-exposure areas (to assist with competition for sunlight), whereas algae in high wave-exposure areas are less branched (to lower drag and reduce the risk of breakage). We testred this hypothesis by measuring the branching patterns of the intertidal the rockweed *Ascophyllum nodosum* (Knotted Wrack) across different wave-exposure areas at Kent Island, NB, Canada. Preliminary analyses suggest that Knotted Wrack is longer, heavier, and older in low wave-exposure areas. Furthermore, the air bladders, or vesicles, of Knotted Wrack are larger in low wave-exposure areas, suggesting that buoyancy plays an important role in morphological differences between sites. We observed high variation in size and branching structure across wave exposures, and we used graph theory to analyze algal branching structure in greater detail, demonstrating that branching is more frequent in low wave-exposure areas.

Sat- 30

Studying Large-Scale Insect Declines: Influence of Habitat Type and Level of Human Activity

Charlotte Lussier (Siena College, Department of Environmental Studies and Sciences, Loudonville, NY), **Savannah Werblow** (Siena College, Department of Environmental Studies and Sciences, Loudonville, NY), and Mary Beth Kolozsvary (Siena College, Department of Environmental Studies and Sciences, Loudonville, NY)

Abstract - In recent decades, there have been notable observations of insect abundance and biomass declines in many areas, but the extent and causes of these declines is unclear and controversial. There is regional variation in insect abundance by taxonomic group, and some groups of insects appear to be declining dramatically, whereas other insect groups are not. Additional sampling of insect populations in different locations is needed to detect regional patterns in insect declines and to determine the key drivers of these trends. Our research is part of a nationwide, collaborative study involving the sampling of insects at >100 sites across North America. By sampling across the continent, the study aims to identify which insect groups are experiencing declines and pinpoint where these declines are occurring. In 2023, we established a baseline study using standardized insect sampling as a means to measure biomass on the campus of Siena College in Loudonville, NY. In 2024, we expanded the study to include 2 additional sites in the Albany Pine Bush Preserve, a fire-dependent ecosystem that offers unique ecological flora and fauna. As part of the overall study, we employed a standardized sampling protocol using a Malaise trap, set for 72-hours during 3 designated sampling periods. Preliminary analyses from 2023 data indicated that our insect family biomass was similar to regional data from the larger study. On a local scale, statistical analysis of 2024 data at our 3 local sites revealed no significant differences in overall taxon biomass, except for *Hymenoptera* ($p>0.05$), which showed significant variation between Siena College and 1 of the Albany Pine Bush sites. Despite the distinct insect fauna of the Albany Pine Bush ecosystem ($P < 0.05$), the 2 sites within this location did not differ significantly from Siena based on our level of taxonomic resolution ($P < 0.05$). Our future analyses will focus on target groups and taxonomic variation, expanding data collection to other regional areas, and investigating the impacts of urbanization on insect abundance of broad taxonomic groups as it relates to insect declines.

Sun- 24

Greenhouse Study of Lumbricid and Megascolecid Invasive Earthworm Impact on Seedling Growth

Teagan Mabrysmith (Colgate University, Hamilton, NY), Tilly Morris (Colgate University, Hamilton, NY), Joy Tang (Colgate University, Hamilton, NY), Robert Vanderhoef (Colgate University, Hamilton, NY), Annise Dobson (Yale School of the Environment, New Haven, CT), Andrea Dávalos (SUNY Cortland, Cortland, NY), and Timothy McCay (Colgate University, Hamilton, NY)

Abstract - The northeastern United States is home to a small number of native earthworms and a much larger number of invasive earthworms. Lumbricid earthworms from Europe have been in the Northeast for a long time; megascolecid earthworms from Asia, including the pheretimoid "jumping worms", have more recently expanded in the Northeast. Invasive earthworms of both European and Asian provenance can alter conditions at the forest floor in ways that can affect forest regeneration. We conducted a greenhouse experiment to better understand how invasive European and Asian earthworms might affect growth and survival of *Prunus serotina* (Black Cherry), *Quercus rubra* (Red Oak), *Picea glauca* (White Spruce), and *Acer saccharum* (Sugar Maple) seedlings. We planted seedlings in pots along with solarized soil, crushed leaf litter, and 1 of 4 earthworm treatments: *Lumbricus terrestris* (Nightcrawler) only, *Metaphire higendorfi* (Large Jumping Worm) only, both Nightcrawlers and Large Jumping Worms, and no earthworms. We standardized the mass of earthworms in all earthworm treatments. We found that seedling responded differently to our experimental conditions and exhibited a seasonally cyclical trend. Earthworm treatment had little effect on growth of these tree seedlings, suggesting that forest regeneration may be robust to earthworm invasion under resource-abundant conditions.

Sat- 6

A Within-site Comparison of Intertidal and Subtidal Populations of *Astrangia poculata*

Danielle Moloney (Department of Biology & Werth Center for Coastal and Marine Studies, Southern Connecticut State University, New Haven, CT) and Sean Grace (Southern Connecticut State University, New Haven, CT)

Abstract - Ocean temperatures are expected to rise 1–3 °C by the year 2100, and this shift warrants an immediate and greater understanding of marine-life resilience. High temperatures have been implicated in global declines of multiple marine populations, including corals, with 14% of global hard coral cover being lost in >10 years between 2009 and 2018 alone. Historically, most marine research on corals has focused on tropical species that tend to exist within narrow conditions for survival, in which there is little variation in the abiotic environment, including temperature, water chemistry, and light and nutrient levels. However, not all corals live under these precise conditions. This research project focuses on the temperate scleractinian coral *Astrangia poculata* (Northern Star Coral), abundantly found along the US east coast from Cape Cod to Florida. Northern Star Coral provides an interesting candidate for research due to its facultative symbiosis (ability to live with very low levels of symbionts in its tissue), its ability to live in both the intertidal and subtidal zones, and its winter quiescence (dormancy) period. We comparatively analyzed intertidal and subtidal populations of Northern Star Coral at a field site in Rhode Island. We subjected aposymbiotic intertidal and subtidal colonies to 5 temperature treatments (5 °C, 14 °C, 18 °C [control], 22 °C, and 27 °C), 4 of which might be considered thermally challenging based on historic averages in the region (reflected in the control treatment). We measured metabolic parameters including feeding response, dissolved oxygen use, and photosynthetic efficiency. Based on periodic exposure of intertidal individuals to extreme environmental variation when exposed to open air, we hypothesized that intertidal Northern Star Coral would have higher thermal tolerance at all experimental temperatures than subtidal Northern Star Coral. Preliminary results indicate that there is little difference between intertidal and subtidal physiological performances in laboratory tests. However, both intertidal and subtidal corals in the 5 °C treatment entered quiescence, allowing for measurements on dormant Northern Star Coral in the lab for the first time.

Sat- 48

Temporal Patterns in the Acoustic Activity of Harbor Porpoise Near Mount Desert Rock, Maine

Megan Maloney (Allied Whale, College of the Atlantic, Bar Harbor, ME)

Abstract - *Phocoena phocoena* (Harbor Porpoise) use echolocation for navigation, foraging, communication, and object identification. I used a C-POD seafloor-mounted archival passive acoustic recorder to detect Porpoise clicks from 2 July to 2 August 2024, near Mount Desert Rock, ME. Statistical analysis revealed that Harbor Porpoises emit significantly more clicks at night than during the day (Wilcoxon rank sum test: $P < 0.001$). Further, minimum inter-click intervals were significantly higher during the day than at night (Wilcoxon rank sum test: $P < 0.001$), suggesting that Porpoises are foraging at night more than during the day.

Sat- 32

Epidermal Micromorphology of the Leaves of *Sassafras albidum*

Samuel Mangiaracina (SUNY Oswego, Oswego, NY) and Jinyan Guo (SUNY Oswego, Oswego, NY)

Abstract - *Sassafras albidum* (Sassafras) is a deciduous tree native to eastern North America and its roots were traditionally used to make root beer. Even though the essential oils of its leaves, which provide a unique aroma, have been extracted and studied, the anatomical structures that may produce these essential oils have not been investigated. In this study, we sampled different regions of the mature ovate, 2-lobed, and 3-lobed leaves of Sassafras and studied the micromorphology of the adaxial and abaxial epidermises of each sample using scanning electron microscopy (SEM). Trichomes were found on the major and minor veins of both the adaxial and abaxial surfaces, and the trichomes in the proximal region were much longer and in higher density on all 3 types of leaves. Dense stomata were only found on the abaxial epidermis, while numerous multicellular secretory glands were only found on the adaxial epidermis for all 3 types of leaves. The secretory gland typically consists of 1–3 apical cells and is surrounded by several bigger subsidiary cells. This study showed that the leaf epidermal micromorphology of Sassafras is similar to that of its East Asian relative *Sassafras tzumu* (Chinese Sassafras). The presence of secretory glands provides the anatomical basis for the characteristic aromatic scent of sassafras leaves.

Sat- 47

Using Polyvinyl Chloride Pipes to Bridge Knowledge Gaps: Comprehensive Gray Treefrog Monitoring

Matthew R. Marcelino (University of Vermont, Burlington, VT) and Brittany A. Mosher (University of Vermont, Burlington, VT)

Abstract - Understanding species' habitat associations is crucial for biodiversity conservation, especially in the face of climate change and habitat loss. *Hyla versicolor* (Gray Treefrog), though classified as least concern, have significant knowledge gaps regarding their terrestrial and overwintering behaviors. This study evaluates the effectiveness of polyvinyl chloride (PVC) pipes as a monitoring tool for Gray Treefrogs in the northeastern US to address these gaps. Over 2 years, we deployed PVC pipe arrays across 8 study sites, capturing 179 individuals with a 10.1% recapture rate. Analysis revealed that habitat variables such as basal area, elevation, and maximum temperature significantly influenced capture success, with higher temperatures and later dates in the year correlating to higher capture rates. Additionally, we used radio telemetry to explore overwintering behaviors. Initial results suggest that treefrogs use brush piles and tree canopies as refugia during freezing temperatures, though sample sizes were limited due to weather constraints. Our findings highlight PVC pipes as a cost-effective and scalable method for long-term monitoring, contributing critical baseline data on Gray Treefrog ecology. These insights support broader conservation initiatives, such as the US' 30 by 30 and Vermont's 50 by 50 goals, emphasizing the importance of informed land management strategies for amphibian preservation.

Sun- 51

Limited Effects of Invasive Jumping Worms on Plant Mycorrhizal Associations

Sophie I. Marin (SUNY Cortland, Cortland, NY), Annise Dobson (Yale University, New Haven, CT), Laura Eierman (SUNY Cortland, Cortland, NY), and Andrea Dávalos (SUNY Cortland, Cortland, NY)

Abstract - Invasive jumping worms present in hardwood forests have been found to alter soil chemistry and reduce native understory plant abundance. One ecological relationship affected by invasive worms is the symbiosis between mycorrhiza and root hairs of native plants, but it is unclear how strong the impact varies across species. In this study, we evaluated the potential changes that invasive jumping worms have on mycorrhiza structures present in the fine root hairs of *Solidago flexicaulis* (Zig-zag Goldenrod). We transplanted native seedlings and recollected them from 7 sites in the Catskill Mountains located along a gradient of invasive worm abundance. Roots were separated from the aboveground biomass, cleaned, and then stained for mycorrhiza viewing. Frequency of mycorrhiza structures varied according to site, but not according to worm abundance. Hyphae were the most common structure, followed by vesicles and arbuscules. These results refute our hypothesis, suggesting that invasive worms may not have an impact on mycorrhiza structures in Zig-zag Goldenrod.

Sat- 7

Invasive Zebra Mussels in Massachusetts and Sustainability Pillars

Abigail Martel (Hoosac Valley High School, Cheshire MA and MCLA, North Adams, MA)

Abstract - *Dreissena polymorpha* (Zebra Mussel) is an invasive species that has been invading non-native waters since 1988. They consume the phytoplankton and zooplankton and directly impact the native species food chain. Originating from Eastern Europe, they arrived via European ports and eventually made their way to the Great Lakes. The invasive Zebra Mussels affect all the pillars of environmental sustainability: environmental protection, social equity, and economic vitality. Due to the nature of their effects on food chains, they have a larger impact on the ecosystem, or environmentally, as a whole. Socially, Zebra Mussels impact boating recreation by attaching to boat hulls increasing drag and reducing speed resulting in increased fuel consumption in motorized boats. Additionally, beaches are impacted by the sharp shells that wash up in shallow areas, which can cut visitors and litter beaches. Zebra Mussels have a great economic impact. Remediation and control efforts aimed at Zebra Mussels cost a total of $513.9 million dollars in 1999 and $631.5 million dollars in 2000. More recently, in the 2010s the yearly average cost associated with this invasive species was about $26 billion dollars. Implications of Zebra Mussels on environmental sustainability need to be addressed in order for this aquatic ecosystem to survive and thrive.

Sun- 41

Bogligates: Obligate Arthropods in a Southern Boreal Peatland

Hunter Martin (SUNY Plattsburgh, Plattsburgh, NY), Stephen Langdon (Shingle Shanty Preserve and Research Station,), Annie Arnold (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - There are many orders of arthropods found in boreal peatlands. These arthropods all play important roles in food-web dynamics, pollination, and nutrient cycling, and can be habitat generalists or peatland obligates. Peatland obligates may be especially threatened by habitat loss due to anthropogenic disturbances, land management, and climate change, particularly in peatlands at their southern range margin in the boreal-temperate ecotone (BTE) where climate change impacts are most notable. Further, peatland obligates may be an indicator of peatland ecosystem quality since they are excluded from other habitat types. Within peatlands, fine-scale differences between forested and open bogs create unique microhabitats that certain arthropods may be especially attuned to. This study aims to identify the obligate arthropods found in a boreal peatland and describe the importance of their roles in this ecosystem, and across the forested to open-bog gradient. In this study, we collected terrestrial arthropods at the Shingle Shanty Preserve and Research Station, in the Adirondacks of upstate New York, located at the southern range of the North American BTE. We collected arthropods monthly at 3 peatland sites from June to September in 2023. At each site, we established transects in forested, transition, and open-bog environments, with 3 plots located along each transect (total of 27 plot locations). We have identified samples to family and categorized them as generalist or obligate based on existing literature. In many cases, further taxonomic classification is required, as many families span both categories. Preliminary results, however, indicate that at least 1 mosquito species, *Wyeomyia smithii* (Pitcher Plant Mosquito), is found extensively in the forested and transition bog environments at our study site. We have also identified several families in our samples that are known to contain bog-obligate species. Notably, Lycaenidae (gossamer-winged butterflies), Tabanidae (horse and deer flies), Salticidae (jumping spiders), and Staphylinidae (rove beetles) are all present, and identification to lower taxonomic levels is underway. By looking at distribution and abundance of these arthropods across the forested to open-bog gradient, we can better understand their fine-scale habitat requirements. This understanding will inform management of these threatened peatland ecosystems.

Sat- 54

A Tale of Two Rivers: Integrating Art and Science to Highlight the Stories of Two Rivers in Connecticut

Kirsten Martin (University of Saint Joseph, West Hartford, CT), **Christopher Croucher** (Letting the Land Lead, Leominster, MA), and **Todd Bartel** (The Cambridge School of Weston, Weston, MA)

Abstract - In this project we integrated art activities into a field-based aquatic science course. We conducted these art activities alongside scientific surveys at 2 rivers (Park River Bloomfield, CT, and Scantic River Enfield, CT) during fall of 2024. The student-created art and the scientific data will be incorporated into a dance performance that will be premiered in spring 2025.

Sat- 39

Response of Acadian Flycatcher (*Empidonax virescens*) to Eastern Hemlock (*Tsuga canadensis*) Deterioration

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Abstract - Few studies have investigated response of a specific bird species to *Adelges tsugae* (Hemlock Woolly Adelgid) infestation over a long-term period. Here we document effects of *Tsuga canadensis* (Eastern Hemlock) deterioration on *Empidonax virescens* (Acadian Flycatcher) nesting behavior, habitat use, and productivity across 2 periods, 2001–2002 and 2013–2014, in northeastern Pennsylvania and northwestern New Jersey. Eastern Hemlock condition deteriorated over the 14-year study in terms of overall tree and branch condition but not infestation level or presence of new growth. Understory density was not significantly different between available (random) and nest plots within either period but increased significantly between periods. The slow pace of deterioration and varying degree of Eastern Hemlock decline within study sites allowed observation of a variety of Acadian Flycatcher responses. Mean nest height increased slightly between time periods and varied considerably among study sites. A shift from Eastern Hemlock to deciduous tree use for nesting was detected in 1 study site. Mean pair density, fledgling density, and nest survival declined significantly across study sites between time periods, with complete abandonment of severely infested sites. Our results will help guide future studies of other hemlock-dependent songbirds and provide insight on adaptability to invasive species-induced habitat changes.

Sat- 24

Comparative Habitat Analysis of Two Rare Wetland Plant Species

Lydia Mauroni (Dickinson College, Carlisle, PA) and Carol Loeffler (Dickinson College, Carlisle, PA)

Abstract - This project compares the habitats of 2 rare plant species, *Eurybia radula* (Rough-leaved Aster) and *Euphorbia purpurea* (Glade Spurge), in south-central Pennsylvania. Glade Spurge is listed as endangered in Pennsylvania, while Rough-leaved Aster is considered vulnerable. Habitat degradation, such as that caused by deer overgrazing and increased abundance of nonnative species, is likely contributing to the rareness of these species. Due to their ecological importance, wetlands are critical habitats for conservation efforts. Studying species in decline can provide valuable information to restoration efforts. While it is known that both species are present in wetlands, identifying more specific habitat traits of these plants will allow us to better understand their conservation requirements. We surveyed 8 sites, each species occurring in 4 sites. At each site, we randomly placed 8 quadrats in locations where the plants are known to be present to collect plant-community data (species abundance and percent cover) and took a soil sample at each quadrat to be analyzed by the Penn State Agricultural Analytical Services Laboratory. We are conducting data analyses to identify similarities in plant communities and soil chemistry between sites and using GIS to map soil types and geological features across sites. Given the rareness of these species, it is expected that there will be few significant differences between sites, as the species are likely to have specific growth requirements. The results of this analysis can be used for identification of potential translocations sites in future research.

Sat- 20

Writing Essays for Broader Audiences: Experiences, Adjustments, and Compromise

Declan J. McCabe (St. Michael's College, South Burlington, VT)

Abstract - In 2014, I received a call to wrangle a desert centipede that had been mailed from Texas to a Vermont grade school. I wrote a tongue-in-cheek essay about the experience for the Vermont Entomological Newsletter. An editor for "The Outside Story", a syndicated weekly natural history essay series, contacted me and asked me to rewrite the essay for their series. I have since become a regular contributor to the essay series, their annual conference, and had essays reprinted in other outlets. Through the editorial process, I have learned to simplify my writing, reduce jargon, and compromise between the precise nature of scientific writing and a more readable and audience friendly style suitable for readers of local newspapers. I have had significant help from editors that includes writing help, topic selection, and distribution of the end products. The experience has resulted in the production of accessible essays that reach a far broader audience than is typical for my scientific writing. The essays advance the mission of my institution and have broader impact that is appreciated by my funding agencies.

Sat- 61

Seven Years of Salamander Population Monitoring at BSU with SPARCnet

Finnegan McCaul (Bridgewater State University, Bridgewater, MA), **Ethan Medeiros** (Bridgewater State University, Bridgewater, MA), Avery Barry (Bridgewater State University, Bridgewater, MA), Emmalee Bent (Bridgewater State University, Bridgewater, MA), Alexa Cloutier (Bridgewater State University, Bridgewater, MA), Olivia Quintin (Bridgewater State University, Bridgewater, MA), Alex Reed (Bridgewater State University, Bridgewater, MA), Grace Santos (Bridgewater State University, Bridgewater, MA), Bethany Ozolins (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - Regional research initiatives, like those taken by the Salamander Population and Adaptation Research Collaboration Network (SPARCnet), have worked to improve the understanding of the contributions of wide-ranging species like the *Plethodon cinereus* (Eastern Red-backed Salamander) to the ecological processes of northeastern North American forests. A 2024 publication by SPARCnet participants on salamander density across the network describes how abundant they are compared to other forest vertebrates. Combined with the information presented in a 2024 literature review by SPARCnet participants, these abundance results suggest that Eastern Red-backed Salamanders play a vital role in forest ecology. This poster summarizes the SPARCnet data collected at Bridgewater State University (BSU) over the last 7 years in the context of these 2 publications. Starting in April of 2017, the Fisher-Reid lab at BSU has sampled salamanders in 8 SPARCnet plots installed in the Great Hill Forest on campus. These 8 plots are located in pairs, within 3 different dominant tree stands of the same forest. Four plots are in a deciduous stand, 2 are within a coniferous stand, and 2 are in a mixed conifer–deciduous stand. Over 7 years, we have observed 4181 salamander captures (including recaptures) and individually marked 1671 salamanders across our 8 plots. Density is highly variable across our small forest, with high density (>0.90 salamanders per m^2) in 2 of the 4 deciduous plots, medium density (0.45–0.75 salamanders per m^2) in the mixed plots, and the remaining 2 deciduous plots, and low density (<0.25 salamanders per m^2) in the coniferous plots. Moving forward, we hope to connect these density trends to environmental factors (e.g., soil moisture, seasonal rainfall, and seasonal temperature patterns) to further understand the drivers of salamander density and provide evidence of the critical role that salamanders play in the health of the forests in New England.

Sat- 40

Genetic Variation and Endosymbiont Incidence in the Introduced Ant-Mimicking Spider, *Myrmarachne formicaria*

Milo R.K. Miller (SUNY Geneseo, Geneseo, NY), Brooke Sikora (SUNY Geneseo, Geneseo, NY), and Jennifer L. Apple (SUNY Geneseo, Geneseo, NY)

Abstract - We examined the genetic and endosymbiotic diversity of *Myrmarachne formicaria*, an ant-mimicking jumping spider native to Eurasia that has expanded its presence in North America over the past several decades. Non-native populations often exhibit reduced genetic diversity, and patterns in genetic diversity may help demystify the source of their introduction and number of introduction events. Prior sequence analysis of several mitochondrial genes revealed little genetic variation within *M. formicaria* across most European and North American populations. One of the aims of this study was to sequence a nuclear gene to expand the number of genetic loci available for assessing genetic diversity. Compared to other arthropods, relatively little is known about the incidence of endosymbiont infections in arachnids and their impacts. Colonization of new geographic areas have been found, in some taxa, to result in the loss of endosymbiont bacteria. Previous surveys of both North American and a limited sample of European *M. formicaria* identified ubiquitous *Cardinium* infections, while the incidence of *Wolbachia* was more sporadic. A *Cardinium* gene sequenced from infected *M. formicaria* showed minimal variation across populations. Coupled with nuclear gene sequencing, this study involved surveying spiders for additional endosymbionts *Spiroplasma* and Phage WO, a bacteriophage infecting *Wolbachia.* Additionally, we obtained more sequence data from endosymbionts to characterize the genetic variation of *Wolbachia* in *M. formicaria* and to see if endosymbiont genetic variation reveals geographic patterns illuminating the history of their host populations. Exploring the genetic and endosymbiotic diversity of *M. formicaria* may help us describe patterns in their introduction and spread in North America.

Sun- 25

Associations Between Fruiting Plant Species and Their Insect Parasites in a Forest–Agriculture Mosaic

Nolan Miller (SUNY Geneseo, Geneseo, NY), **Thomas Back** (SUNY Geneseo, Geneseo, NY), and Suann Yang (SUNY Geneseo, Geneseo, NY)

Abstract - Both biotic and abiotic factors can drive the incidence of parasitism, such as habitat characteristics and host availability. This study examines the association between parasitic insect larvae and the fruiting plants they parasitize, and what factors can influence these interactions in western New York. We used the forests surrounding cultivated fruit fields to understand how these parasites are distributed in an undisturbed forest habitat that is adjacent to a variety of agricultural habitats. Since fall 2023, we have sampled the forests surrounding 7 cultivated areas. We have found a disproportionately large number of parasites developing in *Frangula alnus* (Glossy Buckthorn) compared to the other fruit-bearing plant species. Our preliminary identification shows these larvae to be mostly lepidopterans, with other larvae being dipterans and coleopterans. An association between these larvae and fruits of plants like Glossy Puckthorn, which showed a larger yield of parasites developing inside, may lead to other related hypotheses. The research also suggests that these interactions may be dependent upon the distance of the host berry from different types of cultivated fields, the species of plant hosting these parasites, and fruit-crop size.

Sat- 4

Effects of Artificial Lighting at Night (ALAN) on Water Quality and Amphibian Performance in Aquatic Ecosystems

Jasmine Moayedzadeh Rad (Pace University, Pleasantville, NY) and Michael Rubbo (Pace University, Pleasantville, NY)

Abstract - Humans rely on artificial light sources (e.g., street lights, vehicle headlights, building lights, etc.) to enhance visibility while performing activities at night. While artificial light at night (ALAN) provides societal benefits such as safety and comfort, it disrupts the growth and survivability of nearby species. It alters normative environmental parameters and bioecological cycles in surrounding ecosystems. Although researchers have widely studied the effects of ALAN on terrestrial ecosystems, our understanding of its impact on freshwater aquatic environments—including vernal pools, estuaries, lakes, ponds, streams, freshwater wetlands, and salt marshes—remains limited. To analyze the effects of ALAN on aquatic ecosystems, we added *Lithobates clamitans* (Green Frog) tadpoles to 16 mesocosms representative of local wetlands. We placed 8 tadpoles in each mesocosm and exposed mesocosms to one of 4 light treatments every night from June to September 2024. Each light treatment was replicated 4 times. The light treatments included prolonged exposure to blue, orange, and white 200-watt light-emitting diode (LED) lights, with ambient light as the control treatment. We analyzed temperature, conductivity, dissolved oxygen, pH, chlorophyll a, and nutrients bi-weekly throughout the summer. Additionally, we measured and recorded the growth and survival of tadpoles at the end of the study to document the effects of prolonged exposure to light treatments at night. Our results indicate that prolonged exposure to ALAN affects aquatic ecosystems by altering water-quality parameters and nutrient availability, influencing the growth of aquatic consumers.

Sun- 47

Flower Diversity as a Driver of Pollinator Attraction in Agricultural Landscapes

Katherine Mohan (The State University of New York College of Agriculture and Technology at Cobleskill, Cobleskill, NY) and Andrew Gascho-Landis (The State University of New York College of Agriculture and Technology at Cobleskill, Cobleskill, NY)

Abstract - The goal of our study is to determine if diverse flower assemblages attract a greater number of pollinators than monocultures and if the abundance of pollinators is influenced by proximity to active agricultural crop fields. We conducted research at 2 sites, each with different floral compositions. The site with diverse flora featured a mix of *Solidago* spp. (goldenrod) and *Symphyotrichum novae-angliae* (New England Aster), while the monoculture site containws only goldenrod. At both sites, qw assessed pollinator abundance and species diversity using visual counts of pollinators at varying distances from an active agricultural crop field. Our findings indicate that the more diverse flora resulted in a higher number and variety of pollinators compared to the monoculture site. *Apis mellifera* (Honeybees) accounted for a significant portion of the pollinators we observed at the diverse flower site and were the only pollinators present at distances of 10 m or less from active agriculture. The monoculture site had little Honeybee activity, with only 3 observed at distances greater than 100 m from active agriculture. These results underscore the importance of plant diversity in supporting pollinator health, with implications for sustainable agricultural practices and habitat management.

Sat- 59

Long-Term Changes in Blue Mussel Populations in Response to an Invasive Predator

Mallory Morrison (Bridgewater State University, Bridgewater, MA), **Zachary Cabral** (Bridgewater State University, Bridgewater, MA), Caroline Kleimola (Bridgewater State University, Bridgewater, MA), Solomon LeFrancois (Bridgewater State University, Bridgewater, MA), and Christopher P. Bloch (Bridgewater State University, Bridgewater, MA)

Abstract - *Hemigrapsus sanguineus* (Asian Shore Crab) became established on the Atlantic coast of North America in the 1980s and is now the dominant crab species in rocky intertidal habitats in the northeastern US. Because it is a strong competitor and voracious predator, it has substantially impacted other resident species, especially a preferred prey item, *Mytilus edulis* (Blue Mussel). We collected abundance and body-size data on these species via quadrat sampling at multiple coastal sites in Massachusetts and Rhode Island from 2014 to 2024 and compared these to data from a site on Cape Cod (Sandwich, MA) that was sampled from 2003 to 2024. Although at Sandwich, there was a significant negative correlation between abundances of Asian Shore Crabs and Blue Mussels, this relationship was not observed at the newer sites. Nevertheless, at multiple sites, mean body size of Blue Mussels increased over time, suggesting that increased numbers of mussels are surviving to reach adulthood. Although the mechanism remains unclear, this result suggests a recovery in populations of Blue Mussels in the wake of the invasion by Asian Shore Crabs.

Sun- 58

From Beach to Basin: Assessing the Spatio-temporal Distribution of Microplastics in Lake Champlain

Allison Morrow (SUNY Plattsburgh, Plattsburgh, NY), Timothy Lloyd (SUNY Plattsburgh, Plattsburgh, NY), Grace Calvelli (SUNY Plattsburgh, Plattsburgh, NY), Taygin Jump (SUNY Plattsburgh, Plattsburgh, NY), Timothy Mihuc (SUNY Plattsburgh, Plattsburgh, NY), and Danielle Garneau (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Microplastics are of increasing concern in our natural environment, with plastic production increasing at an annual rate of 8.4% (1950–2015). Once plastic is discarded, it fragments and travels via pathways as particulate macro- and microplastic (<5 mm). Pre-production pellets are a type of microplastic used in mass-production that are transported via roadways, railways, manufacturing outflows, and sewers, risking pollution within waterways and along shoreline beaches. The focus of our research is to investigate the potential pollution pathways and the spatio-temporal distribution of pre-production pellets in Lake Champlain. Beginning in summer 2024, we commenced wrack-line surveys along 6 New York beaches, including Point Au Roche State Park, Plattsburgh City Beach, Ausable Point, Port Douglas, Port Kent, and the Boquet. Additionally, we sampled 5 local tributaries including the Little Chazy, Great Chazy, Saranac, Ausable, and Boquet using neuston-net tows, followed by sample wet peroxide oxidation. Finally, we continue to explore historical whole-lake samples, collected for the Long-term Monitoring Program (LTM), archived at the Lake Champlain Research Institute (1992–2024). Preliminary findings show few pre-production microplastics on the wrack line of these beaches. Some evidence of accumulation of pre-production pellets was observed at Plattsburgh City Beach and Ausable Point, with higher abundances closer to dunes. Early tributary sampling shows minimal evidence of those waterways being a major pathway of industrial pellet pollution in Lake Champlain. Preliminary data from Lake Champlain samples suggests that pre-production plastics are found throughout the lake system. Our study will focus on identifying the timing and distribution of these plastics in the Lake Champlain Basin and their possible sources. By identifying potential microplastic pathways and distribution throughout the lake, we can better inform manufacturers and future infrastructure projects to reduce the threat of pre-production plastic in Lake Champlain.

Sat- 34

The Role of Climate in the Geographic Expansion of *Ixodes scapularis*: A Predictive Modeling Approach

Ian R. Mowatt (University of Southern Maine, Environmental Science and Policy, Portland, ME) and Joseph Staples (University of Southern Maine, Environmental Science and Policy, Portland, ME)

Abstract - The geographic expansion of *Ixodes scapularis* (Blacklegged Tick), the primary vector of the bacteria *Borrelia burgdorferi* that is a major causative agent of Lyme disease, has been strongly influenced by climate change, reforestation, and shifts in host populations. This study integrates correlative and mechanistic modeling approaches to evaluate the species' future distribution under projected climate scenarios. MaxEnt modeling, utilizing WorldClim CMIP6 data (2041–2060), predicts continued northward expansion into southern Canada, driven by increasing minimum winter temperatures. Meanwhile, DYMEX simulations, incorporating physiological stress thresholds, confirm that for up to a +3 °C temperature increase, habitat suitability increases in northern latitudes while extreme summer heat may impose physiological limits on populations in the southeastern US. The results highlight potential declines in cold stress as a historical barrier to tick survival, supporting the likelihood of continued establishment in previously unsuitable areas such as northern New England, the Great Lakes region, and southern Canada. Alternatively, increasing summer heat stress may stabilize or slightly reduce tick populations in regions where temperatures exceed their thermal tolerance. These findings have significant public health implications, as the expanding range of Blacklegged Ticks may lead to increased Lyme disease risk in newly colonized areas. This study combines predictive modeling approaches to enhance assessments of future Blacklegged Tick distributions, emphasizing the need for proactive vector surveillance and targeted disease-prevention strategies in a changing climate.

Sun- 22

Hydrology and Water-Flow Dynamics in Balster Brook and Wetland: Insights from Curry College, Milton, MA

Dylan Nash (Curry College, Milton, MA) and Elizabeth J. Wade (Curry College, Milton, MA)

Abstract - Wetlands and the water bodies that flow into them are critical ecosystems that improve water quality and support diverse biological communities. Understanding the hydrology of these systems is fundamental to investigating how these environments change over time. This study focuses on the Balster Brook and wetland system in Milton, MA, a vital water resource for biodiversity located on Curry College's campus. We took field measurements including pH, air and water temperature, dissolved oxygen, total dissolved solids, electrical conductivity, water depth, flow rates, nutrient availability, and heavy metal concentrations year-round for multiple years to understand variability across seasons and years. By monitoring these fluctuations, our research provides evidence about seasonal patterns, landscape influences, and long-term changes in ephemeral wetland systems due to increasing climatic changes.

Sun- 39

It'll be a Cold Day in [the North Woods] Before I Eat That

Julia Giannattasio (Skidmore College, Saratoga Springs, NY), Rachel Entin-Bell (Skidmore College, Saratoga Springs, NY), Izzy Hoffmann (Skidmore College, Saratoga Springs, NY), and **Joshua H. Ness** (Skidmore College, Saratoga Springs, NY)

Abstract - This multi-year project focuses on 9 plant species that produce fruits in late summer or autumn yet continue to carry them during some fraction of the upstate New York winter, and explores the relationship between the removal of these lingering fruits and ambient temperature. Here, we defined winter as November–March, when migrant birds had already left our study sites in Saratoga County. We documented a total of 185 descriptions of fruit loss over time, with an average of 10 days (median = 6) between the consecutive inspections used to calculate the removal rate for a particular combination of species and ambient temperature. The average daily temperatures during those 185 intervals varied from a high of 15.4 °C to a low of -12.1 °C. For each species, we compared the utility of linear versus gaussian peak models to predict variation in removal rate with temperature. Five species (*Rhamnus cathartica* [Buckthorn], *Euonymus alatus* [Burning Bush], *Rosa multiflora* [Multiflora Rose], *Berberis thunbergii* [Barberry], and *Prunus serotina* [Cherry]) had removal rates that decreased as ambient temperatures dropped, i.e., removal slowed as late autumn transitioned to winter. For 2 species (*Vibrunum acerifolium* [Mapleleaf Viburnum] and *Actaea pachypoda* [Doll's Eyes]) removal rates were greatest at intermediate temperatures (at ~6–8 °C for Doll's Eyes and at 1–3 °C for Mapleleaf Viburnum), being lower in both warmer and cooler ambient temperatures. Removal rates for the remaining 2 species (*Ilex verticillata* [Winterberry] and *Celastrus orbiculatus* [Bittersweet]) increased as ambient temperatures dropped. When treating the species as replicates, average energy content per fruit differed among these 3 phenological archetypes (1.19 KJ, 1.02 KJ, and 0.42 KJ, respectively). Generally, the more energy-rich fruits were separated from maternal plants earlier in winter, such that energy-poor fruits are increasingly removed in the coldest eras of winter. Whether animals make choices in removing the fruits of particular species based on the merit of their individual characteristics (such as energy content and the costs of foraging in the cold), versus relative to available alternatives, is unclear. This is an interesting question in part because 5 of these 9 species are exotic. As a result, the available alternatives that might inform choices by fruit-consuming animals in a New York winter may have changed considerably over the past 300 years.

Sat- 45

Assessing Reproductive Tradeoffs in Savannah Sparrow Incubation on Kent Island, NB, Canada

Oscar K. Nigam (Bowdoin College, Brunswick, ME), Patricia L. Jones (Bowdoin College, Brunswick, ME), Sarah D. Mueller (University of Guelph, Guelph, ON), and D. Ryan Norris (University of Guelph, Guelph, ON)

Abstract - The energy required to reproduce creates a fundamental, universal life-history tradeoff. Evolutionary theory asserts that by increasing parental investment, parents increase the fitness of their offspring at their own expense. Therefore, species have evolved a diverse array of reproductive strategies to balance reproductive success with parental survival. In birds, one such tradeoff occurs during egg incubation. Incubation creates an ideal environment for studying reproductive tradeoffs, as there is a visible dichotomy of female effort: a female is either on the nest incubating, investing in her offspring, or off the nest foraging, investing in herself. Birds must be able to spend sufficient time incubating for eggs to develop and hatch while also sustaining themselves to both survive and be able to feed and fledge their young after hatching, an energy-intensive process. Here, we examine the incubation behavior of *Passerculus sandwichensis* (Savannah Sparrow) and how females vary their incubation strategies in response to environmental stressors. We analyzed the relationships between demographic and environmental variables and how female Savannah Sparrows balance their time during the incubation period. We found that environmental variables significantly affect both the length and frequency of off-bouts, though air temperature and precipitation have contrasting effects on off-bout length. We also find significant interactions between environmental variables and female age. Understanding which factors affect incubation can help determine how reproductive success differs within a population given variable environmental conditions and individual characteristics, and can shed light on the nature of reproductive tradeoffs.

Sun- 31

Investigating the Impact of a Sense of Community and Belonging on Citizen Science Participation

Jordan O'Hare Gibson (UMass Amherst, Amherst, MA)

Abstract - As citizen science projects become more prevalent in research and policy, we must ensure that participant pools are proportionally representative of the populations they service, so as to accurately model phenomena and equitably implement policy. Community, while a crucial cultural component for Black Americans and other non-dominant social identities, is an understudied aspect of citizen science (CS) program development. A sense of community significantly contributes to goal-achieving behavior, even when those goals are individual. As such, a sense of community and belonging (SCB) is a prime variable to investigate as we engage in the important work of diversifying scientific and academic spaces. This exploratory study, a voluntary, unsupervised survey of citizen science participants in western Massachusetts, uses the Theory of Planned Behavior to pioneer methodology and investigate how a SCB impacts participant engagement. Published papers investigating participation in CS programs ha]ve not included SCB in their analyses; this project begins to address this gap. I analyzed survey responses using both qualitative and quantitative methods, and investigated the attitudes, subjective norms, and perceived behavioral control of participants in a hobby-based citizen science program. This analysis suggests significant correlations between the researcher–participant relationship and engagement of participant, while also spotlighting other factors of interest for further investigation such as previous experience, project format, and whether those programs are issue- or hobby-based. Incorporating emphasis on SCB may help ensure CS programs reach their full potential as powerful tools for environmental-justice initiatives.

Sun- 61

Urbanization and Songbird Nest Composition in the New York Capital District

Audrey Oliver (SUNY Cobleskill, Cobleskill, NY) and Amy Dechen Quinn (SUNY Cobleskill, Cobleskill, NY)

Abstract - Increases in urban expansion and anthropogenic waste output worldwide poses a significant threat to terrestrial species. In particular, avian species have demonstrated behavioral adaptations to changing urban environments. Past research indicates a positive relationship between urbanization and proportion of artificial material incorporated in avian nests. Associated negative impacts to nest success and survival have been documented including nestling entanglement, failure to fledge, and increased predator detection. However, this relationship remains poorly understood within US populations. This study examines how incorporation of anthropogenic material in songbird nests varies with habitat disturbance within New York's Capital District. We classified sample-site disturbance levels using block-level housing density. We collected nests from areas of low and high housing density and dissected them to calculate mean proportion of anthropogenic material. The proportion of anthropogenic material in high-disturbance nests was significantly greater compared to low-disturbance nests (U-stat = 2, U-critical = 45). The physical qualities of frequently observed items, such as string/thread-like materials, may inform their incorporation. This study highlights the need for continued research on the selection, availability, and impacts of anthropogenic pollution on our local songbird populations. Understanding how urban-adapted species interact with anthropogenic materials in different habitats will allow managers to better protect and conserve sensitive songbird species.

Sat- 26

Beaver (*Caster canadensis*) Activity Increases Sprouting in American Beech (*Fagus grandifolia*) at Emmons Pond Bog, Delaware County, New York

Albert C.H. Osterman (SUNY Delhi, Delhi, NY) and Jack T. Tessier (SUNY Delhi, Delhi, NY)

Abstract - *Fagus grandifolia* (American Beech), which can be found in the northeastern US, shares habitat with *Castor canadensis* (American Beaver). Both the Beech and the Beavers have impacts on local biodiversity, with Beech sprouting when damaged, and Beavers felling trees to create dams and access food. At Emmons Pond Bog, located in Davenport, NY, we collected data to identify any connections between Beaver activity and Beech reproduction rates. We quantified rates of suckering and sprouting in Beech adjacent to the pond and away from the pond, along with determining rates to Beaver activity on the Beech. Beaver damage caused an increased level of sprouting, but there was no significant change in Beech suckering between stands. Beaver activity can affect Beech vegetative production, which has implications for forest composition.

Sat- 17

Spread of the Exotic Hydrophyte *Myriophyllum aquaticum* in New England

Donald J. Padgett (Bridgewater State University, Bridgewater, MA)

Abstract - The invasive *Myriophyllum aquaticum* (Parrot-feather) has been established in waters of North America since 1890 when it escaped cultivation in New Jersey. It was well established in southeast New York By 1940 and reached southern Connecticut by 1946. Collection data indicate it is spreading rapidly, with 22 additional sightings in Connecticut (8), Rhode Island (4), and Massachusetts (10) since 2000. To investigate fragment viability and regenerative capacity in a Massachusetts population, I cultured 2 fragment types (with and without apical tips in a growth chamber for 35 days: emergent leafy branches (8 and 4 cm lengths) and amphibious stolon segments (1, 3, and 5 cm lengths). Axillary leafy branches of both lengths grew adventitious roots (100%) and new shoots (50%). Only stolons of 5 cm lengths sprouted both branches and adventitious roots and showed 100% survival. Findings corroborate those of other studies indicating longer fragments can increase survival rate and colonization. These results illustrate that fragments of different types and varied sizes are important ways for the continued spread of this plant.

Sat- 37

Plunged Into Darkness: The Impact of a Total Solar Eclipse on Zooplankton Migration in Seneca Lake

Andrew Painton (Hobart and William Smith Colleges, Geneva, NY), Meghan Brown (Hobart and William Smith Colleges, Geneva, NY), and N. Griffin Brown (Geneva High School, Geneva, NY)

Abstract - A total solar eclipse occurred over the Finger Lakes region (New York) on 8 April 2024 (15:21 totality, 2.21 minute duration). We studied the effect of this phenomenon on the behavior of crustacean zooplankton in Seneca Lake. Zooplankton's migration in response to diel light-level changes are well documented, typically migrating upwards in the water column at night to feed and downwards during the day to avoid predation. We hypothesized that some species of zooplankton would vertically migrate in response to the mid-day darkening caused by the total solar eclipse. We collected depth-specific plankton tows and abiotic data at 20-minute intervals before, during, and after totality the day of the eclipse and again the following week. We analyzed samples for total biomass as well as changes in abundance relative to taxa, sex, and body length. Copepods dominated the zooplankton assemblages, and as light levels dropped below measurable values, we detected upward migration in the water column. Plankton's response to acute, rapid changes in light level, independent of time of day, suggests that solar eclipses influence organism behaviors that may impact interactions among organisms such as predator–prey overlap.

Sun- 46

Moth Biodiversity in Marshlands Conservancy, Rye, NY

Kristen Pareti (Westchester County Department of Parks, Recreation and Conservation, Rye, NY)

Abstract - Moths are abundant and diverse lepidopterans that play important ecological roles in their communities. Moths have various impacts on the vegetative trophic levels of an ecosystem through herbivory, varied generalist to specific plant-relationship preferences, and, in some species, the role of pollination. Moths are a vital food source for bird hatchlings as caterpillars in their lava stage and are a prey source for insectivorous birds and mammals as adults. Moths are integral to ecosystem health and it is therefore critical to understand and record any changes in moth populations, phenology, and biodiversity. This study assesses the biodiversity and abundance of moth populations in Marshlands Conservancy in Rye, NY. I set out a Robinson-style light trap overnight an average of 3 nights per month from April to October 2024. i photographed, identified, and released all specimens captured. I recorded the total number of individuals and calculated Shannon diversity and species-level richness. I noted species phenological presence or absence as the months progressed. I will present the biodiversity, abundance, and phenology results from this study, which serves to supply a baseline dataset on moth species at this conservancy and may act as a marker of ecosystem health for comparison with future studies.

Sun- 23

Assessing Differences in Vegetation Composition and Diversity Across Habitats in the Anthony Lawrence Wildlife Preserve, Southeastern Massachusetts

Emelia Pettit (Wheaton College, Norton, MA) and Jessie L. Knowlton (Wheaton College, Norton, MA)

Abstract - Global change has contributed to an unprecedented loss of biodiversity. Plants are among the many impacted groups, with urbanization, climate change, and habitat fragmentation placing pressure on communities. By understanding the relationship between habitats and plant diversity, we hope to inform conservation strategies and ecosystem-preservation methods. This study examined plant diversity across 3 habitat types: upland forest, freshwater marsh, and riverine forest within Anthony Lawrence Wildlife Preserve in Attleboro, MA. We investigated how alpha and beta diversity vary between habitats and the relationship between plant and insect diversity. We collected data from 15 plots (5 per habitat) during the summer of 2024, recording plant species and abundance. We found a statistically significant difference in Shannon diversity among habitats, with upland demonstrating a significantly higher Shannon index compared to the marsh habitat. We used non-metric multidimensional scaling (NMDS) to assess the beta-diversity patterns of upland, marsh, and riverine habitats. We observed clear clustering by habitat, indicating that habitats support distinct communities. Our subsequent PERMANOVA indicated that these results were significant, with moderate separation between communities, and that habitat explained 25.3% of the variation in vegetation composition ($R^2 = 0.25268$). We identified 7 indicator species in the upland habitat, 1 exclusive to riverine plots and 2 found in both river and marsh communities. A species-accumulation curve verified that our sampling was sufficient, and further use of a Chao1 estimator predicted a true vegetation richness of 281.77 organisms within the preserve. Surprisingly, no correlation was found between plant and insect diversity. These findings underscore the role of habitat heterogeneity in structuring plant communities and highlight the importance of preserving diverse habitat types to maintain regional biodiversity in southeastern Massachusetts.

Sun- 9

A Survey and Proposed Management of Structural and Mechanical Tree Defects at Norwich University

Tyler Phipps (Norwich University, Northfield, VT) and Lindsey Pett (Norwich University, Northfield, VT)

Abstract - We surveyed structural and mechanical defects in trees on the main campus of Norwich University in Northfield, VT. We surveyed >50 trees for morphological attributes, including diameter at breast height (DBH), canopy cover, and height. We identified, categorized, photographed, and analyzedstructural and mechanical defects . Results indicate that *Acer platanoides* (Norway Maple) exhibited the highest number of defects of all tree species, primarily bark inclusions and bole wounds ($P < 0.05$). Defects found can likely be attributed to frequent human activity and lawncare equipment. Conversely, *Pyrus calleryana* (Bradford Pear) displayed the fewest defects ($P < 0.05$), possibly due to its location having minimal external disturbances. We found no significant correlation between DBH or height of trees and defect count, suggesting that tree location plays a greater role in defect development than age or size. However, tree height (a proxy of age) was positively correlated to defect surface area indicating that as a tree ages the defect surface area increases ($P < 0.05$, $R^2 = 0.59$). These findings emphasize the need for targeted management strategies, including improved maintenance practices and species selection, to enhance tree health and minimize risks of structural failure on campus.

Sat- 23

The Effects of Sibling Groups on the Growth of Eastern Box Turtles Head-starts

Nora Platt (Bristol County Agricultural High School, Dighton, MA)

Abstract - *Terrapene carolina carolina* (Eastern Box Turtle) populations are declining due to habitat fragmentation, road mortalities, and illegal pet trade. “Head-starting” is a method used to raise hatchlings past vulnerable stages of life in order to augment declining populations. While aspects of head-starting Eastern Box Turtles have been tested, the effects of sibling grouping on the growth of head-starts has not. I am currently raising 2 groups of Eastern Box Turtles under the same conditions. Group 1 is comprised of 5 siblings and group 2 is comprised of 4 non-sibling individuals. I have been collecting growth data every 2 weeks and will continue to do so until approximately 1 June 2025. Once the study period concludes, I will compare growth data to determine if sibling grouping affected the growth of head-started Eastern Box Turtles. The forthcoming results may contribute to increasing efficacy and efficiency of head-starting techniques and greater conservation efforts.

Sun- 55

Changes in Shell Symmetry and Diet in Populations of the Wood Turtle, *Glyptemys insculpta*

Victoria M. Prouty (SUNY Oneonta, Oneonta, NY), Jacob Warner (SUNY Oneonta, Oneonta, NY), Donna Vogler (SUNY Oneonta, Oneonta, NY), Faith Williams (SUNY Oneonta, Oneonta, NY), Elayne Sepulveda (SUNY Oneonta, Oneonta, NY), Alexandra Vlk (SUNY Oneonta, Oneonta, NY), and Elizabeth Bastiaans (SUNY Oneonta, Oneonta, NY)

Abstract - Factors contributing to population declines in herpetofauna across the northeastern US, such as anthropogenic disturbance, habitat degradation, and landscape fragmentation, may also be linked to changes in an organism’s physiology. We conducted field surveys at a highly disturbed site in Oneonta, NY, to locate, photograph, and collect carapace and claw samples from *Glyptemys insculpta* (Wood Turtle). We compared fluctuating asymmetry in the carapaces and plastrons of modern Wood Turtles to historical Wood Turtle specimens captured from a range of sites near the Oneonta region during the 1950s–1960s. Additionally, we conducted a stable isotope analysis of δ15N and δ13C in modern and historical Wood Turtle carapace and claw tissues. Our results revealed that modern turtles had the highest levels of asymmetry in both their carapaces and plastrons, and that the presence of a shell deformity substantially increased asymmetry. These results suggest that modern Wood Turtles may be exposed to suboptimal conditions during development, which may be increasing levels of asymmetry in both the carapace and plastron. This increase in asymmetry may be attributed to higher temperatures during incubation, population isolation and reduced gene flow, and stress from anthropogenic interference in their preferred habitats. Preliminary analyses of results from the stable isotope analysis of δ15N and δ13C suggest that the diets of contemporary Wood Turtles are different than those of historical Wood Turtles from the same geographic region, with historical Wood Turtles occupying higher trophic positions and consuming a greater proportion of high-nitrogen food sources. A shift in the diets of modern Wood Turtles may indicate that they do not have access to their preferred food sources and that they are not receiving the nutrients they need for successful survival and reproduction.

Sun- 53

What it Sed (i) ment a Lot: 7000 Years of Fire and Vegetation History in a Jack Pine-Dominated Ecosystem

Amélie Przedwiecki (SUNY Plattsburgh, Plattsburgh, NY), Lydia Harvey (SUNY Plattsburgh, Plattsburgh, NY), Mary Alldred (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Paleoecological studies from lakes and wetlands provide insight into historical community assemblages, species migration patterns, and disturbance history (e.g., fire occurrence). Understanding the history of an ecosystem can help to better understand potential future changes that might occur and when managing that ecosystem. Rare ecosystems are important to study because of their unique ecological relationships and the biodiversity they harbor. In addition to the species present, unique disturbance regimes are also important to understand. In northeastern North America, dominated by northern hardwood forest, fire-dependent pine barrens represent such a case. The Altona Flat Rock is an ~ 2000-ha sandstone pavement *Pinus banksiana* (Jack Pine)-dominated pine barrens that represents one of these important ecosystems. Jack Pine is at its southernmost distribution there, making it at risk from both the direct effects of climate change, and changing disturbance regimes. In January 2024, we sediment-cored a wetland at the Flat Rock, using a Russian Peat Corer 5 cm in diameter . We collected sediment to a depth of 3.24 m. Core segments were separated into cookies 1 cm thick from which we took 1-cm^3 sections for loss on ignition (LOI) organic carbon analysis and pollen analysis, while using the remainder for macrofossil identification and charcoal fragment counts. We sieved each sample to separate the macrofossils from the sediment matrix to then identify and count them under a dissecting scope. Radio-carbon dating determined that sediment started accumulating 7462 years ago. *Tsuga canadensis* (Eastern Hemlock) and *Pinus strobus* (Eastern White Pine) were initially the dominant species present, but both disappear from the core at ~5000 YBP when Jack Pine first appears. Jack Pine macrofossils, however, are virtually absent from the core from 4600 YBP to present, during which time charcoal abundance is consistently high, organic carbon concentrations decline, and sedimentation rates are low. Results suggest that fire and/or prolonged dry conditions may have dried the wetland causing little to no sedimentation and destroying macrofossil evidence of the surrounding vegetation. Ongoing pollen analysis will help elucidate these findings, and provide a multifaceted perspective of the site's vegetation and disturbance history.

Sun- 16

Small, but Mighty: Characterizing Beetle Diversity and Abundance Across Seasons

Alex Reed (Bridgewater State University, Bridgewater, MA), Emmalee Bent (Bridgewater State University, Bridgewater, MA), Olivia Quintin (Bridgewater State University, Bridgewater, MA), Grace Santos (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - Beetles constitute the most diverse taxonomic order on the planet. Consisting of anywhere between 350,000 and 400,000 species, and representing 40% of all arthropods, beetles serve as key pollinators, ecosystem engineers, and keystone species for a wide variety of ecosystems. Commercially, they also have medicinal and agricultural uses, and are used as a source of food in many cultures, particularly for its protein. However, in North America, and elsewhere throughout the world, beetles have been critically understudied, despite 17 species being listed as federally endangered in the US alone, with many more species being in decline. To help address this knowledge gap, we sampled beetles in both the summer and fall on the campus of Bridgewater State University (BSU) in a 1-week period through pitfall trapping in order to compare diversity and abundance between each season. The overall goal was to determine if beetle species richness and abundance varied by season, as well as to compare beetle richness and abundance to the density of *Plethodon cinereus* (Eastern Red-backed Salamander) using long-term data from BSU's SPARCnet plots. After preserving all beetle specimens with ethanol, we sorted and identified species first by morphological similarities, and eventually to the genus level using software such as the iNaturalist app and dichotomous keys such as *Beetles of New England*, confirming identification through multiple sources. Preliminary results suggest that summer abundance and richness are greater than fall abundance, although additional analyses are still being conducted. This result would suggest that conservation efforts associated with beetles would be more successful during the summer, considering the overall presence of beetles would be greater, in terms of both number of species and number of individuals. Future plans include comparing beetle diversity to Eastern Red-backed Salamander density to further characterize the community ecology of these vertebrates, as well as comparing beetle abundance between sites.

Sat- 52

A Year In Review: Spadefoot Toad Translocation Project 2024, Ashumet Holly Wildlife Sanctuary

Alex Reed (Bridgewater State University, Bridgewater, MA), Jay Cordeiro (Mass Audubon Long Pasture Wildlife Sanctuary, Cummaquid, MA), Ian Ives (Mass Audubon Long Pasture Wildlife Sanctuary, Cummaquid, MA), Ben Nash (University of Maine, Orono, ME), Anna Bishop (Marine Biological Laboratory, Woods Hole, MA), and Corina Danielson (U.S. Army Corps of Engineers, Sandwich, MA)

Abstract - Amphibians are a group that notably provide major ecosystem services such as waste secretion and bioturbation (moving soils), serving as ecosystem engineers and constituting a vital part of many natural systems throughout the globe, while also fulfilling many human needs, serving medicinal and culinary functions. However, amphibian populations are currently disappearing at rapid rates throughout the globe. *Scaphiopus holbrookii* (Eastern Spadefoot Toad) is listed as threatened in Massachusetts where it reaches the northern limit of its range. Historically widespread, it has declined due to habitat loss, surviving in isolated populations throughout the state. The species disappeared from Mass Audubon's Ashumet Holly Wildlife Sanctuary in the 1990s. In 2011, Mass Audubon began a head-starting and translocation project to restore the population that once existed at the site, releasing 40,000 toadlets raised in school classrooms across Cape Cod. Seven wetlands were created or restored to serve as breeding sites for the species. Since then, the population has been continuously monitored to determine viability. In 2024, we conducted 25 upland surveys of toads to assess conservation status following 3 successful years of breeding. Surveys indicated a decline in population size in 2024. In addition, the amphibian-borne pathogen chytridiomycosis (caused by the fungus *Batrachochytrium dendrobatidis*, or Bd) was documented in the population. Bd has caused rapid amphibian population declines and several species extinctions worldwide. This project provides a summary of the results of the 2024, as well as potential projections and plans moving forward.

Sun- 52

Correlation Between Urbanization and Water Quality Along an Urbanization Gradient in Worcester, MA

Laura Reynolds (Worcester State University, Worcester, MA), Alison Dunn (Worcester State University, Worcester, MA), William Hansen (Worcester State University, Worcester, MA), Alyssa Hammond (Worcester State University, Worcester, MA), Matthew Kaufman (Worcester State University, Worcester, MA), Justin Gagnon (Worcester State University, Worcester, MA), Cailey Ryan (Worcester State University, Worcester, MA), Kari Mickunas (Worcester State University, Worcester, MA), and Caitlin Dellert (Worcester State University, Worcester, MA)

Abstract - Landscape change due to urbanization can degrade the water quality of urban lakes and streams in a variety of ways, although temporal and spatial variability in water quality due to factors unrelated to urbanization as well as inconsistences in urbanization metrics used among studies can make teasing out the specific sources of water-quality variations challenging. We have monitored several stream and lake sites in the Tatnuck Brook, Worcester, MA watershed since 2022 for water-quality metrics including specific conductance, dissolved oxygen, temperature, turbidity, and nutrient (N, P) concentrations. This watershed provides an excellent case study for the effects of urbanization because the level of urbanization in the landscape (as measured by percent of impervious surface, agricultural land, and/or road and traffic density in subwatersheds draining into a specific site) generally increases from its headwaters to its confluence downstream, and the compact size of the watershed reduces other sources of variability. Our results show that average values of specific conductance for our stream sites are strongly correlated with all urbanization metrics studied, but are most highly correlated with road and traffic density values, while other water-quality parameters are less strongly correlated or uncorrelated with these urbanization metrics. We interpret these results to indicate the role of road salt in salinization of urban streams; however, seasonal patterns of conductivity are complex and vary year to year, perhaps indicating the mixed contribution of salt via overland flow and groundwater discharge. Finally, we describe the community and municipal collaborations that led to this research and future plans for monitoring efforts.

Sat- 35

Autumnal Photosynthesis Duration Varies Amongst Native and Invasive Maples in Urban and Forest Environments

Indi-Anna Richardson (SUNY Purchase, Purchase NY), Maura Vanderputten (SUNY Purchase, Purchase NY), Senna Levy (SUNY Purchase, Purchase NY), Allyson Jackson (SUNY Purchase, Purchase NY), and Hanna Makowski (Black Rock Forest, Cornwall NY)

Abstract - This study investigated the phenological patterns of *Acer rubrum* (Red Maple), *Acer saccharum* (Sugar Maple), and *Acer platanoides* (Norway Maple) in urban and forest environments. Based on observation of leaf coloration and senescence, we analyzed the impact of microenvironments, species, and diameter at breast height on the timing and duration of the phenological processes. We collected data daily from 10 October 2024 through 20 November 2024 using bins to signify different phenological stages. We found that native Red Maple trees in an urban environment displayed the fastest rate of leaf senescence, likely due to the urban heat island effect. Native Sugar Maple trees in a forest environment maintained foliage longer than their urban counterparts. Invasive Norway Maple trees exhibited the largest variability in phenological timing, but they showed delayed senescence compared to their native counterparts. We also observed a positive correlation between diameter at breast height and delayed senescence across all species, suggesting that larger trees may have prolonged photosynthetic periods. These findings emphasize the impact of microclimates and tree size on phenological patterns and the competitive advantage of invasive species. Understanding these dynamics is crucial for the management of native and invasive species in a world of rapid global change with shifting environmental conditions.

Sat- 12

Seedbank Response to Agriculture Past and Present: Implications for Management

Leo Rothstein (Vassar College, Poughkeepsie, NY) and Meg Ronsheim (Vassar College, Poughkeepsie, NY)

Abstract - Weed management is an urgent concern in agricultural systems, from large-scale, chemically dependent monocultures to small, organic farms. As weed seeds can remain in the soil for many years before germinating, seedbanks play an important role in determining future plant community composition. Both land-use history and current agricultural practices may have a contributing role to the composition of viable seeds in the seedbank. This study examines the seedbank of the Poughkeepsie Farm Project (PFP) and the Vassar Ecological Preserve (EP). Both areas were clear cut for agriculture and farmed for decades before going fallow in the 1950s. The PFP began its CSA-based, organic farming operation 25 years ago, and the land is currently managed through annual plowing and hand weeding. Adjacent fields in the EP are mowed annually and are otherwise undisturbed. This experiment explores whether restarting agriculture has impacted the seedbank or if the shared, longer-term land-use history of these spaces is a primary determinant of their seedbank composition, specifically with regard to the number of seeds, species composition, and overall biodiversity. We sampled 2 sites, with a paired PFP field and adjoining EP oldfield. At each subsite, we set up 3 transects to collect soil samples that we subsequently transferred to growth trays in a greenhouse to estimate their seedbank composition by seedling emergence. Results show that the seedbank is significantly different between the paired oldfield and PFP sites. While each site was found to have similar diversity, the individual species that constituted the sites with different land treatments (PFP vs EP) were very distinct. In the EP, certain perennial species like *Lythrum salicaria* (Purple Loosestrife) were present, while the PFP was dominated by typical agricultural weeds such as *Abutilon theophrasti* (Velvetleaf) and *Amaranthus* sp. (pigweed). These results indicate that recent land management has a more important role than previous land use in shaping the seedbank and thus the aboveground plant community. This reflects the importance of current land management in avoiding potential weed outbreaks by minimizing available seed in the seedbank, with implications for the management of agricultural as well as ecological spaces.

Sun- 4

Years Since the Axe: Forest Diversity in Response to Timber Harvest

Ryan Rotigliano (Keene State College, Keene, NH), **Chloe March** (Keene State College, Keene, NH), Liam Conley (Keene State College, Keene, NH), and Wyatt Ferrando (Keene State College, Keene, NH)

Abstract - Forests are essential ecosystems worldwide; they cover more than 30% of the world's land surface, and provide ecosystem services that are necessary for life. Forest diversity is on the decline globally with exceptionally high rates of species extinction due to anthropogenic causes including forest-management methods like logging, which can give way to the rise of invasive plant species. Working with our community partners, the Harris Center for Conservation Education and the New Hampshire Department of Natural and Cultural Resources, we studied how forests respond to disturbance across spatial and temporal scales in the Monadnock region of southwest New Hampshire. We were granted access to 4 parcels of land to conduct our research on where we used 2 sampling methods: (1) variable-radius plot sampling to record mature trees, using a basal 10-factor prism and diameter at breast height (DBH), and (2) fixed-radius plot sampling (3.6 m [11.8 ft]) to record saplings. We measured invasive plant species using population-size codes to determine prevalence. Our data showed us that in the regions we observed, there was no correlation between logging and invasive prevalence. Over the course of the data collection, we observed a diverse assortment of trees and saplings that are both shade-tolerant and intolerant. Our results show that shade tolerance dominated both mature trees and sapling data. All the forests we surveyed were in different stages of secondary succession. The presence of beech leaf disease on *Fagus grandifolia* (American Beech) in our sample is widespread. Which will have a profound impact on species composition within forests in the Monadnock region and beyond.

Sat- 11

Characterizing the Ecological Community Interacting with Red-backed Salamanders in Massachusetts

Grace Santos (Bridgewater State University, Bridgewater, MA), **Olivia R. Quintin** (Bridgewater State University, Bridgewater, MA), Alex Reed (Bridgewater State University, Bridgewater, MA), Emmalee Bent (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - Understanding the intricacies of community ecology, general ecosystem health, and productivity is essential in mitigating climate, conservation, and preservation concerns. Ecological communities are a diverse assembly of different species occupying a particular habitat, which prompts complex interactions with one another (e.g., predation and competition) and with the abiotic environment. One important ecological community within New England is the temperate forest. Within temperate forests, many amphibians, particularly salamanders, serve as key members of their communities and are integral in maintaining ecosystem health and overall biodiversity. The Great Hill forest on the campus of Bridgewater State University has varying levels of salamander density throughout it, and our project attempted to correlate salamander density with the biodiversity of prey, competitors, ecosystem engineers (worms), and abiotic soil factors. Using various sampling methods, we collected arthropods and identified them to the order level. We found that smaller arthropods from leaf-litter collections were more diverse in areas that have higher salamander density, suggesting salamanders are attracted to areas with diverse prey communities. This pattern was not observed for the larger arthropods collected with pitfall sampling. These larger arthropods act as competitors and sometimes predators of salamanders, and salamander density was highest where large arthropod diversity was lowest. Earthworm-sampling methods (mustard vermifuge, hand sampling, and grunting) showed minimal results, but hand sampling was the most successful. Soil-composition analysis showed a positive relationship between salamander density and pH. All together, we analyzed the information collected from each of the sampling methods to determine correlations between the density of *Plethodon cinereus* (Red-Backed Salamander) in each plot and the various biotic and abiotic factors we tested. Continued work for this project includes comparing beetle diversity over seasons, investigating earthworm and slug abundance in relation to salamanders, expanding our study to other nearby forests for comparisons in relation to different soil compositions, and further genetic analysis with PCR.

Sat- 42

The Impact of Emerald Ash Borer on Western New York Wetlands

Caitlin Schirmer (SUNY Geneseo, Geneseo, NY), Sam Bonesteel (SUNY Geneseo, Geneseo, NY), and Brian Hoven (SUNY Geneseo, Geneseo, NY)

Abstract - First identified in New York in 2009, *Agrilus planipennis* (Emerald Ash Borer [EAB]) is an invasive insect of great concern. *Fraxinus pennsylvanica* (Green Ash), a dominant canopy tree in forested wetlands of western New York, is particularly susceptible. Widespread EAB-caused ash loss is proposed to have substantial impacts on wetland ecosystems. To assess potential changes, we established 16 sites, each site containing 3 circular 400-m^2 plots in 2024. We identified and measured diameter at breast height (DBH) for all trees ≥10 cm DBH within plots. Canopy-tree abundance, species richness, and species diversity was 26 ± 2, 3.0 ± 0.1, and 0.64 ± 0.04, respectively. For all canopy trees we assessed crown position. In the canopy layer, we identified 19 species; the 2 most common were Green Ash (43%) and *Acer* × *freemanii* (Freeman Maple; 50%). Mean stand basal area (BA) for all species was 23,310 ± 1921 m^2 ha^{-1}, per plot and of that 663 ± 64 m^2 ha^{-1}, was ash. We assessed all ash in the canopy and subcanopy layers (≥9.9 cm DBH) on a 1–5 scale, with 1 being healthy and 5 being dead; mean ash health was 4.7 ± 0.1 in the canopy and 2.7 ± 0.2 in the subcanopy. We used canopy-stand BA, ash canopy BA, and ash health to calculate ash-decline and ash-mortality indices; the mean values were 49 ± 0.04% for decline and 47 ± 0.04% for mortality. Mean percent canopy openness was 44 ± 3.7% per plot. We will use a cumulative log-link model to assess a potential relationship between ash health, canopy position, and size. This data is a baseline for assessing long-term EAB-caused ash mortality in western New York wetlands.

Sun- 28

Phylogeny of Superclonal Aphid Populations in North America

A. Kevin Scott (Bridgewater State University, Bridgewater, MA), M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA), and Heather Marella (Bridgewater State University, Bridgewater, MA)

Abstract - *Danaus plexippus* (Monarch Butterfly) is an important pollinator and a charismatic species. The larval stage of this butterfly feeds exclusively on plants in the genus *Asclepias* (milkweed). While agriculture is one of the largest driving factors for the reduction in this critical butterfly habitat, an invasive insect parasite, *Aphis nerii* (Oleander Aphid), also threatens to further rapidly reduce this diminishing habitat. Unlike most invasive species that generally require some genetic diversity for success, the oleander aphid reproduces only asexually, effectively generating clones of itself every spring and summer season. In this poster, we present the results of a phylogeographic analysis of multiple populations of the Oleander Aphid from 7 states: Connecticut, Massachusetts, New Jersey, New York, Ohio, Pennsylvania, and Wisconsin. The largest sampling of populations collected are concentrated within Massachusetts. We collected samples during the summers of 2022 and 2024. We sequenced 48 individual aphids from 2022 and 25 individual aphids from 2024 at the mitochondrial gene cytochrome oxidase I (COI) sequences. Understanding any potential genetic diversity of these aphids through genetic and spatial relationships may help us to better understand where the aphids are originating from, how they manage to be so successful at milkweed colonization in North America every year, and how to better prevent infestation from these insects. This understanding can then be turned toward ongoing restoration efforts for milkweed and monarch butterfiles.

Sat- 49

Habitat Preference and Classification of Two Forest Types (Oak vs Mixed Forest) by *Nicrophorus* spp. at a Heterogeneous Landscape in Central New York

Eva Sgambettera (SUNY Cobleskill, Cobleskill, NY), Carmen Greenwood (SUNY Cobleskill, Cobleskill, NY), and John Pipino (SUNY Cobleskill, Cobleskill, NY)

Abstract - Burying beetles (Coleoptera: Silphidae) of the genus *Nicrophorus* play a crucial role in a given ecosystem through carrion decomposition and nutrient cycling. This study aimed to investigate habitat preferences of *Nicrophorus* spp. in 2 forest types (oak and mixed forest) at Greenwood's Conservancy in Hartwick, NY, and to assess if the habitat types were accurately described. As part of a habitat-suitability study conducted in preparation for the reintroduction of the federally threatened *Nicrophorus americanus* (American Burying Beetle [ABB]), we established trap sites within different habitats of Greenwoods Conservancy, a conservation easement property. We characterized habitats visually by what appeared to be the predominant tree species, but we did not quantify the forest community composition to confirm the designation. This study aims to quantify the forest community composition of these designated trap sites. We placed carrion bucket traps across 6 forested sites. We labeled 3 of the forested sites as "mixed forest" and 3 as "oak forest". We assessed forest community composition using a basal area measurement (404 m^2 [0.1 ac] plot size) 3 times at each of the 6 forested trap sites downwind of the trap. Results showed that *N. orbicollis* (Roundneck Sexton Beetle) was the most abundant species collected, indicating favorable conditions for large *Nicrophorus* spp. Trap site 6, classified as an oak forest, had the highest total beetle abundance but lacked oak trees, suggesting a need for reclassification. Traps 4 and 5 had the highest percentage of oak trees present (22% and 32% respectively). Trap sites 8 and 9 had the greatest species richness with a significant difference from the other trap sites. The study highlights the importance of heterogeneous, unfragmented habitats with suitable availability of vertebrate populations for *Nicrophorus* spp. conservation and provides insights into site selection for ABB-reintroduction efforts.

Sat- 51

Seasonal Composition and Infestation Rates of Shell-Boring Polychaetes in the Eastern Oyster (*Crassostrea virginica*)

Ava Sheedy (Wheaton College, Norton, MA) and Andrew Davinack (Wheaton College, Norton, MA)

Abstract - *Crassostrea virginica* (Eastern Oyster) is the only native oyster species on the eastern coast of North America and plays a crucial ecological and economic role. However, this species faces serious threats, including overharvesting, habitat degradation, and diseases. In Massachusetts, shell-boring polychaetes—*Polydora websteri*, *Polydora onagawaensis*, and *Polydora neocaeca*—pose significant threats for oysters such as facilitating mud-blister disease, particularly in the Herring River estuary in the town of Wellfleet. This disease compromises shell integrity and reduces the market value of oysters, posing a major challenge for the regional shellfish industry. This study investigates seasonal changes in the composition and infestation rates of shell-boring polychaetes in *C. virginica* from the Herring River. Results show a clear seasonal variation in polychaete prevalence. These findings can inform harvesting strategies, enhance understanding of polychaete dynamics, and help guide management of the Herring River restoration project. Additionally, the results may benefit other coastal communities addressing similar challenges, contributing to sustainable practices in oyster aquaculture.

Sun- 59

Preserving the Dead: The Role Natural History Specimens Have in Higher Education

Lexi Silva (Bridgewater State University, Bridgwater, MA) and Maria Armour (Bridgewater State University, Bridgewater, MA)

Abstract - Specimens housed in natural history collections are more than just pieces from the past that occupy valuable space. They offer opportunities for learning and scientific inquiry to several parties: the public, students of educational institutions, and research scientists. These repositories of information allow for the study of organisms past and present so scientists can better understand the changing natural world and forecast the future of the planet. This study focuses on how recent acquisitioned specimens can be scientifically valuable to an institute of higher education. Using the case-study approach, we set out to highlight both the educational and scientific value one specimen has at our institution using an *Ursus americanus* (American Black Bear) cub that died following a vehicle collision in Rutland, MA. The specimen was necropsied by strong-stomached undergraduates, and its bones were processed in a dermestarium. This specimen, now known as "Rosie the Cub" to the students, has a story to tell. Students were taught proper post-mortem wildlife handling and dissection techniques; through public outreach, the bones helped highlight issues of wildlife–vehicle collisions in the state; through 3D rendering, the cub's femur was tested in a student research project; and current wildlife health research is being conducted to identify possible genetic or nutritional issues this cub possessed. New specimens, like Rosie, can provide information about current populations' health and environmental conditions which can help biologists and environmental agencies make informed decisions.

Sun- 60

Hemlock Woolly Adelgid, A Challenge for the Northeast US

Olivia Silvernail (Hoosac Valley High School, Cheshire MA and MCLA, North Adams, MA)

Abstract - The *Adelges tsugae Annand* (Hemlock Woolly Adelgid [HWA]) has been present in Massachusetts since 1988, impacting the sustainability of our forests. This pest affects 3 pillars of sustainability: environmental protection, economic vitality, and social equity. HWA affects the health and population of *Tsuga canadensis* (Eastern Hemlock) trees through widespread defoliation, branch dieback, and tree mortality, removing a key canopy species that provides habitat and food sources for various wildlife species in these forests. Ecosystem services provided by Eastern Hemlocks include temperature regulation, nutrient cycling, and overall forest aesthetics which impacts recreational uses when HWA impacts the forest. The economic impact of HWA is severe, as it significantly reduces the monetary value of properties with Eastern Hemlocks infected by HWA. The decline of Eastern Hemlock populations caused by HWA can have significant ecological, economic, and social consequences in all northern hardwood forests with Eastern Hemlock, and for this particular case study focusing on Massachusetts.

Sun- 13

Changes in Burrow Distribution in a Leach's Storm-Petrel Colony

Riley Simon (Bowdoin College, Brunswick, ME), Patricia Jones (Bowdoin College, Brunswick, ME), Luke Robinson (Bowdoin College, Brunswick, ME), and Liam Taylor (Bowdoin College, Brunswick, ME)

Abstract - The distribution of *Hydrobates leucorhous* (Leach's Storm-Petrel) burrows is dependent on the population size of a colony. Leach's Storm-Petrels tend to burrow in clusters at growing colonies until increasing population density forces the burrow distribution to become more random. Therefore, as global populations of Leach's Storm-Petrels continue to decrease, colony layout has the potential to change. We used Long-term monitoring data of a colony on Kent Island, a research station off the coast of New Brunswick, Canada, to assess burrow distribution as colony population decreased. We used GPS points of burrows and occupancy data to quantify the change in distribution from 2006 to 2023. This analysis indicated that occupied burrow distribution became less clustered and more random as population declined and nearest-neighbor distance increased. This deconstruction of a clustered structure could be a result of random disappearance of nesting pairs, change in available burrowing habitat, or increased burrow switching caused by investigator disturbance.

Sat- 28

The Role of Higher Education in Native Plant Amplification: A Case Study from Vassar College)

Ethan Skuches (Vassar College, Poughkeepsie, NY), Jennifer Rubbo (Vassar College, Poughkeepsie, NY), and Keri VanCamp (Vassar College, Poughkeepsie, NY)

Abstract - Higher-education institutions, with their access to unique funding and staffing sources, can play a pivotal role in strengthening supply chains for native plant material. While native seed may be available through commercial sources, access to ecotypic seed is limited on local and regional scales.Vassar College's Native Plant Propagation Program uses an innovative, college-scale approach to address ecotypic supply constraints for native plant materials. Since its establishment in September of 2023, more than 400 seed accessions have been catalogued representing 178 species across 118 genera collected both on Vassar property and at partner sites. Through student and community engagement, Vassar is working in the sourcing, amplification, and dissemination of native plant materials in the Hudson Valley region. Students are engaged in the work from collecting, cleaning, sowing, and distributing the seed. Once collected, the seed is used in various ways: foundation plot establishment, campus pollinator gardens, campus restoration efforts, and external work as well. Through partnerships formed with local schools and community organizations, plugs are distributed each spring for use in pollinator gardens and restoration projects throughout the region. Programs like this help to educate our students about seed literacy and the importance of locally sourced seeds, while also engaging meaningfully with the community and environment that surrounds the College.

Sun- 5

Phenology in the Floral Visitors in a Bee Pollinated Flower in the Eastern Deciduous Forest

Drew Smith (Wetsern Connecticut State University, Danbury, CT), Dorothy Christopher (Wetsern Connecticut State University, Danbury, CT), and Carlos Santibanez-Lopez (Wetsern Connecticut State University, Danbury, CT)

Abstract - The timing of biological events is important in the ecology of both plants and pollinators, influencing what species both parties encounter during key moments in an organism's life cycle. As some animals are more effective pollinators than others, keeping records of local pollinator phenology can allow for more effective management of these keystone species and provide a framework to study future mismatches in the face of climate change. Studies on insect phenology have been conducted in temperate latitudes in the past, but records of pollinator phenology and the seasonal frequency of foraging behavior in the eastern deciduous forest ecosystem are rare. The goal of our study is to contribute towards knowledge of pollinator phenology by identifying animals visiting a planted cohort of morning glories down to the taxonomic rank of family and recording the date and time of their visitation. Between the dates of 7 July and 12 August, we observed a wide variety of pollinators in situ, but only 2 families, Syrphid flies and Halictid bees, and 1 species, *Bombus impatiens* (Common Eastern Bumblebee), made up a significant portion of the population at any point of the data collection period. Syrphid flies were the most abundant pollinator during the first week of visitation and made up a significant portion of the pollinator population in the second week before declining in abundance afterwards. Halictids were also abundant during the second week, though they only represented a significant portion of the pollinator population later in the morning. The number of visits from Common Eastern Bumblebees was greater than that of other pollinators on the second, fourth, and fifth weeks, making up virtually all visits by the end of the season. These observations are in accordance with observations in the literature, as the abundance of halictids and syrphids are both known to decline in late summer.

Sat- 57

Along Came a Spider: Unraveling the Web of Spider Distribution in a Southern Boreal Peatland

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Abstract - Boreal peatlands house multitudes of arthropods varying in size, order, and effect on the ecosystem. They play an integral role in maintaining the food web by mitigating smaller pests and participate in decomposition of animal corpses, pollination, and waste reduction. Their sensitivity to changes in the environment makes them important bioindicators of ecosystem health. The role of *Araneae* (spiders) in this ecosystem as predators makes them valuable bioindicators, as the spider population is directly linked to the amount of prey available. This function may be particularly important in peatlands at their southern range margin in the boreal-temperate ecotone (BTE) where peatlands are most at risk due to climate change. Our goal was to analyze the distribution of spiders across the forested-to-open bog gradient and between different collection methods. In this study, we collected terrestrial arthropods at the Shingle Shanty Preserve and Research Station in the western Adirondacks of New York, located at the southern range of the North American BTE. We collected spiders monthly in 3 peatland sites from June to September in 2023. At each site, we established transects in the forested, transition, and open bog, with 3 plots located along each transect. We used a combination of Berlese funnels, ground and aerial sweep netting, and Lindgren funnels at each plot for spider collection. We looked at changes in spider density between sites, across the forested-to-open bog gradient and between collection methods, which may indicate different fine-scale habitat use/life-history characteristics (i.e., sit-and-wait versus pursuit predation). We found that overall spider density was evenly distributed between the sites and across the forested-to-open bog gradient. However, there were large differences between collection methods, with open-bog spiders being far more prevalent in the ground sweep, while the aerial sweep produced the highest numbers in the forested bog. Understanding the distribution of spiders, and how fine-scale habitat use changes, as reflected by collection method, within the peatland can provide insight into the ecosystem function and importance of spiders in these systems.

Sun- 27

Nest Site Fidelity and Breeding Dispersal in Kent Island *Tachycineta bicolor* (Tree Swallow)

Helena Souffrant (Bowdoin College, Brunswick, ME) and Patricia Jones (Bowdoin College, Brunswick, ME)

Abstract - Aerial insectivorous birds have declined in Canada by ~59% and across North America as a whole by ~32% since the 1970s. These declines are likely due to a combination of climate change, habitat degradation, and insect decline. Among these declining birds are *Tachycineta bicolor* (Tree Swallow). Since 1934, researchers on Kent Island have monitored the nesting activity of Tree Swallows in artificial boxes. Nest-site fidelity and dispersal between boxes can influence the breeding success of Tree Swallows. By analyzing the long-term dataset, we examined sex differences in dispersal, and the effects of adult density and number of fledglings on adult dispersal distance. We found that female birds are more likely to disperse between nest boxes than males. We also concluded that neither density nor number of fledglings significantly affects dispersal distance.

Sun- 32

What Bugs Love: A Study of Macroinvertebrates as Water Quality Indicators of Urbanization Through the Ashuelot River

John Stanway (Keene State College, Keene, NH), **Lena Goins** (Keene State College, Keene, NH), **Abigail Haskins** (Keene State College, Keene, NH), and **Zach Leno** (Keene State College, Keene, NH)

Abstract - Macroinvertebrate sampling is used worldwide to survey water quality. Urbanization can lead to higher amounts of non-point-source pollution that, in a lotic system, can impact the biodiversity of macroinvertebrates and other members of the freshwater community. To determine if macroinvertebrate community composition reflects water-quality conditions and inputs from urban areas, we assessed the Ashuelot River at 5 locations in New Hampshire: Gilsum, 2 sites in Keene, Winchester, and Hinsdale. We performed the kick-net method in the riffles of 3 channel locations and installed rock baskets in the riffles of 2 other sites. The rock baskets were left in the river for 4–6 weeks beginning in September, while the kick-net surveys took place in September and October of 2024. Once the macroinvertebrate samples were collected and identified, we scored each location using a pollution tolerance index (PTI) to determine the quality of the river. We also took abiotic measurements at each site to be compared with the biotic sample results. Of the 446 macroinvertebrate samples we were able to identify, the most common families in descending order of abundance were Stoneflies, Mayflies, and Riffle Beetles. Across our 5 sites, we identified more than 15 taxonomic families. Our results, supported by biotic data and abiotic measurements, suggest that the Ashuelot River is ranked excellent in water-quality characteristics. Samples from all 5 sites yielded a majority of pollution-intolerant macroinvertebrates, with high PTI scores varying from 26 to 44. There were no abiotic measurements indicative of elevated pollution levels within our sampling sites. Our study provides further evidence that biotic sampling can be used as a method to determine water quality. More data would be necessary to draw conclusions about macroinvertebrates being used as water-quality indicators of urbanization in the Ashuelot River and elsewhere.

Sat- 36

SPARCnet RaMP: Preliminary Impacts of a Postbaccalaureate and Intentional Mentor Training Program in Wildlife Ecology

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Abstract - It is clear that STEM fields are challenged to diversify their workforce by recruiting and retaining members of underrepresented minority groups (URM). But this diversity issue is not due to a lack of interest or engagement from URMs. Instead, this may be a problem of opportunity and the quality of experiences that URMs gain during their education pathways. Furthermore, impactful mentorship may play a significant role in retaining diverse students that go on to successful STEM careers. To meet these challenges, the National Science Foundation (NSF) initiated the Research and Mentoring Postbaccalaureates (RaMP) in Biology program, which aims to support the STEM diversity problem. We used a long-term salamander research network (The Salamander Population and Adaptation Research Collaboration Network [SPARCnet]) as the setting for developing our RaMP program focused on building various research and professional development skills, including an independent, tailored research experience. Parallel to this program, we have also developed a 6-month mentor program for teaching necessary skills, such as fostering independence, conflict resolution, and communication. This presentation will provide preliminary evidence of impacts to both mentors and postbaccalaureates in SPARCnet RaMP.

Sat- 62

Utility of Body Condition Index in Monitoring of Radio-Telemetry Subjects: Data from Eastern Copperheads

Tigran Tadevosyan (Oxbow Associates, Inc., Boxborough, MA), Brian Butler (Oxbow Associates, Inc., Boxborough, MA), Scott Smyers (Oxbow Associates, Inc., Boxborough, MA), Gregory Mertz (New England Wildlife Center, Weymouth, MA), Ronald Strohsahl (Oxbow Associates, Inc., Boxborough, MA), Jonathan Shuster (Oxbow Associates, Inc., Boxborough, MA), Kyle Cormier (OA), Robert Adamsky (New England Wildlife Center, Weymouth, MA), Lisa Trout (New England Wildlife Center, Weymouth, MA). Dominic Kemmett (Oxbow Associates, Inc., Boxborough, MA), and Spencer Campbell (Oxbow Associates, Inc., Boxborough, MA)

Abstract - We aimed to test the utility of the body condition index (BCI) of *Agkistrodon contortrix* (Eastern Copperhead) from the northeastern limit of their range, as a measure for monitoring wellness and predicting the risk of inadequate weight gain and mortality in individuals implanted with radio-transmitters, using the data gathered from a single-season. We defined BCI as the residual of the linear regression between log-transformed snout–vent length (SVL, measured by linear extension) and weight (males: BCI = Ln[Weight] – [LnSVL*2.7376-12.522], females: BCI = Ln[Weight] – [LnSVL*2.8498-13.083]), and compared average change in BCI between samples of snakes that were not implanted (n = 110) and radio-tracked snakes (n = 22). Non-implanted snakes of both sexes demonstrated significantly higher average BCI in summer and fall compared to that after emergence (Males: ANOVA: P = 0.009, Tukey HSD: P = 0.01, Females: ANOVA: P = 0.004). Average BCI in radio-tracked snakes did not significantly change throughout the season (Males: ANOVA: P = 0.19, foraging females: ANOVA: P = 0.30, Paired t-test: P = 0.71). We used BCI curves to predict the risk of failure to maintain or gain sufficient seasonal mass, as well as potential for mortality in "champion sized" males (>1000 mm SVL) and in typically sized females that produced offspring during the study year.

Sat- 44

Comparing Adult and Larval Blacklegged Tick Density Against Ground-Dwelling Arthropod Diversity at a Conifer-Dominant Site and a Deciduous-Dominant Site in Southern Maine

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Abstract - Since the 1990s, an observable increase in the range and density of *Ixodes scapularis* (Black-Legged Tick or Deer Tick) has been documented across New England. Additionally, an increase in the rate of diseases associated with this vector has also occurred. Integrated pest management strategies have explored ways to curb this increase by manipulating and relying on ecological relationships, while also employing more traditional methods, such as pesticide or acaracide application. Some studies have investigated the potential of predatory arthropods to manage tick levels in certain environments. In this study, we established and maintained research sites in 2 forested locations at the Wells National Estuarine Research Reserve (WNERR) in York County, ME, from September 2023 to January 2025 to further understand the biodiversity of terrestrial arthropods in Maine forests and their potential as predators during the seasonal emergences of the larval and adult Black-Legged Tick life stages. We installed pitfall traps for 2 weeks in the fall of 2023 to evaluate the biodiversity of terrestrial arthropods at each site. We also performed 6 hours of flagging at each site to evaluate tick density. We then analyzed these data sets to compare terrestrial arthropod biodiversity against tick density at each site. Relatively high tick density was observed in the deciduous compared to the conifer sites. Data collected in 2023 revealed *Cyminidis* spp. (ground beetles) were dominant in areas of lower tick density, prompting further investigation in 2024. We re-installed ritfall traps in July 2024 and October 2024 for 2-week collection periods and conducted 7.5 hours of flagging at each site. Analysis of 2024 data is ongoing to characterize insect biodiversity and tick density obtained during the 2024 collection period.

Sun- 21

Searching for Pollen-Specialist Bees in Rhode Island Using iNaturalist

Emma R. Tondre (University of Rhode Island, Kingston, RI), Casey L. Johnson (University of Rhode Island, Kingston, RI), and Steven. R. Alm (University of Rhode Island, Kingston, RI)

Abstract - As a part of our ongoing efforts to document the bee species of Rhode Island, we have been surveying under-sampled localities and habitat types, specifically targeting pollen-specialist bees. The females of these specialist species primarily or solely collect pollen from a single plant taxon, be that a species, genus, or family. We used iNaturalist to estimate the bloom period of host plants, locate previous host-plant occurrences, and approximate target habitat based on indicator species. In 2024, we surveyed 24 plant species at 27 locations, collecting a total of 129 bees across 47 different bee species. Of these, 7 species were pollen specialists, and 4 species were new state records. In 2025, we plan to expand our efforts to include more target species across a larger area. These data will be incorporated into a statewide bee species checklist, and provide information regarding bee populations, species phenologies, and plant–pollinator interactions in Rhode Island. This knowledge can then be used to identify species of conservation concern and support them through the preservation of their host plants and nesting habitat.

Sun- 3

Metacercarial Cyst Presence from Digenetic Trematodes on Teleost Species in the Genesee River Watershed

William Tormey (Houghton University, Houghton, NY) and Eli Knapp (Houghton University, Houghton, NY)

Abstract - The research conducted attempts to serve as the first investigation into digenetic trematode presence in the Genesee River Watershed. We collected fish samples using minnow traps in 2 distinct secondary tributaries connected to the Genesee River. We assessed all collected organisms for metacercarial cyst formation, otherwise known as black-spot disease, on the epidermal layer of the individuals. Formation of cysts is a distinct indication of trematode activity in the form of free-swimming cercariae. In total, over 1000 individuals were captured and assessed for metacercarial cyst presence in both collection sites. As a result, over 10 distinct fish species were observed with at least 1 instance of black-spot presence. Species included, but were not limited to *Lepomis macrochirus* (Bluegill), *Lepomis cyanellus* (Green Sunfish), *Campostoma anomalum* (Central Stoneroller), *Rhinichthys atratulus* (Blacknose Dace), *Etheostoma caeruleum* (Rainbow Darter), and *Etheostoma blennioides* (Greenside Darter). We suggest that the likely trematode candidate for a majority of the observed cysts is *Uvulifer ambloplitis* as *Helisoma trivolvis* (Marsh-Ramshorn Snail) and *Megarcyle alcyon* (Belted Kingfisher) were present at the collection sites and these 2 species serve as intermediate and definitive host organisms for the aquatic parasite. Based on the results of the assessments of collected fish, we suggest that specific families are infested with metacercarial cysts at a higher rate than others due to the specific area they typically reside within the tributaries.

Sat- 33

Falling into the Ashes: Jack Pine Population Dynamics Following Wildfire

Taylor Towne (SUNY Plattsburgh, Plattsburgh, NY) and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - As anthropogenic actions, such as fire suppression and the manipulation of global temperatures, contribute to a shift in disturbance regimes, the resilience of fire-dependent species is at risk. One of these species is *Pinus banksiana* (Jack Pine), which occurs at its southernmost range limit at the Altona Flat Rock, an isolated sandstone pavement pine barrens in the northeastern US. Surrounded by northern hardwood forests, the Flat Rock contains ~2000 ha of Jack Pine habitat. Being a serotinous species, the cones of Jack Pine open under extreme heat or pressure, allowing seeds to germinate when disturbances such as wildfires clear the understory. In 2018, after a 61-year fire-free period, a fire burned across ~250 ha of the pine barrens, providing the opportunity to study the regeneration and resilience of Jack Pine. We established 39 permanent plots across the burned area following the fire and determined fire severity for each plot. From 2019 to 2022, we assessed seedling densities, heights, understory cover, live and dead stems, and downed woody debris annually. Densities averaged 357,000 (sd = 481,000) seedlings per ha across this time. In 2024, two years after the previous study, we resampled plots and found that regeneration had fallen to an average of ~81,000 (sd = 95,000) seedlings per hectare. Proportionally, mortality has been relatively constant across the burned area (~80%). However, plots that experienced higher fire severity showed the largest decreases in number of seedlings (reductions of >700,000 seedlings/ha). These results suggest that intraspecific competition is beginning to play a major role in the recovery of this system. While competition may explain mortality, it was found that fire severity, along with *Vaccinium* (blueberry) abundance and standing-dead density were the strongest predictors of seedling abundance across the burned area. Continued monitoring of this system is required to understand how the successional trajectory will play out as the Jack Pines continue to grow and mature over the coming decades.

Sun- 17

Flag Trees and Fir Wave Motion as Indicators of Winter Surface Wind Patterns on Mt. Washington, NH

Gray Trumbore (SUNY ESF, Syracuse, NY) and Colin M. Beier (SUNY ESF, Syracuse, NY)

Abstract - I measured the severity and directionality of wind flagging on *Abies balsamea* (Balsam Fir) and *Picea* spp. (spruces) near treeline on Mt. Washington to develop a map of surface wind patterns during the winter season. We aged Balsam Fir waves near the study site using increment cores, and terminal wave tree age, wave speed, and severity of flagging at wave edges matched the results found by prior studies. The wind vectors reveal a complex network of wind patterns that drive fir wave motion nearly antiparallel to the prevailing winds measured at the summit of Mt. Washington.

Sun- 14

Hearing Fresh(water) Voices: Exploring Pond Soundscapes in Western New York

Maya Tucci (Department of Biology, SUNY Geneseo, Geneseo, NY), Bryan Armpriest (Department of Biology, SUNY Geneseo, Geneseo, NY), Katelyn Stancliffe (Department of Biology, SUNY Geneseo, Geneseo, NY), Anna Tessier (Department of Biology, SUNY Geneseo, Geneseo, NY), and Kristina Hannam (Department of Biology, SUNY Geneseo, Geneseo, NY)

Abstract - Organisms can create sound for many different reasons, and as such, soundscapes (the collection of all sounds in a habitat) can tell us about the biotic activity in an environment based on the quantity and characteristics of sounds being produced. Freshwater soundscapes are generally understudied compared to terrestrial soundscapes. A wide variety of species are active and vocalize in freshwater environments, and studying patterns within these soundscapes can give insight on broader ecosystem health. We explored diel and seasonal patterns in the soundscapes of 2 ponds in western New York by applying acoustic indices (the acoustic complexity index and the acoustic diversity index) to underwater recordings from April and July 2024. Based on index values, we located times in recordings from each day when acoustic activity changed significantly, and examined these times in RavenPro. We noted all sounds that were audible and visible on the spectrogram, as well as compared the ratio of total sounds to total unique sounds with the index values. We will report our investigation of the efficacy of the 2 indices (which were originally designed for application to terrestrial soundscapes) in freshwater contexts. With our notes on unique sounds, we're developing a sound library that will further aid us in finding patterns in acoustic activity.

Sun- 45

Drop it Like its Hot: Cone Serotiny in the Altona Flat Rock's Jack Pine Population

Sophie Turner (SUNY Plattsburgh, Plattsburgh, NY), James Wholey (SUNY Plattsburgh, Plattsburgh, NY), Zoe Fox (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Cone serotiny is an adaptation of many conifers living in fire-dependent ecosystems including *Pinus banksiana* (Jack Pine). Serotinous cones, sealed shut with resin, open only when exposed to heat. This characteristic ensures that seeds are deposited in favorable post-fire conditions when light and nutrients are abundant and competition and seed predation low. Serotiny is a genetic trait with high variation within and between trees. As fire intervals increase or become more unpredictable, populations must diversify their reproductive strategies. In Jack Pine, existing studies show that serotiny levels decrease and become more variable at the southern range extent and in isolated populations, which generally have fewer, less intense fires. The goal of our project was to determine the degree of serotiny in Jack Pine at Altona Flat Rock in northern New York. The Flat Rock's complex fire history and position as an isolated patch at the extreme southern edge of Jack Pines' range may have caused genetic variation differing from existing data collected elsewhere. We established 5 plots in each of 3 different stands at the Flat Rock based on disturbance history. Two of the stands experienced wildfire, while the third was subject to a mechanical harvesting disturbance. At each plot, we sampled the 5 trees (>10 cm diameter) closest to plot center. We recorded tree diameter and height and took a core to discern tree age. We scored cone serotiny on a 5-point scale for each tree overall and also separately for lower, middle, and upper sections of each tree. We calculated stand density using a prism sweep. We found no difference in average serotiny between differently aged stands. We found no relationship with tree height or diameter. However, serotiny decreased significantly with increasing stand density, likely due to a relationship between tree age, density, and serotiny. Future analysis will explore if serotiny is related to branch height and tree age. The Flat Rock overall showed a higher serotiny level than previously studied populations at either the core or edge of the species range, highlighting the Flat Rock population's unique ecological significance. Understanding serotiny variation within the Flat Rock community and between range-edge and core populations will help predict responses to a warming climate and shifting fire regimes.

Sun- 18

Stable Isotope Portrait of a Northern Hardwood Ecosystem

Matthew A. Vadeboncoeur (University of New Hampshire, Durham, NH), Erik A. Hobbie (University of New Hampshire, Durham, NH) and Andrew P. Ouimette (US Forest Service, Durham, NH)

Abstract - Stable isotopes of C and N are influenced by the processes by which organisms acquire and use these essential elements. We present data collected from the Bartlett Experimental Forest in New Hampshire over several years, including canopy and understory foliage of both arbuscular mycorrhizal and ectomycorrhizal tree species, arbuscular and ericoid mycorrhizal shrubs, forest-floor herbs varying from lycopods to myco-heterotrophs, and root holoparasites, as well as sporocarps of both ectomycorrhizal and saprotrophic fungi. Systematic differences in terms of ^{13}C and ^{15}N reveal physiological differences and ecological relationships among these groups.

Sat- 10

Too Hot to Handle: Can a Colonial Seabird Serve as an Indicator of Marine Productivity in Warming Waters?

Jay van Pelt (College of the Atlantic, Bar Harbor, ME)

Abstract - Monitoring trends in the reproductive success of piscivorous seabirds is key to understanding the health of the environments that they depend on. Fluctuations in food availability is a limiting factor in parental foraging success, affecting many aspects of reproduction. Using data gathered on Great Duck Island, ME, and archival data of sea surface temperature (SST), this study will investigate long-term trends in the reproductive success of *Larus smithsonianus* (American Herring Gull) in the Gulf of Maine. As SST has been linked to reduced oceanic productivity, we expect to see lower reproductive success in years with higher spring and summer temperatures. Because the Gulf of Maine is warming rapidly compared to similar bodies of water, it is an ideal location to investigate whether colonial seabirds can serve as indicator species for pelagic and coastal environments in the face of global climatic warming.

Sat- 27

Mind the Gap: The Role of Beaver-Felled Canopy Openings in Facilitating Terrestrial Plant Invasions

Carlina Velicer (University of Rochester, Rochester, NY) and Mark Lesser (SUNY Plattsburgh, Plattsburg, NY)

Abstract - *Castor canadensis* (North American Beaver) is a keystone ecosystem engineer whose dam-building and foraging activities create or sustain riparian habitats. Beavers influence the competitive dynamics of the forest understory through tree felling, which creates canopy gaps, increasing light availability and reducing competition for soil and nutrients. Invasions of many common non-native plants increase in frequency and severity in the wake of canopy disturbance. Although invasive vegetation is common in riparian ecosystems across the US, it is unknown to what extent canopy gaps created by Beavers promote terrestrial plant invasions. Our objectives were to assess (1) the extent to which Beaver felling influenced light availability, (2) whether canopy gaps created by Beaver felling facilitated the spread of non-native herbaceous plants and woody shrubs, and (3) which invasive species took advantage of these gaps. Since Beaver-felled gaps increase light availability—potentially creating conditions conducive to the spread of non-native species—we hypothesized that Beaver herbivory promotes the spread of invasive herbaceous plants and shrubs. At a well-established beaver pond at the Huyck Preserve and Biological Research Station in east-central New York, we surveyed 5-m radial plots around 38 Beaver-felled and unfelled control trees. We measured tree diameter, canopy openness, soil pH, and the percent abundance of invasive plant species. Plots with Beaver-felled trees exhibited gaps in the forest canopy, resulting in significantly higher light levels than unfelled control plots. The total percent abundance of invasive herbaceous plants and shrubs was significantly higher in Beaver-felled plots than in controls, but only 3 of the 10 invasive species surveyed were drivers of this difference: *Celastrus orbiculatus* (Asiatic Bittersweet), *Lonicera* spp. (honeysuckles), and *Berberis thunbergii* (Japanese Barberry). Our findings reinforce the importance of light availability resulting from canopy disturbance, and facilitated by Beaver activity, in enabling terrestrial plant invasions.

Sat- 14

Phenological Trends of Vernal Pool Amphibians in the Northeastern US Based on Online Observations

Rachel E.R. Wadsworth (University of Maine, Orono, ME) and Noah Charney (University of Maine, Orono, ME)

Abstract - This study aims to find phenological trends of amphibians in the northeastern US using data analysis of Vernal Pool Listserv forum posts from 2002 to 2024. From each post describing observations, we recorded information such as the date, location, and species. Species mentioned in these posts included *Ambystoma maculatum* (Spotted Salamander), *Lithobates sylvaticus* (Wood Frog), and *Pseudacris crucifer* (Spring Peeper). As the movement of vernal pool amphibians is closely linked to weather conditions, we expect that, in the context of global climate change, migration phenology will have changed over the course of 23 years.

Sat- 41

Assessing Plant Diversity, Floristic Quality, and Biomass Quality in Ecosystem Functions for Freshwater Wetlands

Talia Weidberg (SUNY Geneseo, Geneseo, NY), Lauren Saggese (Rochester Institute of Technology, Rochester, NY), Wendy Owens Rios (SUNY Geneseo, Geneseo, NY), and Christy Tyler (Rochester Institute of Technology, Rochester, NY)

Abstract - Natural wetlands provide many ecosystem services such as carbon storage and biodiversity habitat. Anthropogenic impacts have degraded and destroyed wetlands, leading to loss of essential ecosystem services. Restoration efforts are complicated and not always successful. Finding optimal restoration strategies is essential to recovering these ecosystem services, especially in the face of climate change. This study focuses on the plant community, determining species composition, species diversity, and overall plant quality (FQA and C:N) in 1 created wetland under experimental conditions and 1 nearby natural forested wetland. We established 4 transects (4 m x 50 m) in the created wetland, 2 of which were kept under experimental conditions through the addition of leaf-litter compost, and 2 as controls, for 5 years. The study is part of a comprehensive ecosystem analysis of a newly created forested freshwater depressional wetland in the Finger Lakes Region of New York State. Previous results indicate leaf-litter compost added to experimental transects had increased floristic quality and Shannon diversity compared to control wetland plots. In additon, there is the potential for mosses to serve in restoration projects as indicators of ecosystem quality or to initiate succession. The goal for 2025 is to determine whether the addition of leaf-litter compost and the use of mosses as indicators of ecosystem quality are effective strategies for wetland restoration. Ultimately, this study will build upon our knowledge and inform effective management decisions to drive ecosystem succession toward the goals of the wetland mitigation.

Sun- 48

Effects of Multi Species Cohabitation on Growth of Head-started Turtles

Victoria Welzel (Bristol County Ag. School, Dighton, MA)

Abstract - *Terrapene carolina carolina* (Eastern Box Turtle) populations are declining due to habitat fragmentation, road mortalities, and illegal pet trade. “Head-starting” is a method used to raise hatchlings past vulnerable stages of life in order to augment declining populations. I am testing the effects of multi-species cohabitation on the growth of head-started turtles. I am currently head-starting 2 groups of turtles. Group 1 is comprised of Eastern Box Turtles ($n = 2$) and *Glyptemys insculpta* (Wood Turtle; $n = 2$). Group 2 is comprised entirely of Eastern Box Turtles ($n = 4$). Both groups of head-starts are raised under the same conditions. I have been collecting growth data every 2 weeks and will continue until ~1 June 2025. Once the study period concludes, I will compare growth data to determine if multi-species cohabitation affected growth. The forthcoming results could be used to help refine head-starting techniques.

Sun- 54

Fresh Out the Oven: Within-tree Variation in Jack Pine Cone Serotiny at its Southern Range Limit

James Wholey (SUNY Plattsburgh, Plattsburgh, NY), Sophie Turner (SUNY Plattsburgh, Plattsburgh, NY), Zoe Fox (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Serotinous cones are sealed with resin and must be heated to open and release seeds. This is an important adaptation to fire, allowing seeds to be banked on the tree until wildfire creates favorable microsite conditions for germination and a competitive advantage for seedlings. In *Pinus banksiana* (Jack Pine), cone serotiny has been shown to vary across its range, between trees, and within individual trees. Further, serotinous cones may open at different temperature thresholds based on vertical (height from ground) and horizontal (cone age) position within a tree. Previous studies of Jack Pine have shown that cone age and tree size (diameter) were positively correlated with cone-opening temperature in populations at the speceis' southern range margin. However, branch position and tree age were not related to opening temperature as they have been in other serotinous species. Our objectives were to determine variability of temperature thresholds required to open serotinous cones at an individual-tree level at the Altona Flat Rock pine barrens, a disjunct southern population with a different disturbance history than the contiguous-range populations which past studies have focused on. We sampled 5 sites in each of 3 different-aged stands (26, 68, and 85 years old) at the Flat Rock. At each site, we sampled the 5 trees closest to the plot center. We collected branches from 3 vertical zones (bottom, middle, and top) of each tree. We then collected cones from 3 positions along each branch (interior, middle, and tip) resulting in cones from 9 locations on each tree. We also cored each tree to establish age, and took diameter and height measurements. We heated cones at 49 °C for 1 hour and scored them for percentage of open scales. We repeated this process with 3 °C increases until all scales had opened. Preliminary results indicate the majority of cones open at 58 °C regardless of vertical branch position. However, opening temperature decreased with cone age along a branch. Our further analysis will look at tree age and size and the interaction of these factors. This research will assist management of these fire-dependent systems in the face of changing climate and disturbance regimes.

Sun- 19

Forest Regeneration and Succession after Herbivore Eradication on a Hemiboreal Island

Mitchell F. Zell (Bowdoin College, Brunswick, ME) and Patricia L. Jones (Bowdoin College, Brunswick, ME)

Abstract - Introduced herbivores have significant impacts upon forested ecosystems across the world, and these effects are magnified in island settings. Introduced herbivores can increase the spread of invasive species and alter forest regeneration and succession. Our study is located on Kent Island, NB, Canada, a hemiboreal island in the Bay of Fundy where *Lepus americanus* (Snowshoe Hare) prevented forest regeneration since their introduction in 1959 until their eradication in 2007. Our study uses data from 2008, 2019, and 2024 to understand the impact of Snowshoe Hare eradication on forest regeneration and succession on Kent Island. We surveyed 371 permanent 10 m x10 m forest plots. We recorded the number of mature trees, saplings, and seedlings and the presence of understory species in each plot. We also collected general information on each plot including canopy density, dominant canopy and understory, habitat type, and number of dead trees. We analyzed data since 2008 to track forest regeneration through both spatial and statistical approaches and found that the forest was regenerating across the majority of the island. We also analyzed relationships between understory vegetation and forest regeneration and found associations between understory vegetation species and increased sapling counts under broken and dense canopy conditions. Regeneration patterns have implications for potential future management of the forest and implications for the impacts of climate change on hemiboreal forests.

Sat- 13

Mammal and Bird Occurrence and Activity Patterns in the Anthony Lawrence Wildlife Preserve in Southeastern Massachusetts

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Abstract - Urbanization is a significant driver of environmental change, altering biodiversity through habitat destruction and reduced connectivity. Small protected areas, even within an urban or suburban matrix, can serve as a refuge and stepping stone between larger tracts of habitat for many species. Our study monitored bird and mammal use of a 20-ha protected area surrounded by suburban developments in Attleboro, MA. The Anthony Lawrence Wildlife Preserve encompasses 3 distinct habitat types: upland forest, freshwater marsh, and riverine forest. Using infrared trail cameras and automated recording devices, we collected data over a 4-month period (12 June–12 October 2024) to assess species presence and activity patterns. We hypothesized that we would find high alpha and beta diversity of mammals and birds in the preserve despite its small size, but that generalist species would be more common than specialists. We also expected that birds and mammals in the preserve would show greater activity (singing for birds and camera sightings for mammals) during times when human-recorded noise and sightings were lowest. We recorded 93 observations of 6 species of mammals in the marsh, 112 observations of 7 species in the riverine forest, and 267 observations of 6 species in the upland forest. There was a moderate overlap of species among habitats, with *Odocoileus virginianus* (White-Tailed Deer), *Procyon lotor* (Common Raccoon), and *Sciurus carolinensis* (Eastern Gray Squirrel) appearing frequently in all habitats. The unique species we found were *Canis latrans* (Eastern Coyote) in marsh, *Pekania pennanti* (Fisher) in upland, and *Lynx rufus* (Bobcat) and *Rattus* sp. (rat) in riverine. Generalist mammals were much more common than specialists. We expect that the bird data will show similar trends to the mammal data. The results of this study provide valuable insights into the effects of urbanization on local wildlife, informing conservation strategies to mitigate biodiversity loss in suburban landscapes.

Sun- 35

Repeated Cutting of *Reynoutria japonica*, s.l., (Japanese Knotweed) Diversifies Flora in Marist University Nature Preserve

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Abstract - *Reynoutria japonica,* s.l*., (*Japanese Knotweed) was controlled in Fern Tor Nature Preserve for 16 years in a 0.53-ha plot, using repeated selective cutting May–late August for the last 10 years. Along a 95-m transect, we assessed species identity and cover, multiple soil parameters and photosynthetically active radiation (PAR). Within a 40-m segment where Japanese Knotweed was present, we paid particular attention to species abundance and interactions between co-occurring species, light availability, and soil parameters. We used generalized linear models (GLM) to compare the relationship between PAR and percent species cover. We determined that PAR is not a good predictor of species coverage in this ecosystem. Across various PAR levels, species cover varied widely from 0% to 95%. Our GLM models supported previous findings that Japanese Knotweed can grow in shaded and full sun conditions; however, no knotweed was observed in areas receiving <50 µmol/s/m^2. Additionally, we identified 4 species—*Pilea pumila* (Clearweed), *Cardamine impatiens* (Narrowleaf Bittercress), *Microstegium vimineum* (Japanese Stiltgrass), and *Symplocarpus foetidus* (Skunk Cabbage)—that co-occurred with Japanese Knotweed. As groundcover species, Clearweed and Narrowleaf Bittercress were still able to dominate with a knotweed canopy. Japanese Stiltgrass, another invasive, was able to outcompete knotweed in certain sections of the transect with high PAR and drier soils. On the other hand, Skunk Cabbage preferred mucky soils and low PAR. These species have diverse habitat preferences allowing them to co-exist with Japanese Knotweed. We believe continued efforts to cut knotweed will slow its growth and allow other species to flourish, continuing to diversify the plant community.

Sun- 11