2026 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).

An Optimized Protocol for DNA Extraction from Historic Formalin-fixed Specimens

Meron Abraham (University of Vermont, Burlington, VT), Nasreen Z. Broomandkhoshbacht (University of Vermont, Burlington, VT), Li Moavenien (University of Vermont, Burlington, VT), and M. Elise Lauterbur (University of Vermont, Burlington, VT)

Abstract - Extracting DNA from formalin-fixed, ethanol-preserved specimens is challenging. The formaldehyde and DNA molecules react to form crosslinks that complicate extractions, and this effect is exacerbated in specimens stored long-term in formalin solution. While standard preservation protocols require transfer of specimens from formalin to ethanol through a series of step-up ethanol concentrations, this step is not always carried out. This failure to follow protocol results in DNA that is present in very small quantities, difficult to extract, and highly fragmented. Nevertheless, these specimens have the potential to provide an invaluable source of historic genomic information, opening avenues of research into recent and long-term population demography, evolution, and changes in interactions with pathogens and other hosted microorganisms. We optimized an existing DNA-extraction protocol for use on formalin-fixed and stored specimens, focusing on rodent specimens housed in the Zadock-Thompson Zoological Collections at the University of Vermont. We tested 4 different pre-extraction treatments on liver samples collected from 2 formalin-fixed and stored rodent specimens to find the pre-treatment protocol that yielded the most high quality DNA. We hypothesized that prolonged soaking in either PBS, Tris, or both would result in an increase in DNA yield and fragment length. Our preliminary results show increases in DNA yield for all of the experimental treatments. To determine which treatment resulted in the most endogenous DNA, we built single-stranded libraries using protocols optimized for highly fragmented ancient DNA and submitted these for NovaSeq 2x150 paired end sequencing at the University of New Hampshire Hubbard Center for Genome Studies. These samples will be mapped using a custom pipeline to identify host, pathogen, and exogenous (contaminant) DNA. Our modifications have demonstrated the feasibility of extracting DNA from samples stored long-term in formalin, improving on existing protocols for historic samples. We propose this modified protocol as a useful method of making the vast genomics resources present in formalin-fixed and stored specimens available for future research.

Sun- 51

Direct and Indirect Effects of Abiotic and Biotic Variables on Human Incidence of Tick-Borne Diseases

Carlos Amissah (University of Vermont, Burlington, VT), Ellen Martinsen (University of Vermont, Burlington, VT), and Nicholas Gotelli (University of Vermont, Burlington, VT)

Abstract - This study aimed to determine how abiotic variables directly and indirectly predict human disease incidence across 249 towns in Vermont. We used publicly available annual data (2015–2023) on human disease incidence, tick density, pathogen prevalence, and climatic variables. Reported Lyme disease incidence was directly associated with temperature, tick density, and pathogen prevalence, whereas the effects of the normalized difference vegetation index (NDVI), relative humidity, and elevation on disease incidence were indirect and mediated through tick density. For anaplasmosis, temperature and elevation directly increased pathogen prevalence in ticks and indirectly increased human disease incidence through effects on tick density. These findings indicate that human disease risk is governed by a partial mediation framework in which climatic and local habitat variables influence risk through distinct pathways.

Sat- 52

Status of State-Level Vernal Pool Protections in the Northeastern United States

Emma Andros (Siena University, Department of Environmental Studies and Sciences, Loudonville, NY) and Mary Beth Kolozsvary (Siena University, Department of Environmental Studies and Sciences, Loudonville, NY)

Abstract - Vernal pools are a unique class of small, discrete, ephemeral wetlands that undergo cyclical periods of drying and inundation. These cyclical extremes make vernal pools an important ecological resource for amphibians and invertebrates adapted to temporary wetlands free of permanent wetland predators. Additionally, in a number of states, vernal pools provide critical foraging, estivating, and resting sites for many state-listed and more common amphibians and reptiles. However, the small size and dynamic nature of vernal pools create challenges in their conservation, and not all states incorporate them into their freshwater wetland regulations. To summarize the status of state-level protections for vernal pools, I have compiled a document including summaries of current (as of 2025) state-level protections of vernal pools in the District of Columbia and northeastern states of Connecticut, Delaware, Maine, Maryland, Massachusetts, Maine, Maryland, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. Most states in this region have vernal pool-specific legal definitions and regulations. The remaining states vary from no legal protections for vernal pools to those with protections under other natural resources legislation.

Sun- 9

Leveraging eDNA to Reveal Basidiomycete Ecology on Middlebury College Lands

Jack Barnhart (Middlebury College, Middlebury, VT), David Needle (University of New Hampshire, Durham, NH), Megan Munis (University of New Hampshire, Durham, NH), Lawrence Gordon (University of New Hampshire, Durham, NH), Jeff Munroe (Middlebury College, Middlebury, VT), Jody Smith (Middlebury College, Middlebury, VT), Peter Ryan (Middlebury College, Middlebury, VT), Lily Buren (Middlebury College, Middlebury, VT), Jacob Hurst (University of Hawai‘i at Mānoa, Honolulu, HI), David Allen (Middlebury College, Middlebury, VT), and Andrew Swafford (Middlebury College, Middlebury, VT)

Abstract - *Basidiomycetes* are the phylum of fungi responsible for most of the species we call mushrooms. Many of these species form host-specific ectomycorrhizal (ECM) mutualisms with specific tree roots, an indicator of forest health. We collected pooled-subsample soil samples across 25 sites on lands maintained for recreational use by Middlebury College with varied use histories and forest compositions. Using Illumina sequencing of the ITS 1-2 ribosomal subregion, we resolved fungal sequences to the genus level. We recorded the species and approximate biomass of all trees and woody shrubs within a radius of the subsamples. We analyzed soil samples for moisture, as well as carbon, nitrogen and phosphorus, key nutrients exchanged in the ECM symbiosis. Here we present preliminary correlative data showing the ecology of symbiotic vs non-symbiotic *Basidiomycete* fungi as they relate to soil, forest composition, and land-use history variables across Middlebury College lands.

Sun- 38

Interpreting Eight Years of Body-Size Data for Eastern Red-Backed Salamanders in Massachusetts

Avery Barry (Bridgewater State University, Bridgewater, MA), Seán Blackden (Bridgewater State University, Bridgewater, MA), Alexa Cloutier (Bridgewater State University, Bridgewater, MA), Harrison Gabriele (Bridgewater State University, Bridgewater, MA), Olivia Quintin (Bridgewater State University, Bridgewater, MA), Lauren Sellmayer (Bridgewater State University, Bridgewater, MA), Sophia Vitorino (Bridgewater State University, Bridgewater, MA), Bethany Ozolins (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - *Plethodon cinereus* (Eastern Red-backed Salamander), the most abundant salamander on the East Coast of North America, is considered an indicator species and a developing model organism. Their health is closely tied to that of the overall environment. In collaboration with the Salamander Population and Adaptation Research Collaboration Network, we have collected individual demographic data on these amphibians in the Great Hill Forest at Bridgewater State University since 2017. Previous work at our site has established that salamander density is highly variable across 8 plots within 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 deciduous–coniferous plots, and the remaining 2 deciduous plots, and low density (<0.25 salamanders per m^2) in the coniferous plots. For this project, we analyzed the range and average snout–vent length (a measurement of body size) of the salamanders at each of the since 2017. The 2 deciduous plots with the highest densities of salamanders show the widest range of body sizes, suggesting all size classes are present. The 2 coniferous plots with the lowest densities of salamanders skew strongly towards larger, adult salamanders, suggesting that we primarily observe adults in this habitat. The remaining 4 plots of intermediate density show variation from year to year, sometimes skewing towards large adults, and sometimes showing a broader range of sizes indicating all size classes are present. These patterns help us visualize which locations in our forest might offer the best habitat for reproduction. We hope to continue to investigate these patterns to connect environmental factors beyond forest type (e.g., soil nutrients, temperature, moisture levels, invertebrate taxa presence or absence) with reproductive success as indicated by the range and average of salamander body sizes present.

Sat- 16

Pressing On: The Resilience of Small College Herbaria

Nora Beer (Bennington College, Bennington, VT), **Isabel Coviello** (Bennington College, Bennington, VT), and Caitlin McDonough MacKenzie (Bennington College, Bennington, VT)

Abstract - Small herbaria at small colleges have an outsized scientific and educational impact despite persistent underfunding and underestimation. This poster examines how the endurance of these collections challenges capital-intensive models of science and reveals forms of ecological and cultural knowledge that have persisted for generations outside profit-driven systems. Drawing on recent literature, we highlight the unique value of small herbaria in providing hyper-local biodiversity data, and preserving crucial regional information embedded in specimen labels. We also evaluate the use of herbaria in education, specifically through student engagement in an advanced Ecology course focused on the modest herbarium at Bennington College. At these small colleges, students actively steward collections as they learn from them, supporting long-term data continuity and intergenerational knowledge transfer. We argue that amid federal funding cuts and the rise of community science, small herbaria are essential, resilient infrastructures for biodiversity research and beyond.

Sun- 49

Where to Winter? Evaluating Northern Harrier and Short-eared Owl Preferred Habitat Characteristics

Samouel Beguin (EDR, Syracuse, NY), **Aubrianna DeLario-Brown** (EDR, Syracuse, NY), Jessica Tatten (EDR, Albany, NY), and Thomas Hilling (EDR, Rochester, NY)

Abstract – As changing agricultural practices, land development, reforestation, and other factors influence the availability of open habitat for area-sensitive wintering grassland bird species including *Circus hudsonius* (Northern Harrier) and *Asio flammeus* (Short-eared Owl), understanding the characteristics associated with preferred wintering habitat becomes increasingly important. Drawing from studies that EDR conducted to assess wintering grassland raptor presence and use patterns following a standardized survey protocol over multiple years and in multiple regions of upstate New York State in the context of siting renewable-energy facilities, we conducted an initial evaluation of habitat characteristics (e.g., contiguous open habitat size, cover types, agricultural crop history) for open areas that had no documented presence/use, presence with limited/inconsistent use, and presence with high/consistent use for Northern Harriers and Short-eared Owls. Study results suggest that larger, more vegetated, grass-dominated open habitat areas typically provide higher-quality wintering habitat for these species. These findings are expected to inform assessment of development-related impacts to wintering habitat, identification of priority areas for habitat preservation/management, and expanded analyses that would include additional study locations, larger datasets, and/or predictive habitat modeling.

Sat- 68

Emergence Timing and Survivorship in Eastern Copperheads with Possible *Ophidiomyces* Infection

William Benner (Department of Environmental Conservation, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA), Graziella DiRenzo (US Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Environmental Conservation, University of Massachusetts, Amherst, MA), Michael Jones (Massachusetts Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program, Westborough, MA), and **John Corey** (Department of Environmental Conservation, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA)

Abstract - The northern edge of the range for *Agkistrodon contortrix* (Eastern Copperhead) extends into southern New England, and the species is state-listed as endangered in Massachusetts. In Massachusetts, Eastern Copperheads have relatively small, isolated populations with unknown population sizes, disease status, or emergence phenology, which impede their management and conservation. In this study, we collected capture–mark–recapture data on 2 populations of Eastern Copperheads in central Massachusetts over a 3-year period from 2022 to 2024. We also collected data on spring emergence, disease status, and habitat information. We calculated correlation coefficients between day of emergence and severity of skin lesions. Over the 3-year study, we tracked 57 individuals at site 1, and 154 individuals at site 2. We detected a negative correlation between day of emergence and severity of skin lesions, where animals that emerged earlier had more severe skin lesions ($\rho = -0.31$, $P < 0.001$). This pattern was observed regardless of year and site. Although it is not clear what disease is afflicting this population, these results inform population long-term health and viability on a highly secretive and rare species.

Sun- 20

Are Changing Leaf-Out Times of Overstory Plants Leading to Phenological Mismatch with Changing Understory Plants?

Kai Bjork (Bennington College, Bennington, VT), **Hazel Ragozzine** (Bennington College, Bennington, VT), and Caitlin McDonough MacKenzie (Bennington College, Bennington, VT)

Abstract - Phenological mismatch can happen when 2 interacting species' seasonal life events shift due to climate change. Such asynchronies can disrupt crucial interactions such as herbivory, pollination, nutrient cycling, and competition. Here, we will investigate how changing leaf-out times of overstory plants are affecting understory plants and if there is any mismatch in their advancing phenology. We plan to use historical phenological data present in Bennington's herbaria specimens, along with climate data gathered from the National Oceanic and Atmospheric Administration's Global Historical Climatology Network, to model phenological sensitivity of *Viola* (violets) in *Fagus grandifolia* (American Beech)-*Acer saccharum* (Sugar Maple) forests. We expect that advancing flowering times of early-spring blooming *Viola* species are not keeping pace with the advancing leaf-out of the canopy in beech-maple forests, leading to a phenological mismatch between them. Phenological mismatch can have cascading effects across trophic levels, disrupting mutualisms and affecting downstream community interactions, such as the timing of when key resources are available.

Sun- 46

Microhabitat Variation and its Impact on Morph Frequency of *Plethodon cinereus* at a SPARCnet site in Bridgewater, Massachusetts

Seán Blackden (Bridgewater State University, Bridgewater, MA) and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - *Plethodon cinereus* (Eastern Red-backed Salamander), is a small plethodontid salamander present throughout much of the northeastern US and southeastern Canada. This terrestrial amphibian, like many members of the genus *Plethodon*, exhibits color polymorphism, with a striped (red-backed or red) morph and an unstriped (lead-back or lead) morph. Morph frequency has been the subject of study for several decades, with many factors appearing to influence morph frequency, such as predation (e.g., negative frequency-dependent selection), temperature, elevation, and moisture, although patterns are not consistent across the large geographic range of this species. In this study, we use data from a long-term mark–recapture data set from the Bridgewater State University SPARCnet site to explore the variation in morph frequency over time (2017–2024) and as it relates to dominant tree type and salamander density. Previous work at our site has established that salamander density is highly variable across our 8 plots, and loosely related to dominant tree type: 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 2 mixed deciduous–coniferous plots and remaining 2 deciduous plots, and low density (<0.25 salamanders per m^2) in the 2 coniferous plots. We believe that this variation in density reflects habitat suitability in our forest, with deciduous habitat being more suitable than coniferous habitat. Preliminary results suggest that morph frequency at our site is stable over time, at roughly 80% striped and 20% unstriped. Proportions of striped individuals significantly increase (ANOVA: $F = 6.53$, $P = 0.002$) in the low density, coniferous plots (mean = 89% striped) as compared to the high density, deciduous (mean = 83% striped) and medium density, mixed and deciduous plots (mean = 80% striped). This result is inconsistent with prior research suggesting the unstriped morph is more common in less suitable habitat. Future analyses to explore morph frequency in more detail, especially as it relates to specific environmental variables (e.g., soil pH, soil temperature, season) are planned to better understand patterns of morph frequency in this species.

Sat- 14

Population Decline of Intertidal Macroinvertebrates at Sandwich, Cape Cod

Christopher P. Bloch (Bridgewater State University, Bridgewater, MA), Faith Ballarino (Bridgewater State University, Bridgewater, MA), Jillian Hallman (Bridgewater State University, Bridgewater, MA), Caroline Kleimola (Bridgewater State University, Bridgewater, MA), Solomon LeFrancois (Bridgewater State University, Bridgewater, MA), and Mallory Morrison (Bridgewater State University, Bridgewater, MA)

Abstract - Invasive species often increase rapidly in abundance after invading a new habitat, attaining densities higher than in their native ranges and exerting substantial effects on native prey or competitors. However, there is no single canonical pattern of population dynamics for invasive species or those with which they interact, as evolutionary adaptation and environmental heterogeneity generate unique responses. Consequently, long-term observations are required to understand the effects of biological invaders on resident species. In this study, we examined quadrat data collected annually from 2003 to 2025 at Sandwich, MA, on the north shore of Cape Cod, focusing on 4 focal species: *Hemigrapsus sanguineus* (Asian Shore Crab), *Carcinus maenas* (Green Crab), *Littorina littorea* (Common Periwinkle), and *Mytilus edulis* (Blue Mussel). The population of Asian Shore Crabs grew rapidly from 2003-2012, then declined and has fluctuated around a mean of approximately 11 individuals/m^2 since 2016. The population of *C. maenas* has not recovered from initial declines, whereas Blue Mussels have exhibited multiple years of high density and increased mean body size since the decline of Asian Shore Crabs. Density of Common Periwinkles does not appear associated with Asian Shore Crabs but has displayed a consistent negative trend over time. All 4 species exhibited low densities in 2025, with substantial declines in Asian Shore Crabs (>12 individuals/m^2) and Blue Mussels (>120 individuals/m^2), and Common Periwinkles reaching their lowest density of the study. These declines coincided with a substantial increase in algal cover, potentially due to reduced grazing by Common Periwinkles. Continued observations will be necessary to determine whether this represents a transient effect or evidence of a regime shift.

Sat- 6

Prevalence of Scute Abnormalities in a Large Blanding's Turtle Population in Central Massachusetts

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Abstract - Turtles are among the most imperiled large tetrapod orders. A sign of developmental stress in turtles is the irregular formation of scutes, keratinous plates covering most turtles' shells. Scute abnormalities are an example of fluctuating asymmetry. Embryos develop these abnormalities when signaling pathways that dictate scute formation are disrupted by environmental stressors, such as high temperature and low humidity, during incubation. Abnormalities include extra, missing, and deformed scutes. Fluctuating asymmetry is thought to decrease fitness, but no study has directly demonstrated this effect in turtles. *Emydoidea blandingii* (Blanding's Turtle) are an imperiled species most common in the midwestern US, with disjunct populations in New England and Nova Scotia. Our objective was to determine the prevalence of scute abnormalities in New England's largest known population of Blanding's Turtles, located in central Massachusetts. In 2025, we caught 316 unique individuals via traps and opportunistic hand capture. We measured and weighed each capture and approximated age by counting annuli. We recorded distinct markings, injuries, and congenital anomalies (i.e., deformed limbs, scute abnormalities). Overall, we captured 39 turtles (12.3% of total) with irregular scutes. The incidence of irregularity was significantly higher in females than males (Fisher's exact test: $P = 0.0184$). Quantifying abnormalities by locus, we found that 94.2% of abnormalities were on the carapace and 5.76% were on the plastron. Just under half (49.0%) of carapacial abnormalities were vertebral, while 26.5% were costal and 24.5% were marginal. Tracking the prevalence of scute abnormalities may help gauge population health and inform local conservation efforts.

Sun- 17

The Presence of Microplastics in the Gastrointestinal Tract of Various Cold-Water Fish Species Surrounding Mount Desert Rock, Maine

Gemma Bradney (College of the Atlantic, Bar Harbor, ME) and **Sophia Rice** (College of the Atlantic, Bar Harbor, ME)

Abstract - Mount Desert Rock (MDR) is a highly remote island located ~40 km offshore of Mount Desert Island. The waters surrounding MDR are highly nutrient-dense and home to many species of pelagic cold-water fish species, including *Pollachius virens* (Atlantic Pollock), *Tautogolabrus adspersus* (Cunner), and *Scomber scombrus* (Mackerel). During the summer season of 2025, we collected 51 specimens of these 3 species with the intention of dissection of the gastrointestinal (GI) tract for various types of microplastics. The observation of differing categories of microplastics formulates an interesting study regarding the accumulation of plastics throughout the organisms of the marine water column surrounding Mount Desert Rock. We performed sterilized dissections of the GI tract within a contamination-controlled lab space, as microplastic samples are highly susceptible to different types of plastic contamination. The lab space was sanitized with isopropyl alcohol and enclosed from the outside environment in order to reduce the risk of airborne contamination. We preserved dissected samples of organ matter with ethyl alcohol for digestion. We continued the processing of these samples in a sterilized and contaminant-free laboratory, in which we combined sample matter with a 10:1 dilution of KOH and digested samples on hot plates with magnetic stirrers and constant agitation at 130 rpm. Once digested. We filtered the samples through Whatmann filters using a hand-vaccuum pump. We performed microscopic analyses on the finished filter papers, recording categorizations and identification of microplastics. We recorded accumulation of microplastics, filaments, fibers, beads, and foams, and statistical analysis with this data is currently in progress. We will provide the results of this analysis at the conference in April.

Sat- 1

Using Camera Traps to Determine Activity Patterns of White-Tailed Deer Avoidance of Coyotes

Theo Bray (Mianus River Gorge/Lakeland High School, Shrub Oak NY), Christopher Nagy, (Mianus River Gorge, Bedford, NY), and Alyssa Magallon (Mianus River Gorge/Irvington High School, Irvington, NY)

Abstract - *Odocoileus virginianus* (White-Tailed Deer) are considered to be overpopulated in many parts of the northeastern US, which negatively affects forest regeneration and biodiversity. *Canis latrans* (Coyote) have also increased in number in the Northeast in the last 100 years and are known to predate deer to some degree. The goal of this study was to determine if White-tailed Deer change their activity when Coyotes are present within the 397-ha (980-ac) Mianus River Gorge Preserve in southern New York. Deer having different activity patterns when Coyotes are present could indicate that Coyotes are predating deer, which could help with ongoing deer-management efforts in the Preserve. We deployed 42 camera traps in the preserve in October through December 2024, and our analysis consisted of 2 tests. First, we generated kernel density curves (KDC) from camera observations that compared deer activity at cameras with high vs. low Coyote presence. Second, we calculated avoidance attraction ratios (AAR), which determined if deer were avoiding Coyotes and/or Coyotes were attracted to deer at a finer spatio-temporal scale. KDC curves for deer differed between cameras with high and low Coyote observations ($P < 0.0001$), and AARs overall showed that deer were avoiding Coyotes, but not at a high magnitude. This study shows that deer are avoiding Coyotes, but only need to slightly adjust their behavior to do so. This study can be useful to managers at the MRGP who are working to decrease the local White-tailed Deer population, and its framework can be a model for determining other species relationships in the area.

Sat- 55

Species Distribution Modeling to Support Conservation of Imperiled Northeastern Odonates

Charlotte G. Brennan (Department of Natural Resources and the Environment, University of Connecticut, Storrs, CT) and Chadwick D. Rittenhouse (Department of Natural Resources and the Environment, University of Connecticut, Storrs, CT)

Abstract - Imperiled odonates in the northeastern United States face ongoing conservation challenges driven by habitat loss and hydrological changes. Protection of these species is hindered by incomplete occurrence data, variable detectability, and uneven survey effort. We developed species distribution models (SDMs) using Maxent to support survey prioritization and conservation planning for 3 imperiled odonates across southern New England: *Williamsonia lintneri* (Ringed Boghaunter), *Enallagma recurvatum* (Pine Barrens Bluet), and *Enallagma pictum* (Scarlet Bluet). Models incorporated occurrence data from state natural heritage programs (2015–2025) across Massachusetts, Connecticut, and Rhode Island. Ringed Boghaunter suitability was associated with palustrine wetlands, the presence of sphagnum moss, and greater distance from buildings. Pine Barrens Bluet suitability was driven by small ponds, proximity to the coast, and high sand content. Scarlet Bluet suitability was associated with small ponds, the presence of emergent aquatic vegetation, and high surrounding forest cover. All 3 models were developed in collaboration with partner agencies to guide targeted surveys across southern New England, with the Scarlet Bluet model developed specifically to support evaluation of detectability and practical utility of SDM-guided exploratory surveys. Together, these models provide agency-ready tools to improve survey efficiency and conservation planning for rare northeastern odonates.

Sat- 49

Taxidermy Time Transect: Using Collections to Understand Links Between Pathogens and Species Invasions

Nasreen Broomand (University of Vermont, Burlington, VT), Finn Flynn (University of Vermont, Burlington, VT), Li Moavenian (University of Vermont, Burlington, VT), Meron Abraham (University of Vermont, Burlington, VT), and Elise Lauterbur (University of Vermont, Burlington, VT)

Abstract - Natural history specimens are an underutilized resource in many fields, including genomics. As an example of the broad range of knowledge that can be gleaned from these specimens using genomics methods, we present an overview of our work using historic rodents to characterize the dynamics of species invasions and pathogen dynamics. Rodents in New England provide an ideal system in which to study past, present, and future relationships between invasive species and pathogens due to the relatively defined timeframe of invasive rodents' first introduction from Europe to the New England coast. The success of a species invasion may be helped or hindered by interactions with pathogens and whether they disproportionately impact the invasive species or native competitors. To investigate these interactions, we sampled 138 rodent-skin museum specimens across 6 native and 2 invasive species to create a time transect spanning over a century. To determine how pathogens influenced invasive rodent expansion into Vermont's native rodent territory over the past few hundred years, we will combine population demographic analysis, inference of past population-level positive selection on pathogen-interacting proteins (PIPs) in native and invasive rodent genomes, and metagenomic pathogen screening of every sample. Pathogens detected in museum specimens will be identified, characterized, and compared with genomes of modern isolates to investigate corresponding co-evolutionary changes and identify functional differences. Future work will include the addition of high-quality modern genomes and fine-tuned analyses to more accurately pinpoint selective sweeps in PIPs. The combination of these 3 angles of inquiry allows us to illuminate the broader picture of host-pathogen interactions in the context of species invasions. In addition to an introduction to the main project, we describe results from methods-optimization experiments, challenges faced, and subsequent solutions.

Sun- 55

Plastics in Paradise: Quantifying Microplastics at Two Lake Champlain Beaches

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Abstract - Microplastics (MP's) are pollutants that accumulate on shorelines and marine/freshwater ecosystems. MP's are <5 mm in size and include hard and soft plastics (e.g., fragments, foams, rubbers, fibers). These plastics are a concern for ecosystem health due to their longevity and abundance in freshwater settings. The goal for this study was to quantify and characterize microplastics in Lake Champlain beaches, specifically Plattsburgh City and Ausable beaches. Additionally, we piloted a density-separation method to better characterize microplastics <1 mm in size from very fine sediment. Over 2024–2025, we surveyed the top layer of dried beach sand and size-separated samples using 1–5-mm sieves. Concomitantly,we collected meso- (5–25 mm) and macroplastics (>25 mm) along the strandline. Previous research determined that MPs <1 mm size are poorly extracted in fine sediments. So we used potassium carbonate ($\rho = 1.54$ g/cm^3) for future characterization. Results show that the most common beach MP morphologies were foams, fragments, and rubber of medium sizes (2.35 mm, 1.18 mm). Plattsburgh City beach contained approximately twice the MP abundance as did Ausable beach. Low-visited beach areas had higher MP abundance than more-visited beach areas. Macroplastic samples frequently contained fragments, wrappers, and cigarette butts, while the density-separation method only produced fiber and fiber-morphologies. City beach likely contains greater MP's due to higher public visitation. Beach grooming may also explain differences in MP abundance: high visited areas (City beach) are groomed more often than low-visited areas (Ausable). Results indicate that density separation is an effective method for isolating fibers and fiber bundles that would normally get caught within a sieve. To reduce plastic pollution in shorelines, regular beach grooming and clean-up outreach events are encouraged. Fiber characterization has been a long-standing challenge for MP researchers, especially for sizes <1 mm. By using density-separation techniques, this research demonstrates an effective way to process these ubiquitous plastics.

Sun- 7

Assessing the Impact of Flood Potential and Geographic Features on Water Quality and Pollutant Mitigation in Central Massachusetts Water Bodies

Corey Charron (Worcester Polytechnic Institute, Worcester, MA)

Abstract - I investigated how flood potential influences water quality and pollutant levels in various water bodies across central Massachusetts. I categorized study sites into Federal Emergency Management Agency (FEMA)-defined flood zones: red (high risk), orange (moderate risk), and green (low risk). Within each zone, I analyzed 1 small stream, 1 large river, and 1 pond. Key water quality parameters assessed included fecal bacteria such as *Escherichia coli* and fecal coliform, sediment, and excess nutrients including nitrogen and phosphorus. I evaluated variability in pollutant concentrations across flood zones and examined the influence of geographic features, including land use (urban versus rural), riparian buffer size and health, and surrounding infrastructure. Particular attention was given to riparian buffer characteristics to assess their effectiveness in filtering pollutants using a nutrient pollution reduction model. This model quantified the capacity of riparian buffers to mitigate nutrient runoff under differing flood risk scenarios. My findings reveal complex interactions among flood risk, geographic characteristics, and infrastructure, highlighting their combined effects on water quality. These results provide insight into sustainable watershed management strategies in flood-prone regions and inform efforts to reduce pollution and enhance water resilience amid increasing flood hazards.

Sat- 22

Going Out On a Limb: Supernumerary Appendages in Eastern Red-Spotted Newts (*Notophthalmus viridescens*)

Madelyn R Chartier (Holyoke, MA) and Elise Edwards (US Geological Survey, Eastern Ecological Science Center [Patuxent Wildlife Research Center], SO Conte Anadromous Fish Research Laboratory, Turners Falls, MA)

Abstract - Malformations including extra limbs, toes, or under-developed parts of limbs, also called polymelia, polydactyly, and micromelia, respectively, have been observed in a number of amphibian species. *Notophthalmus viridescens* (Red-spotted Newt) is one of the most common newt species in the Northeast US, and its ability to develop and regenerate limbs has been well studied, though instances of abnormal limb growth are rarely reported. After observing an adult Red-spotted Newt with supernumerary appendages, we sought to compile other observations of this phenomenon. In several capture–recapture studies and 1 disease-surveillance study (unrelated to limb growth), we observed many Red-spotted Newt individuals, yet very few exhibited clear signs of supernumerary appendages.

Sun- 10

A Revised Geospatial Analysis to Identify Candidate Sites for Designation as a Catskill Research Forest

Tiffany Chen (Siena University, Loudonville, NY), **Ryan Strang** (Siena University, Loudonville, NY), Daniel A. Bogan (Siena University, Loudonville, NY), and Pine Roehrs (NYSDEC, New Paltz, NY)

Abstract - Research forests support long-term, interdisciplinary, and collaborative research and monitoring programs that are necessary to inform environmental policy and management. New York's Catskill ecoregion lacks a designated environmental research facility. Therefore, we are revising a geospatial analysis to account for newly acquired public lands and an expanded study area to identify candidate sites within the Catskills for future designation and development into a top-tier, ecological research facility. Our focal area is the overlapping region of the NYC DEP West of Hudson Watershed and Catskill Park "Blue Line" boundaries, creating a 1839-km^2 (710-mi^2) study area. Using the USGS Hydrological Unit Classification system as the framework of our spatial analysis, we delineated HUC 12 watersheds into smaller HUC 14 watersheds to identify drainages $\geq$4.05 km^2 (1000 ac) as individual units for our preferential and exclusionary analysis. Preferential criteria include protected lands (NYSDEC forest preserve lands and NYCDEP in-fee and conservation easement lands), general forest cover, presence of *Picea* (spruce)/*Abies* (fir) and first-growth forests, site accessibility (e.g., interior hiking trails and dirt roads), presence of existing research and monitoring infrastructure (e.g. stream gauges), and the presence of wetland complexes. Exclusionary criteria reduce the overall ratings of sites having extensive land in private ownership and exhibiting prevalent site fragmentation (e.g., housing and imperious roads). We are currently investigating additional criteria to improve our site selection, and are seeking feedback from an advisory committee for further refinement. Ultimately, our analysis will identify candidate sites that best represent the overall Catskill ecoregion.

Sun- 35

Jumping Worms Impact on Soil Erosion and Invertebrate Communities in Upstate New York

Lindsey Chung (Colgate University, Hamilton, NY), Ed Cherry (Colgate University, Hamilton, NY), and Timothy McCay (Colgate University, Hamilton, NY)

Abstract - Jumping worms are invasive earthworm species capable of making loose granular castings that change soil chemical properties. The impact of jumping worms on soil structure might increase soil erosion. Slope gradient, rainfall intensity, and soil characteristics all influence soil erosion. We measured the impact of jumping worms on soil erosion and litter biodiversity at 6 sites in Madison County, NY. We measured erosion with steel pins and litter diversity by Berlese extraction of animals from litter samples. Three sites contained jumping worms, and 3 did not. Jumping wor- invaded sites had a greater rate of erosion ($P < 0.05$) over 41 days in fall 2025. There was little evidence that jumping worms significantly impact the abundance or diversity of litter-dwelling invertebrates. By increasing the rate of erosion, jumping worms may cause a redistribution of nutrients and biodiversity in invaded forests, especially those with high slopes.

Sat- 64

Investigating the Ecological Factors Affecting the Regeneration of Atlantic White Cedar (*Chamaecyparis Thyoides*) in Bradford Bog

Reece Ciampitti (University of New Hampshire, Durham, NH), Gregg E. Moore (University of New Hampshire, Durham, NH), Heidi Asbjornsen (University of New Hampshire, Durham, NH), and Ashley Bulseco (University of New Hampshire, Durham, NH)

Abstract - *Chamaecyparis thyoides* (Atlantic White Cedar [AWC]) is a specialized conifer endemic to the eastern US coastal plain and the foundational species of the "cedar swamp" ecosystem. While less common today, they remain valuable for water filtration and carbon sequestration, recreational/cultural importance, and provision of habitat for rare and threatened species. Despite the ecosystem services they provide, AWC's range has declined by 70–84% since pre-colonization, and key drivers of its regeneration in northeastern forests remain poorly understood. This study investigated environmental factors influencing AWC seedling establishment and success at the species' northwestern range limit in the Bradford Bog (Bradford, NH). We established experimental plots in open- and closed-canopy areas with and without AWC seedlings to compare microclimate, hydrology, porewater chemistry, and vegetation community composition. Piezometer data indicated that drought reduced peat saturation, potentially altering porewater chemistry and limiting seedling recruitment during the study period. Microclimate (light and temperature) appeared to influence seedling height ($P = 0.04$ and $P = 0.001$, respectively) and stem diameter ($P = 0.02$ and $P = 0.01$, respectively) but not seedling density, suggesting these factors may be more significant to AWC seedling growth than establishment. Additionally, this study revealed microplastic contamination in bog peat, previously undocumented in a cedar swamp. Microplastics were found in all peat cores across treatments through the 12-cm extent of core, representing ~65 years of peat accretion. While the drivers of AWC regeneration remain unresolved, these findings suggest relationships that can inform community-driven management strategies for sustaining this ecologically significant habitat.

Sun- 40

Non-Target Impacts of Emamectin Benzoate in the Herbivore and Detritivore Food Webs

Maya N. Clough (St. Michael's College, Colchester, VT) and Declan McCabe (St. Michael's College, Colchester, VT)

Abstract - We collected data on the growth and development of cultured *Porcellio laevis* (Swift Woodlouse; dairy cow morph), conducted in cultures supplied with *Fraxinus americana* (White Ash) leaves. Our 2 treatments were: experimental, where we provided isopods with leaves from trees injected with emamectin benzoate to control *Agrilus planipennis* (Emerald Ash Borer), and controls with leaves from trees that had not been injected. We confirmed presence of emamectin benzoate in the experimental leaves using GC/mass spectrometry. We established 7 replicates of each treatment and alternated positioning on the cultures on laboratory shelves. In addition, we scored White Ash leaves for damage indicative of herbivory from injected and control trees. Our results revealed that the presence of emamectin benzoate slowed time to reproduction in Swift Woodlouse. In addition, Swift Woodlouse abundance was reduced in cultures with leaves from injected trees as compared to cultures with control leaves. Leaf damage was common in control leaves but virtually absent in leaves from injected trees. Our results confirm that systemic injections of emamectin benzoate largely eliminate herbivory on ash leaves. Furthermore, our isopod culture results indicate that insecticide residues in fallen leaves causes sublethal impacts in the detritus food web. These results demonstrate non-target impacts of injectable systemic insecticides on detritivores. Such impacts should be considered before application of these compounds in natural systems.

Sat- 62

Six Years of Mammal Abundance and Diversity Data from a Suburban Massachusetts Forest

Alexa E. Cloutier (Bridgewater State University, Bridgewater, MA) and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - Human activity can have various effects on the climate and ecosystem of our planet, leading to changes in habitats and subsequent impacts on the species living in those habitats. Starting in 2019, as part of Snapshot USA, our lab has been collecting camera-trap data every September and October on mammal abundances and diversity in the Great Hill Forest on the campus of Bridgewater State University in Bridgewater, MA. We used the 6-year data set to estimate average relative abundance index (RAI) and naïve occupancy for each species and to generate activity clocks for the top 6 most abundant species. We have observed 15 mammal species in our forest. Three species are consistently super-abundant: *Sciurus carolinensis* (Eastern Gray Squirrel; mean RAI = 103.88), *Odocoileus virginianus* (White-tailed Deer; mean RAI = 30.42), and *Tamias striatus* (Eastern Chipmunk; mean RAI = 17.75). Six species show medium relative abundance (mean RAI = 2.23–7.53), and 6 species show low relative abundance (mean RAI = 0.29–1.20). For the latter 6 species, this result suggests they are present but either more secretive in their behavior or do not use the forest habitat as much as the other 9 species. Previous work with the first 4 years of data showed alternating relative abundances between 2 mesocarnivores, *Urocyon cinereoargenteus* (Gray Fox) and *Vulpes vulpes* (Red Fox), and between 2 acorn predators, White-tailed Deer and Eastern Chipmunks. With the addition of 2 more years of data, all 4 of these species are now increasing in abundance and no longer alternating who has higher relative abundance. Average activity clock patterns were as expected for the top 6 most abundant species, but the annual data for *Canis latrans* (Coyote) shows changes in activity times that other work using these and additional data has linked to changes in human activity. We are continuing to collect data and update our understanding of mammal abundance and diversity in our forest. In future work, we hope to connect the patterns we have observed to environmental factors like seasonal variation in temperature and precipitation, human activity, and proximity to anthropogenic development.

Sat- 59

Powerline Rights-of-Way Management Study

Myles Cohen (SUNY Delhi, Delhi, NY)

Abstract - This study assessed the effectiveness of 3 vegetation management strategies: hand trimming, basal oil, and integrated vegetation management utilizing herbicides within powerline rights-of-way (ROW) in Delaware County, NY. Using data collected between 2018 and 2025, I conducted an assessment of the effects of these treatments on plant diversity, species richness, invasive species prevalence, and the growth of danger stems. I recorded observations across 3 study sites, with the different management strategies present at each site. I analyzed the data using the Kruskal–Wallis test, which revealed no significant differences ($P > 0.05$) among any of the management strategies for the measured traits. While historical literature suggests herbicide treatments offer greater potency and effectiveness, these results indicate that manual cutting and basal oil applications are equally effective in this specific geographic region. The findings suggest that herbicide use may be unnecessary to maintain ROW safety in Delaware County, NY, offering an opportunity to save costs and reduce environmental chemical exposure. Final management recommendations will be issued upon the study's completion in 2027.

Sun- 43

A Preliminary Biological Inventory of Macrofungi on Great Duck Island, ME

Kira Connelly (College of the Atlantic, Bar Harbor, ME)

Abstract - I conducted a preliminary bioinventory of macrofungi on Great Duck Island (GDI) from 14 June to 19 July 2025. Great Duck Island is an 89-ha island south of Acadia National Park, ME, and has been the location of extensive seabird research over several decades; however, there was no previous study of fungi on the island. I collected a total of 36 observations of macrofungi that were uploaded to iNaturalist, representing approximately 32 species across 13 genera. All were in the phylum Basisdiomycota. I collected, dried, and accessioned into the College of the Atlantic Herbarium 14 specimens from GDI. This fungal inventory is the first to document macrofungi on GDI, and furthers our understanding of their distribution in coastal and offshore-island habitats, as well as to our understanding of GDI's forest ecology and natural history.

Sat- 63

Protecting Seabeach Amaranth (*Amaranthus pumilus*) and other Rare Species on Coastal Beaches in New Jersey

Chase Craig (Raritan Valley Community College, Branchburg, NJ), Jay Kelly (Raritan Valley Community College, Branchburg, NJ), and Jessica Ray (Raritan Valley Community College, Branchburg, NJ)

Abstract - We conducted monitoring and protection efforts for *Amaranthus pumilus* (Seabeach Amaranth) and other rare, federally listed (threatened) coastal plant species across multiple state parks and municipal beaches in New Jersey during the summer field season. Protection strategies differed by land ownership and included the installation of symbolic fencing along the upper beach and foredune transition zones in state parks, as well as compliance monitoring on municipal beaches where towns committed to protecting designated percentages of suitable habitat as part of approved beach-management plans. Compliance monitoring involved verifying protected-area boundaries and documenting disturbances such as mechanical raking, vehicle tire tracks, and foot traffic that could negatively impact plant survival. In addition, we conducted population surveys within protected areas to locate, count, and measure individual Seabeach Amaranth plants, with all observations compiled into a standardized dataset for comparative analysis. These efforts allowed for assessment of both population presence and the effectiveness of management practices across jurisdictions. Our results highlight the importance of targeted habitat protection, consistent compliance monitoring, and field-based population surveys in supporting the persistence of Seabeach Amaranth and other listed species on highly managed recreational beaches along the New Jersey coast.

Sat- 34

Do Native Predators Consume Invasive Jumping Worms? Anuran preference for *Amynthas tokioensis* and *Lumbricus* spp.

Kianna Criscuola (Colgate University, Hamilton, NY) and Timothy McCay (Colgate University, Hamilton, NY)

Abstract - Originating from Asia, jumping worms (*Amynthas* and *Metaphire* spp.) have been associated with a decline in leaf-litter habitat in their invaded range, causing ecological implications for species that depend on these microhabitats. A lack of effective predators may be a key contributor to dispersal of jumping worms. Although some native North American earthworm predators are known to consume jumping worms, preferences of jumping worms compared to other earthworm species are unclear. We investigated the preference of *Anaxyrus americanus* (American Toad) and *Lithobates pipiens (*Leopard Frog) for *Amynthas tokioensis* and established European (*Lumbricus*) earthworms using a cafeteria-style study. We analyzed recorded data from trials to determine earthworm defensive behaviors and characterize possible predation evasion strategies by *A. tokioensis.* Juvenile American Toads did not consume jumping worms. Leopard Frogs consumed more European worms than jumping worms; however, over half of all offered jumping worms were captured across all trials. We conclude that *A. tokioensis* is a viable prey item for Leopard Frogs. Jumping worms spent less time moving during the trial periods compared to *Lumbricus*. This study provides further evidence for the effectiveness of *Amynthas* "freezing" behavior in avoiding predation from sight-based predators and suggests that this defensive behavior may give them an advantage when confronted by predators that cue on motion.

Sat- 65

Preservation of Vermont Fossils

Ari D'Arconte (University of Vermont, Natural History Collections, Burlington, VT)

Abstract - Vermont, while not being a hotbed for fossils, does have a significant number of Ordovician fossils of marine invertebrates. These specimens play a critical role in describing these ancient ecosystems that are critical in understanding the development of marine life. This presentation will serve to showcase the unique fossils that are preserved at the Perkins Geology Museum and how they are being used for continued research and educating the public about this time in earth and Vermont's history.

Sun- 53

More Than a Grain of Salt: Re-Assessing Floristic Diversity in a Westchester County Salt Marsh

Julie D'Onofrio (Lehman College, Bronx, NY)

Abstract - An ongoing floristic survey of Marshlands Conservancy is nearing completion for the largest remaining salt marsh complex in Westchester County. The goals are to document its vascular plant diversity and assess its conservation significance given the urgency of the habitat, which will be lost due to rising ocean levels associated with climate change. The survey includes rocky shorelines, maritime shrublands, brackish transition zones, and high and low salt marsh habitats. This study reveals a richer assemblage of vascular plants than previously recorded, including state-listed taxa considered rare or uncommon in New York. Several taxa represent first reports for Westchester County, highlighting substantial gaps in previous documentation, illustrating that it has been historically under surveyed despite its ecological importance. Herbarium voucher specimens are being collected that include habitat, abundance, and associated vegetation data for institutional herbaria to ensure long-term documentation of the site. Moreover, this study establishes an important baseline for future monitoring and management and allows contrast with other nearby salt marshes. Work such as this shows the need to continue surveying even well-known sites by highlighting the persistence and resilience of rare plants in urban regions.

Sat- 35

Biological Implications of Urbanization Within a Watershed

Will Demers (Worcester State University, Worcester, MA), Laura Reynolds (Worcester State University, Worcester, MA), Bekah Dorman (Worcester State University, Worcester, MA), and Matthew Kaufman (Worcester State University, Worcester, MA)

Abstract - Water quality monitoring provides insight into how surrounding land use influences human and natural ecosystems. Worcester State University, in collaboration with the City of Worcester and the Tatnuck Brook Watershed Association, has conducted long-term monitoring of local recreational water bodies since 2022 to support watershed management, public health goals, and environmental sustainability. This study compares several sites within the Tatnuck Brook watershed: Cooks Pond, primarily surrounded by conserved land, Patch Reservoir, which is largely bordered by residential development, and the Tatnuck Brook which connects the two systems. These contrasting land-use settings allowed us to evaluate quality patterns along an urbanization gradient. We monitored physical and chemical parameters, including dissolved oxygen, salinity, turbidity, temperature, nitrate, and total phosphorus, throughout the season. Results from 2025 indicate that Cooks Pond exhibited lower nutrient concentrations and only a brief period of bottom-water anoxia during peak summer stratification. In contrast, Patch Reservoir remained anoxic at depth for the duration of the monitoring period and showed elevated phosphorus concentrations. Understanding the land-use effects on water quality has important implications for improving management of urban systems.

Sun- 4

The Role of Floodplain Complexity in Wood Turtle Habitat Use

Laura Deming (Moosewood Ecological, LLC, Chesterfield, NH)

Abstract - *Glyptemys insculpta* (Wood Turtle) occupy cold, low-gradient riverine habitat throughout the northeastern US and southeastern Canada. Studies across the species' range have quantified various aspects of their habitat, but none have quantified stream or floodplain geomorphic complexity. The goal of this study was to explore the role of stream channel and floodplain geomorphology in Wood Turtle habitat use. I calculated several metrics of stream and floodplain geomorphic complexity using bare earth lidar to compare geomorphic condition of 5 floodplains along a New Hampshire Wood Turtle stream, and in one, I tested the effect of each of these variables and 3 components of vegetation structure on Wood Turtle habitat use. Results of this study show that certain metrics of geomorphic complexity and vegetation structure were positively associated with Wood Turtle habitat use. Although variables of vegetation structure showed stronger predictive value than elevation metrics, the best overall model for predicting Wood Turtle habitat use included metrics of both vegetation structure and geomorphic complexity. These metrics contribute valuable information for identifying and evaluating known and potential Wood Turtle sites and provide a means of evaluating floodplain geomorphic condition across multiple sites and broad geographic regions. These, and other measures of stream and floodplain geomorphic complexity provide a means for establishing a quantitative framework for evaluating geomorphic condition of riverine ecosystems at multiple scales.

Sun- 18

How to Setup an Imaging Station from Scratch

Eli Denzer (New York State Museum, Albany, NY), James Lendemer (New York State Museum, Albany, NY), and Jessica Allen (University of California - San Diego, CA)

Abstract - A quick introduction to getting digitization efforts up and off the ground with information about how to set up an imaging station on a budget, including materials, arrangement options, and expenses involved. Specifically focusing on camera and lighting setups and postprocessing software for vascular plants, cryptogams, and other difficult-to-image specimens.

Sun- 50

Liming in the Adirondack Mountains: A Chemical Analysis of Nutrient Availability in Treated Soils Over Time

Daytona Doherty (Colgate University, Hamilton, NY), Zach Lightfoot (Colgate University, Hamilton, NY), Mary Thomas Powell (Colgate University, Hamilton, NY), and Catherine Cardelus (Colgate University, Hamilton, NY)

Abstract - Acid rain historically altered the soil chemistry and nutrient cycling in the Adirondack Mountains, where the young soils have limited buffering capacity. Liming counteracts acidification, yet its long-term ecological effects in forested systems remain unclear. We examined soil chemistry and physical properties nearly 20 years after liming at 4 Adirondack forest sites. We sampled soils from paired limed and control plots across 5 years (2009, 2012, 2016, 2021, and 2025). Besides soils, we also looked at aboveground biomass and leaf litter in the same sites over time. Liming produced persistent increases in soil pH and calcium, indicating long-term chemical alteration. However, limed plots exhibited lower total carbon and nitrogen concentrations, while microbial biomass nitrogen was elevated. Results suggest that liming induces enduring chemical change, but long-term nutrient dynamics are possibly governed by time, microbial processes, and soil structure rather than liming alone.

Sun- 32

An Accessible History

Willa Donovan (Bennington College, Bennington, VT) and Caitlin McDonough MacKenzie (Bennington College, Bennington, VT)

Abstract - What is the impact of proper archival of work and how does it let us explore interactions between art and ecology? An incredible example of the interaction between art and ecology is the life work of Kate Furbish (1834–1931). Furbish was an accomplished painter and botanist who focused her studies on the Flora of Maine. Furbish's painting style mimicked that of an herbarium specimen and she collected, pressed, and mounted thousands of her own specimens. Melissa Cullina, Director of Plant Science and Collections at the Coastal Maine Botanical Gardens, theorizes that many of Furbish's paintings were based on specific voucher specimens that Kate herself collected. Furbish has a series of paintings and sketches of alpine specimens yet she never made collections in alpine habitats; the question is, where did the alpine specimens come from? We used Kate Fubish's paintings and sketches alongside the digital collections from the Harvard Herbaria to compare Furbish's art to voucher specimens in order to piece together the history across many different fields (humanities, botany, and art).

Sun- 48

Applying Automated Timelapse Camera Systems and Machine Learning to Study Nocturnal Pollination

Caroline T. Dressler (Harvard University, Cambridge, MA), **Remi Christiansen** (Antioch University New England, Keene, NH), Avalon C.S. Owens (Harvard University, Cambridge, MA), Amine Kousba (Harvard University, Cambridge, MA), Imogen Daszak (Northeastern University, Boston, MA), Michael E. Akresh (Antioch University New England, Keene, NH), and Timothy Barker Plotkin (College of the Atlantic, Bar Harbor, ME)

Abstract - Insect species worldwide are under threat due to a variety of anthropogenic pressures including urbanization, pesticide use, and light pollution. Understanding the consequences of insect declines for pollination services is therefore a leading research priority. However, despite the fact that ~60% of insect species are active at night, pollination research to date has focused on diurnal plant-insect interactions, leaving nocturnal pollination comparatively understudied. This knowledge gap can be explained in part by diurnal bias among researchers, logistical field and safety constraints, and a paucity of well-established protocols for nocturnal monitoring. Our study aims to establish paired field and data-analysis methods that can be leveraged to understand nocturnal pollination in a variety of plant/insect systems. In summer 2025, we used infrared timelapse cameras to monitor 10 varieties of flowering plants in New England, collecting a total of 11,388 hours of footage over the day and night. At 3 sites, we rotated 6 cameras among different flowering plants, with the cameras taking a photo every minute for 4–6 days per flowering plant. We then trained an object-detection model to detect visiting insects. Using the machine-learning model, we determined the insects' position in-frame as well as their presumed activity (e.g., whether they were on a flower or flying). We will provide a brief summary of our findings to date. Our study provides a novel, systematic approach to assess nocturnal pollination and can be used by researchers to better understand plant–pollinator interactions in both natural and agricultural settings.

Sun- 63

Invasive Jumping Worms (*Amynthas* spp.) Alter Aphid Abundance and Ant-Aphid Mutualisms on Golden Alexander (*Zizea aurea*)

Madelynn Edwards (The University of Vermont, Burlington, VT) and Josef Görres (The University of Vermont, Burlington, VT)

Abstract - Belowground invasive species, such as earthworms, can influence aboveground ecological interactions. By altering soil structure and nutrient availability, earthworms often affect plant performance and nitrogen content, leading to cascading impacts on associated herbivore communities. However, the consequences of invasive *Amynthas* spp.(jumping worms) for plant–insect interactions remain poorly understood. As part of a broader investigation into these cross-trophic effects, we are examining how invasive jumping worms influence aphid abundance and ant–aphid interactions on the native plant *Zizia aurea (*Golden Alexander). We established a controlled mesocosm experiment with and without jumping worms and monitored aphid abundance, ant presence, and plant traits throughout the growing season. Using generalized linear models, preliminary findings indicate that presence of jumping worms significantly increases aphid abundance ($P < 0.05$) and marginally increases ant presence ($P = 0.056$). These initial results highlight that invasions of jumping worms have the potential to shape aboveground biotic relationships through plant-mediated pathways. With further analyses and field work, we aim to understand the broader impacts of invasion by jumping worms on other plant traits and plant–insect interactions, including pollination.

Sun- 56

***Agrilus planipennis* (Emerald Ash Borer) Abundant with High Ash Density in Central Delaware County, New York**

Marley Eignor (SUNY Delhi, Delhi, NY), Sam Clark (SUNY Delhi, Delhi, NY), Gabby Ferri (SUNY Delhi, Delhi, NY), Alexander Madison (SUNY Delhi, Delhi, NY), Diana Vizcarra (SUNY Delhi, Delhi, NY), and Jack Tessier (SUNY Delhi, Delhi, NY)

Abstract - *Fraxinus* (ash) trees are an important component of forests in the northeastern United States. However, *Agrilus planipennis* (Emerald Ash Borer [EAB]) threatens to annihilate the species. We sampled 40 trees at 6 sites across central Delaware County, NY, for signs of EAB presence, ash abundance, canopy condition, and signs of woodpeckers. Only 1 of our 6 sites had EAB exit holes, and exit hole abundance across sites was positively related to both woodpecker sign and ash density. EAB was found on ash trees of a wide variety of sizes and was most abundant in the high ash-density stand. Woodpeckers may be attracted to areas with EAB presence. EAB is present in Delaware County and will likely expand its influence on the ash-tree population.

Sun- 31

Insect Biomass and Declines: Are Local or Regional Factors More Important?

Carter Emerson (Siena University, Department of Environmental Studies and Sciences, Loudonville, NY) and Mary Beth Kolozsvary (Siena University, Department of Environmental Studies and Sciences, Loudonville, NY)

Abstract - In recent decades, there have been notable observations of insect declines in many areas, but the extent and causes of these declines are unclear. Regional insect abundance by taxonomic groups varies, and some groups of insects appear to be declining dramatically, whereas other insect groups are not affected, with some even increasing. Our research is part of a continental-scale collaborative study involving the sampling of insects at >100 sites across North America. The overall study aims to identify which insect groups are experiencing declines, pinpoint where these declines are occurring, and to determine the key drivers of these trends. In 2023, we joined the study and established a site on Siena University's campus in Loudonville, NY. In 2024 and 2025, we added 2 additional sites in the Albany Pine Bush Preserve, a fire-dependent ecosystem that offers unique ecological flora and fauna. Sampling involves annual standardized sampling using a Malaise trap, set for 72 hours during 3 standardized sampling periods. Analyses from the larger study indicates that insect family biomass from our sites are similar to regional data from the larger study. On a local scale, our results from years 2023–2024 indicate no significant differences between taxon biomass across the 3 sites ($P < 0.05$). This result provides support for the assertion that regional factors can be powerful in driving insect abundance and declines, despite local site variation.

Sun- 59

Native Trees Increase Insect Biodiversity in New York City Across Space and Time

Liam D. Engel (Fordham University, Bronx, NY), Adanna Smith (CUNY Medgar Evers College, Brooklyn, NY), Irma Cardenas (St. Francis College, Brooklyn, NY), Dunya Abdulkarem (St. Francis College, Brooklyn, NY), Claudia C. Vasquez (St. Francis College, Brooklyn, NY), Evon Hekkala (Fordham University, Bronx, NY), Emily M. Herstoff (St. Francis College, Brooklyn, NY), and Michael Tessler (CUNY Medgar Evers College, Brooklyn, NY)

Abstract - Cities and suburbs frequently have native and non-native trees as foundation species. The non-natives have often been cultivated in these areas for centuries, and are usually not invasive. Previous studies have generally found that native trees host more biodiversity. However, few studies simultaneously look across space and time to determine the consistency of the impact of native and non-native trees on biodiversity. Here we combine varied methods across a range of temporal and spatial scales in New York City to test the hypothesis that native tree leaves consistently have more insect and mite interactions than well-established non-native trees, with stronger effect sizes for specialists (gall-former abundance and species richness) than generalists (percent herbivory). We examined (1) congeneric species pairs, controlled for growing conditions and stoichiometry in an arboretum, (2) diverse *Quercus* spp. (oaks) at a botanical garden,(3) community science records across Brooklyn, and (4) herbarium specimens from 1864 through present across New York City. For all spatial and temporal scales examined, we found consistent results to support our hypothesis. Specialist data were especially striking: native trees had numerous gall-forming arthropod species, while non-natives had exceedingly few. Generalist data had equivalent or greater herbivory on native than non-native trees. Over the last century, herbarium records showed increases in herbivory on non-native trees and decreases in herbivory on native trees; however, native trees increased in gall abundance while non-native trees were rarely galled. These results solidify native origin as key to tree–arthropod interactions in a real-world urban setting, even if a non-native tree species has been cultivated locally for centuries. Our findings will help city planners and property owners confidently choose native trees to promote arthropod biodiversity.

Sat- 51

Fibrous Flows: Quantification and Characterization of Microplastics in the Tributaries of Lake Champlain

Monique Faubert (SUNY Plattsburgh, Plattsburgh, NY), Allison Morrow (SUNY Plattsburgh, Plattsburgh, NY),Grace Calvelli (SUNY Plattsburgh, Plattsburgh, NY), Timothy Lloyd (SUNY Plattsburgh, Plattsburgh, NY), Aude Lochet (SUNY Plattsburgh, Plattsburgh, NY), Timothy Mihuc (SUNY Plattsburgh, Plattsburgh, NY), Danielle Garneau (SUNY Plattsburgh, Plattsburgh, NY), Anne Jefferson (University of Vermont, Burlington, VT), Nurjahan Begum (University of Vermont, Burlington, VT), Andrea C. Stumpf (University of Vermont, Burlington, VT), Arden Clarke-DeGrenier (University of Vermont, Burlington, VT), Grace Massa (University of Vermont, Burlington, VT), and Alyssa Warbeck (University of Vermont, Burlington, VT)

Abstract - Microplastics are emerging pollutants in freshwater systems of a size <5 mm, making them hard to remediate. Most microplastics, especially fibers, are derived from anthropogenic pathways such as wastewater treatment plants (WWTP), agricultural runoff, vehicle tire wear, urbanization, and atmospheric deposition. Studies have suggested that freshwater microplastics are found at higher concentrations during wetter periods, attributable to land-based runoff. Recently, more attention has been focused on atmospheric deposition as a major fiber source. During July–October 2024–2025, we biweekly sampled Lake Champlain-tributary surface waters for microplastics using a 153-um mesh neuston net at a depth of ~30 cm for two 10-min replicates. In 2024, wde sampled 10 tributaries in the Basin (Little Chazy, Ausable, Great Chazy, Boquet, Saranac, LaPlatte, Lamoille, Winooski, Missisquoi, and Otter Creek), while in 2025, we focused sampling on those with the fastest flow (Ausable, Saranac, Lamoille, and Otter Creek). We subject samples to wet peroxide oxidation digestion and size-separated remaining particulate using a sieve stack varying from 4.75 mm to 125 um. We characterized particulates to morphology, color, and polymer type using standard and Fourier transform infrared microscopy. Across both years, and all tributaries, fibers were the dominant morphology and were largely blue and black and of smaller size (125 um). In 2024, New York tributary particulate composition was 66% fibers and 15% rubber, while Vermont tributaries were 75% fibers. In 2025, New York tributary particulate trends were similar, while Vermont tributaries were 85% fibers. Common microplastic polymers are polyethylene, ethylene vinyl acetate, and polystyrene. On-going research has shown that Lake Champlain tributary microplastic composition mirrors what is found in the lake. Prior studies in the watershed have shown that particulate morphologies from wastewater post-treatment effluent are plant-specific and more diverse (fragments, films, and foams) than those in tributaries that were dominated by fibers. This study is part of a broader characterization of the distribution and abundance of microplastics in the Lake Champlain Basin. Unlike findings from the Great Lakes, microplastic morphologies in rivers and lakes are similar and dominated by fibers, suggesting that rivers are the pathways directing microplastics into the lake and should be a future study consideration.

Sun- 8

Comparing Plant Taxonomy Indices at different Invasive Plant Coverage

Jack Ferreira (Westfield State University, Westfield, MA) and Lei (Westfield State University, Westfield, MA)

Abstract - Invasive plant species can alter the structure and functioning of plant communities as their spatial dominance increases. We sampled 13 plant communities spanning gradients of invasive plant cover to evaluate impacts on native vegetation. We quantified community structure using total abundance, Margalef's species richness, Shannon's diversity index, Simpson's dominance index, and Pielou's evenness. Margalef's species richness and Pielou's evenness declined consistently with increasing invasive cover, indicating a shift toward dominance by fewer taxa. In contrast, total plant abundance varied little across invasion levels, suggesting invasion primarily altered community composition rather than overall plant density. Shannon's diversity index showed weaker responses than richness and evenness, consistent with compensatory dynamics in which increases in dominant species offset losses of rarer taxa. These findings demonstrate that invasive plants reduce native biodiversity through increased dominance and reduced evenness, even when abundance remains stable, with important implications for ecosystem resilience, management, conservation, and planning efforts.

Sun- 41

Effects of Sulfur in Brimstone Creek

Shamar Fitzpatrick (SUNY Cobleskill, Cobleskill, NY)

Abstract - Stream habitats may be subject to several types of pollutants. One pollutant is hydrogen sulfur (H_2S) in Brimstone Creek in Sharon Springs, NY. Sulfur can affect water quality and organisms. However, some of these organisms adapt to live in the sulfur environment. I undertook this study to see if the concentration of H_2S and other water-quality parameters (temperature, pH, dissolved oxygen) will decrease or improve as I go downstream and to see if the diversity of macroinvertebrates is affected by the H_2S. I measured water-quality parameters, including H_2S, and subsampled 100 macroinvertebrates from 3 sites. In my analysis, I made a graph to compare if H_2S affects the other water-quality parameters. I also calculated Shannon's diversity index, Simpson's diversity index, and Hilsenhoff's biotic index (HBI), and evenness for macroinvertebrates and categorized them into functional feeding groups, . There was some variation in H_2S, temperature, and dissolved oxygen in Brimstone Creek. H_2S decreased, the temperature increased, and dissolved oxygen fluctuated with distance downstream. The pH varied from 6.0 to 6.8 indicating the stream was well buffered. The HBI went up with distance downstream from 3.40 to 4.61, showing that the invertebrates inhabiting the downstream portions of the creek may have a tolerance for some minor levels of pollution. The Shannon's index decreased and the diversity of species got less with distance downstream. The Simpson's index showed that abundance fluctuated in each species throughout the sites. The evenness of diversity decreased as well. H_2S dissipates quickly and does not affect the other water-quality parameters. In my study, the H_2S never exceeded 0.7 ppm (not very high), so it did not affect the water quality in a major way. H_2S does not appear to affect the presence of macroinvertebrates. Diversity decreased with distance downstream, as did the H_2S levels, but it is unlikely that the reduction in sulfur caused the decrease in diversity, so other factors are probably involved. Further research should be done to see what affects the macroinvertebrate population and downstream water quality.

Sun- 6

Spotting Lady Beetles: Using Zoological Collection and Citizen Science Records to Assess Coccinellid Biodiversity Loss in Vermont

Finn Flynn (University of Vermont, Burlington VT) and the Vermont Center for Ecostudies (White River Junction, VT)

Abstract - Lady beetles (Coccinellidae) are a charismatic invertebrate group with high ecological impact, serving as natural biological control for pests such as aphids and scale insects. Examination of zoological collections has indicated that native lady beetle species are in sharp decline across North America, with formerly abundant species now extirpated from much of their range. Despite their beneficial ecological impacts, conservation attention towards lady beetles has been limited. In order to determine conservation status, the Vermont Lady Beetle Atlas is utilizing zoological collections and citizen science records to identify which species of lady beetles have been historically present in Vermont, and to assess recent population and range declines in native species. As part of this effort, I digitized and geocoded 2500 historical Coccinellidae specimens from the Zadock Thompson Zoological Collection, collected in Vermont from 1910 to 2022. Bayesian occupancy modeling was utilized by the Vermont Center for Ecostudies to identify species in decline. As a result of this research, 4 native species have been declared critically endangered in Vermont: *Coccinella novemnotata* (Nine-spotted Lady Beetle), *Adalia bipunctata* (Two-spotted Lady Beetle), *Coccinella transversoguttata* (Transverse Lady Beetle), and *Hippodamia tredecimpunctata* (Thirteen-spotted Lady Beetle). Establishing conservation status of lady beetles in Vermont will lay the groundwork for legislation and conservation efforts that protect these charismatic insects.

Sun- 57

A Multi-Year Acoustic Survey of Avian Biodiversity vs. Wildfire and Meteorological Impacts

Tycho Force (Mianus River Gorge, Bedford, NY)

Abstract - Numerous factors can affect avian biodiversity including air temperature, precipitation, wind, and air quality. This study aimed to determine how these meteorological and wildfire-related factors affect avian biodiversity. I set up 4 Acoustic Recording Units in *Tsuga* (hemlock) stands in a lower Hudson Valley nature preserve, monitoring birds around dawn and collecting recordings of their calls. I identified birds using Merlin Bird ID. I compared weekly data from the 2024 and 2025 breeding seasonsto determine how meteorological and wildfire factors affect avian biodiversity. Overall, average weekly bird abundance decreased by 16%, while total species richness increased by 9%. Species richness is more accurate, however, as a species only had to be counted once to be part of the species richness value. Average precipitation decreased by 78.2%, air temperature increased by 5%, wind speed decreased by 25.8%, and air quality increased by 33.4% (i.e., air quality became poorer). The strongest negative correlation was between change in precipitation and species richness. Birds like *Melospiza melodia* (Song Sparrow) and *Meleagris gallopavo* (Wild Turkey) had the greatest percent increases in population from 2024 to 2025 by 850% and 229%, respectively. *Thryothorus ludovicianus* (Carolina Wren) and *Contopus virens* (Eastern Wood Pewee) dropped in population the most, by 124 and 69 birds, respectively. Air temperature and wind speed surprisingly had a smaller effect on bird abundance and species richness. There are multiple next steps to take, including studying the effect of these factors on bird phenology and song success and the training of AI used to identify individual birds.

Sat- 67

Pushing the Limits: Effects of Climate Change on Growth of *Pinus banksiana* 300 Kilometers South of its Natural Range

Zoe Fox (SUNY Plattsburgh, Plattsburgh, NY), **Oliver Gorman** (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Species range margins may be dictated by both abiotic (e.g., climate) and biotic (e.g., competition) factors. The fundamental niche is the set of conditions that a species can survive in, while the realized niche is a subset of the fundamental niche that a species is restricted to, usually due to biotic factors. This discrepancy leads to uncertainty on a species true fundamental niche. Transplant experiments, where individuals are planted beyond their natural range limits, are beneficial for understanding fundamental-niche limits of a species. *Pinus banksiana* (Jack Pine) is a boreal tree species that reaches its southern range limit in northern New York. Previous work on this species at the Altona Flat Rock, one of the most southern locations, has shown little to no growth response to climate change. However, Jack Pine was planted ~300 km south of its natural boundary at the Huyck Preserve in the mid-20th century. This more southern planting allows us to assess the influence of climate on the growth of trees south of their natural range limit. Our objectives were to analyze growth trends in the Huyck Preserve population, model growth trends as a function of regional climate variables, and compare results from the Huyck population to the Altona Flat Rock population. We hypothesized that climate, and especially temperature variables, will have a greater influence on Jack Pine growth at the Huyck Preserve than at the more northern location. In summer 2025, we collected increment cores from 106 Jack Pine at the Huyck Preserve and measured and cross-dated them using standard dendrochronological techniques. Results indicate growth remained relatively constant across the latter half of the 20th century. However, growth was consistently low over the first 2 decades of this century. We will model annual ring width against seasonal climate variables to determine which factors influence growth over time. Ongoing climate change is expected to cause northward range shifts for many species. These results suggest that recent conditions may be becoming less favorable for Jack Pine at the Huyck Preserve, which may serve as a bellwether for Jack Pine at its realized range limit as temperatures continue to warm.

Sun- 28

Getting to the Root of the Problem: Testing Alternative Methods for Invasive Species Control

Amanda Frazier (University of Saint Joseph, West Hartford, CT), Tatianah Zeigler (University of Saint Joseph, West Hartford, CT), and Kirsten Martin (University of Saint Joseph, West Hartford, CT)

Abstract - Non-herbicidal alternatives for invasive species control have received a lot of attention in recent years, with multiple options being widely promoted on the internet and secondary information sources, but little scientific research has been conducted on the effectiveness of these methods. In this study, we tested 2 popular alternative methods for invasive species control, magnesium sulfate (epsom salt) and copper nails, to see how they might impact root health (growth and decay) and shoot health (chloroplast abundance). Based on information gathered on the internet, we applied 3 solution concentrations of magnesium sulfate to germinated *Pisum sativum* (Garden Pea). We also placed copper nails next to some germinated Peas. We measured root length at the beginning of the experiment and again after 1 week. At the end of the week, we removed 3 mm of apical shoot tissue, stained it with Iodine, and examined it under a compound microscope. We then recorded the number of chloroplasts viewed in 25% of the field of view.

Sat- 33

As Fiddler Crabs Expand Northwards, Will There Be Reproductive Trade Offs?

Alaina H. Frias (Saint Anselm College, Manchester, NH) and Lori H. LaPlante (Saint Anselm College, Manchester, NH)

Abstract - *Minuca pugnax* (Atlantic Marsh Fiddler Crab) was first documented to have migrated northward past its historical upper limit of Cape Cod in 2014. This burrowing crab's range expansion occurred in response to warming in the Gulf of Maine. Despite this warming, the climate in the expanded range is still colder, with harsher changes in seasonality than in their southern range. As the crabs move beyond their southern range, they will allocate more energy to surviving the harsher climate, potentially changing the amount of energy available for reproduction. To measure possible reproductive tradeoffs in the climate migrants, we sampled ovigerous fiddler crabs from Bunker Creek (Durham, NH), and measured their fecundity and egg size. We will compare our recorded fecundity and egg size to published data from the Atlantic Marsh Fiddler Crab in their historic range to identify any reproductive tradeoffs occurring in response to their migration.

Sun- 1

Variation in Ovarian Egg Counts in a Population of *Plethodon Cinereus* in Southeastern Massachusetts

Harrison Gabriele (Bridgewater State University, Bridgewater, MA), **Lauren Sellmayer** (Bridgewater State University, Bridgewater, MA), Avery Barry (Bridgewater State University, Bridgewater, MA), Seán Blackden (Bridgewater State University, Bridgewater, MA), Alexa Cloutier (Bridgewater State University, Bridgewater, MA), Olivia Quintin (Bridgewater State University, Bridgewater, MA), Sophia Vitorino (Bridgewater State University, Bridgewater, MA), Bethany Ozolins (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - *Plethodon cinereus* (Eastern Red-backed Salamander) is a common, wide-ranging species that is a popular study system in ecology and evolutionary biology. However, generalization of their ecology has proved difficult due to lack of consistency in results throughout the salamander's large geographic range. To better understand the role of Eastern Red-backed Salamanders in eastern North American forests, researchers throughout the northeastern and midwestern US founded the Salamander Population and Adaptation Research Collaboration Network (SPARCnet) in 2013. Our research group joined SPARCnet in 2016, and has been collecting long-term mark–recapture data at a single population in Bridgewater, MA, since April, 2017. A recent comprehensive literature review of research on Eastern Red-backed Salamanders highlighted how little is known about clutch size across the geographic range, with data from only a handful of scattered locations. Here, we present preliminary data analyzing ovarian egg counts across 8 SPARCnet plots on the campus of Bridgewater State University from 2017 to 2024. These 8 plots are located in pairs within 3 different dominant tree stands of the same forest: 4 plots are in a deciduous stand, 2 in a coniferous stand, and 2 in a mixed conifer–deciduous stand. We recorded morphometric data (e.g., snout–vent length, color morph, body mass) for every individual and ovarian egg counts, via palpation of the dorsal body wall, for every adult female. There were no significant differences in ovarian egg counts across plots or when plots are grouped by forest type. However, our low-density plots in coniferous forest showed consistently larger variation in ovarian egg counts over time, suggesting the habitat is less consistently suitable for reproduction than the deciduous and mixed deciduous–coniferous habitats. Future analyses are planned to explore these data in more detail, in particular we hope to understand seasonal variation (fall vs. spring) and annual variation in ovarian egg counts, as well as explore the attrition of ovarian eggs from the fall mating season to the spring egg-laying season to better understand the relationship between ovarian egg counts and final clutch size.

Sat- 15

Threshold Analysis Using Plant Diversity Indices to Assess Community Structure Change at Different Invasion Stages

John R. Gaj (Westfield State University, Westfield MA) and Lili Lei (Westfield State University, Westfield MA)

Abstract - Invasive plant species can alter native community function by reorganizing species evenness and dominance. We sampled thirteen 6 m × 6 m plots spanning a gradient of invasion intensity to evaluate impacts on native plant communities. We assessed community structure using Margalef's species richness, Shannon's diversity index, Simpson's dominance index, Pielou's evenness, and total abundance. Threshold analysis identified a critical transition at ~70% invasive plant cover. Spearman correlation analyses showed no significant relationship between invasive cover and Shannon diversity, Margalef's richness, or total abundance. In contrast, Pielou's evenness exhibited a strong, significant negative relationship with invasive cover, while Simpson's dominance showed a moderate but non-significant response. Together, these results indicate that invasive species establishment precedes a dominance-driven reorganization phase once invasive cover exceeds 70%. This transition is characterized by declining evenness without corresponding losses in richness or abundance, demonstrating non-linear invasion impacts with prolonged coexistence followed by abrupt shifts in community structure and function.

Sun- 44

Conservation, Wetland Restoration, and Chytridiomycosis Monitoring in a Translocated Population of *Scaphiopus holbrookii* (Eastern Spadefoot Toad)

Eilidh Gallien (Mass Audubon Long Pasture Wildlife Sanctuary; Cummaquid, MA); **Ben Nash** (University of Maine Orono, Orono, ME), Jay Cordeiro (Mass Audubon Long Pasture Wildlife Sanctuary, Cummaquid, MA), Ian Ives (Mass Audubon Long Pasture Wildlife Sanctuary, Cummaquid, MA), and Alex Richards (UMass Boston, Boston, MA)

Abstract - Amphibian populations are declining globally from habitat destruction, pollution, and disease, with chytridiomycosis (chytrid) among the most critical threats. *Scaphiopus holbrookii* (Eastern Spadefoot Toad) is a toad whose range extends along the eastern US from Florida to Massachusetts, and overlaps regions with documented chytrid presence. The Eastern Spadefoot Toad is listed as threatened in Massachusetts and is identified as a species of greatest conservation need. Mass Audubon has been working to address this need by establishing and maintaining an experimental translocated population of Spadefoot Toads into created and restored wetlands at the Ashumet Holly Wildlife Sanctuary. Wetland restoration has been shown to be a viable and cost-effective means of amphibian conservation at this site. Since 2011, more than 40,000 toadlets and late-stage tadpoles have been headstarted and translocated in 5 of 7 restored vernal pools at the sanctuary. These toads have been monitored continuously since then to evaluate population health and assess reproductive success. After chytridiomycosis was detected in adult toads in late 2023, the project scope broadened to incorporate disease surveillance and infection research in partnership with the University of Massachusetts Boston Woodhams Lab. In 2025, we conducted 48 nighttime visual-encounter surveys to document adult activity and reproductive success, and to gather data on chytrid infection. We implanted toads with PIT tags to facilitate recapture and track infection in individual toads. Testing reveals a decline in chytrid infection from 2024 to 2025, as well as evidence that toads repeatedly utilized the same burrows throughout the year. Testing by the Woodhams Lab indicates that chytrid infection can be variable in amphibian populations, and our monitoring results suggest that translocated populations, coupled with vernal pool restoration, are a viable tool for amphibian conservation under disease pressure.

Sun- 12

Drivers of Movement and Social Behaviors in the Eastern Red-Backed Salamander (*Plethodon cinereus*)

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Abstract - *Plethodon cinereus* (Eastern Red-backed Salamander) is emerging as a model study organism for understanding anthropogenic effects on forest ecosystems, increasing in relevance with ongoing changes in climate. This species has a broad geographic range in the northeastern US and southeastern Canada, where it can be found in a great diversity of climates and habitat types. Quantifying differences among populations across these environmental gradients can provide insights into potential responses to future environments. We conducted 5 years of capture–mark–recapture studies on surface-active salamanders at 2 nature preserves in central Ohio. This included surveys in both the spring and fall using replicate coverboard arrays ($n = 6$) at sites varying in historical land use, slope aspect, and forest composition. Our study examined how environmental drivers (air and soil temperature, humidity, and soil-water content) as well as intrinsic factors (size, sex, and morphology) affect the surface activity of Eastern Red-Backed Salamanders. Importantly, we quantified social interactions using co-occurrence between individuals and used spatial capture–recapture models to estimate individual home-range size and movement. Surface activity in salamanders peaked at intermediate air temperatures and with higher air humidity. Surprisingly, adult salamander pairings were seen more between females and males than same-sex pairings. Juvenile salamanders were more likely to be found with adult females than adult males. In addition, we will present data on home-range size, individual movement patterns, and how these vary across sites. The data collected from our study not only describes factors affecting the social and activity patterns of these model organisms, but expands and broadens our understanding of amphibian responses to global change.

Sat- 13

The Relationship Between Dermal Glucocorticoids, Surface Activity, and Home Range Size in Red-backed Salamanders

Shawn R. Geary (SUNY Oneonta, Oneonta, NY) and Elizabeth Bastiaans (SUNY Oneonta, Oneonta, NY)

Abstract - *Plethodon cinereus* (Red-backed Salamander) is an abundant species of plethodontid salamander that plays a vital role in temperate forest ecosystems of eastern North America. Due to a multitude of environmental stressors, Red-backed Salamander populations, along with other plethodontid species, are expected to experience population declines and a reduction in range. However, a northern extension of their range will also occur, but their philopatric nature may impede their ability to colonize this newly habitable area. Corticosterone (CORT) is a glucocorticoid released by amphibians in response to stressors, and its release can cause a variety of physiological and behavioral changes. A more detailed understanding of how CORT changes in response to environmental factors, and how it influences surface activity and movement behavior may help us understand how Red-backed Salamanders will respond to range shifts. In this study, we will take advantage of a large, marked population of Red-backed Salamanders on coverboard plots, on which several years of data on individual growth and habitat use have already been collected. We will use dermal swabbing to measure baseline dermal CORT levels in individual salamanders throughout their active seasons and will relate dermal CORT to coverboard use.

Sat- 12

Climate-Driven Shifts in Annual Sugar Maple Leaf-Out Times

Devon Giardini (Bennington College, Bennington, VT), **Alex Libby** (Bennington College, Bennington, VT), and Caitlin McDonough MacKenzie (Bennington College, Bennington, VT)

Abstract - Anthropogenic climate change is causing significant shifts for organisms around the world, with plants experiencing notable phenological mismatch—a phenomenon that researchers have studied using herbarium specimens. We will determine an estimated days/°C shift in leaf-out times of *Acer saccharum* (Sugar Maple) in Southern Vermont using small-college herbarium specimens and historic weather data. To investigate, we will compare the collection date of the Bennington College Herbarium's Sugar Maple specimens in early leafing condition to historic climate data accessed through NOAA's climatology network using linear regression modeling. Previous studies looking at phenological mismatch between overstory and understory plants suggest that Sugar Maples are experiencing an ~3.3 day/°C temporal shift. Maple sugaring season, an important economic and cultural benchmark in Vermont, ends with leaf out, and earlier annual leaf out could have a significant, negative impact on the Green Mountain State.

Sun- 47

Carbon Cache: Stored Carbon in Planted Red Pine Forests and Natural Hemlock Forests

Lucas Gillikin (Edmund Niles Huyck Preserve, Rensselaerville, NY), **Laurel Rhoads-Goodman** (Edmund Niles Huyck Preserve, Rensselaerville, NY), and **Zoe Sweeney** (Edmund Niles Huyck Preserve, Rensselaerville, NY), Karsen Chiminelli (Brown University, Providence, RI), and Zoe Fox (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Increases in atmospheric CO_2 elevate the importance of carbon sequestration by forests in a changing climate. Of the 843 ha (2084 ac) at the Edmund Niles Huyck Preserve in Rensselaerville, NY, 9% are planted conifer forests and 17% are naturally occurring *Tsuga canadensis* (Eastern Hemlock) forests. Since being planted in the early 20th century, *Pinus resinosa* (Red Pine) forests at the Huyck Preserve have been unmanaged and are self-thinning. Previous studies suggest that the annual carbon storage in old-growth hemlock stands is greater than in younger coniferous stands, leading us to predict that stored carbon would be higher in the Huyck Preserve's hemlock forests because of high competition for resources in the unmanaged, planted Red Pine forests. We created three 10 m x 10 m plots in each of 3 planted Red Pine stands and 3 Eastern Hemlock stands, yielding a total of 9 plots in each forest type. Within each plot, we recorded diameter at breast height (DBH) and species of each tree and collected a core from 1 tree (Eastern Hemlock or Red Pine) to estimate tree age. We calculated aboveground biomass to approximate stored carbon. At the Huyck Preserve, we found that natural Eastern Hemlock and planted Red Pine forests store similar amounts of carbon, but Red Pines are taking in carbon at a significantly higher rate than Eastern Hemlocks. These results have important management implications as forest owners consider climate resilience and as the future of Eastern Hemlock forests is threatened by *Adelges tsugae* (Hemlock Woolly Adelgid).

Sat- 60

Natural History Museums Breathe New Life to Otherwise Discarded Specimens: A Focus on Small Mammals

Nox Giordano (University of Vermont, Burlington, VT)

Abstract - We took small-mammal bycatch specimens from the Vermont Family Forests (VFF) annual small-mammal surveys (part of their broader biodiversity surveys) and created research skins to be housed at the Zadock Zoological Collections, located on the University of Vermont campus. These specimens die in Sherman traps and are then frozen, identified to species, and sexed and aged (if possible). Once obtained, we created research skins, removed the skull and procured tissues which will provide invaluable information on size, weight, genetics, disease, occupancy, and other data that will contribute to the conservation of species now and into the future.

Sun- 54

Analyzing Above- and Belowground Productivity Resulting from Different Mycorrhizal Inoculation

Presenter: Lauren Goodrich (SUNY Cobleskill Ag & Tech, Cobleskill, NY) and Andrew Gascho Landis (SUNY Cobleskill Ag & Tech, Cobleskill, NY)

Abstract - Mycorrhizae interacts with over 80% of terrestrial plants, most of which are symbiotic in nature. *Andropogon gerardii* (Big Bluestem), *Echinacea purpurea* (Purple Coneflower), and *Oligoneuron album* (Upland White Goldenrod) were propagated in a greenhouse to test mycorrhizal relationships across grasses and forbs, with the goal of better understanding their role in restoration scenarios. We designed an experiment to compare the differing effects of ericoid mycorrhizae, endo- and ectomycorrhiza mix, and a sterile control on germination success and plant growth. We used steam-sterilized compost to grow 20 seeds (culled to 5 seedlings post-germination) under greenhouse conditions in 54 randomly arranged 4-inch pots. The control for the Big Bluestem grew significantly taller than the multi-blend mycorrhizae treatment. There was no significant difference between treatment types and species regarding the dry weights for above- and belowground biomass. These results suggest that funds used for restoration projects can be better spent elsewhere than on mycorrhizae inoculants.

Sun- 39

Evaluation of a Laser Scarecrow and Distress Call System for Bird Control in Cultivated Highbush Blueberry

Evelyn Gregg (Wheaton College, Norton, Massachusetts), Rachel Arabian (University of Rhode Island, Kingston, RI), Fiona Dell'Antonio (University of Rhode Island, Kingston, RI), Rebecca Brown (University of Rhode Island, Kingston, RI), Scott McWilliams (University of Rhode Island, Kingston, RI), Howard S. Ginsberg (University of Rhode Island, Kingston, RI), and Steven R. Alm (University of Rhode Island, Kingston, RI)

Abstract - Bird predation can cause substantial losses in commercial plantings of *Vaccinium corymbosum* (Highbush Blueberry), and growers often rely on costly netting to protect fruit. We evaluated whether a laser scarecrow combined with a distress call system reduced bird activity and berry consumption in a 0.15-ha blueberry planting in Rhode Island. One-half of the plot was projected with rotating 520-nm laser beams, while the other half served as a control. The distress call system played for 14 hours during the day in the whole plot. We conducted 10-minute point counts 3 times a day, on Monday, Wednesday, and Friday, during the peak ripening period of the patch, 9 June through 25 July 2025. We recorded bird species, abundance, and location in the laser or control area of the patch. The most commonly observed species was *Dumetella carolinensis* (Gray Catbird), followed by *Turdus migratorius* (American Robin), *Cardinalis cardinalis* (Northern Cardinal), *Melospiza melodia* (Song Sparrow), and *Baeolophus bicolor* (Tufted Titmouse). Total bird observations were lower on the laser-protected side (174 individuals) than on the control side (221 individuals). We estimated fruit loss using a consumption index based on the proportion of berries remaining on bagged versus unbagged branches across early-, mid-, and late-ripening cultivars. Logistic regression showed a significant interaction between branch treatment and plot type (Wald chi-square = 75.003, df = 1, $P < 0.0001$), indicating reduced berry consumption in the laser plot relative to the control plot. Despite this difference, substantial fruit loss still occurred in the laser-protected area, particularly among early-ripening cultivars, and animals frequently damaged mesh bags to access fallen berries. Our results suggest that the laser scarecrow and distress call system reduced bird presence and fruit consumption but did not eliminate crop loss. Given the cost of the system and the need for multiple units in larger plantings, this technology may be most useful as a supplemental deterrent rather than a replacement for traditional netting.

Sun- 67

Long-term Population Dynamics of the Asian Shore Crab in Southern New England and Correlations with Resident Species

Jillian Hallman (Bridgewater State University, Bridgewater, MA), **Faith Ballarino** (Bridgewater State University, Bridgewater, MA), Mallory Morrison (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) is an invasive species native to East Asia that has undergone rapid population growth on the northeastern coast of North America. Invasive species often have negative impacts on native species, causing population declines or even local extinctions. These effects are especially prominent during the growth and expansion phase of an invasion, when the invader population may grow at a near-exponential rate. To investigate long-term trends of population dynamics of the Asian Shore Crab and resident intertidal species with which it is likely to interact, we collected abundance estimates for the Asian Shore Crab, *Littorina littorea* (Common Periwinkle), the *Mytilus edulis* (Blue Mussel), and *Carcinus maenas* (European Green Crab) via quadrat sampling from 6 sites along the coast of Massachusetts and Rhode Island from 2014 to 2025. Populations were not strongly spatially synchronous. Moreover, there was no significant correlation in abundance between the Asian Shore Crab and the other species. These findings, coupled with longer-term data collected at other sites, suggest that the Asian Shore Crab population has exited the growth phase of its invasion, reached a dynamic equilibrium, and is now having more subtle effects on other populations than would have been expected during rapid population growth and expansion.

Sat- 5

Burning Questions: How Mammals Bounce Back (or Don’t) After Controlled Fires

Dwight Holloway (East Stroudsburg University, East Stroudsburg, PA), Thomas LaDuke (East Stroudsburg University, East Stroudsburg, PA), Bernardo Mesa (East Stroudsburg University, East Stroudsburg, PA), and Emily Rollinson (East Stroudsburg University, East Stroudsburg, PA)

Abstract -While prescribed burns are increasingly used to manage understory fuel and maintain early successional habitats, research often prioritizes floral responses over faunal impacts. Small mammals are vital seed dispersers, pollinators, and prey; however, we lack a comprehensive understanding of how these communities shift following fire-induced habitat modification. We are investigating the effects of fire-based management on smal- mammal distribution and diversity within Pennsylvania State Game Lands. This study uses a series of treatment and non-treatment plots across secondary-growth deciduous and coniferous forests to track community changes before and after burns. We conducted surveys using camera traps and live-trapping transects, employing *H.B.* Sherman (Sherman), Tomahawk, and Longworth traps. To capture a broad range of species, including *Peromyscus leucopus* (White-footed Mouse) and *Tamias striatus* (Eastern Chipmunk), we checked traps at multiple intervals: pre-burn, immediately post-burn, and annually for 2 years. We recorded species identity, sex, age, and morphometric data before releasing individuals. We hypothesized that mammal diversity would decline immediately post-burn and that community composition would shift toward species better adapted to reduced ground cover and altered resource availability. We will analyze relative abundance and differences in community composition using generalized mixed models. By correlating these data with terrestrial habitat assessments, we aim to determine how vegetation structure dictates vertebrate recovery. These findings will help land managers develop burn strategies that account for the life-history requirements of diverse mammalian inhabitants, ensuring long-term ecosystem stability.

Sat- 57

Effects of Climatic Variables on Growth Rates of Juvenile Blanding's Turtles in Central Massachusetts

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Abstract - *Emydoidea blandingii* (Blanding's Turtle) live in fragmented populations scattered across New England, with their core range in the midwestern US. As an ectothermic species, Blanding's Turtles are vulnerable to temperature irregularities and shifts in growing seasons. Our objective was to examine the effects of climatic variables on proportional annual growth rates in juveniles in the largest population in New England, located in north-central Massachusetts. We captured 68 unique juvenile Blanding's Turtles during the spring and summer of 2025 using traps and opportunistic hand captures. Each individual was identified, measured, weighed, and photographed, which allowed us to age turtles by counting annuli (annual growth rings visible on the shell). We then used ImageJ software to measure distances between the annuli to calculate annual growth rates. We used a generalized linear mixed model to test the effects of average summer temperature, total precipitation during the growing season, and number of summer days with maximum temperature >35 °C on proportional annual growth rates. We found that the number of days with maximum temperature >35 °C had a significant negative effect on growth rate, showing the potential negative impact of extreme weather conditions on growth. Precipitation did not have an effect, but average summer temperature had a significant positive effect on growth rate, suggesting that temperature has a stronger influence on growth than precipitation. Investigating these climate–growth relationships aids in understanding the cumulative environmental consequences of a vulnerable, slow-growing species.

Sun- 16

Effect of Canopy Cover on Benthic Macroinvertebrate Populations in Northeast Pennsylvania

Elise Hertling (East Stroudsburg University, East Stroudsburg, PA) and Paul Wilson (East Stroudsburg University, East Stroudsburg, PA)

Abstract - Canopy cover is influential to small-order stream ecosystems. It can impact chemical, physical, and biological components of the stream, determining food, habitat, and nutrients availability, as well as lowering temperatures which then in turn alters chemical properties within the stream. Previous analysis of macroinvertebrate populations comparing land-cover changes of the Cherry Creek watershed in Monroe County, PA, between the years of 2019 and 2024 determined there was a 40-km increase in forest cover in the watershed and a decrease in biodiversity within the macroinvertebrate population at the study site. Here we will further investigate the relationship of macro-invertebrate populations and canopy cover by conducting an analysis of canopy-cover changes within 200 m of Cherry Creek and changes in the macroinvertebrate populations between the years 2015 and 2025.

Sat- 24

Assessing Photosynthetic Pathways in Native and Nonnative Aquatic Plant Species

Karolina Heyduk (University of Connecticut, Storrs CT) and Ellie Loew-Mendelson (University of Connecticut, Storrs CT)

Abstract - Aquatic vascular plants evolved from a terrestrial ancestor and acquired adaptations for life in water. One of the major challenges of an aquatic lifestyle is the slow diffusion of gases, including CO_2, which is critical for photosynthetic productivity of submerged species. As a result, many aquatic species have evolved carbon-concentrating mechanisms, which are modifications to the central photosynthetic metabolism that serve to drive high concentrations of carbon around the photosynthetic machinery. Despite the frequent evolution of carbon-concentrating mechanisms in aquatic plants, little is known about the general photosynthetic physiology of aquatic species largely because most of our methods are based on terrestrial ecosystems and are difficult to apply to aquatic systems. Here, we highlight progress in understanding the photosynthetic physiology of 2 New England species of aquatic plants: the native *Vallisneria americana* (American Eelgrass) and the nuisance species *Hydrilla verticillata* (Waterthyme). *Hydrilla* is impacting native species, including *Vallisneria*, in ponds, lakes, and throughout the Connecticut River, but our ability to understand where *Hydrilla* will be successful is hampered by a lack of understanding of its overall physiology. Toward that end, we are carefully characterizing the carbon-concentrating mechanisms of both species in the lab and in the field to better predict habitat preferences and how environmental perturbation may affect each species' physiology.

Sat- 31

Temporal Biodiversity Change Analyses for Lake Erie Watershed Fishes and Mussels: Linking Museum Collection Records to Ecological Stressors with GIS

Abigail L. Hines (Buffalo Museum of Science, Buffalo, NY), **Luke F. Quarles** (SUNY Buffalo, Buffalo, NY), Annika Rauschelbach (SUNY Buffalo, Buffalo, NY), and Louiza Mohamed-Cherief (SUNY Buffalo, Buffalo, NY)

Abstract - Industrial activity, legacy contamination, and biological invasions have profoundly altered fish and mussel communities in the Lake Erie and the Niagara River watershed, yet we lack crucial spatially explicit baselines for community composition and diversity to evaluate long-term community change and restoration effectiveness. The Buffalo Museum of Science (BMS) has, within the last few years, re-curated and digitized its Ichthyology and Concology collections which contain intensive regional sampling from the 1900s for mussels and the 1970s for fish. These datasets provide a means of establishing baselines for population assemblages before the major invasive species introductions as well as instances of contamination and remediation. The New York State Department of Environmental Conservation (NYSDEC) has documented and georeferenced over 200 contaminated and remediated sites (e.g., brownfields and areas of concern [AOC]) and the Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS) has documented the distribution of nonindigenous fish and dreissenid mussel species. This project will integrate these disparate datasets to identify priority locations for contemporary fish and mussel resampling that increase inferential power on invasion, contamination, and remediation impacts. We will first geocode BMS location data within the Lake Erie/Niagara River watershed, then spatially integrate these data with NYSDEC brownfield and AOC polygons, assess proximity to GLANSIS nonindigenous species records, and hydrologic units (USGS Watershed Boundary Dataset). We will perform a union of contamination/AOC boundaries and apply 100-m buffers and we will intersect this layer with BMS specimen sampling locations. We will then use a 250-m buffer to flag sites that now co-occur with invasive species records. The resulting products will be a ranked list of priority sites for resampling and accompanying map layers that will be designed to support before-and-after assessments in existing NYSDEC monitoring programs. By targeting sites with strong historical baselines and known exposure to contamination and invasion, this work will improve evaluation of restoration outcomes, inform adaptive management for imperiled taxa, and provide a transferable framework for integrating museum records into regional aquatic restoration assessments.

Sat- 29

Effect of the Rodenticide Brodifacoum on Body Size of *Lucilia sericata* (Common Green Bottle Fly) (Diptera: Calliphoridae)

Jacob A. Honigsfeld (University of New Haven, West Haven, CT), Kalyna Karpishka (University of New Haven, West Haven, CT), Prushti S. Patel (University of New Haven, West Haven, CT), Hadleigh J. Sargent (University of New Haven, West Haven, CT), Jessica Spengler (University of New Haven, West Haven, CT), and Samantha J. Sawyer (University of New Haven, West Haven, CT)

Abstract - Brodifacoum is a second-generation anticoagulant rodenticide that inhibits vitamin K epoxide reductase. In vertebrate animals, this leads to a prevention in blood clotting and can cause lethal hemorrhaging. After the animal dies, necrophagous insects colonize, including *Lucilia sericata* (Common Green Bottle Fly) (Diptera: Calliphoridae). While blow flies like the Common Green Bottle Fly are primarily known for their consumption of remains, they serve as pollinators as adults. Therefore, changes in blow fly populations can have broad ecological repercussions in the surrounding area. Fly morphometrics are a useful tool for environmental monitoring, as body size can show how environmental stressors can affect developmental stability. The purpose of this study was to discuss the effects of brodifacoum on Common Green Bottle Fly adult body size per sex. To this end, we conducted a series of tests, beginning with introducing flies to the carrion of rats that contain brodifacoum, as well as those that do not. We dissected the rats, homogenized their organs, and gave half of the organs toxic doses of brodifacoum before being replaced into the rat remains. We then inoculated the rats with first instar fly larvae. We determined adult fly sex and compared body size by measurement of the hind tibia using the Zeiss ZEN lite software and a Zeiss Stemi 305 trinocular stereomicroscope with a built in Axiocam 205 Color camera. This presentation will discuss sex- and treatment-specific differences in body size and the potential influences this effect has on population dynamics in affected ecosystems.

Sat- 45

Using Camera-bucket Traps to Assess the Relationship Between Small-Mammal Communities and Tick-borne Zoonotic Diseases

Nora Hull (University of Maine Farmington, Biological Sciences, Farmington, ME), Donelle Schwalm (University of Maine Farmington, Biological and Environmental Sciences, Farmington, ME), and Ryan Martin-Hachey (University of Maine Farmington, Biological Sciences, Farmington, ME)

Abstract - Some small-mammal species serve as highly competent reservoirs for facilitating the spread of devastating zoonotic diseases, such as Lyme disease, whose causative agent, *Borrelia burgdorferi*, is spread by *Ixodes scapularis* (Black-legged Tick). Warmer, longer summer seasons have facilitated Black-legged Tick migration into New England. A positive correlation has been previously observed between small-mammal hosts and zoonotic disease load in Black-legged Ticks. Using the bucket camera-trapping method, we examined the relationship between the small-mammal population, Black-legged Tick population, and zoonotic load in Farmington, ME. We constructed and placed baited bucket camera traps in public and private lands representing 3 categories of anthropogenic alteration and use. We used standard “dragging” and “flagging” methods to collect Black-legged Ticks at each site and tested those ticks for 3 zoonotic diseases using qPCR. The habitat types focused on were urban yard (n = 5), rural yard (n = 6), undeveloped (n = 3), and urban semi-developed (n = 2). We collected data in mid-winter/spring 2025 and fall/early winter 2025; additional survey years are planned. Preliminary data indicates differences in small-mammal population density and season, depending on site type. In the late winter, undeveloped areas had the highest small-mammal populations, followed by rural yards and urban yards, in that order. Differences in population distributions were found in the late fall, where preliminary data showed that rural yards have the most small mammals (an average of 117 individuals over 14 days) followed by undeveloped (22.75), then urban yards (3.66). We also discuss the limitations of our existing data based on timing of sampling and challenges associated with using the bucket camera-trapping method in winter. Difficulties also came with adapting the relatively novel bucket camera-trap method to a New England climate, as it was originally designed for use in the Southeast or summers in the Mid-Atlantic region.

Sat- 54

Rediscovering Rhode Island's Rare Plants

Madeline JeBailey (Brown University, Providence RI), **Olivia Rodriguez** (Brown University, Providence RI), Keri Brule (University of Rhode Island, Kingston RI), David Gregg (Rhode Island Natural History Survey, Kingston RI), George Christie (Rhode Island Natural History Survey, Kingston RI), and Rebecca Kartzinel (Brown University, Providence RI)

Abstract - Informed conservation and ecosystem management decisions rely on up-to-date biodiversity data, particularly information on the distribution and occurrence of rare and endangered species. In Rhode Island, these data are stewarded by the Rhode Island Natural History Survey (RINHS), which provides information on the viability of plant and animal populations in the state to all for planning, research, conservation, and regulatory activities. Data on the occurrences of rare species are, ideally, updated with regular field visits and surveys. However, every year there is a substantial shortfall between rare plant sites needing re-visits and the number of qualified people available to make them, meaning our information on these populations grow increasingly outdated. Many rare plant populations on record were last observed far in the past—some as long ago as the early 1900s. Significant efforts are needed to update these records in order to best understand the threats facing our rare species and identify conservation priorities and appropriate strategies. In the summer of 2025, we deployed a dedicated field team of undergraduate botany interns to resurvey high-priority rare-plant occurrences. We completed 85 total surveys, among which were 26 instances where the target species was present at the site, and 47 instances where the target species was absent. On 4 occasions, the target population was inaccessible. We discovered 8 previously unreported rare plant populations. Overall, this dedicated field team accounted for the highest number of surveys completed since 2020. In the absence of the team, the RINHS would have only received 10 completed surveys in 2025. While this summer of dedicated surveying was just the first step in keeping Rhode Island's rare species databases current, it illustrated the necessity of a dedicated field team while providing valuable in-field experience for students of natural history.

Sat- 41

***Lucilia sericata* (Common Green Bottle Fly) (Diptera: Calliphoridae) as a Chemical Sentinel of Pharmaceutical Contaminants**

Kalyna Karpishka (University of New Haven, West Haven, CT), **Hailey Ruddock** (University of New Haven, West Haven, CT), Brooke W. Kammrath (University of New Haven, West Haven, CT), Pauline E. Leary (Noble, Boston, MA), and Samantha J. Sawyer (University of New Haven)

Abstract - Pharmaceutical and illicit drugs pose a threat to the environment primarily through wastewater and runoff. These drugs often enter wastewater through improper disposal in households, hospitals, drug-manufacturing plants, homemade drug labs, and human waste, resulting in behavioral and physiological changes in non-target organisms. Traditional environmental monitoring through water and soil is time-consuming, costly, and requires widespread sampling. However, testing widely distributed organisms, such as blow flies, is a sufficient alternative, as they interact with many substrates, likely picking up these contaminants. Previous research in our lab has demonstrated that filth flies can be equally reliable and more cost effective when surveying biological contaminants (i.e., pathogens). The purpose of this study was to determine the ability to use *Lucilia sericata* (Common Green Bottle Fly) (Diptera: Calliphoridae) as a means of detecting chemical contaminants in the environment. We inoculated the flies with 3 illicit drugs, using the published limit of detection for each contaminant and a 10x higher concentration. We then homogenized samples and analyzed them using a portable mass spectrometer (First Detect Tracer 1000), a portable gas chromatograph-mass spectrometer (Teledyne FLIR Griffin G510x), and an ion-mobility spectrometer (Smiths Detection IONSCAN 600). We conducted a time series by inoculating the flies and testing every 2 hours to determine how long the drugs remained at detectable levels in the flies. This presentation will discuss the viability of using blow flies to identify toxins in the environment with portable instruments.

Sat- 46

The Effects of Predation Risk and Fear on Mate Choice and Reproductive Output in *Drosophila melanogaster*

Jesse Balaban-Feld (University of Saint Joseph, West Hartford, Connecticut) and **Jordan Kates** (University of Saint Joseph, West Hartford, Connecticut)

Abstract - External environmental factors can affect mate selection and influence reproductive behavior, including the fear associated with predation risk. Exposure to predation may alter female choosiness and overall reproductive output as individuals that have experienced predation may estimate that they will have a shorter lifespan and fewer mating opportunities. In a series of experiments, we assess how fear from predation influences the reproductive behavior of *Drosophila melanogaster* (Fruit Fly). Groups of male and female Fruit Flies were separately exposed to a live predator (jumping spider of the genus *Phiddipus*). We labeled survivors of the spider-exposure training as "predator-experienced" and flies that had never experienced predation risk as "naïve". The first experiment examined how predation risk influenced female mate choice. Individual "predator-experienced" or "naïve" females were presented with a choice between 1 large (more attractive) and 1 small (less attractive) male. We generated males of different size types by altering larval density and the amount of food available to the larvae during their developmental phase. Females that had previously experienced predation took longer to begin mating but mated at a higher rate compared with naive females that had never experienced predation risk. Additionally, experienced females preferentially mated with small males, while the naive females strongly preferred large males. The second experiment is currently examining the reproductive output of groups of males and females with different combinations of predator experience (naïve females–naïve males; naïve females–experienced males; experienced females–naive males; experienced females–experienced males). Data analysis is ongoing. The results will help to determine whether males and females respond differently to predation risk and how the group dynamics of mixed predator-experienced and naive individuals may influence reproductive investment and output.

Sat- 48

The Role of Senesced Pitchers in Wetland Ecosystems

Anna B. Kerr (Norwich University, Northfield, VT)

Abstract - *Sarracenia purpurea* (Purple Pitcher Plant), a carnivorous inhabitant of nutrient-poor wetlands, is commonly used as an ecological model system because its living pitchers host a complete microaquatic ecosystem. In contrast, the ecological role of senesced pitchers remains largely unexplored. I investigated whether senesced pitchers function as habitat and food resources across 6 Vermont wetlands, and whether use of senesced pitchers varies by wetland type or distance to forest edge, consistent with island biogeography theory. At each site,I measured, dissected, and assessed senesced pitchers for herbivory and invertebrate occupancy. Pitcher morphology and biomass differed significantly among wetlands but did not predict the presence of inhabitants or herbivory. Senesced pitchers were found to support a diverse group of arachnids and other invertebrate inhabitants. I found that invertebrate abundance was positively associated with detrital biomass. Herbivory of senesced pitchers by insects and vertebrates occurred at all sites and declined significantly with increasing distance from the forest edge. My findings demonstrate that senesced pitchers of Purple Pitcher Plants contribute structurally and trophically to wetland ecosystems by providing habitat and serving as a food source, with spatial context influencing biotic interactions.

Sat- 37

Temporal Activity Patterns of Red Fox (*Vulpes vulpes*) ranging in Urban, Suburban, and Rural Areas in the Unites States

Abigail Kisseberth (East Stroudsburg University, East Stroudsburg, PA) and J. Bernardo Mesa-Cruz (East Stroudsburg University, East Stroudsburg, PA)

Abstract - Urbanization reshapes landscapes and can substantially alter wildlife behavior and temporal activity. *Vulpes vulpes (*Red Fox), a highly adaptable mesopredator documented across North America, Europe, and Australia, provides a useful model for examining behavioral responses along gradients of human disturbance. This study evaluates how human activity influences daily activity patterns of Red Foxes across urban, suburban, and rural environments within a 160-km (100-mi) radius of 10 urban centers in the US. We analyzed camera-trap data collected from 2019 to 2024 through the Snapshot USA project to quantify temporal activity overlap within and between urban, suburban, and rural environments. The results of this study highlight how Red Foxes in urban areas modify their behavior in response to urbanization to occupy human-altered environments. These findings demonstrate the behavioral flexibility of Red Foxes in human-dominated environments and highlight urbanization as a driver of temporal niche changes. The study provides insight into mesopredator adaptation, informing urban wildlife management, coexistence strategies, and conservation planning in increasingly urbanized ecosystems.

Sat- 56

Herbivory of *Phragmites australis* Along a Salinity Gradient in Connecticut Wetlands

Sydney Kolz (University of Connecticut, Storrs, CT)

Abstract - Invasive *Phragmites australis* (Common Reed) continues to dominate New England wetlands, displacing native species and changing topography in already-declining salt marsh habitat. Like most invasive plants, *Phragmites* supports fewer insects than its native counterparts, but these herbivores could still serve as important stressors, decreasing the plant's fitness. How herbivory interacts with salinity—another factor limiting *Phragmites* growth—could inform how we manage *Phragmites* invasion. I measured soil salinity and quantified the damage of 3 herbivore guilds (i.e. gall-formers, leaf-chewers, and sucking herbivores) on *Phragmites* stems in 5 salt marshes and 3 freshwater wetlands in Connecticut. I found that the proportion of stems with galls increased with salinity, while sucking herbivores likely became less prevalent. Chewing damage patterns were unclear. My results suggest that *Phragmites* stems growing in saline soil suffer greater herbivory damage, so they will likely respond more readily to anthropogenic control efforts. Interactions between plants' abiotic and biotic stressors merit further investigation, especially for their potential to inform management of invasive plants.

Sat- 36

Hybridization and Morphological Variation in Coastal Maine Ferns

Conrad Kortemeier (College of the Atlantic, Bar Harbor, ME)

Abstract - Interspecific crosses are common among *Dryopteris* (wood ferns) in sympatry and are associated with limited reproductive isolation during the fern life cycle. However, identifying these hybrids in the field is challenging due to the high phenotypic and ecological plasticity of hybrid individuals. I evaluate the potential for reliable field identification of *Dryopteris* species and their hybrids using morphological characteristics. I surveyed populations on Mount Desert Island, Halifax Island, and Double Shot Island along the coast of Maine, where multiple *Dryopteris* species co-occur. I collected herbarium voucher specimens and sampled leaf tissue for later ploidy analysis. Of the 20 plots surveyed, I identified putative hybrids in 16 based on morphological field keys alone. Ongoing ploidy analysis will allow me to assess the accuracy of morphology-based identifications and quantify agreement between field and cytological classifications. This work will clarify the reliability of morphological characters for identifying hybrids in *Dryopteris* and improve field-based surveys.

Sat- 42

Insect Behavior Along an Urban Gradient: How Do Insects Respond to Artificial Light?

Amine Kousba (Harvard University, Cambridge, MA), Avalon C.S. Owens (Harvard University, Cambridge, MA), Qian Tang (Harvard University, Cambridge, MA), Imogen Daszak (Northeastern University, Boston, MA), Caroline Dressler (Harvard University, Cambridge, MA), Timothy Barker Plotkin (College of the Atlantic, Bar Harbor, ME), and Remi Christiansen (Antioch University New England, Keene, NH)

Abstract - Artificial light at night (ALAN) and urbanization are increasingly prevalent drivers of global insect declines, partly due to the maladaptive flight-to-light behavior exhibited by many nocturnal insects. To investigate environmental influences on flight-to-light behavior, we performed time-gated sampling along 3 urbanization gradients in eastern Massachusetts throughout summer 2025. We hypothesized that insects at rural sites with less light pollution would approach our experimental light source earlier in the night due to a lack of competing ALAN sources. Our results shed light on environmental determinants of insect flight-to-light behavior in New England habitats, with implications for the conservation of at-risk species on an increasingly illuminated planet. Improved understanding of flight-to-light behavior can inform the design of lighting practices that better balance human needs with ecological sustainability, such as the timing or dimming of lights during peak insect activity.

Sun- 60

Rediscovery of Collections Within SLRO: Imaging, Transcription, and Georeferencing in a Small University Herbarium in Western Pennsylvania

David M. Krayesky (Department of Biology, Slippery Rock University, Slippery Rock), L.I.T Korsak (Morris Arboretums and Gardens of the University of Pennsylvania, Philadelphia, PA), G.M. Bachtel (Department of Biology, Slippery Rock University, Slippery Rock, PA), L.A. Martino, (Department of Biology, Slippery Rock University, Slippery Rock, PA), R.L. Black (Department of Biology, Slippery Rock University, Slippery Rock, PA), and Cindy Skema (Morris Arboretums and Gardens of the University of Pennsylvania, Philadelphia, PA)

Abstract - The Slippery Rock University Herbarium (SLRO) is a small herbarium at a public university. The last overall published accounts of collections within this herbarium identified 12,500 specimens. From the time of the inception of the herbarium in the late 1930s to current times some 5000–6000 specimens were added. Historically, Slippery Rock University has been unable to fund the maintenance and cataloging of its collections. Consequently, much of the work was and is done on a volunteer basis by faculty and student workers. Also, much of the knowledge of what was within the herbarium was not passed from one curator to the next, since an inventory of collections did not exist. A partnership with the Morris Arboretum and the Mid-Atlantic Herbaria Consortium (MAHC), led to the imaging and transcription of the SLRO collection and creation of a virtual herbarium for SLRO in the MAHC portal (https://midatlanticherbaria.org/portal/collections/misc/collprofiles.php?collid=503). Today it is known that the herbarium houses nearly 18,000 specimens of vascular plants. Many of the specimens are from North America north of Mexico, with ~1000 specimens from Canada and >16,000 specimens from 48 of the 50 states in the US. A little more than half the specimens are from Pennsylvania. Furthermore, it was discovered that SLRO contains type collections as well as more than 300 specimens that are identified as plants of concern within Pennsylvania and abroad. Georeferencing is still in progress for SLRO.

Sat- 70

Rising Temperatures and Morphological Changes in New England *Peromyscus*

Lincoln Kunkemueller (University of Vermont, Burlington, VT)

Abstract - Ecogeographic rules, such as Bergmann's Rule, predict that mammalian populations in warm climates will be smaller than their cold-climate counterparts. This pattern is often attributed to how small body size can help a mammal dissipate body heat when living in warm environments due to an increased ratio of surface area to volume. One major aspect of climate change is an increase in mean annual temperatures, which may introduce new selective pressures on thermoregulatory strategies. In connection to Bergmann's Rule, I hypothesized that as mean annual temperatures increase, mammalian body size will decrease as an adaptation to prevent overheating. In this study, I used a linear model to compare the head–body (nose to tail base) length of more than 1400 *Peromyscus* (deer mice) specimens from 5 states in New England across the last 120 years. I found no evidence of changes in the head-body length of deer mice, which may indicate that thermoregulation strategies are not under selection pressure, despite rising temperatures.

Sun- 25

Maple Sugaring in the Classroom: Exploring the Process and Identity of Vermont Maple Syrup at Saint Michael's College

Kyleena J. Lathram (Saint Michael's College, Colchester, VT) and **Olivia L. Record** (Saint Michael's College, Colchester, VT)

Abstract - Our class explores maple sugaring as a material process and a cultural symbol within Vermont's identity. Through readings from *Meanings of Maple: An Ethnography of Sugaring* by Michael Lange, and by engaging with sugaring practices on campus, we can learn about maple production from backyard sugaring with metal buckets to large-scale production using reverse osmosis, modern evaporators, and extensive tubing networks. Technological developments have transformed the maple industry, leading to product consistency, grading systems, and increased sugaring efficiency, while maintaining the cultural resonance surrounding maple. As technology modernizes sugaring, the industry has retained strong cultural heritage symbols, including metal sap buckets, red flannel jackets, multigenerational family farms, and horse-drawn carts that Vermont still includes in its sugaring story. These cultural ties shape the authenticity and public perception of sugaring, even as technology alters modern-day sugaring practices. The tradition of maple sugaring is "local" to Vermont's identity and symbolizes regional pride and belonging, adding significant meaning to the commodity distributed nationwide. We will discuss the role of maple sugar commodification through marketing, how "Vermont" signifies purity, heritage, and authenticity as a brand, and how packaging, grading changes, and labeling processes maintain the local narrative. Saint Michael's College allows us to make hands-on connections as we engage directly in traditional sugaring methods on campus. Collecting sap in metal buckets and boiling syrup in a backyard setting allows us to connect with small-scale sugaring methods and reflect on the process and experience far beyond what any traditional lecture could convey. By integrating classroom learning with hands-on, experimental activities, we can view Vermont's individualistic identity through maple sugar and see how maple sugaring is intertwined with Vermont's agricultural identity. We will explore tree-tapping practices and learn about maple marketing along the way. This unique experience is enriched by the science and cultural identity of maple in a way that no textbook or price tag can convey.

Sun- 68

Body Size of the Invasive Asian Shore Crab as a Function of Population Density in Southern New England

Solomon LeFrancois (Bridgewater State University, Bridgewater, MA), Faith Ballarino (Bridgewater State University, Bridgewater, MA), Jillian Hallman (Bridgewater State University, Bridgewater, MA), Caroline Kleimola (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 a widespread invasive crustacean commonly in rocky intertidal zones along the northeastern coast of the US. It exhibits substantial variation in population density both spatially and temporally. These changes in density may influence individual growth through density-dependent processes such as competition for resources and shelter. To examine whether variation in abundance is associated with body-size trends over time, we analyzed annually collected data from 2015 to 2025 at 5 intertidal sites in southern New England. We sampled sites using standardized circular quadrats and recorded abundance per quadrat. Additionally, we measured individual carapace width to the nearest 0.1 mm using dial calipers. No consistent trend in body size across sites was observed; however, mean body size at Sandwich, MA (northern Cape Cod) in 2015 was significantly lower than all other sampled sites. These findings suggest a limited effect of population density on individual body size for the Asian Shore Crab under normal field conditions, with local environmental factors likely having a larger impact.

Sat- 7

Beaver Bread Crumbs: Plant Composition along Beaver Paths

Annie Lendrum (Edmund Niles Huyck Preserve, Rensselaerville, NY), **Alannah MacDonald-Katz** (Edmund Niles Huyck Preserve, Rensselaerville, NY), and Payton Zolck (University of California Berkeley, Berkeley, CA)

Abstract - *Castor canadensis* (North American Beaver, hereinafter Beaver) were first documented at the Edmund Niles Huyck Preserve in Rensselaerville, NY in 1939 after being nearly eradicated from the state by the late 19th century. Beavers are ecosystem engineers since they alter their habitat and impact other organisms by building dams, lodges, and terrestrial paths to access food and building materials. Their dietary and shelter-building preferences for woody plants like *Alnus* spp. (Alder), *Cornus* spp. (dogwoods), and *Salix* spp. (willows) have been well-documented. Through their behavior, others have found that Beavers can reduce plant species richness and provide openings for invasive plant species. In this study, we explored plant composition with distance along Beaver-made paths and hypothesized that plant species richness would decrease along a path with distance from a water body. We identified 4 Beaver-created paths originating at the Huyck Preserve's Lake Myosotis and established a transect along each. We created three 5 mx5 m plots at the beginning, middle, and end of each transect. Within each plot, we identified all plants and estimated their percent cover. We did not find a significant change in plant species richness along the beaver paths and found more native plant species than invasive. These results may show that along Beaver paths, other factors are driving composition and richness as one moves from the water's edge to more upland habitat.

Sat- 38

Calcium Addition Changes Adirondack Leaf Litter Chemistry 20 Years After Initial Treatment

Zach A. Lightfoot (Colgate University, Hamilton, NY), Mary Thomas Powell (Colgate University, Hamilton, NY), Daytona Doherty (Colgate University, Hamilton, NY), and Catherine Cardelús (Colgate University, Hamilton, NY)

Abstract - Acid deposition has acidified soils, reduced the availability of soil nutrients, and caused widespread forest decline in the northeastern United States. To test the prolonged effects of liming to release soil cations and support higher-quality litter production, we investigated litter chemistry and leaf fall accumulation in 3 tree species—Acer rubrum (Red Maple), *Fagus grandifolia* (American Beech), and *Betula alleghaniensis* (Yellow Birch)—20 years after the initial $CaCO_3$ treatment in the Adirondack Park of upstate New York. Lime treatment continues to increase calcium and phosphorous accessibility and lower leaf-carbon content, but leaf-fall timing did not vary across treatments. These results indicate that lime-treated trees produce higher-quality litter and that acid deposition negatively impacted leaf construction. Leaf-fall data suggests that acidification is not the determinant factor and that a drier summer and fall drives an earlier leaf abscission.

Sun- 34

Evaluating the Effect of Temperature on Historical Landings of *Mya arenaria*

Olivia Macaluso (Providence College, Providence, RI) and Roxanne Banker (Providence College, Providence, RI)

Abstract - *Mya arenaria* (Soft-shell Clam) has been a staple of Rhode Island shellfish culture for generations, but stocks of this once abundant species are much depleted from its historic populations along the New England coast. Studies have linked this decline to the invasive *Carcinus maenas* (European Green Crab) which arrived in New England in the late 1890s. The European Green Crab has a predatory preference for bivalves including the Soft-shell Clam and is well known to consume juveniles of this species before they reach sizes that allow them to bury deeply enough to avoid predation. Further studies have shown that the European Green Crab is sensitive to temperature, with reduced reproduction and food consumption in colder conditions. Previous research has shown a direct link between temperature and European Green Crab abundance, with very cold temperatures negatively impacting populations of this crab. However, there have not been direct tests on the relationship between temperature and Soft-shell Clam abundance, mediated by predatory crab activity. The goal of our project is to evaluate the relationship between historical temperature and Soft-shell Clam landings from Rhode Island during 1920 to 2024. We assembled data from The National Oceanic and Atmospheric Association (NOAA). While preliminary results suggest no correlation (Pearson's: $P > 0.05$) between average seawater temperature and Soft-shell Clam landings, we are in the process of further resolving our temperature record with additional data sources. Results from this study will provide important historical context to how we understand Soft-shell Clam population dynamics in New England, both in the past and in the future. While European Green Crabs are the primary detriment to Soft-shell Clam populations, a better understanding of this 3-way interaction with temperature could be applied to species-conservation efforts. Winter temperatures could serve as a critical predictive tool for Rhode Island fishery management by preemptively predicting necessary adjustments to Soft-shell Clam harvest quotas and management programs for European Green Crabs.

Sat- 3

Factors Influencing the Phenology of *Acer rubrum* (Red Maple) in the Eastern United States

Mollie Magner (University of Saint Joseph, West Hartford, CT) and Kirsten Martin (University of Saint Joseph, West Hartford, CT)

Abstract - The aims of our research are to collect site-specific phenology data for *Acer rubrum* (Red Maple), examine the factors that influence Red Maple phenology in the eastern US, and consider how future climate change may affect Red Maple phenology. We recorded the status and intensity of flowers, budbreak, leaf out, seeds, leaf coloration, and leaf fall twice a week in the spring and fall of 2024 and 2025 for 23 Red Maple trees at a town park in central Massachusetts. We also obtained data from online resources for research conducted at 8 National Ecological Observatory Network (NEON) sites in the eastern US from 2014 to 2024 and for research conducted at the Harvard Forest in Petersham, MA, from 1990 to 2023. We are conducting correlation and regression analyses to analyze the effects of temperature and precipitation at different times of the year on Red Maple phenology. The research demonstrates the importance of consistent, long-term, site-specific studies for determining the influence of environmental conditions on tree phenology and predicting how trees will respond to future conditions. It also shows the value of studying tree phenology for connecting people with nature and increasing appreciation and concern for other species.

Sat- 61

Save Our Ecosystems, Employ a House Fly: House Flies as Biological Sentinels to Track Pathogens

Sydney Lamberty (University of New Haven, West Haven, CT), **Claire Mahaffy** (University of New Haven, West Haven, CT), Hailey Ruddock (University of New Haven, West Haven, CT), Jessica Spengler (University of New Haven, West Haven, CT), Andrew Zhang (University of New Haven, West Haven, CT), and Samantha J. Sawyer (University of New Haven, West Haven, CT; ssawyer@newhaven.edu)

Abstract - Pathogens are infectious agents that can cause major health issues. One strain of bacteria, methicillin-resistant *Staphylococcus aureus* (MRSA), is especially threatening because it is known to infect wild animals, domestic animals, and also humans; this strain poses a greater problem due to its antibiotic-resistant nature. Being able to monitor the presence of this microbe throughout multiple ecological systems could assist with the prevention of MRSA-related infections in wild and domestic populations. Previous methods of tracking microbes, such as broad sampling of various environmental substrates, can be costly and time-consuming. This experiment introduces an alternative biological sentinel: house flies. These flies, also known as filth flies, have an affinity for decomposed and digested food sources that often can contain this bacterial strain, which in turn gets picked up by the flies, allowing them to be a source for testing. A previous study from our lab using protozoan parasites demonstrated the efficacy of filth-fly monitoring through field-based rapid tests; however, bacterial tests have not yet been explored. Establishing the relatively cheap tests used in this experiment as reliable confirmers of the presence of MRSA could increase accessibility to monitoring. To assist in the goal of nationwide health, the objective is to assess the viability of house flies, specifically *Musca domestica* (Diptera: Calliphoridae), as biological sentinels. We made serial dilutions (1:10 to 1:100,000) from a MRSA culture and tested all dilutions on the ThermoScientific Staphaurex ™ Plus Latex Agglutination Test and Clearview ™ PBP2a SA Culture Colony Test to determine test sensitivity. Flies were individually fed bacterial dilutions and crushed in 20 µl of distilled water and used on both rapid tests. Subsequently, to determine test sensitivity since exposure, we independently gave positive dilutions to new flies, with testing taking place 2, 3, 6, and 8 hours after initial exposure. This presentation will discuss the sensitivity, time constraints, and reliability of these tests in connection with the house fly's ability to act as a cheap and ubiquitous sentinel, thereby assisting with ecological health assessments involving MRSA.

Sat- 47

IImpact of Agricultural Nitrogen on Mycorrhizal Colonization of Sugar Maple in Forest Fragments

Olivia Maloney (Middlebury College, Middlebury, VT) and David Allen (Middlebury College, Middlebury, VT)

Abstract - Arbuscular mycorrhizal fungi (AMF) are subterranean organisms that form symbiotic relationships with an estimated two-thirds of all plant species. These fungi facilitate nutrient exchange through specialized intracellular structures called arbuscules, providing host plants with increased drought and herbivory resistance in exchange for photosynthetic carbohydrates. In Vermont, *Acer saccharum* (Sugar Maple) is a dominant AMF-associated species often found in forest fragments adjacent to agricultural operations. These operations fertilize their fields each spring with mixtures of nitrogen, phosphorus, and potassium. Previous research has shown negative effects of chronic nitrogen addition to ectomycorrhizal abundance due to reallocation of carbohydrates toward growth of the host plant and changes to fine root diameter. However, effects of nitrogen on AMF is poorly understood. This study aims to determine whether the ambient nitrogen released from agriculture settles in adjacent forest patches along an edge-to-interior gradient, and whether nitrogen deposition negatively impacts arbuscular mycorrhizal abundance on Sugar Maple roots. We selected 3 study sites in the Champlain Valley that contained Sugar Maple stands adjacent to agricultural fields. We quantified throughfall nitrogen and percent soil nitrogen at each study site along an edge-to-interior transect and examined soil cores for recognizable Sugar Maple roots. We estimated percent AMF colonization by microscopy techniques. This research contributes to the growing body of work investigating how anthropogenic nitrogen effects forested ecosystems, by looking specifically at a key fungal-plant interaction.

Sun- 37

Botanical Biodiversity in Vernal Ponds

David H. Marsh (Dickinson College, Carlisle, PA) and Carol Loeffler (Dickinson College, Carlisle, PA)

Abstract - Wetlands have long been considered to be biodiversity hotspots, containing more abundant and more diverse plant life than surrounding terrestrial habitats. In the face of warming climate and rapidly changing public policy, it is more important than ever to understand and protect these ecological havens. Vernal ponds are a type of ephemeral wetland that has received growing attention in recent years yet remain largely under studied. We conducted a study to gain a better understanding about how biodiversity differs between the vegetative zones that surround each of several vernal ponds located on South Mountain in Cumberland County, PA. The ponds represent a diversity of depths and sizes. We used 1-m^2 quadrats spaced periodically along 50-m transects to estimate density and cover of the varying plant species within each zone. We then used statistical analysis to generate values to represent the biodiversity of each zone and compare it to the other zones, as defined by soil moisture. Results through early spring of 2026 will be presented.

Sat- 18

Tick-Borne Zoonotic Disease Prevalence in the Greater Farmington Area

Ryan Martin-Hachey (University of Maine at Farmington, Farmington, ME) and Donelle Schwalm (University of Maine at Farmington, Farmington, ME)

Abstract - The growing prevalence of tick-borne zoonotic diseases in the northeastern US is cause for concern; however, there are many competing hypotheses for what is driving the spread of ticks and tick-borne illnesses. Similarly, understanding of spatial variation in pathogen risk is an area of active exploration. Commonly, areas with higher disease prevalence have a higher proportion of *Ixodes scapularis* (Black-Legged Tick) compared with *Dermacentor variabilis* (American Dog Tick). However, while pathogen-positive American Dog Ticks do not appear to transmit the more common tick-borne diseases in our region (i.e., Lyme disease, anaplasmosis, and borreliosis) to humans, they may co-infect Black-Legged Ticks if they attach to the same host and consume a blood meal. In addition, differences in how anthropogenic land use influences tick presence and infection prevalence is of considerable utility for informing public understanding of disease risk and avoidance. We conducted a multi-year assessment of the prevalence of 3 tick-borne zoonotic diseases known to be increasing in the region. We collected ticks between May 2024 and November 2025 on public and private lands representing 4 increasing levels of anthropogenic development (rural yards $n = 16$, urban yards $n = 12$, urban semideveloped $n = 4$, undeveloped $n = 6$). We identified ticks to species, age, and sex, then used qPCR to test for the causative agents for each of our focal diseases. Preliminary results from 38 sites and 248 ticks showed ticks were found most commonly in rural yards (56% of ticks analyzed) compared to other land-use types studied; however, sampling effort was skewed towards rural yards (42% of sites sampled). Disease prevalence was also highest in ticks analyzed from rural yards (33.82% Lyme disease and 22.43% anaplasmosis) compared to other land-use types (min–max: 0–13% for Lyme disease and 0–7% for anaplasmosis). We are planning additional testing to analyze ticks for babesiosis.

Sat- 53

Mining Historical Biodiversity Data in Vermont: Humans vs AI

Megan Massa (Vermont Center for Ecostudies,White River Junction, VT) and Kent McFarland (Vermont Center for Ecostudies, White River Junction, VT)

Abstract - Historical data is important to answer questions about changing phenology, but much of it remains undigitized or inaccessible. As part of biodiversity data-rescue efforts at the Vermont Atlas of Life, we digitized *Records of Vermont Birds* (1977-2001). In 2016, volunteers used the DigiVol platform to manually transcribe all spring records submitted by birdwatchers on paper forms and cards. In 2026, we used Google Gemini to digitize all volumes as assembled by expert reviewers at time of publication, with human reviewers validating AI outputs, resulting in over 110,000 records. AI performance improved when scanned text was segmented into small chunks, workflows were automated via an API rather than a consumer interface, and prompts enforced structured outputs. AI errors were largely systematic (e.g., optical character recognition and formatting issues), which simplified post-processing. Human reviewers excelled at interpreting ambiguous records, especially location names. Validated records will be uploaded to GBIF and used for analysis of phenological changes across multiple decades. Our hybrid workflow demonstrates that AI can dramatically reduce labor barriers for large-scale data-rescue when paired with human review; AI tools are effective for monotonous, high-volume transcription tasks, allowing human expertise to focus on validation, interpretation, and analysis.

Sun- 66

Comparing Community-Led Science and State Agency Methods for Assessing Wildlife Population Trends

Eleora McCay (University of New Hampshire, Durham, NH), Mairi Poisson (University of New Hampshire, Durham, NH), and Remington Moll (University of New Hampshire, Durham, NH)

Abstract - We conducted a comparison of wildlife population trends for 9 species in the state of New Hampshire from state agency harvest data with 36 years of snow-track survey data from a community-led program to test for correlation. We compared these methods at 2 (region and statewide) spatial scales and found strong numerical and visual correlations between the snow-track survey data and the state's harvest data for *Alces alces* (Moose), *Odocoileus virginianus* (White-Tailed Deer), and *Pekania pennanti* (Fisher). We used Pearson's and Spearman's correlations to assess the comparability of methods. The correlation between methods for Moose was low for the central region (Pearson correlation = 0.34, $P = 0.07$) and statewide (Spearman correlation = 0.36, $P = 0.06$), but visual inspection suggested similar broad-scale trends across datasets, albeit with substantial variation. White-Tailed Deer trends had strong numerical correlation in the J2 region (Pearson correlation = 0.41, $P = 0.02$; Spearman correlation = 0.43, $P = 0.02$). Fisher trends had strong numerical correlation between methods statewide (Pearson correlation = 0.37, $P = 0.04$; Spearman correlation = 0.36, $P = 0.046$). Other species did not show strong correlations at the region or statewide scale (all P -values > 0.05). Overall, this work demonstrates how participatory science contributes to understanding the local trends for certain wildlife species which can help inform local management goals.

Sun- 27

Dead or Alive: Does Preservation Change the Intensity of Biofluorescence in Museum Specimens

Tyler McElwee (SUNY Oneonta, Oneonta, NY), Benjamin Wilhelm (SUNY Oneonta, Oneonta, NY), Elizabeth Bastiaans (SUNY Oneonta, Oneonta, NY)

Abstract - Recent research has revealed that biofluorescence is widespread across many taxa of vertebrate animals. Studies on this topic have used a mixture of living animals and preserved museum specimens. Storage of museum specimens, especially fluid preservation, has the unintentional side effect of causing visible color degradation in the samples, but prior work on biofluorescence has not directly tested whether the same is true for biofluorescent coloration. We are in the process of comparing the average maximum intensity of fluorescence between preserved specimens and living animals from 2 vertebrate taxa that are typically preserved differently: mammals and amphibians. Our goal is to include 30 species commonly found in central New York: 14 amphibians and 16 mammals. We also seek to document new instances of biofluorescence in species where the phenomenon has not been previously found. Here, we present preliminaryresults from our survey of museum specimens.

Sun- 52

Help Me Out Here! Do Plants Anticipate Help from Parasitoids?

Caitlin McNamara (Wesleyan University, Middletown, CT), **Tamara M. Kancoglu** (Wesleyan University, Middletown, CT), and Michael S. Singer (Wesleyan University, Middletown, CT)

Abstract - Plants can detect and anticipate herbivory, responding to such cues by increasing direct and indirect resistance to herbivores. For example, herbivore larvae or eggs can induce a plant to increase leaf toxins (direct resistance) and "cry for help" by emitting volatile organic compounds that serve as odor cues for enemies of herbivores (indirect resistance). Recent evidence suggests that plants can also downregulate direct resistance to herbivores when they detect cues that prompt them to "anticipate help" from ants or possibly from parasitoids. Parasitoids are natural enemies of herbivores that oviposit eggs or young into hosts, such as caterpillars, where they develop and immediately (idiobionts) or eventually (koinobionts) kill their herbivore host. While plants have been shown to respond differentially to herbivory by koinobiont-parasitized and unparasitized caterpillars, we ask if plants can "anticipate help" from koinobiont parasitoids infecting caterpillar hosts. We hypothesize that another facet of the life history of the developing parasitoid will determine a plant's defensive response to parasitized caterpillars. Parasitoid wasps can be solitary, with a single offspring per host, or gregarious, with multiple offspring per host. Caterpillars parasitized by a solitary species often feed less than unparasitized caterpillars, while caterpillars parasitized by a gregarious species often feed more than unparasitized caterpillars, suggesting that solitary parasitoids are most likely to benefit plants. We hypothesized that plant defensive responses to herbivory by caterpillars parasitized by a solitary parasitoid species will be reduced or dampened compared to plant defensive responses to herbivory by (1) unparasitized caterpillars and (2) caterpillars parasitized by a gregarious parasitoid species. We tested this hypothesis in a meta-analysis on plant defensive responses to parasitized and unparasitized caterpillars, with parasitized caterpillars separated by solitary or gregarious life history of the parasitoid. Undamaged plant responses served as a control. Consistent with our hypothesis, our meta-analysis shows that plant defensive responses to caterpillars parasitized by solitary parasitoids are dampened compared to plant defensive responses to herbivory by unparasitized caterpillars and caterpillars parasitized by a gregarious parasitoid species. Additionally, plant defensive responses are dependent on both the species of plant and the type of plant defense response being measured.

Sun- 45

Biodiversity on Both Sides: A Macroinvertebrate Survey of Two Dammed Water Bodies

Jesse Melas (Edmund Niles Huyck Preserve, Rensselaerville, NY), Jake Madden (Middlebury College, Middlebury, VT), and Darian Pierre (University of Nebraska, Lincoln, NE)

Abstract - Biodiversity of aquatic systems can be impacted by factors such as global warming, dam construction, habitat fragmentation, eutrophication, and urbanization. The 843-ha (2084-ac) Edmund Niles Huyck Preserve in Rensselaerville, NY includes 2 impounded water bodies: 40-ha (100-ac) Lake Myosotis and 3-ha (8-ac) Lincoln Pond. The goal of this project was to assess the diversity of aquatic macroinvertebrates found on the upstream and downstream sides of the dams at Lincoln Pond and Lake Myosotis. We hypothesized that aquatic macroinvertebrate diversity would be greater on the upstream side of the dam than on the downstream side. We identified 3 sampling locations above and below the dams at both Lincoln Pond and Lake Myosotis for a total of 12 sites. At each sample site, we recorded water temperature and substrate composition. We used kick sampling to collect organisms into a d-net. We grouped captured organisms based on taxonomic order and counted collected organisms by type. We used the Shannon diversity index to calculate the biodiversity of each site. We found no significant difference in aquatic macroinvertebrate diversity in the upstream and downstream side of either dam. However, there was a difference in both the types of organisms and the number of individual organisms that were collected at each location. At Lincoln Pond, the most collected macroinvertebrates were amphipods above the dam and isopods below the dam. Overall, macroinvertebrates of the Amphipoda, Odonata, Gastropoda, and Planeridae groupings were only found in Lincoln Pond. At Lake Myosotis, the most collected macroinvertebrates for both the upstream and downstream sections of the dam were from the Order Ephemeroptera. Chironomidae and Hirudinea groupings were only found at Lake Myosotis. The observed differences in macroinvertebrates may be due to key differences in habitats and habitat quality.

Sat- 25

Agricultural Legacies Persist in Hudson Valley Forests

William Mennerick (Bard College, Annandale-on-Hudson, NY)

Abstract - Agricultural land-use creates continuing legacies for recovering northeastern forests, but the long-term stability of these novel forest assemblages remains understudied. Building on surveys conducted in 1984 and 2006, I resampled 20 permanent plots in forests with varied historical land-use in the Hudson Valley. I compared patterns of community composition for mature trees (≥10 cm DBH), sub-canopy layers of trees (≥ 2.5 cm DBH), and soil fungal communities in formerly wooded, cultivated, and pastured sites. I found that the composition of mature-canopy trees differs between the 3 land-use types, consistent with past surveys. However, understory tree composition did not differ between land-use histories. For soil fungi, community composition on cultivated sites was distinct from other land-use types. Together, my results suggest that heterogeneity in forest composition due to land-use history persists for decades, but may decline over time as canopy trees are replaced.

Sun- 30

First Evidence of Neonicotinoid Pesticide Contamination in Wild Snakes: A Pilot Study from Agricultural Landscapes in Vermont

Rosy L. Metcalfe (Antioch University New England, Keene, NH) and Michael E. Akresh (Antioch University New England, Keene, NH)

Abstract - Neonicotinoids are among the most widely used classes of pesticides in the world, yet their presence in wild snake populations has never been documented. To address this gap, we conducted a pilot study testing for neonicotinoid contamination in the blood plasma of snakes in Chittenden, Washington, and Addison counties, Vermont. During spring and summer 2024, we collected blood from 57 individual snakes across 4 colubrid species—*Lampropeltis triangulum* (Eastern Milksnake), *Storeria dekayi* (Dekay's Brownsnake), *Storeria occipitomaculata* (Red-bellied Snake), and *Thamnophis sirtalis* (Common Gartersnake)—at 11 study sites. We pooled plasma samples by site and date, and then analyzed them for neonicotinoids via ultra-performance liquid chromatography–tandem mass spectrometry (UPLC-MS/MS). Two pooled samples—1 from a site with a mixed colubrid sample and 1 from Dekay's Brownsnakes—tested positive for trace amounts of thiamethoxam, representing what is, to our knowledge, the first documented detection of neonicotinoid pesticide contamination in wild snakes. Our findings underscore the need for expanded research on neonicotinoid exposure pathways in reptiles, optimized blood-sampling protocols for small-bodied snake species, and investigation of the sublethal effects these contaminants may have on reptile ecology and population dynamics.

Sun- 21

Demography of an Isolated Spotted Turtle Population in Massachusetts

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Abstract - *Clemmys guttata* (Spotted Turtle) is a small freshwater turtle species native to the midwestern and eastern US, as well as southeastern Canada. In the last 30 years, they have experienced an estimated decline of 50% across their range, with remaining fragmented Spotted Turtle populations often containing <100 individuals. Given this status, data on abundance, age structure, and other demographic characteristics for local populations is helpful for informing management decisions. We initiated a demographic study of a Spotted Turtle population in Middlesex County, MA, using mark–recapture. We caught turtles via traps and uniquely marked them by notching their marginal scutes. We conducted three 12-day trapping sessions between April and August 2025, where 5 traps in 1 wetland were checked every 24 h and rebaited every 48 h. In traps, we captured a total of 45 Spotted Turtles, of which 33 were unique individuals. With a close- population model, our findings estimate a population size of 61.4 (±17.2 SE)individuals. We found a sex ratio (male: female) of 1:1.2, suggesting no significant skew ($P = 0.746$). Of the turtles captured, 6.1% were 0–6 years of age, 78.9% were ages 7–13 (average age range of maturation), and 15.2% were age 14 and above. Given the current estimate for Spotted Turtle longevity is 65–110 years, the age structure observed suggests this population has had successful recruitment in the last decade. Comparing this Spotted Turtle population to others in Massachusetts and the Northeast can help inform regional conservation efforts.

Sun- 13

Pathogen Presence in Historic Rodents of Vermont

Li Moavenian (University of Vermont, Burlington VT), Finn Flynn (University of Vermont, Burlington VT), Nasreen Z. Broomand (University of Vermont, Burlington VT), and M. Elise Lauterbur (University of Vermont, Burlington VT)

Abstract - *Ixodes scapularis* (Black legged Tick), the main vector for *Borrelia burgdorferi* in human patients, have had a confirmed presence in Vermont since 2006. *B. burgdorferi* infection in humans, commonly referred to as Lyme disease, was exceedingly rare in Vermont until around the same time. However, there is evidence to suggest the pathogen existed in Vermont rodent populations far before this landmark date. Black legged Ticks typically become infected with *B. burgdorferi* during their nymph and larval stage, while feeding on rodents. Previous research done in Massachusetts has found rodent-ear clippings from the late 1800s to harbor detectable *B. burgdorferi.* In this study, we tested for the presence of *B. burgdorferi* DNA in preserved rodent skins collected in Vermont from 1914 to 2002 to determine whether the pathogen was present in the state before its modern primary vector. We extracted DNA from ear clippings and prepared single-stranded DNA libraries using the Santa Cruz Reaction protocol, which is optimized for ancient DNA. We used a qubit to determine DNA extract and library concentrations and spot-checked libraries for large adapter peaks using an Agilent TapeStation, which showed successful library preparation. The libraries were sequenced at the University of New Hampshire's Hubbard Center for Genome Studies with 2 x 150 paired-end reads using the Illumina Novaseq Platform. The presence of *B. burgdorferi* in Vermont rodent populations prior to the arrival of Black legged Ticks would significantly alter our current understanding of how *B. burgdorferi* spread through the Northeast US and how it is maintained in the current ecosystem. With global warming, the range of the Black legged Tick is projected to continue expanding north, and with it the range of *B. burgdorferi*. Understanding its historic emergence will help us better predict and handle the future distribution and prevalence of *B. burgdorferi* in both humans and animals.

Sun- 23

Effects of Dietary Protein on Growth of Head-started Eastern Box Turtles

Brianna R. Monast (BCAHS, Dighton, MA)

Abstract - Turtles are among the most threatened vertebrate groups worldwide. *Terrapene carolina carolina* (Eastern Box Turtle) is considered vulnerable at the national level, leading to conservation strategies such as head-starting, which potentially plays a useful role in enhancing survivorship during the juvenile stage. This research investigates how protein levels affect the growth of head-started hatchlings. I reared ten 2025 cohort hatchlings from 2 clutches in a controlled lab at Bristol County Agricultural High School. I randomly assigned the individuals to 2 treatment groups: one receiving 30% protein and the other receiving 50% protein. I measured growth biweekly using mass and straight carapace length (SCL). In order to increase the sample size used in this investigation,I compared these data with a treatment group from the 2024 cohort, which was kept under identical conditions but received a 40% protein diet. Preliminary results have not shown a clear relationship between the protein and Eastern Box Turtle head-start growth. Due to the limited sample size, formal statistical significance could not be determined, though additional data collected in the remainder of the study period may provide greater insight. Future studies utilizing a larger sample of Eastern Box Turtle hatchlings are necessary to confirm these findings and definitively identify the optimal dietary composition in order to use conservation resources most efficiently while achieving successful head-starting outcomes.

Sat- 9

The Role of Carrion Size in American Burying Beetle Reproduction

Hannah M. Moreau (SUNY Cobleskill, Cobleskill, NY) Andrew Gascho Landis (SUNY Cobleskill, Cobleskill, NY), Carmen Greenwood (SUNY Cobleskill, Cobleskill, NY), and John Pipino (New York Natural Heritage Program, Albany, NY)

Abstract - We conducted a laboratory study at SUNY Cobleskill to examine whether reproductive carrion resource size affects brood size for *Nicrophorus americanus* (American Burying Beetle). We observed no significant relationship between carrion size and emerging brood size. These results suggest that brood size is controlled by alternate factors, and future studies should investigate female condition, age, and cumulative reproductive output influence on brood size. Our findings contribute to the refinement of propagation techniques of this federally endangered species.

Sun- 58

Inducible Defenses of the Blue Mussel to an Invasive Predator, the Asian Shore Crab, in Southern New England

Mallory Morrison (Bridgewater State University, Bridgewater, MA), **Caroline Kleimola** (Bridgewater State University, Bridgewater, MA), Jillian Hallman (Bridgewater State University, Bridgewater, MA), Faith Ballarino (Bridgewater State University, Bridgewater, MA), Solomon LeFrancois (Bridgewater State University, Bridgewater, MA), and Christopher P. Bloch (Bridgewater State University, Bridgewater, MA)

Abstract - Invasive species can alter community structure not only through direct predation but also by inducing phenotypic changes in native prey. The invasive *Carcinus maenas* (European Green Crab) is known to elicit inducible defenses in *Mytilus edulis* (Blue Mussel). When exposed to waterborne chemical cues released by Green Crabs, mussels increase shell thickness, thereby enhancing resistance to predation. A similar inducible response has been documented following the introduction of *Hemigrapsus sanguineus* (Asian Shore Crab), with evidence suggesting that mussels developed increased shell deposition in response to this predator within ~15 years of its establishment. This study aimed to evaluate whether long-term exposure to the Asian Shore Crab along the southern New England coast has altered the expression of shell-thickening responses in Blue Mussels relative to those induced by Green Crabs, and whether shell thickness varies as a function of Asian Shore Crab density. We collected mussels and estimated population density of the Asian Shore Crab at 4 rocky intertidal sites. After accounting for differences in total body size, mean shell thickness in 2025 was significantly lower at Sandwich, MA (northern Cape Cod) than at other sites. This result did not correspond to population density. Follow-up studies will compare current mussel thickness with that of individuals from museum collections from before the invasion of the Asian Shore Crab and during its early period of rapid population growth.

Sat- 8

Lethal vs. Simulated Visual Survey Methods to Assess Bee Responses to Habitat Restoration

Aliza Newton (UMass Amherst, Amherst, MA), Aliza Fassler (UMass Amherst, Amherst, MA), David King (UMass Amherst, Amherst, MA), and Lerman (US Forest Service Northern Research Station, Amherst, MA)

Abstract - Growing evidence reveals that bee populations are declining because of habitat loss, climate change, pathogens, and pesticides. Monitoring bee populations is critical in identifying vulnerable species and understanding how to manage their habitats. Bee-sampling methods vary from lethal forms of trapping, which allow for species-level identification, to visual surveys, which provide a nonlethal alternative for vulnerable bee species. We aim to compare bee community responses to management using lethal survey methods (time-standardized netting) and simulated visual survey methods. We simulated visual survey methods by sorting bees caught using lethal methods into 6 morphogroups (e.g., "small black bee") that are typical of visual surveys. We used specimens from the Pollinator Habitat in Log Landings (PHiLL) project, which seeks to inform the management of log landings (staging areas for timber harvests). We treated a total of 15 landings to reduce soil compaction and seeded with a native pollinator seed mix and compared these to an additional 15 control landings. We hypothesized that simulated visual survey methods may mask bee responses to management by limiting the taxonomic resolution for community estimates and grouping bees into biologically meaningless categories. Preliminary results show the most common morphospecies group in simulated visual surveys was the "small black bee" group (average of 265.20 ± 54.98 on untreated landings vs. 173.8 ± 45.83 on treated landings), which contains 33 species. Morphogrouping can obscure information on species biology. For example, ground-nesters made up nearly 80% of the "small black bee" morphogroup and stem-nesters made up the other 20%. However, rarefaction analysis using Hill numbers ($q = 1$) on treated landings compared to control landings showed higher diversity in treated landings regardless of whether the data was analyzed at the species or morphospecies level. This finding suggests that, in this system, simulated visual survey methods may detect management effects on bee community diversity. Nevertheless, morphospecies data doesn't yield ecological guild information that likely explains the response of bees to management. We recommend further research to assess when lethal methods are necessary to understand responses to management and when non-lethal methods can provide equally valuable data.

Sun- 61

Investigating Baltic Isopod (*Idotea balthica*) Tidepool Microhabitat choice on Mount Desert Rock, ME

Eun-Jae Norris (College of the Atlantic, Bar Harbor, ME)

Abstract - *Idotea balthica* (Baltic Isopod) are a small, algivorous isopod found in intertidal habitats across the north Atlantic, exhibiting five distinct color morphs as well as a variety of shell colors. I hypothesized that Baltic Isopods would be more likely to settle in algae whose coloration and structure more closely resembled their appearance– i.e. that isopods' color morphs and shell color would match the algae they were found in, and that smaller isopods would settle in algae with thinner fronds. I sampled isopod population at 7 sites on Mount Desert Rock, a remote island 32 km (20 mi) offshore from Mount Desert Island, noting color, color morph, size, and algal substrate. I only found Baltic Isopods at 3 of the 7 sites, concentrated entirely in the island's northwest intertidal between two coves. Preliminary analysis indicates a preference for red algae, in particular *Chondrus crispus* and *Ceramium* spp., which would demonstrate a difference in algal preference from the Baltic Sea population, which seems to prefer *Fucus vesiculosus*. Additionally, the distribution of color morphs on Mount Desert Rock differs greatly from that of Baltic Isopods in Narragansett Bay. Ongoing analyses will examine more specific small-scale isopod–algal community relationships, in particular the effects of color morph, size, and disturbance. This research potentially indicates location-based variation Baltic Isopod communities and continues investigations into littoral isopod crypsis and habitat usage.

Sat- 2

Fragment Regeneration and Colonization in the Invasive Parrot-Feather (*Myriophyllum aquaticum*)

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

Abstract - The invasive hydrophyte *Myriophyllum aquaticum* (Parrot-Feather) is spreading in New England, with 22 sightings recorded in Connecticut (8), Rhode Island (4), and Massachusetts (10) since 2000. To investigate shoot fragment regenerative capacity and colonization in this functionally sterile plant, I grew leafy shoot fragments in a greenhouse in waters of 2 depths over 60 days. I placed plant fragments individually into flasks filled with 3 cm of substrate (washed sand) and either 30 cm (deep treatment) or 15 cm (shallow treatment) of spring water. At conclusion of the experiment, all fragments remained floating. Overall, 47% of fragments developed a secondary shoot (1 sample developed 2 shoots) and 100% grew adventitious roots. Roots grew long enough to reach the substrate in 47% of samples, but most of these (93%) were in the shallow-water treatment. In the shallow treatment, roots started penetrating the substrate in 21 days, while the 1 deep sample whose roots reached the substrate, did so by day 56. My findings indicate that fragments exhibit prolonged buoyancy, which highly increases dispersibility. Plants show a moderate regeneration capacity, while dispersed fragments have a high colonization capability (especially favoring shallow waters).

Sat- 30

Buckets of Biodiversity; Small Mammal Abundance and Diversity in a Jack Pine Barren

Dean Parmelee (Center for Earth and Environmental Science, SUNY Plattsburgh, Plattsburgh, NY), Danielle Garneau (Center for Earth and Environmental Science, SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (Center for Earth and Environmental Science, SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Disturbance plays a large role in shaping habitat characteristics. Specifically, stand-replacing wildfire can dramatically change overstory and understory composition and structure. These characteristics continue to change through time following a disturbance as forest succession proceeds. Small mammals may be particularly sensitive to these changes due to the spatial scales of their habitat. Small mammals also play an important role in ecosystem function, as they influence both higher (predator species) and lower (plant) trophic levels, as well as being important for zoochorous plant species, and soil properties. However, despite their importance, small mammals are often understudied due to difficulties in sampling. Traditional camera-trap studies do not capture small mammals due to camera placement and detectability. Here, we use cameras mounted inside 19-L (5-gal) buckets (hereinafter bucketcams) to study small-mammal abundance, diversity, and habitat use at a *Pinus banksiana* (Jack Pine) sandstone pavement barrens in Altona, NY. This pine barrens is a fire-dependent ecosystem, with multiple wildfires having occurred over the past century. We established camera stations in mid-October 2026 at 5 locations in the most recently burned area (2018) and 5 locations in the adjacent older forest (burned in 1957). This design allowed us to focus on small-mammal abundance and diversity at different successional stages—newly regenerated forest (8 years old) versus mature forest (69 years old). At each camera station we placed a baited bucketcam to record small-mammal occurrences. We also placed a camera on a nearby tree 0.5 m above the ground directed at the bucket to detect small mammals that do not fit into the bucket (*e. g., Sciurus carolinensis* [Eastern Gray Squirrel]) . *Peromyscus* sp. were abundant in both the recently burned and mature stands. *Blarina brevicauda* (Northern Short-tailed Shrew) were found more often in the recently burned stand. We also found low occurrences of *Sorex* sp (long-tailed shrew) and Eastern Gray Squirrel across both stands. Cameras will continue to collect images through winter and spring, and we will update data will accordingly. Understanding how small mammals differentially use, or avoid, these different successional stages is essential for long-term management of the ecosystem.

Sun- 24

The Impact of Calcium Carbonate on Aboveground Net Primary Productivity in Forests in the Adirondacks

Mary Thomas Powell (Colgate University, Hamilton, NY), Daytona Doherty (Colgate University, Hamilton, NY), Zach Lightfoot (Colgate University, Hamilton, NY), and Catherine Cardelús (Colgate University, Hamilton, NY)

Abstract - Anthropogenic acid deposition has had a significant impact on forests across the world. It leeches foliar nutrients, lowers soil pH, disrupts nutrient cycling, and decreases aboveground net primary productivity (ANPP). The Adirondack Park, in northeastern New York, has been subject to acid deposition due to its proximity to midwestern manufacturing hubs. Following the 1990 Clean Air Act, the amount of direct acid deposition decreased, but many of the indirect effects such as acidic soil or disrupted nutrient cycling continue to disrupt ecosystems. Previously, liming has been studied as a mitigation strategy. These studies found a positive short-term effect of adding calcium carbonate to forest ecosystems to restore soil pH, ANPP, and nutrient availability. This study seeks to understand the long-term effects of calcium carbonate addition to forests in the Adirondacks on ANPP and competition dynamics between 2009 and 2025. In conflict with many short-term studies, we found no significant effect on the overall, or species specific, ANPP gain over a 16-year period between limed and unlimed sites. Interestingly, while we found that growth in limed plots was limited by density-dependent factors, there was a decreasing-competition trend between trees in unlimed sites. These findings may be explained by the highly acidic parent material of the Adirondacks; the addition of calcium carbonate may have made the soils too basic. Alternatively, other variables like climate change, beech bark fungus, or over abundance of deer may limit tree growth more than soil pH and nutrient availability.

Sun- 33

Integrating eDNA and Hydroacoustic Data to Assess Temporal and Spatial Variability of *Alosa* Species in the Kennebec River

Isabella R. Probert (University of Southern Maine, Portland, ME), Brian Determan (USM, Portland, ME), and Karen Wilson (USM, Portland, ME)

Abstract - We used environmental DNA (eDNA) analysis to assess the presence of *Alosa aestivalis* (Blueback Herring) and *Alosa pseudoharengus* (Alewife)—collectively known as River Herring—in the Kennebec River from July through September. We collected samples at 6 sites between Phippsburg and Richmond, ME, including both surface and deep water. Using real-time qPCR, we quantified relative River Herring DNA concentrations in each sample. We then compared these results with hydroacoustic data provided by the Department of Marine Resources to evaluate how River Herring distribution patterns shifted across sites and months during the outmigration period.

Sat- 27

Continuous Monitoring of Water Quality in an Urban Lake Across the Winter to Spring Transition

Laura Reynolds (Worcester State University, Worcester, MA), Matthew Kaufman (Worcester State University, Worcester, MA), Rebekah Dorman (Worcester State University, Worcester, MA), and William Demers (Worcester State University, Worcester, MA)

Abstract - The transition from winter ice cover to spring is an important period for temperate lake ecosystems, but is infrequently monitored because of unsafe ice conditions. We deployed temperature and dissolved oxygen loggers at multiple depths in Patch Reservoir, a small urban lake in Worcester, MA, in the falls of 2025 and 2026 to continuously measure conditions during the winter, ice-off, and early spring periods. Our results demonstrate that sub-ice buoys are effective tools for determining precise ice-off timing; our upper-water sensors recorded an abrupt increase in dissolved oxygen (DO) during ice break up, followed by a more gradual increase in water temperature as the reservoir transitioned to open-water conditions. In contrast, the bottom water sensor indicated that the onset of hypoxia preceded ice-off and persisted throughout the spring and summer. This failure of the bottom waters to oxygenate during spring mixing may indicate incomplete turnover, high biological oxygen demand, or another process. While these datasets provide an unusual look into seasonal changes in water quality, biofouling has remained a significant technical challenge and likely degrades long-term data accuracy. This study shows the value of year-round monitoring for understanding the health of urban freshwater systems while highlighting the need for improved sensor maintenance strategies in productive reservoirs.

Sat- 23

Habitat Selection of Blanding's Turtles in Central Massachusetts

Jesus Rodriguez Riverol (Department of Environmental Conservation, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA), Shelby Truckenbrod (Organismic and Evolutionary Biology Program, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA), Graziella DiRenzo (US Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Environmental Conservation, University of Massachusetts, Amherst, MA), Allison Roy (US Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Environmental Conservation, University of Massachusetts, Amherst, MA), Brian Butler (Oxbow Associates, Boxborough, MA), Kyle Crafts (Department of War, Devens Reserve Forces Training Area, Devens, MA), Katherine Ineson (US Fish & Wildlife Service, Northeast Region Ecological Services, Hadley, MA), Michael Jones (Massachusetts Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program, Westborough, MA), Stephanie Koch (US Fish & Wildlife Service, Eastern Massachusetts National Wildlife Refuge Complex, Sudbury, MA), and Lisabeth Willey (US Fish & Wildlife Service, Northeast Region Fish and Aquatic Conservation, Hadley, MA)

Abstract - Turtles are among the most threatened vertebrates, with many species declining worldwide due to anthropogenic stressors. Because they depend on aquatic and terrestrial habitats, turtles can be particularly vulnerable to habitat alteration and degradation. Therefore, information on habitat use and selection is critical to inform conservation efforts. *Emydoidea blandingii* (Blanding's Turtle) is a freshwater turtle found throughout the upper Midwest, New England, and southern Canada. In New England, one of the largest populations of Blanding's Turtles is found in a large complex of protected lands in central Massachusetts. This area supports a diversity of freshwater habitats including emergent wetlands, vernal pools, and oxbow ponds. This project aims to quantify microhabitat selection of Blanding's Turtles across this complex of protected lands. During the 2025 field season, we radio-tagged 36 adult turtles (14 males and 22 females) with radio transmitters. Turtles were located approximately biweekly, and we collected a total of 221 turtle locations. At both turtle locations and a paired random available location, we collected environmental covariates (e.g., vegetation types, basking structure, water depth, water temperature, and canopy cover). We found that, on average, 88.5% of each turtle's locations were in water (11.5% on land) and most (95.4%) water locations were <1 m deep. We plan to compare Blanding's Turtle habitat selection of environmental covariates at turtle locations and random available locations using conditional logistic regression. The data collected may inform management of this population and others throughout the Northeast.

Sun- 14

What Fish and Other Animal Species Can We Identify in Local Rivers Using eDNA?

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Abstract- Environmental DNA (eDNA) is genetic material found all throughout the environment. This eDNA can be collected by a multitude of sampling methods. Genetics and Biology students at the University of Maine at Presque Isle (UMPI) collected and filtered 2-L water samples from nearby and regional streams and rivers and extracted eDNA. The purpose of this research was to find which fish were detectable in these streams and rivers using eDNA. We amplified the 12S rDNA gene region by PCR and identified species by BLAST. Of those fish expected in Maine, we found matches for many of the large game fish and a majority of the smaller non-game fish species such as minnows. We also detected other vertebrates including mammals, amphibians, and birds as by-catch, suggesting that eDNA can be used to take a snapshot in time of the vertebrate community recently passing through a stream or river on a particular date from a single water sample.

Sat- 28

The Influence of Decreased Day Length and Temperature on Fall Emergence and Foraging Patterns of Bats in New Hampshire

Ella Rogers (Franklin Pierce University, Rindge, NH), **Olivia Wood** (Franklin Pierce University, Rindge, NH), Jacques Pierre Veilleux (Franklin Pierce University, Rindge, NH), and Logan Stecker (Antioch University, Keene, NH)

Abstract - Bat species occurring in northern North America are insectivorous nocturnal predators that emerge from daytime roosts to forage for aerial insects at night. Emergence typically occurs near sunset, and standardized survey protocols in the US require mist-netting and other monitoring efforts to begin at sunset in order to minimize the likelihood of missing early emerging individuals. The timing of emergence is widely considered to reflect a trade-off between energetic gain and predation risk, as emerging under low-light conditions may reduce the probability of predator detection and attack. During summer, relatively warm nighttime temperatures support sustained insect activity, allowing bats to forage over extended periods. As fall approaches, declining nighttime temperatures reduce insect availability and shorten potential foraging bouts. Later in the season, temperatures at sunset may be sufficiently low that foraging opportunities are brief or absent altogether. At the same time, bats face strong energetic pressure to accumulate fat reserves necessary for successful hibernation. These seasonal constraints suggest that trade-offs in emergence timing may shift during autumn, with earlier emergence potentially increasing energy intake while also elevating predation risk due to higher visibility. Anecdotal observations indicate that some bats may emerge earlier relative to sunset during late fall, possibly reflecting an adaptive response to declining prey availability. For individuals requiring additional fat stores, the energetic benefits of earlier emergence may outweigh the costs associated with increased detectability. This study examined patterns of bat emergence timing and foraging activity during the fall season in a temperate forest system. We evaluated whether emergence time shifted earlier relative to sunset as fall progressed and nighttime temperatures declined. We predicted a seasonal advance in emergence timing corresponding with decreasing temperatures and reduced insect activity. Our surveys took place at the US Army Corps of Engineers Surry Mountain Lake (SML) facility located in southwest New Hampshire (Cheshire County, Surry Township). We deployed 8 acoustic detectors at the SML from 15 September through 30 November 2025. Detectors were operational nightly from 30 min prior to sunset until 30 min after sunrise. Acoustic data of bats emergence timing relative to sunset time and temperature are currently being analyzed.

Sun- 26

Effects of a Constructed Floating Wetland on Water Quality at Little's Lake

Isabelle Rowley (Siena University, Albany, NY) and Mary Beth Kolozvary (Department of Environmental Studies and Science, Siena University, Loudonville, NY)

Abstract -We designed, constructed, and deployed a floating treatment wetland at Little's Lake in Menands, NY, to evaluate its effectiveness in reducing nutrient concentrations and improving overall water quality in a small, human-impacted lake system. Little's Lake has experienced declining water quality in recent decades, including elevated nutrient loads and reduced water clarity. We installed the floating wetland in mid-summer 2025 and collected baseline data on water quality every 2 weeks throughout the growing season, including nitrogen, phosphorus, conductivity, and turbidity. We documented vegetative composition on the wetland platform and recorded relevant physical and environmental conditions. Over the course of the summer, vegetation on the floating wetland became established. At the end of the growing season, we removed the structure for overwintering and will redeploy it in subsequent years to support long-term monitoring. In 2026, we will add additional plants to the floating wetland to improve the ability to remove nutrients from water, and will be exploring the water quality of upstream tributaries to determine what additional actions could be taken. This project provides an applied-restoration approach that improves water quality while creating hands-on research opportunities for students and informing lake management strategies for small freshwater systems in the Northeast.

Sun- 5

Eight Years of Experimental *Typha* Removal to Restore a Lake Ontario Coastal Plain Fen, Oswego County, NY

Jennifer Rudy (SUNY Oswego, Oswego, NY), Faith Page (Fisher Associates, Rochester, NY), and C. Eric Hellquist (SUNY Oswego, Oswego, NY)

Abstract - *Typha* species (cattails) can alter habitat structure, nutrient cycling, and community composition of wetlands and littoral zones, especially by deposition of thatch that can impede plant growth and alter successional pathways. Since the early 2000s, colonization by *Typha angustifolia* (Narrowleaf Cattail), was noted as a concern in an Oswego County intermediate fen complex of conservation importance. Over the past 2 decades, Narrowleaf Cattails became increasingly abundant on the floating mat, with evidence that dead thatch was starting to accumulate. The density of cattail thatch favors additional cattail growth while suppressing overall species richness. In 2016, we initiated a manual cattail-removal program to maintain the habitat structure of the peatland. We employed an experimental, systematic seasonal removal program to establish best practices while also comprehensively removing cattails outside of our research plots. We clipped stems at the peat surface during 2016–2020 in the spring (n = 12 plots) and fall (n = 12 plots). We compared these plots to 12 uncut plots each year. Following a hiatus, we resumed our work in the same plots during 2023. Based on 8 years of experimental removal (through 2025), we found that cutting in the spring was most effective at reducing cattail growth and potential seed set. Stem counts and biomass decreased, especially when compared to uncut plots. Although it takes time to reduce cattail growth by decreasing rhizome carbohydrate reserves, repeated cutting eliminated thatch in our plots, thus eliminating the central driver of plant community turnover and alterations of habitat structure. Although labor intensive, manual removal has been an effective approach to manage cattails at our study site. We believe manual removal also can be effective at other sites where colonies are relatively small and unconsolidated.

Sat- 32

Reproductive Effort in a Disjunct Population of Green Alder

Anele Saige (University of North Carolina Asheville, Asheville, NC), Mitchel Watson (University of North Carolina Asheville, Asheville, NC), Anaya Harry (University of North Carolina Asheville, Asheville, NC), Irene Rossell (University of North Carolina Asheville, Asheville, NC), and Jennifer Ward (University of North Carolina Asheville, Asheville, NC)

Abstract - *Alnus crispa* (Green Alder) is a circumboreal shrub distributed throughout Canada and the northeastern US with disjunct populations in the central and southern Appalachians. In North Carolina and Tennessee, it is classified as a species of special concern that occurs within the globally rare Green Alder Bald community type at high elevations in Roan Highlands. Green Alder reproduces primarily through vegetative propagation, but plants also produce strobiles containing wind-dispersed seeds. Our objective was to better understand the overall reproductive effort of Green Alder at Roan Highlands, where Green Alder balds have been invaded by dense thickets of *Rubus* spp. (blackberries). We counted vegetative sprouts and estimated crown loss for Green Alder clumps in plots with high and low levels of blackberry cover during the summer. During the fall, we measured leaf chlorophyll content and counted the total number of seeds in strobiles. Linear regression showed the total number of seeds per strobile increased with increasing leaf chlorophyll content, suggesting seed production could be related to plant vigor. TTC tests of seeds showed overall high viability (87%), although seeds from a few strobiles were nearly all inviable. Alders in areas of high levels of blackberry cover had fewer vegetative sprouts and showed a trend of greater crown loss compared to plots with low levels of blackberry cover. Since crown loss may be related to plant vigor, continued competition from blackberries could suppress seed production as well as vegetative reproduction over the long term.

Sat- 39

Comparison Of Two Araneae Biodiversity Inventories Done at Different New Jersey Natural Lands Trust Preserves

Joseph Salmieri Jr. (Citizen Scientist, NJ) and Jason Hafstad, (Preserve Manager, New Jersey Natural Lands Trust, Trenton, NJ)

Abstract - We present survey results from a 6-day biodiversity inventory of spider fauna of the New Jersey Natural Lands Trust's Game Branch Preserve in Salem County and an 8-day biodiversity inventory of the NJNLT's Red Lion at Bear Swamp Preserve in Burlington County. A total of 141 observations yielded 57 taxa, of which 41 could be identified to species level from Game Branch Preserve. From Red Lion at Bear Swamp, we made 366 observations of 57 taxa, of which 35 could be identified to species level. Our survey methods included sweep netting, beat sheeting, leaf sifting, visual spotting, bark brushing, and pitfall traps. We identified several species as keystone species, with differences between the 2 preserves with some overlap, due to their abundance and consistency in the surveys: *Micrathena gracilis* (Spined Micrathena), *Micrathena mitrata* (White Micrathena), and *Leucauge venusta* (Orchard Orbweaver). We will highlight the differences and similarities between the 2 preserves. Each inventory returned multiple Salem and Burlington County records for taxa as well as New Jersey taxa. New Jersey lacks an official checklist of spiders, let alone sufficient data on distribution, rarity, or trends for the majority of species. Available online data suggests New Jersey has at least 348 native and 49 introduced spiders, with an additional 116 native species occurring in eastern North America with incomplete distribution data that could reasonably be found here in the state. Future planned inventories like these 2 surveys will continue to support our understanding of spider fauna in New Jersey.

Sun- 64

The Use of Classification Trees to Age American Black Bear (*Ursus americanus*) Cubs

Jamie Santini (East Stroudsburg University, East Stroudsburg, PA), Colleen Olfenbuttel (North Carolina Wildlife Resources Commission, Raleigh, NC), Marcella Kelly (Virginia Tech, Blacksburg, VA), and J. Bernardo Mesa Cruz (East Stroudsburg University, East Stroudsburg, PA)

Abstract - *Ursus americanus* (American Black Bear) cubs are born relatively underdeveloped compared to other mammalian species, with a birth mass of ~0.4 kg and rapid growth exceeding 9-fold by the time of den emergence. Wildlife managers frequently rely on fostering orphaned cubs into wild litters, as denning females readily accept additional cubs. However, fostering success is likely influenced by synchrony in developmental stage between biological and orphaned cubs. Currently, wildlife practitioners lack practical and accurate tools for estimating the age of cubs with unknown birth dates, limiting effective management and rehabilitation decisions. We aimed to develop a morphological age-classification model for Black Bear cubs to support management and conservation efforts. Cubs included in this analysis were born to temporarily captive female bears housed at Virginia Tech's Black Bear Research Center. We collected repeated morphological measurements from 80 cubs from birth through den emergence. We obtained measurements at 10-day intervals including body mass, chest girth, neck girth, total length, skull width, paw length and width, ear length, and skull-hair length. We used classification tree modeling to identify the most informative morphological predictors of cub age and to construct a practical field-applicable age estimation framework. The best model provides Black Bear managers with a tool for estimating cub age, improving decisions related to orphan fostering and understanding regional birthing phenology. This work represents the application of morphometric classification techniques for aging Black Bear cubs and offers a practical management tool that can enhance cub survival and inform Black Bear population-management strategies.

Sat- 58

Effect of Brodifacoum on Longevity of *Lucilia sericata* (Common Green Bottle Fly (Calliphoridae)

Hadleigh J. Sargent (University of New Haven, West Haven, CT), **Prushti S. Patel** (University of New Haven, West Haven, CT), Kalyna Karpishka (University of New Haven, West Haven, CT), Jacob Honigsfeld (University of New Haven, West Haven, CT), Jessica Spengler (University of New Haven, West Haven, CT), and Samantha J. Sawyer (University of New Haven, West Haven, CT)

Abstract - Anticoagulant rodenticides are widespread environmental toxins that persist in urban and peri-urban areas and can enter carrion-based food webs following rodent mortality. Necrophagous blow flies such as *Lucilia sericata* (Common Green Bottle Fly) play a critical role as detritivores and pollinators; however, the effects of rodenticide exposure on their development and survival remain unclear. This study investigated whether oral exposure to brodifacoum, a second-generation anticoagulant rodenticide, affects longevity in Common Green Bottle Flies. We removed soft tissues from 8 rat carcasses and homogenized them, divided the homogenate equally, and treated 1 portion with a rat-body size-adjusted toxic dose of brodifacoum. We returned equal portions to each of 4 carcasses per treatment and control group, which we then inoculated with 25 first-instar larvae. We recorded emergence success and monitored surviving adults daily to determine average life span per sex between exposed and unexposed flies. This presentation will discuss how oral exposure to brodifacoum influences Common Green Bottle Fly longevity and subsequent population dynamics in affected ecosystems.

Sat- 44

Modeling the Spread of European Strains of the Tapeworm *Echinococcus multilocularis* in New England

Noel Schlageter (Middlebury College, Middlebury, VT) and Alexis Mychajliw (Middlebury College, MIddlebury, VT)

Abstract - *Echinococcus multilocularis (Em*) is a circumboreal tapeworm that causes alveolar echinococcosis in humans, a potentially fatal disease. Following the global translocation of its key host, *Vulpes vulpes* (Red Fox), *Em*'s European lineage was introduced to North America and is currently expanding across New England. To predict the future expansion of *Em*'s European lineage in North America and the niche dynamics of its introduction, we built niche and distribution models for *Em* and its European lineage in both North America and Europe using climatic and landcover variables. Niche models showed that both *Em* and its European lineage significantly ($P < 0.05$) conserve their niches between continents. Distribution models predicted a 49% larger range for European *Em* in North America than was modeled based on North American *Em* occurrences, with suitable European *Em* habitat entirely engulfing New England. We conclude that *Em*'s niche is stable between continents, but that much of *Em*'s potential North American suitable habitat was historically unfilled, with the introduction of European *Em* facilitating expansion by bypassing historic barriers to *Em* dispersal.

Sun- 22

Is Death Other Lichens? Contact and Competition in a Corticolous Lichen Community

Mina Shenoy (Bowdoin College, Brunswick, ME), Patricia L. Jones (Bowdoin College, Brunswick, ME), and Liam U. Taylor (Bowdoin College, Brunswick, ME)

Abstract - Lichens coexist in dense communities on shared substrates. Although these organisms are slow-growing and stress-tolerant, some studies indicate competitive interactions between lichens of the same growth form (e.g., competition between 2 crustose lichen species). Here, we studied interactions between abundant fruticose lichens (*Usnea*) and foliose lichens (*Parmelia* and *Hypogymnia*) in epiphytic communities in a *Picea* (spruce) forest on Kent Island, NB, Canada. First, we measured the substrate coverage of lichen genera to describe underlying community composition. Second, we examined each *Usnea* thallus across 10 *Picea glauca* (White Spruce) branches, recording interspecific contacts and thallus characteristics. A binomial mixed-effects model revealed that contact with foliose lichens significantly increased the odds of *Usnea* mortality by 549%. Microscopy indicated tissue damage and photobiont absence associated with foliose contact. The strong correlation between interspecific contact and *Usnea* mortality suggests lichens dynamically interact even when they differ in growth form. Future work should investigate the mechanisms linking contact and mortality, considering resource competition, chemical defense, and physical damage.

Sat- 43

Turtle Power: Painted Turtle Population Estimates for SUNY Oneonta's Campus Pond

Saranna Shevalier (State University of New York, SUNY Oneonta, Oneonta, NY), Allyson Degrassi (Shenandoah University, Winchester, VA), Jennifer Purrenhage (University of New Hampshire, Durham, NH), David Steinberg (University of New Hampshire, Durham, NH), and Elizabeth Bastiaans (State University of New York, SUNY Oneonta, Oneonta, NY)

Abstract - Turtles are one of the most threatened vertebrate taxa, and most turtles struggle to persist in anthropogenically altered environments such as cities. Even for the few turtle species that can survive in urban environments, the effects of urbanization are unclear. TurtlePop 2.0 is a project organized through the Ecological Research as Education Network (EREN) that seeks to understand the effects of urbanization on the *Chrysemys picta* (Painted Turtle), a native turtle in Eastern North America that is common in environments with a range of anthropogenic impacts. Participants in TurtlePop 2.0 are undergraduate biology classes who select 1 urban pond and 1 rural pond near their campus and carry out mark–recapture surveys to assess population density, sex ratio, and size/age structure in each setting. We participate in TurtlePop 2.0 sampling at SUNY Oneonta, a public university with approximately ~5500 students in central New York. We sampled a small pond next to the student union for 3 years, from 2023 to 2025, and we present preliminary estimates of population size, sex ratio, and size structure.

Sun- 19

An Endangered Moth, and Its Egg Parasitoid: Natural History in a Peatland Ecosystem

Karen R. Sime (State University of New York at Oswego, Oswego NY)

Abstract - *Hemileuca maia menyanthevora* (Bog Buck Moth) is an endangered saturniid found in peatlands and known only from 10 sites around the Great Lakes. Populations have declined in recent years, and some have disappeared. The egg parasitoid *Anastatus furnissi* (Eupelmidae) may be an important mortality source. I report on a decade of study of parasitoid and host in New York, assessing *A. furnissi* impact and observing its life cycle and behavior in the field. Bog Buck Moth oviposition behavior is unusual: it lays eggs not on the larval food plant (*Menyanthes trifoliata* [Bogbean]) but on plants nearby. I recorded the plant species on which I found egg clusters, plus height, distance from Bogbean plants, cluster size, and attack rate of emerging parasitoids, and found that these parameters varied between sites. Parasitism averaged 10–20% across years and sites regardless of host density, suggesting that *A. furnissi* is a significant mortality source but not density dependent and unlikely the cause of extirpations. I found no consistent relationships between parasitism rates and plant species or egg-cluster height or size. Parasitized clusters were usually closer to Bogbean plants than were unparasitized eggs, suggesting that the plants are used to find hosts. Both parasitoid and host oviposit in fall and emerge in spring, but as the moth is univoltine, it is likely that *A. furnissi* uses other hosts in summer. These findings indicate that *A. furnissi* is an opportunistic parasitoid of saturniid eggs and able to utilize hosts in varied habitats.

Sat- 50

The Association Between Beech Bark Disease Infection Rates and Soil Fungal Community Structure

Izzy Simon (Bard College, Annandale-on-Hudson, NY) and Cathy Collins (Bard College, Annandale-on-Hudson, NY)

Abstract - *Fagus grandifolia* (American Beech) has suffered from Beech Bark Disease (BBD) since the mid-19th century. In the past 20 years, disease rates have significantly increased in North America. BBD results from the interaction of an insect *Cryptococcus fagisuga* (Beech Scale), and a fungus *Neonectria faginata* (BBD Fungi). Previous studies have demonstrated the negative effects of BBD on beech trees, and others have revealed net positive effects of soil fungi on tree health. However, whether the presence and/or severity of BBD is related to soil fungal community diversity or structure remains unclear. Furthermore, soil nutrients likely influence both BBD severity and soil fungal communities. We explored the relationship between disease severity, soil nutrient levels, and microbial fungi at Huyck Preserve, a temperate forest in the Hudson Valley. We assigned a level of infection (1-10) to 30 trees, sampling soils beneath for both nutrients and fungal composition. We tested the hypothesis that microbial community composition shifts with tree infection status and that nutrients mediate this interaction. Understanding the relationship between BBD in the context of abiotic and biotic soil.

Sun- 36

Into the Web: Assessing Differences in Spider Community Assemblages Within a Southern Boreal Peatland

Madelynne Solan (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 - 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 prey availability. This relationship 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 objective was to determine differences in spider community assemblage along the forested-to-open peatland gradient. 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, transects were established 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 abundance 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 active predation). We found 400 spiders individuals representing 26 different families across the study area. Ordination analysis showed very little difference between the forested and transition zones, while open-zone plots were much more tightly clustered. Indicator analysis at the family level designated Thomisidae as being significantly associated with open peatlands while Clubionidae was significantly associated with the transition zone. Lycosidae was significantly associated with both the forested and transition zones. Ongoing research will determine if hunting strategy is associated with habitat type. Understanding the distribution of spiders, and fine-scale habitat changes within the peatland can provide insight into ecosystem function and importance of spiders in these systems.

Sun- 65

Mussel Stranding in the Wheelwright Dam Impoundment

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Abstract - Freshwater mussels (*Unionidae*) are an important group of freshwater organisms that face multiple threats and widespread decline. While dams fragment streams that mussels inhabit, their removal can negatively impact mussels and their habitat. Dam removal can cause rapid declines in water level in the dam's impoundment (the area upstream of the dam with higher water level and lower flows than the free-flowing river), which can lead to widespread stranding events, whereby mussels are trapped in sediment as the water level declines. Spatial analysis of where stranding events occur within the impoundment during a dam removal could help to inform where mussels are most vulnerable to declining water levels. We surveyed stranded mussels at the Wheelwright Dam in Hardwick, MA, during a multi-phase drawdown and dam removal. At 30 sites (15 locations with paired left and right bank sites) along a ~5-r km impoundment, we counted mussels and collected physical information (e.g., bed texture, bank slope, vegetation). Using this information, we modeled the relationship between mussel stranding and physical characteristics of the landscape to determine which factors put freshwater mussels most at risk during a dam removal. We also deployed trail cameras to monitor an additional 3 sites for signs of mussel predation. These findings could be beneficial for managers to focus conservation efforts such as mussel relocations in areas with the highest risk of stranding events.

Sun- 3

Climate Disequilibrium in the Hemlock–Red Spruce Transition Zone in Western Massachusetts

Ellie Stanzel (Smith College, Northampton, MA), **Jack Elkner** (Smith College, Northampton, MA), and Jesse Bellemare (Smith College, Northampton, MA)

Abstract - The rapid pace of climate change over recent decades in the northeastern US likely exceeds the dispersal and establishment capacity of many long-lived forest tree species, potentially resulting in growing mismatch between the composition of communities established under cooler conditions in the past relative to current and near-future climatic conditions. Forest communities dominated by tree species that are no longer well-suited to current climate may experience reduced productivity and diminished carbon storage, and may be candidates for proactive forestry management to facilitate the transition to species composition better matched to warming climate. However, trends inferred from regional-scale climate models might fail to capture fine-scale stand dynamics and the buffering effects of microclimate on the ground, underscoring the need for site-specific research and mechanistic insight into tree growth responses over time. This study focuses on 2 foundational northeastern conifer species, *Picea rubens* (Red Spruce) and *Tsuga canadensis* (Eastern Hemlock), whose performance and dominance strongly shape forest structure and ecosystem function in western Massachusetts, where the former species often dominates stands at cooler, higher elevation sites and the latter typically dominates stands at warmer, low- to mid-elevation sites. We combine dendrochronological approaches, population-structure surveys, and species distribution modeling to evaluate climate sensitivity and growth responses of the 2 conifers in a series of study sites where they co-occur along an elevational gradient (427–640 m [1400–2100 ft] asl) spanning the historical transition from Eastern Hemlock- to Red Spruce-dominance. Specifically, we explored whether forest stands in this transition zone at the historical warm-margin limit of Red Spruce and cold-margin limit of Eastern Hemlock show evidence of mounting disequilibrium with climate. We used tree cores collected from stands along the elevational gradient to quantify annual growth rates by tree, stand, and species in relation to historical (1985–2026) climate data. In recent decades across all sites, Eastern Hemlock displayed higher growth rates and growth rate increases than Red Spruce as temperatures increased. This difference was most pronounced at lower- and mid-elevations, suggesting higher sensitivity of Red Spruce near its warm margin limit. To assess whether these individual-level growth trends are also reflected demographically at the population level, we will analyze stand-level population life-stage structure. Finally, we have integrated historic climate data with community science occurrence records to build geographical-scale species distribution models (SDMs) to characterize each species' realized climatic niche and project mid-century habitat suitability under future climate scenarios. By linking individual growth responses, population structure, and geographical-scale SDM forecasts, this research seeks to provide a mechanistic foundation for anticipating forest compositional change and informing adaptive management in climate-sensitive regions.

Sun- 29

Factors Influencing the Presence and Cover of Non-Cultivated Plants in Vermont Pastures

Alexander Steiner (University of Vermont, Burlington VT)

Abstract - Pastures comprise a large portion of Vermont's landscape, ~137,593 ha (~340,000 ac), with a large portion in perennial production. Despite being agricultural systems, many pastures in Vermont are managed minimally, which can allow for non-cultivated species to proliferate. Here we describe the non-cultivated herbaceous species found in 74 pastures across Vermont, and their relationship to grazing intensity, field margin cover type, and soil properties.

Sun- 42

Environmental DNA (eDNA) as a Tool for Rare Freshwater Mussel Detection and Restoration Planning

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Abstract - Freshwater mussels are one of the most imperiled faunal groups in North America, with over 70% of freshwater mussel species considered to be endangered, threatened, or of special concern. Many of these imperiled species are rare on the landscape, making widespread monitoring a challenge. Traditional survey methods, such as snorkeling, are time-intensive and spatially limited. To overcome these difficulties, environmental DNA (eDNA) surveys have become an extremely desirable tool for freshwater mussel conservation. eDNA surveys collect shed organismic genetic material from environmental samples, allowing scientists to non-invasively determine species presence and distribution. In this study, we evaluated eDNA as a method for detecting *Alasmidonta varicos*a (Brook Floater), a state-listed endangered freshwater mussel species in Massachusetts. Specifically, our objectives were to: (1) assess eDNA detection in a known population, and (2) determine the potential presence of Brook Floater at sites with unknown status. For objective 1, we collected water samples, habitat (e.g, wetted width), and water quality (e.g., pH, specific conductivity, dissolved oxygen) upstream, immediately downstream, and 100 m downstream of the known mussel population. In the lab, we filtered water samples, extracted DNA, and then amplified the DNA using qPCR. After verifying these methods, we sampled for Brook Floater eDNA at 15 sites where the species has not been recently recorded (objective 2) to guide future mussel surveys. Results will be used by managers throughout the Brook Floater's range (Georgia to Nova Scotia) to inform expanded use of eDNA for species surveys and restoration efforts to support species' conservation.

Sun- 2

Feeding Differences among *Metaphire hilgendorfi*, *Amynthas agrestis*, and *Amynthas tokioensis*

Joy Tang (Colgate University, Hamilton, NY), Timothy McCay (Colgate University, Hamilton, NY), and Meiko Kim (Colgate University, Hamilton, NY)

Abstract - *Metaphire hilgendorfi*, *Amynthas agrestis*, and *Amynthas tokioensis* are 3 species of jumping worms that have become an ecological concern due to their successful co-invasion of northeastern forests. However, niche theory states that species are only able to co-exist in the same space due to niche partitioning or division of resources. Previous work conducted by M. Kim analyzed the 13N and 15C isotopes of these jumping worms, hinting at their different feeding behaviors and niche partitioning. This experiment continued that work, and aimed to test if there were distinct feeding preferences between the 3 species of jumping worms through a cafeteria-trial experiment in which we placed jumping worms in microcosms with 4 species of leaves: *Acer saccharum* (Sugar Maple), *Fagus* grandifolia (American Beech), *Quercus rubra* (Northern Red Oak), and a mulch mixture. Though results were not significant, beech and mulch were consumed at the highest rates across all 3 species. There was very low consumption of oak leaves across all species. This is consistent with literature where oak leaves have low palatability to organisms due to high lignin and tannin concentrations. Comparisons between *M. hilgendorfi* and *A. amynthas* as well as between *M. hilgendorfi* and *A. tokioensis* were significant. These results suggest that *M. hilgendorfi* has a different feeding behavior than the other 2 species. These results could be useful in future research looking at the preference of these jumping worm species and determining how their dietary preferences could be facilitating their impressive invasion of forests.

Sat- 66

Environmental DNA Application to *Calidris canutus* (Red Knot)

Teye .K. Christiana (University of Maine, Orono, ME)

Abstract - *Calidris canutus* (Red Knot) is a migratory shorebird whose survival depends on access to high-quality prey at key stopover and wintering sites. Traditional diet assessment methods are often invasive or limited in taxonomic resolution. For this study, we evaluated environmental DNA (eDNA) as a non-invasive approach to characterize Red Knot diets using fecal samples, alongside sediment samples from foraging habitats. Metabarcoding of the eDNA samples revealed a diverse range of dietary taxa, including bivalves, crustaceans, polychaetes, and other invertebrates, consistent with the known foraging ecology. Sediment eDNA provided complementary information on prey availability, while fecal samples showed greater specificity for consumed taxa. The study results demonstrate dietary diversity in Red Knots and highlight eDNA as a sensitive and effective tool for assessing shorebird diets and informing the conservation of migratory species in coastal ecosystems.

Sat- 69

Nutrient Uptake by Aquatic Vegetation and Impact on Chloroplasts

Olivia Thaxton (University of Saint Joseph, West Hartford, CT), Joseph Venditto (University of Saint Joseph, West Hartford, CT), Tatianah Zeigler (University of Saint Joseph, West Hartford, CT), Amanda Frazier (University of Saint Joseph, West Hartford, CT), and Kirsten Martin (University of Saint Joseph, West Hartford, CT)

Abstract - In an over decade long study of water quality within the Scantic River Watershed (north-central Connecticut), it has been noticed that nutrient (nitrate and phosphorous) levels are typically lowest within 2 impoundment areas (Somersville Mill Pond (Somersville, CT), and Windsorville Mill Pond (East Windsor, CT). Nitrate and phosphorous levels are elevated at monitoring locations above and below these areas. Both mill ponds have extensive mats of both free-floating and attached aquatic vegetation. This project looked at the ability of 1 free-floating aquatic vegetation species, *Lemna* sp., to uptake and sequester various concentrations of nitrate and phosphorous. We placed *Lemna* sp. in conical tubes containing differing concentrations of nitrate or phosphorous and allowed the plants to remain in the solution for at least 1 week before removing processing, and analyzing them using a UV-VIS spectrophotometer. We also looked at the impact that these nutrient levels would have on chloroplast abundance.

Sat- 19

Reestablishing *Mya arenaria P*opulations with Seeding and Netting in the Great Salt Pond of Block Island, RI

Emma Thornton (Providence College, Providence, RI) and Roxanne Banker (Providence College, Providence, RI)

Abstract - *Mya arenaria* (Softshell Clam) are commonly found in waters off the northeast coast of the US and are also globally distributed. These clams account for about 8% of the commercial clam catch in the US, but in recent years, many locations have seen declines in clam landings due to climate change and predation by the invasive *Carcinus maenas* (Green Crab). In the Great Salt Pond (GSP) of Block Island, RI, the Softshell Clam harvesting season has been permanently closed due to their low numbers. To help regrow their population, we have employed a “seeding and netting” method as part of a multiyear monitoring program to survey clam populations and densities. We also placed recruitment boxes on the mudflats adjacent to the netted plots to assess clams' recruitment success within the GSP. Counts of clams from cores taken in the netted plots outplanted in 2023 and 2024 showed that the plots successfully protected clam numbers compared with counts from cores taken in 2025 outside the netted plots (Tukey HSD Test: P adj. = <0.001 and 0.02, respectively). The recruitment boxes showed less successful results. The clams from the sediment in the boxes were separated from the sand and identified as 2 species: Softshell Clams and *Gemma gemma* (Amethyst Gem Clam). We found 5 Softshell Clam individuals in the 5 total boxes. We think these counts result from placing the boxes out after the main spawning window for Softshell Clams, which occurs between 10 °C and 20 °C. Boxes were deployed on May 27^{th,} but according to temperature data collected from the GSP during 2025, the spawning window began a little over a month earlier, on April 18th. Thus, we likely missed most of the settlement of Softshell Clam recruits.

Sat- 4

The Relationship Between Land Cover and the Wild Bee Communities in Pollinator Plantings

Emma Tondre (University of Rhode Island, Kingston, RI), Casey Johnson (University of Rhode Island, Kingston, RI), Tracy Zarrillo (Connecticut Agricultural Experiment Station, New Haven, CT), Kelsey Fisher (Connecticut Agricultural Experiment Station, New Haven, CT), and Steven Alm (University of Rhode Island, Kingston, RI)

Abstract - Understanding the relationship between land cover and wild bee communities can improve habitat management strategies. In 2023 and 2024, we surveyed bees at 23 sites across Rhode Island and Connecticut. Using ArcGIS Pro 3.1.3 and Python, we examined the land-cover composition in the area surrounding site boundaries. We chose multiple buffer distances to reflect the potential range of foraging distances of different bee species from their nesting locations. We used generalized linear models to understand associations between bee populations and the surrounding landscape. Our objectives were to (1) determine if and how the observed bee species are associated with specific land-cover categories, (2) identify focal landscape characteristics to be used in further analyses in conjunction with our in-situ data, and ultimately, (3) use this contextual information to improve the establishment and management of planted pollinator meadows.

Sun- 62

Assessing the Effect of Host Behavior on the Relationship Between Environmental Temperature and Host Temperature using Eastern Newts and *Bd*

Samantha (Sam) Troast (University of Vermont, Burlington, VT) and Brittany Mosher (University of Vermont, Burlington, VT)

Abstract - For ectothermic species whose behavior dictates much of their life history traits, thermal decisions also influence their ability to combat disease. Individuals' environmental histories affect their vulnerability to infection and can provide insight into variation in infection within species. To assess the average relationship between environmental temperatures and host temperatures, and its resulting influence on *Batrachochytrium dendrobatidis* (*Bd*) load, we will use *Notophthalmus viridescens* (Eastern Newt) to conduct isolated temperature experiments in conjunction with studying movement in the field to better understand the behavioral aspect of the host–pathogen–disease relationship. We aim to answer: (1) How does newt temperature influence in-host pathogen growth? and (2) How does newt behavior affect the relationship between environmental temperature and amphibian temperature? We will hold newts in 2 types of enclosures: ones designed to experience narrow temperature ranges (warm and cool) and others that are designed to allow behavioral choice in temperature. Studying this temperature-sensitive relationship may provide clarity on how certain amphibians species are better able to combat infection by this fungal pathogen. This information can also be used to inform what kinds of environmental manipulation may better serve amphibians infected with *Bd*.

Sun- 11

Demography and Spatial Ecology of a Blanding's Turtle Population in Central Massachusetts

Shelby Truckenbrod (Organismic and Evolutionary Biology Program, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA), Jesus Rodriguez Riverol (Department of Environmental Conservation, Massachusetts Cooperative Fish and Wildlife Research Unit, University of Massachusetts, Amherst, MA), Graziella DiRenzo (US Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Environmental Conservation, University of Massachusetts, Amherst, MA), Allison Roy (US Geological Survey, Massachusetts Cooperative Fish and Wildlife Research Unit, Department of Environmental Conservation, University of Massachusetts, Amherst, MA), Brian Butler (Oxbow Associates, Boxborough, MA), Kyle Crafts (Department of War, Devens Reserve Forces Training Area, Devens, MA), Katherine Ineson (US Fish & Wildlife Service, Northeast Region Ecological Services, Hadley, MA), Michael Jones (Massachusetts Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program, Westborough, MA), Stephanie Koch (US Fish & Wildlife Service, Eastern Massachusetts National Wildlife Refuge Complex, Sudbury, MA), and Lisabeth Willey (US Fish & Wildlife Service, Northeast Region Fish and Aquatic Conservation, Hadley, MA)

Abstract - *Emydoidea blandingii* (Blanding's Turtle) is a semi-aquatic, at-risk freshwater turtle proposed for federal listing. In the northeastern portion of its range (midwestern and northeastern US and southeastern Canada), populations of Blanding's Turtles are often small and isolated; however, a stronghold population remains within a complex of 3 adjacent, protected lands in central Massachusetts. These sites have historically been monitored and managed separately. Additionally, the level of connectivity among the sites in terms of individual movement has not been formally assessed. Thus, this project aims (1) to assess the population size, density, and demographic structure of Blanding's Turtles within the collective 3-site area (total of 785 ha of wetlands) and (2) to characterize Blanding's Turtle movement and spatial patterns. From April to August 2025, we conducted 10 mark–recapture trapping surveys (2008 trap nights) across sites and radio and GPS-tracked 36 adult turtles approximately bi-weekly. In total, we captured 379 turtles via trap and opportunistic hand captures and collected 2657 locations for tracked turtles. We observed a sex ratio (female:male) for trap captured adults of 2.33:1. Twenty-six percent of our trap captures were juveniles (adult:juvenile ratio of 2.85:1), suggesting that this population has had robust recruitment in recent decades. Capture–recapture data from traps revealed no site-crossover events, whereby an individual moved from one of the 3 sites to another, but telemetry showed at least 10 crossover events (8 by females, 2 by males), highlighting the contiguity of wetlands among the sites. We plan to quantify these spatial patterns using a spatially-explicit capture–recapture closed population model. Ultimately, our findings will inform future management of this focal population and regional conservation efforts.

Sun- 15

Effects of Season and Stream Characteristics on Algal Populations

Konoka Uematsu (Dickinson College, Carlisle, PA) and Carol Loeffler (Dickinson College, Carlisle, PA)

Abstract - Freshwater streams are dynamic environments with characteristics that are susceptible to change due to seasonal events or human activity. Freshwater algae within these environments are responsive to changes, particularly toward changes in the water chemistry, making them bioindicators for stream health. Big Spring, a freshwater stream that runs through Cumberland County, PA, in proximity to human agricultural activity and households, has been previously observed to have spontaneous filamentous green algal blooms in the springtime. The purpose of this project is to observe the relationship between macroalgal health and changes in stream characteristics, as well as to inform reliable methods to achieve this. We identified and observed freshwater macroalgae at several sites in Big Spring over time, then compared these findings to changes in stream characteristics such as water chemistry, temperature, dissolved oxygen, volumetric flow rate, and substrate type. Water-chemistry analyses included nitrate and orthophosphate concentrations, pH, turbidity, and conductivity. We then compared findings from Big Spring to similar analyses and observations made in the LeTort, which runs through the town of Carlisle in Cumberland County, to further understand how stream characteristics affect algae in a different system. As our data collections and analyses continue, we will determine the role of human activity and season in relation to algae health. We will further use the data to create a random-forest prediction model to test the reliability of the data in predicting algae health. This study will further our understanding of anthropogenic activity on stream and algae health and inspire development and refinement of methods, ultimately contributing to establishing freshwater macroalgae as visual indicators of stream health.

Sat- 20

Factors Affecting the Prevalence of Symbiotic Green Algae in Amphibian Egg Masses in Vernal Pools

Liliana Vazquez (Dickinson College, Carlisle, PA) and Carol Loeffler (Dickinson College, Carlisle, PA)

Abstract - Symbiosis between *Ambystoma maculatum* (Spotted Salamander) and green algae has been noted for over 100 years. The effects of this symbiosis have been more recently studied with strong evidence showing that oxygen from the algae located in the embryos reduces the salamander mortality rate, helps them hatch simultaneously, helps the larvae to be fuller developed when hatching, and more. Conversely, Nitrogen from the plants also has an effect on the algae, accelerating its growth. We wanted to find out if there were certain factors about vernal pools that made this symbiosis more likely to occur. We also wanted to see if this symbiosis would occur in other amphibian species such as *Ambystoma opacum* (Marbled Salamander) and *Lithobates sylvaticus* (Wood Frog). In fall of 2025, we explored local areas surrounding Carlisle, PA, and located a total of 25 vernal pools. We took soil/mud samples from each pond to test them for green algae. We specifically looked for *Chlamydomonas* ssp. and found that all except 1 site had it. Thus, in the spring, all of these sites (except 1) could have this symbiosis if embryos are present. In spring 2026, we will investigate these vernal ponds for evidence of this symbiosis. Results will be presented.

Sat- 17

Water Under the Bridge: Nutrient Monitoring of the Scantic River (Northeastern CT)

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

Abstract - The Scantic River Watershed includes ~36,500 ha (~90,000 ac) in north-central Connecticut and south-central Massachusetts. The 61-km (38-mi)-long river joins the Connecticut River in South Windsor, CT. The Scantic River Watershed provides a wildlife corridor, and the water is utilized for both recreation and agricultural uses. Since 2010, water quality has been monitored by the K. Martin (USJ/ Scantic River Watershed Association). In addition to monthly year-round monitoring of physical parameters (turbidity, conductivity, pH, temperature, nitrate and phosphate), selected locations are also monitored weekly during the summer for *Escherichia coli* levels. In the summer of 2025, we collected samples weekly from selected locations and analyzed them for both *E. coli* and nutrients (nitrate and phosphate). To conduct these tests, we used HACH TNT phosphate and nitrate reagents and a spectrophotometer. We analyzed turbidity, conductivity, total dissolved solids, and dissolved oxygen using Vernier ISE probes. We analyzed *E. coli* levels using the IDEXX Quanti-Tray 2000 method. The information provided by these 3 tests helped us get an understanding of water quality and the potential impacts on human health. We uploaded *E. coli* data collected to a website maintained by the Connecticut River Conservancy, where locations were marked whether they were safe for recreational use, boating only, or not safe for either.

Sat- 21

Quantification of Stripe Coverage in Eastern Red-Backed Salamander (*Plethodon Cinereus*)

Ellie Vogl (SUNY Oneonta, Oneonta, NY) and Elizabeth Bastiaans (SUNY Oneonta, Oneonta, NY)

Abstract - Many animals exhibit discrete variation in color, or polymorphism, within the same population, but genetic or environmental factors may lead to continuous variation within morphs. *Plethodon cinereus* (Eastern Red-Backed Salamanders) have a well-documented polymorphism in which some individuals have a red stripe on their dorsal surface, whereas others are unstriped. We seek to quantify dorsal-stripe morphology in the striped morph of the Eastern Red-Backed Salamander to better understand its phenotypic variation and the role of environmental conditions in shaping morphology. Eastern Red-Backed Salamanders are important indicator species in upland forest ecosystems, and the prevalence of striped vs. unstriped salamanders may reflect variation in temperature and moisture. However, the degree of variation within the striped morph, particularly the stripe width, proportional dorsal coverage, and how these traits change over time, is under-examined. This poster presents our preliminary findings from a capture–mark–recapture project with the goal of quantifying stripe coloration to determine if it remains consistent over time in marked individuals and assess how it relates to intrinsic and extrinsic factors including sex, body size, and ambient temperatures at the time of capture. Tracking stripe coloration across seasons and environmental conditions may give insight into how ambient temperature, body size, sex, and other variable influence salamander morphology. Additionally, this indicates how environmental changes may affect salamander populations currently and in the future.

Sat- 10

SPARCnet RaMP: Impacts from the First Year of a Postbaccalaureate and Mentor-Training Program in Ecology

Alexa Warwick (Michigan State University, East Lansing, MI), Carli Dinsmore (Pennsylvania State University, State College, PA), M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA), Tanya J.H. Matlaga (Susquehanna University, Selinsgrove, PA), David A.W. Miller (Pennsylvania State University, State College, PA), Bethany Ozolins (Bridgewater State University, Bridgewater, MA), and Sean C. Sterrett (Monmouth University, West Long Branch, NJ)

Abstract - Access to high-quality research opportunities can be limited for undergraduate students for a variety of reasons including lack of mentors and funding, in addition to previous restrictions due to the COVID-19 pandemic. To supplement these opportunities, the National Science Foundation initiated the Research and Mentoring Postbaccalaureates (RaMP) program. We leveraged a long-term, geographically distributed salamander research network (Salamander Population and Adaptation Research Collaboration Network; SPARCnet) to develop a RaMP program focused on building trainees' research and professional development skills over a 1-year period. During the program, each trainee is paired with a mentor and conducts an independent, tailored research project, in addition to a project with their RaMP cohort peers using existing SPARCnet capture–mark–recapture data. In parallel to the trainee program, we also developed a mentor-training program to enhance mentor skills, such as fostering independence, assessing understanding, and communication. To date, we have completed all 3 years of mentor training and are half-way through our second cohort of trainees. This presentation will provide preliminary evidence of impacts to both mentors and postbaccalaureates in SPARCnet RaMP, with a focus on the completed cohort 1.

Sat- 71

From Stress to Success: Factors Shaping Milkweed Health in Controlled Environments

Maggie Widberg (Bridgewater State University, Bridgewater, MA), Roxane Leon (Bridgewater State University, Bridgewater, MA), Heather Marella (Bridgewater State University, Bridgewater, MA), and M. Caitlin Fisher-Reid (Bridgewater State University, Bridgewater, MA)

Abstract - *Asclepias syriaca* (Common Milkweed) is a keystone native plant that plays a critical role in supporting pollinators and herbivores. In particular, milkweed supports *Danaus Plexippus* (Monarch Butterfly) at all life stages. Monarch Butterfly populations have declined in recent decades due to habitat loss. Restoration of Common Milkweed populations is therefore an important focus of ecological research, and an understanding of how environmental and biological factors influence Common Milkweed growth can inform effective restoration strategies. We have observed multiple morphological differences in milkweed seedlings grown in a greenhouse setting versus seedlings growing in wild populations. The most striking of these differences, thinner stems and thinner leaves in the greenhouse seedlings may impact the success of restoration efforts. We hypothesized that exposure of seedlings to wind in wild populations drives development of thicker stems and performed an experiment to test this with greenhouse seedlings. We grew Common Milkweed plants from seed under controlled greenhouse conditions to examine the effects of simulated wind on plant health. To test the impact of wind, we grew seedlings for 8 weeks under 1 of 2 treatments: the wind treatment plants experienced gentle wind from fans set to a 30-min on/30-min off cycle, while the control plants did not experience any wind. Contrary to our hypothesis, Common Milkweed plants exposed to simulated wind were less robust in multiple morphological traits than those grown without wind exposure. These results suggest that simulated wind stress under greenhouse conditions may negatively affect Common Milkweed growth, though the underlying mechanisms remain unclear. These findings emphasize that physical factors should be carefully considered in milkweed restoration and conservation efforts.

Sat- 40

Geographic Variation in Gape Ratio Among Populations of *Fundulus heteroclitus*

Sabrina H. Wise (College of the Atlantic, Island Research Center, Bar Harbor and Great Duck Island, ME)

Abstract - *Fundulus heteroclitus* (Mummichog) is one of the most common fish on the northern Atlantic coast and inhabits environments spanning broad gradients of salinity, temperature, dissolved oxygen, and water velocity. Thus, the species provides an interesting case study on how drastically different environments may influence geographically isolated populations. Great Duck Island (GDI) Mount Desert Island, ME, is an 89-ha island located ~15 km south of Mount Desert Island with a wetland that spans the island's center, home to a relatively isolated population of Mummichog. Mummichogs also inhabit Northeast Creek: a tidal estuary that flows into Mount Desert Narrows near Bar Harbor, ME. This estuary is very connected to the Gulf of Maine and to upriver parts of the stream. Morphometric analysis revealed that all measured traits—such as various fin, head, body, and eye morphometrics—scaled with body length, except for gape width in Northeast Creek fish. As GDI fish increased in size, both gape length and width increased proportionally, whereas in Northeast Creek fish, gape width remained relatively constant. This pattern indicates population-level variation in mouth morphology, potentially shaped by environmental and ecological conditions.

Sat- 26

Relatedness and Microhabitat Choice in the Red-Backed Salamander

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Abstract - Genetic relatedness is known to influence social behavior and territorial choice in many animal species. However, social behavior is understudied in amphibians due to their cryptic lifestyle. This project examines the relationship between genetic relatedness and microhabitat choice in *Plethodon cinereus* (Red-backed Salamander), a highly abundant terrestrial amphibian in northeastern forests. We created a DNA library from tissue samples of individually identifiable salamanders on pre-existing coverboard plots and quantitatively derived relatedness through SNP-based computation. We used historical capture records to generate "cohabitation indices" for pairs of individually identified salamanders. We examined cohabitation likelihood in relation to relatedness, as well as other factors such as sex and comparative size.

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