

2022 Northeast Natural History Conference Poster Abstracts

Listed in alphabetical order by first-listed author/presenter. 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).

The Importance of the Floral Scent of Herbivore-damaged *Asclepias syriaca* (Common Milkweed) Flowers

Simon Abbott (Department of Biology, Elms College, Chicopee, MA), Luis Aguirre (Department of Biology, University of Massachusetts, Amherst, MA), Lynn Adler (Department of Biology, University of Massachusetts, Amherst, MA), and Nina Theis (Department of Biology, Elms College, Chicopee, MA)

Abstract - *Asclepias syriaca* (Common Milkweed), a host plant for *Danaus plexippus* (Monarch Butterfly) and an important nectar source for other pollinators, has an important influence on plant and pollinator communities. Traits such as floral volatiles advertise this critical nectar source, and the level of these volatiles is an indicator of the attractiveness of individual plants to pollinators. However, herbivory can influence these traits, with cascading effects on pollinator communities. We hypothesized that leaf herbivory on Common Milkweed would alter volatile emissions. Floral scent could be dampened due to damage, or increased due to induced defenses systemically increasing floral volatile production. Following simulated herbivory, we measured fragrance emissions (plant volatiles) in order to understand how large an effect herbivory had on fragrance-compound emissions and subsequent pollinator attraction and reproductive success. Our results will help to further our understanding of the effects of herbivory on fragrance emissions. Changes in emissions may be an overlooked, but critical component of community function and cause changes to inter-species interactions and plant reproduction and pollinator health.

Sat- 16

Tough Crowd: Post-disturbance Regeneration Dynamics in a Jack Pine Barrens in Northern New York

Devan Bushey (SUNY Plattsburgh, Plattsburgh, NY), Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY), Harleigh Green (SUNY Plattsburgh, Plattsburgh, NY), and Mikayla Osmer (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Species adapted to specific disturbance regimes may be sensitive to changes such as severity and return-interval time. Along range edges, these sensitivities may be exacerbated by concurrent changes in climate resulting in low resilience and shifts to alternative ecosystem states. *Pinus banksiana* (Jack Pine) is a serotinous species dependent on fire disturbance to open cones, release seed, reduce understory competition, and expose mineral soil. The Altona Flat Rock in northern New York is a globally rare sandstone pine barrens, at the southern edge of Jack Pines range. In summer of 2018, a wildfire burned ~200 ha of the Flat Rock, providing the opportunity to study post-disturbance recovery and long-term regeneration trends of Jack Pine. Beginning in spring 2019, we collected data on seedling density and understory composition annually at 39 plots spanning the burned area, and twice in 2021 when seedling heights were also collected. Initial seedling densities following the disturbance averaged 275,000/ha. Variation in seedling density across the site was significantly associated with fire severity and pre-fire stand density. Additional germination occurred during the 2019 growing season resulting in seedling densities increasing to 390,000/ha in 2020. Seedling density remained at this level in spring 2021, suggesting that the post-disturbance seed bank was now depleted. Over the course of the 2021 growing season, average density fell to 315,000/ha—a substantial decline but still orders of magnitude greater than pre-fire stand density (2000 trees/ha). In fall 2021, seedling height averaged 17 cm (SD = 5.9 cm). As seedlings continue to grow, space will become more limiting; however, it is unclear at exactly what stage this may become a determining factor. Continued study of this system will allow us to determine timing and causes (e.g., intraspecific versus interspecific competition in conjunction with climate change) of mortality as the forest grows and matures. At this point, it does not appear that the interaction of disturbance and changing climate has shifted enough to prevent the recovery of this ecosystem to its pre-disturbance Jack Pine-dominated state. However, ongoing climate change may still have an impact on seedlings/saplings as this forest continues to mature.

Sat- 23

Oh Deer, What Do We Have Here? Monitoring Stand- and Landscape-level Changes in Wildlife Habitat Use in Northern New York

Hannah Cave (SUNY Plattsburgh, Plattsburgh, NY), **Liam Rascoe** (SUNY Plattsburgh, Plattsburgh, NY), Danielle Garneau (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Forest composition and structure is a primary determinant of wildlife community patterns. However, disturbances such as selective harvesting, wildfires, and maple-sugaring operations, along with seasonal changes in habitat, may also influence wildlife species richness and abundance at the landscape-level. The Altona Flat Rock, a sandstone pavement barrens, contains *Pinus rigida* (Pitch Pine)- and *Pinus banksiana* (Jack Pine)-dominated forest types nested within the largely northern hardwood-dominated landscape of upstate New York. Sections of these forest types have undergone recent disturbance (i.e., wildfire in the Jack Pine, maple sugaring and harvest in the northern hardwoods), changing structure and/or composition in those areas. The objective of this study was to evaluate wildlife habitat use over time and space across these adjacent, but very different, forests. Since spring 2018, we have used game cameras to continuously monitor wildlife in the hardwood-dominated forests surrounding the Flat Rock ($n = 12$). Concurrently, we have also been monitoring wildlife use in the Pitch Pine ($n = 4$) and Jack Pine barrens ($n = 8$). The most ubiquitous herbivore across all 3 sites was *Odocoileus virginianus* (White-tailed Deer), while *Canis latrans* (Eastern Coyote) and *Lepus americanus* (Snowshoe Hare) were most abundant in the Jack Pine forest type. Interestingly, *Sciurus carolinensis* (Gray Squirrel) and *Sciurus vulgaris* (Red Squirrel) were found almost exclusively in either the hardwood or Jack Pine forests, respectively, suggesting differences in dietary needs/preferences. Species richness varied dramatically across forest types, with northern hardwood, Jack Pine, and Pitch Pine richness values of 20, 31, and 2, respectively. Disturbance in the Jack Pine stand initially decreased richness, however, over the duration of the study there was little difference between the disturbed (26 species) and undisturbed (22 species) Jack Pine stands. We have observed slightly lower species richness in the mature hardwood forest (13 species) versus the young hardwood forest (19 species). Further analysis will determine temporal (seasonal and diel) wildlife diversity patterns. This study will provide wildlife and forest managers insights into the influence of forest type, and impacts of disturbance and management practices, on wildlife habitat.

Sat- 25

Can Drought Frequency be Tracked by Stable Carbon Isotopes in *Sphagnum* Soluble Sugars?

Julia Charest (Union College, Schenectady, NY), Anouk Verheyden (Union College, Schenectady, NY), and Steven K. Rice (Union College, Schenectady, NY)

Abstract - As the climate changes due to human activity, precipitation patterns are shifting and leading to increasing severity of droughts in some areas. In order to understand if intraseasonal weather patterns are being altered, the periodicity of droughts needs to be measured. This study explored the use of stable carbon isotopes (^{13}C) in soluble sugars from *Sphagnum* moss to record bioavailable water over a timescale of weeks. We exposed 2 different species, *S. magellanicum* and *S. fallax*, to wet and dry conditions over 3 months in a growth room. We then measured the stable isotope composition ($\delta^{13}\text{C}$) of bulk tissue and soluble sugars. In bulk tissue, the $\delta^{13}\text{C}$ of both species increased over time, with greater increases in plants from the wet treatments indicating higher concentrations of ^{13}C . In the wet treatment, neither species showed stable $\delta^{13}\text{C}$ values after 3 months indicating a longer response time. Also, the 2 species differed in the magnitude of $\delta^{13}\text{C}$ but had the same response to wet treatment and to time. The $\delta^{13}\text{C}$ in the soluble sugars is expected follow similar patterns with respect to species and wet treatments. However, the $\delta^{13}\text{C}$ in soluble sugars is expected to change and stabilize much more rapidly than that of the bulk tissue, providing a signal that reflects changing water conditions over 2–3 week increments, rather than over the 3 months observed in bulk tissue. The $\delta^{13}\text{C}$ of *Sphagnum* bulk tissue, which is stored in peat deposits, allows for reconstructions of past climates and records long-term climate change. Less is known about ways to record the intraseasonal shifts in weather patterns caused by climate change. The $\delta^{13}\text{C}$ of *Sphagnum* soluble sugars may allow for efficient and accurate measurement of these shifts.

Sat- 11

The Effects of Weather Correlates on Bird–Window Collisions in New York City

Katherine Chen (Columbia University, New York, NY), Sara Kross (Columbia University, New York, NY), Benjamin Van Doren (Cornell University, Ithaca, NY), Chad Seewagen (Great Hollow Nature Preserve and Ecological Research Center, New Fairfield, CT), and Kaitlyn Parkins (New York City Audubon, New York, NY)

Abstract - Human alteration of natural landscapes has created novel risks to wildlife. For avifauna, collisions with manmade structures are a major concern with bird–window strikes accounting for 365–988 million bird fatalities every year in the United States. Several studies have addressed contributing factors including surrounding greenery, artificial lighting at night, the amount of glass on a building, and the seasonal time of year. However, few studies have looked at how weather conditions influence bird–window collisions in urban centers. We modeled numbers of collisions occurring in New York City (NYC) to assess which weather variables may be potentially important for predicting bird–window collision and how these variables affect collision rates. We used 5 years of collision surveys conducted at 27 buildings in NYC, as well as concurrent weather and migration data. Preliminary results suggest that migration magnitude and wind and visibility conditions are the most important factors in predicting fatal bird collisions.

Sat- 3

Direct Measurement of the Contribution of Bats to Pest Control on an Organic Farm

Kate Cleary (SUNY Potsdam, Potsdam, NY)

Abstract - Agriculture is an economic and cultural mainstay of northern New York (NNY), but many farmers use industrial farming approaches that are damaging to bat populations and not economically sustainable in the long term. The purpose of this ongoing study is to quantify contributions of bats to pest control in organic sweet corn, a common commercial crop in NNY. In our 2021 pilot season, we set up 6 paired plots in the cornfield of an organic farm; over 3 plots we placed a netting structure to exclude bats but not the most widespread lepidopteran pests of sweet corn in our region (*Striacosta albicosta* [Western Bean Cutworm], *Helicoverpa zea* [Corn Earworm], and *Spodoptera frugiperda* [Fall Armyworm]). From July to September, we measured presence and activity levels of bats and moths using an Anabat Swift acoustic monitor and pheromone moth traps, and assessed corn damage in all plots each week. We hypothesized that there would be higher levels of damage to corn inside the plots where bats were excluded, and that bat activity would spike when moth abundance was highest. Preliminary results provide some support for our hypotheses, showing higher levels of damage to corn in the bat-excluded plots than in the control plots, but the difference is not significant. Acoustic monitoring data shows bat activity peaking when Western Bean Cutworm abundance peaks. We are now seeking feedback to improve the study for the 2022 field season. Our long-term aim is to provide information about the benefits of protecting bats in NNY, and encourage the inclusion of bat-conservation measures in agricultural management plans.

Sun- 7

2021 Progress Report on Comparison of Management Techniques in Powerline Rights-of-Way

Morgan A. Condon (SUNY Delhi, Delhi, NY) and Jack T. Tessier (SUNY Delhi, Delhi, NY)

Abstract - Powerline rights-of-way (ROW) management is necessary in order to have a safe and reliable power supply. This study highlights the effectiveness of different management techniques on promoting species diversity and richness while still protecting the ROW. This study addressed the efficacy of 3 management strategies relative to species richness, presence of invasive species, and hazard trees. The 3 treatments included integrated vegetation management with herbicide (IVM), IVM with basal oil only, and hand-trim treatments. In the summer of 2021, we sampled 3 transects for a total of 300 sample points per span in each of 3 replicates per treatment and compared the data to those collected prior to the application of treatments (2018). There were no significant differences among the treatments in any of the measurements we conducted relative to the pre-treatment conditions. There was also a high degree of variability within each treatment. All treatment sites will continue to be monitored through 2027. Current results suggest that all 3 management techniques will effectively protect the powerline while also supporting biodiversity.

Sun- 2

Microplastics in the Intertidal Zone of Rye Beach

Paola Cruz (SUNY Purchase, Purchase, NY) and **George Kraemer** (SUNY Purchase, Purchase, NY)

Abstract - Plastic pollution is a prominent global issue due to its increasing abundance and potential effects on the environment and human health. Plastic makes up about 10 percent of waste (can vary by country) and is estimated to make up 80 percent or more of solid waste that is found on land, ocean surface and seabed, and shorelines. Microplastics are synthetic polymer-based particles between 1 μm and 5 mm. They may be produced at or broken down to that size. Plastics decomposition is estimated at hundreds to thousands of years. Through the food web, microplastics can bioaccumulate and eventual human consumption may deliver adsorbed additives and contaminants. Intertidal zones of beaches are at risk for accumulating microplastics due to the impact of human. The goal of this study was to quantify microplastics across the intertidal zone. We collected sand samples during December 2021 from the intertidal zone of Rye Beach in New York at low, mid-, and high elevations. We used density separation using a concentrated sea salt solution to separate microplastics from the higher-density sediments. The separated microplastics in the solution were then filtered, rinsed twice with 35% H_2O_2 , and dried. We analyzed the dried samples under a digital microscope to quantify the microplastics they contained. The data, in conjunction with other studies of microplastic abundance, can help identify how and where to focus efforts in plastic management on a larger scale.

Sun- 26

Flock Size and Habitat Use by Overwintering *Junco hyemalis* (Dark-eyed Junco) on a Suburban College Campus

Lilly deLemos (MCLA, North Adams, MA) and **Daniel Shustack** (MCLA, North Adams, MA)

Abstract - During the breeding season, *Junco hyemalis* (Dark-eyed Junco) are territorial and occur individually or with a mate and dependent offspring. However, similar to other songbirds, they often join flocks from fall through early spring. In particular, they spend much of their time on the overwintering grounds in single-species flocks. We were interested in describing flock size and winter habitat use by Juncos in a suburban context on our college campus. We hypothesized that flock location and size could be affected by locations of bird feeders. During the winter of 2021–2022, we marked 1 flock member with a radio transmitter. Then, twice per day during daylight hours, we used radio tracking to locate and observe Junco flocks in and near our college campus in western Massachusetts. When we located the tagged bird, we observed it and the flock for 5 minutes, noting the number of Juncos in association or proximity to the radio-tagged Junco. We then marked a map with the radio-tagged Junco's location and any nearby bird feeders. We also noted the flock size and activity and movements of the flock. We also have ~15 banded birds for which we record resights when spotted with or without the rest of their flock. We found that the Junco flocks use a variety of locations within a relatively small area, but the Juncos seem to have preferred locations where they were relocated repeatedly. In this presentation, we will present preliminary findings on Junco habitat use and flock size in a suburban habitat.

Sun- 24

Solitary Bees of Northeast Barrens Habitats

Amanda Dillon (Albany Pine Bush Preserve Commission, Albany, NY), **Elizabeth Crisfield, PhD**, (The Strategic Stewardship Initiative, Boalsburg, PA), **Rick Van de Poll, PhD**, (Ecological Management Consultants of New England, Center Sandwich, NH), and the Northeast Fish and Wildlife Diversity Technical Committee

Abstract - In 2018, the Northeast Association of Fish and Wildlife Agencies, through the Northeast Fish and Wildlife Diversity Technical Committee and the Regional Conservation Needs Grant Program, initiated a 5-year project with the objective of improving habitat management of barrens in the northeastern US. The northeastern states funded the "Xeric Habitat for Pollinators" project due to the known concentration of Regional Species of Greatest Conservation Need at barrens sites, including rare solitary ground-nesting bees associated with sandy soils. To characterize the bee community as completely as possible and maximize data consistency across sites, we set 120-m transects of bee bowls in 5 visits from May to October. Survey effort varied across the sites, and many specimens still require identification. However, to date, 255 unique species have been identified region-wide (of roughly 700 species that occur in the Northeast). With the assistance of Sam Droege (USGS) and Clare Maffei (USFWS), we have classified species by rarity, nesting traits, and barrens associations. Here we present preliminary results showing how the bee community varies at sites across the region and which rare or barrens-obligate bees have been found.

Sun- 5

Nocturnal Moths of Northeast Barrens Habitats

Amanda Dillon (Albany Pine Bush Preserve Commission Albany, NY), Elizabeth Crisfield (The Strategic Stewardship Initiative, Boalsburg, PA), Rick Van de Poll (Ecological Management Consultants of New England, Center Sandwich, NH), and the Northeast Fish and Wildlife Diversity Technical Committee

Abstract - In 2018, the Northeast Association of Fish and Wildlife Agencies, through the Northeast Fish and Wildlife Diversity Technical Committee and the Regional Conservation Needs Grant Program, initiated a 5-year project with the objective of improving habitat management of barrens in the northeastern US. The states funded the “Xeric Habitat for Pollinators” project due to the known concentration of Regional Species of Greatest Conservation Need at barrens sites, including rare lepidoptera. While a number of sites actively survey populations of butterflies such as the endangered *Lycaeides melissa samuelis* (Karner Blue) and *Callophrys irus irus* (Frosted Elfin), the nocturnal moth communities have been surveyed less often and at fewer project study sites. To address this data gap, 4 contractors visited 20 sites on 5 dates in 2021 to place 3 UV light traps overnight. The resulting dataset provides insight into nocturnal moth community diversity and abundance at barrens sites throughout the Northeast. The dataset contains nearly 1000 unique species (out of ~2400 occurring in the Northeast) and 25 species with a rare or declining status in northeastern states.

Sat- 20

Carry, Skip, Kill: The Role of Plant Characteristics and Landscape Context in Beaver–Tree Interactions

Sage E. Ganshirt (Skidmore College, Saratoga Springs, NY) and Joshua H Ness (Skidmore College, Saratoga Springs, NY)

Abstract - *Caster canadensis* (North American Beaver) are large herbivorous rodents that affect the structure of forest and aquatic environments through the damming of water sources and harvesting of trees. The extent of Beavers’ landscape disturbance, either through hydrological changes or predation, is likely influenced by varying abiotic and biotic factors in the surrounding environment. Here, we explore how the nature of Beavers’ effects on riparian tree communities are influenced by among-tree variation in (1) elevation above the water line, (2) proximity to Beaver-created structure (dam or lodge), (3) distance from water’s edge, and (4) intrinsic foraging value. Our study site was an active Beaver-dammed pond embedded in mixed deciduous forest in Saratoga County, NY. We sampled 8 plots around the pond, measuring all trees >3 cm DBH within 16 m of the pond, and diagnosing each tree as either harvested, ignored, or not attacked but nonetheless drowned (carry, skip and kill; $n = 61, 131, \text{ and } 133$, respectively). Based on trunk diameter, inferred foraging values (i.e., the ratio of nutritious biomass to time required to topple tree) for the 325 trees ranged from 0.0001 to 27 g leaf biomass per minute trunk cutting time (per Belovsky 1984). Based on logistic regressions analysis, the likelihoods of a tree being diagnosed as standing-dead-and-drowned quickly decreased with elevation (i.e., was high on shallow ground and decreased as the tree’s base was higher above water line). Trees located close to the water’s edge (<11 m) were likely to die due to drowning. Likelihoods that a tree would be harvested rather than ignored generally increased with the foraging value assigned to the tree, although this relationship was sensitive to proximity to Beaver-built structures (the inferred destinations for the harvested materials). Among-plant differences in cost-benefit ratios were less predictive when dams or lodges were nearby but became increasingly predictive when a tree was far from these structures. In our focal system, the indirect hydrological impacts of Beaver dams on tree communities seemed more consequential than their more direct effects as tree harvesters, and the relative importance of these can be predicted based on local topography.

Sat- 27

Winter Ecology of Black-capped Chickadees and White-breasted Nuthatches in the Mount Washington Valley, New Hampshire

Katelynn Gierlinger (Tin Mountain Conservation Center, Albany, NH), Katherine Lewis (Tin Mountain Conservation Center, Albany, NH), and Rick Van de Poll (Tin Mountain Conservation Center, Albany, NH)

Abstract - Annual survival rates and demographic structure of year-round-resident passerine species are important factors used in conservation planning. Songbirds such as *Poecile atricapillus* (Black-capped Chickadee) and *Sitta carolinensis* (White-breasted Nuthatch) with ranges that extend across a variety of ecosystems are particularly valuable to study since their yearly cycles are influenced by a variety of habitats. Investigating these species beyond the breeding season allows us to better understand the role of overwintering sites relative to year-round survivorship and success. Such studies inform conservation management strategies for these areas. Beginning in 2015, we tested winter survival, age structure, and winter site fidelity of Black-capped Chickadees and White-breasted Nuthatches within a mixed coniferous-northern hardwood forest at a site in Carroll County, NH. We compiled capture histories from 7 years of color-banding and tag-resight data. We performed banding and recapture using potter traps during the months of December, January, and February. We also banded nestlings from nest boxes in the summer months. We resighted color-banded birds weekly, from November through April, at feeders or during point counts and trail walking. The main objectives of this study were to (1) determine winter survival rates of local Black-capped Chickadee and White-breasted Nuthatch populations, and (2) analyze the age structure within these groups and how they change across years. Understanding how survival rates and age structures vary within local populations may reveal how different regional communities will be affected by a changing climate. The degree that annual cycles of year-round residents are being influenced can help in prioritizing conservation efforts when considering a wide-ranging species.

Sat- 2

Effect of Invasive Dreissenids on Macroinvertebrate and Hydrophyte Communities of Otsego Lake

Julie Gifford (Purchase College (SUNY), Purchase, NY), Dr. Willard Harman (SUNY Oneonta, Biological Field Station, Cooperstown, NY), and Ryan Taylor (Purchase College (SUNY), Purchase, NY)

Abstract - This study investigated the effect the invasion of *Dreissena polymorpha* (Zebra Mussel) and *Dreissena rostriformis bugensis* (Quagga Mussel) is having on both the macroinvertebrate and macrophyte components of the benthic community in Otsego Lake. We attempted to replicate both macroinvertebrate and macrophyte studies previously collected on the lake pre-invasion to add to a growing long-term data set. During the summer of 2021, we collected 30 benthic macroinvertebrate samples using an Elkman dredge that we compared to samples collected in 1963 and 1993, and 65 macrophyte samples in littoral depths that we compared to 7 studies performed between 1935 and 2012. Our results show that following the dreissenid invasion there has been an increased relative biomass of mollusk species in deeper water substrates, a decline in total species richness of macrophytes lake wide, and frequency and distribution changes for certain species. Zebra Mussels and Quagga Mussels are having a definite impact on the lake's benthic community in dimensions predicted by the literature. Further study is needed to aid water resource managers and help them effectively to mitigate the ecologically detrimental spread of Zebra Mussels and Quagga Mussels.

Sun- 30

Nest Site Fidelity in Leach's Storm-Petrels on Great Duck Island, Maine

Eleanor J. Gnam (College of the Atlantic Island Research Center, Bar Harbor, ME)

Abstract - *Hydrobates leucorhous* (Leach's Storm-Petrel) is a species of small, pelagic seabird in the tubenose order. Great Duck Island, located 17 km (12 mi) south of Mt Desert Island, Hancock County, ME, is the largest known colony of Leach's Storm-Petrel in the continental United States, with an estimated 20,000 pairs nesting in and around the island's *Picea* (spruce) forest. Leach's Storm-Petrels nest in shallow burrows that they dig in loose soil or under natural or artificial surface objects, including buildings, boulders, and fallen logs. I examined a population of Leach's Storm-Petrels banded primarily in 2020, banded the mates of those previously banded individuals that were recaptured, and mapped additional marked burrows in which I banded both members of the 2021 breeding pair. Burrows are costly to excavate, often persist through multiple years, and it seems likely that birds will reuse a burrow that has been successful in the past. I recaptured 22 adult Leach's Storm-Petrels and banded an additional 75 adults, creating 47 marked burrows with banded pairs and 3 burrows with a singleton banded bird. All 22 recaptures from the 2020 season were found in the same burrow in which they were originally banded, suggesting a high level of site fidelity. The creation of this marked population enables future recapture efforts and will continue to provide insights into site fidelity and nesting ecology.

Sat- 6

A Comparison of Leaf Decomposition of *Carya ovata* and *Quercus alba* in the Glenwood Cemetery Creek (Geneva, NY)

Sarah Gray (Hobart and William Smith Colleges, Geneva, NY)

Abstract - The decomposition of leaves in streams is an essential resource for detritus-based food webs, which strongly influence species interactions and ecosystem function. Variation in leaf-litter quality and stream conditions can influence the decomposition and the release of leaf-bound nutrients. *Carya ovata* (Shagbark Hickory) and *Quercus alba* (White Oak), which differ in their foliar nutrient and phytochemical composition, are the dominate woody-plant species surrounding a creek that transects the campus of Hobart and William Smith College (Geneva, NY). In this study, I studied leaf-litter decomposition and net changes in elemental concentration of Shagbark Hickory and White Oak at 4 locations from the creek's headwaters to its outflow in Seneca Lake. I submerged mesh bags with a single species' leaves or equal weight of both species' leaves at field sites from January to March 2022. Stream and leaf conditions were assessed before, during, and after their stream incubation to test the following hypotheses: (1) White Oak leaves decompose faster than Shagbark Hickory leaves, and the decomposition rates when both species are incubated together are not additive of the single-species rates; (2) White Oak leaves and Shagbark Hickory leaves differ in their percent decline in carbon and nitrogen, and the percent change when both species are incubated together are not additive of single-species percentages; (3) both species have higher decomposition rates and greater percent nutrient release at the 2 pool sites along Glenwood Cemetery Creek compared to the headwater (Odell's Pond) and outflow (Seneca Lake) sites. These results provide information about terrestrial-to-lake flow of nutrients and detritus-based habitat for microorganism and macroinvertebrates, which help in the campus's development of a management plan for the campus forest (Coopers' Woods).

Sat- 9

An Evaluation of Blood Heat-shock Proteins as Biomarkers of Stress in Common Loons

Ericka L. Griggs (Western Connecticut State University, Danbury, CT), **Michelle Y. Monette** (Western Connecticut State University, Danbury, CT), **Lucas Savoy** (Biodiversity Research Institute, Portland, ME), **Christopher P. Persico** (Biodiversity Research Institute, Portland, ME), **Nina Schoch** (Adirondack Center for Loon Conservation, Ray Brook, NY), and **David C. Evers** (Biodiversity Research Institute, Portland, ME)

Abstract - Heat-shock proteins (HSPs) are chaperone proteins that are detectable in wild avian red blood cells (RBCs). Among HSPs, HSP70 can be used as a biomarker of cellular stress, which is of particular interest in wild species, as HSP70 levels do not appear to fluctuate as rapidly as hormone levels during capture events. In recent years, *Gavia immer* (Common Loon) has experienced a southward expansion from their northeastern range, into areas that could present a variety of environmental pressures and anthropogenic stresses to loons. Previous research has been done to evaluate biomarkers to specific physical and chemical stressors; however, little is known about cellular stress in these birds. In this study, we tested the hypotheses that HSP70 is detectable in Common Loon RBCs, is correlated with other blood biomarkers of stress previously identified in this species, and is correlated to circulating heavy metal concentrations. During June to September 2021, we captured and sampled a total of 79 adult and hatch-year Common Loons from breeding populations in New York, Massachusetts, and Maine. Through Western Immunoblotting, we determined that HSP70 is present in the blood cells of Common Loons, and that expression levels vary between individuals. However, HSP70 abundance was not correlated to sex, age, and sampling location. The abundance of HSP70 was correlated with hematocrit and total cellular protein, but not with heterophil/lymphocyte ratios. We also found that heavy metals including lead, cadmium, and mercury were detectable in the whole blood samples of Common Loons, but that there was no correlation between metal concentrations in blood and HSP70 abundance. Together, our results show that HSP70 is present in the red blood cells of Common Loons, and that its abundance may be correlated with other blood parameters. This study is the first to describe a method to measure HSP70 in the blood cells of Common Loons, which has the potential to aid in evaluating how stress may affect physical condition in loons from other regions or other wild waterbird species.

Sun- 22

Microplastic Ingestion in Northern Diamondback Terrapins within the Taunton River

Abstract - The threat of global plastic pollution has become a large issue in today's society. Plastics that accumulate in the world's ocean are broken down into smaller fragments due to weathering. Fragments <5 mm but >1 μ m in diameter are known as microplastics. The consumption of these microplastics has repeatedly been documented across many marine taxa, including several species of sea turtle. However, no data has been collected on the consumption of microplastics by *Malaclemys terrapin* (Northern Diamondback Terrapin). Northern Diamondback Terrapins are a species of brackish turtle, mainly living in estuary communities. During the Summer of 2021, I collected fecal samples from 13 individuals, varying in sex and size, from a wild population of Northern Diamondback Terrapins in the Taunton River estuary. Fecal samples were dyed with Nile Red and then poured through a 150-micron sieve. I analyzed the contents of the sieve using fluorescence microscopy. Control samples were also run on the tap water in which the fecal samples were collected to establish a background rate of microplastic occurrence (6.15 microplastics/250 mL, $s = 2.1$). I compared the control samples' microplastic concentration to the feces sample to determine if the feces samples concentration was greater. The feces samples produced a mean microplastic concentration of 38.8

Sun- 27

The Many-Layered Flat Rock: A Geospatial Database for the Altona Flat Rock

Zachary Hart (SUNY Plattsburgh, Plattsburgh, NY), **Mark Lesser** (SUNY Plattsburgh, Plattsburgh, NY), **Eileen Allen** (SUNY Plattsburgh, Plattsburgh, NY), and **David Franzi** (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Located in Clinton County, NY, the Altona Flat Rock is a globally rare pine barrens ecosystem, with a New York Natural Heritage designation of S1G2. The Flat Rock is ~2000 ha of *Pinus Banksiana* (Jack Pine)-dominated sandstone barrens, with an understory dominated by *Vaccinium angustifolium* (Lowbush Blueberry), and *Gaylussacia baccata* (Huckleberry), nested within a matrix of northern hardwood forest. Further differentiating the Flat Rock from the surrounding landscape is that Jack Pine is fire dependent—making fire management of the area a priority. Finally, the Flat Rock serves as a local community recreation destination (e.g., blueberry pickers and snowmobilers). Due to its unique ecology and disturbance regime, and its socio-cultural importance, having comprehensive data for both research and management of the ecosystem is paramount. To that end, we are compiling spatial data into a GIS database that encompasses all available aspects of the Flat Rock, including data from the NYS GIS Clearinghouse including soils, roads, and landcover; forest cover and land-use data from the W.H. Miner Institute (a major property owner of the Flat Rock); property ownership data from Clinton County Planning Department; and past student research projects have been compiled. Additionally, we have also obtained historical maps on the fire history and forest management from the Miner Institute and have digitized and spatially referenced them with the other data sources. We have used ESRI's ArcGis10.8 to manage and visualize these data. This database will be an invaluable resource for both future research and management of the Flat Rock. For instance, ongoing ecological research at the Flat Rock is investigating forest regeneration following the most recent wildfire at the site (2018). An important part of this study is understanding how factors such as topography, management history, and forest type and density (all spatial variables) interact with disturbance to generate the observed regeneration patterns. Further, fire-management planning depends on detailed knowledge of spatial factors such as access routes, forest types, water sources, and topography, along with coordination of surrounding property owners. A geospatial database of the Flat Rock is a steppingstone for further research regarding the ecosystem.

Sat- 22

Two Lobes Diverged by a Stream Channel: One Peatland's Story of Succession

Laura K. Hatmaker (University of Vermont, Burlington, VT)

Abstract - Balch Head Heath is a Coastal Plateau Bog Ecosystem located just off the coast in Trescott Township in Washington County, ME. These ecosystems are unique to Maine within the United States and ranked as vulnerable (S3) with the potential to become imperiled. The area is relatively undisturbed and has a long-standing historic survey record, first surveyed in the 1950s by H. Osvald, then by Worley in the 1980s and by Davis in the 1990s. Balch Head Heath is made up of 2 open plateau lobes, one draining laterally and the other radially, separated by a centralized drainage channel. I developed and employed surveys to evaluate potential nutrient and hydrologic regime changes and conducted botanical surveys at long-term monitoring plots. Additionally, I conducted data analysis of climatological and LiDAR data to ascertain tree canopy progression and climatic effects. While the northeastern lobe remains much as it likely was in the 1980s, the southwestern side is undergoing reforestation at a more rapid rate. The effects of climate change, previous anthropogenic disturbance, and distinct hydrologic regimes have created differences between the 2 lobes of the peatland. Because of these 2 distinct lobes, Balch Head Heath offers a chance to observe 2 different pathways of peatland progression side by side.

Sun- 1

Age and Growth of the Yellow Lampmussel (*Lampsilis cariosa*)

Brian T. Hefferon (SUNY Oneonta, Oneonta, NY), Paul H. Lord (SUNY Oneonta, Oneonta, NY), and Andrew Gascho Landis (SUNY Cobleskill, Cobleskill, NY)

Abstract - *Lampsilis cariosa* (Yellow Lampmussel) is a freshwater pearly mussel native to Atlantic slope drainages from New Brunswick to South Carolina. It is listed as “vulnerable” by IUCN and is a New York State “species of greatest conservation need”. In comparison to other members of the genus *Lampsilis*, the Yellow Lampmussel has not been well studied. Major components of its life history remain poorly defined. An analysis of age and growth will shed light on some basic life-history traits. We are assessing the age and growth of the Yellow Lampmussel in 2 distinct Atlantic slope drainages. With shells collected and aged from the Upper Susquehanna River and Schoharie Creek, we hope to better understand energy investments in growth versus other functions as a fundamental life-history characteristic. We also hope to provide a better picture of their expected life span and how land use can affect their growth. By utilizing 2 distinct watersheds, we will be able to assess similarities or differences between the 2 populations and evaluate how applicable the results will be for other Yellow Lampmussel populations. This research will help to inform local regulation and inform managers how to best protect this species.

Sun- 29

Assessing Soils in Central New York for Resistant Ectomycorrhizal Fungal Propagules Compatible with the American Chestnut Tree

Nina Baldwin (SUNY ESF, Syracuse, NY), **Molly Heit** (SUNY ESF, Syracuse, NY), Tom Horton (SUNY ESF, Syracuse, NY), and Bill Powell (SUNY ESF, Syracuse, NY)

Abstract - *Castanea dentata* (American Chestnut) trees grew in the Syracuse area prior to the arrival of chestnut blight fungus. A major restoration effort is underway at SUNY-ESF which has yielded blight-tolerant chestnuts. Further, we have shown that ectomycorrhizal fungi compatible with American Chestnut remain available in forest soils in the area, likely because many of these species are also part of the mycorrhizal fungus community associated with *Quercus rubra* (Northern Red Oak) and *Fagus grandifolia* (American Beech), which continue to populate Central New York. In this growth chamber study, we investigated whether some of these fungi produce a resistant spore bank that can serve as mycorrhizal inoculum in future chestnut-restoration efforts. We grew pure American Chestnut in soils collected from 4 forest sites near Syracuse, NY. In late May and early June 2021, before mycorrhizal networks become active for the year, we collected 3 soil samples from 5 random locations in each forest stand for a total of 60 soil samples, then pooled them by site into 5 sources of inoculum. To reduce the effect of viable hyphae and select for resistant propagules (spores and sclerotia), soils were dried and stored at room temperature for 3 weeks prior to planting. We then planted American Chestnut seeds in a 1:1:1 ratio of soil inoculum:perlite:sand, including 4 additional controls planted in sterilized soil to detect contaminating inoculum. Seedlings were grown at room temperature with 12 hours of artificial light per day. We harvested seedlings after 9 months and washed the roots for viewing under a dissecting microscope to determine percent colonization by mycorrhizal fungi. Mycorrhizal root tips were morphologically typed (morphotyped) to assess species richness and diversity. Of the 30 non-control seedlings harvested to date, all had formed mycorrhizal associations. One morphotype was also observed on control seedlings. Control seedlings had less root growth and were markedly smaller than seedlings grown in non-sterilized soils. We will extract DNA from each morphotype and use the sequence of the fungal barcode (nrITS region) to identify fungal species. We have shown that using field soils is an efficient and effective way to inoculate seedlings with locally adapted mycorrhizal fungi.

Sun- 15

Microplastics and *Aspergillus fumigatus* in *Gavia immer* (Common Loon) Collected and Sampled in New England

Thomas P. Hilling (Western Connecticut State University, Danbury, CT), Hannah Reynolds (Western Connecticut State University, Danbury, CT), and Mark Pokras (Cummings School of Veterinary Medicine, Tufts University, Grafton, MA)

Abstract - This presentation presents an analysis of environmental threats to *Gavia immer* (Common Loon) in New England, with a focus on microplastics (gastrointestinal tract [GIT], anthropogenic threat) and *Aspergillus fumigatus* (respiratory system, natural threat). Our preliminary set consists of 20 carcasses collected across New England in 2021 and 2022 that were sampled for microplastics in the GIT and *A. fumigatus* in the respiratory system (air sacs, lungs, trachea). We hypothesize that both environmental threats will be widespread in *G. immer*. Furthermore, as *A. fumigatus* is known to be associated with immune stress, and microplastics may act as a source of physiological stress, we hypothesize that cases of severe aspergillosis will be associated with high microplastic quantities.

Sun- 25

From Munchkins to Monsters: A Study on Fledging Success in Herring Gulls

Wriley Hodge (College of the Atlantic, Bar Harbor, ME), **Rosie Chater** (College of the Atlantic, Bar Harbor, ME), and Georgia Lattig (College of the Atlantic, Bar Harbor, ME)

Abstract - *Larus smithsonianus* (Herring Gull) is a colonial nesting waterbird that is experiencing declines across its range, especially in the Western North Atlantic. This study focused on fledging success in a large colony (783 nests) of Herring Gulls on Great Duck Island, ME, located ~10 km (6 mi) south of Mount Desert Island in the Gulf of Maine. This study evaluated relationships between clutch size, hatch date, and sequence of egg-laying in relation to fledging success. We conducted daily checks on 32 nests that were strategically selected to minimize colony disturbance. Nest checks included daily morphometrics of eggs and chicks and assessed the growth of the fledglings. In our selection of nests, mean clutch size was 2.6 eggs and mean fledging success was 1.3 chicks. On average, nests with 3 eggs fledged 1.4 chicks, while nests with 2 eggs fledged 1.3 chicks. Nests with a single egg fledged 0 chicks. Continued monitoring of nest success in this colony is important in understanding population dynamics of Herring Gulls within the Gulf of Maine.

Sat- 5

Nest Success and Daily Survival Rates Across the Breeding Seasons in Gray Catbirds

Bethany Hollenbush (Penn State Schuylkill, Schuylkill Haven, PA) and Lucas Redmond (Penn State Schuylkill, Schuylkill Haven, PA)

Abstract - We studied nest success in *Dumetella carolinensis* (Gray Catbird) during the breeding seasons of 2016 to 2021 in southeastern Pennsylvania. Catbirds begin arriving at our study site, located on and around Penn State Schuylkill Campus, early to mid-May and initiate nesting by late May through early June. Starting in mid-May, daily we conducted surveys of the study site to locate as many breeding pairs and nests as possible. Once found, we checked nests every 3–4 days until they were successful or failed. We used program MARK to estimate daily survival rates and the variation in nest success across multiple breeding seasons. Our MARK analysis indicated that daily survival rates of catbird nests varied yearly (2017/2019 > 2016/2018). In all years, daily survival rates were highest in May and then declined through June and July, with a slight increase in August. This decline in daily survival rates was more pronounced in June and July of 2016 and 2018 than in 2017 and 2019. Across the period of this study, 2016 to 2019, approximately 47% of catbird nests were successful. We plan to use the breeding seasons of 2020 and 2021 to investigate the variation in nest success further and determine if there are any distinguishable patterns in the breeding biology of Gray Catbirds.

Sun- 20

Creation and Restoration of Blanding's Turtle Nest Habitat in Northern New York

Glenn Johnson (SUNY Potsdam, Potsdam, NY), Angelena Ross (NYS Department of Environmental Conservation), Michael Ingraldi (SUNY Potsdam, Potsdam, NY), Nora Clark (SUNY Potsdam, Potsdam, NY), and Jase Briggs (SUNY Potsdam, Potsdam, NY)

Abstract - Nesting activity and nest success of the state-threatened *Emydoidea blandingii* (Blanding's Turtle) and other freshwater turtle species in northern New York have been negatively impacted by habitat loss due to intensive row-crop agriculture, natural succession, and fragmentation between nesting and wetland habitats due to roads. We created or enhanced 3 large (0.5 to 0.7 ha) potential turtle nesting areas in the Towns of Lisbon and Louisville in northern St. Lawrence County of New York between October 2020 and March 2021 by clearing existing vegetation and depositing and grading 12 inches of screened sand over the site. We installed solar-powered electric fences designed to exclude nest predators while allowing turtles to freely enter the sites. We measured soil temperatures at random and nest locations over the nesting season (mid-May through late October). In addition, we installed time-lapse cameras to capture nest-predator breaches and turtle use. Nesting activity was monitored daily between 1800 and 0100 hours at each site from mid-May through 10 July. We also established 3 reference sites at historical Blanding's turtle nesting sites to compare nest success, nest predation, and soil temperature. Mean daily soil temperatures at both random and nest locations were not significantly different between created and reference sites. Just 1 year post construction/restoration, we observed Blanding's turtles nesting in 2 sites ($n = 5$), with 24 turtles emerging as compared to 9 nests and 90 turtles emerging from reference sites. We plan to construct 1 more site and monitor use of all 4 sites (constructed/enhanced and reference) during the 2022 nesting season.

Sun- 31

Antipredator Behaviors Following an Attack With and Without Tail Autotomy in the Red-backed Salamander

Richard Jones (SUNY Oneonta, Oneonta, NY) and Elizabeth Bastiaans (SUNY Oneonta, Oneonta, NY)

Abstract - Prey animals must balance the need to find food and reproduce with the need to avoid being eaten by predators to maximize their fitness. *Plethodon cinereus* (Red-backed Salamander) uses a variety of behavioral and morphological mechanisms to avoid and survive predator encounters. One such mechanism is the ability to lose its tail (autotomy) during an attack and eventually regrow it. Though effective, this ability can may also negatively affect the salamanders if they alter behaviors following the attack in ways that could reduce feeding, locomotion, or reproduction. Previous studies have explored altered behavior following tail autonomy but have not differentiated between an attack with and without tail loss. In this study, we investigated how various behaviors may be affected by predation attempts both with and without tail autotomy. We performed behavioral assays to study escape distance, exploratory movements, cover use, and eating habits on individuals assigned to either a control, attacked with autotomy, or attacked without autotomy group. We predicted that salamanders that have experienced tail autotomy would show a reduction in exploratory movements and an increase in escape distance, cover use, and feeding.

Sat- 30

Empire State Native Pollinator Survey: Saproxylic Hover Flies within Rare Old Growth Forest Habitats of New York State

Gloria Keal (SUNY Cobleskill, Cobleskill NY) and Carmen Greenwood Ph. D. (Department of Fisheries, Wildlife, and Environmental Sciences SUNY Cobleskill, Cobleskill, NY)

Abstract - Begun in 2017, The Empire state native pollinator survey project's goal is to provide a bioassay of 100 targeted Syrphidae (syrphid flies) species. Syrphids provide various ecosystem services included but not limited to pollination and pest management. Due to syrphids being predominantly saproxylic, we gathered data for this project in old-growth forests throughout New York State. Each site held 1 collection trap that we managed weekly. The collected specimens were sorted, pinned, and identified down to species. Our results revealed the abundance and diversity of species at each site and ecoregion. From 2017 to 2020, we had a total of 17 genera and 50 species of targeted taxa identified. Data collection can be utilized further to understand species diversity, abundance, and future studies.

Sun- 6

DNA Barcoding *Planorbella* (Ramshorn Snails) From Science Education Supply Companies

Shakhrizoda L. Khazratkulova (Utica University, Utica, NY), **Gladys J. Leitch** (Utica University, Utica, NY), **Katherine Hawley** (Utica University, Utica, NY), and Jessica H. Shinn-Thomas (Utica University, Utica, NY)

Abstract - Researchers at Utica University use *Planorbella* (ramshorn snails) from Ward's Science and Carolina Biological Supply Company. However, neither company offers species-level classification information. In addition, they do not provide information about from where the snails are collected or if they are consistently collected from the same geographical location. Therefore, we aim to determine if the snails we obtain from these companies are invariant species within a company and between companies by using DNA barcoding. We isolated and analyzed CO1 mitochondrial DNA sequence to determine species-level classification. Based on morphological evidence and preliminary sequence data, we hypothesize that Ward's Science and Carolina Biological Supply Company may sell ramshorn snails of various species.

Sun- 32

Assemblage Nestedness and Succession of Earthworms in Postglacial North America

C. Mieko Kim (Colgate University, Hamilton, NY), Julieanne Montaquila (Colgate University, Hamilton, NY), Yuntong Sun (Colgate University, Hamilton, NY), and Timothy S. McCay (Colgate University, Hamilton, NY)

Abstract - Modern earthworm assemblages in previously glaciated regions of North America developed after glacial retreat and were strongly affected by introductions of European species. There is large variability in the composition and diversity of these assemblages, and the factors that have affected the development of modern earthworm assemblages are poorly understood. Understanding the patterns of assemblage development can aid in the prediction of assemblage change in areas that have been incompletely colonized and help to better understand the harm these species might cause. We conducted a retrospective analysis of 21 published datasets including earthworm assemblages and environmental factors at 945 sites in the northern United States and Canada. We analyzed species assemblages for nestedness, then correlated habitat and environmental traits with our maximally packed nested matrices to assess potential drivers of the development of modern assemblages. Assemblages were more strongly nested than predicted by random addition of species. Species nestedness was correlated with latitude and sample year, possibly reflecting the expansion of populations northward over time. Guilds also were significantly nested, suggesting that the succession of types of earthworms is generally cumulative and predictable over time according to the following sequence: epigeic, epi-endogeic, anecic, and endogeic. Models of earthworm community development can help managers to anticipate changes in species and functional groups over time. These analyses add to evidence suggesting that, despite their long history, the invasion of northern North America by European earthworms is ongoing.

Sun- 18

Fluctuations in Lake Huron's Water Level Impact the Surface Area of the Manitoulin and Tobermory Islands

Janne Knieke (Hobart and William Smith Colleges, Geneva, NY) and Meghan Brown (Hobart and William Smith Colleges, Geneva, NY)

Abstract - Global climate change is impacting the North American Laurentian Great Lakes, which hold 20% of the world's and over 80% of the United States' freshwater. In contrast to rising sea levels, water levels in the Great Lakes oscillate seasonally and interannually. Lake level is largely attributable to over-lake evaporation that varies with climate conditions—an interplay of precipitation, ice cover, and water and air temperatures—and, to a lesser extent, outflow regulations and glacial isostatic rebound. This project investigates lake-level conditions and resulting geographic impacts to the Lake Huron shoreline, with a concentration on islands in the Manitoulin and Tobermory regions adjacent to Georgian Bay. Based on water-level gauge records that start in the late 1800s, Lake Huron fluctuates >1.5 m interannually. In the last 20 years, the lake experienced both record highs and record lows, which are attributable to warmer-than-average water temperatures and high evaporation rates despite above-average precipitation. We analyzed satellite imagery and digital maps using GIS tools to compare island areas ($n = 74$ Manitoulin Islands, $n = 23$ Tobermory Islands) during high-water conditions (2021) and low-water conditions (2010). Our dataset includes large, inhabited islands, such as Manitoulin Island, the largest freshwater island in the world, and smaller islands that are important bird rookeries and wildlife habitat. Landscape characteristics such as elevation and inland-water surface water area were also examined. Our results regarding these islands, and the Great Lakes coast in general, provide critical information for coastal ecology and human communities as climate shifts in the Great Lakes. The Great Lakes have more coastline (7242 km [4500 mi]) than the US Atlantic coast, the continental Pacific coast, and the Gulf of Mexico. Thus, the Great Lakes provide an ideal study system to better understand biogeographical changes to large, complex hydrological systems.

Sat- 8

Lost Legacy: Forest Resilience and Recovery Following an Extreme Disturbance in the Adirondack High Peaks

Robert Kruse (SUNY Plattsburgh, Plattsburgh, NY), **Mark Lesser** (SUNY Plattsburgh, Plattsburgh, NY), and **Ken Adams** (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Forests are typically characterized as resilient ecosystems, requiring strong directional forces to disrupt successional pathways that are supported by positive feedbacks generated via species adaptations. These forces can come gradually (i.e., climate change) or abruptly in the form of extreme or novel disturbance events (i.e., wildfire). In northeastern temperate forests, relatively cool temperatures and high precipitation/moisture make large-scale frequent wildfire a rare disturbance. While some northeastern species have adaptations for wildfire such as the ability of *Betula papyrifera* (Paper Birch) to root sucker or *Prunus pensylvanica* (Fire Cherry) seeds to lie dormant in the soil until fire clears the understory, even these species are not well adapted for high-severity, frequent fire. To understand the impact of an extreme disturbance event on forest resilience, we studied forest composition following a wildfire in the Adirondack High Peaks region of New York State. In September 1999, an intense wildfire burned for nearly 2 weeks on the shoulder of Noonmark Mountain in the Adirondack Park. The severity of the fire was such that the organic material of the soil was consumed, leaving no seedbed or roots to support recolonization. Following the fire, from 2000 to 2006, we collected seedling and sapling plot data within and around the burned area to monitor the recolonization and the post-fire forest composition and structure. Data from the first 3 years post-fire showed that, on average, 60% of the colonizing stems were either *Populus tremuloides* (Trembling Aspen) or *Populus grandidentata* (Bigtooth Aspen) while other typical Adirondack post-fire colonizers like Paper Birch and Fire Cherry were only 16 and 20% of the regeneration, respectively. Twenty-two years later in October 2021, we reexamined the composition and successional state of the burned area. We discovered that Aspen spp. had strengthened their position as the dominant tree genus, averaging 80% of the total stem density across all plots within the post-fire forest. We believe the severity of the 1999 Noonmark fire disrupted the positive feedbacks of the pre-fire forest by destroying the soil organic material, which opened the area to the establishment of a new successional pathway starting with the colonization of Aspen spp.

Sun- 11

Overstory Effects of Emerald Ash Borers (EAB) on a Riparian Forest

Aquila Lambert (Stevenson University, Owings Mill, MD), **Emily Wise** (Stevenson University, Owings Mill, MD), and **Mark Norris** (Stevenson University, Owings Mill, MD)

Abstract - *Agrilus planipennis* (Emerald Ash Borer [EAB]) is an invasive beetle from Asia that was discovered in the US in 2002 and has decimated *Fraxinus* (ash) forests throughout the country. The ash trees of Stevenson University in Owings Mills, MD, have not been spared from EAB infestation. This research study sought to understand how important ash trees are to the overall local forest, how EAB have affected those ash trees, and the forest habitat, and considered ways to restore the forest to ameliorate the effects of EAB infestation. We surveyed trees and canopy cover in 5 randomly placed plots throughout a 6-ha section of riparian forest. We examined individual ash trees for EAB exit holes and status rating. This study found that Ash trees are the most important tree in the forest but with spatial variation. A majority of the ash trees are dead with signs of EAB infestation but canopy openness does not correlate with EAB ash infestation. There are opportunities for future studies that could be conducted on the local forest with our data as a starting point. One potential study could analyze the genome of the 4 living ash trees that were found. Restoration options include planting already present non-ash tree seedlings in certain plots to restore the canopy, injecting the 4 living ash trees in plot 4 with insecticide, or releasing non-native parasitoid wasps to reduce EAB populations. We could also collect and mail seeds from the living ash trees to a US Forest Service project in Ohio to preserve and understand these potentially EAB-resistant ash trees. From this study, we learned how important ash trees are to Stevenson's ecosystem and that the ash population has been severely affected by EAB infestation.

Sat- 19

Island-Dwellers: A Population Study of Eastern Red-backed Salamanders on Great Duck Island, ME

Georgia Lattig (College of the Atlantic, Bar Harbor, ME)

Abstract - Great Duck Island is a 91-ha island that is located ~10 km (6 mi) south of Mount Desert Island in the Gulf of Maine. It is home to a population of *Plethodon cinereus* (Eastern Red-backed Salamander), a species of small (5–12 cm [2–5 in]) terrestrial salamander. These salamanders lack lungs and require a moist environment in order to breathe through their skin. Eastern Red-backed Salamanders often rely on the use of cover objects such as decaying logs and leaf-litter to provide that moist environment. Prior to my study, very little was known about the island's salamanders. My study focused on the population's habitat use and density within different habitat types. I worked alongside a comprehensive forest survey that split the island into 4 strata: forest interior, forest edge, meadow and blowdown. I used quadrat sampling within each stratum to survey a total of 17 plots that were 15 m x 15 m: 5 forest interior plots, 5 forest edge plots, 5 meadow plots, and 2 blowdown plots. Only 2 blowdown plots were surveyed because of the time and energy-intensive nature of surveying each one. On each plot, I turned over every cover object that I could find and recorded salamander abundance but refrained from more invasive survey methods such as breaking apart pieces of decaying wood. I spent between 5 and 60 minutes per plot depending on how many cover objects the plot had. For each habitat type, I calculated an estimate of population density. Salamander abundance was most dense in forest interior and forest edge plots, and there were no salamanders found in meadow plots. This study gives a preliminary understanding of habitat selection by Eastern Red-backed Salamanders on Great Duck Island and could help predict how changes in the island's forest composition might affect the population of this species.

Sat- 32

Site Fidelity in a Solitary Bee (*Agapostemon virescens*) Depends on Sex and Nesting Status

Chloé Markovits (Tufts University, Medford-Somerville, MA), Nicholas Dorian (Tufts University, Medford-Somerville, MA), and Elizabeth Crone (Tufts University, Medford-Somerville, MA)

Abstract - Many solitary bees visit the same foraging sites repeatedly, a phenomenon known as site fidelity. Site fidelity has rarely been studied in solitary bees, and we know very little about the traits that determine it. We conducted a mark-recapture experiment of a solitary bee, *Agapostemon virescens* (Bicolored Striped-Sweat Bee), in Somerville, MA, gardens in 2020 and 2021. We investigated differences in site fidelity across 3 groups within a single species: summer-active females, fall-active females, and (fall-active) males. We hypothesized that site fidelity would differ among these 3 groups because they were seeking different resources (respectively: pollen and nectar; nectar; nectar and mates). We found that summer-active females were more site faithful than fall-active females, and males were more site faithful than females in fall, despite foraging on similar plant taxa. The survival rates and proportion of recorded movements did not differ between the 3 groups. These results demonstrate that tendency to return to a particular patch of habitat is influenced by both sex and nesting status, even within a single species. This study underscores the frequent, repeated use of city gardens by solitary bees throughout their life cycles.

Sat- 18

Conservation Decision-support for Silver Chub Habitat in Lake Erie

James E. McKenna, Jr. (US Geological Survey, Tunison Laboratory of Aquatic Science, Cortland, NY)

Abstract - Conservation and restoration of aquatic species is difficult, especially for rare species, because their habitats are typically disturbed, obscuring the natural ability of the habitat to support each species. The Lake Erie population of *Macrhybopsis storeriana* (Silver Chub) struggles to sustain itself in a habitat disturbed by a wide spectrum of anthropogenic factors. I used a combination of models that predict the best potential for Lake Erie habitat to support Silver Chub and the effects of anthropogenic disturbances on that population to identify opportunities for restoration and conservation throughout the western aquatic lake unit. As many as 76 combinations of best habitat potential and disturbance conditions were present, but the best opportunities occurred in <12% of the study area. Some of the best protection opportunities were farthest offshore, and extensive areas of least disturbed habitat for restoration were near the southern and western shores. The location-specific model predictions provide fine-scale decision-support for Silver Chub habitat protection or restoration. The approach applied here may help identify protection compatibilities among species to achieve the desirable fish community for Lake Erie and reconcile conflicting management actions.

Sun- 28

How Salty Is Too Salty? Investigating the Salt Tolerance of Midori Giant Soybeans Grown under Hydroponic Conditions

Skylah J. Miller (University of Saint Joseph, West Hartford, CT), Cody Koplak (HVAC Technician), and Kirsten Martin (University of Saint Joseph, West Hartford, CT)

Abstract- Agriculture is one of the main freshwater users contributing to the increasing shortage of freshwater. Looking at the options ahead, one possibility is the use of ocean water and hydroponics. Plenty of studies have been done demonstrating that hydroponics conserves more freshwater than the typical agricultural farming. In this experiment, we will grow the Midori Giant variety of *Glycine max* (Soybean) in different dilutions of salt water to determine the salt tolerance of the soybeans grown under hydroponic conditions. We will monitor multiple components as the plant develops. During the germination phase, we will measure the germination rate, germination time, radicle size, and time until the true leaves formed. Post-germination, we will count chloroplasts on leaves to evaluate the productivity of the plants.

Sat- 15

Is Stable Isotope Analysis a Viable Method for Identifying Prior Tick Hosts? Part 2: Fur and Ticks

Sasha Milsky (Union College, Schenectady, NY), Sarah Wettergreen (Union College, Schenectady, NY), and Kathleen LoGiudice (Union College, Schenectady, NY)

Abstract - The prevalence of tick-borne diseases has been fluctuating across the United States, calling attention to the need to better understand the importance of various host species in maintaining these disease cycles. Here, we built upon previous research exploring the use of stable isotopes as a method to identify previous hosts of *Ixodes scapularis* (Black-legged Tick). Due to the difficulty in collecting ticks from hosts consuming natural diets, we investigated the isotopic variability in fur, a tissue with some isotopic similarity to the red blood cells that ticks consume. I also examined “tick–fur spacing”, or the difference in $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ isotopic signatures from the host fur to the molted tick. First, we generated an isotopic library of fur signatures from 9 common tick host species (average of 3–4 samples/species). Logistic regression revealed difficulty in identifying a fur sample to its accurate species, likely due to high dietary overlap between ecologically similar host species. Therefore, we grouped species by feeding guild. A logistic regression model at the guild level assigned fur samples to the correct guild 58% to 91% of the time. This variability is likely due to opportunistic feeding. To make use of this library as a reference to determine previous tick hosts, I examined whether there was a standard value for tick–fur spacing. To do this, I trapped and held *Peromyscus leucopus* (White-footed Mouse) and *Tamias striatus* (Eastern Chipmunk) in our vivarium. There, I collected fur samples and ticks that dropped from each individual within 12 hours of capture and were thus reflective of the host’s wild diet. Tick–fur spacing values were quite variable ($\delta^{15}\text{N}$ min–max: 1.47–5.63‰; mean = 3.24‰ \pm 1.14 SD); $\delta^{13}\text{C}$ min–max: -2.61–1.39, mean = -0.73 \pm 0.76), so more study is needed to determine the utility of a fur library for this technique. Overall, intraguild variability limits the utility of this approach, but in the absence of more host-specific molecular techniques, it may shed light on host preferences of *I. scapularis*.

Sat- 13

Use of Trail Cameras in a Suburban Environment to Establish Presence and Patterns of Observable Wildlife

A.J. Morales (Stevenson University, Owings Mills, MD) and Mark Norris (Stevenson University, Owings Mills, MD)

Abstract - Understanding anthropogenic influences on wildlife habitat is critical for understanding patterns of biodiversity. Stevenson University’s suburban campus habitat is currently undergoing multiple major construction projects requiring the removal of wooded and meadow habitats. Additionally, the campus removed a recently established beaver dam and relocated the *Castor canadensis* (American Beaver) off campus. With the recent changes in habitat and removal of a keystone species, understanding the presence and behavior of animals on Stevenson’s campus both before and after these changes has become increasingly important. The present study aims to estimate the effect of the removal of both the Beavers and available habitat on the species composition and behavior on campus using trail cameras deployed throughout our campus habitats. Cataloging methods used during the study allowed us to identify multiple species that frequent Stevenson’s campus and roughly track their movement patterns. Wildlife species encountered include *Ardea Herodias* (Great Blue Heron), *Meleagris gallopavo* (Eastern Wild Turkey), *Lontra canadensis* (North American River Otter), *Neovison vison* (Mink), and additional species representing greater diversity than anticipated given the heavily developed suburban environment and recent substantial anthropogenic disturbances present surrounding our campus. While no statistical analyses were used during this study, the species identified in photographic data gathered provide a foundation for further research on the species composition in our suburban environment. Future studies conducted on Stevenson’s campus should establish relative species abundances for observed species to help contribute to a more detailed understanding of the biodiversity present on campus and in surrounding areas.

Sat- 26

Effects of Weather on Variation in Clutch Size and Egg Mass of Gray Catbirds

Grace Muench (Penn State Schuylkill, Schuylkill Haven, PA) and Lucas Redmond (Penn State Schuylkill, Schuylkill Haven, PA)

Abstract - Several factors have been identified as important sources of variation in clutch size and egg mass in birds. For example, temperature and precipitation during periods when eggs are forming can influence both clutch size and egg mass. We have undertaken a study of the effects of weather on variation in clutch size and egg mass of *Dumetella carolinensis* (Gray Catbird) breeding on and around the Pennsylvania State University – Schuylkill campus in southeastern Pennsylvania from 2016 to 2021. We considered several factors that potentially influence clutch size and egg mass such as clutch initiation date, mean temperature, and precipitation values around the time of laying. Weather outside of the breeding season was also considered, as it can impact plant and insect growth, which can influence food availability during the breeding season. Larger eggs may allow for faster development and thus earlier departure from the nest and independence from parents which could either be a mechanism to reduce nest predation or increase juvenile survival of offspring in later broods. We are currently completing analysis of the data.

Sun- 21

Observations of a North Atlantic Sea-level Wetland: When is a Marsh a Fen?

Finley O'Connor (College of the Atlantic, Bar Harbor, ME)

Abstract - Within the East Coastal bioregion of Maine—an area characterized by a cool, moist climate, with frequent summer fog—is the 91-ha Great Duck Island (GDI), ~15 km from Mount Desert Island. Despite 22 years of previous scientific work on GDI, no data had been collected on the sea-level wetland (4.7 ha) that bisects the island; my study establishes baseline data for this plant community. These data may prove informative as sea levels rise, storm-surge washover becomes more frequent, and salinity increases. I sampled vegetation in thirty-four 1-m² plots, spaced 19.7 m apart along 7 N–S transects, moving from the eastern edge of the wetland westward. For each plot, I identified all species of vascular plants present and recorded the estimated percent cover of each. From this data, I determined species richness and frequency, and assigned each species a salinity-preference value, following an established classification scheme. The most frequent of the 65 species observed were *Triglochin maritima* (Seaside Arrowgrass), *Potentilla anserina* (Coastal Silverweed), *Spiraea alba* (White Meadowsweet), *Agrostis stolonifera* (Creeping Bentgrass), and *Calystegia sepium* (Hedge Bindweed). The overall species composition most closely matches that of a Brackish Tidal Marsh, using Maine state definitions. Across the sample area, species richness was highest in the transitional wetland–upland edge and lowest in the central portion of the wetland. I observed a saline-tolerance gradient from least to most halophytic moving from the upland to the center of the wetland. The morphology of the wetland (especially apparent from aerial photographs) appears to be that of a patterned fen: alternating strings of vegetation and open mud/peat flats that run N–S, perpendicular to the flow of groundwater. Groundwater flow was determined from the slope in elevation from east to west, from an elevation of 2.47 m to 1.7 m. Patterned fens have not been documented in brackish environments in Maine, and this study may represent the first occurrence. I took no water or soil samples; thus, further work is needed to characterize the abiotic factors in this wetland.

Sat- 10

This Could be the Start of Something New: Jack Pine Regeneration at Altona Flat Rock, NY

Mikayla Osmer (SUNY Plattsburgh, Plattsburgh, NY), **Mark Lesser** (SUNY Plattsburgh, Plattsburgh, NY), **Harleigh Green** (SUNY Plattsburgh, Plattsburgh, NY), and **Devan Bushey** (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Disturbance is essential for shaping and maintaining ecosystems. For species with adaptations to a specific disturbance regime, changes in the intensity, duration, and interval of the disturbance may have adverse effects on resilience and recovery. *Pinus banksiana* (Jack Pine) is a fire-dependent species relying on fire to (1) open its serotinous cones and release seed, and (2) create seedbeds by exposing mineral soil and removing understory competition. The Altona Flat Rock in northern New York is home to a globally rare Jack Pine-dominated barrens. In 2018, a wildfire burned ~200 ha of the Flat Rock forest providing us the opportunity to study post-disturbance recovery of Jack Pine. The goal of this study was to track seedling survival and growth at very-fine spatial scales to determine how microsite conditions affected seedling success. We randomly established 3 sites, each with three 1-m² plots. Each plot was subset into a 10-cm² grid where we determined the rooting substrate and percent cover of competing vegetation, along with the number of Jack Pine seedlings. We monitored seedlings each fall and spring since 2018 for survival and since fall 2019 for height. We used linear regression to determine the effects of measured variables on survival and height. Initial seedling densities in fall 2018 varied from 353,000 to 1,070,000 seedlings/ha across the 3 sites. Continued germination through 2019 offset mortality and maintained the initial density at 1 site, but significant mortality occurred at the other 2 sites, reducing densities by 40–75%. Following the 2019 growing season, no new seedlings have germinated, and densities have continued to decline at all 3 sites. Seedling densities as of fall 2021 varied from 57,000 to 893,000 (reductions of 16–84%). Survival was highly correlated with soil depth, % rock, and % grass. In 2019, average seedling height was 3.56 cm across the 3 sites. By 2021, average seedling height was 10.04 cm, with the tallest seedling being 32 cm. Height was strongly correlated with soil depth and % duff. These results help elucidate the ongoing successional process and how the forest is recovering back towards its pre-disturbance state.

Sat- 24

Urbanized House Sparrows and Their Ability to Adapt to Novel Objects

Gianna Papantoniou (Purchase College, SUNY, Purchase, NY) and **Allyson Jackson** (Purchase College, SUNY, Purchase, NY)

Abstract - *Passer domesticus* (House Sparrow) is now a common bird species in the United States, but is native to Asia, North Africa, and Europe. House Sparrows were introduced to the United States in 1851 to help control caterpillar populations in Brooklyn, but after several releases, the species became established in the United States. Thus, they are invasive to the United States and have lasted a long time here. Much of their success is due the fact that House Sparrows live very well among humans and use many developments created by humans as shelters. It is also common for House Sparrows to eat the scraps of food left by humans. In this study, we investigated how they reacted to different types of feeders and other objects in their environments. In October of 2021, we began acclimating the House Sparrows to a specific area using feeders. Once they were constantly feeding from this site, we began running the different behavioral trials. In each trial, we assess how long it takes the birds to adjust to new situations including new feeders and novel objects. They show a high degree of neophobia; it takes them time to get adjusted to each new scenario we gave them. This apparent caution around new objects may help explain why they have become so good at establishing themselves in the United States.

Sat- 1

Encroachment of Invasive Pheretimid Earthworms (Jumping worms) in the Adirondack Park: Extent and Possible Effects on Nutrient Cycling

Sophie G. Pedzich (Colgate University, Hamilton, NY), **Caroline M. Barnhart** (Colgate University, Hamilton, NY), and **Timothy S. McCay** (Colgate University, Hamilton, NY)

Abstract - Three pheretimid earthworms, originally from Asia and commonly called Jumping Worms, are becoming widespread in the northern United States: *Amyntas tokioensis*, *A. agrestis*, and *Metaphire hilgendorfi*. This development represents the second wave of earthworm invasion, following colonization by European species. Although they are spreading widely in the United States, early studies had suggested that Jumping Worms may be unable to colonize parts of northern North America because of geology and climate. It has become clear in recent years, however, that Jumping Worms are indeed able to colonize portions of the Northern Forest, including parts of the Adirondack Park. We report here new records of Jumping Worms from the Adirondack Park and conditions under which they were found to exist. We additionally conducted a laboratory mesocosm study of the effects of these species on nutrient loss in soil percolate. Jumping Worms caused the increased percolation of nitrate and fluoride in soil leachate and the decreased percolation of potassium, magnesium, and calcium ions. These differences did not vary among species assemblages in the microcosm. *Metaphire hilgendorfi* had a much higher survival rate than either *Amyntas* spp. in our trials, suggesting potentially important differences in physiology among these species. The percolation of potassium, magnesium, and calcium increased as biomass mortality in our microcosms increased, reflecting a pulsed return of these nutrients into the soil percolate. The invasion of the Adirondacks by Jumping Worms is active and ongoing. Invasion into areas previously unoccupied by earthworms has the potential to change nutrient availability for plants and increase nitrate loss from soils. Jumping Worms may extract cations from soils temporarily during the growing season, then return them during the end of the growing season when earthworms perish. More research is needed into the factors that might limit the invasion of Jumping Worms in northern forests and their effects in these ecosystems.

Sun- 19

Effect of Population Size on Growth in a Recently Established Population of Blanding's Turtles

Regina Peters (University of Massachusetts Lowell, Lowell, MA), **Alison Hamilton** (University of Massachusetts Lowell, Lowell, MA), **Stephanie Koch** (US Fish and Wildlife Service, Sudbury, MA), **Bryan Windmiller** (Zoo New England, Acton, MA)

Abstract - We will use linear regression analysis of annual increments of plastron growth in juvenile *Emydoidea blandingii* (Blanding's Turtle) in a recently established population to compare annual growth rates as population size changes. Over the past 15 years, >2000 hatchling and juvenile Blanding's Turtles have been released at a site in eastern Massachusetts to establish a new population of this state-listed threatened species. While a known number of turtles were released every year and overall survival can be estimated, differential success of cohorts based on population density is unknown. The purpose of this study is to evaluate whether juvenile turtles' growth rates change in response to increasing population density over time. We will use linear regression analysis to estimate individuals' sizes in each year post-release based on photos of annual plastron growth increments. We will perform a time-based comparison of growth on individuals and evaluate it on the cohort level to identify trends in turtles' growth over time. These results will be compared to the growth rate of juveniles in a well-established population located less than 15 km away.

Sat- 31

Fungal Specificity of *Hypopitys monotropa* for Ectomycorrhizal Fungi in *Tricholoma*

Alice E. Roosevelt (Syracuse University, Syracuse, NY), Charles Schirmer (SUNY ESF, Syracuse, NY), and Thomas R. Horton (SUNY ESF, Syracuse, NY)

Abstract - *Hypopitys monotropa* (Pinesap) is a mycoheterotrophic plant in Ericaceae, subfamily Monotropoideae. This achlorophyllous species grows in shady conifer understories, parasitizing ectomycorrhizal fungi to obtain carbon. Pinesap has been found to associate specifically with fungi in the genus *Tricholoma*. Recent molecular evidence suggests that Pinesap is likely a species group, and different genotypes within the group associate with unique species of *Tricholoma*. Our study was conducted to determine if a bumper crop of hundreds of Pinesap plants found in Central New York was associated with 1 or multiple species within *Tricholoma*. Determining fungal specificity is important because it can give us insight about this tripartite relationship between photosynthetic plants, mycorrhizal fungi, and achlorophyllous parasites. We extracted DNA from the root tips of 11 individuals within the Pinesap patch. To identify the fungi in those roots, we used PCR to amplify the fungal nuclear ITS region, the fungal species barcode. All Pinesap plants sampled from this prolific patch were associated with a single *Tricholoma* species, *T. myomyces*. The high fungal specificity of this parasitic plant underscores the importance of conserving all parts of complex ecological systems. Without Eastern White Pine (*Pinus strobus*) and its ectomycorrhizal fungal associate, *T. myomyces*, there is no Pinesap. Restoration projects in the future could utilize this knowledge to conserve these interconnected ecological components, and thus bolster Pinesap populations.

Sun- 16

Holy Shift! Tree Species Range Shifts in the Adirondack Mountains

Ed Rosenberg (SUNY Plattsburgh, Plattsburgh, NY), Sophia Griffiths (SUNY Plattsburgh, Plattsburgh, NY), Megan Grega (SUNY Plattsburgh, Plattsburgh, NY), and Mark Lesser (SUNY Plattsburgh, Plattsburgh, NY)

Abstract - Many tree species are predicted to experience range shifts to cope with changing climate conditions, particularly in mountainous regions. While range shifts due to climate change are predicted to be upslope, species may also be experiencing range shifts due to changes in conservation status, land use, and other legacy effects, which may result in either down or upslope shifts. The purpose of this study was to determine if, and in what direction, tree species are shifting their range in the High Peaks region of the Adirondacks in northern New York. We compared sapling abundance to mature tree abundance along transects established every 100 m in elevation gain on 6 mountains, with varying aspects, in the High Peaks region: Algonquin, Big Slide, Blueberry, Cascade, Gothics, and Lower Wolfjaw. Along each transect, we established 10 plot centers 15m apart and used the point quarter method to sample the mature and sapling composition. We used these data to calculate frequency, dominance, density, and importance of each species by elevation and mountain. For the most common species, we used logistic regression to model mature and sapling frequency by elevation. The offset between the elevation at which maximum frequency was reached indicated if the species was moving up, down, or not at all. Generally, results showed that *Fagus grandifolia* (American Beech) is shifting upslope on most mountains. However, beech bark disease dynamics make it unclear if this is related to climate. Contrary to climate related predictions, *Acer pensylvanicum* (Striped Maple) showed a consistent downward shift on most mountains. This result may be due to aforementioned land-use history and the ability of Striped Maple to recolonize historically disturbed areas at lower elevations. We found that *Picea rubens* (Red Spruce) moved in both directions on individual mountains. Possible explanations include decreased logging activity since the 19th century leading to downslope shifts in some locations, while upslope shifts in others may be due to acid rain reductions over the past 40 years. This approach provides a “real time” assessment of how climate and anthropogenic factors are changing forest communities and allows conservation and management approaches to adapt accordingly.

Sun- 12

Bird Diversity and Abundance of Mt Desert Rock

Levi Sheridan (College of the Atlantic, Bar Harbor, ME)

Abstract - Mt Desert Rock (MDR) is a 1.2 ha (3-ac) island located 40 km (25 mi) south of Mt. Desert, Hancock County, ME. The island is a nesting site for small numbers of *Larus argentatus* (Herring Gull) and *Larus marinus* (Great Black-backed Gull). Because it is geographically isolated and the surrounding waters are biologically productive due to upwelling, many birds take refuge on the island or utilize the space around it. This situation provides the unique opportunity to study bird abundance and diversity of the off-shore marine environment. During the summer of 2021 (June through August), a sea watch was conducted every morning to document any bird species on or around the island, and new arrivals were noted throughout the day. Traditional pelagic birds, such as shearwaters, storm-petrels, alcids, terns, gulls, shorebirds, jaegers, skua, and boobys, were all represented, with a consistent showing of uncommon species. Songbirds were regular visitors (including both expected and unexpected species), which helps establish MDR as a useful site for monitoring migrating passerines.

Sat- 4

Abundance, Morphometrics, and Diet Diversity of Invasive Praying Mantids in Southeastern Massachusetts

Adi Shmerling (Wheaton College, Norton, MA), **Julianna Bauer** (Wheaton College, Norton, MA), **Kayla Lewis** (Wheaton College, Norton, MA), **Eleanor Ruhlin** (Wheaton College, Norton, MA), **Samantha Teixeira** (Wheaton College, Norton, MA), Jessie L. Knowlton (Wheaton College, Norton, MA), Erin E. Wilson Rankin (UC Riverside, Riverside, CA)

Abstract - Praying mantises are generalist predators and are typically ambush hunters, utilizing cryptic coloration and behavior to remain undetected until the last second. In Massachusetts, there are no native praying mantises, but 2 invasive mantid species have become widespread due to both intentional and unintentional introductions: *Tenodera sinensis* (Chinese Mantis), native to Asia, and *Mantis religiosa* (European Mantis), native to Eurasia and Africa. Invasive generalist arthropod predators such as these can be major drivers of disruptions to local food webs and declines in native species, including important pollinators such as butterflies and bees. We surveyed and collected 300 mantises in a series of old fields in southeastern Massachusetts from July to October of 2021. We measured and dissected collected mantises and used DNA barcoding to determine prey taxa. We will link the species, morphometrics, and prey items of the mantids to the local and landscape characteristics of the fields where they were collected. We hypothesized that both *T. sinensis* and *M. religiosa* body size, abundance, maturity rate, and diet diversity would be greater in old fields that have higher plant species diversity and in larger old fields that are closer to other suitable habitat. Understanding the impacts of invasive organisms on native food webs, including how habitat and landscape-level variables shape trophic interactions, is crucial to determining how invaded ecosystems operate over both short and long time scales. By assessing these interactions and linking them to multi-scale variables, we hope to develop strategies to minimize the impact of invasive arthropods in local habitats and protect important native arthropod species.

Sun- 8

Pathways to Forest Restoration and Increased Carbon Sequestration

Ethan Skuches (Vassar College, Poughkeepsie, NY), Margaret Ronsheim (Vassar College, Poughkeepsie, NY), and Keri VanCamp (Vassar College, Poughkeepsie, NY)

Abstract - The goal of this research was to devise methodology and recommendations for forest restoration that concurrently increases potential carbon sequestration. We surveyed permanent forest plots on the Vassar College Ecological Preserve in the summer of 2021 and used diameter at breast height (DBH) of all trees sampled to model carbon sequestration. This data was geospatially represented to identify low carbon sequestering ecological communities on the Preserve. The patterns we observed indicate that low-sequestering ecological communities were predominantly in areas dominated by invasive vegetation such as *Malus* spp. (apples), *Lonicera maackii/morrowii* (Amur and Morrow's Honeysuckle), and *Celastrus orbiculatus* (Oriental Bittersweet), and coincide with areas abandoned after 1950. We recommend these areas as targets for restoration and planting of tree species that would maximize carbon sequestration, such as *Quercus* spp. (oaks) and *Juglans nigra* (Black Walnut), 2 high-sequestering native tree species. In addition to these parameters, we included resilience to climate change and invasive pests in prioritizing species selection, resulting in a decision framework for forest restoration efforts in the Northeast to concurrently maximize carbon sequestration.

Sun- 13

Mesocarnivores on the Move: Assessing Spatiotemporal Patterns Along an Urban–Rural Gradient

Anna Soccorsi (Columbia University, New York, NY) and Scott LaPoint (Black Rock Forest Consortium, Cornwall, NY)

Abstract - As landscapes become increasingly fragmented from urban development, agriculture, forestry and other human-related impacts, resident wildlife are progressively forced to partition space, time, and resources. Carnivores are particularly sensitive to land-use alterations due to their typically low densities and relatively large spatial requirements. Thus, understanding how carnivore species do or do not respond to habitat fragmentation should provide relevant conservation knowledge and potentially reduce human–carnivore conflict. To explore how mesocarnivores (i.e., mammalian carnivores with body masses of 2–20 kg) partition time and space, we ran 40 camera traps, for 4440 trap nights, along an urban-to-rural gradient near Newburgh, NY. Both *Vulpes vulpes* (Red Fox) and *Canis latrans* (Coyote) were generally nocturnal across all sites, 73.89% and 71.50%, respectively. Temporal analyses suggested Red Fox became notably less nocturnal (-29.31%) and reduced the portion of the day they were active (-0.01579 ± 0.09467 SE; $P = 0.09534$) at urban sites with predominantly nocturnal Coyote compared to sites without Coyote present. However, Red Fox did not appear to adjust their temporal activity patterns in natural camera locations with Coyote. The 2 species exhibited an activity overlap of 0.81217 when detected at the same natural camera sites, compared to an overlap of 0.671215 when present at the same urban locales. Taken together, these results suggest that Red Fox may exhibit Coyote-avoidance behavior to facilitate coexistence and reduce competitive encounters in more fragmented human-modified landscapes. To further evaluate our predictions, we are also performing single- and multi-species occupancy models to investigate spatial partitioning between these mesocarnivores.

Sun- 10

Species' Forest Model for the Return of the Natural Landscape

Richard H. Stafursky (Species Forest, Inc., Conway, MA)

Abstract - The Species' Forest natural landscape research model developed by Species Forest, Inc., was begun in 2001 and is located on a 32.4-ha (80-ac) former dairy farm in Conway, MA. This model demonstrates how culturally managed land can revert to the sole control of dynamic natural forces and processes, first by identifying aspects of the cultural landscape, followed by removal of these cultural elements and then adhering to measures for the protection in perpetuity of this natural landscape. I propose that: (1) the cultural landscape always harms the natural landscape, yet the natural landscape never harms the cultural landscape; (2) any acreage within the Great Northeastern Broadleaf Forest of New England can be returned to a natural state; and (3) all the other native plants, animals, fungi and soil microbes must take priority for the return of a species' forest. A species' forest is of, by, and for all the other native species.

Sun- 14

Questions of Value: Management of Leach's Storm-Petrels and an Aging Forest

Lundy Stowe (College of the Atlantic Island Research Center, Bar Harbor, ME) and **Eleanor Gnam** (College of the Atlantic Island Research Center, Bar Harbor, ME)

Abstract - *Hydrobates leucorhous* (Leach's Storm-Petrel) is a species of concern in the State of Maine. Our research sought to predict the impact of a marked lack of forest regeneration on this species' nesting grounds. The study took place on Great Duck Island (GDI); a 91-ha island located 15 km south of Mount Desert Island, ME. GDI is home to the largest Leach's Storm-Petrel colony in the eastern US, with ~90% of the known breeding petrels in the lower 48 states. From May to November, petrels nest in burrows under roots and downed woody debris in the blowdowns and the forest edge while they raise their young. During the summer of 2021, we conducted a forest survey of GDI to assess the forest health and the different vegetation strata that these petrels burrow in across the island. The island was divided into 4 strata: meadow, blowdown, forest edge, and forest interior. Within each stratum, we recorded petrel burrow abundance and occupancy. Data analysis suggests that a lack of *Picea* (spruce) forest regeneration on the island may not impact the Leach's Storm-Petrel population, though some factors such as browsing by hares may be benefitting petrels by keeping the forest floor open while decreasing spruce recruitment. Thus, now the question becomes what to manage: petrels or the forest? This research will facilitate management decisions by The Nature Conservancy and the Maine Department of Inland Fisheries and Wildlife concerning GDI.

Sat- 7

New Records of Native Earthworms in the Northeast

Yuntong Sun (Colgate University, Hamilton, NY), **Jackson D. Hoit** (Colgate University, Hamilton, NY), and **Timothy S. McCay** (Colgate University, Hamilton, NY)

Abstract - Although the majority of earthworm species in the northeastern United States are believed to be exotic to North America, there are 5 native species found in this region: *Bimastis parvus*, *B. tenuis*, *B. rubidus*, *Eisenoides lonnbergi*, and *Sparganophilus eiseni*. Their distributions and abundance—and even their status as native species—has changed in recent years. We conducted surveys to better understand the distribution of these species in the Northeast, focusing on the native species associated with wetlands: *E. lonnbergi* and *S. eiseni*. The geographic ranges of these species is more extensive than previously believed. We report here the first records of *E. lonnbergi* and *S. eiseni* in the Adirondack Park and a new record of *E. lonnbergi* for Vermont. Records of *S. eiseni*, which is found most often near flowing water, occurred in certain watersheds and apparently not in others. Given that neither of these species is a common bait worm among fishers, these data support the hypothesis that these are populations that reestablished naturally following glacial retreat. We encourage additional research into these interesting native members of the northeastern fauna.

Sun- 17

How Does the Abundance of Invasive *Lonicera maackii* (Amur Honeysuckle) Increase Tick Density?

Khoa Tran (Union College, Schenectady, NY) and Kathleen LoGiudice (Union College, Schenectady, NY)

Abstract - In recent years, the CDC has recorded a steady increase in the instance of tick-borne diseases, most notably Lyme disease, caused by the bacteria *Borrelia burgdorferi*. However, tick density and infection status are highly variable at both large and small spatial scales. Many potential explanations have been proposed to explain this trend, one of which is the alteration of vector–host dynamics caused by the introduction and propagation of invasive flora and fauna. Prior research has established a correlation between the abundance of several invasive species in the genus *Lonicera* and the abundance of ticks. In this research, we tested several hypotheses to explain this correlation. We tested 2 hypotheses, (i) that engorged ticks might benefit from fungicidal compounds released into the soil by *L. maackii* (Amur Honeysuckle) and (ii) that *L. maackii* shrub structure creates a favorable microhabitat for engorged tick survival, using a soil-core experiment. We compared tick survival in soil cores under 4 treatments: in *L. maackii* shrubs, in native shrubs, in climate-controlled rooms with Amur Honeysuckle extract, and in a climate-controlled room with native extract. We further examined the bioactive compound hypothesis in an experiment in comparing fungal growth in Amur Honeysuckle extract, *Viburnum acerifolium* (Mapleleaf Viburnum) extract, and deionized water under laboratory conditions. We tested a third hypothesis, that tick hosts prefer Amur Honeysuckle shrubs for shelter, using a camera-trapping experiment. Although parts of the soil-core experiment had to be abandoned due to the lockdown of Union College, important insights can still be drawn. The 2 field treatments of the soil-core experiment showed no differences in tick survival. Similarly, the fungal growth experiment did not reveal fungicidal properties in Amur Honeysuckle compared to a native shrub control (Mapleleaf Viburnum). Common tick hosts such as *Odocoileus virginianus* (White-tailed Deer) and *Peromyscus leucopus* (White-footed Mouse) showed a slight preference for Amur Honeysuckle shrubs compared to native shrubs. Altogether, this research emphasizes the unpredictability of biological invasions and the need for more integrative research into the role of invasive flora in vector–host dynamics and disease ecology.

Sat- 14

Use of Urban Greenspaces by the Gray Fox (*Urocyon cinereoargenteus*) in Syracuse, NY

John P. Vanek (Hobart and William Smith Colleges, Geneva, NY), James P. Gibbs (SUNY-ESF, Syracuse, NY), and Bradley J. Cosentino (Hobart and William Smith Colleges, Geneva, NY)

Abstract - Urban areas are the fastest growing ecosystem on earth, representing novel challenges and habitats for many species. *Urocyon cinereoargenteus* (Gray Fox) is a medium-sized carnivore with a wide geographic distribution across North and Central America. In some parts of its range, the Gray Fox appears to be tolerant of mild urbanization. However, in many urban areas, the Gray Fox is either absent, declining, or less common than other canids, such as *Vulpes vulpes* (Red Fox) and *Canis latrans* (Coyote). Track surveys in the 1990s suggest high occupancy by Gray Fox in Syracuse, NY. However, these surveys were limited by available snow cover and results may be conflated with Red Fox sign. Here, we confirm high occupancy of the Gray Fox in urban greenspaces in Syracuse using trail cameras. Weekly detection rates were low, but naive occupancy was high (>90%), with Gray Fox detected in even small and isolated forest fragments. We also detected sympatric mesopredators such as Red Fox, *Procyon lotor* (Raccoon), *Pekania pennant* (Fisher), *Didelphis virginiana* (Virginia Opossum), *Felis catus* (Domestic Cat), *Canis familiaris* (Domestic Dog), *Mephitis mephitis* (Striped Skunk), and Coyote, but we did not detect *Lynx rufus* (Bobcat). High occupancy of Gray Foxes in this urban ecosystem may be facilitated by the extensive tree cover within the city of Syracuse and ostensibly low Coyote density. Syracuse has the potential to be an excellent location to study the impacts of urbanization on a declining mesocarnivore, as well as interactions between a diverse urban carnivore guild.

Sun- 9

Melanism in the Eastern Gray Squirrel: Using Multiple Methods to Quantify an Urban–Rural Cline

John P. Vanek (Hobart and William Smith Colleges, Geneva, NY), James P. Gibbs (SUNY-ESF, Syracuse, NY), and Bradley J. Cosentino (Hobart and William Smith Colleges, Geneva, NY)

Abstract - Urban areas are the fastest growing ecosystem on earth, transforming land cover and climate at an unprecedented rate. These environmental changes can drive the evolution of novel adaptations within populations, which in turn influences the ecological dynamics of populations, communities, and ecosystems. *Sciurus carolinensis* (Eastern Gray Squirrel) is one of the most common and well-known urban mammals in North America, as well as an ecologically and economically important species. Eastern Gray Squirrels exhibit 2 color morphs, gray and melanic, the latter of which was the prevailing morph in northern forests prior to the 1800s. While the melanic morph is still common in rural areas in northern Michigan and Ontario, in New York State the melanic morph is mostly restricted to cities, such as Syracuse. Here, we quantify this urban–rural cline in squirrel melanism using 3 different data sources: citizen/community science records, opportunistically encountered roadkill, and targeted camera trapping. Preliminary results show a strong cline in melanism from all 3 data sets. However, citizen science and roadkill surveys underestimate the presence of melanic squirrels in rural areas outside Syracuse when compared to camera traps. We discuss potential selective factors that may facilitate this cline (e.g., hunting and differential visibility on roads). Future work will include tests of parallel evolution across multiple cities in the Eastern United States.

Sat- 28

Breeding Habitat Use During Migration by *Junco hyemalis* (Dark-eyed Junco) in Western Massachusetts

Hannah L. Wait (Massachusetts College of Liberal Arts, North Adams, MA) and Daniel P. Shustack (Massachusetts College of Liberal Arts, North Adams, MA)

Abstract - *Junco hyemalis* (Dark-eyed Junco) are observed year-round in many parts of Berkshire County in western Massachusetts, and the degree to which these are the same or different individuals throughout the year is part of our ongoing research efforts. Our prior work has demonstrated that juncos from various latitudes north of Berkshire County pass through lower-elevation (~210m) valley locations during fall and spring migration, and that juncos from as far as northern Canada overwinter in the valleys of Berkshire County. However, the use by migratory juncos of higher-elevation sites (>500 m), where juncos breed in the summer, is unknown. During spring migration 2021, we sampled Dark-eyed Juncos from 2 known breeding locations. The “Frost” site is at 518 m elevation and has juncos year-round. There, supplemental food (e.g., bird feeders) is available fall through spring. The “Fire Tower” site is at 760 m. There, juncos breed, but do not overwinter, and there is no supplemental food. We used deuterium ratios from the most distal secondary feather of juncos to assess migration behavior of individuals captured at the Fire Tower site ($n = 10$) and the Frost site ($n = 43$). During spring migration, junco densities at the Fire Tower were much lower than at the Frost site. At the Fire Tower, the deuterium values from all 10 sampled individuals matched deuterium values of the local breeding population. Additionally, 6 of 10 sampled individuals were observed during the subsequent breeding season (e.g., June and July) at the Fire Tower site. In contrast, ~37% (16 of 43) of the Dark-eyed Juncos sampled at Frost had isotopic values that aligned with the local breeding population, meaning >60% of the spring juncos at the Frost site were migrants. Both local breeders and migrants were detected across the spring migration period (March 25 through April 30) at the Frost site. Migration is a significant part of the annual cycle of migratory birds, and is influenced by many complex factors. A more nuanced and complete understanding of migratory behavior in specific populations of Dark-eyed Juncos is important in fully understanding this declining species.

Sun- 23

A Comparison of Pollinator Habitat Restoration Techniques in Urban and Floodplain Ecosystems in Western Massachusetts

Haley Wales (Westfield State University, Westfield, MA), Lauren DiCarlo (Westfield State University, Westfield, MA), Alivia Gjekaj (Westfield State University, Westfield, MA), Talia Queeney (Westfield State University, Westfield, MA), John Renzoni (Westfield State University, Westfield, MA), and Lily Smith (Westfield State University, Westfield, MA)

Abstract - As ecological restoration becomes more relevant each year, restoration of pollinator habitats and species has become a primary topic of interest. Pollinators provide essential ecosystem services and are responsible for over 35% of global crop and 80% of native plant pollination. Despite this, pollinator species are rapidly declining worldwide due to a variety of factors including disease, habitat loss, and climate change. While a common goal seeks to increase pollinator numbers, restoring pollinator habitat, including food and nesting resources, is the key factor in the success of pollinator-restoration efforts. This project aims to compare available floral resources in restored urban and floodplain ecosystems. We use floral and community data gathered from a planted pollinator garden and a restored floodplain (invasive plant species removed) in western Massachusetts. The purpose of this project is to give insight on how to expand methods of restoration and preservation of pollinator species by creating and improving pollinator habitat, specifically in urban and floodplain environments in the Northeast.

Sun- 3

***Cladonia subtenuis* Cover, Morphology, and Photosynthetic Properties from Contrasting *Pinus rigida* Stands**

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Abstract - Ground lichens colonize disturbed soils as pioneer biota, often due to plant removal, but can be replaced successionally by woody plants, like shrubs. Succession may lead to abiotic and biotic changes that impact ground lichens and facilitate their decline as ground cover through effects on morphology, photosynthetic activity, and reproduction as they are overtopped by plants. To understand how the presence of shrubs may influence the community structure of terricolous fruticose lichens in the New Jersey Pine Barrens, we carried out a field study to assess species composition and differences in microclimate abiotic variables in shrub-covered and open-canopy microsites. Abiotic variables did not differ significantly between microsites. We found *Cladonia subtenuis* (Dixie Reindeer Lichen) to be the most common species among all sites and was used it in a second study to compare morphology, reproduction, and photosynthetic properties between sites. We compared dry biomass, number of apothecia, and chlorophyll content between *C. subtenuis* collected from shrub covered and open canopy microsites. Results from the second study revealed a significant difference between dry biomass, number of apothecia, and chlorophyll content of *C. subtenuis* collected from adjacent microsites.

Sat- 21

Is Stable Isotope Analysis a Viable Method for Identifying Prior Tick Hosts? Part 1: Ticks and Host Diet

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Abstract - Tick-borne diseases pose a prominent threat to humans by causing a wide variety of symptoms and occasionally death. We are studying tick-borne disease transmission through an ecological lens, attempting to identify previous tick hosts using stable isotope analysis (SIA). A method for indirect tick-host identification would be useful because our current understanding of the roles of various tick hosts might be biased by the ease of capture of some hosts compared to others. SIA of ticks collected in the wild could clarify the relative importance of various hosts or even identify new hosts that have not been previously considered, advancing our understanding of tick-borne disease transmission through communities. To evaluate SIA as a technique for previous tick-host identification, we trapped 2 species known to be important hosts for *Ixodes scapularis* (Black-legged Tick), *Peromyscus leucopus* (White-footed Mouse; $n = 26$) and *Tamias striatus* (Eastern Chipmunk; $n = 19$), and infested them with nymphal *I. scapularis*. For the 3–4 days that the ticks fed, the hosts consumed a diet enriched with ^{15}N , an isotope commonly utilized for trophic-level identification, to determine if that diet enrichment would be reflected in the molted tick. We chose ^{15}N because previous research showed that $\delta^{13}\text{C}$, another useful isotope for studying diets, has a flexible isotopic signature that would likely change according to short-term, opportunistic deviations from a host's typical diet. By using ^{15}N , we hoped to find a less flexible isotopic signature to facilitate host identification to species or at least to feeding guild. The average isotopic signature of ticks feeding on hosts with a ^{15}N -enriched diet was significantly higher than ticks collected from newly captured animals (which presumably reflect the wild diet; $P < 0.0001$). This result indicates that a short-term diet change was reflected in the molted tick. Further comparisons indicated that the host's long-term diet is also reflected, revealing a summative quality of the $\delta^{15}\text{N}$ signature. Our overall findings suggest that the $\delta^{15}\text{N}$ isotopic signature is more flexible than expected and reflects dramatic short-term diet changes, nevertheless identification of host feeding guild could still be possible because the long-term diet is also represented.

Sat- 12

Native Pollinator Biodiversity in Protected Lands: A Comparison of eDNA Metabarcoding and Traditional Survey Methods in Meadows and Grasslands

Amelia Whitehurst (Purchase College SUNY, Purchase, NY) and **Stephen Harris** (Purchase College SUNY, Purchase, NY)

Abstract - Environmental DNA (eDNA) has increasingly been shown over the past decade to be a successful complement or even replacement for traditional ecological surveying methods. eDNA metabarcoding has been applied to water, soil and air samples, and even to identify the species of pollen found on the bodies of arthropods. Monitoring the biodiversity of insect populations has been accepted as a means of gauging the health of an ecosystem. Here we test whether wildflowers could provide a source of eDNA for the identification of visiting pollinators, which is of particular importance to the stewards of national and state protected lands seeking to restore native plants and the endemic populations of a region. Mianus River Gorge Preserve (MRG) in Westchester County, NY, is one such place; the native pollinator biodiversity of restored meadows has been assessed annually there since 2019 using traditional surveying techniques of pan trapping and hand-netting. We sampled 3 distinct meadow habitats within MRG preserve with 2 transects each by collecting at least 5 flower heads from each encountered flowering plant. We then conducted arthropod species identification through eDNA metabarcoding to answer whether the same or more insect diversity was recovered compared to the traditional survey methods.

Sun- 4

Assessing *Plethodon cinereus* (Red-backed Salamander) Skin Microbiome Differences Across Northern New York

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Abstract - The role of global climate change in increasing the prevalence of amphibian disease, including chytridiomycosis, is well known. The skin microbiome is considered an important component of the amphibian immune system. Specific bacterial taxa and high skin microbial diversity are factors that are known to boost amphibian disease resistance. In this study, we explored the impact of environmental conditions on *Plethodon cinereus* (Red-backed Salamander) skin microbial abundance and diversity at a variety of different sites in New York's North Country. We surveyed *P. cinereus* specimens from 5 sites varying in elevation and dominant vegetation type. Salamander skin microbiomes were subsequently sampled via sterile swab, plated and characterized by visual inspection of colony morphology. We performed DNA extractions and PCR to prepare samples for genetic sequencing to determine bacterial species identity. In total, 31 unique bacterial taxa were collected from the 5 sites. The highest and lowest bacterial diversity were observed at the Paul Smiths' Visitor Interpretive Center's Forest Ecosystem Research and Demonstration Area (FERDA) sites single tree and control silviculture stands, respectively. Beta diversity tests also indicated that the skin microbial communities at these 2 sites were most similar to each other and noticeably different from that of the Altona Flat Rock and Rugar Woods sites. These results indicate that site conditions are important determinants of *P. cinereus* skin microbial community diversity patterns. Although the identity of bacterial species (pathogenic, non-pathogenic) are yet to be confirmed, this study has added support to the concept that environmental conditions alter salamander skin microbiomes, which in turn can influence salamander disease resistance.

Sat- 29

Floral Scent of Basil May Affect *Crithidia* Parasitism of *Bombus impatiens* (Common Eastern Bumble Bee)

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Abstract - A healthy pollinator community is a key indicator of an ecosystem's overall health. Self-medication has been hypothesized for a range of organisms including insects, and pollinators may be selecting particular flowers to visit to improve their own health. *Bombus impatiens* (Common Eastern Bumble Bee) is an important pollinator in eastern North America. It is commonly afflicted by the protozoan endoparasite *Crithidia bombi*, which infects the lower digestive tract of the bees and spreads to other individuals through contaminated fecal matter left on plants. *B. impatiens* is a main pollinator of cultivated *Ocimum basilicum* (Basil), which produces a variety of different volatile compounds in its leaves and flowers. When *Crithidia*-infected bumblebees were allowed to forage on 6 different varieties of Basil, 3 varieties resulted in low parasite loads and 3 varieties resulted in high parasite loads. Here, we test whether there is a specific combination of chemicals produced by basil varieties that correlate with decreased parasite load in the bees. Through scent analysis of the different concentrations of volatile compounds found in each of the 6 basil varieties, we can identify a specific compound or group of compounds that may be affecting parasitism. With this information, we can begin to determine if parasitized bumblebees can self-medicate, specifically choosing plants to lower their parasitic count in the wild.

Sat- 17