

Poster Presentation Abstracts

Listed alphabetically by presenting author. Presenting author names appear in bold. Code following abstract refers to timing of poster presentation (Day [Thu = Thursday, Fri = Friday] – Time slot [AM = morning session, PM = afternoon session] – Posterboard number. For example, Thu-PM-18 indicates: Thursday afternoon poster session on posterboard number 18. Presenters' contact information is provided in a separate list at the end of this document.

Application and Use of a Lay Monitoring Program for Lake George, NY

Laurie Ahrens, L.W. Eichler, and C.W. Boylen (Darrin Fresh Water Institute, Rensselaer Polytechnic Institute, Bolton Landing, NY)

Established in 1980, the Lake George Lay Monitoring Program celebrated its 31th anniversary in 2010. The primary goal of the program is the collection of a large amount of physical data over a long period of time through the voluntary efforts of Lake George basin residents. Lake George is a large, softwater, oligotrophic lake located at the southwest margin of the Adirondack Park in northern New York State. Long-term volunteer monitoring of changes in physical characteristics of the lake have been documented in a relatively cost-effective manner in the current program. A beneficial side effect of the Lay Monitoring program is the opportunity to educate basin residents with hands-on experience about lake water quality and techniques used to study freshwater ecology. Lay-monitor secchi readings are combined with total phosphorus and chlorophyll analyses performed by the Darrin Fresh Water Institute to provide Carlson Trophic State Index values. Water quality testing and index values generated indicate a continued oligotrophic state for Lake George, signifying relatively low levels of nutrients. Lay-monitor data has also demonstrated higher water clarity in the North basin of Lake George compared to the South basin, generally attributed to higher intensity of land use in the south basin. Elevated levels of sediment and nutrients in storm water run-off from urbanized areas have resulted in decreased water transparency.

Thu- AM-01

Moss Facilitates Restoration of Alpine Zones in the MacIntyre Range of the Adirondacks

Pamela Aracena and Stewart Diemont (Department of Environmental Resources Engineering, SUNY-EFS, Syracuse, NY), Sean Robinson (Department of Biology, SUNY College of Oneonta), and Robin Kimmerer (Department of Environmental and Forest Biology, SUNY-ESF, Syracuse, NY)

The alpine summits of the Adirondacks are exposed to anthropogenic activities, which threaten the fragile alpine vegetation, many species of which are considered rare and endangered. Limited research exists about physical and chemical soil conditions at the summits of the MacIntyre Range. The objective of this research was to determine if alpine moss alter site characteristics to facilitate establishment of vascular plants and help restore the site. Sampling of succession used a point-intercept method, and plant species frequency distributions along each transect was established. An outdoor experiment was conducted in conjunction with field sampling to determine if vascular plants would germinate and grow in moss. Chewings Fescue (*Festuca rubra*) seedlings were sown in four different ground cover mediums—organic soil, inorganic soil, *Polytrichum juniperinum*, and *Dicranum fuscescens*—and monitored. This experiment was coupled with a percent cover analysis of *Carex bigelowii* alongside each transect. Results indicate a greater vascular plant species distribution compared to bryophyte species distribution. Presence of moss had no effect on average pH levels and carbon:nitrogen ratios, but related to higher soil depth. Results also indicate improved average height growth and germination of Chewings Fescue within moss ground-cover mediums. No correlation was noted between moss cover and cover of *C.bigelowii*. This study suggests presence of bryophytes will facilitate restoration of alpine zones as they were associated with increased soil depth and increased germination and growth of grass seeds.

Fri- AM-01

Earthworm Community Composition in Two Managed Pasture Sites in Southern Rhode Island

Edward Avizinis, Andrew Giguere, Claire Staines, and Jose Amador (Soil Biology and Microbiology Laboratory, University of Rhode Island)

The area covered by ice during the last Wisconsinan glaciation—including Rhode Island—has no evidence suggesting the presence of native earthworms prior to glaciation. If present, native earthworms would have been extirpated by glaciation. The glaciated northeast remained earthworm-free until colonization by Europeans introduced exotic earthworms in plants, mulch, and other sources. Exotic earthworm species have also been introduced to other areas of North America and continue to spread. We examined the composition of earthworm communities during the 2010 growing season in two similar managed pastures in Rhode Island: Peckham Farm in Kingston, RI and the W. Alton Jones campus of the University of Rhode Island in West Greenwich. Seven, 0.07-m² plots were excavated every other week at alternating sites to a depth of 30 cm and hand-sorted for earthworms, which were washed, weighed, and identified. The most common species found at both sites was *Lumbricus rubellus* (epi-endogeic ecological group). No epigeic or endogeic species were found at Peckham Farm. Species from all ecological groups—epigeic, epi-endogeic, endogeic, and anecic—were found at W. Alton Jones. The maximum number of earthworms was found in early fall at both sites: 20.2/m² on 7 October at Peckham Farm and 21.5/m² on 16 September at W. Alton Jones. Juvenile individuals of the genus *Lumbricus* outnumbered all other individuals at both sites on all sampling dates, ranging in number from 7.7/m² in early summer to 80.0/m² in fall at Peckham Farm, and 18.1/m² in fall to 82.6/m² in early summer at W. Alton Jones. The mass of individual earthworms was similar for both sites, with mean (s.d.) values of 0.31 ± 0.06 g at Peckham Farm and 0.25 ± 0.07 g at W. Alton Jones. In addition, six individuals of the genus *Amyntas*, a relatively new exotic earthworm in this area, were found in June and July only at the W. Alton Jones site. Earthworms are ecosystem engineers whose activities affect nutrient and carbon cycling, as well as the physical structure of ecosystems. As such, measuring changes in their community composition is useful in understanding and quantifying their potential effects.

Thu- AM-02

Antimicrobial Properties of Bryophytes in University of Lagos

Alusesani A. Ariyo, O.O. Shonubi, and O.A Onile-Ere, (Department of Botany, University of Lagos, Nigeria)

The present study describes the antimicrobial activity of 4 extracts of *Hyophila crenulata donelli*, *Fissidens weirii*, and *Riccia* spp. collected from the University of Lagos, Nigeria. The plants were extracted in distilled water, ethanol, acetone, and methanol and tested against 4 gram-negative bacteria: *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, *Escherichia coli*, and *Proteus vulgaris*. The results revealed that all the four bryophytes were active against all the test bacteria. Among the test organisms used, *Klebsiella pneumoniae* was found to be the most sensitive and *Pseudomonas aeruginosa* was the least sensitive, while the moss *Calymperes donelli* showed the broadest spectrum of antibiotic activity and *Riccia* showed the lowest spectrum of activity. The results presented in this paper suggests the possibility that all the four bryophytes possess antimicrobial compounds that are effective against all the gram-negative bacteria.

Thu- AM-03

A Comparison of Behavior of Resident Versus Translocated Eastern Box Turtles in Southern NY

Erin Baker (Teatown Lake Reservation)

Eastern Box Turtle populations are in decline largely as a result of the loss of adults through road mortality, habitat loss and degradation, pet collection, and human interference. The long-term survival of local populations is dependent on the ability of adults to successfully approach their longevity of 100+ years. High densities must be sustained for males to visually locate a mate, and a female will generally produce only 2–3 offspring that reach adulthood during the course of her lifetime. Research finds that the loss of just one adult each year can cause the eventual disappearance of a local population. When adults are removed from the wild by human interference and no original location is known or the habitat is lost to development, it would be advantageous if displaced turtles could be released into nearby areas to help offset the loss of those local populations. However, research finds that translocated box turtles often wander great distances trying to return home, thereby being more susceptible to predation and road mortality; after many years, they may fail to establish a new territory. There is also little known as to the effects of translocated turtles on the behavior of established resident populations. This study will contribute to research on the behavior of translocated box turtles, and specifically focus on the selection of hibernation sites as a factor affecting successful relocation, as well as assess interactions of translocated individuals among a resident population. We are radio-tracking 12 adult box turtles in southern New York, including 6 resident and 6 translocated turtles, further subdivided evenly by gender. Turtles will be tracked for three years from April–November a minimum of twice per week, with minimal disturbance to the turtle so as not to influence behavior. Any direct interactions observed between translocated turtles and resident turtles will be recorded, and habitat use as well as home-range size will be compared between the two groups. Temperature buttons will be attached to the carapace in late fall through spring to monitor and compare the microclimate of the selected hibernation sites.

Thu- AM-04

Soil Respiration and Nematode Density as Habitat Restoration Indicators, Rome Sand Plains, Rome, NY

Gary Bedrosian, Jennifer Santoro, Ashleigh Smythe, Ernest Williams, and William Pfitsch (Hamilton College, Clinton, NY)

The New York threatened Frosted Elfin Butterfly (*Callophrys irus*) depends on Wild Blue Lupine (*Lupinus perennis*) for oviposition and larval feeding. In upland areas of the Rome Sand Plains, lupine patches are successional intermediate habitats between recently disturbed bare sand and closed pine-dominated forest. White Pine (*Pinus strobus*) trees are invading the few remaining natural lupine patches at the Rome Sand Plains. Restoration efforts have manipulated both ends of this successional sequence with the goal of increasing lupine dominated habitats by 1) planting lupine seedlings, and 2) removing invading White Pine trees. We used soil respiration rates and nematode counts as integrated measures of ecosystem function to assess restoration efforts. Soil respiration rates and nematode densities increased over the successional sequence from bare sand plots with <1% soil organic matter (SOM) to forest soils with 4 to 6% SOM, but were maximal in lupine patches invaded by White Pine (1 to 2% SOM). Soil pH was higher in herbaceous communities dominated by the N-fixing lupine than in sand or forest plots. Former sand mine plots where lupine seedlings were planted in 2005 now host expanding lupine populations and exhibit soil respiration and nematode counts intermediate between sand and lupine plots. Similarly, ecosystem properties of experimental plots where trees were removed 7 or 8 years previously were intermediate between White Pine-invaded and natural lupine patches. Overall, management by seedling transplantation and tree removal altered belowground integrated measures of ecosystem function toward those of lupine habitat.

Thu- AM-05

Host Use and Morphological Variation of *Leptorhynchoides thecatus* from Otsego Lake, NY

Michael Bergman and F. Reyda (SUNY, Oneonta, NY)

A survey of the helminth parasites of the fishes of Otsego Lake and nearby water bodies in Otsego County, NY was undertaken from September 2008 to the present. Fish were collected by hook and line, seine, or by gill net. Over three hundred individual fish representing 22 species were examined for intestinal helminths. Nine of 22 fish species examined were infected with adult specimens of the acanthocephalan *Leptorhynchoides thecatus*. However, gravid female *L. thecatus* were only found in the Largemouth Bass (*Micropterus salmoides*), the Smallmouth Bass (*Micropterus dolomieu*), Rock Bass (*Ambloplites rupestris*), and the Redbreast Sunfish (*Lepomis auritus*). In each of the nine fish species infected with *L. thecatus*, worms were more frequently located in the intestine rather than in the pyloric caecae. Observations of proboscis hook morphology suggest that our specimens correspond to what other authors have called the Large Form of *L. thecatus*. Observations of host use, however, raise the possibility that there may be two species of *Leptorhynchoides* in Otsego Lake. Molecular data are currently being obtained to explore this possibility.

Fri- AM-02

High Elevation Ozone in the Northeastern US: Implications for Ozone Uptake in Red Spruce-Dominated Ecosystems

Chris Bergweiler (PP Systems, Inc, University of Massachusetts-Amherst)

Despite state and national air quality initiatives, ground-level ozone continues to affect vegetation in natural, urban, and agro-ecosystems, causing a variety of damage to susceptible vegetation. Summertime ozone persistence at remote higher elevations is characterized by well-documented level (nocturnally stable) diel exposures, versus the typical diurnal formation and fate observed at lower elevations. Primary goals of this study are i) to assess long-term trends in ozone exposure based on up to 20 years of archival data, and ii) to define how controlling mechanisms of ozone uptake differ for Red Spruce in alpine environments from those at lower elevation. Preliminary findings show that air quality at surveyed high-elevation sites shows neither improvement nor deterioration at either southern or northern New England locations. In a recent example, although the summer of 2009 experienced a (positive) air quality anomaly in the Northeast, at least 56 elevated ozone events occurred in 2008 between April and September in New England alone. A substantial proportion of ozone distribution in the highest concentration ranges (≥ 80 ppb) occurs nocturnally at higher elevations, often exceeding valley locations. Nighttime ozone exposures can actually exceed daytime exposures in southern New England, based on the cumulative ozone concentration exposure metrics AOT40 (EU) and SUM60 (US EPA). Monthly average exposures tended to be highest in spring. Seasonal variability in simultaneous physiological condition of foliage of Red Spruce saplings is likely to mitigate some ozone uptake, e.g., where current-year needles have not entered the phase of seasonal maximum stomatal conductance (g_{max}).

Thu- AM-06

Odonata Community Composition in Acadia National Park

Paige Blaker and Alysa Remsburg (Unity College, Unity, ME)

Dragonflies and damselflies (order Odonata) fill important ecological roles as both predators and prey. Increasingly, they also serve as flagship species that help engage the public in conservation efforts for plant and invertebrate communities. We studied relative abundances of odonate species breeding in three different wetland types within Acadia National Park, Maine: 6 temporary pools, 11 large freshwater marshes, and 8 brackish marshes. Our results differed from previous Odonata surveys in the Park, possibly because we collected exuvia (cast-off skins) of emerging odonates rather than surveying adults. We searched emergent vegetation along 20 m of shoreline at each site, repeating the surveys on 2–3 dates. We identified 49 species in total. We observed highest species richness at temporary pools (mean = 8.0, SD = 6.0, $n = 6$), followed closely by freshwater marshes (mean = 9.7, SD = 5.1, $n = 11$). At temporary pools, the most common species were *Aeschna tuberculifera* and *Sympetrum rubicundulum*, followed by *Erythrodiplex berenice* and species of the *Lestes* genus. At freshwater marshes, *Leucorhinia frigid*, *Enallagma erbi* and *hageni*, and *Lestes unguiculatus* were most common. At brackish sites, 5 different species (4 *Enallagma* spp. and *Sympetrum vicinum*) were collected at one site with low salinity; no exuvia were found at other brackish sites. Four state-listed species of special concern have been documented in the area, but we found only one of these species. Although *Enallagma durum* was previously documented at brackish sites, we collected this species only from two freshwater marshes. Surveying exuvia provides information on successful breeding populations that can differ from results of adult insect surveys alone. This study provides baseline data to enable comparisons of phenology and community composition through time. We completed a related project in Acadia National Park investigating the significance of vehicle collisions for insect mortality at 7 locations near freshwater that receive high traffic. From the total of 10.5 km surveyed, 224 road-killed insects were collected (42% Hymenoptera and 18% Odonata). Vehicle impact could be investigated further as a contributing threat for some insect species that are already declining.

Thu- AM-07

Integrating Ecosystem-based Management (EBM) in NYS Parks: Balancing Ecosystem Sustainability with Human Needs

Lynn Bogan and Kristen Cady-Sawyer (Office of Parks, Recreation and Historic Preservation, Ithaca, NY)

New York State Parks, a member of the Ocean and Great Lakes Ecosystem Conservation Council (Council), created in 2006 through Article 14 of Environmental Conservation Law, has been working to integrate ecosystem-based management (EBM) into programs, policies, and activities. EBM is an adaptive approach to management, ensuring the coexistence of healthy, functioning ecosystems with human communities and activities. This management structure differs from others in that it uses a holistic approach to management, incorporating an ecosystem perspective, of which people are an integrated part. Additionally, it incorporates six guiding principles. The goals of EBM integration within State Parks are to conserve, maintain, and restore coastal ecosystems and their watersheds so that they are healthy, productive and resilient and able to deliver the resources people want and need. While the focus of the Ocean and Great Lakes Ecosystem Conservation program is on ecosystems in and around marine and Great Lake systems, the program also calls for application of EBM principles to upstream watersheds. This program is still in its early stages, yet NYS Parks has incorporated EBM principles statewide into 3 on-the-ground projects, 5 park master plans, and 2 new Agency policies. Examples are explained in detail. Additionally, through an EBM public literacy program, educational panels have been developed to introduce EBM to visitors in Long Island State Parks. EBM provides an excellent framework for collaborative, science-based, management that is adaptive and driven by measurable objectives. This initiative has bolstered interagency collaboration, improved state park management and facilitated public stakeholder involvement.

Thu- AM-08

Diatoms in Brooktrout Lake Sediments: A Record of Lake Acidification

H. Chandler Rowell (Division of Water, New York State Department of Environmental Conservation), Sharon L. Kanfoush (Department of Geology, Utica College, NY), Richard Bopp (Department of Earth and Environmental Science, Rensselaer Polytechnic Institute, NY), and **Charles W. Boylen** (Darrin Fresh Water Institute, Rensselaer Polytechnic Institute, NY)

Over 200 different diatom taxa were recognized in a 22.5-cm long core taken from Brooktrout Lake in June 2004. The changes in species assemblages through time, dating back to the early 1700s, reflect the lake's history of progressive acidification and its recent recovery. An acidobiontic species, *Fragilariforma acidobiontica*, dominates (>60%) the diatom assemblage in the top 4 cm, representing deposition since 1960. Abundant *F. acidobiontica* in Adirondack lakes has been associated with pH levels below 5.0. Lower in the core, species transition over time toward forms of greater acid tolerance; *Fragilariforma acidobiontica* is absent and acidobiontics are at 10% of the assemblage, but acidophilic species make up as much as 70%, while alkaliphils constitute less than 5%. Through the application of various diatom-based pH index models, it is postulated that Brooktrout Lake never had a pH much above 6.0. The top core sample, representing the last 10 + years of deposition, shows a drop in *F. acidobiontica* and associated rise in diatom assemblage diversity, indicative of air SO₂-reduction-driven water quality improvement towards the summer mean epilimnetic pH 5.6 reported for the lake in 2005.

Thu- AM-09

The Helderbergs: A New York State Herpetofaunal Hot Spot

Alvin R. Breisch (Partners in Amphibian and Reptile Conservation, Altamont, NY) and Mark Fitzsimmons (Albany County Office of Natural Resources, Albany, NY)

The Helderbergs extend diagonally from the southeast corner of Albany County, NY, in the Town of Coeymans to the northwest corner of the county in the Town of Knox. This area is dominated by limestone formations including sheer, 100-foot escarpments, numerous small caves, linear benches, and prominent outcroppings. At the base of the escarpment are steep, forested talus slopes which transition into diverse lowland habitats cut by streams that drain into extensive and diverse complexes of wetlands. In 1979, we began cursory surveys within the Helderberg area to determine herpetofaunal distribution focusing primarily on protected lands. We began more comprehensive surveys of these lands in 2009 as part of an overall biodiversity assessment of the Helderbergs. These combined surveys have resulted in records for 21 amphibian and 12 reptile species occupying the Helderberg area. Five of these are listed by New York State as species of special concern and 10 as species of greatest conservation need. The total species for the Helderbergs represent 65 percent of the amphibians and 41 percent of the reptiles known from New York, and the total number of amphibians rivals the combined amphibian species diversity of all six New England states. It is noteworthy that five additional species for which historic records exist in the Helderbergs are currently considered to be extirpated, although habitat for all of these species still exists. It is timely that Partners in Amphibian and Reptile Conservation recently proposed establishing Priority Amphibian and Reptile Conservation Areas (PARCAs), similar in concept to Audubon's Important Bird Areas Program. Criteria for identifying these areas include: viability of the landscape in which they occur; presence of one or more species of state, national, or global significance; or areas with exceptionally high herpetofaunal diversity. Using these criteria, the Helderberg area in Albany County ranks as one of the most significant herpetofaunal areas in the state and should, therefore, be considered for PARCA status under established criteria for herpetofaunal significance.

Thu- AM-10

Tree Removal Management to Increase Lupine Populations in a Pine Barren, Rome Sand Plains, Rome, NY

Dan Bruzzese, Mary Lehner, Jonathan Pinney, Chloe Von Ancken, Edward Williams, Ernest Williams, and William Pfitsch (Hamilton College, Clinton, NY)

Wild Blue Lupine (*Lupinus perennis*) populations in the Rome Sand Plains (RSP) are being overgrown by White Pine (*Pinus strobus*) trees. In 2002 and 2003, we initiated tree-removal experiments to assess the potential to rescue lupine populations and thereby increase habitat for the NY threatened Frosted Elfin Butterfly (*Callophrys irus*). We took slightly different approaches in the two studies, but in each case White Pine trees were cut and removed from plots where they appeared to have a negative effect on extant lupines. We compared lupine response in tree-removal plots with similar control plots where trees were not removed. Measurements of lupine stem densities were repeated regularly starting the year prior to tree removal, but here we compare measurements made the first year and in 2010. At the outset of each experiment, there was considerable variation among study plots in lupine stem density and the total basal area of invading White Pine trees. In general, lupine stem densities and the proportion of flowering stems have increased in tree-removal plots, while decreasing in control plots. The increases were greatest in areas with already high lupine density. The abundance of small individuals (most likely to be new seedlings) has not expanded in experimental plots, suggesting that increases may have largely resulted from increased below-ground branching of this herbaceous perennial. Our results show that tree removal can be an effective way to enhance Frosted Elfin habitat in areas where lupine is abundant, but further measures to increase lupine seedling establishment would more effectively restore sparse populations. Without tree removal or some other form of disturbance to the developing forest, the RSP lupine population and the butterflies that depend on them will continue to decline.

Thu- AM-11

Variation in the Oviposition Strategies of Two Populations of Bog Buck Moth

Janet Buckner and Karen Sime (SUNY Oswego, NY)

The Bog Buck Moth or Cryan's Buck Moth (Lepidoptera: Saturniidae) is found in ten locations worldwide. Six of these populations are found in the fens of Oswego County, NY. The peculiar requirements of this moth have caused disagreements concerning its classification. Morphological and genetic similarities suggest a close relationship with *Hemileuca maia*, but its distinct behavior and ecology, including various adaptations to peatland habitats and the use of *Menyanthes trifoliata* as the larval food plant, suggest that it may be a separate species. Among its distinctive traits is its oviposition behavior. Rather than ovipositing on the larval host plant, as do most Lepidoptera, the Bog Buck Moth oviposits on different wetland plant species. This occurs partly because *M. trifoliata* dies back before the breeding season, and therefore its foliage is not present at the time of oviposition. We investigated the oviposition behavior of Bog Buck Moths in two Oswego County peatlands. We found significant differences between the two populations in oviposition preferences. They differed in plant species preference, position on the plant, the size of the egg clusters, the distance from the larval host plant, and rates of egg parasitism. These findings suggest that these two populations, which we have previously found to differ genetically, are micro-adapting to their respective bogs. These data may provide further evidence of a recent divergence from other *Hemileuca maia*.

Thu- AM-12

What Lives in the Ice Caves of Sam's Point Preserve?

Luis Espinas and **Amy Cahill** (Marist College, NY)

The Ice Caves at Sam's Point Preserve, NY were formed along fractures in the bedrock and in a jumble of boulders or talus blocks that have fallen from the face of the cliff. Water seeps through cracks in the rocks and makes small streams and permanent pools. Snow and cold air enters the caves through the openings at the top and is unable to escape. This refrigerated environment often preserves snow and ice into the summer. Certain animals use the Ice Caves as sleeping quarters or for short-term protection such as bats, crickets, daddy longlegs (opilionids), spiders, beetles, and slugs. Flatworms and two types of crustaceans (copepods and amphipods) may spend their whole life inside the caves. Ice Caves' amphipods (*Stygobromus* sp.) are adapted to the darkness and lack pigmentation and eyes. Inside the caves, they appear to lack predators; therefore, they do not need to be small to hide in cracks or under rocks. They are thus of gigantic proportions. We are currently studying if they are a new and unique species found only at Sam's Point Preserve. The flatworms (Platyhelminthes) in the springs of the Ice Caves are albino, but still show a high variability in the size of their eyes. They have been found with normal eyes, tiny eyes, or no eyes at all. Some individuals even have asymmetric eyes, with one eye being smaller than the other. Since the Ice Caves formed after the end of the ice age, less than 12,000 years ago, they are relatively young. It may be that regressive evolution of the eyes is still developing, and we are actually privileged to be witnessing the process of evolution as it is happening.

Thu- AM-13

Beech Thickets Impact Northern Hardwood Forest Biodiversity

Jonathan Cale, Stacy McNulty, Stephen Teale, and John Castello (SUNY Environmental Science and Forestry, Syracuse, NY)

Beech bark disease (BBD) has dramatically altered hardwood forest structure and composition across northeastern North America. Bark lesions, crown dieback, and death of American Beech are common symptoms of BBD. Extensive overstory mortality has resulted in prolific root suckering in some stands leading to understory thickets of small-stemmed beech. Beech thickets may lead to changes in forest biodiversity, but this has not been adequately evaluated. We hypothesized significant differences in diversity of groundcover flora, small mammals, amphibians, and crane flies between plots with and without beech thickets. Twenty paired plots were established in northern hardwood forest stands at two sites in the Adirondack Mountains of New York State. We sampled five 1-m² nested quadrats along a 16-m transect to measure groundcover. The small-mammal community was sampled using a 5 x 5 point trapping grid, while amphibians and crane flies were sampled using timed searches over 8-m radius plots and 1-m² pyramidal emergence traps, respectively. Discriminant analysis showed a significant difference between treatments, and identified beech sapling abundance, leaf-litter depth, and coarse woody debris volume as important variables in treatment separation. Using simple linear regression, beech sapling density was found to be negatively correlated with each of three metrics for groundcover plant diversity. Sapling density explained 41%, 31%, and 15% of the variance in species richness, Shannon-Weiner, and Inverse Simpson index values, respectively. Using a Mann-Whitney U-test, we found no significant differences in the diversity of faunal communities.

Thu- AM-14

The Role of Grass Management on Airport Properties

Joseph Carlo and Cody Bacuiska (Loomacres Wildlife Management Inc.)

Airport property serves as a wildlife sanctuary in an urban setting. Providing abundant sources of food and refuge, these spans of grassland and relatively undisturbed areas are frequently visited and inhabited by a broad array of migratory birds, small mammals, and insects. Our study investigated the abundance of birds present across 5 airport properties over the course of the year in order to establish a standard grass height that will minimize the abundance of birds. Proper management of airport property minimizes the impact that wildlife communities have on aircraft. Our analysis concluded that bird abundance is greatest when grass is measured between 0 and 20 cm regardless of location or time of year. When grass was between 21 and 30 cm in height, bird abundance dropped significantly regardless of the time of year. These results indicate that proper management of airport property should incorporate strict maximum and minimum heights of grassland to minimize wildlife populations on airport property. Our results further suggest that grass height should be maintained between 30 and 40 cm to best deter birds from airport properties.

Thu- AM-15

Fish Map Series (Atlas) and Comparisons of Occurrences in NYS

Douglas Carlson (NYSDEC) and Robert Daniels (NYS Museum, Albany, NY)

Fish distributional patterns have many uses to field biologists, and perhaps most important is when they can answer the question, “has this unfamiliar fish that I just identified ever been caught here before?” New York’s wealth of fish records are found in many local and distant archival facilities and are being summarized. These maps allow you to visualize the otherwise long listing of catch records and have codes for before and after 1977. The maps are under development for website access. Also, there are three clusters of records called comprehensive samples from streams, and they encompass the 1930s, 1970s and 2000s. Changes in fish occurrence within each of 18 watersheds have been explored within the earliest and recent periods. Green Sunfish, Bluegill, Fathead Minnow, and Spotfin Shiner had substantial gains, while Tonguetied Minnow and Comely Shiner had losses.

Thu- AM-16

Physical Habitat Patterns of the “Of Special Concern” Bridle Shiner, *Notropis bifrenatus*, at Multiple Spatial Scales

Jason Carmignani (Clark University, MA)

The freshwater fish minnow species *Notropis bifrenatus*, Bridle Shiner, is threatened throughout most of its range along the Atlantic coast in North America. Population fragmentation and declines are possibly attributed to sedimentation, hydrologic alteration (International Joint Commission 2006), and invasive predatory species (*Micropterus salmoides*). Bridle Shiner habitat has been previously described qualitatively at microhabitat to reach levels, but other than depth and velocity, habitat preferences have not been quantified. A multiple spatial-scale habitat and distributional study was conducted for the Massachusetts state-listed minnow in the Housatonic River Watershed in the fall of 2010 to determine physical habitat requirements and identify possible factors that limit distributions. Based on historical distributional records, 67 sites were sampled in 6 sub-basins (tributaries and open water) resulting in 46 presence locations. Thorough snorkeling allowed the collection of rank abundances and presence-absence data. Fish presence and abundance were regressed against rank-based reach-scale variables, and landscape compositional percentages calculated by using GIS software. At the reach/site-scale, abundance was positively correlated with wetland cover, backwater cover, submerged vegetation (SV) cover, and amphibious plant cover. However, fish presence was unrelated to measured forms of instream cover, suggesting a facultative relationship with SV for at least one life-stage. Landscape analysis revealed significant Bridle Shiner declines with increased forested wetlands. This study infers potential Bridle Shiner sources of meta-populations in non-forested wetlands with extensive backwaters and abundant SV in the Housatonic River Basin. Conservation efforts should steer their focus to these areas for protection from major threats, such as hydrologic alteration.

Thu- AM-17

Shrew Responses to Terrestrial Liming and Potential Effects of Calcium Availability on Diet and Behavior

Cathleen Carr, Timothy McCay, and Paige van den Heever (Colgate University, Hamilton, NY) and Danielle Garneau (SUNY Plattsburgh, NY)

Crushed limestone (lime) is often applied in forests to ameliorate increased acidity and acid-induced loss of calcium from forests affected by acid deposition, including forests of the Adirondack Mountain Region (Adirondacks). We sampled shrew populations during the year before and the four years following the application of lime to four forest plots in Herkimer County, within the Adirondacks. We also conducted a series of diet and behavioral studies using a captive population of *Cryptotis parva*. Populations of the three common shrews of the Adirondacks (*Blarina brevicauda*, *Sorex cinereus*, and *S. fumeus*) did not increase and may have decreased in the years immediately following liming. Shrews may have been negatively affected by a decrease in acidophilic prey or physical changes at the litter layer. Calcium concentration was not a primary determinant of food selection by *Cryptotis* under our laboratory conditions, although these laboratory animals would regularly gnaw on abandoned snail shells when they were available. Shrews maintained on diets with calcium concentration similar to that found in foods of the Adirondacks performed poorly in a maze study compared to animals maintained on a diet with a higher calcium concentration. Calcium concentration of invertebrates in areas affected by acid deposition may be inadequate to support peak performance in the absence of extra mineral sources of calcium (e.g., snail shells). We plan to continue the monitoring of populations at limed areas to better understand the shrew response to increased calcium availability subsequent to the stress apparently caused by the application of lime.

Thu- AM-18

The Effect of Estrogen on the Reproductive Success of the Hermaphroditic Snail *Physa acuta*

Nervah Cheremond, Terry Provost, and Thomas McCarty (Utica College, NY)

Estrogen-mimicking chemicals released into the environment cause harmful effects on reproductive success in wildlife and humans. Some of these endocrine-disrupting chemicals appear in rivers, lakes, and streams and cause feminization of male fish as well as causing female snails to lay a greater number of eggs. However information about the impact of estrogenic chemicals on hermaphroditic snail species is limited. In the present study, we tested the effect that estrogen has on the hermaphroditic snail *Physa acuta*. We habituated 56 snails in 190 ml of aged water for seven days and then exposed them to aged water ($n = 14$), aged water with 0.01% ethanol and 0.02 ng/ml estrogen ($n = 14$), aged water with 0.1% ethanol ($n = 14$), or aged water with 0.1% ethanol and 0.2 ng/ml estrogen ($n = 14$) for 60 days. We provided standard food once a week and changed snail jars with aged water and the appropriate treatment every 10 days. During the 60-day treatment period, we counted egg masses in each jar and determined the number of eggs per mass. Snails exposed to 0.1% ethanol ($P = 0.018$) and 0.1% ethanol with 0.2 ng/ml of estrogen ($P = 0.016$) laid significantly fewer egg masses and number of eggs than those exposed to the control or 0.01% ethanol with 0.02 ng/ml estrogen treatment. Animals exposed to the lower concentration of ethanol (0.01%) and estrogen (0.02 ng/ml) laid egg masses and number of eggs similar to control snails. This data suggests that the ethanol in concentrations of 0.1% had a significant impact on the reproductive ability of these snails, while estrogen in either concentration had no impact. Future research should investigate the impact of an estrogen-mimicking chemical to determine if hermaphroditic snails exhibit the same egg-producing increase as non-hermaphroditic snails to determine if another physiological process could be causing the increase in egg production.

Fri- PM-29

Physicochemical and Development Factors Affecting Gastropods and Other Benthic Macroinvertebrates in Four Suburban Lakes

Tami M. Cloherty, and W.J. Rachlin (Lehman College and The Graduate Center, CUNY)

This suburban ecology project examines four lakes to determine if communities of benthic macroinvertebrates in the littoral zone were affected by physicochemical factors and shoreline development. The central hypothesis was that there would be a significant level of association between the physicochemical factors in the lakes, levels of development around the lakes, and the populations of gastropods and other benthic organisms. Sampling occurred over three years from April through October 2008, 2009, and 2010. Benthic taxa were identified using appropriate keys. Species richness, diversity, and EPT indices were calculated to characterize the taxa found. Physicochemical parameters measured included: temperature, cloud cover, pH, DO, mean nitrate and phosphate concentrations, hardness (Ca^{2+} and total), TDS, conductivity, and coliform testing. Filtration of sediment and loss-on-ignition studies were done to assess sediment types, percent organic matter, and percent carbonates. Data characterizing lake shore development was collected from appropriate town, county, and state resources. Development factors included: phosphorous loading, number of structures, number of storm drains, percent developed land, and run-off into the lakes. Multivariate analyses and correlation analyses were done to explore the data and to identify any significant relationships between the benthic fauna and the abiotic variables. Results indicated that freshwater benthic macroinvertebrates show significant correlations to physicochemical and development factors, including: ambient temperatures, hardness, DO, ECS, TDS, pH, percent silt, mean nitrate concentrations, coliforms, phosphorous loading, percent developed land, storm drains, and the number of structures. The results of this study illustrate the anthropogenic effects of development on benthic macroinvertebrates in the littoral zone of suburban lakes.

Thu- AM-19

The Effects of Stress-Induced Plant Responses on Leaf and Soil Composition

Elizabeth Coffey (Biodiversity, Conservation and Policy, University at Albany, NY), **Kaori Shiojiri** (Kyoto University, Japan), and **George Robinson** (University at Albany, NY)

Plants undergo physical and chemical changes in response to damage from herbivory. Such alterations are reflected in the chemical composition of the leaves, which are seasonally lost and contribute to the organic layer of soils. These changes affect both the plant itself and the detritus-based ecosystem, including soil invertebrate communities. This novel study examines the effects of mechanical damage to plants through a comparative analysis of the growth, leaf chemical composition, and soil communities of artificially cut plants. Previous studies have determined that artificial damage through cutting with scissors mimics that of herbivory, and this method was employed. Populations of three shrub species (*Quercus prinoides*, *Salix pumila*, and *Quercus ilicifolia*) in the Albany Pine Bush were subjected to a manual removal of 25% of the total plant. Leaves were then tested for C/N, P, and phenol concentrations, and soil samples were collected for invertebrate identification. Preliminary research has indicated notable differences in soil communities subsequent to treatment. Soils under control plants yielded 62% more invertebrates in surrounding soil samples than did treatment plants, and species diversity was reduced by 23% overall when plants were damaged. These differences held for all three species ($P < 0.05$). Species composition was significantly different in litter from the oaks versus the willow ($P = < 0.001$), which may be related to their marked differences in chemical defenses (e.g., tannins versus salicins). These findings support the importance of these interactions and need for further investigation into the complex interactions between above- and below-ground organisms. This study is currently on-going, and will add tests of plant growth rates in spring 2011.

Thu- AM-21

GIS Meets Genetics: Spatial and Molecular Evaluation of American Beech Trees Resistant to Beech Bark Disease

Olesea Cohojari, **Brenda Nsambu**, Robin Sleith, Carol Shaw, John Van Hoesen, and Natalie Coe (Green Mountain College, Poultney, VT)

American Beech, a staple species of Northeastern forests, can grow to 100 feet and live for 400 years. Unfortunately, Beech Bark Disease (BBD), resulting from initial invasion by the exotic and invasive Woolly Beech Scale (*Cryptococcus fagisuga* Lind.) followed by infection by *Nectria* fungi (*N. coccinea* var. *faginata*, *N. galligena* Bres.), has spread rapidly throughout the beech range in just over a century. Estimates of American Beech tree loss is at 80% in some areas, but can be as high as nearly 100%. Substantial stand mortality can be seen over a relatively short time period (within 30 years). Wildlife (Black Bear, White-tail Deer, Raccoon, squirrel, Wild Turkey) is critically dependent on the beech mast. Gratefully, pockets of resistant trees do exist. Our study site (Deane Preserve, Poultney, VT) contains four stands with approximately 200 trees. Each stand has many afflicted trees, but also phenotypically non-afflicted trees. The Deane preserve has been surveyed, and each beech tree located using an electronic total station (Topcon GTS-212). All survey and annual monitoring data has been imported into ArcView GIS for analysis and for permanent electronic record. We have performed initial cluster analyses to evaluate how similar trees are to surrounding trees (or not) in context of disease state. Non-symptomatic trees within twenty feet of a susceptible tree are likely resistant, but it can be argued that they have not been exposed to both pathogens during suitable environmental conditions. Separate studies in our laboratory focus on both microarray and proteomic analyses to deduce changes in either mRNA expression or protein profiles, respectively, that correlate to phenotype (resistant or susceptible to BBD). It is critical to determine if trees in close proximity with different phenotypes, are not clonal and are genetically distinct. It is also important to know if small groupings of susceptible trees are either clones or distinct individuals. This information will inform multiple other studies. This study required genomic DNA preparation of beech buds harvested from trees of both phenotypes. Trees for each phenotype ($n = 15$) are being characterized at ten polymorphic loci (through PCR analyses) and results to date are highlighted.

Thu- AM-20

Ontogenetic Dietary Shifts of the White Sucker (*Catostomus commersoni*) in the Poultney River

Gwendolyn Cramer (Green Mountain College, VT)

Dietary shifts during the larval and juvenile stages are known to occur among species in the Catostomidae family, including the Shortnose Sucker, *Chasmistes brevirostris*, and the June Sucker, *Chasmistes liorus*. Investigations of White Sucker (*Catostomus commerson*) diets in lakes have found some evidence for similar shifts in this species. Dietary shifts often correspond with changes in the position of the mouth or abundances of zoobenthos versus zooplankton. Greater knowledge of the diet of larval and juvenile White Suckers is important for understanding relationships in the Poultney River and identifying potential effects of population changes in White Suckers or their prey. Objectives of this investigation were to identify changes in the diet during the early life history (larval and juvenile stages) of the White Sucker and give a reasonable explanation for any noticeable shifts, as well as to determine whether diet shows selectivity or simply reflects what is available in their habitat.

Thu- AM-22

Summer Fish Migrations Associated With Beaver-Impacted First-Order Adirondack Streams

Woody Cyr (SUNY, Syracuse, NY)

Beavers (*Castor canadensis*) build dams which create meadows and alter the structure of streams in which fish migrate. The conditions under which fish will migrate through Beaver-impacted first-order streams was investigated in Huntington Wildlife Forest, Newcomb, NY. Fish were expected to migrate after periods of moderate precipitation when water levels were moderate. Fish migrations were monitored using wier traps constructed at the upper and lower limits of Beaver meadows. Trap-specific fin clips were used to determine recaptures and migrations between trap sites. Stream level, temperature, dissolved oxygen, and pH were measured periodically. Fish tended to migrate from the beginning of the study in June through most of July when stream levels were elevated or moderate. Migration was minimal from the end of July into August even when stream levels were elevated. Fish generally migrated upstream. Extremely few fish migrated through Beaver meadows completely. Time of year appears to be the primary determinant of when fish migrate, while water level is a secondary determinant. Increased water levels at times of year close to the preferred migration date may result in migration while such water levels may not result in migration at other times of year.

Thu- AM-23

Natural History of the Spionid Polychaete *Polydora colonia* Based on New Specimens from Long Island, NY

Andrew David and Jason Williams (Hofstra University, Hempstead, NY)

The spionid polychaete *Polydora colonia* (Moore 1907) is a widely distributed polydorid worm that is typically found associated with sponges. The species was first described from Massachusetts and subsequently has been reported along the east coast of the United States to Florida, as well as Argentina, Brazil, Jamaica, the Mediterranean Sea, and South Africa. In spite of wide reports of the species, the natural history of *P. colonia* is virtually unknown, and taxonomic studies are needed to determine the potential status of this species as an introduced species. The current study examined the morphology, ecology, feeding biology, and reproduction of *P. colonia* based on specimens from Long Island, NY collected between 2007–2010. *Polydora colonia* was associated with two host sponges, *Microciona prolifera* and *Halichondria bowerbankii*, attached to docks; the worms reached densities as high as 6 worms/mm³ during July to August. Morphological studies based on light and scanning electron microscopy showed the specimens agree with previous studies and there were no features that distinguished it from published reports from around the world. *Polydora colonia* was shown to exhibit adelphophagy (i.e., nurse eggs were consumed by developing larva) and to produce free-swimming planktotrophic larvae. Asexual reproduction (via architomy) was recorded for the first time in this species; overall prevalence of architomy was 24% ($n = 780$). Anterior regeneration was completed in 8 days and followed a similar morphogenesis pattern to other spionids. Two symbionts were found associated with *P. colonia*, one ectocommensal ciliate *Urceolaria* sp. that was attached to the worm's body (prevalence = 25%) and one endoparasitic monstrolloid copepod *Thaumaleus* sp. (prevalence = 1%). Gut content analysis of adult worms showed the presence of sponge spicules in 53% of worms examined ($n = 100$), the first evidence of sponge feeding in polydorids. The impacts of sponge feeding remain unknown; therefore, the symbiosis of the worms with host sponges is in need of further analysis. Since *P. colonia* are often associated with sponges in marinas there is a strong possibility the species has been introduced to various regions, and it should be considered a cryptogenic species.

Thu- AM-24

Comparing Reproductive Costs and Ecological Costs of Prickle Defenses in *Rubus ideaus*

Matthew Dickinson and Nishi Rajakaruna (College of the Atlantic, Bar Harbor, ME)

Allocation costs have been proposed as a critical factor in the evolution of phenotypic plasticity in plants. Ecological costs then arise when plastic response to the environment negatively affects other abiotic and biotic interactions; for instance, defense against one herbivore may lead to susceptibility to a second herbivore. I plan to investigate the allocation and ecological costs of prickly defense in *Rubus ideaus* using two Coastal Islands, one with mammal herbivores and one without, as model systems of the effects herbivory has on phenotypic plasticity. Comparing leaf prickly density with reproductive fitness (number of flowers, viability of seed) will show allocation costs of prickles in island populations. Other comparisons will include timing of flowers and fruits, and amount of insect herbivory. Further comparisons with controlled settings and environments will attempt to show the ecological costs of the morphological plastic trait, prickles, in *Rubus*.

Thu- AM-25

Using Stable Isotopes To Identify Population Dynamics Of Bats At Acadia National Park, Maine

Timothy Divoll (BioDiversity Research Institute, Gorham, ME and National Park Service, Acadia National Park, Bar Harbor, ME), Bruce Connery, Bik Wheeler, Karen B. Anderson (National Park Service, Acadia National Park, Bar Harbor, ME), Robert Michener (Boston University Stable Isotope Laborator, Boston, MA), and Dustin Meattey (BioDiversity Research Institute, Gorham, ME)

Bats in northeastern North America face anthropogenic challenges such as heavy metal contamination, habitat loss and degradation, white-nose syndrome, and wind power development. Little information is known about the natural history and coastal usage patterns of bat species in Maine, facilitating the need for baseline natural history data for these species. We used several methods—banding, acoustic recording, and stable isotope sampling—to better understand spatial and temporal bat activity along the coast of Maine and monitor variance in the population at Acadia National Park. In 2009 and 2010, we captured and banded 909 bats, sampled 256 for stable isotopes, and recaptured 10. We also passively recorded echolocation calls in 2010 from April 4th to September 30th at two distinct high-activity sites. Though stable isotope and acoustic recording data have not yet been analyzed, capture data reveal a substantial population of Little Brown Bats (*Myotis lucifigus*, $n = 533$), Northern Long-eared Bats (*Myotis septentrionalis*, $n = 244$), and Eastern Small-footed Bats (*Myotis leibii*, $n = 122$) at this coastal refuge. Temporally, Little Brown and Eastern Small-footed Bats shared an inverse relationship: *Myotis leibii* dominated captures in April, May, and September, whereas *Myotis lucifigus* dominated in June, July, and August. *Myotis septentrionalis* maintained stable representation during capture efforts from April through September. Our data provides a natural history baseline for a population of bats at one geographic location, indicating further need for quantitative studies on specific issues in similar bat populations. Acadia National Park may be at the convergence of many age-old coastal movements and migrations, and thus may be a stronghold for these Myotine species, which have all recently been petitioned for listing under the Endangered Species Act.

Thu- AM-26

Both Temperature and Photoperiod Affect Wing Melanization in the Butterfly *Colias philodice*

Enna Domby, Quillan Reed, and Ernest H. Williams (Hamilton College, Clinton, NY)

The development of light or dark wings depends on the season in which various butterfly species emerge as adults. This developmental phenomenon, known as seasonal polyphenism, produces generations of melanistic specimens during cool periods, which is when the insects can benefit from increased solar warming. We investigated the environmental cues that trigger wing darkening in the butterfly *Colias philodice* by raising last-instar larvae and pupae under different daylength and thermal conditions. We hypothesized that appearance of the wings would be affected by both temperature and photoperiod. To analyze polyphenism, we calculated the overall darkness of the ventral hindwing and, separately, counted dark scales in sample areas. We found that sensitivity to environmental conditions begins in the 5th instar and continues into the pupal stage. Both temperature and daylength affected wing melanism, but the effects of these two factors differed between the larval and pupal stages. There was no difference between the sexes. Overall, both temperature and daylength influenced the amount of melanin in *Colias philodice* wings.

Thu- AM-27

Environmental Assessment of Circumneutral Wetlands with Shrubby Cinquefoil (*Dasiphora fruticosa*): Host Plant of the Endangered Clayton Copper Butterfly (*Lycaena dorcas claytoni*)

Sarah Drahovzal, Cynthia Loftin, and Judith Rhymer (University of Maine, Orono, ME)

Little is known about environmental characteristics of Maine's circumneutral wetlands containing shrubby Cinquefoil (*Dasiphora fruticosa*), the sole host plant for the state-endangered Clayton Copper Butterfly (*Lycaena dorcas claytoni*). Although *D. fruticosa* is not considered rare, only eight wetlands with stands of *D. fruticosa* support viable *L. d. claytoni* populations. Vegetation structure and hydrological conditions in wetlands may affect the distribution and robustness of *D. fruticosa*, which may also influence its use as a host plant by *L. d. claytoni*. We are evaluating hydrological conditions and the vegetation composition in ten wetlands with *D. fruticosa*; seven of these sites support populations of *L.d. claytoni* and three do not. We conducted vegetation surveys to determine the shrub and tree species composition of these wetlands. We also installed monitoring wells equipped with continuous water level recorders (Solinst Leveloader Gold) in each wetland to determine vertical flow and water-table fluctuations. Hydrographs indicate three different wetland types among the 10 sites, distinguished by differences in water source, surface and groundwater dynamics, and water and peat chemistry. Each of the three types include a least one site with moderate population density of *L.d. claytoni*; however, one wetland type includes three wetlands with the greatest density of *L.d. claytoni*. *Dasiphora fruticosa* plants in this wetland type are generally larger and have moderate to high density of blooms compared to *D. fruticosa* in the other two types, and the largest shrubs grow under a sparse to moderate cedar (*Thuja occidentalis*) canopy. Conservation and recovery of *L. d. claytoni* depends in part on the quality of its habitat. Our research will inform management recommendations for *D. fruticosa* and potentially identify unoccupied sites that are suitable for *L.d. claytoni*.

Thu- AM-28

Using Microsatellites to Assess Relatedness within and among *Formica subintegra* Ant Colonies

Sarah Dzara and Jennifer Apple (SUNY Geneseo)

Formica subintegra and *F. pergandei* are parasitic slavemaking ants that periodically conduct raids upon a host species, *F. glacialis*. During these raids, the slavemakers capture the immature *F. glacialis* ants, which are subsequently raised as slaves in the slavemaker nest, where they perform nest maintenance, forage for food, and care for the slavemaker brood. We used several microsatellite loci to assess inter- and intranest relatedness for *F. subintegra* colonies. We genotyped six individuals from each of the eleven *F. subintegra* colonies in the 8-hectare Spencer J. Roemer Arboretum on the SUNY Geneseo campus. The genotype data were then used to estimate the relatedness coefficients within colonies as well as the genetic distance between colonies. The intranest relatedness coefficients allow us to determine the structure of the *F. subintegra* nests: whether an individual colony is monogynous, with one singly mated queen, or polygynous, with either a single queen repeatedly mated or multiple queens. Additionally, the genetic distances among the *F. subintegra* colonies enable us to assess the spatial genetic structure of this local population. These data contribute to a long-term investigation of the interactions between slavemaking ants and their hosts.

Thu- PM-01

Developing a Management Plan for a College Nature Preserve

Richard Feldman (Marist College, Poughkeepsie, NY) and Sarah Sterner (NYS Department of Environmental Conservation, New Paltz, NY)

Fern Tor is Marist College's 13-acre nature preserve. It is mostly forested (oak-hickory ridges, hemlock-northern hardwood cove) and contains a creek, pond, wetland, scenic Hudson River overlook, and extensive trails. It is a valuable campus resource, having multiple beneficial uses including: teaching, student research, natural history observation, conservation of species and habitats, contemplation, and exercise. As its use and popularity increases, there is need for a management plan to protect and enhance Fern Tor. Persistent problems include invasive species (Japanese Knotweed), litter, campfires, eutrophication, and moderate erosion. An initial plan was developed last year, which will be presented with the intent of receiving constructive feedback for its improvement.

Thu- PM-02

Differences in the Aquatic Micro-Invertebrate Fauna of Two Common Epiphytic Tree Lichens

Benjamin German and John Foster (Fisheries and Wildlife Department, State University of New York, Cobleskill, NY)

Epiphytic tree lichens are the home of unique aquatic micro-habitats which are widely dispersed throughout the terrestrial forest. The aquatic micro-invertebrate fauna of Common Greenshield Lichen (*Flavoparmelia caperata*) and Rough Speckled Shield Lichen (*Punctelia rudecta*) were examined from the same individual Red Oak (*Quercus rubra*) trees, in Otsego County NY, to determine if there were differences between their respective micro-invertebrate communities. Paired 2-g lichen samples from the same tree were soaked in individual 50-ml baths of dechlorinated water and sprayed off, and the wash water was then examined for aquatic micro-invertebrates. While the aquatic micro-invertebrate fauna of the two species of lichens consisted of the same three metazoan phyla: Tardigrada (water bears), Rotifera (rotifers), and Nematodes (roundworms), the Common Greenshield supported three times the density of water bears, twice the density of rotifers and 50% more roundworms. Species occurrence, richness, and community composition also differed. Differences found between aquatic micro-invertebrate communities of two similar lichen species on the same tree indicate that the study of the aquatic micro-invertebrate fauna of epiphytic tree lichens may present some exceptional opportunities for ecological research.

Thu- PM-03

Aquatic Macro-Invertebrate Distribution Along a Hydrogen Sulfide Gradient in Brimstone Creek, NY

Cassidy Folts and **John Foster** (Fisheries and Wildlife Department, State University of New York, Cobleskill, NY)

The impact of hydrogen sulfide on stream macro-invertebrates has been studied extensively in laboratory experiments, but corroborating evidence from field studies is lacking. In this study, the density, distribution, and species composition of aquatic macro-invertebrates were examined along a naturally occurring hydrogen sulfide gradient in Brimstone Creek, NY. A Surber sampler was used to collect ten benthic invertebrate samples at five locations at 20-yard intervals downstream from the sulfur spring. Thirteen species of stream macro-invertebrates were collected in hydrogen sulfide levels ranging from 198 ppb closest to the sulfur spring to 33 ppb furthest downstream. As hydrogen sulfide concentration decreased, species richness and diversity increased, but total density of macro-invertebrates decreased. Two species, Spiny Crawler Mayflies (*Eurylophella bicoloroides*) and Flat Head Mayflies (*Stenacron interpunctatum*) that were abundant in the high concentrations of hydrogen sulfide were in a moribund condition and infected with water mold. However, four other species, Apple Caddisfly - American Grannom (*Brachycentrus americanus*), Small Minnow Mayflies (*Baetis tricaudatus* and *Baetis vagans*) and Combmouthed Minnow Mayflies (*Amelcetus iudens*), seemed to be unaffected by the hydrogen sulfide levels observed. This study demonstrates that in the wild, some aquatic macro-invertebrates can occur at hydrogen sulfide levels described as lethal in laboratory studies.

Fri- AM-03

Survey of Small Mammals on Sandstone Pavement Barrens in Northern, NY

Kayla Frenyea, Whitney Wilson, and Danielle Garneau (SUNY Plattsburgh, NY)

Sympatric species that compete over similar resources should not be able to coexist without niche partitioning. White-footed Mice (*Peromyscus leucopus*) and Deer Mice (*P. maniculatus*) share similar habitat needs, and consume similar resources. Researchers have suggested that this coexistence is permitted as a result of physiological and/or behavioral differences among these two species. This study was conducted at two sandstone pavement barren sites, selected for their global rarity as natural heritage sites, specifically the Altona flat rock in Chazy, NY at the Miner Institute Experimental Forest and the Gadway sandstone pavement barren in Mooers, NY. Sixty Sherman live traps were monitored monthly, for four consecutive nights, over the course of the summer. *Peromyscus leucopus* and *P. maniculatus* are very similar in pelage color and become very difficult to distinguish morphologically, such that several morphological metrics were collected. Additionally, saliva samples were drawn from each *Peromyscus* spp. in order to determine species using molecular verification via salivary amylase electrophoresis. There was a greater relative abundance of White-footed Mice than Deer Mice on both the Altona flat rock and Gadway sandstone pavement barren. Red-backed Voles, chipmunks, flying squirrel, Red Squirrel, Meadow-jumping Mice, and Northern Short-tailed Shrews were also found among the Altona flat rock. Red-backed Voles were not present on the Gadway sandstone pavement barren; however, Northern Short-tailed Shrews, chipmunks, and Red Squirrels were found on the pavement barren. The overall significance of our experiment was to determine the species composition of small mammals located on these unique sandstone pavement barrens. Additionally, our research served to refute earlier research, which suggested that only *P. leucopus* was present on these sandstone pavement barrens, in support of sympatric *Peromyscus* spp. populations.

Thu- PM-04

Species Diversity and Metal Content of Insects on Adjacent Serpentine and Granite Outcrops on the Deer Isles, ME

Jillian Gall, Louise Kirven-Dows, Carrie Graham, and Nishanta Rajakaruna (College of the Atlantic, Bar Harbor, ME)

Derived from ultramafic rocks such as peridotite, serpentine rock outcrops are deficient in many nutrients essential for plant growth including potassium, phosphorus, and calcium. These soils, instead, have toxic concentrations of nickel, chromium, and cobalt, heavy metals that create a stressful environment for plant growth. Serpentine outcrops in eastern North America exhibit lower rates of plant endemism and species richness than serpentine outcrops in western North America. As a result, many more studies focus on western serpentine than eastern serpentine, leaving informational gaps in the ecology, floristics, and fauna of eastern serpentine outcrops. While western serpentine has shown floral and faunal adaptation to the serpentine substrate, young eastern serpentine may offer a glimpse into early-stage evolutionary adaptations. To fill the informational gaps, we will build upon previous floristic surveys on the Deer Isles, ME, by comparing insects on Pine Hill, a serpentine outcrop, with insects on Settlement Quarry, a granite outcrop. We will survey the diversity of insect species on the adjacent serpentine and granite outcrops and examine their metal content. Although previous studies have not shown nickel hyperaccumulation ($>1000 \mu\text{g g}^{-1}$ dry leaf tissue) in plants on Pine Hill, many of the plants exhibit elevated nickel concentrations. Thus, our study will examine insects at the two sites to determine whether they differ and whether those inhabiting the serpentine site accumulate greater levels of nickel in their tissues. If insects accumulate nickel, then nickel biomagnification may occur in higher trophic levels.

Thu- PM-05

Phoretic Midges on Hellgrammites (*Corydalis cornutus*: Megaloptera) from the Susquehanna River

Michael Gavlick and Brian Mangan (King's College, Wilkes-Barre, PA)

Aquatic midge larvae have been observed living phoretically on various aquatic organisms, including members of the Order Megaloptera. While this relationship has been reported from many areas of the globe, the geographic variation that might occur within stream systems has not been well documented. We collected hellgrammites (*Corydalis cornutus*, $n = 363$) from seven sites along the Susquehanna River in Pennsylvania during July through September of 2010. In general, 23% of all hellgrammites collected had at least one midge case attached to their exoskeleton, but the incidence of phoresy ranged from 4.3% to 52.7% at the individual sites. Many hellgrammites had multiple midge cases attached to them, but smaller hellgrammites hosted few or none. The maximum number of midges found on a single hellgrammite was 55, with an average of 3.6 cases. Most cases were observed attached to the abdomen (77%), followed by the thorax (22%) and head (<1%). The cases were almost evenly divided among the dorsal and ventral surfaces, at 55% and 45%, respectively. Further research is required to determine the environmental variables responsible for the geographic variation in the incidence of this phoretic relationship.

Thu- PM-06

Investigations into the Factors Affecting Pellet Production in Double-crested Cormorants, *Phalacrocorax auritus*

Colin Grubel and John Waldman (CUNY Graduate Center and Queens College, NY)

Double-crested Cormorants, *Phalacrocorax auritus*, regurgitate pellets containing the undigested bones, scales, and otoliths from meals. Pellets are often dissected, and prey otoliths counted to estimate the diet of a cormorant population. Two aspects of pellet production may affect the accuracy of consumption estimates derived through pellet analysis: 1) the speed with which these pellets are produced varies, and 2) the otoliths of some fish species may be more likely to survive digestion to be regurgitated in pellets than others. Feeding trials were administered to captive birds to gain a better understanding of how different characteristics of prey morphology may affect pellet production. These variables included prey spininess, prey size, otolith shape, and otolith size. Birds were fed diets of Pinfish, *Lagodon rhomboides*, which had been manipulated in one of three ways: spiny fins removed, selected for different sizes, stuffed with otoliths of various sizes and shapes. Small, nontoxic colored glass beads were placed in fish fed out to allow the speed of pellet production to be estimated. Preliminary results indicate that the presence of spiny fins increased the rate time it took pellets to form ($P = 0.002$) Increasing prey size decreased the time it took pellets to form, but the results were not significant. Looking at otolith survival in the pellets, compact otoliths were more likely to be found in pellets than otoliths with a more fragile shape. The effect of otolith size was uncertain, with differences being seen only when the degree of size variation was great enough. More data is needed to draw strong conclusions on the effect of otolith size on the ability of otoliths to survive digestion. These results can help managers seeking to better quantify a population's diet based on pellet analysis.

Thu- PM-07

Flight Line Study of Double-crested Cormorants, Preliminary Results

Richard Flamio, Edward Gruber (Eastchester High School, Eastchester, NY), and **Colin Grubel** (CUNY Graduate Center and Queens College, NY)

Double-crested Cormorants, *Phalacrocorax auritus*, annually frequent the waters around Long Beach Island, NJ. In a preliminary study of their flight patterns, we observed birds at two communal roosting locations, Myer's Hole and Turtle Cove. We noted the travel directions of arriving and departing birds as well as recorded flock size. Flight lines of these waterbirds were determined by following them by boat and using binoculars and a compass. Of the birds observed at Myer's Hole ($n = 25$), those arriving flew in most frequently from the northeast (43%), where Barnegat Lighthouse and Island Beach State Park are located, or the southwest (27%), the interior of the bay. Most departing birds flew to the northeast (21%) or the southwest (24%) towards the same locations. Of the birds observed in Turtle Cove ($n = 25$), the largest proportion (76%) flew in from the northeast, where Barnegat Lighthouse is located, or the southeast (91%) to various locations on Long Beach Island's coast. Myer's Hole was found to be a roosting location in which cormorants stayed at and frequently flew to and from. Turtle Cove was determined to be a loafing location in which cormorants would fly to in great numbers, dive, and leave shortly after. Flight paths tended to go between resting locations on man-made structures or from these locations to foraging areas. The birds were observed in foraging areas popular with anglers as well as traveling to and from marinas, Barnegat Inlet, and local marshes. Understanding how Double-crested Cormorants utilize their environment may help conservationists understand how to manage their populations

Fri- AM-04

Helminth Diversity in Fishes from Otsego Lake, NY

Umrhan Habal, D. Willsey, M. O'Rourke, L Laraque, and F. Reyda (SUNY, Oneonta, NY)

A survey of the helminth parasites of the fishes of Otsego Lake and nearby water bodies in Otsego County, NY was undertaken from September 2008 to the present in order to characterize species diversity. Otsego Lake, an oligotrophic finger lake, is part of the Mid-Atlantic drainage basin. It serves as the headwaters of the Susquehanna River, which drains into the Chesapeake Bay. Fish were collected by hook and line, seine, or by gill net during fall, winter, spring, and summer. Over five hundred individual fish representing nine species were necropsied for helminths. These included: *Micropterus salmoides* (Largemouth Bass), *Ambloplites rupestris* (Rock Bass), *Lepomis macrochirus* (Bluegill), *Lepomis gibbosus* (Pumpkinseed), *Lepomis auritus* (Redbreast Sunfish), *Perca flavescens* (Yellow Perch), *Esox niger* (Chain Pickerel), *Catostomus commersoni* (Common White Sucker), and *Ictalurus nebulosus* (Brown Bullhead). Multiple species of metazoan parasites were encountered, including nematodes (e.g., *Spinitectis*, *Philometra*), digeneans (e.g., *Clinostomum*, *Crepidostomum*, and *Azygia*), cestodes (e.g., *Proteocephalus*), and acanthocephalans (e.g., *Leptorhynchoides thecatus* and *Neoechinorhynchus*). Although it may seem contrary to intuition, the occurrence of a diversity of helminths in the fish examined in this study is suggestive of a healthy ecosystem.

Fri- AM-05

Anadromy and Archaeology of Maine Fish as Evidenced by Dam and Dirt Removal

David Halliwell (Maine Department of Environmental Protection, Augusta, ME), Art Spiess (Maine Historic Preservation Commission, Augusta, ME), and Nate Gray (Maine Department of Marine Resources, Hallowell, ME)

Prior to the establishment of dams in the mid-1800s, the native sea-run fisheries in Maine rivers, as elsewhere, were well-appreciated by resident native peoples and European settlers. Following their decline and since the latter 1900s, the migratory fishes in Maine rivers have been targeted as part of a comprehensive fish restoration program within the Maine Department of Marine Resources. Over the past several decades, Maine DMR has historically conducted bi-weekly fish assemblage assessment studies using large beach seines at eight index sites on the Kennebec River from the town of Gardiner, north to Fort Halifax (mouth of the Sebasticook River). These riverine fish assemblage assessment studies have been carried out annually from late June through October. Fish species movement records prior to and following the removal of the Edward's dam in Augusta (1837–1999), based on beach seining data (fish species occurrence and relative abundance), form the basis for this subjective evaluation of anadromy in Maine fish. Truly anadromous native fish species, such as Atlantic Salmon, River Herring, American Shad, Sturgeon, Striped Bass and Sea Lamprey appear to have a strong predisposition to annually migrate from the sea to suitable freshwater spawning habitats under favorable free-flowing river conditions. Other weakly anadromous native fish species, such as Rainbow Smelt and Tomcod, tend to have less of a predilection to migrate great distances above the head of tide, regardless of the presence or absence of river barriers. In contrast, truly estuarine native fish species such as White Perch, though capable of successfully land-locking in freshwater lakes and ponds, show a strong preference to naturally remain in coastal ponds open to the sea and tidal waters below the head of tide. The inland versus coastal presence of fish skeletal remains found at Maine native peoples (pre-Columbian) archaeological sites tend to support these observations.

Thu- PM-08

Use of Smoked Aluminum Track Plates to Confirm Northern Cricket Frog Winter Habitat and Survival in Southeast, NY

Jack H. Hecht (HDR, Inc., Pearl River, NY)

Little is known about the late fall and early spring activity and overwintering habitat of the Northern Cricket Frog (NCF) in southeast New York and over much of their range. Potential winter habitats have been identified by circumstantial evidence (primarily concentrations of NCFs near potential winter habitat during the late fall as temperatures drop). Attempts by researchers to fence in potential winter habitats and locate NCFs as they emerge from winter hibernacula have provided little information over the last several years. Smoked aluminum track plates placed in late September 2008 provided some evidence that NCFs used rock crevices, but the timing was such that NCFs could have moved and overwintered elsewhere. In late fall (20–23 November 2010), smoked aluminum track plates provided evidence of NCF activity adjacent to potential winter habitat at a time when NCFs should be in winter habitat. However to confirm winter habitat, NCFs need to be identified leaving the habitat in early spring (March); this would also confirm that NCFs were able to survive the winter in this habitat. During the spring of 2011, smoked aluminum track plates will be placed at eight potential overwintering habitats, checked weekly and replaced as needed. The results of studies to date provided confirmation of habitat not previously considered as winter habitat, and potential results of spring 2011 studies may provide descriptions of other suitable winter habitats. The methodology to employ track plates for NCF studies is described; including track-plate design and placement, and identification of NCF tracks.

Thu- PM-09

Searching for a Mechanical BMP for Large-scale Management of Pale Swallow-wort (*Cynanchum rossicum*)

Casey Holzworth, John Shultz and Brian Thomas (NYS Office of Parks, Recreation and Historic Preservation, Thousand Islands Regions, NY), Robert T. O'Brien and Alyssa Reid (NYS Office of Parks, Recreation and Historic Preservation, Minnewaska State Park Preserve, New Paltz, NY), and George R. Robinson (State University of New York at Albany, Albany, NY) ENDREC

Some of the largest and most dense populations of the non-native invasive plant Pale Swallow-wort (*Cynanchum rossicum*) in New York State exist within Robert G. Wehle State Park. Management of Pale Swallow-wort and its negative impacts on native flora and fauna has proven very difficult. Although not strictly prohibited, the Office of Parks Recreation and Historic Preservation's (OPRHP) formal policy aims to reduce the use of pesticides, arguably the most accepted method of *C. rossicum* management to date. As such, other, non-chemical methods of *C. rossicum* management are being investigated. In 2010, OPRHP staff utilized Bobcat™ tractors and several different earth-moving attachments to remove *C. rossicum* from three 1/4-acre plots. Following *C. rossicum* removal, each test plot was divided into four quadrants and treated with one of three restoration techniques; no restoration, annual rye seeding, or annual rye-native grass/forb seeding. Pre-treatment surveys of *C. rossicum* densities ranging from 46–194 stems/m² in the forested plot and 13–403 stems/m² in the two open field test plots were reduced to 0–63 stems/m² in the forested plot (an 85% reduction) and 0–2 stems/m² in the two open field test plots (a >99% reduction) two months following treatment. Although this method appears to be successful based on *C. rossicum* stem densities, issues with the reclamation of native species, reclamation of *C. rossicum*-infested soil, and *C. rossicum* re-invasion over time may limit the usefulness of these techniques.

Thu- PM-10

Forest Regeneration in an Abandoned Clayplain Pasture

Shabana Hoosein and Jeffrey Corbin (Union College, NY)

Before European settlement, clayplain forests dominated the Poultney Valley in upstate NY. This now rare and diverse community has mostly been cleared for agricultural purposes. As a result, erosion and agricultural runoff have been negatively affecting a very unique wetland and warm-water river (Poultney River). The Poultney Valley is home to 7 threatened and endangered species and has been recognized as a national-level priority. Although agricultural processes have ceased, the restoration of the clayplain forest community has been slow. We tested whether dispersal limitation and/or competition with pasture species limit forest regeneration in this region. Our study took place in a clayplain forest remnant and a degraded clayplain forest that is now an abandoned agricultural pasture. We planted Red Oak (*Quercus rubra*) acorns and observed the germination rates at various distances into the forest remnant and into the abandoned pasture. Our results show that the seed establishment was highest in the pasture compared to the forest ($P = 0.018$), though seed herbivory (likely from small mammals) was observed on one side of the pasture (2 out of 6 transects). These results suggest that: 1) Forest regeneration in pasture may be dispersal limited; 2) competition from pasture grasses does not appear to limit tree establishment; and 3) herbivory may influence tree establishment, though further experiments would be required to confirm this. Increasing seed inputs into the pasture, along with efforts to limit seed herbivory, may be effective in increasing tree establishment.

Thu- PM-11

Restoration of Native Grasslands at Ganondagan State Historic Site

Tom Hughes, Peter Fry, Sue Poelvoorde, and Peter Jemison (NYS Office of Parks, Recreation and Historic Preservation, NY), and Janet Zuckerman (NYS OPRHP, Environmental Management Bureau, NY)

In the spring of 2009, a team of dedicated OPRHP staff and community partners initiated a project to restore native grassland communities for 61 acres of previously leased agricultural land at Ganondagan State Historic Site (SHS) in Victor, NY. These restored “oak opening” communities are composed primarily of native wildflowers and warm season grasses, including Big Bluestem (*Andropogon gerardii*), Little Bluestem (*Schizachyrium scoparium*), and Indian Grass (*Sorghastrum nutans*). The goals of this project are to (1) restore grassland communities that are representative in both composition (e.g., native grasses, forbs, and woody species) and spatial arrangement of grassland communities; (2) enhance the interpretive value of the site; (3) increase biodiversity of plants and animals and their habitats; and (4) foster partnerships with agencies and academic institutions that promote research and understanding of historic and current sustainable landscape management practices. Thanks to a seemingly ideal growing season in 2010, the fields at Ganondagan SHS are boasting exciting results from the May 2009 planting. Vegetation surveys at 9 random monitoring plots located within the 27- and 34-acre parcels revealed that, while competing exotics and some native plant species were present within the sampled areas, planted warm-season grasses and wildflowers represented 40-80% of the total vegetation. These observations are very encouraging and suggest that the restoration of the fields to an historical “oak opening” community type is progressing well. While these grasses continue to grow, Environmental Management Bureau, Finger Lakes Region, and Ganondagan staff are working collectively with partners (DEC, USDA, USFWS, US Forest Service, Albany Pine Bush Preserve Commission, National Park Service, NY NHP, TNC, Genesee Valley Pheasants Forever, Finger Lakes Community College, and local municipalities) to develop long-term burn and fire management plans. This poster details several ways in which the grassland restoration project at Ganondagan SHS has contributed to defining current OPRHP policies and management protocols for pesticide/herbicide use, native plants, and prescribed burning. In addition, this poster offers strategies and methods for achieving a successful ecological restoration project, celebrates the partnerships formed, and discusses long-term plans for grassland management at Ganondagan SHS.

Thu- PM-12

Mitigating Impacts of an Invasive on Recreation: Fanwort Control at Belmont Lake State Park

Kristen Husson, Karen Terbush, Ariana Newell, and Kate Haggerty (NY State Parks, NY)

Belmont Lake is the central feature of a popular State Park recreational area on Long Island. There is substantial growth of an invasive aquatic weed, Fanwort (*Cabomba caroliniana*) within the lake that has adverse impacts on recreation. Patron enjoyment of the Park is reduced in several ways: hiking/passive use through adverse visual impacts, fishing through line entrapment, and boating through entanglement due to the heavy infestation of non-native aquatic plants. New York State Parks was fortunate to receive a member item from Assemblyman Sweeney to begin much needed restoration efforts at this site. During 2008 and 2009, State Park staff worked to control Fanwort in the lake and complete assessments of the lake's bathymetry and sediments towards developing a comprehensive lake management plan. Control efforts were focused on mitigating impacts of Fanwort on recreation and included the use of benthic barriers, the stocking of Grass Carp, and a weed pull. There were pros and cons for each effort. Benthic barriers eliminated Fanwort growth, but only in a small area and at a fairly high expense; Grass Carp mitigated impacts lakewide, but did not have very pronounced results; and the weed pull eliminated Fanwort in a popular stretch of the lake for fishing, but the effects were short-lived. Overall, recreational opportunities at the Park were improved and the information gathered will be a very important component of a comprehensive lake management plan. Continuing efforts are needed, however, to improve conditions at this site.

Fri- AM-06

An Incidence of Elevation-caused Home Range Overlap By Two Populations of White-Tailed Deer, *Odocoileus virginianus*

Andrew Joachim (Lake Placid, NY)

Based on data collected in Southern Albany County, NY from 1991 to 1994, this study consists of documenting observations of White-tailed Deer in roadside habitats, noting their numbers and elevation. The observation route included 11 stops, each in the approximate center of 100-ft elevation intervals of grouped data. Elevation range was from 150 ft at the point of origin in Delmar, NY, to the highest elevation of 1250 ft at the Bear Swamp Source Pond, a Nature Conservancy preserve in the Town of Westerlo. The route passed through sections of the Helderberg Mountains that included suburban, rural, and succeeding agricultural areas, all of which contained suitable habitat for White-tailed Deer. Findings indicated that deer of the Helderberg Population followed predictable patterns of moving to higher elevations in summer and intermediate elevations during spring and autumn. Still, elevation means of observations were highest instead of lowest in winter, suggesting an influx from another population, probably from the higher and nearby Catskill Mountains, as these deer traveled to lower wintering areas overlapping with the home ranges of the Helderberg animals.

Thu- PM-13

Seep and Spring Distribution of *Cordulegaster diastatops* (Odonata: Cordulegastridae) in Nelson Swamp, Madison County, NY

Nina Kalantari, Van Scholten, and Barbara J. Hager (Cazenovia College, NY)

Cordulegaster species (spiketails) can be found in small streams, springs and seeps in North America, but knowledge of nymph habitat and distribution is not fully understood. Given that we saw adults foraging and reproducing in Nelson Swamp in previous summers, we decided to examine larval distribution and abundance during the fall of 2010. From September 9th through November 4th, we surveyed the seeps and springs along Chittenango Creek in Nelson Swamp (Cazenovia, Madison County, NY) in order to determine: (1) the species and distribution of them among the seeps and springs, (2) if there were any biological or physical attributes that correlated with presence/absence of spiketails, and (3) if there were detectable patterns in abundance and age distribution (cohorts, based on head width measurements) among and within seeps and springs. Shoreline length, water depth, and substrate type were measured for the sites. We removed nymphs to measure head width, body length and wingpad length, keeping some for identification purposes and returning the rest to the habitat. Despite sampling the sites in their entirety, we found most of the nymphs in muck and cobble in depths of <10 cm. Most (97%) of the *Cordulegaster* were the Delta-spotted Spiketail (*C. diastatops*); the others were the Twin-spotted Spiketail (*C. maculata*). The substrate of the seep or spring appears to influence both the abundance of the spiketails and their size. More and smaller individuals were present in cobble substrate than in pure muck. Spiketail density ranged from 0.09–7.17 individuals/meter of shoreline. Most individuals were found in the inlets, and it appears that two or more cohorts were present in most of the sites. Additional studies need to be done; we suggest further work on assessing physical parameters of the sites, including water chemistry and flow, determining food resources, and testing causal relationships between microhabitats, substrate, and nymph distribution in relation to life history.

Thu- PM-14

Metabolism of a Central New York State Beaver Pond

Larry Klotz and Laura Platt(SUNY College at Cortland)

With the return of the North American Beaver, more streams have been converted to their former, natural condition of free-flowing sections separated by impounded areas. The changed hydrology of the streams as a result of Beaver activity has been shown to influence ecological processes. One way to assess the impact of Beaver on the overall stream ecosystem is to measure the metabolic activity of organisms in the pond. The research reported on here determined net ecosystem productivity (NEP), which quantifies the amount of production and consumption of O₂ by the organisms in the system. The few previous studies on the NEP of Beaver ponds have provided differing results. This study was conducted from June through November 2010 at a Beaver pond in Hoxie Gorge State Forest, Freetown, NY. During this period, oxygen, temperature, and wind-velocity readings were taken every 15 minutes, 24-h per day, to calculate NEP. The NEP values ranged from -245 to 251 mmol O₂ m⁻².d⁻¹ throughout the study period. Generally positive NEP values during the spring and early summer period transitioned to mostly negative NEP in late summer and fall. The primary producers in this pond system were dominated by submergent and emergent aquatic plants. Aquatic plant biomass (dry weight) increased from 71.6 g m⁻² on 21 June 2010 to 225 g m⁻² on 14 July 2010. There was a relatively low phytoplankton biomass in the pond of approximately 100 cells mL⁻¹. Compared to Beaver ponds in boreal regions of North America, those in Central New York State show greater autotrophic activity during the summer growing season.

Thu- PM-15

A Preliminary Inventory of Ant Diversity in Roemer Arboretum, Geneseo, NY

Alexander Kulp and Jennifer Apple (SUNY Geneseo, NY)

This study aimed to quantify the diversity and species composition of ants that exist in the 8-ha Roemer Arboretum located on the SUNY Geneseo campus. The Roemer Arboretum was originally used as pasture until it was abandoned forty years ago. This area of secondary successional forest has hosted a number of on-campus ecological projects, including a study of the interactions between two slavemaking ant species and their hosts. Pitfall traps were set to collect ground-dwelling ants, and arboreal ants were sampled through collections by hand on vegetation. A total of 32 pitfall traps were set up in two transects spanning the Arboretum. Hand sampling was performed in four 5-m x 5-m plots. In addition, ants that were found to be tending Homoptera were sampled. Different ant genera were observed in the pitfall trap and vegetation samples, as pitfall traps failed to capture some ant species commonly observed on foliage. The species composition of the ant community in this secondary successional forest will be compared to inventories from other New York and Northeast sites.

Thu- PM-16

A River-wide Demographic Survey of an Imperiled Bivalve, *Margaritifera margaritifera*, in The East Branch Swift River

Brittany Laginhas (Clark University, Worcester, MA)

For most unionid populations, demographic information is either insufficient or nonexistent, yet it is critical for the creation of successful conservation and management strategies. I investigated a robust *Margaritifera margaritifera* population with regards to its demography and habitat preferences. Site-specific densities ranged from 0.33–97.2 individuals m⁻². The presence of individuals in all age classes provided evidence for sustained recruitment over time. Recent recruits (<5 years) comprised 6% of all individuals sampled. However, a large proportion of the individuals sampled consisted of older individuals (>20 years), thereby indicating a potential lack in reproduction. Stable water chemistry values and a surrounding pristine riparian habitat suggest that the lack of reproduction might be due to other intrinsic factors, such as an inadequate abundance of host fish. Situated at the southern end of its geographic range, this population is characterized by short life spans, reaching a maximum age of 43 years, and high growth rates. Habitat preference of *M. margaritifera* occurred on multiple scales. Site-level surveys indicated that *M. margaritifera* preferred pebble substrate, but had no preference for flow type. At a patch scale, excavations revealed substratum selection by *M. margaritifera* based on an individual's size. Small individuals avoided cobble substrate, and medium and large individuals avoided cobble and pebble substrate. All size classes preferred sandy substrates. Knowledge of the demography and habitat preferences of *M. margaritifera* in the East Branch Swift River is important for developing management plans, as well as for measuring the success of threatened *M. margaritifera* populations in biogeographically similar stream systems.

Thu- PM-18

Effect of Variable Mast Production on Human-Black Bear Conflicts in the Adirondack Park of New York

Courtney LaMere (SUNY, Syracuse, NY) and Stacy McNulty (SUNY, Newcomb, NY)

As the Black Bear (*Ursus americanus*) population in the Adirondack region has expanded, so have negative encounters with humans. NYS Department of Environmental Conservation (DEC) biologists suspected periodic increases in human-Black Bear conflicts were caused by a lack of natural food, but it had not been rigorously quantified until this study. American Beech (*Fagus grandifolia*) is the only hard mast species of significance in the region producing $\approx 165,000$ nuts/ha in good years and 0 nuts/ha during crop failures. The objectives of this study were to: (1) assess patterns in production of natural bear foods in the Adirondacks from a 20-year dataset of forest fruit and beechnut abundance, (2) quantify the relationship of food shortages to nuisance bear movements, and (3) develop recommendations for mitigation of human-bear conflicts. We hypothesized annual increases in human-bear conflicts were positively correlated to beechnut crop failure. SUNY ESF Huntington Wildlife Forest (HWF) in Newcomb, NY ranks fruit abundance annually on a scale of 0 (no fruit) to 4 (excellent), and seed abundance is estimated using traps. Results of linear regression indicated nuisance bear reports occurring inside the Park during the summer were negatively correlated to beechnut abundance rankings in the following autumn ($r = -0.803$). DEC Region 5 (75% of the Park) experienced pulses of bear complaints occurring approximately every 4 years. In this region, the mean number of human-bear conflicts was significantly higher during these peak years (1995, 1999, 2003, and 2007) than other years ($P < 0.0001$). Beechnuts/ha had a significant negative correlation to complaints in Region 5 ($r = -0.711$). As Black Bears are opportunistic omnivores, we averaged the rankings of 14 species of soft mast bear foods by year and found they produced fruit in unison with beech, suggesting a common driver of masting. This finding identifies summer food sources as a possible catalyst for the increase in human-bear conflicts and as an indicator of the success of the consequent beechnut crop. Indices of mast abundance can serve as indicators of human-bear conflict levels and may permit prediction of future periods of scarcity of key bear foods.

Thu- PM-19

Instar Dependent Grouping Behavior of the Bog Buck Moth (*Hemileuca maia*) Caterpillar

Sean LaMora and Karen Sime (SUNY, Oswego)

The grouping behavior of caterpillars of the rare Bog Buck Moth (*Hemileuca maia*) was studied in order to determine the relationship between instar and the size of the group preferred for each instar. Group sizes and the instars were recorded in May and June 2010 at two bogs in Oswego County, NY. Group size decreased with age. First, second, third, and fourth instars were found in groups averaging 29.5 ± 3.07 , 20.0 ± 1.70 , 11.5 ± 1.34 , and 2.6 ± 0.39 individuals per group, respectively, and fifth and sixth instars were mostly solitary. Field observations suggest that group size variation corresponds to differences in defensive strategy. Caterpillars may gain protection from grouping when their spines are small, but the spines become large enough with age for a single caterpillar to defend itself adequately. Moreover, older caterpillars also appear to use a variety of escape tactics; they, unlike the younger ones, drop off the food plant when disturbed and can swim to new food plants. Upcoming research goals for this study include experimentally assessing differences in defensive tactics at different larval stages, and evaluating the mechanisms of group cohesion and following behaviors. This study provides behavioral information about a little known species that is endemic to the Great Lakes Region, limited to at most 10 fens, and is considered endangered by the New York State Department of Environmental Conservation.

Thu- PM-20

Lost and Found in Onondaga: Historical Ecology of a Polluted Lake

Catherine L. Landis, R.W. Kimmerer, and D.J. Leopold (SUNY, Syracuse)

This project takes a biocultural approach to restoring one of the nation's most polluted lakes as well as surrounding areas in the watershed. Following the example of the Onondaga Nation's Vision for a Clean Onondaga Lake, the metaphor of healing is used to inspire re-connection to place and biota. The first step in the process is to tell a different story based on a thorough review of materials related to historical ecology of the Onondaga Lake watershed. Historical documentation also provides data on reference conditions for restoring Onondaga Lake. Water, plants, fish, birds, mammals, and soils are among the elements included in this study. Research to date on pre-European habitats suggests a clean lake (water quality) supporting abundant fish and wildlife including American Eel (*Anguilla rostrata*), Passenger Pigeon (*Ectopistes migratorius*), and Bison (*Bison bison*). Plant community data suggest some degree of agroforestry involving chestnut, walnut, pawpaw and various other fruits, as well as Wild Rice (*Zizania aquatica*). The post-European settlement history of the Lake concerns the production of salt, soda ash, steel, and other chemicals as Syracuse took shape in a cedar swamp drained for urban development. Our project thus far reveals the cost (in biodiversity and sustainability) of these commodity-driven, extractive industries, and suggests a different model of relationship. Onondaga Lake clean up and restoration provide an opportunity to discover where we are (as found in Onondaga) in terms of choosing to develop more reciprocal and informed relationships to place.

Thu- PM-17

Associations Between Stream Conditions and Growth Rates of Eastern Brook Trout

Miranda Lapierre, Alan R. Giese (Lyndon State College, VT), and John Magee, (New Hampshire Fish and Game Department, Concord, NH)

Salvelinus fontinalis (Eastern Brook Trout, hereafter EBT), a cold-water fish that ranges naturally from Maine to Georgia, is the only native trout species in much of the eastern USA. EBT require cold, clean, and highly oxygenated water to thrive, and have suffered extreme declines throughout major portions of their historic range. EBT declines have occurred concomitant with myriad environmental impacts including changes in streambed morphology, riparian vegetative cover, adjacent terrestrial vegetative cover, and fragmentation of streams by road crossings and poorly designed culvert installations. Efforts to restore EBT depend upon understanding the relative impacts of different environmental variables. In the present study, we collected age and size data on approximately 200 EBT from streams in northern New Hampshire. We first analyzed the relationship between age and size to understand the degree of variation in growth rate. We then analyzed growth rates for associations with water temperature, stream class, drainage, slope, density of trout and density other species of fish. ENDREC

Fri- AM-07

Restoration Insights from a Natural Population of Wild Blue Lupine in the Rome Sand Plains, Rome, NY

Mary Lehner, Dan Bruzzese, Jonathan Pinney, Chloe Von Ancken, Eddie Williams, and William Pfitsch (Hamilton College, Clinton, NY)

Wild Blue Lupine, *Lupinus perennis*, is the host plant for the New York threatened Frosted Elfin Butterfly, *Callophrys irus*. Lupine populations are declining in the Rome Sand Plains due to forest succession. We studied a recently discovered undisturbed lupine population in the Rome Sand Plains to gain insight into management strategies to expand lupine populations. We measured lupine stem size class and inflorescence density, light availability, soil pH, and soil organic matter content in randomly selected plots in the 30-m by 40-m patch. We found that lupine were more abundant in areas with higher soil pH and light availability. Soil pH was inversely correlated with soil organic matter content, and the density of lupine decreased as soil organic matter increased. Higher soil organic matter content and lower light levels occurred near White Pine (*Pinus strobus*) trees. Therefore, the removal of White Pine trees, in particular with controlled use of fire or wood ash deposition to raise soil pH, could increase the lupine population and provide additional Frosted Elfin habitat.

Thu- PM-21

Pearly Mussels in NY State Susquehanna Watershed

Paul Lord and Timothy Pokorny (Biological Field Station, Cooperstown SUNY-Oneonta, Cooperstown, NY)

Pearly mussels are native mollusks with complex life cycles which are easily disturbed by changes in watershed quality. There are four species historically found in the NY State Susquehanna River Watershed that have been identified by NYSDEC as meriting greatest conservation need (SGCN). These SGCN are the Brook Floater (*Alasmidonta varicosa*), the Green Floater (*Lasmigona subviridis*), the Yellow Lamp Mussel (*Lampsilis cariosa*), and the Elktoe (*Alasmidonta marginata*). Since the status of the four SGCN is unknown, we estimated their populations. In 2008–2009, we mapped four rivers—the Susquehanna, the Chemung, the Chenango, and the Tioughnioga—using kayaks and GPS units, noting bottom character, riparian uses and buffers. Additionally, we identified pearly mussels and their locations whenever observed, and, in 2009, sought out locations we believed would support mussels. In 2010, we completed quantitative surveys along 15 transects randomly chosen from the riffles, pools, and runs mapped previously. We sampled 982 1-m² plots for presence and number of pearly mussels using SCUBA, snorkel, and view buckets. We also excavated 180 plots to the depth of potential pearly mussel survival to ascertain numbers of immature pearly mussels and to correct our count of adults. Material excavated was washed through three sieve boxes. Results provide both encouragement and reasons for concern. We have identified a new unionid SGCN in the Susquehanna River Watershed: the Eastern Pearlshell (*Margaritifera margaritifera*), which has been found in NY, but not in the Susquehanna's watershed. We found all four of the SGCN in multiple locations. The Yellow Lamp Mussel, Elktoe, and the Green Floater are alive in all four rivers surveyed. The Brook Floater is found in three of the four rivers. Pearly mussel SGCN were found in areas below extended riffles (apparently thriving in the oxygenated waters) and in areas with minimally mobile substrates (presumably avoiding pulverization). We found young pearly mussels buried in mobile sediments, but rarely did we find adults in such sediments. We are concerned that unionid habitat is degraded by fluctuating water levels and current velocities resulting from poor agricultural practices, urban sprawl, and stream channelization projects, and, most apparently, from stormwater inputs to rivers.

Fri- AM-08

Spatial Aspects of Black-capped Chickadee Flocks in Response to Food Availability during Winter

Krysten Zummo and Michael Losito (Department of Fisheries and Wildlife, State University of New York at Cobleskill, NY)

Bird feeders can be found in backyards all across the world; indeed, in the United States, the popularity of watching birds for recreation and sport competition contributes 117 billion dollars annually to the economy in direct and indirect expenditures (USFWS 2003). The purpose of this study was to determine if mid-winter bird feeding attracts both local Black-capped Chickadee (*Poecile atricapillus*) flocks as well as chickadee flocks from further distances. We hypothesized that backyard bird-feeding stations would only attract chickadee flocks from afar during mid-winter months when the availability of natural foods is compromised by snow and ice cover. To test this, we used a bird-feeding station at a single location on the campus of the State University of New York at Cobleskill in Schoharie County, from November 2010 through April 2011. We captured chickadees using mist nets (36-mm mesh) and marked them with standard USGS individually numbered aluminum leg bands, and plastic colored leg bands (Avinet, Inc.) for individual recognition with 8 x 40x binoculars. Birds were aged as second year (SY) or after second year (ASY) using tail feather characteristics outlined in Pyle (1997). Standard measurements for each bird included wing chord (mm), tarsus (mm), culmen (mm), and body mass (g). All birds were released on site within 10 minutes of capture. Color-marked individuals were re-sighted around the campus to obtain an estimate of distances traveled to and from the feeding station leading to a better understanding how chickadees use space during winter. If our hypothesis is correct, then the proportion of newly banded birds should be highest during mid-winter and should wane as spring commences, at which time only chickadees local to the feeders will be captured. This determination will be made through contrasts of new captures and previous captures.

Fri- AM-09

New York Natural Heritage Program and State Parks: Working Together to Protect Biodiversity

Julie Lundgren (New York Natural Heritage Program in Partnership with Office of Parks, Recreation, and Historic Preservation)

From 1998 to 2003, the New York State Natural Heritage Program (NYNHP) was contracted by the Office of Parks, Recreation, and Historic Preservation (OPRHP) to compile data on rare species and natural communities in State Parks across the state. Full ecological community maps were delineated for 170 parks and 280,980 acres, and field surveys identified 160 new records for communities of statewide significance and 200 new records for rare plants and animals. In 2008, a formal partnership between OPRHP and NYNHP was established to continue this effort and to provide more detailed guidance for park managers and planners. Improved digital orthoimagery, mapping tools, predictive modeling, site-specific knowledge from park staff, and continued field inventory has led to better mapping and new discoveries even in well-surveyed parks. This poster highlights some of the new discoveries and tools, and the value of continued inventories and collaboration to protect the biological richness of New York State Parks.

Fri- AM-10

Habitat Suitability: Comparing Extant, Historic, and Potential Bog Turtle (*Glyptemys muhlenbergii*) Sites in Columbia, Dutchess, and Otsego Counties of NY

David MacDougall and George Robinson (SUNY at Albany, NY). and Rudy Arndt (Richard Stockton College)

This study will aid in the establishment of baseline conditions for a reliable habitat suitability model for the Bog Turtle using significant differences between habitat variables from known extant sites and potential or historic Bog Turtle sites. Known and potential sites were searched in Dutchess, Columbia, and Otsego counties of New York State, for the presence of the Bog Turtle. Site habitat characteristics were recorded and compared for all sites to determine if significant differences could be determined. This study will better focus the parameters used to assess sites for prioritization of search effort. Field measurements were taken from extant, historic, and potential Bog Turtle sites. Approximately 16 sites are being surveyed. Field measurements include vegetation (species, % cover), hydrology, soils (texture, color, chemical components, organic matter), pH, surrounding habitat types, and potential hibernacula. These parameters were measured along transect lines following a compass bearing and include 1-m squares every 5 m for 50 m. USFWS phase II survey techniques were also used to search all sites for turtles. The USFWS has identified the search for new populations and exploration of historic sites to be one of its recovery goals. This project will hopefully supply another piece to this puzzle as historic and potential sites are searched and new characterization techniques are discovered.

Fri- AM-11

Hen Houses Along the Hudson River Make Poor Real Estate for Mallards

Sean Madden (Bureau of Habitat, NY State Department Of Environmental Conservation)

Although Mallards (*Anas platyrhynchos*) are typically ground-nesting birds, they are well-documented to use over-water nesting structures (often called “hen houses”). Over-water nesting structures have been successful in increasing Mallard breeding in the prairie pothole region of the United States and Canada, but their use and success is relatively untested in other ecosystems where Mallards are known to breed, such as large river systems. As part of a 2008 study of polychlorinated biphenyl (PCB) levels in Hudson River Mallards, sixty-one (61) over-water nesting structures were placed along the Hudson River from Queensbury to Mechanicville, NY to facilitate the collection of Mallard eggs for PCB analysis. Sites were selected using aerial imagery and field reconnaissance to identify suitable nesting habitat within 400 m of the Hudson River. The nesting structures were monitored for use during spring and summer 2008–2010. Over the three breeding seasons, no evidence of Mallards using the nesting structures was found. Evidence of 3 Mallard nests outside of nesting structures was found during the monitoring period. One of the nests was within 40 m of the nearest nesting structure. In addition, several Mallard broods were observed and collected in close proximity to nesting structures. The observation of Mallard nests and broods near nesting structures suggest that the nesting structures were placed in appropriate habitat. The density of breeding Mallards compared to the availability of suitable nesting habitat is probably not high enough to prompt competition that might favor the use of over-water nesting structures along the Hudson River. Further studies would have to be done to see if this applies to other large river systems where Mallards breed.

Fri- AM-12

Baseline Inventory of Native Freshwater Mussels in New York's Southern Lake Ontario Basins

Amy Mahar and **Jenny Landry** (New York State Department of Environmental Conservation, Avon, NY)

New York State Department of Environmental Conservation has completed the second year of a five-year project to determine distribution, density, and status of native freshwater pearly mussel species (Unionacea) in the Southern Lake Ontario watershed. Mussels are a vital component of stream ecosystems, yet are among the most imperiled groups of animals in North America. In Southern Lake Ontario tributaries, the current status of freshwater mussels is unknown. At minimum, accessible segments on the main stem of each 11-digit Hydrologic Unit watershed were surveyed. Crews spread evenly across the stream width and waded upstream, using a view bucket to search all substrate types for live mussels and spent shells. Live mussels were identified to species, length was measured, density was estimated, and habitat characteristics and potential threats were recorded. Between 2009 and 2010, 154 sites along 40 streams and 12 Erie Canal sites were surveyed. Live mussels were found in 53% of surveyed streams, with NY species of greatest conservation need (SGCN) confirmed in 28% of streams. Spent shells were found in an additional 15% of streams. Evidence of mussels was found in 16 streams for which there were no previous mussel records, while other streams with rich records showed little in the way of extant populations. Native and invasive bivalves were found at all Erie Canal sites. In these surveys, 20 native mussel species were represented; 17 of the 20 species were found live, including 9 SGCN. Species diversity was greatest in Honeoye Creek (16 species), followed by the Erie Canal, Black Creek, and the Genesee River. Rare species found live include *Truncilla truncata*, *Toxolasma parvum*, and *Lasmigona subviridis*. In Genesee River tributaries, species diversity and number of SGCN present were greatest at sites closest to the Genesee River convergence. For tributaries associated with Finger Lakes, greatest mussel densities, dominated by common *Elliptio complanta*, were found near lake outlets. Surveys of Rochester urban streams revealed high densities of only three common species. Surveys for 2011 through 2013 will focus on tributaries of the Finger Lakes, Upper Genesee, and lake plains. Resulting distribution maps will guide mussel conservation efforts.

Fri- AM-13

Plant Diversity and Soil-Tissue Relations of Callahan Mine, Brooksville, ME

Margaret Mansfield and Nishanta Rajakaruna (College of the Atlantic, Bar Harbor, ME)

Callahan Mine is a metal-enriched Superfund site primarily containing copper, zinc, and lead, potentially at levels dangerous to human health and the environment. The extreme edaphic conditions at Callahan Mine make it particularly interesting for botanical study since metal-enriched soils often support plant communities consisting of distinct species or ecotypes. A recent study on the lichens of Callahan Mine points to a unique, metal-tolerant assemblage; however, little is known about the vascular plants of the site. This coming summer the vascular plants of Callahan Mine will be surveyed using standard field sampling methodology to compile a species list and assess species diversity indices. Analysis of heavy metal accumulation in soil and plant tissue will give insight into potential for metal transfer across trophic levels. This study will be relevant to better inform remediation efforts of this and other metal-enriched Superfund Sites in New England. Further understanding of metal-enriched habitats may also lead to insight on metal-accumulating plants that could potentially be used in the process of phytoremediation.

Fri- AM-15

Mercury Levels in Double-crested Cormorant Eggs, Chicks, and Adults

Marilyn Mayer, E. Lachance, **Kylie Rock**, and S. Locke (St. Lawrence University, Canton, NY)

Mercury is a neurotoxin that bioaccumulates and magnifies up the food chain. Because Double-crested Cormorants are a high-trophic-level, fish-eating bird, they might have high mercury levels and thus could possibly serve as a model for Common Loons. In 2008, we collected feathers from chicks and adults as well as eggs from ground-nesting colonies. Location had a significant effect on mercury levels in eggs ($P < 0.0001$) and chicks ($P < 0.5$), with levels for St. Lawrence River (SLR) colonies exceeding those for Lake Ontario. Half of the eggs collected on Gull Island (SLR, US) and at least one egg from W. Crossover (SLR) and Little Galloo (US Lake Ontario) had mercury levels above the threshold for reproductive impairment in Common Loons. Nest had a significant effect on mercury level of eggs ($P = 0.025$), and variation in mercury levels among eggs from the same nest ranged between 5% and 23%. The mercury levels of all chicks sampled (Little Galloo and W. Brother [Canada] in Lake Ontario and Murphy's Island [US] and D-41 [Canada] in the SLR) were below the lethal threshold for Loon chicks. The mercury levels of adults for Lake Erie ($n = 8$), Lake Ontario ($n = 3$), and SLR ($n = 5$) were all below the threshold for reproductive impairment in Common Loons. However, adult feather levels, which reflect adult body burdens at the time of feather regrowth at their overwintering location, may not be the best indicator for egg levels since Cormorants can spend 2 or more months at their breeding location before laying eggs.

Fri- AM-16

Canadarago Lake Management Plan Research Efforts

Nicholas Mazziotta (SUNY Oneonta, NY) and Matthew Albright (Biological Field Station, Cooperstown, NY)

Canadarago Lake, located in Otsego County, NY, is a dimictic water body formed by glacial activity and is considered eutrophic due to its high nutrient levels and tendency to lose oxygen in hypolimnetic waters. Tributaries to the lake include Oaks Creek, Hyder Creek, Herkimer Creek, Trout Brook, and Ocquionis Creek. Since 2008, research has been conducted in order to generate an annual state of the lake report which will be the basis for a future management plan for this lake. Topics of research have included aquatic macrophyte biomass, temperature, dissolved oxygen, conductivity, pH, total phosphorus, ammonia, total nitrogen, nitrite plus nitrate, and turbidity content. The focus of this research project, however, involves fecal coliform concentrations reported over the course of the summer of 2010. Samples were collected at the same locations as previous studies and were analyzed according to the standard methods membrane filter technique. All cultures were incubated in a water bath at 44.5°C for 24 ± 2 hours. The results of this study show that fecal coliform counts have increased in Canadarago Lake and its tributaries since 2008. This trend could be due to a variety of factors such as an increase in water fowl presence, unregulated lake-side septic systems, and as a result, phosphorus; all of which will be considered when creating a Canadarago Lake management plan.

Fri- AM-17

Correlations Between *Tsuga canadensis* and *Adelges tsugae* Cycles

Mary McClintock and Carol Loeffler (Dickenson College, Carlisle, PA)

The invasive Hemlock Woolly Adelgid (*Adelges tsugae* Annand) has decimated Eastern Hemlock (*Tsuga canadensis* L.) stands in part of its range in the eastern United States. This continuing study has monitored the abundance of adelgids, tree condition, and temperature of eight hemlock stands in central Pennsylvania over four years. Sixteen of 204 adult trees died. Reproduction was highly variable among plots, ranging from none to reproduction adequate to replace trees that died. The number of adelgids showed different patterns among plots, but peaked overall in winter of 2007–2008, declining thereafter. New growth and crown density increased slightly among live trees over time. At the plot level, correlations of winter adelgid presence with new growth in the same year, in the previous year, or in the following year were usually non-significant. This held true especially when one plot with chronically high adelgid levels and new growth was excluded as an outlier. At the individual tree level, relationships of winter adelgids to the past summer's new growth showed a tendency to be positive, while new growth showed a tendency to be negatively related to the previous year's adelgid population, but more data are needed to confirm these trends. We found no consistent evidence that new growth correlated with crown density or live crown ratio of individual trees. By gaining a better understanding of the effects of the Hemlock Woolly Adelgid in stands under different conditions, we can apply control methods more efficiently and effectively in areas where they are needed most.

Thu- PM-22

A Limnological Survey of the Lakes of Allegany County, NY

Gregg McConnell, James Wolfe, Stephen Hill, Rachel Hillegas, Michael Johnson, Peter Stark, and Daniel Wang (Houghton College, Houghton, NY)

In fall 2010, the Limnology class of Houghton College performed a survey of six lakes in the Allegany County area. Three of the lakes studied are impoundments open to the public: Allen Lake, Rushford Lake, and Cuba Lake. Moss Lake and Spring Lake are natural kettle lakes, with Moss Lake considered a classic bog (and protected Nature Conservancy preserve) and Spring Lake classified as a eutrophic lake. Darby Pond in Bliss, NY (Wyoming County) is manmade outflow lake connected to Wiscoy Creek. Secchi readings for the six lakes ranged from 1.2 m for Spring Lake to 3.2 m for Rushford Lake. Darby Pond showed the highest ANC values of 146.0 mg/L and the dystrophic Moss Lake had the lowest values of 6.5 mg/L. Levels of conductivity for the six lakes were correlated with pattern of ANC levels. The lakes with the greatest maximum depth (Spring Lake, Cuba Lake, and Rushford Lake) all showed stratification for oxygen and temperature, with hypolimnetic readings approaching zero. Phosphorus readings ranged from 6 ppb in Cuba Lake to 130 ppb for Moss Lake. The most important factors influencing lake characteristics were lake depth and watershed features. This class study was instructive in teaching basic limnological principles and concepts.

Fri- AM-18

Biotic and Abiotic Ecosystem Component Variation in the Hudson River Estuary

Toby Michelena, Charles Boylen, and Sandra Nierzwicki-Bauer (Darrin Fresh Water Institute, Troy, NY)

The Hudson River Estuary is a dynamic ecosystem that stretches approximately 154 miles, from the Federal Dam in Troy, NY, to the terminus in New York Harbor. Throughout the reach of the estuary, a series of tributaries merge with the mainstem of the estuary. The mouth of each of these tributaries has a unique physical configuration in the form of small embayments that form the confluence with the mainstem of the estuary. This investigation is designed to characterize the biotic communities and associated abiotic parameters in these embayments. Data collected to date indicates statistically significant variation ($P < 0.05$) in both biotic and abiotic parameters including chlorophyll-a, benthic invertebrate diversity, nutrients, dissolved oxygen, and light penetration as a function of both location and season. Turbidity, as measured by secchi disk readings reveal the two sampling locations outside the estuary have significantly ($P < 0.05$) less turbid water than all other sampling locations, with a significant increase in turbidity from north to south. Chlorophyll-a concentrations vary significantly ($P < 0.05$) both temporally and spatially. Preliminary data indicates a potential spring/fall pattern of peak chlorophyll-a concentrations occurring in the northern estuary in the spring and early summer and subsequently moving south in the fall and early winter. The variation in the biotic and abiotic components of these embayments reflect the structural differences of the confluence as well as the chemical and physical inputs that each tributary provides to the estuary. Understanding these differences will be used to help elucidate the role these embayments play within the estuary ecosystem.

Fri- AM-19

Project Silkmoth: Seeking Moth Sightings in Northern New York State

Janet Mihuc (Paul Smith's College)

Giant silkmoths (family Saturniidae) are the largest-sized moths native to North America. In addition to light pollution potentially exposing them to greater predation, silkmoth caterpillars of certain species are known to fall victim to a parasitic fly (*Compsilura concinnata*) introduced to the eastern US to control Gypsy Moth populations. Little is known about the extent to which this parasite may be influencing the distribution and viability of silkmoths in the northeast. Most silkmoths found in our area are distinctive in color and size, making them easy to identify without capture. Project Silkmoth, established in 2010, accepts sightings of adult silkmoths seen in New York State, north of Albany and Syracuse. The purpose of the project is to accumulate spatially referenced baseline data on silkmoth occurrences and provide an opportunity for volunteers to contribute meaningful information about these moths. Results from 2010 will be presented along with details of how to become involved in this project.

Fri- AM-20

Evaluating Local and Landscape-Level Controls on CPOM Retention in Urban and Forested Small Streams of Central Massachusetts: A Response of the Urban Stream Syndrome

Erin Miller (Clark University, MA)

Coarse particulate organic matter (CPOM) transport and retention was evaluated in 14 small streams in central Massachusetts. Seven streams were within the greater metropolitan boundary of Worcester, and 7 were within state-protected areas north of the city. All sites drain areas with a range of watershed and riparian disturbance levels. To determine retention rates, I released artificial objects (wooden dowels, simulating small branches, and diamond-shaped acetate strips, simulating leaves) of similar size and density to natural CPOM particles into 50-m reaches during low-flow conditions. Substrate composition was the most influential factor in acetate diamond retention, and rocks, boulders, and debris dams breaking the water surface were the most influential factor in dowel retention. Although there was no difference in retention rates between urban and protected areas, the analysis shows potential for variation due to significantly fewer debris dams in urban areas than protected areas. The amount of developed area in the watershed and vegetation characteristics of the riparian area attribute to this difference. These findings contribute to the understanding of the Urban Stream Syndrome, showing that streams in urban areas aren't necessarily "urbanized"; their geomorphology isn't necessarily different from streams in forested areas. The fact that influential factors range from the riparian area to the entire watershed supports the idea that it is important to consider stream restoration and management in the context of the entire natural landscape.

Fri- AM-21

Nesting Movements, Juvenile Recruitment, and Management of Three Turtle Species of Greatest Conservation Need within Southern NY State Park Lands

Marnie Miller-Keas (Trailside Museums and Zoo), Ed McGowan (OPRHP), and Matt Shook and Don Steinmetz (Highlands Environmental Research Institute)

In response to local and, ultimately, worldwide turtle population declines, Trailside Museums and Zoo and the Highlands Environmental Research Institute partnered to undertake a three-year State Wildlife Grant-funded project to evaluate and manage SGCN turtle populations in Harriman and Bear Mountain State Parks. While other species of SGCN turtles are extant within the study area (*Sternotherus odoratus*, *Chelydra serpentina*), we chose to work with the Wood Turtle (*Glyptemys insculpta*), Spotted Turtle (*Clemmys guttata*), and Eastern Box Turtle (*Terrapene carolina*) owing to noted declines in their populations as well as plentiful data on past locations from historical records. Our efforts focused on mature females to identify nesting habitat, monitor nesting behavior, and determine hatchling success. Extensive field surveys were conducted throughout each of the three years of the project period (2008–2011), with particular emphasis placed on nesting season (May–July). Field surveys conducted in three targeted watersheds within the project area revealed multiple sub-populations of each species, providing some insight into population demographics, individual habitat usage and home range, and juvenile recruitment. Radio-telemetry of 52 adult female SGCN turtles amounted to 1069 total telemetry locations and lead to the identification of critical habitats, including nesting sites. During the three-year study, 7 turtle nests were protected with handmade wire-mesh cages, and an experimental turtle nesting predator exclosure was constructed and deployed in a heavily used Box Turtle nesting site. Additionally, 500' of silt fencing was used to capture wild-hatched turtles. Wood and Box Turtle hatchlings collected from the nest protectors, exclosure, and silt fence were headstarted at Trailside Zoo, the first cohort being released in the summer/fall of 2010. Post-release monitoring of the headstarted Wood Turtle hatchlings will continue in 2011 with the support of the Norcross Wildlife Foundation, while others continue to serve as an important educational tool for relaying turtle conservation issues until their release. In our poster presentation, we will discuss in detail the results of the three-year study, including the status and sustainability of turtle metapopulations in Harriman and Bear Mountain State Parks, and mitigation options such as nesting habitat management, headstarting, and population augmentation.

Fri- AM-22

The Influence of a Catadromous Fish Species (American Eel) on Fish and Crayfish Populations in Streams

Sarah Mount and Catherine O' Reilly (Bard College, NY)

American Eels are a catadromous fish species whose populations have declined in recent decades. This decline could have ecological consequences for the structure and function of stream communities. To assess populations of eels, other fish, and crayfish, we conducted triple-pass electroshocking surveys at 15 sites along 10 tributaries to the Hudson River. High numbers of eels impact fish and crayfish communities. Sites below barriers that restrict eel migration upstream, such as dams and waterfalls, had high numbers of eels and either zero or low numbers of crayfish present. Sites above barriers had low numbers of eels and high numbers of crayfish. This inverse relationship between eels and crayfish is likely due to predator-prey interactions. Almost all of the crayfish caught were the native *Orconectes limosus*. One site that had been invaded by Rusty Crayfish (*Orconectes rusticus*) had an extremely high density of crayfish and no eels present. Rusty Crayfish have not invaded most tributaries to the Hudson River, possibly because of the presence of eels.

Fri- AM-23

The Use of Citizen Science to Predict Eastern Screech Owl Site Occupancy Across a Developed Landscape

Christopher Nagy (Mianus River Gorge Preserve, Bedford, NY), Kyle Bardwell (Mianus River Gorge Preserve; Ossining High School, Ossining, NY), Robert F. Rockwell (American Museum of Natural History, New York, NY), and Rod Christie, and Mark Weckel (Mianus River Gorge Preserve)

We sought to characterize the landscape-level habitat use of Eastern Screech Owls (*Megascops asio*) in a suburban/urban region of New York and Connecticut using citizen-science methodologies and National Landcover Data land-use information. Volunteers sampled their properties using repeated call-playback surveys in the summers of 2009 and 2010. Using these data, we modeled detection and occupancy as functions of distance to forest and distance to four levels of development (open, low, medium, and high). All occupancy models indicated greater occupancy rates when closer to open development (<20% paved surfaces) and farther from forest and low (20-49% paved surface), medium (50-79% paved surface), and high (>80% paved surface) development. Once detection was accounted for and ambiguous nondetections were removed, AICc-supported models were then tested against an independent dataset collected by trained technicians in Ossining, NY. The model with the best predictive accuracy (Cohen's kappa = 0.73 ± 0.17 ; mean + SE) contained distance to forest ($\beta = 0.0070 \pm 0.0037$; mean + SE), open development ($\beta = -0.0304 \pm 0.0090$), and pooled medium and high development ($\beta = 0.0054 \pm 0.0019$) covariates. In both datasets, detection increased when surveys were performed closer to forest and closer to high development. The high predictive accuracy of our model and the similar detection patterns among the two datasets show that, in this case, a citizen science methodology was comparable to systematic sampling, with the advantage of greater amounts of data over a wider area. Screech owls in suburbia appear to closely track open development and are less common in undisturbed forest and higher levels of urbanization, although the small effect of mid-to-high development compared to forest or open development indicates that site-specific variables may allow screech owls to persist in urbanized areas.

Fri- AM-24

The Flora of Little Duck Island, ME

Luka Negoita and Nishanta Rajakaruna (College of the Atlantic, Bar Harbor, ME) and Glen Mittelhauser (Maine Natural History Observatory, Gouldsboro, ME)

Little Duck Island (LDI) off the coast of Maine is a botanically under-explored island about 32 ha in size and 30 km south of the mainland. This island is unique as it has had limited human activity relative to most other islands in the region. As a result, LDI may be useful as a model for understanding ecological processes contributing to plant community assembly on coastal islands. A study was conducted in the summer of 2010 to survey the vegetation and associated abiotic factors of the island. Data include percent covers for species in 67 plots (2 x 10 m) stratified by vegetation type, stem counts, tree ages, a representative voucher collection of vascular plants, as well as detailed physical and chemical soil analyses generated using 63 soil samples. Maps were generated illustrating the distribution of plant species and community-level associations with 10 essential soil nutrients as well as other soil chemical features. Correlations between certain soil factors and detailed aerial photographs of vegetation were noted. Calcium, pH, nitrate, and phosphorus provided some of the strongest visual correlations between the forest and meadow vegetation communities. Multivariate analyses of plant species and soil chemistry are being conducted to yield statistical validation of these correlations and their useful implications in better understanding Maine island ecosystems.

Fri- AM-25

Students Gather Data for Tidal Flow Restoration Project at Sunken Meadow State Park

Ariana Newell (NYSOPRHP, Long Island Regional Environmental Office, Babylon, NY), Heather Young (NYSDEC), and Larissa Graham (NY Sea Grant)

Since 2008, NYS Parks has worked with the Open Space Stewardship Program (OSSP) on Long Island. The Open Space Stewardship Program (OSSP) teaches teachers and students to conduct much needed environmental monitoring and stewardship projects. In addition to providing valuable data, another goal of the program is to enable students to become stewards of public land and increase their appreciation of the environment around them. NYS Parks partnered with Hauppauge High School's A.P. Environmental Science classes (APES), NY Sea Grant, NYSDEC, and OSSP to develop a long-term habitat monitoring program along a tidal creek at Sunken Meadow State Park. A habitat restoration project along Sunken Meadow Creek is currently being planned to increase the tidal exchange of the creek in order to restore a degraded salt marsh and re-establish diadromous fish runs. This is the third year that students from Hauppauge's APES program have collected pre-project monitoring data. They collect data on water quality, macro-invertebrates, fish, wildlife and plants each month during the fall and spring of the school year to gather pre-restoration data which will be useful to NYS Parks and other agencies. Students present their findings at OSSP's year-end celebration every June and have received an Outstanding Stewardship Partner award for their efforts. This partnership is expected to continue for years to come as the project progresses through the implementation and post-construction phases.

Fri- AM-26

Stable Isotope Analysis in the Hudson River Marshes: Implications for Human Impact, Climate Change, and Trophic Activity

Khoi Nguyen (Columbia University, NY) and Dorothy Peteet and Sanpisa Sritraira (Lamont-Doherty Earth Observatory Palisades, NY)

Heightened anthropogenic activities such as land-use change and nutrient loading have been shown to affect both the biodiversity and sedimentation dynamics of wetlands, but how have the marshes of the Hudson River Valley been affected by these changes? The study of stable carbon and nitrogen isotopes provide useful records of eutrophication, the carbon cycle balance, biological productivity shifts, climate shifts, and trophic linkages pertaining to the wetlands of the Hudson River Valley. To answer the proposed question, records of stable isotopes $\delta C-13$ and $\delta N-15$ and the C:N ratio in sediment cores from the marshes of Iona Island, Piermont, Staten Island, and Jamaica Bay were measured using an isotope ratio mass spectrometer (IRMS). Obtained values suggest $\delta N-15$ levels in the marshes have increased over time since the first European contact due to agricultural and wastewater input, but decreased in the 1970s due to the increase in the use of synthetic fertilizers. Increasing human populations, however, have possibly caused $\delta N-15$ to continue to rise in the past couple of decades. The $\delta C-13$ signal decline in all the marshes parallels the ragweed (*Ambrosia*) rise, but the signal fluctuates towards the present indicative of significant vegetational changes at each site. This research therefore sheds light on the effects of anthropogenic forcings upon the dynamics of nitrogen and carbon cycles in the Hudson River wetlands. Results of this research will additionally provide important background data for future studies on trophic dynamics in the Hudson River.

Fri- PM-09

Breeding Biology of Grassland Birds in Western New York: Conservation and Management Implications

Christopher Norment (Department of Environmental Science and Biology, SUNY College at Brockport, Brockport, NY), **Michael C. Runge** (USGS Patuxent Wildlife Research Center, Laurel, MD), and **Michael R. Morgan** (NYS Department of Environmental Conservation, Massena, NY)

Declining grassland breeding bird populations have led to increased efforts to assess habitat quality, typically by estimating density or relative abundance. Because some grassland habitats may function as ecological traps, a more appropriate metric for determining quality may be breeding success. Between 1994 and 2003, we gathered data on the nest fates of Eastern Meadowlarks (*Sturnella magna*), Bobolinks (*Dolichonyx oryzivorus*), and Savannah Sparrows (*Passerculus sandwichensis*) in a series of fallow fields and pastures/hayfields in western New York State. We calculated daily survival probabilities using the Mayfield method, and used the logistic-exposure method to model effects of predictor variables on nest success. Nest survival probabilities were 0.465 for Eastern Meadowlarks, 0.484 for Bobolinks, and 0.586 for Savannah Sparrows. Fledge dates for first clutches ranged between 14 June and 23 July. Only one obligate grassland bird nest was parasitized by Brown-headed Cowbirds (*Molothrus ater*), for an overall brood parasitism rate of 0.004. Logistic-exposure models indicated that daily nest survival probabilities were higher in pastures/hayfields than in fallow fields. Our results, and those from other studies in the Northeast, suggest that properly managed cool-season grassland habitats in the region may not act as ecological traps, and that obligate grassland birds in the region may have greater nest survival probabilities, and lower rates of Brown-headed Cowbird parasitism, than in many parts of the Midwest.

Thu- AM-29

Area Effects Removed: Vegetation Characteristics and Grassland Bird Abundance in a Western NY Field

Nathan Grosse, **Christopher Norment**, and **Mark Norris** (Department of Environmental Science and Biology, SUNY College at Brockport, Brockport, NY) and **Heidi Kennedy** (NYS Department of Environmental Conservation, Bureau of Wildlife, Basom, NY)

Understanding relationships between local-scale habitat structure and obligate grassland breeding bird (OGBB) abundance is important for management and conservation. Studies typically examine OGBB habitat relationships across a series of fields of different sizes and vegetation types. However, it may be difficult to explain effects of vegetation on OGBB abundance, due to the influence of patch size and perimeter/area ratio on this metric. Between 2006 and 2010, we examined relationships between OGBB abundance and vegetation in a 83-ha grassland at the John White Wildlife Management Area (JWWMA) in western New York, thereby removing area and related effects. The JWWMA has been managed primarily for OGBBs since 2005. The grassland, which is surrounded almost entirely by agricultural fields, contains ten smaller management units planted into different mixtures of native and nonnative cool-season grasses, warm-season grasses, and forbs. Six OGBB apparently bred in the study area, although only three (Bobolink [*Dolichonyx oryzivorus*], Savannah Sparrow [*Passerculus sandwichensis*], and Grasshopper Sparrow [*Ammodramus savannarum*]) were common. OGBB, which were counted using a variable-width transect method, generally were most abundant in management units with relatively low, less dense vegetation, and a mix of nonnative cool-season grasses and forbs. Tall, dense stands of either cool-season grasses and forbs, or the warm-season grass *Panicum virgatum*, supported few OGBBs. Results of our study agree with other studies in the Northeast, which suggest that in most inland areas, OGBBs are most abundant in cool-season grasslands with low, relatively less dense vegetation.

Thu- PM-23

Soil Carbon Dynamics Following Land Cover Change in Western New York

Mark Norris (Department of Environmental Science, The College at Brockport State University of New York)

Land-cover/ land-use change is one of the major anthropogenic drivers of global ecological change including impacts on biodiversity and biogeochemical cycling. One of the predominant patterns of land-cover change in the temperate zone is afforestation and woody plant expansion, which has received considerable attention with respect to the global C cycle as a substantial terrestrial carbon sink. Vegetative change in western New York has followed a common pattern, as presettlement forests were extensively cleared for agriculture use. In the past several decades, a substantial portion of this agricultural land has been permitted to succeed back to shrublands or early successional forests. This study investigates soil C dynamics with respect to this land-cover change as old fields succeed to shrublands to early successional forests. Three habitats each of four dominant plant community seres (meadow, early successional shrubland, late successional shrubland, and early successional forest) along a successional chronosequence were analyzed at the Iroquois National Wildlife Refuge. The early successional habitat was further divided into distinct shrub islands in an herbaceous community matrix. Soil respiration rates were measured in situ six times during the summer 2008, with simultaneous soil moisture and temperature measurements. Soil C content, fine root biomass, peak aboveground herbaceous biomass, and woody basal area were collected once. Despite substantial shifts in the plant community composition and structure, soil C dynamics did not change correspondingly nor with significant effects of habitat type. Soil respiration rates were generally greatest in meadow sites, decreased with shrubland development, then increased with forest establishment. In contrast, soil organic matter was greatest in the early successional shrublands, then decreased over time. Soil microclimate changed predictably over the chronosequence as soil moisture generally increased and soil temperature decreased, perhaps with contrasting effects on soil C fluxes. While consequences of this land-cover change in western New York remain inconclusive, the scale of this change could result in substantial shifts in regional ecosystem C dynamics.

Fri- AM-28

Tracking Population Declines of Cave Bats Through Summer Mist-Netting Results

Kathleen O'Connor, Carl J. Herzog, M.S. Fishman, Alan C. Hicks, and Ryan I. von Linden (Department of Environmental Conservation, Albany NY)

Many studies have reported apparent losses of bats at winter hibernacula in the region affected by white-nose syndrome (WNS). Confidence that these apparent declines accurately represent regional population trends varies by species. Furthermore, the extent to which declines noted at hibernacula due to WNS result in changes in the abundance of bats on the surrounding summer landscape has not been well demonstrated. We examined the results of mist-net surveys done in New York from 2003–2010 to see the extent to which observations of WNS impacts at hibernacula might be supported. Observed changes in catch-per-unit-effort for Little Brown Bats (*Myotis lucifugus*) and Northern Bats (*Myotis septentrionalis*) agree with declines seen in winter survey data, i.e., losses of 90% or more. Mist-net captures for Big Brown Bats (*Eptesicus fuscus*) show no clear trend over the study period.

Fri- AM-29

Survey of Freshwater Crayfishes on Long Island

Samantha Olsen and Peter Daniel (Hofstra University, Hempstead, NY)

Crayfish are a diverse group of freshwater crustaceans, with over 600 species described globally. Two families occur in the United States alone, Cambaridae and Astacidae, and well over half of the described species are found in the US. The abundance of crayfish in the northeastern states is not nearly that of the southeastern states, where crayfish have the highest diversity globally, but they are still common. In New York, there are fewer than 15 species. On Long Island specifically, very little is known about the diversity and abundance of crayfish. A number of specimens have been deposited to the New York State Museum (NYSM) from several areas on Long Island, which gives the impression that there is a fairly diverse assemblage of crayfish on the island; however, no thorough investigations have been made before now to confirm or refute this. The museum specimens were used as guidelines to study the distribution of crayfish on Long Island more closely. Sixteen sites were sampled, ranging from western Nassau county to eastern Suffolk county. Two methods were used to sample for crayfish, dip netting and trapping, in which modified minnow traps were baited with cat food and set for 24 hours or longer. Two species were found: *Orconectes limosus*, a presumed native species, and *Procambarus clarkii*, an invasive species. Of the 23 sites sampled, *O. limosus* was found at six sites, while *P. clarkii* was only found at two. No samples contained both species. These preliminary results suggest that there are a good number of habitats on Long Island that are suitable for crayfish, though the diversity may not be as high as museum specimens suggest. Additional sampling will help give more insight into the crayfish populations on Long Island. Specifically, further sampling of various sites on Long Island will help determine if *P. clarkii* and *O. limosus* can be syntopic, and surveys of bait shops and pet stores will be conducted in an effort to find the possible source of *P. clarkii* in the region.

Fri- PM-01

Microcommunity Ecology of Mites (Acarina) of Trogid Beetles (Coleoptera: Trogidae)

James Philips (Babson College, MA)

A total of 110 adult and 62 larval trogid beetles were collected in AZ, CT, MA and NY by hand and Tullgren funnel extraction from: owl and eagle pellets; owl, eagle, falcon, and goose nests; feather bait; and small-mammal carcasses. In addition, 3326 trogid beetles in the collections of Bishop Museum (Honolulu, HI), Museum of Comparative Zoology (Boston, MA), Smithsonian Institution (Washington, DC), British Museum of Natural History (London, UK), and SUNY College of Environmental Science and Forestry (Syracuse, NY) were examined. The exterior of all specimens was microscopically inspected, and mites were removed and identified after recording their locations. Personally collected adults were also examined for subelytral mites. Phoretic and parasitic mites of 26 families were found on 120 species of trogid beetles (Coleoptera: Trogidae). Among the adult trogid beetles examined, 952, or 27.73%, harbored mites. Up to 292 mites occurred per beetle.

Fri- PM-02

Spatial Evidence that Intra-specific Competition Structures Rome Sand Plains Pitch Pine Populations

Jonathan Pinney and William Pfitsch (Hamilton College, Clinton, NY)

Pine barren ecosystems are characterized by dry sandy soils, low vegetative density, and an active fire regime, which makes them ideal habitat for high-light-requiring and fire-tolerant species like Pitch Pine, *Pinus rigida* (Mill.). Periodic fires kill Pitch Pine competitors, but leave Pitch Pine populations largely unaffected. When pine barren disturbance regimes are suppressed, however, Pitch Pine numbers greatly decline as succession occurs. Pitch Pine is an important component of upland forests of the Rome Sand Plains (RSP) in Rome, NY. Fires have been suppressed since the early 1900s, resulting in succession to closed-canopy forests. The higher vegetative density restricts Pitch Pine seedling establishment, and leads to Pitch Pine's competitive replacement by shade-tolerant species. My objective was to assess the role of competitive interactions in structuring Pitch Pine populations in two 0.8-ha forest plots of different successional status. I hypothesized that the younger Pitch Pine population structure would be shaped by intra-specific competition, while inter-specific competition would be more important for the older Pitch Pine population. The young forest had smaller trees and a higher Pitch Pine stem density. White Pine was the most abundant species in each plot, and small oaks were frequent in the young plot; there was no evidence of recent Pitch Pine seedling establishment in either plot. Tree-ring analysis demonstrated similar initial Pitch Pine growth rates, but showed slower recent growth rates of trees in the older plot, an indication of decreased resource availability. At the sub-plot level in the young forest, there was an inverse correlation between average Pitch Pine stem diameter and stem density, suggesting that self-thinning may have occurred where densities are high. An inverse correlation between summed stem diameter and distance between nearest Pitch Pine neighbors in the older plot provides evidence that intra-specific competition may have structured that population. There was no evidence of inter-specific competition. These findings suggest that intra-specific rather than inter-specific competition was more important in structuring these Pitch Pine populations, but that without disturbance to enable the establishment of young Pitch Pine, the RSP forests will lose their pine barren aspect.

Thu- PM-24

Survey of Muskrat Population on Ausable and Wickham Marshes in Clinton County, NY

Kate Podwirny, Caleb Smith, and Danielle Garneau (SUNY Plattsburgh, NY) and Joshua Premo (Binghamton University, NY)

The Muskrat (*Ondatra zibethicus*) is a medium-sized aquatic rodent that historically has been an important fur-bearing mammal for the eastern United States. From late January through mid-March 2010, Wickham and Ausable marshes in Clinton County, NY, both state-owned managed wetlands, were surveyed to assess muskrat distribution and abundance patterns. Using belt transects, Wickham Marsh was surveyed entirely. As a result of unseasonably warm weather and ice instability, only a section of the Ausable Marsh was surveyed and will be completed in future research endeavors. Vegetation at each GPS-marked den site was noted, as well as den height and width. Following the ground survey, GPS locations of den sites were imported into an ArcMap project to facilitate occupancy comparisons between marshes. Results from this survey suggest that there is overlap in home range and territories of most muskrats on these marshes, and that the dens are often associated with emergent grasses and shrubs. The width of the muskrat dens was not significantly different ($P = 0.21$) between the marshes, in contrast to their height ($P = 0.011$). Results from this study suggest that differences in the management practices at the two marshes could influence the distribution of muskrats. This study provides information which can help assist wildlife managers and will add to the gap in literature for this ecosystem engineer.

Fri- PM-03

Comparison of Two Artificial Cover Object Grid Densities for Sampling Terrestrial Salamanders

John Polascik and Brian Mangan (King's College, Wilkes-Barre, PA)

Artificial cover objects (ACOs) have been widely used for studying terrestrial salamanders. While ACOs offer a degree of sampling standardization above natural substrates, their successful use can be a function of many variables, including those related to their deployment density. We conducted this study to determine the influence of ACO density on salamander abundance and diversity beneath cover boards in a riparian forest. Each of our five study sites contained a 10 x10 grid with 100 boards spaced 5 m apart and another grid with 100 boards spaced 1 m apart. The ACOs were placed in the plots during late April or early May, and checked every three weeks from June through November. In 8000 individual board inspections, we observed 895 salamanders (many were repeated observations). Four species of salamanders were observed throughout the season; Red-backed Salamander was most often observed (77%), followed by the Eastern Newt (eft form, 18.3%), Spotted Salamander (4.6%), and Four-toed Salamander (0.1%). In general we found more species and greater numbers of salamanders in the larger plots (lower density). However, the diversity and relative abundance of salamanders varied greatly among the plots. The larger plots also contained more ACOs with multiple salamanders beneath individual boards. Our results suggest that researchers should consider ACO deployment density when designing studies to monitor for terrestrial salamanders.

Fri- PM-04

Urban Herpetology: Understanding the Invasion Biology of Red-eared Sliders in Urban Ponds

Shahriar Rahman (Brooklyn College, NY)

Red-eared Slider Turtles (RES) are considered amongst the world's worst invasive species. Outside its native range, RES have established feral populations in the northeastern United States. RES are abundant in urban ponds and lakes throughout New York City and Long Island. Despite their abundance in urban and suburban areas, we know very little concerning their ecology and their impact on the native turtle species. RES in urban areas provide an excellent opportunity to learn about the basic population biology and short-term evolution of invasive species. I investigated the ecology of an introduced population of Red-eared Sliders in a 0.4-ha, urban pond in Queens, NY from September 2007 to April 2011. The objective of this study was to increase our knowledge on the ecological difference between the feral populations of RES in urban areas and the populations in their native range. During the study period, 63 individual RES were captured and recaptured a total of 230 times. I measured parameters, including growth, body size, sex ratios, sexual dimorphism indices, ontogenetic melanism, and population density. The mean plastron lengths of male and female RES were 141 mm and 173 mm, respectively. Sexual size dimorphism index was calculated to be 0.23. The minimum size of plastron of melanistic male was 141 mm. Melanism occurred in 28.6% of the adult males. I compared these values with the published values of the populations of RES in their native range. The mean plastron length of males and females, and the degree of sexual size dimorphism was similar to the published data of populations in their northernmost, native range. The proportion, average size, and minimum size of the melanistic males were also found consistent with the published values for populations of Red-eared Sliders throughout its native range. Overall, I found no significant, consistent difference in population demographics of RES between an introduced population and the populations in their native range.

Fri- PM-05

Patchogue Lake Eutrophication and Restoration

Mohammad Rana, Melissa Hoerning, Michael Namorato, and Christine Nastasi (Saint Joseph's College, Patchogue, NY)

Patchogue Lake, the focus of our study, is located in the Town of Patchogue, Suffolk County, NY (40°46'00"N ,073°01'15"W). It is connected to the Upper Patchogue Lake, and Cannon Lake to its north. This series of lakes is also attached to the Great South Bay through Patchogue River. The lake appears to be in the last stage of eutrophication, or lake death. The visible signs of lake eutrophication are lake islands (covering fifty percent of the lake and dominated by invasive species of burr reeds, *Sparganium* spp.), thick algal bloom, and an unusually high concentration of sediments. The lake also appears to have abnormal concentrations of nutrients and heavy metals. These traits are pertinent to the Patchogue community, as well as to Long Island as a whole, because of the importance lakes play in recharging the aquifers. In attempt to save the lower part of Great Patchogue Lake, the aquatic plants must be removed, and lake islands must be dredged. As a result, the excess nutrients and heavy metals may flush out. Bioremediation methods will be discussed as well. It is also recommended that the lake should be monitored regularly for invasive species and excess amounts of heavy metals and nutrients.

Thu- PM-25

Ranavirus-exposed Wood Frog Tadpoles (*Lithobates sylvaticus*) are Robust to Three Natural Environmental Challenges

Brooke Reeve (SUNY, Syracuse, NY) and Jesse Brunner (Washington State University)

Amphibian larvae in ponds and ephemeral pools are forced to cope with an array of challenges as they develop: high conspecific density, predators, and limited resources are just a few of the obstacles on the path to metamorphosis. Ranaviruses, a group of highly lethal emerging pathogens, impact larval amphibians during these sensitive early life stages. It remains unclear whether natural environmental challenges might alter tadpole physiology and ability to cope with ranavirus outbreak. This study aimed to determine how high density, predator cues, and food limitations influence Wood Frog tadpole performance and response to ranavirus exposure. Two experiments, one testing individual-level effects in the laboratory and one testing community-level effects in mesocosms, were conducted in which Wood Frog tadpoles were chronically challenged with a stressor and then exposed to ranavirus. Tadpole mass, development, and corticosterone levels were measured to determine how each treatment effected physiology. Disease mortality, prevalence, and time to death were recorded to discover whether any treatment increased the severity of disease. Results show that, although food limitation negatively impacted tadpole physiology, density, and predator-challenged groups remained robust. Amazingly, every treatment group was able to cope with disease as well as or better than the control groups, which faced no adverse conditions. Ranavirus prevalence was similarly high (>85%) across all treatments, and no differences were observed in time to death by treatment. Case mortality was comparable for all treatments (~50%) except mesocosm high-density treatments, in which it was significantly lower (12%). Competing risk analysis of metamorphosis and survival showed that mesocosm tadpoles in the high-density treatment were three times more likely to metamorphose than the no-stress controls: the faster development rates may have served to rescue those tadpoles from disease mortality. These results suggest that the environmental challenges studied may not increase the severity of disease, and indeed, in the case of high density, may even promote survival. Accordingly, disease management strategy should focus on preventing the introduction of ranavirus to native ponds.

Thu- PM-26

Development of Methods for an in situ Assessment of Black Bass Condition at Capture-and-Release Tournaments

Alejandro Reyes, Timothy Mihuc, and Mark Malchoff (Lake Champlain Research Institute, SUNY Plattsburgh, NY)

Developing effective methods for scoring fish condition following escapement from commercial gear or recreational catch-and-release events remains an inexact science. While evaluation methods have been used to better evaluate the impacts of by-catch in marine fisheries, they could also be used to more fully understand the impacts of catch-and-release activity in both marine and freshwater environments. While blood chemistry is the best or preferred way to evaluate fish condition, it is often impractical or too expensive, given the temporal and spatial restraints present in the field. In order to examine and quantify the condition of fish tagged at local Black Bass tournaments, we are currently developing an in situ assessment of fish condition. This index is based off 3 major parameters: barotrauma and its indices, wounding and its indices, and reflex impairment. Each parameter contains an individual score based on presence/absence. Testing of this index and data collection will take place in the summer of 2011 at local bass fishing tournaments on Lake Champlain. We anticipate that this index may have a positive impact on management of bass tournaments.

Fri- PM-06

Isolation and Identification of Bacteria from *Azolla caroliniana* Extract Grown on Select PPCPs

Anne Roberts, Charles Boylen, and Sandra Nierzwicki-Bauer (Darrin Fresh Water Institute and Department of Biology, Rensselaer Polytechnic Institute, Troy, NY)

Recently, there has been growing concern over the level of pharmaceuticals and personal care products (PPCPs) appearing in the aquatic environment. The floating fern, *Azolla caroliniana*, presents itself as a novel tool for the remediation of PPCPs. *Azolla caroliniana* is a widely known hyperaccumulator of diverse compounds and contains a multitude of bacterial symbionts within its leaf cavities. Studies have suggested that the bacteria within *Azolla* may use a wide range of organic compounds as energy sources, potentially aiding in the degradation of hyperaccumulated compounds. This research presents preliminary data on the isolation and identification of bacteria from *Azolla caroliniana* extracts capable of growing on media seeded with select PPCPs. To date, bacteria have been isolated capable of growing on R2A agar seeded with 10 mM SDS, 100 mM ibuprofen, and 100 ug/L 17 β -estradiol. This study is significant as it explores the potential role played by bacterial symbionts within the plant and, also, could provide an additional approach for remediation of PPCPs.

Fri- PM-07

Antibiotic Resistance in American Crow Nestlings

Douglas Robinson (Mount Saint Mary College, Newburgh, NY) and **Nikki Izen** (Buena Vista University, Storm Lake, IA)

Wildlife have long been barometers of environmental health, but investigating the role of emerging environmental contaminants, such as antibiotics, on wildlife populations has only recently gained significant attention. The widespread use and abuse of antibiotics in treating and preventing illnesses has led to an increase in the number of antibiotic-resistant bacteria that are present in the environment, but the extent to which wildlife species are affected by this increased prevalence is unknown. The American Crow (*Corvus brachyrhynchos*), a bird species that lives in close association with humans, could potentially be one species that is resistant to relatively common antimicrobial agents and could serve as a host for resistant bacteria. We investigated the prevalence and spatial distribution of antimicrobial resistance in the bacterial flora from the urogenital tract of nestling American Crows in Storm Lake and Alta, IA. In tests of antibiotic resistance to eight commonly used antibiotics, only resistance to Bacitracin and Vancomycin was ubiquitous among our nestlings. Furthermore, resistance to these two antimicrobial agents was more likely in nestlings raised in suburban versus rural areas, a finding that contradicts much of the literature on this subject. If bacterial resistance compromises individual health, then our evidence adds further insight into the previous finding that nestlings raised in suburban areas are in poorer body condition than those raised in rural areas. Further research is needed to determine the source and amount of antibiotics in the environment and how antibiotic resistance develops or is obtained by nestling American Crows.

Fri- PM-08

Genetic Relatedness and Wolf Hybridization of the Coyotes of Allegany County, NY

Stephen Ruhl and James Wolfe (Houghton College, NY)

Recent studies have shown that Coyotes of the Adirondacks are the result of hybridization with Wolves from southern Ontario. Allegany County in western New York may represent a “meeting point” where Coyotes entering from northern New York and those coming through the Midwest may have met. We hypothesized that the Coyotes of Allegany County would have some Wolf DNA signatures, although not to the same extent as those from the Adirondacks. We tested hair samples from Coyote pelts taken in New York state and western Illinois. Results indicate that Coyotes from Allegany County show Wolf hybridization whereas those from Illinois as typical of Midwest populations do not. We present evidence suggesting the pattern of Coyote introduction into western New York State and contrast it to results found previously for the Adirondack region.

Fri- PM-10

Efficacy of a Norway Maple Eradication Effort at Lyndon State College

Corey Santorello, David Conant, and Alan Giese (Lyndon State College, Lyndonville, VT)

Invasive plants can negatively impact natural systems in significant ways. *Acer platanoides* (Norway Maple) is an invasive tree that competes directly with commercially and culturally important native trees such as *Acer saccharum* (Sugar Maple) and *Acer rubrum* (Red Maple) in the northeastern USA. In 2005–2007, students in several classes at Lyndon State College embarked on an effort to remove Norway Maple from a 0.10-ha plot on campus. The oldest trees removed at that time were in excess of 90 yrs, indicating that the infestation was well established. For the present study, we revisited the same plot to assess the efficacy of the 2005–2007 eradication effort. We systematically walked the plot and pulled every Norway Maple seedling or sapling detected. Additionally, we cut every Norway Maple stump sprout at stump or ground level. None of the stems or sprouts collected in 2010 were seed bearing, indicating that the seed bank had not been replenished in at least three years. We aged seedlings in the smallest size class to quantify the ongoing contribution of the standing seed bank. In total, we removed over 2700 saplings and seedlings in 2010 that ranged in age from 1 to >10 years. This result compared to over 8700 saplings and seedlings removed in 2005–2007. Thus, despite 90 person hours of extraction effort during 2005–2007, a large number of trees in a variety of age classes were missed. Our results highlight the need to detect and mitigate biological invasions as early as possible. Additionally, our results confirm the need for an iterative approach to invasive plant management, and suggest that a three-year return rotation may be appropriate for Norway Maple eradication.

Fri- PM-11

Pine Barrens Restoration: Analysis of Butterfly Habitats in the Rome Sand Plains

Jennifer Santoro, Ernest Williams, and William Pfitsch (Hamilton College, Clinton, NY)

Frosted Elfin (*Callophrys irus*) and Karner Blue (*Lycaeides melissa samuelis*) butterflies, both listed species in New York, depend on native Blue Lupine (*Lupinus perennis*) for reproduction. These butterflies have declined because of lack of disturbance of the habitat, forest succession, and urban encroachment. Lupines and these butterflies could thrive in the Rome Sand Plains (RSP) of central New York, except for habitat degradation. Recent research has shown that tree removal can increase lupine growth and flowering. We investigated this habitat further to understand how to increase and maintain lupine cover, enhance the existing Frosted Elfin population, and develop areas suitable for the introduction of Karner Blues. We evaluated studies from neighboring states to characterize ideal habitat, and we used ESRI ArcGIS® software and our own observation records to determine areas in the RSP most used by Frosted Elfins and therefore most suitable for butterfly introduction or habitat alteration. Spatial analyses like these can contribute to a comprehensive conservation plan for the RSP.

Thu- PM-27

Effects of Engineered Nanoparticles on Native Woody Plants

Sara Scanga, Alyssa Thomas, Andrea Volo, Stephanie Benzing, and Sai Han Myo Tun (Utica College, Utica, NY)

Engineered nanoparticles are used in a variety of commercial products, and are subsequently distributed through waste streams into both terrestrial and aquatic ecosystems. Despite the increasing prevalence of engineered nanoparticles in the environment, their effects on ecosystem functioning are just beginning to be examined. Most previous research on the effects of these nanoparticles has focused on agricultural crops and on herbaceous, rather than woody, plant species. Our objective is to examine the effects of engineered nanoparticles on trees and shrubs native to northern hardwood forests. We are exposing eight woody species to manufactured gold nanoparticles. We will examine whether and how quickly the gold nanoparticles are assimilated into the tissues of the plants, looking for differences in uptake among the species. We will also examine the effect of nanoparticles on plant growth by comparing exposed plants to unexposed controls. Our results will provide baseline information needed to begin crafting evidence-based policy and management responses to the increasing spread of engineered nanoparticles in the environment.

Fri- PM-12

Surveying for *Drosera* Presence in Clinton County, NY

Lilly Schelling, Shane May, and Christopher Martine (SUNY Plattsburgh, NY)

The focus of this study was to establish locality records for *Drosera* (sundew) species presence in Clinton County, NY. Although there are suitable sites for *Drosera* in Clinton County, there were no vouchered records for the presence of the genus, according to the New York Flora Atlas. Three species, *D. rotundifolia*, *D. intermedia*, and *D. filiformis*, were hypothesized to be found in bog sites in Clinton County based on their range in the Northeast. Localities surveyed for *Drosera* presence included sites specified by the New York Natural Heritage Program (NYNHP) as having *Drosera* in past years and sites that had bog habitat characteristics. Sites were also searched that had been recorded by the NYNHP as having *Sarracenia purpurea* presence, as this species is usually found growing alongside *Drosera*. Of the locations visited in this study, *Drosera* presence was only observed in two of the sites. These two locations were NYNHP sites that were previously noted as having *Drosera* presence. The first site is a Black Spruce/ Tamarack bog located on a sandstone pavement barren called Stafford Rock. This site was last visited by the NYNHP in 1991 and was classified as a healthy bog site in excellent condition. After observing this site, it seemed the health of the bog now and into the future will be compromised by overcrowding of shrub and tree vegetation. The second *Drosera* site, Mud Pond, is a Tamarack/ dwarf shrub bog last visited by the NYNHP in 2005 and declared in excellent condition. *Drosera* individuals at this site are growing in a creeping *Sphagnum* bed across the pond; which may prevent other species from overcrowding the *Drosera* habitat. *Drosera rotundifolia* was the only sundew species observed at both sites.

Fri- PM-13

Long-term Comparison of Wetland Plant Communities in Ausable Marsh, Clinton County, NY 1978–2011: Preliminary Results

Timothy Shearman and Christopher Martine (Natural Science Graduate Program, SUNY Plattsburgh, Plattsburgh, NY)

Plant community structure and composition can be altered for a number of reasons such as succession, invasion, or changes in climate or hydrology. This study sought to identify community changes that have occurred over the past thirty years in Ausable Marsh, a large, complex wetland on Lake Champlain. Field maps of plant communities from a study in 1978 were digitized in GIS, where random nested plots were generated in each stratum identified. Preliminary results from the first of two field seasons (2010 and 2011) show that Sørensen's similarity index between 7 sampled strata and their 1978 counterparts varied. Overstory similarity was relatively high, with most strata over 60%. Due to lack of reference data, midstory and understory layers could not be compared in all strata. However, in those that could be compared, similarity was low (mostly under 40%), indicating that community changes may have occurred in these layers. Among the major changes were the spread of non-native species such as European Frogbit (*Hydrocharis morsus-ranae* L.), which was not present in the baseline data, and Purple Loosestrife (*Lythrum salicaria* L.), which greatly increased its range in the marsh. Native species such as Wood Nettle (*Laportea canadensis* (L.) Weddell) also increased in abundance. This project will set up a long-term research study that will enhance our ability to record and understand large-scale shifts in diversity and ecosystem function in wetland habitats of the Sixth Great Lake. It can also provide critical information in developing a management plan for non-native species in the marsh.

Fri- PM-15

Size, Strength, and Composition of Snail Shells Reared Under Light Pollution

Zakiya Skeete and T. McCarthy (Utica College, NY)

Pulmonate snails are widespread and important members of aquatic ecosystems, and may serve as indicator-species when assessing levels of environmental stress. As benthic organisms living in relatively shallow waters, pulmonates may be at risk of exposure to various anthropogenic pollutants, including light pollution from above. Light pollution (artificial light in normally dark nocturnal habitats) has wide-ranging effects on organisms, including altered behavioral patterns, growth rates, and reproduction. Few studies, however, have examined the effect of artificial night lighting on the biology of aquatic invertebrates. *Physa acuta* is a common aquatic snail found throughout North America, and is a small, fast-growing species that produces relatively thin shells. A previous experiment demonstrated significant differences in behavior, physiology, and growth rates for snails reared under 100 lx diurnal illumination and four different nocturnal lighting treatments (0.0001, 0.01, 1, or 100 lx) for four months. Here, we compare strengths and compositions (% of organic compounds) of the snails shells from that earlier work. Shell strength was measured by determining the mass required to crush the empty shell. We estimated the shells organic content (%) by determining the change in mass following burns (550 °C) in a muffle furnace. Shell strength significantly increased with shell length for most treatments, but no significant relationship was evident for 0.01 lx treatment snails. The size of the shell (length) generally did not correlate with the % change in mass after burning, suggesting that the snails did not alter the organic content or composition of the shell with changes in growth rate. Given the abundance and importance of hermaphroditic molluscs in aquatic ecosystems, it is important to understand how disruptions to the physiology, life-history characteristics, and mating systems affect these species and the communities in which they live.

Fri- PM-16

Terrestrial Salamander Diet along a Calcium Gradient in the Adirondack Park, NY

Caitlin Snyder, Stacy McNulty, Melissa Fierke, Colin Beier, and Russell Briggs (SUNY ESF, Syracuse, NY)

Over the past several decades, acid deposition has shaped forest dynamics in the Adirondacks. Calcium deficiency is one consequence that may impact communities, particularly forest-floor and soil organisms. Salamanders and invertebrates contribute greatly to forest processes by connecting above- and below-ground systems through predator-prey interactions. However, little is known about how these interactions may be influenced by calcium. Our objectives were to characterize the diet of the Red-backed (*Plethodon cinereus*) and dusky (*Desmognathus* spp.) salamanders and quantify the relationship between salamander diet and soil calcium within Adirondack hardwood forests. A total of 1496 prey items were identified from the stomachs of 123 *P. cinereus* and 49 *Desmognathus* across twelve sites. Oribatid mites, non-Oribatid mites, snails, and flies were most frequently eaten, while beetles, snails, various larvae, and flies contributed most to stomach content volume. The salamander species shared 67.9% of their diet. However, the two species differed in the number of springtails, Oribatid mites, non-Oribatid mites, larvae, and snails, and differed in the volume of Oribatid mites and snails. Stomach contents showed the differing importance of adult beetles, mites, and springtails in both abundance and volume. We detected few relationships between prey abundance in diet and habitat calcium. Beetle larvae percent abundance in the stomachs of *P. cinereus* increased with calcium, while Oribatid mite percent abundance was negatively correlated. Adult beetle percent abundance was negatively correlated with calcium in the stomachs of *Desmognathus*. We conclude Red-backed and dusky salamanders differ in their consumption of some important prey groups, but overall the two most abundant species have a very similar and diverse diet. Particularly, calcium-rich snails and mites are important to Red-backed salamanders. Indirect effects of acid deposition on calcium depletion may have important implications on salamander prey, feeding strategies, and forest-floor food-web interactions.

Fri- PM-18

The Effects of Deer on Carnivore Assemblages in Westchester County, NY

David Spillo, Melissa Grigione, Dan Farkas, Sonny Bandak, and Diane Kocher (Pace University)

This study investigates differences in carnivore assemblages between protected areas with and without deer in southern New York State. Using camera-trapping techniques, preliminary results suggest that the number of carnivore species and relative abundance of each species is greater when deer are present. However, our study area without deer is smaller in size and hence, may impose constraints which limit carnivore diversity. Mammals that have been camera-trapped in both areas include: skunk, Raccoon, Coyote, Red Fox, opossum, and Feral Cat. In addition, track and fecal data have been collected opportunistically in both areas.

Fri- PM-19

Mercury Contamination of Crayfish in the Susquehanna River

Joshua Stocker and Brian Mangan (King's College, Wilkes-Barre, PA)

Mercury contamination is a major health concern for humans and the environment. Mercury has been shown to both bioaccumulate in organisms and biomagnify among trophic levels to reach dangerous concentrations, especially among higher consumers. Like many rivers in the United States, the Susquehanna River has been contaminated with mercury, and large sections of the river are under a fish-consumption advisory for mercury concentrations in gamefishes. Therefore, the study of mercury concentrations in the invertebrate food web is essential to understanding mercury dynamics within the Susquehanna. There has been no research to date to determine mercury concentrations among crayfish in the Susquehanna River. We collected crayfish from 11 sampling sites along 400+ km of the Susquehanna River in 2008 and analyzed tail-muscle samples ($n = 320$), which had been preserved in 70% ethanol, for total mercury. Our data indicate that total mercury contamination of individual crayfish from the Susquehanna River ranged from 0.08 to 4.38 ppm, with an average of 0.38 ppm. However, levels of contamination varied along the river such that the highest levels occurred at the upriver sites and then steadily decreased at downriver sites. As such, there is a significant linear relationship between river mile and average mercury concentration at the sampling sites ($P = 0.002$, $R^2 = 0.66$). Our results suggest that researchers and natural resource managers would be well advised to incorporate multiple sampling sites along rivers before attempting to characterize mercury contamination in crayfish if not other aquatic organisms.

Fri- PM-20

Recent Paleoecology of Constitution Marsh, Hudson River Valley, NY

Sriya Sundaresan, Dorothy Peteet, Timothy Kenna, and Sanpisa Sritrairat (Columbia University, NY)

This study provides a high resolution paleoecological record for Constitution Marsh, an Audubon sanctuary on the east shore of the Hudson River. Wetlands are ecosystems with important ecological functions. However, the changes in these ecosystems over time cannot be understood simply by studying the modern environment alone. We retrieved a sediment core in 2010 using a modified Livingstone piston corer. Sampling intervals were at 5 cm down to 1 m depth. Macrofossils, loss-on-ignition (LOI), and x-ray fluorescence (XRF) samples were obtained. A macrofossil sample was sent for radiocarbon dating in order to determine the sedimentation rates of this marsh; the 1-meter core is hypothesized to cover 500 years. A macrofossil profile will be presented, demonstrating the changes in vegetation over time. Prior to human impact around 1700, sedges were dominant in the marsh and the LOI shows about 40-50% organic matter. Approximately at 60 cm depth, a major shift takes place in the concentrations of Nickel, Cobalt, Zinc, Potassium, and Iron. At approximately 40 cm, the LOI shows a drastic increase to 75% organic matter. These sharp changes reflect major ecological or landscape changes in the marsh; these changes will be explained in the context of anthropogenic impact on the marsh. The environmental history of Constitution Marsh will provide a better understanding of the paleoecology in the framework of nearby Hudson River marshes, as well as document the effects humans have had on the marsh. This information will aid in wetland and marsh restoration and conservation in the Hudson River Valley.

Fri- PM-21

Do You Eat What You Are? Linking Nitrogen and Phosphorus Uptake through Organic Matter N:P Ratios in Headwater Streams

Claire Superak and Cathy Gibson (Skidmore College, NY)

Excess nutrients are degrading aquatic habitats globally. Headwater streams are critical sites for processing and retention of nutrients, which maintains water quality downstream. The controls on nutrient processing among streams have not been well elucidated. Our study focuses on determining whether the relative uptake of nitrogen vs. phosphorus is related to the ratio of nitrogen to phosphorus in benthic nutrient consumers (algae and microbes). We added nitrogen and phosphorus to four Adirondack streams and tracked their removal as they traveled downstream. We calculated uptake length (average distance traveled by a nutrient molecule) and uptake velocity (downward velocity of nutrients from water column to benthos) to compare the streams. Insights into controls on nutrient uptake aid in management of these systems and prevention of excess nutrients moving to downstream ecosystems.

Thu- PM-28

***Salvia glutinosa* Naturalized in Southeastern New York**

Nava Tabak (Hudsonia Ltd., Annandale, NY)

Salvia glutinosa L. (Lamiaceae) is a perennial herb native to Europe and western Asia, where it grows in wooded mountainous areas. Whereas several other species of *Salvia* are native and introduced in northeastern North America, there are heretofore few records of naturalized *S. glutinosa* in the Northeast, and it is absent from regional floras and databases. I encountered a large, naturalized population of *Salvia glutinosa* in October 2009 on lands near and along the Appalachian Trail in the southeastern part of the Town of Dover known as Duell Hollow, Dutchess County, NY. A loose patch covered approximately 20 acres of disturbed maple-oak forest, and smaller patches were scattered over a larger area that included forest edge and rock ledge habitats. The plants appeared to be spreading locally by rhizomes, but seed production and the occurrence of somewhat disjunct patches suggests that they have dispersed by seed as well. *Salvia glutinosa* is used in horticulture under various names including Jupiter Sage, Jupiter Distaff, and Sticky Sage, and an ornamental garden is a likely source of this introduction. The size of this naturalized population merits attention and further monitoring because the plant is apparently quite hardy (emerging early in the spring, flowering late into the fall, and producing seeds) and may have the potential to spread farther and impact native natural communities. Research into the plant's reproduction and dispersal strategy, rate of spread, current and potential impacts, and effective control methods is warranted.

Fri- PM-22

Stream Monitoring to Identify Impacts of Oil and Gas Well Drilling in Allegany State Park Watersheds

Karen Terbush, Kristen Husson, Kate Haggerty, and Lynn bogan (New York State Parks, Albany, NY)

In the past couple of years, the Pennsylvania Department of Environmental Protection has issued hundreds of permits for oil and gas wells located within the watersheds of streams flowing into Allegany State Park in Cattaraugus County, NY. Based on the need to protect the important resources of this largest State Park in New York, a stream-water quality monitoring program was developed and initiated in May 2010. The goal was to develop an inexpensive quality monitoring program to provide baseline data on the water quality within these streams as well as to document any impacts related to oil and gas drilling in these watersheds. The monitoring program includes weekly monitoring by four teams of two persons each. Monitoring parameters include conductivity, temperature, salinity, turbidity, pH, and stream velocity along with other field observations. The presence of oil in the water is tested in the field using a novel, inexpensive approach with a hand held black light. Laboratory analyses are used to back up unusual or high field results. Results to date indicate that streams in watersheds undergoing significant road building and drilling activities have higher conductivity and turbidity readings. The monitoring program has so far resulted in one successful enforcement action against an oil company by the NYS Department of Environmental Conservation for temporary visual impacts to a stream and another enforcement action is currently pending. It has also served to alert the oil drilling companies and Pennsylvania authorities to the environmental concerns of downstream users of water resources. This monitoring program is an example of a way to obtain quality data and determine impacts with limited funding and may prove to be useful to other agencies or environmental groups as additional oil and gas wells are drilled across New York State.

Thu- PM-29

Effects of Acid Rain and Liming on Growth and Survival of the Terrestrial Isopod, *Porcellio scaber*

Jeffrey Tompson and Timothy McCay (Department of Biology, Colgate University, Hamilton, NY)

Acid deposition on forests with poor soil buffering capacities can affect species diversity of soil and litter animals. Isopods fill many ecosystem roles within these communities, including nutrient cycling, and may be affected by acid rain due to their high calcium requirements and gut microbial activity. I examined the effects of simulated acid rain and liming on the growth rate and survival of the isopod, *Porcellio scaber*, using microcosms. Organisms were subjected to two different acid-rain conditions (pH = 3 and 5) as well as two liming conditions (limed at 8 t ha⁻¹ CaCO₃ and unlimed). Isopods were maintained within the microcosms for 25 days. Rain acidity affected growth rates ($F_{1,32} = 14.032$, $P = 0.001$), with lower growth at lower pH. Consumption of acid water may have reduced microbial activity within the gut of *P. scaber*, as described in other studies. Microcosms with additions of lime had greater growth rate ($F_{1,32} = 8.006$, $P = 0.008$) and lower chance of mortality ($G2 = 5.241$, $P = 0.022$) than microcosms without lime. The use of lime to ameliorate the negative effects of acidic deposition will likely increase the quality of the environment for isopods and perhaps other detritivores that rely on microbial gut symbionts.

Fri- PM-23

Genetic Sampling of Museum Specimens and the Potential of Nonlethal and Noninvasive Genetic Sampling

Jan Trybula (SUNY Potsdam, NY)

Recent literature shows that there is a concerted effort to conduct nonlethal and even noninvasive genetic sampling in many taxa. Genetic data has been collected for avian taxa from feathers and eggshells. Likewise, feces and urine have been a source of DNA from mammals. For insects, samples have included tarsi, wing clips, and frass. This study investigated the use of museum specimens to refine protocols for genetic sampling that may also be used for living specimens. DNA was successfully extracted from the blood clot in the feather calamus of various avian taxa. Minimally destructive sampling of final-stage exuviae from odonates also provided useable DNA. In both cases, both nuclear and mitochondrial DNA was successfully amplified for study. These techniques of acquiring genetic data can be used for species identification or for studying elusive or threatened or endangered species. A further study of the utility of exuviae in genetic analysis is underway.

Fri- PM-24

Current Status of a New Potential Invasive Plant Species in Clinton County, NY: *Mycelis muralis* (Asteraceae)

Megan Ward and Christopher Martine (SUNY Plattsburgh, NY)

Invasive plant species disrupt natural habitats and contribute to the loss of native biodiversity. *Mycelis muralis* (Asteraceae) is a well-documented and well-studied invasive species in New Zealand that has been recently recorded in SUNY Plattsburgh's Rugar Woods and a handful of nearby localities. To develop a better understanding of this apparent newcomer to northeastern New York, a two-step surveying technique shall be used. The first step in the process is to determine the density and distribution of *M. muralis* in Rugar Woods. Second, a more thorough survey shall be conducted in order to analyze how *M. muralis* affects co-occurring plants and pollinator communities. This second survey will also be used to develop baseline data for plant community diversity in Rugar Woods, something that has not been previously done. Preliminary testing shows that *M. muralis* in Clinton County shows similar site preference as invasive populations in New Zealand, including soil pH. These comparisons may prove to be critical to predicting future impacts of *M. muralis* within the region.

Fri- PM-25

Littoral Zone Fish Community of Cazenovia Lake

Thad Yorks (Cazenovia College, NY)

Between 2006 and 2010, the shallow (≈ 1.5 -m-depth) littoral zone fish community at several sites in Cazenovia Lake (Madison County, NY) was periodically sampled using a 15-m seine (0.5-cm mesh). A single location was also sampled to a depth of approximately 3 m with a trap-net (15-m leader; 2.5-cm mesh) for a week in November 2010. All fish captured (>1400) were identified and counted. Length and weight were recorded for a representative subset of fish in each sample so that relative weights could be calculated as an indication of fish condition. Seine samples were typically dominated by *Lepomis* spp. young-of-the-year, Yellow Perch, Bluegill, and/or Pumpkinseed. Some samples included considerable numbers of Largemouth Bass, Rock Bass, Banded Killifish, and/or Cyprinidae species (e.g., Bluntnose Minnow), but the abundance of these species was quite variable. One or few Grass Pickerel, Smallmouth Bass, and/or Tessellated Darter were captured in numerous samples. Of 114 fish captured in the trap-net, 42% were Yellow Bullhead, 14% were Chain Pickerel, and 10 additional species accounted for the remaining 44% of fish. The sample included three individuals (two White Suckers and one Walleye) >50 cm in total length and 11 Chain Pickerel >41 cm in total length. Relative weights of the vast majority of fish were between 90 and 110, indicating average condition, but Yellow Perch relative weights tended to be lower than for other species.

Fri- PM-27

Karner Blue Butterfly Recovery Status in the Saratoga Sandplains

Chris Zimmerman and Rebecca Shirer (The Nature Conservancy), Kathy O'Brien (NYS Department of Environmental Conservation), and Jason Bried (Albany Pine Bush Commission)

In 2010, the Saratoga Sandplains Recovery Unit (SSRU) contained the largest population of the federally endangered Karner Blue Butterfly (KBB) in the eastern United States. We assess the long-term KBB viability in the SSRU using five indicators (metapopulation size, number of viable subpopulations, acres of suitable habitat, total lupine stems, and subpopulation connectivity) to determine the success of recovery strategies. Before habitat restoration began in 2003, less than ten acres of occupied habitat were protected in the SSRU, the KBB population was small, and long-term viability was estimated to be poor. Since 2003, ≈ 128 acres of KBB habitat have been restored on protected lands. Distance sampling and habitat monitoring were conducted to rate viability, and we mapped habitat patches in ARCGIS to assess connectivity. Distance sampling to estimate population size was completed at 12 sites totaling 97 acres. 2010 was the first year that the recovery objective (7641 KBB) for metapopulation size was met in the SSRU, with a first and second brood average of $16,281 \pm 2873$ KBB. From 2005 to 2010, we monitored habitat quality at 18 patches covering 106.6 acres; 76.2 acres were determined to be suitable. The remaining habitat was not suitable due to the lack of overstory cover. With one exception, all patches met the lupine density objective, and the recovery unit met the total lupine stem objective. Based on these data, two of seven occupied subpopulations are considered viable, but the recovery objective is to maintain a minimum of five. The long-term KBB viability in the SSRU remains "fair". The outlook for the species has improved dramatically over the last seven years. However, additional habitat is needed to buffer the population from extreme weather events, connect existing habitat, and secure additional subpopulations.

Fri- PM-28

Poster Presenters' Contact Information

Presenters listed alphabetically.

Laurie Ahrens

5060 Lakeshore Drive
Bolton Landing NY12814
518-644-3541
ciara1965@yahoo.com
Thu- AM-01

Pamela Aracena

Environmental Resources Engineering
1035 Madison Avenue
Syracuse NY13210
305-807-3615
paracena@syr.edu
Fri- AM-01

Edward Avizinis

1 Greenhouse Rd
Kingston RI02881
401-874-2902
eddie@my.uri.edu
Thu- AM-02

Olusesani Ayodele

Botany
Dept of Botany, University of Lagos
Lagos Nigeria
+2348073650202
ayoariyo2009@yahoo.com
Thu- AM-03

Erin Baker

1600 Spring Valley Road
Ossining NY10562
914-762-2912 x114, 337-654-1610
ebaker@teatown.org
Thu- AM-04

Gary Bedrosian

198 College Hill Road
Clinton NY13323
315-859-4717
gbedrosi@hamilton.edu
Thu- AM-05

Michael Bergman

Biology
SUNY
20 Briaroot Drive
Smithtown NY11787
631-741-4190
bergmp02@suny.oneonta.edu
Fri- AM-02

Chris Bergweiler

PP Systems Inc; UMass-Amherst
19 Dudleyville Road
Leverett MA01054
413-658-4661, 413-367-0393
bergweiler@cns.umass.edu,
cb@ppsystems.com
Thu- AM-06

Paige Blaker

42 Murdock Dr
Unity ME04988
402-669-4264
pblaker09@unity.edu
Thu- AM-07

Lynn Bogan

Environmental Management Bureau
NYS Office of Parks, Rec & Historic Preservation
306 West King Road
Ithaca NY14850
607-273-6025
Lynn.Bogan@oprhp.state.ny.us
Thu- AM-08

Charles Boylen

Darrin Fresh Water Institute
110 8th Street
Troy NY12180
518-276-8430, 518-274-0146
boylec@rpi.edu
Thu- AM-09

Alvin Breisch

29 Fiddlehead Lane
Altamont12009
518-765-2880
arbreisch@yahoo.com
Thu- AM-10

Dan Bruzzese

198 College Hill Road
Clinton NY13323
315-859-4717
dbruzzes@hamilton.edu
Thu- AM-11

Janet Buckner

SUNY Oswego
316 Snygg Hall
Oswego NY13126
585-370-9038
jbuckner@oswego.edu
Thu- AM-12

Amy Cahill

Dept of Biology
Marist College
3399 North Road
Poughkeepsie NY12601
845-575-3000 ext 2352
Amy.Cahill@marist.edu
Thu- AM-13

Jonathan Cale

Dept of Environmental and Forest Biology
SUNY ESF
436 Illick Hall
Syracuse NY13210
315-470-6965
jacale@syr.edu
Thu- AM-14

Joseph Carlo

23 Meadowstream Drive
Amherst NY14226
716-390-1776
jcarlo@loomacres.com
Thu- AM-15

Douglas Carlson

317 Washington St
Watertown NY13601
315-785-2263
dmcarlso@gw.dec.state.ny.us
Thu- AM-16

Jason Carmignani

950 Main St
Worcester MA01610
860-601-1178
jcarmignani@clarku.edu
Thu- AM-17

Cathleen Carr

13 Oak Drive, Box B412
Hamilton NY13346
908-251-7837
ccarr@students.colgate.edu
Thu- AM-18

Nervah Cheremond

56 Country Lane
Hamilton NJ08690
609-456-1835
sangohan37@hotmail.com
Fri- PM-29

Tami Cloherty

Lehman College and The Graduate Center, CUNY
250 Bedford Park Blvd West
Bronx NY10468
914-623-3469
tcloherty@gc.cuny.edu
Thu- AM-19

Elizabeth Coffey

Biodiversity, Conservation and Policy
246 Lark St, Apt 5
Albany NY12210
607-329-1174
ec227613@albany.edu
Thu- AM-21

Olesea Cohojari

Green Mountain College
1 Brennan Circle
Poultney VT05764
802-287-8000
cohojario@greenmtn.edu
Thu- AM-20

Gwendolyn Cramer

Green Mountain College
Box 147, 3 Brennan Circle
Poultney VT05764
503-507-1682
cramerg@greenmtn.edu
Thu- AM-22

Woody Cyr

165 Combs Rd
Warrensburg NY12885
315)378-3124
wscyr@syr.edu
Thu- AM-23

Andrew David

8900 170th Street, Apt. 10C
Jamaica NY11432
917-216-2092
bioaad@hofstra.edu
Thu- AM-24

Matthew Dickinson

coa
105 Eden Street
Bar Harbor ME04609
802-591-1665
mdickinson@coa.edu
Thu- AM-25

Timothy Divoll

652 Main St
Gorham ME04038
207-887-7160
tim.divoll@briloon.org
Thu- AM-26

Emma Dombey

198 College Hill Rd
Clinton NY13323
404-713-8084
edombey@hamilton.edu
Thu- AM-27

Sarah Drahovzal

Wildlife Ecology
University of Maine
5755 Nutting Hall
Orono ME04469-5755
207-581-2821
sarah.drahovzal@umit.maine.edu
Thu- AM-28

Sarah Dzara

Department of Biology
SUNY Geneseo
Box 1442 10 MacVittie Circle
Geneseo NY14454
716-353-2286
sad7@geneseo.edu
Thu- PM-01

Richard Feldman

Environmental Science & Policy
Marist College
Poughkeepsie NY12601
845-575-3000
richard.feldman@marist.edu
Thu- PM-02

John Foster

106 Suffolk Circle
Cobleskill NY12043
518-255-5243, 518-234-2172
fosterjr@cobleskill.edu
Thu- PM-03

John Foster

106 Suffolk Circle
Cobleskill NY12043
518-255-5243, 518-234-2172
fosterjr@cobleskill.edu
Fri- AM-03

Kayla Frenyea

Center for Earth and Environmental Science
101 Broad St
Plattsburgh NY12901
518-564-4073
kfren001@mail.plattsburgh.edu
Thu- PM-04

Jillian Gall

College of the Atlantic
105 Eden Street
Bar Harbor ME04609
732-816-6076
jgall@coa.edu
Thu- PM-05

Mike Gavlick

Environmental Program
King's College
133 N. River St
Wilkes-Barre PA18711
570-208-5900
MichaelGavlick@kings.edu
Thu- PM-06

Colin Grubel

805 St Marks Ave., Apt C3D
Brooklyn NY11213
347-419-5732, 347-533-9853
atlasbear1@yahoo.com
Thu- PM-07

Colin Grubel

Fri- AM-04

Umrhan Habal

5 Babbit road
Bedford Hills NY10507
914-522-6868
Habaug68@suny.oneonta.edu
Fri- AM-05

Dave Halliwell

State House Station # 17
Augusta ME04333
207-287-7649, 207-680-6965
david.halliwell@maine.gov
Thu- PM-08

Jack H. Hecht

HDR, Inc.
One Blue Hill Plaza
Pearl River NY10965
845-735-8300, 845-268-6534
jack.hecht@hdrinc.com
Thu- PM-09

Casey Holzworth

Thu- PM-10

Shabana Hoosein

Environmental Science/Biology
Union College
807 Union St
Schenectady NY12308
516-225-0087
hooseins@garnet.union.edu
Thu- PM-11

Tom Hughes

NYS OPRHP
6105 East Seneca Turnpike
Jamesville NY13078
315-492-1756, 315-350-1717
tom.hughes@oprhp.state.ny.us
Thu- PM-12

Kristen Husson

Environmental Management Bureau
Empire State Plaza Bldg 1
Albany NY12238
518-473-0292
Kristen.Husson@oprhp.state.ny.us
Fri- AM-06

Andrew Joachim

66 Moongate Lane
Lake Placid NY12946
518-523-2359
joachim@capital.net
Thu- PM-13

Nina Kalantari

22 Sullivan St
Cazenovia NY13035
802-249-2106
njkalandari@cazenovia.edu
Thu- PM-14

Larry Klotz

Dept of Biological Sciences
SUNY Cortland
P.O. Box 2000
Cortland NY13045
607-753-2709
larry.klotz@cortland.edu
Thu- PM-15

Alexander Kulp

SUNY Geneseo
31 North Street
Geneseo NY14454
585-690-6831
adk4@geneseo.edu
Thu- PM-16

Brittany Laginhas

950 Main Street
Worcester MA01610
401-663-4852
blaginhas@clarku.edu
Thu- PM-18

Courtney LaMere

Environmental and Forest Biology
SUNY
1 Forestry Drive
Syracuse NY13210
315-430-7144
clamere@syr.edu
Thu- PM-19

Sean LaMora

Department of Biological Sciences
168 Jericho Rd
Selkirk NY12158
518-522-5499
lamorazooology@hotmail.com
Thu- PM-20

Catherine Landis

Environmental and Forest Biology
1 Forestry Drive
Syracuse NY13210
315-470-4869, 315-445-1760
catherinelandis@hotmail.com
Thu- PM-17

Jenny Landry

Fish, Wildlife, and Marine Resources
NYS Dept of Environmental Conservation
6274 East Avon-Lima Rd
Avon NY14414
585-226-5491
jalandry@gw.dec.state.ny.us
Fri- AM-13

Miranda Lapierre

1044 Chamberlin Rd Apt A
Barton VT05822
802-673-4316, 802-525-1315
miranda.lapierre@isc.vsc.edu
Fri- AM-07

Mary Lehner

Hamilton College
198 College Hill Road
Clinton NY 13323
315-859-4717
mlehner@hamilton.edu
Thu- PM-21

Paul Lord

SUNY at oneonta
Oneonta NY 13820
607-435-4989
lordph@oneonta.edu
Fri- AM-08

Michael Losito

Fisheries and Wildlife
SUNY Cobleskill
104 Old Gym
Cobleskill NY 12043
518-255-5235, 518-573-1204
losito@nycap.rr.com
Fri- AM-09

Julie Lundgren

NYNHP
625 Broadway, 5th Floor
Albany NY 12233
518-486-2774
Julie.Lundgren@oprhp.state.ny.us
Fri- AM-10

David MacDougall

120 Elm Street, Apt. 2
Cobleskill NY 12043
518-796-9049
dwmacdougall@yahoo.com
Fri- AM-11

Sean Madden

625 Broadway, 5th floor
Albany NY 12233-4756
518-402-8977
smadden@gw.dec.state.ny.us
Fri- AM-12

Amy Mahar

Fish, Wildlife and Marine Resources
NY State Dept of Environmental Conservation
6274 East Avon-Lima Rd
Avon NY 14414
585-226-5337
ammahar@gw.dec.state.ny.us
Fri- AM-13

Margaret Mansfield

College of the Atlantic
105 Eden St
Bar Harbor ME 04609
413-320-8750
mmansfield@coa.edu
Fri- AM-15

Marilyn Mayer

biology Department
St. Lawrence University
Romoda Dr
Canton NY 13617
315-854-5154
mmayer@stlawu.edu
Fri- AM-16

Nicholas Mazziotta

SUNY Oneonta
25 West Street
Oneonta NY 13820
8455687503
mazznk31@suny.oneonta.edu
Fri- AM-17

Mary McClintock

Biology
P.O. Box 1773
Carlisle PA 17013
717-576-0816
mcclintm@dickinson.edu
Thu- PM-22

Gregg McConnell

Department of Biology
Houghton College
Houghton NY 14744
585-567-9297
gregg.mcconnell@houghton.edu
Fri- AM-18

Toby Michelena

Darrin Fresh Water Institute
110 8th Street, MRC 307
Troy NY 12180
518-542-6674
michet@rpi.edu
Fri- AM-19

Janet Mihuc

Paul Smith's College
PO Box 265, Route's 86 & 30
Paul Smiths NY 12970
518-327-6346
jmihuc@paulsmiths.edu
Fri- AM-20

Erin Miller

IDCE Department
Clark University
950 Main Street
Worcester MA 01610
401-339-3340
ermiller@clarku.edu
Fri- AM-21

Marnie Miller-Keas

1132 Main Street Apt 202
Peekskill NY
845-786-2701 ext.265
marnie.mk@gmail.com
Fri- AM-22

Sarah Mount

75 E Market St, Apt B
Red Hook NY 12571
646-387-1734
sarahjanemount@gmail.com
Fri- AM-23

Christopher Nagy

Mianus River Gorge Preserve
167 Mianus River Road
Bedford NY 10506
914-234-3455
chris@mianus.org
Fri- AM-24

Luka Negoita

college of the Atlantic
105 Eden St
Bar Harbor ME 04609
207-370-7654
lukanoo@gmail.com, lnegoita@coa.edu
Fri- AM-25

Ariana Newell

PO Box 247
Babylon NY 11702
631-581-1072
Ariana.Newell@oprhp.state.ny.us
Fri- AM-26

Khoi Nguyen

4266 Lerner Hall, 2920 Broadway
New York NY 10027
718-844-6021
kvn2103@gmail.com
Fri- PM-09

Christopher Norment

Thu- AM-29

Christopher Norment

Environmental Science and Biology
College at Brockport
Brockport NY 14420
585-395-5748
cnorment@brockport.edu
Thu- PM-23

Mark Norris

Department: Environmental Science
350 New Campus Dr
Brockport NY 14420
585-395-5743
mnorris@brockport.edu
Fri- AM-28

Brenda Nsambu

Green Mountain College
1 Brennan Circle
Poultney VT 05764
802-287-8000
nsambub@greenmtn.edu
Thu- AM-20

Kathleen O'Connor

625 Broadway
Albany NY 12203
518-402-8855
keoconno@gw.dec.state.ny.us
Fri- AM-29

Samantha Olsen

Hofstra University
130 Gittleson Hall
Hempstead NY 11549
804-928-6190
samantha.r.olsen@hofstra.edu
Fri- PM-01

James Philips

231 Forest St
Babson Park MA 02457
781-239-4240, 617-364-1232
philips@babson.edu
Fri- PM-02

Jonathan Pinney

Biology
Hamilton College
198 College Hill Road
Clinton NY 13323
315-859-4717
jpinney@hamilton.edu
Thu- PM-24

Kate Podwirny

Center for Earth and Environmental Science
101 Broad St
Plattsburgh NY 12901
518-564-4073
kpodw001@mail.plattsburgh.edu
Fri- PM-03

John Polascik

133 N River St
Wilkes-Barre PA 18711
570-208-5900
JohnRyanPolascik@kings.edu
Fri- PM-04

Shahriar Rahman

Department of Biology
87-22 166th Street
Jamaica NY 11432
347-484-6427
caesar_rahman2004@yahoo.com
Fri- PM-05

Mohammad Rana

Dept of Biology
St Joseph's College
155 Roe Blvd
Patchogue NY 11772
mrana@sjcny.edu
Thu- PM-25

Brooke Reeve

1 Forestry Dr
Syracuse NY 13210
607-425-6570
breeve@syr.edu
Thu- PM-26

Alejandro Reyes

61 Renaissance Village Way
Plattsburgh NY 12901
845-661-0824
areye002@mail.plattsburgh.edu
Fri- PM-06

Anne Roberts

110 8th Street, MRC 237
Troy NY 12180
607-267-6898
robera4@rpi.edu
Fri- PM-07

Douglas Robinson

Division of Natural Sciences
Mount Saint Mary College
330 Powell Ave
Newburgh NY 12550
845-569-3648, 845-787-4248
douglas.robinson@msmc.edu
Fri- PM-08

Kylie Rock

st. Lawrence University
CMR# 761 S 23 Romoda Drive
Canton NY 13617
518-578-7113
kdrock08@stlawu.edu
Fri- AM-16

Stephen Ruhl

Department of Biology
Houghton College
Houghton NY 14744
585-567-9297
stephen.ruhl@houghton.edu
Fri- PM-10

Corey Santorello

PO 27
Barnet VT 05821
802-274-2166
corey.santorello@lyndonstate.edu
Fri- PM-11

Jennifer Santoro

Biology
Hamilton College
198 College Hill Rd
Clinton NY 13323
862-222-2634
jsantoro@hamilton.edu
Thu- PM-27

Sara Scanga

Department of Biology
1600 Burrstone Road
Utica NY 13502
315-792-3137
sescanga@utica.edu
Fri- PM-12

Lilly Schelling

Center for Earth and Environmental Science
101 Broad Street
Plattsburgh NY 12901
518-562-2028
lsche002@plattsburgh.edu
Fri- PM-13

Van Scholten

22 Sullivan St
Cazenovia NY 13035
615-752-8392
vascholten@cazenovia.edu
Thu- PM-14

Timothy Shearman

172 Algonquin Park
Plattsburgh NY 12901
518-872-3983
TSHEA001@plattsburgh.edu
Fri- PM-15

Zakiya Skeete

Department of Biology
Utica College
1600 Burrstone Rd
Utica NY 13502
315-792-3209
zrskeete@utica.edu
Fri- PM-16

Caleb Smith

Center for Earth and Environmental Science
101 Broad St
Plattsburgh NY 12901
518-564-4073
csmit004@plattsburgh.edu
Fri- PM-03

Caitlin Snyder

Adirondack Ecological Center
6312 State Route 28N
Newcomb NEW 12852
518-582-4551
cmsnyder@syr.edu
Fri- PM-18

David Spillo

44 Lakeview Ave
Hartsdale NY 10530
914-659-9476
Davidspillo@gmail.com
Fri- PM-19

Joshua Stocker

Environmental Program
King's College
133 N. River St
Wilkes-Barre PA 18711
570-208-5900
JoshuaStocker@kings.edu
Fri- PM-20

Sriya Sundaresan

440 Riverside Drive, #61
New York NY 10027
917-763-7523
sks2161@columbia.edu
Fri- PM-21

Claire Superak

Environmental Studies Program
815 North Broadway
Saratoga Springs NY 12866
919-357-6913
csuperak@skidmore.edu
Thu- PM-28

Nava Tabak

Hudsonia Ltd
P.O. Box 5000
Annandale NY 12504
845-758-7274
tabak@bard.edu
Fri- PM-22

Karen Terbush

Environmental Management Bureau
Empire State Plaza Bldg 1
Albany NY 12238
518-474-8765
Karen.Terbush@oprhp.state.ny.us
Thu- PM-29

Jeffrey Tompson

Department of Biology
13 Oak Drive, Box V5135
Hamilton NY 13346
973-452-4276
JTOMPSON@students.colgate.edu
Fri- PM-23

Jan Trybula

Biology
SUNY Potsdam
44 Pierrepont Avenue
Potsdam NY 13676
315-267-2258
trybulj@potsdam.edu
Fri- PM-24

Megan Ward

Biological Sciences
101 Broad Street
Plattsburgh NY 12901
518-564-5277
sortofwonderful@gmail.com
Fri- PM-25

Whitney Wilson

Center for Earth and Environmental Science
101 Broad St
Plattsburgh NY 12901
518-564-4073
wwils002@mail.plattsburgh.edu
Thu- PM-04

Thad Yorks

Environmental Studies Program
Cazenovia College
22 Sullivan Street
Cazenovia NY 13035
315-655-7148
teyorks@cazenovia.edu
Fri- PM-27

Chris Zimmerman

195 New Karner Road, Suite 201
Albany NY 12205
518-690-7844
czimmerman@tnc.org
Fri- PM-28

Krysten Zummo

Department of Fisheries & Wildlife
State University of New York
Cobleskill NY 12043
518-255-5325
ZummoK198@Cobleskill.edu
Fri- AM-09