



## 26<sup>th</sup> Annual Conference on the Adirondacks

### Paper Abstracts

**Mihuc, Janet R.<sup>1\*</sup>, and Danielle Urich<sup>1</sup>.**

Adirondack Moth Diversity: An Important Link Between Forests, Birds and Other Insectivores.

Forests harbor an amazing diversity of moths whose caterpillars are an important food source for birds and other insectivores. Woodland birds rely heavily on caterpillars as a food source for nestlings. Documenting adult moth species diversity can help us understand which tree species are most important in supporting the caterpillar populations in forest food webs. Having baseline data on moth diversity and flight periods will make it easier to determine whether climate-induced changes in the timing of moth caterpillar abundance are occurring. An ongoing three-year project has documented over 350 moth species on Paul Smith's College campus and VIC property. From April to September 2016-18, traps were used to sample moth populations in several habitats. Established light sources on the Paul Smith's College campus were monitored at regular intervals during the same time period. Occurrence data were used to construct flight period timeframes for prevalent species. Moth species diversity included wetland plant specialists and species whose caterpillars feed on leaf litter, fungus and lichens. Five of the species found are on the New York State Natural Heritage Program rare species list, including one native inchworm species not documented in New York since the 1800's.

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**Bauer, Peter**<sup>1\*</sup>. James McMartin **Long**<sup>2</sup>. The

Adirondack Park and Rural America

This is a presentation on the report *The Adirondack Park and Rural America: Economic and Population Trends 1970 to 2010*, which will be released in mid-April 2019. This report compares 40-year socio-economic trends of the 62 towns fully within the Adirondack Park and 30 towns split by the Blue Line with seven other geographic areas. Three areas were based on similar population densities as the 62 Adirondack Park towns and include towns in New York State, rural counties in the Northeast U.S. and rural counties across the U.S. Two other regions are based on the USDA rural-to-urban continuum classification system for rural counties in the U.S. and Northeast U.S. were included. The last two areas are New York State and the 3,100 counties of the lower 48 U.S. states. The period 1970–2010 coincides with the establishment of regional land-use zoning and a period of sustained land protection in the Adirondack Park. This report analyzes standard economic indicators, including median household income, per capita income, the poverty rate, and the rates of employment and self-employment. It looks at standard population indicators, including population growth, median age, the ratio of children to adults of childbearing age, and school district enrollments. The report also examines age groups to compare the experiences of young adults of college age, career age adults, and retirees. The experiences of Adirondack communities were consistent with or better than other rural areas.

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**Lower St. Regis Lake Survey:  
A Comparative Study of Fish Population Structure and Function over Time  
Deacon Chapin, Jared Chlus, Louis Daversa, Jon Herrman, Robert Visicaro**

**Abstract**

Lake surveys are performed on bodies of water to provide a health analysis of fish populations over time. Lake surveys can be conducted in a variety of ways to attain specific data. Lower St. Regis Lake was surveyed to determine the fish community composition and to understand fish population traits. Using fyke nets placed at six predetermined locations for 24 hours, as well as fishing, we collected data for age, length (mm), weight (g), and parasites present. Data was analyzed in the lab using Excel to form graphs and tables to demonstrate our findings. Catch rates were lower compared to years before and comparing our data to New York State Department of Conservation data found that our length-at-age data was lower for the six-species sampled. Pumpkinseed and yellow perch were the only two species to have over twenty fish sampled. Decreased air temperatures brought in by a cold front during the week of our sampling may have been a reason for our lower number of fish caught. Mesh size is also a bias while using these nets as smaller fish can escape, and predatory fish can prey on smaller fish while in the net. Some species of fish such as black crappie may be more susceptible to capture due to its habit of associating with structure.

**Wiltse, Brendan<sup>1\*</sup>, Lee Ann, Sporm<sup>2</sup>, & Carrienne, Pershyn<sup>1</sup>**

Mapping the spatial distribution of native and non-native trout in the Ausable River watershed.

Brook trout (*Salvelinus fontinalis*) are an iconic fish species in the Adirondack Park and listed as a species of greatest conservation need in New York State. The Eastern Brook Trout Joint Venture recognizes non-native fish (specifically brown trout) as the second largest threat to brook trout in New York State. Brown trout are known to be more tolerant to warmer water temperatures and can be an aggressive competitor for resources. Understanding the spatial distribution and habitat occupancy of brook trout, brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss*) is an important component to prioritizing conservation strategies to protect wild native fish. We used environmental-DNA to map the distribution of these species in five tributaries to the Ausable River. Tributaries were selected to have no barriers to fish passage in their lower reaches and be in proximity to locations that are stocked with non-native species. We found non-native species occupying the lower reaches of three of the five streams studied, with a few detections made several kilometers upstream. Brook trout were ubiquitous in all of the streams sampled, but not at all sampling locations. Our results show that non-native species are utilizing the lower reaches of some tributaries in the Ausable River watershed and occasionally move far from stocked locations and well into ideal habitat for native wild brook trout. Research across a larger spatial scale would allow for a better understanding of the extent to which stocked non-native species move into wild brook trout habitat in the Adirondack Park.

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## 26<sup>th</sup> Annual Conference on the Adirondacks

### Poster Abstracts

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#### Projection of Climate Change Impact on Adirondack Alpine Tundra Distribution

Given the potential for significant changes in climate over the next century, understanding how biome locations may shift in response to these changes may be useful in informing conservation efforts. In this work the potential effect of climate change on the distribution of alpine tundra in the Adirondack Mountains of New York is examined. The niche modelling software Maxent was used to analyze the distribution of alpine tundra relative to 30 year 800m PRISM climate normal data and terrain aspect over the Adirondacks. Random points from surveyed areas of alpine tundra in the Adirondacks were used as presence data in model training. The initial analysis was aimed at creating a model that was able to predict current alpine tundra distributions with a high level of skill. For the final analysis climate variables that contributed significantly to the skill of the model were downscaled to 10m resolution using an average lapse rate derived from the PRISM data. This analysis found that the presence of alpine tundra is well predicted by annual mean temperature. Different warming thresholds were applied to the climate grids and the model was rerun. The projected reduction in area of alpine tundra in the analysis area is calculated along with uncertainties in timing of area decline associated with different emission scenarios and GCM uncertainty.

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**Anderson-Hanley, Cay**<sup>1,2</sup>, **Marin, Samantha**<sup>1</sup>, **Hausman, Nathan**<sup>2</sup>, and **Obenschain, Richard**<sup>2</sup>

### Green-time triumphs over screen-time: Unplugging for La Vida in the Adirondacks

Technological advances of the new millennium led to increased calls for more green-time vs. screen-time. The Adirondacks have long-served as a place of respite, whether from the urbanization of the 1900s or the digitization of more recent times. Wilderness expeditions offered by the La Vida program in the Adirondacks, aim to facilitate individual development and spiritual growth, while also fostering community. Unplugging from electronics (e.g., phones, social media, videogames, etc.), is not readily embraced by all. This study examined the impact of electronic attachment (e-attached) on outcomes. Participants (n=300+) completed a brief survey, before and after participation in a 10-day wilderness expedition to the Adirondacks. Most of the participants were from a non-denominational Christian liberal arts college in the northeast. Results revealed that across the entire sample, participants experienced significant increases in resilience ( $p < .001$ ) and spiritual well-being ( $p < .001$ ). Interestingly, those who felt the most challenge in leaving behind their electronics (e-attached), were less satisfied with “who they were becoming” ( $p = .03$ ), and yet by the end of the trip they reported the greatest increase in spiritual growth ( $p = .01$ ). Despite missing their electronics more than their counterparts ( $p < .001$ ), e-attached participants were similarly glad that they had unplugged. Open-ended responses were illuminating: *“In person communication, when possible, is much more fulfilling and brings people closer together.”* These findings suggest that despite attachment to electronics and concern about unplugging, participants can benefit significantly in terms of self-satisfaction, resilience, and spiritual growth, when engaged in a structured wilderness expedition, such La Vida in the Adirondacks.

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## Long Term Atmospheric Monitoring in New York State: From Mountaintop to New York City

R. E. **Brandt**, J.J. **Schwab**, B.A. **Crandall**, and P. W. **Casson**, Atmospheric Sciences Research Center University at Albany, State University of New York, Albany and Wilmington, NY; H.D. **Felton** and O.V. **Rattigan**; Department of Environmental Conservation, Division of Air Resources, Albany, NY; J.E. **Dukett**, Adirondack Lakes Survey Corporation, Ray Brook, NY.

Long term records of trace gas atmospheric constituents (O<sub>3</sub>, NO, NO<sub>2</sub>, NO<sub>y</sub>, SO<sub>2</sub>, CO), aerosol mass (PM<sub>2.5</sub>), and standard meteorological parameters have been collected by the Atmospheric Sciences Research Center (ASRC) of the University of Albany at two rural sites in New York State. In the Adirondack Park at 1483 m elevation, the Whiteface Mountain Observatory on Whiteface summit (44.37°N 73.90°W) is near the 850 mb pressure level where long range transport of trace gasses from regional sources dominates. Pinnacle State Park near the Pennsylvania boarder in western New York hosts ASRC's other rural site, Pinnacle Field Station (42.09°N 77.21°W) on the Allegheny Plateau at 504 m elevation. In addition to these ASRC sites, Queens College hosts an urban site (40.74°N 73.82°W) in a partnership with New York's Department of Environmental Conservation and ASRC located in Queens, New York City less than a kilometer south of the Long Island Expressway. This suite of sites provides a rich data set that reveals long-term trends in trace gas and aerosol concentrations and is being used to examine current issues in atmospheric chemistry.

All trace gases have been continuously monitored at these three sites for 17 years or more. SO<sub>2</sub> at all three stations display a monotonic decrease of up to 90% reflecting policy driven emission controls. Oxides of nitrogen, both NO<sub>x</sub> and NO<sub>y</sub>, are also decreasing over this time period although not as rapidly as SO<sub>2</sub> as their wider range of sources is more difficult to address with policy. CO at these three sites is trending downward with Whiteface reaching the lowest annual average of about 100 ppbv. Ozone is more complicated, with Whiteface seeing a modest decrease, Pinnacle remaining steady and Queens College experiencing an increase during 2001-2011 but remaining lower than both the rural sites. Work is underway to quantify summertime ozone production efficiency (OPE) at the rural sites where very low NO<sub>x</sub> (<0.5 ppbv) sets the stage for OPE > 10 ppb/ppb at Pinnacle and >15 ppb/ppb at Whiteface. PM<sub>2.5</sub> measured at the three sites shows significant decreasing trends in total mass and in the major chemical components (SO<sub>4</sub>, NO<sub>3</sub>, NH<sub>4</sub> and TC).

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**Elliott, Alexandria**<sup>1\*</sup>, and **Mary Aلدred**<sup>1</sup>.

Development of a prototype floating treatment wetland for aquatic nutrient remediation.

A large portion of the nitrogen and phosphorous pollution comes from non-point sources such as agricultural run-off and incomplete wastewater treatment. Nutrient pollutants contribute to blooms of bacteria and algae, and hypoxic conditions, with negative consequences for human health. Though improvements in wastewater management reduce the amount of pollution entering downstream ecosystems, enhancing or constructing natural pollution-removal services (*e.g.*, wetlands) may assist in mitigating nutrient pollution and may provide ancillary benefits for local wildlife. We constructed a prototype floating treatment wetland (FTW) following methods developed by Neering and Crane in Peekskill, NY. We modified their procedure to create a small-scale FTW suitable for future replicated mesocosm experiments. This prototype includes a frame constructed from a waterproofed dryer vent, chicken wire, burlap, and zip ties. We filled the frame with an organic growing matrix and native wetland vegetation representing various functional groups (*i.e.*, emergent sedges, forbs, and ferns). We will monitor the growth and survivorship of the plants for one month under controlled greenhouse conditions. If successful, we will replicate this design for future student experiments to determine differences in the uptake and removal of nitrogen and phosphorus among plant species and various species combinations.

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**Ghaly, Ashraf M.**<sup>1</sup>

An Interactive GIS Guide to the Mountain Trails and Attractions of the Adirondacks.

The Adirondack Mountains are rich with their natural beauty that attracts visitors, hikers, rock climbers, and vacationers. The area appeals to those looking for wildlife in its original setting and for outdoor activities in a pristine environment. In addition to its famous 46 peaks that climbers like to challenge, hiking is another popular activity with the visitors of the Adirondacks. The mountain trails are well defined in terms of steepness and level of difficulty. Hikers with a specific preference for trails with certain degrees of difficulty can design their own trail using an interactive Geographic Information Systems (GIS) map developed for this purpose. Digital Elevation Models (DEMs) of the terrain of the entire Adirondack area have been analyzed using GIS tools to produce many helpful map layers. A slope layer has been created where a hiker can choose between easy, moderate, and difficult slopes based on their steepness. Also, an aspect layer has been created where the orientation of the slope is defined based on the four cardinal directions: North, East, South, and West. In addition, contour maps have been generated to provide visitors with a general idea of the nature of the area. Those looking for exploring the area's water bodies, water structures, and communities defined by water systems can find interactive map layers with all relevant information. The engaging nature of the map coupled with its richness of information makes it a useful resource to plan activities ahead and enjoy this beautiful treasure of the state of New York.

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**Schifitto, Lia M.**<sup>1</sup>

Expanding The Narrative Of A Native America In The Adirondack Park.

The case study of the Adirondack Park was utilized to investigate the understudied issue of Western dominance in American heritage narratives. A central region to the history of American environmental preservation, communities who reside in the Adirondacks today and those who come to enjoy the space recreationally, feel passionately about the region's land conservation efforts. The narrative, however, from which this identity in the landscape is formed, is based on roughly 200 years of history; missing from the general public's knowledge and understanding of the Adirondacks is thousands of years of Haudenosaunee, Algonquin, and Mohican regional presence and influence. To expand this gap in knowledge, research began with a review of academic and primary source materials, divided into three subgroups of analysis: invisibility, appropriation, and preservation. Ethnographic fieldwork was completed in July, August, and September of 2017 to supplement the literature review; interviews were conducted with heritage tourists of Great Camp Santanoni (Newcomb, NY), regional professors of archeology and natural science, Native and non-Native curators, educators, and artists, and NY Department of Environmental Conservation (DEC) scientists and anthropologists. Evaluating the evolution of Adirondack consciousness (identity) in larger systems of established heritage, the research revealed the power of communication, formal and informal, in producing historical education which preserves inaccurate narratives of ethnicity and cultural landscape ownership. Such conclusions were visualized through the creation of a cultural dominance continuum. The continuum suggests education can both deny and access inclusive agency in American cultural and natural heritage sustainability.

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Additional Research Posters to be displayed:

**Alexandria Elliot:** SUNY Plattsburgh, Climate change in the Adirondacks

**Alexandria Elliot:** SUNY Plattsburgh, Development of a prototype floating treatment wetland for aquatic nutrient remediation.

**Linh Le :** SUNY Plattsburgh, A tale of two trees: Long-term growth trends at opposing range limits of *Pinus banksiana* and *Pinus rigida*

**Troy Tetreault:** SUNY Plattsburgh, Alpine pollinator guilds of the Adirondack High Peaks

**Troy Tetreault:** SUNY Plattsburgh, Establishment and growth of trees encroaching into a boreal peatland in the central Adirondacks, New York State.

**Megan Flory, Louisa Ulrich-Verderber, and Paul Barber,** Clarkson University, LEED for Communities Development with Lake Placid and North Elba.