



## 16<sup>TH</sup> ANNUAL CONFERENCE ON THE ADIRONDACKS POSTER PRESENTATION ABSTRACTS

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### Comparison of Small Mammal Assemblages in Jack Pine and Hardwood Dominated Stands

Small mammal abundance and distribution were compared in a Jack pine barren and northern hardwood forest stand. Fifty Sherman live traps were monitored in each habitat type over 445 trap nights. There were 32% more captures in the hardwood stand than in the Jack pine barren. Both stands were dominated by *Peromyscus* spp and *Blarina brevicauda*, suggesting that these species are habitat generalists. Biodiversity indices were analyzed using the Program BioDap (Magurran A. and G. Thomas 1988), and Simpson indices were selected due to the limited sample size in some habitats. As species diversity increased from the Jack pine to the northern hardwood stand, evenness marginally declined. The masked shrew (*Sorex cinereus*) and red-backed vole (*Clethrionomys gapperi*) were more prevalent in the hardwood site, which may be attributed to moisture content. The woodland jumping mouse (*Napaeozapus insignis*) frequented the mixed hardwood forest that possessed a denser understory, including herbaceous plants. The Northern flying squirrel (*Glaucomys sabrinus*) and the Eastern chipmunk (*Tamias striatus*) both demonstrated preference for the hardwood stand, which possesses greater structural complexity. This study established biodiversity patterns of small mammals in two diverse sites and provides baseline information for further research of small mammal populations on a flat rock pine barren, a unique habitat ranked on the National Heritage Program as a rare ecological community type.

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### The Arbitrary 46

*The Arbitrary 46* is a multimedia study of the philosophical ideas surrounding the concept of wilderness. The project compiles several years of field work and experiences in the Adirondack wilderness, comparing the goals and outcomes of wilderness pursuits as well as the history and ideas informing them. Generally defined as “A place beyond cultivation/human habitation,” the managed wild lands of the Adirondack Park bespeak the inherent enigma of what we seek from wilderness as well as how we maintain and protect it. This project posits that the notion of wilderness as a geographical location, an unknown to be explored and charted, is an anachronistic though influential concept in the 21<sup>st</sup> century, one that continues to inform cultural and political notions of nature and wilderness. In this project, the idea of wilderness as the “perpetual geographic frontier,” is approached through non-objective excursions

that ask the question “what is wilderness?” rather than “where is wilderness?” Through interviews, examination of wilderness experiences, and multimedia documentation, the concept of wilderness is reestablished as a psychological experience, one characterized by one’s expectations being superseded by natural occurrences. This can happen within individual experience or culturally. Embedded within the particular experiences documented by this project is evidence of how these concepts are manifested in our laws, behaviors, and sometimes paradoxical enterprises. The discourse surrounding tourism, trail maintenance, backwoods shelters, improving outdoor technology and communication, natural resource conservation, water rights, use restrictions/permits, human/wildlife relationships and natural disasters are some of the topics explored.

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### **3. DeNofio, et. al., Plattsburgh State University**

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#### Comparison of Wetland Delineation Methods

Two common methods are currently used to delineate wetlands. The Army Corps. of Engineers’ (ACOE) wetland delineation manual utilizes field hydrology, hydric soil, and hydrophytes indicators. The United States Fish and Wildlife Service (USFWS) relies on remote sensing technology to create wetland maps in the National Wetland Inventory program (NWI). The New York State Freshwater Wetlands Map was created using the NWI method. This study compared the results of the two wetland delineation methods on 193 wetland sites within the Ausable River watershed in Essex County, NY. The 193 study sites were identified as wetlands on the New York State Freshwater Wetlands Map. Wetland hydrological status, depth of surface water, depth to free water in test pit and depth to saturated soil, was observed and hydrology indicators recorded in summer 2008. Our results demonstrated that approximately 76% (147 out of 193) of study sites were found to exhibit sufficient evidence of wetland hydrology using the ACOE’s wetland delineation method. Absence of wetland hydrology was determined at 46 of the 193 study sites. The variation between the results of the two wetland delineation methods exemplifies the margin of error between the two wetland delineation methods.

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#### Geographic Inventory of Telecommunications Permits/Amendments Issued by the Adirondack Park Agency

The NYS Adirondack Park Agency (APA) reviews new structures in the Adirondack Park that are over 40 feet in height, including those providing telecommunications service for emergency providers, television and radio signals, and cellular users. In 2008, the Agency conducted an inventory of all telecommunications permits and amendments that it had issued and it continues to update the inventory. The Agency’s telecommunications inventory is linked to a Geographic Information System which displays data spatially and can be queried by any database or geographic attribute (e.g., location, permit year, or service type). As of March 17, 2009, the Agency had issued 160 permits and amendments for telecommunications projects since 1973 and 59% of those were for projects providing cellular service.

As of March 17, 2009, there were 98 structures in the Park providing telecommunications service: 53 new telecommunications structures (e.g., free standing towers and simulated trees) and 45 existing structures for which the Agency permitted telecommunications use (e.g. free standing towers, buildings, water tanks, fire towers, ski jumps, and a smokestack). The first permit to a cellular carrier was issued in 1993, with applications and permit numbers increasing rapidly since then along with demand and technology. There are 20 structures providing cellular service within 2 miles of the Adirondack Northway (I-87). The poster at this conference displays maps that can be produced with this geographic telecommunications inventory.

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Plant Community and Microclimate Changes Across Forest Edges Created By Clear-Cutting

Forest management creates landscape mosaics of forest stands differing in time-since-harvest and successional age. Microclimate and plant communities exhibit distinct gradients across anthropogenic edges between mature forests and adjacent clear-cuts, but little is known about the temporal variability of the resulting edge effects. We quantified edge effects across edges differing in age (5 vs. 15 years old), that were created by patch clear-cutting in a maple-beech-birch forest in the Adirondack Mountains, NY. We sampled microclimate and plant community characteristics across four edges (2 per age) along twelve 60 m long transects (3 per edge). At increasing distances from each edge (0, 5, 10, 20, 30 m; within forest or clear-cut), we measured hourly air temperature during the peak month of the growing season and cover of ground-layer plants on three 1 × 1 m plots. Microclimate and plant cover exhibited steep gradients across the 5 year old edges, but did not change across 15 year old edges. Species richness did not show a gradient across either edge, but was highest in 5 year old clear-cuts, intermediate in mature forest, and lowest in 15 year old clear-cuts. Mature forest adjacent to 5 year old clear-cuts was more species rich than mature forest adjacent to 15 year old clear-cuts. Thus, edge-related gradients in microclimate and plant cover appear to be transient and obscured by forest regrowth within clear-cuts 15 years after timber harvest. In spite of this, species richness remains affected by time since harvest and the successional age of adjacent stands.

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Spatial Dynamics And Effects Of Beech Bark Disease On An Adirondack Forest

American beech (*Fagus grandifolia*), a major forest tree species in the Northeastern U.S., has been increasingly infected throughout its range by beech bark disease (BBD), which is caused by a non-native insect scale (*Cryptococcus fagisuga*) and fungal pathogens (non-native *Neonectria coccinea* var. *faginata* or native *N. galligena*). Although BBD can considerably affect forest ecosystem structure and function, our understanding of disease spatial dynamics in infected stands and its effects on tree recruitment is rudimentary. We studied spatial patterns of insect scale, canker and tree recruitment using historical stem maps from a ~2 ha plot in a mature northern hardwood forest in the central Adirondacks. Species,

diameter at breast height (DBH) and spatial location of all trees (with DBH > 5 cm) in the plot were recorded in 1985 and 2000. Percentage of each beech stem infected by scale and canker was recorded in 2000. We analyzed spatial patterns of infected beech trees and tree recruitment using Ripley's K-function. Almost 80% of small beech trees (DBH < 10 cm) were not infected by canker but about half were already attacked by scale in a spatially patchy fashion. The majority of larger beech trees were attacked by scale and canker; attack severity appeared correlated to distance from a heavily infested stand section. Despite increased mortality, beech abundance increased from 1985 to 2000; dead beech trees were positively associated with live beech recruits (but negatively with uncantered recruits). Thus, BBD can lead to continuous presence of low quality beech stands.

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Two-lane highways in the Adirondacks may act as barriers for flying squirrels

We wondered if Route 30, a paved two-lane highway in Paul Smiths NY in the Adirondack Park, is a barrier to flying squirrel (*Glaucomys spp.*) movements. Over 6 weeks in September and October 2007 (1320 trap nights) and a week in November (420 trap nights), live traps were set simultaneously on both sides of Route 30. Thirty two squirrels (13 individuals) were captured. Approximately half were captured on each side of the road (18:15). More squirrels were captured during the Sept/Oct period (25 squirrels, 12 of which were recaptured during this period) than in November (8 squirrels, 7 of which were recaptured from the Sept/Oct period); still, capture rates were identical for both periods (0.019 captures/trap night). Of the 13 marked individual squirrels, 7 were caught on one side of the road while 6 were caught on the other side. Eleven of the squirrels were known to be recaptured (mean recapture number = 1.5, range 0-3). No squirrels crossed the 81 m from the traps on one side of the road to the traps on the other side of the road; yet, movement distances from recaptures showed that ear-tagged squirrels traveled up to 130 meters, indicating that squirrels were capable of traveling the distance to cross Route 30. Because nearly every resident squirrel was captured and recaptured in the study area, yet none of them crossed the road, we believe two-lane roads in the Adirondacks may act as barriers to movement, thus preventing gene flow within metapopulations of flying squirrels.

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Chemical, Physical, and Biological Data Collection In Streams Tributary To Lake George

The Stream Assessment Project was initiated in 2006 to monitor the condition of streams in the Lake George watershed and to provide scientific reports for the public. In 2007, chemical, physical, and biological baseline data were collected in 47 stream sample sites in the Lake George watershed. In 2008, 52 sample sites were monitored and additional data were collected at each site. Chemical and physical data were collected once a month from June to September. Chemical data included dissolved oxygen, pH, and specific conductance. Dissolved oxygen and pH met state standards. Specific conductance varied between streams and was relatively higher in sample sites located in more urbanized areas. Physical data included the US EPA's habitat assessment, a pebble count, and flow measurements as well as turbidity,

total suspended solids and temperature data. Tributaries to Lake George were in different physical condition; streams close to development and roadways appeared to be more physically impacted than those found in less disturbed areas. Biological data, specifically macroinvertebrate samples, were collected according to NYS DEC protocol at 47 of these sites in late August and September. From which, 26 were non-impacted, 17 were slightly impacted, and 4 were moderately impacted. There was a moderate inverse relationship between specific conductance and the Biological Assessment Profile scores, where streams with higher specific conductance levels often had lower biological water quality scores. Together, data suggest numerous tributaries to Lake George have become impacted chemically, physically and/or biologically; generally, these sample sites were located in more urbanized areas.

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Nitrate, Ammonia and Phosphorus Dynamics of Star Lake in the Northwestern Adirondack Park

Eutrophication of Star Lake due to phosphorus and nitrate inputs is important to the hamlet of Star Lake as it depends on the lake as a source for its municipal water supply. The private ownership of the shoreline (7.40 km) requires this kettle lake to exert strict control of nutrient addition. While historically Star Lake has had good water clarity (Secchi depths of 4-7 m) and low amounts of phytoplankton, its shoreline density and small watershed make it susceptible to changes in its trophic status. As a typical dimictic lake, the lake shows stratification during each summer (as measured since 2001) with a metalimnetic oxygen maximum at 9 m and an anoxic hypolimnion. Alkalinity (as 10 mg/L calcium carbonate) during summer 2008 reflected the contribution of groundwater through adjacent calcareous sands. Total phosphorus levels in winter 2003 and 2005 and summers 2007 and 2008 showed extremely low levels (< 5 ppb) in the epilimnion and higher amounts (up to 30 ppb) in the hypolimnion, especially during late summer. Amounts of nitrate as measured during summer 2007 and 2008 are in the moderate range for ALSC lakes, with a peak (up to 200 ppb) noted in the lower metalimnion. At several times during summer 2008 nitrate was undetectable in the metalimnion. Chlorophyll levels peaked in the metalimnion during summers 2007 and 2008 with levels at 3 micrograms per liter. A variety of zooplankton (*Daphnia*, *Bosmina*) were noted during summers 2007 and 2008. Ammonia levels during late summer 2008 peaked in the anoxic hypolimnion. Total phosphorus as measured in fall 2008 and spring 2009 confirmed the oligotrophic status of Star Lake with slightly higher levels than found for Hemlock Lake (a water supply for Rochester) in spring 2009. The development of an anoxic hypolimnion each summer indicates the sensitivity of Star Lake to changes in nutrient status. Studies of Star Lake are continuing with the deployment of a YSI 6800 sonde with continuous sampling.

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