Research Notes

Welcome to the second edition of Research Notes, a new feature of AJES that brings you news from the research world in the Adirondacks and related environs. Who is doing what and where? Read on to find out!

Quantifying the Relationship between Anthropogenic Disturbance and Biotic Integrity in the Adirondack Park *(Anne Woods, State University of New York, College of Environmental Science and Forestry)*

This study investigates the response of biotic communities to anthropogenic disturbance in the Adirondack Park and examines the relationship between land use and biotic integrity at the landscape scale. I developed an index of biotic integrity (IBI) for the Adirondack Park using data on bird guilds from the 2000–05 New York State Breeding Bird Atlas (BBA). IBI was a better measure of biotic community condition than species richness, which was affected by sampling effort and responded nonlinearly to disturbance. IBI was negatively related to development and open land covers and positively related to forest/wetland cover and elevation. IBI was predicted better by variables measured at the BBA block scale than larger scales. In the Adirondack Park, the biotic integrity of private lands used for natural resource management may be at risk of degradation from expanding development.

Old-Growth Riparian Forests and Effects on Stream Habitats *(William Keeton, University of Vermont, Clifford Kraft, Dana Warren, Cornell University)*

Riparian forests regulate linkages between terrestrial and aquatic ecosystems, yet relationships among riparian forest development, stand structure, and stream habitats are poorly understood in many temperate deciduous forest systems. Our research in the Adirondack Park has (1) described structural attributes associated with old-growth riparian forests and (2) assessed linkages between these characteristics and in-stream habitat structure. Indicators included coarse woody debris, debris dams, plunge pools, and variations in canopy structure over stream channels. We sampled 29 sites along first and second order stream reaches in Five Ponds Wilderness, Pigeon Lakes Wilderness, the Ampersand Mountain area of the High Peaks Wilderness, a private preserve in the southwestern Adirondacks, and the SUNY ESF Huntington Wildlife Forest. We are finding that old-growth riparian forest structure is more complex than that found in mature forests and exhibits significantly greater accumulations of aboveground tree biomass, both living and dead. Old-growth riparian forests provide in-stream habitat features that have not been widely recognized in eastern North America, representing a potential benefit from riparian forest management. Our research results suggest that riparian management practices—including buffer delineation and restorative silvicultural approaches—that emphasize development and maintenance of late-successional characteristics may be useful where the associated in-stream effects are desired. For further information see *Ecological Applications* 17(3) (2007): 852–868.

Compiled by Michale Glennon. Submit research notes to mglennon@wcs.org.

New Measures of Economic Well-Being for Rural Vermont *(Marta Ceroni, University of Vermont)*

The socioeconomic well-being of Vermont and the Northern Forest depends on the economic vitality of its communities as well as its natural resource wealth, social interactions, health, and knowledge. Yet, classical measures of progress, such as the gross domestic product, are based solely on economic growth, failing to measure what really matters to people. We used the genuine progress indicator (GPI) to investigate the socioeconomic trends of six rural counties of northern Vermont from 1950 to 2000 in a way that genuinely reflects the multiple dimensions of quality of life for the region and its communities. GPI in the most rural counties (Caledonia, Essex, Orleans) was below the U.S. average in 1950 but had risen above the national average by 2000. Rural counties had consistently lower crime rates, generated less solid waste, had less air, water, and noise pollution, and less loss of forest cover and wetlands, but higher costs of underemployment. Such estimates can provide useful interregional comparisons of socioeconomic well-being.

How Would You Invest Your Dollars in a Sustainable Future for the Northern Forest? *(William Porter, Anne Woods, State University of New York, College of Environmental Science and Forestry, Jon Erickson, University of Vermont, Graham Cox, Audubon New York)*

In November 2006, at the Adirondack North Country Association's annual meeting in Saranac Lake, researchers from SUNY ESF and UVM presented a summary of their focus group and opinion surveys to assess how people in the Adirondacks/North Country would invest in a sustainable future for their communities. A summary of the results appeared in *AJES* 14(1). We are pleased to report that the ESF and UVM research team has been funded for the coming year by the Northeast States Research Cooperative (NSRC) to expand our survey to all four states in the Northern Forest—Maine, New Hampshire, New York, and Vermont—to ask 1,200 residents to express their opinions about a sustainable future. Saranac Lake consultants Holmes & Associates will work with the research team to conduct the telephone interviews, help analyze the results, and compare them to the initial focus group and e-mail survey results reported in November 2006. In the initial project NSRC funded the

research to ask two questions: If additional funds were available to invest in your community for a sustainable future, what would your priorities be? Second, would they get the same answers from local communities as they would get from a regional or statewide planning group? In short, the researchers set out to compare a top-down approach to setting priorities to a bottom-up approach. The intent of this expanded research project is twofold: first, to use the survey results to help guide and influence future federal, state, and private investment decisions at the community, state, and regional levels; and second, to have available a survey questionnaire and procedure that is replicable and repeatable, ready and adaptable for use and comparative purposes in any of the Northern Forest communities, state and regional segments.

Modeling Adirondack–Tug Hill Connectivity *(Michelle Brown et al., Adirondack Nature Conservancy and Land Trust, Tug Hill Tomorrow Land Trust, Wildlife Conservation Society)*

Conservation work by the Nature Conservancy (TNC) and others has focused on securing core and buffer areas within the Adirondack Park and Tug Hill. However, the long-term viability of wide-ranging species inhabiting these regions will likely depend on maintaining connectivity across the intervening and relatively unprotected Black River Valley—where land conversion, second home development, and transport infrastructure threaten to further fragment natural habitats. Through spatial connectivity modeling, we seek to identify areas that will maintain or increase landscape permeability for a suite of focal species including American marten, black bear, Canada lynx, cougar, moose, river otter, and scarlet tanager. Results will be used to guide land protection efforts to secure habitat steppingstones by TNC and others and will influence transportation planning and maintenance work to improve permeability of barriers. The spatial model and region-specific parameters will be useful in assessing connectivity potential within other areas surrounding the Adirondack Park (for example, the Saint Lawrence Valley).

Understanding the Impacts on Wildlife of Exurban Development in the Adirondack Park *(Michale Glennon, Wildlife Conservation Society, and Heidi Kretser, WCS and Cornell University)*

Building on our past work to disseminate information on the effects of low density rural sprawl in the Adirondacks and elsewhere on wildlife populations (http://www.wcs.org/adirondackresearch#Development), the Wildlife Conservation Society's Adirondack program is currently engaged in a number of projects to address the overall issue of exurban development and wildlife with on-the-ground field research. With funding from the National Science Foundation, Biodiversity Research Institute, and the Northeastern States Research Cooperative, we are exploring the effects of residential development on a variety of taxa in the Park. Two of these projects investigate the effects of existing development on wildlife populations. We are examining the differences in breeding bird community integrity between subdivisions and adjacent control areas, as well as working to identify what defines a "wildlife disturbance zone" in the Adirondacks—the area around a home in which wildlife habitat should be considered altered by the presence of a residential structure and the associated activities of its inhabitants. A third project explores changes to small mammal, bird, and carnivore communities before and after construction of single-family residences. Collectively, these projects will provide valuable information for local land use planning and provide suggestions for planners to implement projects in ways that will minimize negative impacts on wildlife. If you happen to be building a house and would consider participating in our study, contact us at http://www.wcs.org/adirondacks or 518-891-8872.

Using Science to Manage Northern Forest Tourism and Recreation *(Kelly A. Goonan, Carena J. van Riper, Robert Manning, Christopher Monz, University of Vermont)*

Outdoor recreation and tourism is a growing and important use of the Northern Forest— 26 million acres stretching from the Adirondack Mountains in northern New York to eastern Maine. Thousands of visitors are attracted to the region's mountains each year. Ultimately, outdoor recreation must be sustainable to protect natural resources in the area and provide a high-quality experience to visitors. Managing tourism and recreation in the Northern Forest in a sustainable manner will require informed decisions based on a strong scientific foundation. This approach calls for formulating indicators and standards of quality for natural resource conditions and the visitor experience. Indicators of quality are manageable, measurable variables that define the quality of natural resources and visitor experiences, and standards of quality define the minimum acceptable condition of indicator variables. The University of Vermont is conducting research to guide management of the Northern Forest for tourism and recreation. Once indicators and standards of quality are formulated, indicator variables will be monitored and appropriate management action can be taken to ensure that standards are maintained. This study will focus on four summits across the Northern Forest region, and data will be collected during the 2008 summer field season. A pilot study was conducted on Cascade Mountain in New York during the summer of 2007. Data were collected on the summit area to assess resource and social conditions. These data will provide an initial framework from which additional summits will be examined in upcoming field seasons. This research is funded by a grant through the Northeast States Research Cooperative. For more information, please visit http://www.uvm.edu/envnr/parkstudies and http://www.nsrcforest.org.