

# Adirondack Park Trends Analysis Plan



Prepared by Strategic Action Team 4  
NYS Adirondack Park Agency

May 2001

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## EXECUTIVE SUMMARY

As part of the Adirondack Park Agency's Strategic Plan, an effort to develop policies to help guide the Agency into the next century, a staff team was assembled to develop a plan to facilitate a streamlined Park-wide database that could be used to monitor trends in Park resources. The team's charge was to:

*Identify, inventory, determine trends and analyze Park natural, cultural and other resources of special significance. Develop an overall plan for data development, research and analysis needs. The plan should identify suitable baseline information, show projected time lines, identify sources of money and partners to aid in design and implementation.*

The team identified strategic benefits flowing from this effort, the most important being:

- Agency decisions and pro-active actions will be based more on trends observed from scientific monitoring of natural, cultural and economic resources.
- Agency decisions will sustain the Park over the long term.

The team identified 18 natural and cultural resource areas in 4 resource categories as priorities for trends monitoring. Under these 16 resource areas, the team identified 59 data elements as indicators of the health of the resources. Incorporated in this Plan are existing data sources, likely candidates for collaboration, and potential funding sources.

Recommendations from the team that stemmed from this effort were to:

### **1) Continue the effort towards Trends Analysis as a Strategic Action**

The team felt work should continue on trends as a priority strategic action for one more cycle. During this next cycle several tasks should be achieved. They are:

- the organization of a workshop session or symposium to promote and publicize the Plan;
- work by agency staff on a few key data elements for which the Agency is the primary repository (such as wetland loss and change; permit activity in sensitive watersheds; permit activity involving critical environmental areas; shorelines and scenic travel (river and road) corridors; changes in designated scenic vistas; and state land acquisitions and classifications); and,
- active solicitation for partners and potential funding sources for elements of the Plan.

The team felt that following the above work, Trends Analysis should become one of the Agency's routine functions, with the necessary analysis and reports prepared on a regular basis.

### **2) Devote resources in greater recognition of the importance of Trends Analysis to the Agency and the Park**

Continuing a trends analysis should be a high priority because in the past data collection and trends analysis has been fitful, of varying quality or non-existent at the Agency. While the Agency is generally concentrating on reducing the backlog or getting through the day, the week or the latest project, a plan for a vision of the Park at any scale and determining if we are achieving or deviating from that vision requires these data and

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analyses. *Therefore, the Team recommends that this strategic action be placed at the highest priority levels and that it becomes embedded in the tasks that each division does on a daily basis.*

### **3) Internal Agency Collaboration**

Each division should be represented and participate in the next phase. The Director and Agency members should see that appropriate individuals are assigned the responsibility for maintaining certain databases and these duties are reflected in staff work programs and descriptions of their jobs

### **4) Long term care of the database**

The Team felt that the Agency Planning Division should be responsible for oversight of the databases, coordinating contributions by staff or partners, maintaining public access to them and providing regular periodic analysis of the results.

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## INTRODUCTION

This document is intended to propose a process embodied in a plan for development of Trends Analyses of key Adirondack Park cultural and natural resources. The Plan is to be endorsed by the Adirondack Park Agency in its capacity as a forum for critical issues shaping the Park. It is intended that the Plan should be embraced by other Adirondack organizations and agencies that will participate in trends monitoring and share their expertise.

Throughout its more than a quarter-century of operation, the Adirondack Park Agency has built scientific, geographic, and planning databases to be able to serve the public more effectively and efficiently. As the databases have grown, so has the appreciation for quality data to aid decision-making. Currently, however, a Park-wide database that compiles historic and present-day data is lacking. Such a database would:

- aid the decision-making process for the Agency, other State agencies in the Park, local governments, resource managers, landowners, groups outside the Park looking to institute a similar database for their area, etc.
- aid the understanding of how Park natural and cultural resources have changed over the years, and allow for projections about the future of the resources
- allow the Agency to more effectively base actions on scientific monitoring data so that approved land use and development occurs such that Park resources are conserved, protected and preserved consistent with statutory requirements
- increase awareness about the state of Park resources, and facilitate outreach and education
- encourage more research involvement within the Park by universities
- increase awareness about the importance of data collection

As part of the Agency's Strategic Plan, an effort to develop policies to help guide the Adirondack Park Agency into the next century, a staff team was assembled to develop a streamlined Park-wide database that could be used to monitor trends in Park resources. The team's charge was to:

*Identify, inventory, determine trends and analyze Park natural, cultural and other resources of special significance. Develop an overall plan for data development, research and analysis needs. The plan should identify suitable baseline information, show projected time lines, identify sources of money and partners to aid in design and implementation.*

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To fulfill this mission, the Trends Analysis Team met periodically since April 2000. It was necessary to take stock of the current state of natural, cultural, and economic resources data in the Park and identify important areas on which to focus a monitoring program. Four resource categories were selected:

1. Economic, Fiscal and Cultural Resources Category B focuses on economic vitality, infrastructure and opportunities for cultural enrichment in the Park.
2. Park Character Resources Category B focuses on the aesthetic and wild character of the Park.
3. Physical Resources Category B focuses on the water and air resources of the Park.
4. Biological Resources Category B focuses on plants, animals, and their habitats within the Park.

The four categories were defined by developing a comprehensive list of resource areas stemming from the Agency's enabling legislation and past "milestone" studies addressing Park resources, such as the 1969 *Temporary Study Commission on the Future of the Adirondacks*, the 1989 *Adirondacks in the Twenty-First Century*, and the Northern Forest Lands study.

Within each of the four categories, specific resource areas were defined as priorities to monitor. Staff experts identified measurable indicators for each resource area and listed existing, related data sources, potential partners for data collection and analyses, and sources of funding for data collection.

For each category the Trends Analysis Team chose at least one expert reviewer outside the Agency and discussed the draft Plan with that person. After consultation, their comments were incorporated to the extent feasible into the document. In general, the reviewers were very supportive of the progress made. The reviewers were:

- Economic, Fiscal and Cultural Resources – Terry Martino, Robert Camoin
- Park Character – Dr. Phil Terrie
- Physical Resources – Richard McClimans, PE
- Biological Resources – Dr. Thomas Whitlow

### **Multi-disciplinary approach**

By defining the four categories, the task of Park-wide data collection is approached from a multi-disciplinary perspective. Although each category is discussed in a separate section, it is not meant to convey that the categories are unrelated; instead, the partitioning is intended simply to organize the task of data collection in a straightforward manner. In reality, the categories are interrelated and work concurrently to affect the lives of Park residents, natural resources, and the overall character of the Park (Appendix 1: Making Connections). It is

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important to realize and explore these connections between the sections for the data to be meaningful.

### **Partnerships**

This document will serve to identify areas where the Agency would like to see more research and data development going on in the Park. Researchers, Park residents, other agencies, volunteers and other potential partners who would like to be involved with Trends Monitoring in the Park are encouraged to use this document as a tool to explore ways that their interests may fit in with those set forth in the document. We encourage potential partners to think of connections between resource categories that may make for fascinating studies. The Agency welcomes the opportunity to assist in forming collaborative efforts to develop funding sources for data acquisition and analysis.

### **Return intervals for monitoring, data storage, and data longevity**

A major issue for this undertaking is to insure that data will remain usable over time both in terms of the technology and storage media as well as scientifically relevant. One problem with some historic data sets is that the data have become unusable due to out-of-date storage media, or a lack of data fields that can be linked to join the data to another data set. The ability to access and connect the data sets to one another over time is key to being able to build a temporal database. For this reason, the Agency should explore appropriate, modern storage methods (both software and hardware, or data-storage providers) and act as a database manager making sure that there is a logical consistency between projects so that data comparisons can be made.

Some issues that are only touched upon in the document that will need to be further refined on a project-by-project basis are: What historic data sets exist that may be drawn upon and enhance the study? What are appropriate return intervals for monitoring the particular resource? How can monitoring infrastructure (i.e. data collection and assessment technology, number of sampling sites, etc.) be optimized to insure data quality and longevity?

We hope that the reader of this document will gain an appreciation for Trends Monitoring in the Adirondack Park and the importance of a Park-wide database and consider involving himself/herself or his/her organization in this effort with the Adirondack Park Agency. Because we consider this effort to be dynamic, comments and additions are most welcome.

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## Recommendations

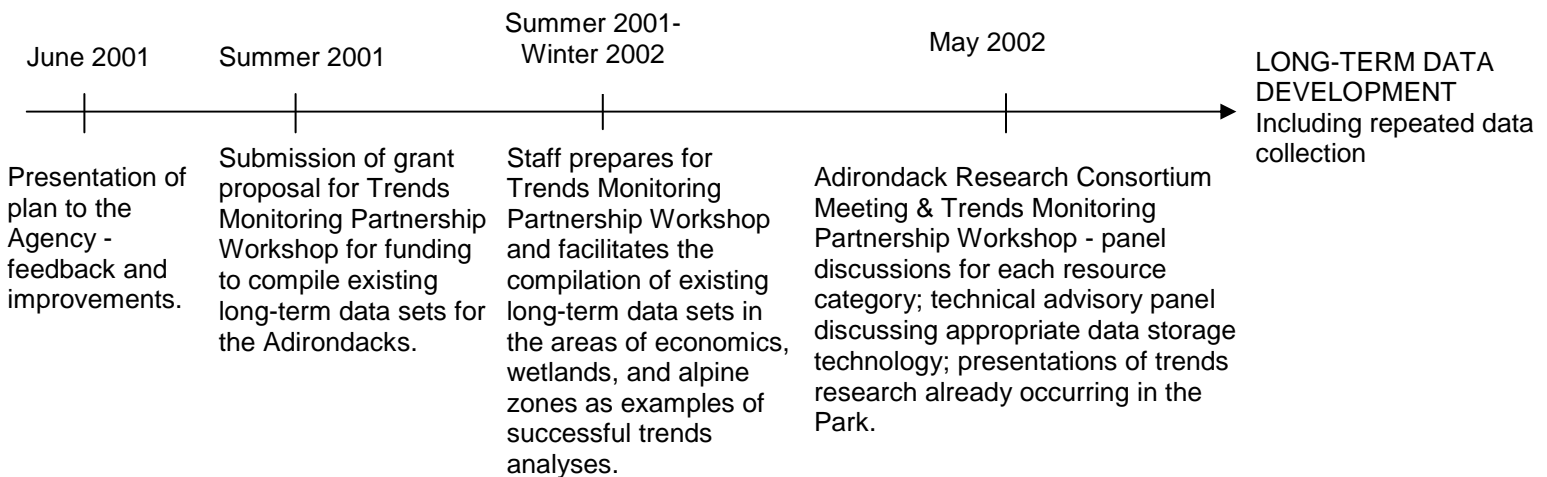
### 1) Continue the effort towards Trends Analysis as a Strategic Action.

The team felt work should continue on trends as a priority strategic action for one more cycle. During this next cycle several tasks should be achieved (Figure 1). They are:

- the organization of a workshop session or symposium to promote and publicize the Plan;
- work by agency staff on a few key data elements for which the Agency is the primary repository (such as wetland loss and change; permit activity in sensitive watersheds; permit activity involving critical environmental areas; shorelines and scenic travel (river and road) corridors; changes in designated scenic vistas; and state land acquisitions and classifications.); and,
- active solicitation for partners and potential funding sources for elements of the Plan.

The team felt that following the above work, Trends Analysis should become one of the Agency's routine functions, with the necessary analysis and reports prepared on a regular basis.

**Figure 1: Trends analysis timeline.**



### 2) Devote resources in greater recognition of the importance of Trends Analysis to the Agency and the Park.

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### **3) Internal Agency Collaboration.**

Each division should be represented and participate in the next phase. The Director and Agency members should see that appropriate individuals are assigned the responsibility for maintaining certain databases and these duties are reflected in staff work programs and descriptions of their jobs.

### **4) Long term care of the database.**

The Team felt that the Agency Planning Division should be responsible for oversight of the databases, coordinating contributions by staff or partners, maintaining public access to them and providing regular periodic analysis of the results.

## **The continuing process**

Although this Plan is a major step towards the institution of Trends Monitoring at the Park-wide level, it is inevitable that it does not address all the possible issues related to Trends Monitoring. Because there may be many other approaches to the problem of detecting changes in environmental quality over time, the Agency should promote public discussion of the Plan, which will likely have the added benefit of enlisting partners.

We suggest organizing a facilitated day-long workshop/symposium to seek input on the process of Trends Monitoring. Experts in each field would be gathered to solicit their opinions and begin discussion of the issues involved. Results of already established trends monitoring projects would be presented as models for success. The end results would be a more widely publicized Plan and the resolution of questions such as existing data sources, partners, sources of funding, methods of information dissemination, and appropriate methods for the continuous update and analysis of data.

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## Economic, Fiscal and Cultural Resources Category

### **RESOURCE AREA: ECONOMICS**

This area focuses on employment, payrolls, and entrepreneurship. These are key factors in community vitality and appearance since the economic welfare of residents is critical to their ability to support local institutions and businesses. In this resource area, we should monitor such key indicators as the growth and stability of employment, seasonality of employment, family income, and levels of entrepreneurship (proprietorships). A major source of funding for this research area may come from NSF's Directorate for Social, Behavioral, and Economic Sciences, Division of Social and Economic Sciences.<sup>1</sup>

#### Indicators:

- A. Employment / Payroll by industry**
- B. Seasonality of employment by industry**
- C. Family income**
- D. Numbers of Entrepreneurs / Sole Proprietors**

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<sup>1</sup> <http://www.nsf.gov/sbe/ses/>

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Sources of Information: Data on the above indicators is available through the NYS Department of Labor (DOL), the US Department of Commerce's Bureau of the Census and Regional Economic Information Service. DOL has created a special database on employment and payroll for portions of counties within the Adirondack Park.

Others with an interest in this issue: NYS Departments of Economic Development, State, and Environmental Conservation; Adirondack North Country Association; County IDAs; Local Development Corporations including Warren County REDC, Adirondack Economic Development Corporation, Clifton-Fine EDC; local chambers of commerce. There has been increased interest by local planners and economic developers in a time series of community based information that could be used in comprehensive planning initiatives.

Sources of funding if data is not readily available: The above data should be readily available. Assistance may be required for assembly, layout, and dissemination

## **RESOURCE AREA: FISCAL/PUBLIC SERVICE**

This area focuses on matters of tax burden on community residents and the capacity of local government to accommodate new development through existing water and sewer infrastructure and/or through system expansions. It involves important matters of quality-of-life and environmental protection.

### Indicators:

- A. Full value real property assessments (total and per capita)**
- B. Real property tax assessment attributable to State lands (actual value / percent of total assessment)**
- C. Design and excess capacity of sewer and water systems**
- D. Number and type of other key public service systems including infrastructure investments, education, police, and fire/ambulance**

Sources of Information: NYS Office of the Comptroller; NYS Office of Real Property Services; County real property tax offices; NYS Department of Health; NYS Department of Environmental Conservation.

Others with an interest in this issue: State, regional and local planning and economic development organizations. Adirondack Association of Towns and Villages, and involved local governments.

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Sources of funding if data is not readily available: While the data is available, its assembly from a variety of sources and its layout in a usable format for a significant number of jurisdictions will be time consuming. Contract assistance may be required.

## **RESOURCE AREA: HOUSING**

An important issue facing many communities and local residents in the Adirondack Park is the growing demand for a limited stock of housing and approved building sites. This can raise housing costs in Park communities, especially those experiencing a significant influx of people enriched by the sale of higher value homes elsewhere. The issue of “gentrification” and the ability of long-time Adirondack residents to maintain a quality and affordable lifestyle is an aspect of community welfare worthy of monitoring.

### Indicators:

- A. Building permits for new housing (number and estimated project costs)**
- B. Residential real property tax assessments (total and expressed on a per household basis)**
- C. Conversion of seasonal to year-round housing**
- D. Proportion of rental to ownership units**
- E. Workforce commutation patterns**

Sources of Information: Data on the above indicators is available from the NYS Division of Housing and Community Renewal; U.S. Census, local building inspectors, town and county real property tax office records, and the NYS/DOL.

Others with an interest in this issue: State, regional and local planning and economic development organizations.

Sources of funding if data is not readily available: While the data is available, its assembly from a variety of sources and its layout in a usable format for a significant number of jurisdictions will be time consuming. Contract assistance may be required.

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## RESOURCE AREA: COMMUNITY CULTURAL CHARACTER AND VISITATION

The improvement of community appearance and maintenance of historic character, important for the quality of life of residents, can also be a factor in improving a local economy and tax base through increased tourism. The creative reuse of historic properties, the growth of local cultural and recreational opportunities, and the absorption of vacant commercial space downtown can be important indicators of community welfare and economic diversification.



### Indicators:

- A. Number of properties listed on the State and federal Registers**
- B. Investment in and/reuse of significant properties (for example: number of vacant buildings, number of buildings not code compliant, evidence of community development initiatives)**
- C. Number and type of cultural and recreational programs (museums, music-in-the-park, theaters, etc.)**
- D. Levels of summer/winter visitation.**

Sources of Information: NYS Office of Parks, Recreation and Historic Preservation; Code enforcement offices; NYS Council on the Arts; NYS Office of Housing and Community Renewal; Empire State Development; Local chambers of commerce.

Others with an interest in this issue: State, regional and local planning and economic development organizations.

Sources of funding if data is not readily available: While the data is available, its assembly from a variety of sources and its layout in a usable format for a significant number of jurisdictions will be time consuming. Contract assistance may be required.

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## Park Character Resources Category

This category focuses on the key components that define the intrinsic aesthetic and wild character of the Park. The quality of these resources is of great importance to distinguishing the Park from surrounding urban and even rural areas and establishing a particular identity for the Park as compared to other “natural reserves.” These resources are affected by regional and local land uses.

### **RESOURCE AREA: OPEN SPACE**

Background: The open space resources of the Adirondack Park are unrivaled in their size and diversity in the Eastern United States. Millions of acres of publicly protected Forest Preserve lands form the cornerstone of the Park’s open space resources. Private lands devoted to forestry, agriculture, and open space recreation add to this valuable mix of open space resources. Expanded public use and other increasing demands on the Park’s open space resources pose both real and potential threats to the continued viability of these resources. The ongoing challenge and responsibility of the APA is, through its policies and actions, to preserve and protect the Park’s valuable open space resources and character while, working with local governments and others, balancing demands for use and development of the Park’s resources.

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Indicators:

**A. Area, categorized by type of Open Space**

- Acreage of land in State land ownership
- § Acreage in conservation easement
- § Acreage of private land in rural use and resource management classifications
- § Acreage being managed as commercial timberlands

**B. Road density in the Park**

**C. Presence/absence of local open space regulations**

**D. Subdivision trends in large parcels**

Sources of Information: Open Space Plan, Temporary Study Commission Report, 21<sup>st</sup> Century Report, local government open space plans, Association for Protection of Adirondacks, Cornell, SUNY-ESF, Adirondack Council, Office of Real Property Services.

Others with an interest in this issue: DEC, Adirondack Nature Conservancy and Land Trust, Association for Protection of Adirondacks, Cornell, SUNY-ESF, Adirondack Council, New York State Office of Real Property Services.

Sources of funding if data is not readily available: Environmental Bond Act, Private Foundations.

**RESOURCE AREA: SCENIC VISTAS**

Many environmental impacts are often unnoticed in a community. These can include changes to the visual landscape however, visual changes can also occur rapidly and dramatically. Visual resources add a vital factor for any municipality; enhancement and preservation of a community's visual resources contributes to its social and economic well being. Whether or not people choose to visit, live or conduct business in a community depends to a great extent on the community's visual impression.

"Regional Vistas" - Along travel corridors there are certain spots or stretches of road which offer exceptional vistas, often across water bodies, wetlands or other open lands, to far ranging features such as mountains. In the 1973 inventory of the Park these locations were identified as "Regional Vistas" and located on the State Land Master Plan Map. Because of their exceptional nature and importance to the key qualities of the Park extra care should be taken to preserve the regional vistas. Inventorying and monitoring these resources can help contribute to local and State government and private efforts to preserve, protect

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and enhance visual resources and can help indicate the quality of the Parks communities.

Indicator:

**A. Visual Resource Inventory and Assessment**

Sources of Information: State Land Master Plan, Visual Resource Inventory and Assessment Methodology, Mike Storey's Map, Adirondack Council's review of the Park's Regional Vistas.

Others with an interest in this issue: The Adirondack Council conducted an independent review of the Regional Vistas in the mid-1980's. Their ongoing attention to the Park's aesthetics is paramount. Since the Regional Vistas are outlined in the SLMP as "potential scenic Pull-offs." DOT would have a fundamental interest in these locations. Scenic America is another organization with an interest in travel corridors.

Sources of Funding if the data is not readily available: Both the Adirondack Council and DOT may be interested in funding a review of the Park's visual resources. Local governments and Adirondack North Country Association may also be interested in identification of visual resources as a tool to further the tourist industry.

## **RESOURCE AREA: STATE LAND**

The 2.5 million acres of State land within the Park constitute over 40% of the Park. They occupy strategic locations mostly at the Park's geographic center among the mountains and numerous ponds and lakes, thus incorporating key components of the Park's ecological character and integral to its ecological health.

The contribution of State Land to the open space and scenic qualities of the Park are discussed below and the Physical and biological qualities of the State Land resource (surface water, forests, wildlife, alpine zones, etc.) are discussed in other portions of this document.

The vast majority of the State land in the Park is Forest Preserve protect by Article XIV of the State constitution which directs that it be "forever kept as wild forest lands." This "wild forest land" resource is unique in New York and the northeastern United States. Wildness is not only a function of healthy natural systems but also of remoteness, quiet, and low levels of interaction with other users. It is also a function of the individual user's perceptions of these factors, the environmental setting and the quality of their experience.

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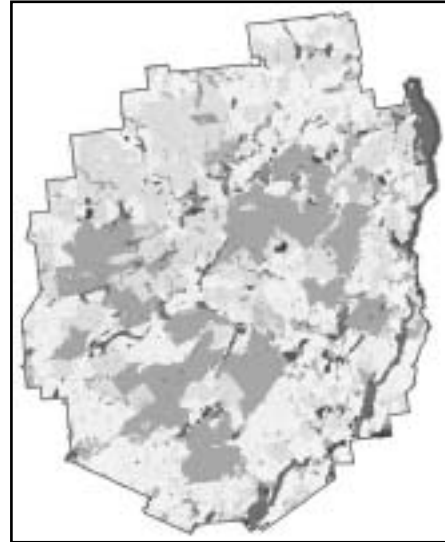
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Indicators:

**A. Acreage of State land by Classification and size of individual units**

Sources of Information: Adirondack Park Agency and Department of Environmental Conservation GIS data.

Others with an interest in this issue: State agencies, local government, environmental organizations and individuals, national and international entities interested in the Park, groups interested in open space preservation and wild land in general.



**B. Use patterns of individual State land units**

Sources of Information: Department of Environmental Conservation trail registers, and user surveys.

Others with an interest in this issue: Department of Environmental Conservation, Office of Parks Recreation and Historic Preservation, individuals, groups, colleges and agencies interested in recreational trends and usage.

Sources of funding if data is not readily available: NYS Stewardship Fund, Department of Environmental Conservation, partners such as National Park Service, SUNY ESF, Cornell University and Paul Smiths College. While colleges and universities may not fund such efforts they can provide valuable expertise and man power.

**C. Road and snowmobile trail density**

Sources of Information: We believe the Temporary Study Commission on the Future of the Adirondacks generated information about road density and motorized access during its work in the late 1960's; and similarly, before that date, the files of the Joint Legislative Committee on Natural Resources may also contain such information. Adirondack Park Agency and Department of Environmental Conservation records and unit management plans, Adirondack Park Agency GIS databases are also good sources of more current information.

Others with an interest in this issue: Department of Environmental Conservation, local governments, environmental groups and individuals and groups interested in the distribution of wild land in the northeast.

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Sources of funding if data is not readily available: NYS Stewardship Fund, Department of Environmental Conservation, Office of Parks and Recreation and Historic Preservation.

#### **D. User perceptions of state land**

Source of Information: Surveys of individual users of the various land classifications conducted at intervals over time by the Agency and Department of Environmental Conservation in conjunction with partners such as colleges and universities.

Others with an interest in this issue: Department of Environmental Conservation, individuals and organizations interested in recreation trends and trends in wild land recreation in particular.



Sources of funding if data is not readily available: NYS Stewardship Fund, National Park Service, Cornell University, Paul Smiths College, SUNY ESF, University of Vermont. While colleges and universities may not directly fund such efforts they can provide valuable expertise and man power.

## **RESOURCE AREA: TRAVEL CORRIDORS**

The Adirondack Park's travel corridors represent the Park's most visible feature and what in large part defines park character to the nine million annual visitors. Tourism is the principle economic force in the Adirondacks and the travel corridors are the face of the Park that greets them.

Public interest and opinion is often shaped by what they is seen while traveling the Park's roads. The continued economic, cultural, and natural well being of the Park depends on the APA and other State and local agencies and organizations taking steps to identify issues and to take steps to preserve and protect the natural, scenic, cultural, historic, recreational, and archaeological resources found along the Adirondack Park's travel corridors. They represent the Adirondack Park's most visible resources.

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Indicator:

**A. Roadside visual character**

Sources of Information: NYS DOT photo inventory, APA Visual Resource Inventory and Assessment Methodology, NYS Scenic Byways Program, Temporary Study Commission Report, Adirondacks in the 21<sup>st</sup> Century Report, Travel corridor management plans, Local/regional planning offices, Lake Champlain Program, Adirondack North Country Association.



Others with an interest in this issue: DEC, DOT, PSC and the utilities servicing the Park, Adirondack Nature Conservancy and Land Trust, Association for Protection of Adirondacks, Adirondack North Country Association, Adirondack Council, Adirondack Economic Development Corporation, ARTC, Area businesses.

Sources of funding if data is not readily available: TEA-21 (Scenic Byways and Transportation Enhancements), Environmental Bond Act, Local governments, Private foundations.

## **RESOURCE AREA: WILD, SCENIC AND RECREATIONAL RIVERS AND SHORELINES**

The APA is charged with administering the NYS Wild, Scenic, and Recreational Rivers Systems Act along private lands in the Adirondack Park. Over 1,200 miles of some 35 Adirondack rivers are protected under this legislation. Protecting and maintaining the character and quality of the rivers in this system and other Park shoreline areas comes in part from Agency actions and regulations. Local and regional governments, DEC, and private landowners also share in the responsibility for helping insure the continued viability of these rivers and shoreline areas for recreation, water supply, water quality, and other essential uses and purposes. Adirondack rivers and shorelines join Park travel corridors and open space areas as among the most visible, valuable, and important resources in the Adirondack Park.

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Indicators:**A. Density of Structures (boathouses, houses, dams, docks)****B. Vegetation (type, density)****C. Shoreline lot widths**

Sources of Information: APA/DEC 1975 rivers inventory file; New York State Office of Real Property Services data will be used for GIS analysis of centroid density; Landsat imagery and the NYS GAP analysis and land cover map derived from these will give information about vegetation type; Temporary Study Commission; Reports from the report on the Adirondacks in the 21<sup>st</sup> Century; Academic institutions, including Cornell, ESF, St Lawrence, SUNY Plattsburgh; Adirondack Nature Conservancy and Land Trust.

Others with an interest in this issue: DEC, Adirondack Nature Conservancy and Land Trust, Cornell, ESF, Paul Smiths, New York State Office of Real Property Services.

Sources of funding if data is not readily available: Private resources (i.e., Hudson River Foundation), Environmental Bond Act.

**RESOURCE AREA: COMMUNITY CHARACTER**

The Adirondack Park is home to over 100 hamlets and community population centers each with their own unique cultural heritage, charm, and character. While each area has its own unique issues and needs, they share a number of common problems. Chief among them are problems related to limited economic development opportunities, aging infrastructure, general visible deterioration, and population out-migration. Adirondack Park hamlet areas play essential roles in providing centers for permanent, seasonal, and transient populations, provide essential public services, and tourism, recreation, and cultural opportunities. Preservation of the Park's hamlet areas is essential to maintaining the Adirondack Park's unique character, interest, and attraction. The hamlets need to be able to strike a balance between economic development and the preservation and protection of community visual character and quality of life. Monitoring trends in Adirondack hamlets offers the opportunity to analyze common problems, develop revitalization strategies and policy plans, and develop economic opportunities for interpreting their important cultural heritage.

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Indicators:

- A. Develop a rating system for overall community appearance including such parameters as amount of open space area, number of vacant buildings, number of buildings not code compliant.**
- B. Population profiles/characteristics: growth or decline, age profile, number of non-local retirees, etc.**

Sources of Information: Roger Trancik=s Adirondack Park Hamlet Studies, other Cornell work; Reports of the Temporary Study Commission on the Future of the Adirondacks; Reports of the Commission on Adirondack Park in the 21<sup>st</sup> Century Report; Adirondack North Country Association information; Adirondack Economic Development Corporation; County and regional planning offices, industrial development agencies, economic development offices, etc.; NYS Department of Economic Development; Local community economic development offices; Census/Department of Labor data.

Others with an interest in this issue: Adirondack North Country Association, Adirondack Economic Development Corporation, NYS Department of Economic Development, Local, county and regional planning and economic development offices, Cornell, Department of Labor (perhaps a partner), New York Planning Federation (perhaps a partner).

Sources of funding if data is not readily available: Housing and Urban Development grants, other federal community development funds, DHCR, Private foundations, Environmental Bond Act, TEA-21 - Scenic Byway enhancements and Community and System Preservation Pilot Program.

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## Physical Resources Category

This category focuses on the surface waters, groundwater and air resources in the Park. The quality of these resources is reflected in the health of the habitats and landscapes in the Park. These resources are affected by global, regional and local land uses.

### **RESOURCE AREA: SURFACE WATER**

This area focuses on quality and the status of lakes, pond, rivers and streams. Of specific concern are changes in the water chemistry, productivity status and acidity status. Additional concerns are for the status of water impoundments and navigation within those waterbodies. The sharp increase in the amount of development and use in recent decades, combined with atmospheric depositions, has caused undesirable changes in the water quality within the Park.



#### Indicators:

- A. Monitor levels of various water quality indicators such as: acid neutralizing capacity (ANC), heavy metal concentrations, potential toxicities due to loading and acidification, and increases/decreases in sulfate and nitrate concentrations.**

Sources of Information: The Adirondack Lakes Survey Corporation (ALSC) is a primary source of this information

Others with an interest in the issue: DEC, Citizen's State-wide Lake Assessment Program, individual lake associations and the NY Federation of Lake Associations, Cornell University.

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Sources of funding if data is not readily available: U.S. Environmental Protection Agency (EPA), NYS Energy Research Development Authority (NYS ERDA), Duck Unlimited.

**B. Monitor lake phosphorus and nutrient loading levels.**

Sources of Information: Review DEC State Pollution Discharge Elimination Systems (SPDES) permits for point source discharges to surface waters to see if meet water quality standards. Review DOH municipal water sources utilizing surface waters for water quality. The Adirondack Lakes Survey Corporation, Adirondack Aquatic Institute at Paul Smiths, County water quality coordinating committees, Hamilton County Water Monitoring Program, Lake Champlain Basin Program. Residents Committee to Protect the Adirondacks, individual lake associations and the NY Federation of Lake Associations.

Others with an interest in the issue: Adirondack Towns and Villages, Residents Committee to Protect the Adirondacks, individual lake associations and the NY Federation of Lake Associations, SUNY ESF.

Sources of funding if data is not readily available: Lake Champlain Basin Program.

**C. Status of dams and impoundments - monitor condition, life expectancy and potential conversion to free flowing waters where applicable.**

Sources of Information: The Adirondack Lakes Survey Corporation, DEC, Niagara Mohawk, NYS Gazette of Dams and Impoundments.



Others with an interest in the issue: Residents Committee to Protect the Adirondacks, individual lake associations and the NY Federation of Lake Associations, NY Rivers United.

Sources of funding if data is not readily available: Public Service Commission.

**D. Losses in navigation due to sedimentation and enlarging deltas.**

Sources of Information: Soil and Water conservation Districts, DEC, Residents Committee to Protect the Adirondacks, County water quality coordinating

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committees, individual lake associations and the NY Federation of Lake Associations.

Others with an interest in the issue: All of the above.

#### **E. Road salt impacts to surface waters.**

Sources of Information: DOT

Others with an interest in the issue: DEC, Residents Committee to Protect the Adirondacks, County water quality coordinating committees, individual lake associations and the NY Federation of Lake Associations.

### **RESOURCE AREA: GROUNDWATER**

This area focuses on quality and the status of groundwater. Of specific concern are the quality and quantity of the resource. New filtration requirements for municipal water supplies have caused many communities to drill new wells for their potable water supply. Aquifers need to be protected and sources of contaminants need to be identified.



Indicators:

#### **A. Municipal drinking water demand and sources of supply from groundwater.**

Sources of Information: DOH, DEC, NY Rural Water Association, Department of State Office for Public Utilities

Others with an interest in the issue: Adirondack Towns and Villages, NYS Atlas of Community Water System Sources, New York State Geological Survey, DEC, USGS.

#### **B. Status of groundwater contamination sites, including current and former mines, concentrated waste disposal sites and their downgradient proximity to sensitive natural areas and drinking water supplies.**

Sources of Information: DEC for contamination sites and for landfill and septic groundwater monitoring records, DEC

Others with an interest in the issue: DEC, ALSC

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### C. Road salt impacts to groundwater.

Sources of Information: NYS DOT

Others with an interest in the issue: Adirondack Towns and Villages, Residents Committee to Protect the Adirondacks, lake associations.

### D. Changes in baseflow levels over time in gauged streams/rivers.

Sources of Information: Federal/state groundwater level records, New York State Geological Survey; US Geological Survey.

Others with an interest in the issue: Adirondack Towns and Villages.

## RESOURCE AREA: AIR RESOURCES

This area focuses on the air quality of the Park. Included in this are regional effects from global warming that include: catastrophic events (micro-bursts, ice storms, 100 year storm events, floods, volcanic eruptions...), temperature extremes, length of growing season and what fundamentally affects vegetative and animal communities.

Indicators:

### A. Monitor regional haze caused by air pollution (measure visibility and sulfate concentrations).

Sources Of Information: DEC Division of Air; US EPA; US Geological Survey; NOAA.

Others with an interest in the issue: Residents Committee to Protect the Adirondacks, universities, Adirondack Mountain Club.

### B. Vulnerability of high elevation soils and soil cation losses leached by acid deposition.

Sources of Information: National Resource Conservation Service, University of Pennsylvania.

Others with an interest in the issue: Empire State Wood Products, Residents Committee to Protect the Adirondacks, Adirondack Nature Conservancy, Dr. Edwin Ketchledge, universities, Adirondack Mouton Club.





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**C. Monitor air quality standards.**

Sources of Information: Examine violations/excursions from standards. Track federal standards for air pollution control (sulfates, fine particulates, and ozone) including the trading of pollution offsets by the electric utilities upwind of the Adirondack Park. DEC Division of Air; USDA Forest Service; US EPA for changes in regional and global energy uses; Canadian sources; US Geological Survey; colleges and universities; NOAA.

Others with an interest in the issue: Residents Committee to Protect the Adirondacks. DEC Division of Air.

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## Biological Resources Category

The Biological Resources Category focuses on the plants and animals within the Park and their habitat. Living things provide much of what is valued most about the Park by both residents and visitors. To monitor trends in Biological Resources it is necessary to first create a baseline inventory of the state of existing resources. For many of the Resource Areas discussed below, this entails creating a land cover map, monitoring species levels within various communities and determining community size. Organisms and direct physical / chemical measurements can be used as indicators to give information about habitat *quality*, and aerial extent can be used to measure habitat *quantity*. Baseline data already exists for some of the Resource Areas and, in some cases, long-term studies are being conducted. It is important for the Adirondack Park Agency to be aware of these studies and develop partnerships with key organizations that may aid in the development of a trends analysis database for the long-term monitoring of the health of the Park's Biological Resources. Many of the potential funding sources may also apply to more than one of the Resource Areas. These include:

- Department of the Interior/United States Geological Survey (DOI/USGS) Unsolicited Proposals: <http://www.usgs.gov/contracts/grants/unsolbk.html>
  - National Science Foundation (NSF), Directorate for Biological Sciences, Division of Environmental Biology: <http://www.nsf.gov/bio/deb/start.htm>
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Under each indicator description, data sources have been organized temporally, according to the length of time data has been collected. For those studies in which only one instance of data collection has occurred, it has been indicated whether there is intent to do follow-up studies.

## **RESOURCE AREA: FORESTED LANDS**

Forested Lands are an open space feature of the Park that is an important component of Park character. Forested Lands offer benefits such as wildlife habitat, employment opportunities, recreation, and aesthetics. The Forested Lands resource includes both commercial timber production lands as well as lands maintained for non-timber purposes such as State Forest Preserve land. Forested Lands may be defined by the ecosystem in which they are found (i.e. Northern Hardwoods, Boreal, or Alpine forests), or by the dominant species (i.e. Sugar Maple forest), or by age-structure (i.e. early successional or old-growth forests), or even by the dominant agent of change in the forest (i.e. fire-maintained or clear-cut forests). Monitoring trends in species composition and areal extent will help define forest health and characterize natural vs. human-mediated changes in the forest.



### Indicators:

#### **A. Species Composition**

##### Sources of Information:

Long-term data sources - Forest data has been collected over the greatest time period at the long-term study plots of the State University of New York College of Environmental Science and Forestry's (SUNY-ESF) Huntington Forest and Cranberry Lake Biological Experiment Station. Data from these areas may be used for forest type descriptions and historical comparisons. Sunita Halasz's M.S. from Cornell University set up permanent plots in the William C. Whitney Wilderness to monitor Adirondack forest recovery from timber harvesting, and compared present-day data with that of previous studies going back to 1898. It is likely that large paper corporations such as International Paper, Domtar, and Finch-Pruyn would also have a long-term database from forest inventories that would be useful for monitoring trends on timber lands.

Shorter-term data sources - The New York Natural Heritage Program (NYNHP) maintains lists and locations of rare element occurrences around

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the state and has published Ecological Communities of New York State (Reschke, 1994), which defines community types by heritage ranking and common species. Other sources of data include studies by Jerry Jenkins and the Wildlife Conservation Society, US Forest Service Northeast Research Station 10-year reports, and Real Property Services forest survey data.

“Snapshot” data - (data collected once; there may be intent to continue the effort) Useful data sources collected once that offer a “snapshot” of the Adirondack forest in time include the NYS GAP Analysis map of generalized forest types around the state and the APA’s 1981-1982 Intensive Timber Harvest Study. There is intent to continue GAP data creation.

Others with an interest in this issue: Potential partners for trends analyses on Forested Lands who would both help collect and analyze data include SUNY-ESF, Cornell University, Paul Smiths College, Middlebury College, and the Institute for Ecosystem Studies (IES) because much of this data collection would be appropriate for graduate studies.

Sources of funding if data is not readily available: Environmental Protection Agency (EPA), NASA and partners. A potential for NSF funding exists if the study was extended to a larger audience, such as the role of the northeast forest in global carbon reserves.

## **B. Areal extent**

Sources of Information: These data are best generated from a Geographic Information System (GIS) since geometric dimensions are an inherent part of geographic attribute information in a spatial database.

Shorter-term data sources - The Nature Conservancy’s Boston, Mass. office and the Adirondack Nature Conservancy and Adirondack Land Trust maintain spatial databases of State and private forest land acquisition in the northeastern United States.

“Snapshot” data -The EPA-funded GIS projects, completed or in progress, already provide some of this information, as does the NYS GAP Analysis map. Northern Forest Lands data may also provide forest area map data. There is intent on the part of the APA to regularly monitor and update wetlands data created in the EPA-funded projects.

Others with an interest in this issue: Potential partners for monitoring changes in area of Forested Lands would include The Nature Conservancy, including Adirondack Nature Conservancy and Land Trust, and the NYS GAP Analysis team at Cornell University.

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Sources of funding if data is not readily available: EPA, DOI/USGS, and partners.

### **C. Natural vs. Human-mediated Changes**

#### Sources of Information:

Long-term data sources - Data from logged-over forests, like the William C. Whitney Wilderness and Champion Lands can be compared with studies at the Huntington Forest, Hubbard Brook Experimental Forest in New Hampshire, and the Harvard Forest in Massachusetts.

Shorter-term data sources - The Adirondack Nature Conservancy and Land Trust has an on-going citizen monitoring program in place to record the spread of weedy invasives.

“Snapshot” data - Much of this data is already available through the Agency’s EPA-funded projects such as the digital versions of the 1916 Fire Map, 1950 and 1995 blowdown maps, and Ollinger *et al.*’s 1993 model of sulfur and nitrogen atmospheric deposition.

Others with an interest in this issue: Forest disturbance studies are often undertaken for graduate study, therefore potential partners include SUNY-ESF, Cornell University, Paul Smiths College, Middlebury College, and IES.

Sources of funding if data is not readily available: NASA, DOI/USGS, and partners.

## **RESOURCE AREA: UNCOMMON AND VULNERABLE LANDS**

Uncommon and Vulnerable Lands are areas in the Park that generally occupy a small percentage of the whole Park; and/or they are areas that are maintained by a particular regeneration regime such as fire or other chronic disturbance or specific meteorologic and geologic conditions; and/or they or their native species are vulnerable to extirpation. These lands are of value because they add species and landscape diversity, perform unique functions in the landscape, or they have other intrinsic value that would be lost if they were damaged. Examples of Uncommon and Vulnerable Lands within the Park are pine barrens, kettlehole bogs, the alpine zone, agricultural lands, and mesotrophic and oligotrophic lakes.

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Indicators:

**A. Species Composition**

Sources of Information:

Shorter-term data sources - Data sources are groups that maintain community descriptions, such as the NYNHP, which has an on-going program of identifying uncommon communities and their species, and assigning heritage rankings.

“Snapshot” data - NYS GAP map and EPA projects. More detailed studies of species richness and abundance in various Uncommon and Vulnerable Lands may be found through theses/dissertation searches from Cornell and SUNY-ESF.

Others with an interest in this issue: Adirondack Nature Conservancy and Land Trust, NYS GAP Analysis group, Dr. Ed Ketchledge.

Sources of funding if data is not readily available: TNC, WCS, the Audubon Society, Trout Unlimited, and Environmental Benefit Fund.



**B. Areal Extent**

Sources of Information:

“Snapshot” data - Groups with digital map data can provide areal extent information including APA EPA-funded projects, NYS GAP Analysis program, and Adirondack Nature Conservancy and Land Trust. Soil and Water Conservation Districts can provide information for agricultural land.

Others with an interest in this issue: NYS GAP Analysis, Adirondack Nature Conservancy and Land Trust.

Sources of funding if data is not readily available: EPA, DOI/USGS.

**C. Water Quality and Water Quantity of Meso and Oligotrophic Lakes**

Sources of Information:

Shorter-term data sources - The Adirondack Lake Survey Corporation (ALSC) can provide water chemistry data from their Long-term Monitoring Waters. ALSC and the United States Geological Survey (USGS) Water Resources

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Division have stream gauging stations and volumetric data on lakes and ponds.

Others with an interest in this issue: Adirondack Aquatic Institute, SUNY-ESF, Cornell University, ALSC, IES, Darrin Freshwater Institute (DFWI).

Sources of funding if data is not readily available: EPA, DOI/USGS, and partners.

## **RESOURCE AREA: SHORELINE/RIPARIAN AREAS**

Shoreline/Riparian Areas are those areas that connect water bodies and uplands. Within the Park, much of this area has been lost to shoreline development, and is easily colonized by invasive species. Shoreline/Riparian Areas mediate biogeochemical functions of lakes, ponds, rivers and streams, thus having a direct effect on water quality. These areas help to maintain baseflow (water quantity stabilization) of surface water features by groundwater seepage and act as flood storage and conveyance areas. They are often home to species adapted seasonal flooding and flow regimes.



### **Indicators:**

#### **A. Species Composition**

##### Sources of Information:

Shorter-term data sources - The NYNHP has rare element occurrence location data and general descriptions of community types including Riparian zone communities.

“Snapshot” data - APA EPA-funded projects can provide basic dominant-species descriptions of these areas.

Others with an interest in this issue: Local shoreline and lake associations, NYS DEC, Federation of Lake Associations (FOLA), Adirondack Aquatic Institute (AAI), DFWI.

Sources of funding if data is not readily available: Since some riparian areas are also wetland areas, EPA State Wetlands Protection Program funding

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could be applied here as well. Potential partners listed above may also be able to provide funding.

## **B. Areal Extent**

### Sources of Information:

Shorter-term data sources - RPS data can be used to determine density of RPS centroids per unit area to give a general idea of shoreline development. USGS hydrography and flow information from stream gauging stations can be used to monitor water feature geometry and changes in flow due to development. Aerial photography and DOQQs can be used to provide more detailed stream data than USGS 1:24,000-scale data.

Others with an interest in this issue: Local shoreline and lake associations, FOLA, DEC.

Sources of funding if data is not readily available: FOLA, NYS DEC.

## **C. Natural vs. Human-Mediated Change**

### Sources of Information:

“Snapshot” data -An example of Natural vs. Human-Mediated change would be beaver dams vs. man-made dams. The Remote Sensing Lab at SUNY Plattsburgh created a map of beaver dam locations. Other examples of potential monitoring studies would be to monitor phosphorous content in surface waters to study septic system inputs to lakes, or the spread of an introduced species like japanese knotweed, or monitor shoreline cutting.

Others with an interest in this issue: SUNY Plattsburgh, local shoreline and lake associations, local governments, IES, Cornell University, SUNY-ESF, Paul Smiths College, Soil and Water Conservation Districts, FOLA, NYS DEC.

Sources of funding if data is not readily available: EPA, partners.

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## RESOURCE AREA: WETLANDS

Similar to riparian areas, wetlands are intermediaries between truly aquatic systems and upland systems, although they are not always associated with open water. They function at both a local (small) and a landscape (large) scale. They often have high species diversity made up of species that undergo their entire life cycle within the wetland, as well as species using wetlands for only part of their life cycle. Wetlands provide critical breeding areas and contribute to genetic



exchange and export on a local and landscape scale. Wetlands mediate nutrient cycling and nutrient exchange, decrease erosion and runoff by slowing the flow of water, provide shoreline stabilization during storm events, store and convey flood waters, allow for the settling of sediment, increase water quality through plant uptake and binding in the sediment, decrease water temperature, and stabilize base flow.

### Indicators:

#### **A. Species Composition**

Sources of Information: Changes in wetland species reflect changes in wetland hydrology or nutrient status. Additionally, changes in wetlands species, such as the presence of non-native or invasive species may cause changes in wetland hydrology and nutrient status.

Shorter-term data sources - Adirondack Nature Conservancy and Land Trust has developed an introduced species monitoring program that is collecting geographic data of non-native plant species occurrences around the Park.

“Snapshot” data - Community level dynamics can be monitored through the use of the wetlands maps created through the EPA-funded State Wetlands Protection Grant. However, more detailed studies of specific species may require further studies. The APA is currently developing a proposal to fund a study on monitoring aquatic plant dynamics, including invasive aquatic species.

Others with an interest in this issue: Adirondack Nature Conservancy and Land Trust, SUNY-ESF, Cornell University, IES, SUNY Plattsburgh.

Sources of funding if data is not readily available: EPA, DOI/North American Wetlands Conservation Council.

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## B. Areal Extent

Sources of Information: Area of wetlands is useful for quantifying wetland function within the landscape (i.e. decreased wetland acreage equals decreased functionality).

“Snapshot” data - The APA EPA-funded State Wetlands Protection Grant mapping project provides this data.

Others with an interest in this issue: Adirondack Nature Conservancy and Land Trust.

Sources of funding if data is not readily available: EPA, DOI/North American Wetlands Conservation Council.

## C. Wetland Water Quality

Sources of Information:

Shorter-term data sources - EPA, SUNY-ESF, Cornell University, US Fish and Wildlife Service (USF&WS), ALSC, USGS Water Resources Division.

Others with and interest in this issue: SUNY Plattsburgh, Adirondack Nature Conservancy and Land Trust, SUNY-ESF, Cornell University, IES, PSC.

Sources of funding if data is not readily available: EPA, DOI/North American Wetlands Conservation Council, partners.

## RESOURCE AREA: WILDLIFE

Wildlife species such as moose, bear, otter and native strains of brook trout are indicators of the overall ecological health of the Park. WCS has developed a list of focal species that can be modified for our purposes to serve as a measure of the health of this resource.



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Indicators:

**A. Focal Species Data**

Sources of Information:

Long-term data sources - SUNY-ESF's Adirondack Ecological Center

Shorter-term data sources - WCS, US Fish and Wildlife Service, DEC, SUNY-ESF's Adirondack Ecological Center, NYNHP.

Others with an interest in this issue: WCS's Adirondack Communities and the Adirondack-to-Algonquin Park (A2A) effort to promote wildlife travel corridors, Adirondack Nature Conservancy and Land Trust, ALSC.

Sources of funding if data is not readily available: Wildlife Federation, Wildlands Project, WCS, EPA.

**B. Population Level Dynamics**

Sources of Information:

Long-term data sources - SUNY- ESF's Adirondack Ecological Center

Shorter-term data sources - DEC, SUNY- ESF's Adirondack Ecological Center, Trout Unlimited, WCS, Cornell University, USF&WS, Adirondack Aquatic Institute, ALSC.

Others with an interest in this issue: WCS's Adirondack Communities and the Adirondack-to-Algonquin Park (A2A) effort to promote wildlife travel corridors. Also, DEC, SUNY-ESF's Adirondack Ecological Center, Trout Unlimited, WCS, Cornell University, USF&WS, Adirondack Nature Conservancy and Land Trust, Darren Freshwater Institute, Adirondack Aquatic Institute, ALSC, IES.

Sources of funding if data is not readily available: Wildlife Federation, Wildlands Project, WCS, EPA.

**C. Habitat Quality**

Sources of Information: Studying the degree of habitat fragmentation and the connectivity of habitat patches by corridors gives information about Habitat Quality in terms of areal extent and the condition of the habitat. Areal extent and condition of habitat patches, themselves, should also be monitored. The

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GIS modeling program FRAGSTATS and the ArcView extension “Animal Movement” can be used to spatially analyze wildlife habitat.

Shorter-term data sources - Other sources of data include: SUNY-ESF, DEC (not only NYNHP, but also the Breeding Bird and Amphibian atlases), WCS, USF&WS, Cornell University, ALSC, and the Audubon Society.

“Snapshot” data - The GAP Analysis map can be used to find communities where focal species may be found. NYNHP spatial data of roadless areas within the Park and other landscape geometry issues is housed at Adirondack Nature Conservancy and Land Trust.

Others with an interest in this issue: Trout Unlimited, WCS, DEC, SUNY-ESF, Cornell University, EPA, USF&WS, Adirondack Nature Conservancy and Land Trust, Darren Freshwater Institute, AAI, ALSC, IES.

Sources of funding if data is not readily available: Wildlife Federation, Wildlands Project, WCS, EPA.

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## APPENDIX 1: MAKING CONNECTIONS

The following three diagrams explore connections between indicators from different resource categories discussed in this document. The arrows show the direction of effect that one indicator has on another. A two-way arrow represents the simultaneous effects two indicators have on one another. For example, in the diagram below, the indicator Air Quality has an effect on Water Quality of Surface Water and Wetlands. In turn, Water Quality has an effect on Species Composition, as well as Species Composition having an effect on Water Quality.

