Adirondack Park
Aquatic Nuisance Species Management Plan

Developed in Cooperation with:

Adirondack Association of Towns and Villages
Adirondack Council
Adirondack Park Agency
Adirondack Park Invasive Plant Program
Adirondack Watershed Institute of Paul Smith's College
Lake Champlain Basin Program
Lake Champlain Sea Grant at SUNY Plattsburgh
Lake George Association
Lake George Park Commission
NYS Department of Environmental Conservation
The Residents' Committee to Protect the Adirondacks
Upper Saranac Lake Foundation

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Table of Contents

I. Executive Summary **1**

II. Introduction **2**

- Adirondack Waters 2
- Plan Justification 3
- Plan Development 4
- Vision and Goals 5
- Evaluation and Review 5
- Plan Funding 5

III. Aquatic Nuisance Species Problems and Concerns in the Adirondack Park **12**

- Introduction 12
- Invasive Plants 14
- Non-native Fish 15
- Impacts of Fish Introductions 18
- Priority Aquatic Nuisance Species of Concern 19
  - Within the Adirondack Park 20
  - Outside the Adirondack Park 25
- Non-native Species of Potential Concern 27

IV. Authorities and Programs **29**

- Local 29
  - Local Government 29
  - Lake, Watershed, and Fishing Groups 29
  - Soil and Water Conservation Districts 30
- Adirondack Park 31
  - Academic Institutions / Research Programs 31
  - Adirondack Park Agency 31
  - Adirondack Park Invasive Plant Program 31
  - Lake George Park Commission 32
- New York State 33
  - New York State Aquatic Nuisance Species Management Plan 33
  - NYS Invasive Species Task Force 34
  - Invasive Plant Council of New York State 35
  - Finger Lakes - Lake Ontario Watershed Protection Alliance (FL-LOWPA) 35
  - Coalition of Lakes Against Milfoil (COLAM) 36

Table of Contents (continued)

- Regional 36
  - Lake Champlain Basin Program 36
  - Northeast Aquatic Nuisance Species Panel 36
  - Non-Governmental Organizations 37
- Federal 37
  - U.S. Fish and Wildlife Service 37
  - National Sea Grant 38
  - U.S. Army Corps of Engineers 38
  - U.S. Environmental Protection Agency 39

V. Objectives, Strategies, and Actions 40

- Objective A. Coordination 40
- Objective B. Enforcement and Legislation 41
- Objective C. Education and Outreach 44
- Objective D. Early Detection and Monitoring 49
- Objective E. Management 52
- Objective F. Restoration 60
- Objective G. Research 61
- Abbreviations 66

VI. Implementation Table 68

VII. Appendices 75

A. Public Comments 75
B. Adirondack Park ANS Management Plan Steering Committee Members 95
C. Non-native Species of Potential Concern in the Lake Champlain Basin 96
D. Federal Agencies Regulating Transport of Live Products 99
E. Regulatory Statutes of New York State 101
F. Known ANS Management Efforts in 2005 109
G. Signed Resolutions of Support 111
H. Glossary 118
I. Bibliography 119

I. Executive Summary

This document is the final draft of an aquatic nuisance species (ANS) management plan for the six million acre Adirondack Park. The vision of this plan is to foster regional collaboration and coordination wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved.

The Adirondack Park was created in 1892 by the State of New York, and is the largest publicly protected area in the contiguous United States. With globally unique wetlands, thousands of lakes and ponds, and over 30,000 miles of rivers and streams the aquatic resources of the Adirondack Park are extensive and diverse and provide a range of ecosystem services for both residents and visitors. There are multiple justifications for focusing resources on saving and protecting this special place from the environmental and socioeconomic threats of ANS. The justification for ANS management is most clear from a socioeconomic perspective, as the Adirondack Park's aquatic resources help form the backbone of the regional economy. Visitors expend over $1.2 billion dollars annually and tourism provides employment for over 26,000 residents. Clean and abundant water is a main ingredient of the tourism package that attracts visitors to the Adirondack Park, as over 85 percent of visitors' desire waterside lodging and approximately 70 percent want to swim, fish, or boat while visiting the Adirondacks. The proliferation of ANS may be the greatest regional threat to water quality, ecosystem health, and the economy of the Adirondacks. One example of an invading aquatic plant is Eurasian watermilfoil, which has been identified in many lakes where it is crowding out native species and forming dense stands that impede recreational activities such as fishing, boating and swimming. Impacts of ANS in the Adirondack Park will continue to increase if current populations of ANS are left unchecked and new species of ANS enter the Park. If action is taken quickly, it may be possible to limit the spread of ANS and protect the ecologic and socioeconomic vitality of the Adirondacks.

The Adirondack Park Aquatic Nuisance Species Management Plan (the Plan) was drafted to facilitate the coordination of ANS management efforts throughout the Park. The Plan was drafted with close attention to the *New York State ANS Management Plan*. The Plan also complements ANS efforts already underway in the eastern portion of the Park as part of the *Lake Champlain Basin ANS Management Plan* and is intended to coordinate closely with the LCBP to help fulfill its ANS management objectives. The Plan identifies ANS problems and concerns and recommends specific objectives, strategies, and actions to be undertaken to manage aquatic nuisance species within the Park. The objectives, strategies, and actions described in Section V of the Plan specifically address the primary strategic ANS management approaches articulated by the *New York State Invasive Species Task Force*: prevention, education, early detection, rapid response, and control/management.

The goals of the Adirondack Park Aquatic Nuisance Species Management Plan are to:

1) Prevent new introductions of ANS into waters of the Adirondack Park.
2) Limit the spread of established populations of ANS into uninfested waters of the Adirondack Park.
3) Abate negative ecological, socioeconomic, and public health and safety impacts resulting from infestations of ANS within the Adirondack Park.

II. Introduction

The *Adirondack Park Aquatic Nuisance Species Management Plan* (the Plan) facilitates the coordination of aquatic nuisance species (ANS) management efforts throughout the Park. The Plan was developed with close attention to the *New York State ANS Management Plan*. The Plan also complements ANS efforts already underway in the eastern portion of the Park as part of the *Lake Champlain Basin ANS Management Plan* and is intended to coordinate closely with the Lake Champlain Basin Program (LCBP) to help fulfill its ANS management objectives. The *Adirondack Park Aquatic Nuisance Species Management Plan* identifies ANS problems and concerns, and describes specific objectives, strategies, and actions to be undertaken to manage aquatic nuisance species within the Park. The objectives, strategies, and actions described in Section V of the Plan specifically address the strategic ANS management approaches articulated by the *New York State Invasive Species Task Force*: education, prevention, early detection, rapid response, and control/management. Though the Plan is specific to the Adirondack Park, given the connectivity of roads and waters with those outside the Park boundary, meeting the goals of the Plan will also require close coordination with ANS management efforts outside of the Park.

Adirondack Waters

The Adirondack Park is 5.8 million acres in size and covers approximately 25% of the total land area of New York State (Figure II.1). The Park contains 12 major watersheds ranging in size from 175,602 acres for the Grass River to 1,087,692 acres for the Upper Hudson River (Table II.1). These 12 watersheds drain in several directions, and are connected to Lake Ontario, the St Lawrence River, Lake Champlain, the Mohawk River, and the Lower Hudson River. The Park contains 321,284 acres of surface water, which represents about 6% of the total land area. There are 11,076 lakes and ponds ranging from 0.01 acres to 28,511 acres (Lake George) in size (Figure II.2 and Table II.1). The Black River watershed contains the largest number of lakes and ponds at 2,705 followed by the Upper Hudson at 1,810 and Raquette River at 1,384. The Sacandaga River watershed contains the largest acreage of surface water at 103,148 acres followed by the Raquette River at 48,194 acres. The Sacandaga and Raquette River watersheds also have the highest surface density of water (acres of water per acre of land area). There are a total of 17,653 miles of rivers and streams greater than one mile in length. The Upper Hudson River watershed contains the greatest mileage of rivers and streams at 3,114 miles followed by the Black River watershed at 2,288 miles.

The Adirondack Park contains 5,300 miles of public roads and 52 dams. A large number of lakes, ponds, and streams are located in close proximity to a public road (Figure II.3). There is considerable day use of Adirondack lakes each summer. For example, 1,160 boats were launched from the NYS DEC launch site on Lake Placid between Memorial Day and Labor Day in 2004 and 751 boats were launched into the St Regis lakes during the same period (PSCAWI Watershed Stewardship Program 2004 Report).

The Adirondack Park contains 12 counties and 105 towns (Figure II.4). Only Essex and Hamilton Counties are contained wholly within the Park boundary. All of the boundaries for the 12 watersheds cross over at least 2 counties and multiple towns. A close up example of this is shown for the Raquette River watershed, wherein the watershed contains parts of 4 counties (St

Lawrence, Franklin, Essex, and Hamilton) and 18 towns (Figure II.5). A watershed approach towards managing ANS will require coordination amongst counties and towns within each watershed and coordination among the watersheds for a park-wide plan. The relationship between NYS DEC Unit Management Plans and watershed boundaries will also need to be considered.

Table II.1. Summary of surface waters by major watershed for the Adirondack Park.

Watershed	Total Area	Lakes and Ponds				Rivers & Streams
		Number	Minimum	Maximum	Total	
	- acres -		- - - - - - - acres - - - - - - -			- miles -
Ausable	630,329	494	0.03	1,942	7,002	1,660
Black	688,858	2,705	0.02	5,839	33,354	2,288
Chazy/Saranac	447,393	529	0.02	4,842	23,809	1,130
English/Salmon	169,688	393	0.01	2,563	4,947	595
Grass	175,602	329	0.01	439	2,303	702
Lake George	376,474	320	0.02	28,511	32,879	1,109
Mohawk	380,697	762	0.03	2,683	11,864	1,112
Oswegatchie	291,420	868	0.01	6,793	12,924	1,179
Raquette	611,640	1,384	0.02	6,044	48,194	1,814
Sacandaga	635,876	883	0.02	20,920	103,148	1,895
St Regis	319,326	582	0.02	1,432	8,311	1,055
Upper Hudson	1,087,692	1,810	0.01	4,616	32,549	3,114
TOTAL	5,814,995	11,076			321,284	17,653

† Data sources from APA and CUGIR and summarized using ArcGIS. Note, streams less than 1 mile in length were not digitized.

Plan Justification

An aquatic nuisance species is a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters. Numerous nonindigenous plants and animal species fit this description within the Adirondack Park. For example, Eurasian watermilfoil (*Myriophyllum spicatum*) and water chestnut (*Trapa natans*) crowd out native lake species and form dense stands that impede recreational activities such as fishing, boating and swimming. The diversity and stability of wetlands are threatened by the proliferation of purple loosestrife (*Lythrum salicaria*), a nonindigenous wetland plant. The Lake Champlain native trout and salmon fishery is threatened by sea lamprey (*Petromyzon marinus*). Zebra mussels (*Dreissena polymorpha*) are displacing native mussels in Lake Champlain and Lake George, negatively impacting recreational activities and damaging municipal, commercial, and private home water intakes. Hundreds of thousands of dollars are spent each year in attempts to manage ANS within the Adirondack Park. Just one lake community alone will invest about $1.5 million over the next 3 years in an attempt to bring the Eurasian watermilfoil population down to a manageable level.

The economic justification for ANS management is clear. The economic backbone of the Adirondack Park is supported by tourism, with visitors expending over $1.2 billion dollars annually and providing employment for over 26,000 people. According to Bill Osborne from Hamilton County, over 85 percent of visitors desire waterside lodging and about 70 percent want to swim, fish, or boat while visiting the Adirondacks. Water is a main ingredient of the tourism package that attracts visitors to the Adirondacks, and thus clean water is a main ingredient of jobs. Water also affects the quality of life of Adirondack residents in several important ways, including property values, drinking water quality, and ecosystem health. The proliferation of invasive species may be the greatest regional threat to water quality, with the negative effects already having been demonstrated through reductions in shoreline property values (and taxes) along heavily infested waters.

Impacts of ANS in the Adirondack Park will continue to increase if current populations of ANS are left unchecked and new species of ANS enter the Park. If action is taken quickly, it may be possible to limit the spread of ANS and protect the ecologic and socioeconomic vitality of the Adirondacks. The Adirondack Park Aquatic Nuisance Species Management Plan provides guidance on management actions to prevent, control, and limit the impacts of ANS that have invaded or may invade the Adirondack Park.

Plan Development

The Plan represents a grass roots effort that has been very much in the public domain with multiple opportunities for individuals and groups to provide input. The document was written by a team of three persons: Dan Kelting (Adirondack Watershed Institute), Mark Malchoff (Lake Champlain Sea Grant/ SUNY Plattsburgh), and Hilary Oles (Adirondack Park Invasive Plant Program) with additional guidance from the New York State Department of Environmental Conservation (NYSDEC), Adirondack Park Agency (APA), Lake Champlain Basin Program (LCBP), Adirondack Association of Towns and Villages (AATV), Cornell Cooperative Extension, the Adirondack Council, the Residents' Committee to Protect the Adirondacks (RCPA), the Upper Saranac Lake Foundation (USLF), and the Lake George Association (LGA). After initial revisions following the guidance provided by the above organizations, the Plan was circulated to a Review Committee consisting of lake and river associations, state and local government, and the research community. The Plan was revised again following the recommendations of the Review Committee and then made available to the participants in the 3rd Annual Adirondack Water Quality Conference, who provided input on the Plan at the conference on August 16th, 2005.

An Adirondack Park ANS Management Plan Steering Committee was formed immediately following the conference, with the main charge of completing the Plan document. Members of the Steering Committee are listed in Appendix B. This version of the Plan reflects the comments provided at the conference (see Appendix A) with additional due attention paid to the guidance provided by the *New York State Invasive Species Task Force Report,* which was released for public comment in August 2005. The Plan was posted for public comment via the World Wide Web at http://www.paulsmiths.edu/PAGE=1685/page.pl through December 2005. Public comments sent to committee members through December were incorporated into a fourth draft of the Plan.

The Adirondack Park Agency agreed to consider endorsing the Plan following a final public review through NYS DEC environmental notice bulletin (ENB) process. A public comment period was announced via the ENB and was open for about six weeks, closing on March 15, 2006. A press release was sent to local news agencies to announce the ENB. Only one individual sent comments via the ENB process (see Appendix A), and their comments have been addressed in this final version of the Plan.

Vision and Goals

The Adirondack Park Aquatic Nuisance Species Management Plan will foster regional collaboration and coordination wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved.

The goals of the Adirondack Park Aquatic Nuisance Species Management Plan are to:

1) Prevent new introductions of ANS into waters of the Adirondack Park.
2) Limit the spread of established populations of ANS into uninfested waters of the Adirondack Park.
3) Abate negative ecological, socioeconomic, and public health and safety impacts resulting from infestations of ANS within the Adirondack Park.

Evaluation and Review

An Adirondack Park Aquatic Nuisance Species Advisory Committee will oversee the implementation of the actions within the Plan and will evaluate the overall performance of the plan. The makeup and basic charges of the Advisory Committee are discussed in Section V under Objective A: Coordinate Plan Implementation. The ANS Advisory Committee will guide Plan implementation and other local and state ANS initiatives, set priorities for research and management on a regular basis, and coordinate with the Lake Champlain ANS Advisory Committee. The ANS Advisory Committee will ensure that the Plan is continuously improved with information provided by research and monitoring, and through input from various stakeholders.

Plan Funding

Dedicated, sustained funding in support of the Adirondack Park Aquatic Nuisance Species Management Plan is a vital part of its success and effectiveness. The challenge of invasive species cannot be managed by piecemeal and sporadic funding, nor by assigning existing staff additional responsibilities associated with coordinating the Plan. State funding needs to support the hire of a centralized, coordinating staff person(s) to ensure the Plan's implementation.

Numerous groups and organizations in the Adirondack Park spend hundreds of thousands of dollars every year to prevent or mitigate the impacts of aquatic nuisance species. Cooperators

view this Plan as a tool to leverage additional resources through state and federal grants and local and private assistance to support coordinated regional planning and local implementation projects. An increased Environmental Protection Fund with an initial $10 million per year in dedicated, sustained funding in support of invasive species programs in New York State is an important first step in fighting against invasive species.

To encourage legislative support and state funding for the Plan, over the past several months members of the steering committee have been presenting the Plan to local government officials and other stakeholder groups throughout the Park and asking them to sign a resolution endorsing the Plan. Copies of signed resolutions are in Appendix G.

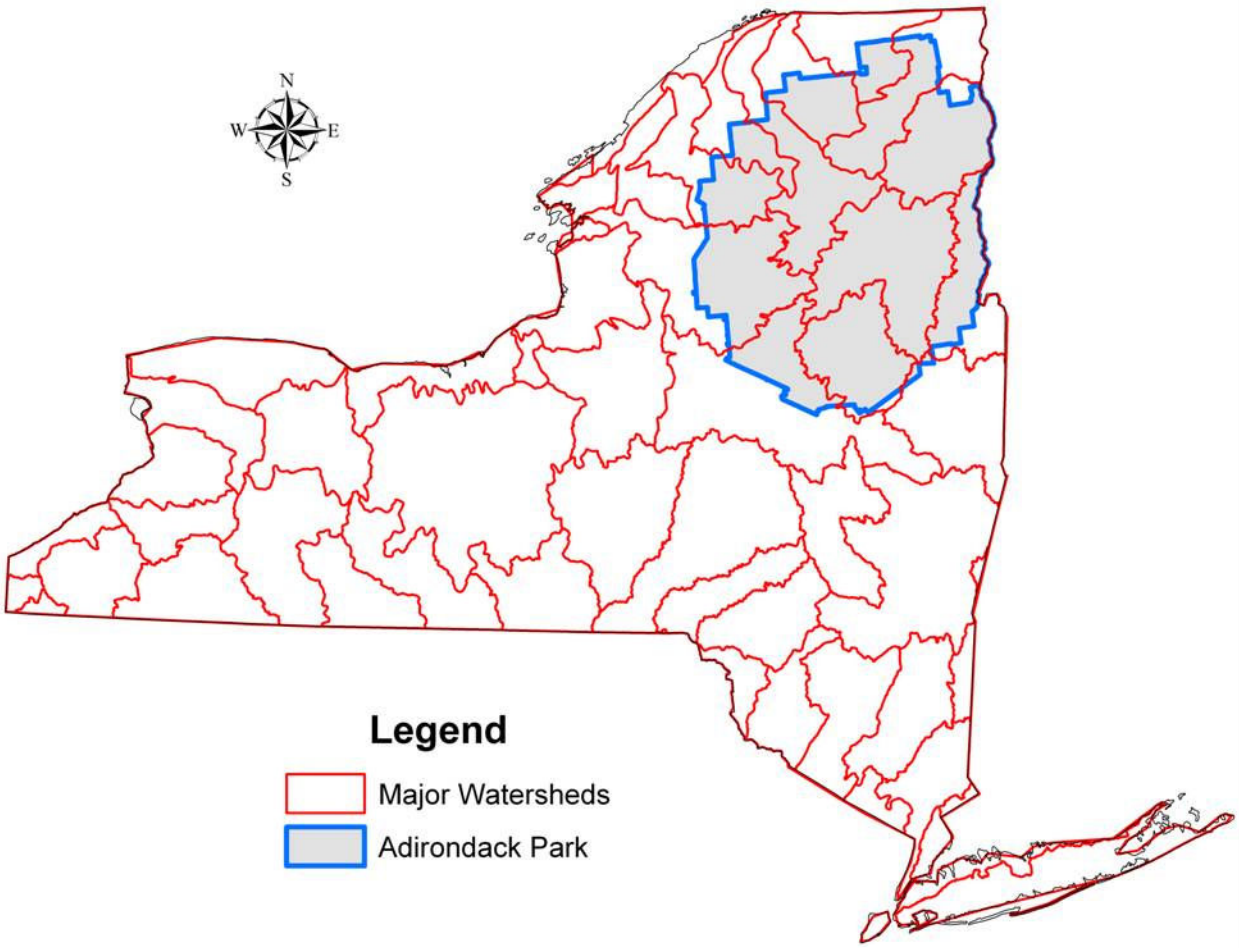

Figure II.1. Adirondack Park and major watersheds of New York State. Data sources from APA and CUGIR, compiled with ArcGIS.

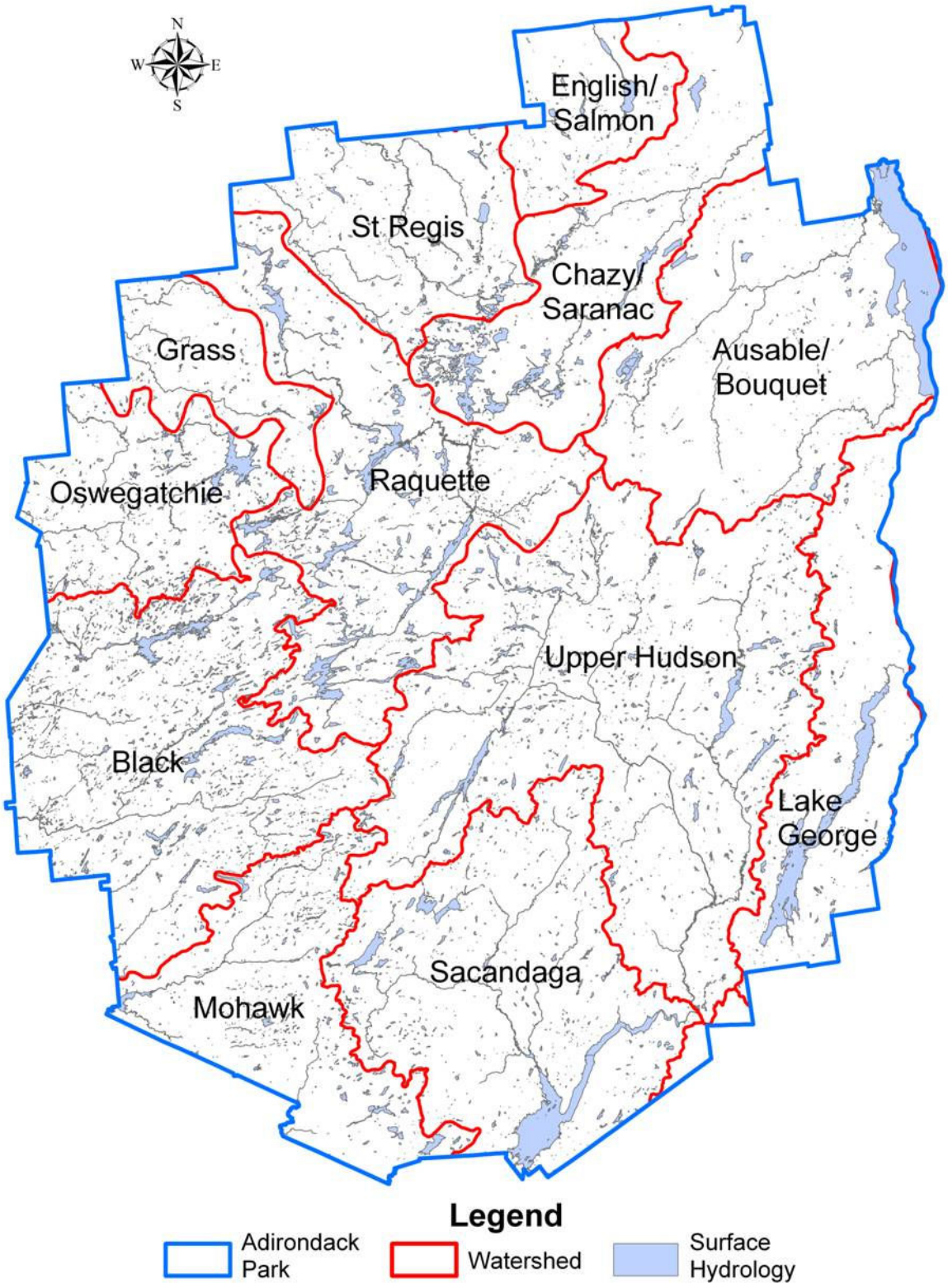

Figure II.2. Adirondack Park watersheds and surface hydrologic network. Data sources APA and CUGIR, compiled with ArcGIS.

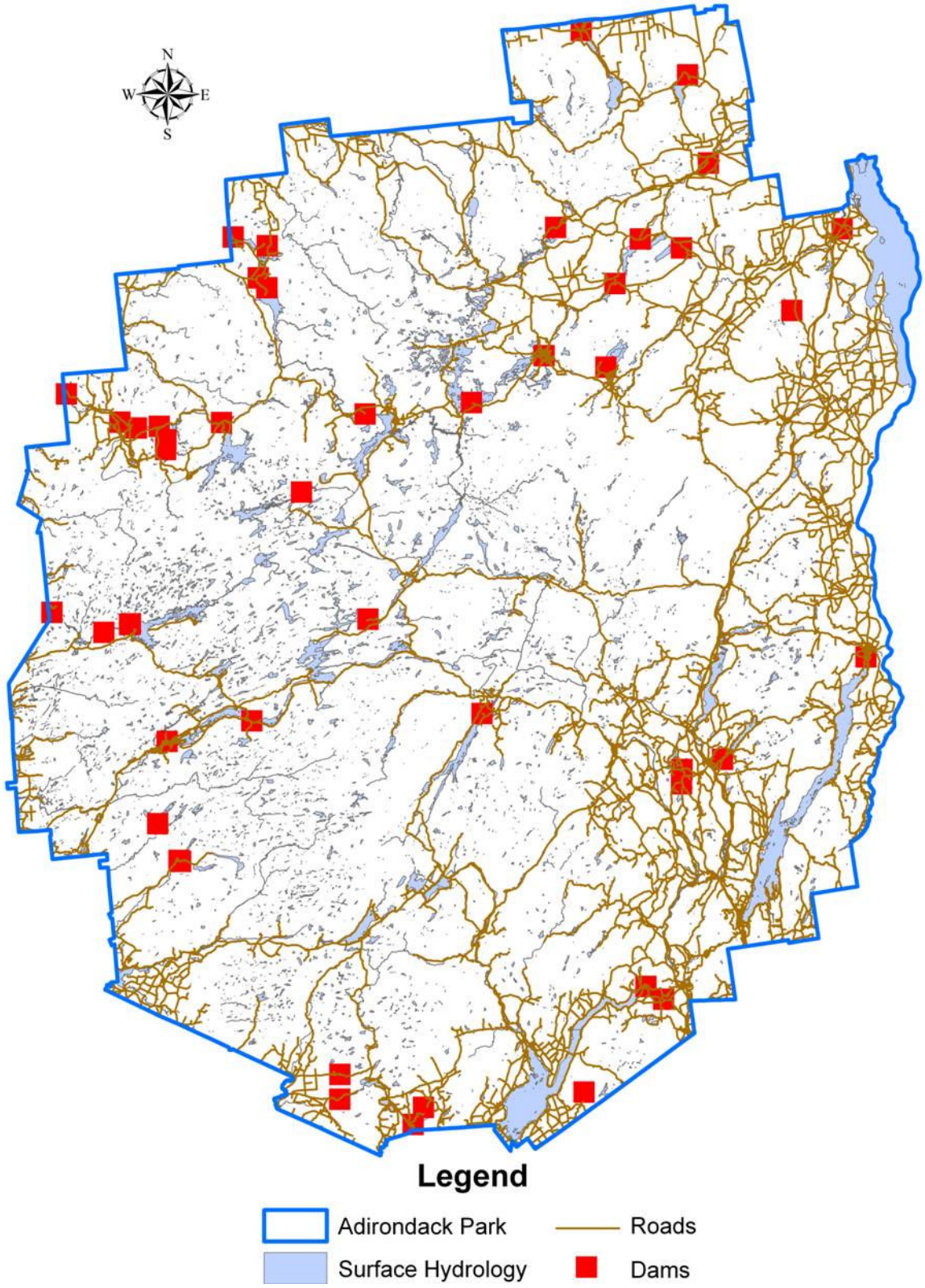

Figure II.3. Roads and dams in the Adirondack Park. Data sources APA and CUGIR, compiled with ArcGIS.

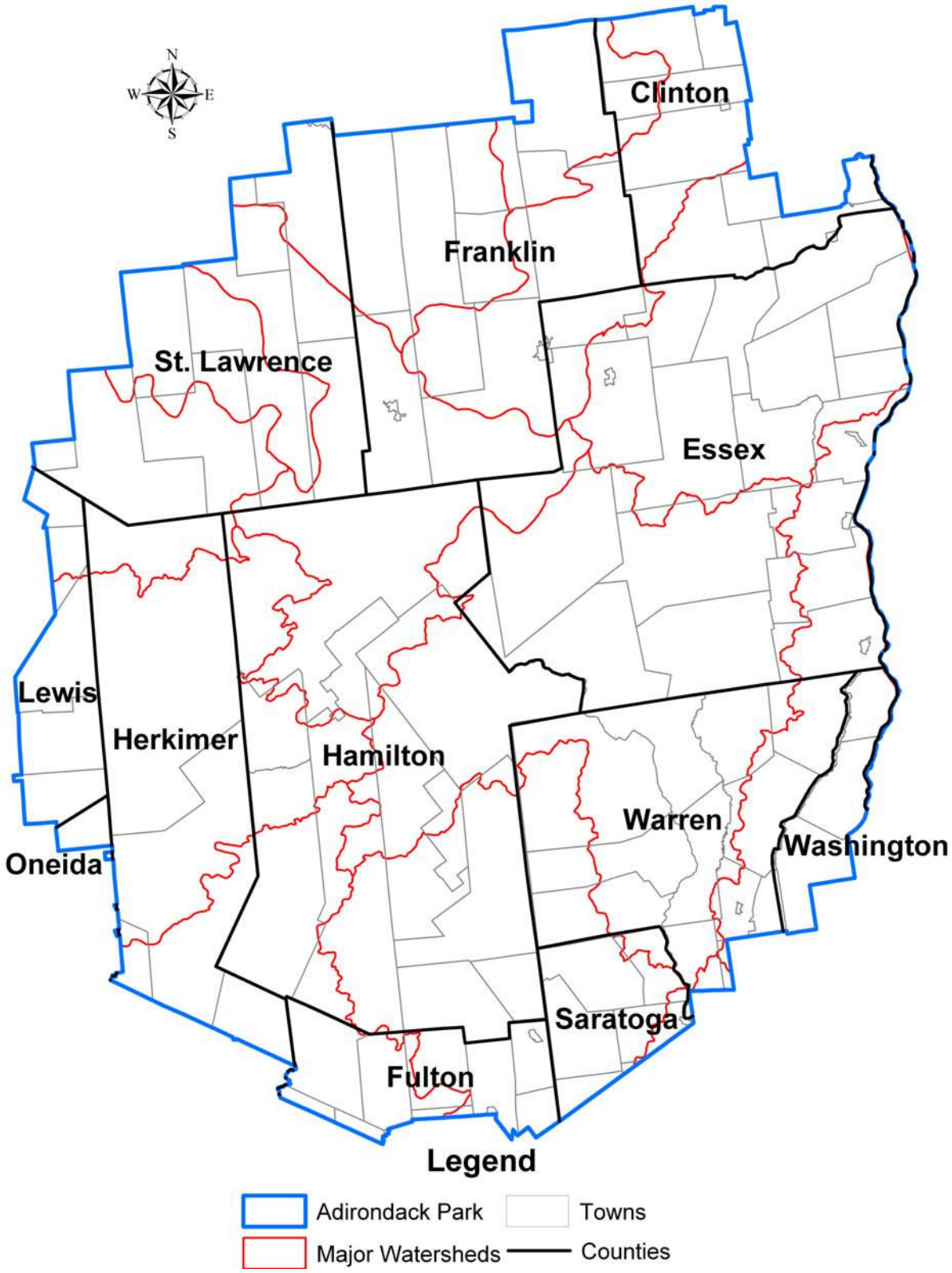

Figure II.4. Adirondack Park counties and towns superimposed over watersheds. Data sources APA and CUGIR, compiled with ArcGIS.

Figure II.5. Counties and towns in the Raquette River watershed. Data sources APA and CUGIR, compiled with ArcGIS.

III. Aquatic Nuisance Species Problems and Concerns in the Adirondack Park

This section of the Plan borrows very heavily from two existing documents (in some cases whole paragraphs are reproduced nearly intact). Taken together, these two documents convey much of the best information and thinking regarding invasive species in the Adirondacks, and the authors of this draft Adirondack ANS Management Plan are grateful for the starting point that these reports collectively present. The two documents are: NYSDEC's Siamese Ponds Wilderness and Dug Mountain, Forks Mountain and Chatiemac Primitive Areas Proposed Final Unit Management Plan/Environmental Impact Statement, and section III of the Lake Champlain Basin Aquatic Nuisance Species Management Plan, published by LC Basin Program and finalized January 2005

Introduction

About 48 non-native species have been introduced into waters of the Lake Champlain Basin (Basin), much of which falls within the Adirondack Park. Many of these species have dispersed and are at nuisance levels, causing substantial (though not quantified) environmental and economic impacts. These are considered to be aquatic nuisance species (ANS). Other ANS are expanding their ranges in adjacent regions and threaten to enter the Basin. If introduced, many of these new species would likely cause additional negative impacts and further strain limited management resources.

At this writing, there is no authoritative list of ANS for the Adirondacks, and the total number remains open to speculation. In any case, the number of ANS in the Adirondacks is likely smaller than the figure of 48 listed for the Basin, which in turn is low relative to adjacent regions. For example, 160 exotic species are known in the Great Lakes; 87 have been found in the St. Lawrence River; while 113 have been listed in the Hudson River (Mills et al. 1993, 1996, de Lafontaine and Costan 2002, Strayer 2005).

This perspective is important, and it suggests that: a) Adirondack aquatic ecosystems are still largely intact as compared to nearby regions, and; b) a unique opportunity exists to capitalize on those factors (remoteness, lack of development, reduced suite of ANS vectors, etc.) that may offer at least some protection against ANS invasions in the Adirondacks.

As in other regions of the United States, attention to ANS in the Adirondacks has historically been a reactionary response. Resource managers have generally focused on addressing problems associated with specific ANS already introduced and only after the ANS populations reach nuisance proportions. Similarly, it was only after reaching nuisance proportions that ANS problems attracted significant attention from the public. Only minimal efforts were given to preventing the introduction of new ANS to the Basin, and those efforts were generally not well coordinated with similar efforts outside of the Basin.

The potential pathways of introduction for ANS into and around the Adirondacks are numerous. The movement of boats and other aquatic equipment is the most visible and readily recognized pathway. Available information strongly suggests that the Eurasian milfoil invasion now

occurring in the park is linked to this vector, though secondary vectors include movement by birds/animals and natural movement (e.g. plant fragmentation). Aquarium dumping, improper disposal of live bait, accidental releases from cultivation, and intentional introductions all represent additional threats. Natural and artificial waterways also serve as conduits for ANS into the Adirondacks. The Champlain Barge Canal connects the southern end of Lake Champlain to the Hudson-Mohawk watershed, which is, in turn, connected to the Great Lakes drainage basin by the Erie Canal System. The Champlain Barge Canal likely provided access for numerous ANS into Lake Champlain Basin portion of the Adirondack Park. Species thought to have invaded via this route include zebra mussels, blueback herring, water chestnut, flowering rush, purple loosestrife, white perch, and mud bythnia. The Richelieu River, which flows out of the northern end of Lake Champlain and ultimately into the St. Lawrence River, has a similar potential to move nonindigenous species into and out of the Lake Champlain Basin. For example, tench likely entered Lake Champlain via this waterway. Some preliminary work has been done to identify potential management options for the Champlain Barge Canal, but a great deal more work and funding will be required to eliminate the threat of ANS introductions via canals and waterways.

There is a lack of knowledge concerning the presence and extent of many ANS found in the Adirondacks. Knowledge gaps usually center on questions of range, population biology and ANS impact on indigenous species, habitats, and foodwebs. Exceptions to this lack of knowledge exist with respect to the fish community, in certain waters. As given below NYSDEC Bureau of Fisheries surveys, and other documents do include classification of common Adirondack upland fish fauna into “native,” “non-native,” and “native but widely introduced” groupings (W. Schoch, pers. comm.; George, 1980; Pfeiffer, 1979). For example, available fisheries related information has documented the impacts of non-native fishes on native brook trout populations. Obtaining this type of technical information through surveys and monitoring programs is essential to formulate effective and efficient management strategies. While programs exist within the Adirondacks that produce/update ANS range and impact (e.g. APIPP), no permanently funded staff/programs are specifically tasked to do this work. In addition, there seems to be little coordination between agency efforts approaching ANS from the fisheries perspective, and the mostly volunteer based efforts focusing on invasive plants. Existing programs should be reviewed continually and modified as needed; new programs should be implemented as necessary to fill information gaps. This information should then be used to determine future management strategies and priorities.

Resource managers throughout North America generally agree that ANS spread prevention efforts should emphasize public outreach and voluntary compliance with established ANS spread prevention guidelines. Survey research of boaters in Minnesota, Wisconsin and Ohio indicates that the potential for the spread of ANS can be reduced through effective boater information campaigns (Gunderson, 1996). The small percentage of the public who through either ignorance or indifference do not comply with these guidelines, however, pose a significant risk to the economic and ecological integrity of Adirondack waters. The introduction and spread of Eurasian watermilfoil, that continues to frustrate numerous aquatic resource stakeholders in the Park represents the best example of this situation. No amount of boater education will address existing milfoil infestations in Upper Saranac Lake, Eagle Lake and Lake George, and heavily

infested Adirondack Lakes. However, new species and new infestations of existing species require vigilance on all fronts, including education and outreach.

Laws and regulations dealing with ANS transport often contain loopholes (i.e. only certain species covered). Where necessary laws do exist, active enforcement has been minimal. Recently Vermont revised earlier ANS transport rules. The resulting changes now give that state's resource managers considerable legal authority in preventing the introduction and spread of ANS. Similarly, New York and the Adirondack Park would clearly benefit from a revision and/or update of existing ANS transport rules and regulations.

Invasive species issues continue to gain attention throughout the Park. Lakeshore residents and other members of the general public are becoming more actively involved in ANS monitoring, spread prevention, and management activities. A primary concern for many stakeholders is the ongoing threat posed by the large number of mostly unattended public boat ramps in the park. While many have called for the installation of boat wash stations, this technology remains an expensive and largely untested choice for the management of boat-trailer-borne plant and invertebrate species. Other concerns center on the economic impact of invasive species, and the potential positive impact of volunteer monitoring and control efforts. The Adirondack Park Invasive Plant Program has substantially increased the number of citizens it trains and the number of waterbodies it monitors for ANS. The Northeast Aquatic Nuisance Species Regional Panel has facilitated information sharing among resource managers throughout the region and regional coordination of outreach efforts has improved considerably. Greater efforts are being directed at preventing the introduction of new species, such as hydrilla, and in addressing other potential pathways of introduction, such as fishing tournaments and aquarium dumping, and canals - at least in the Champlain valley portion of the Park. The water chestnut management program on Lake Champlain has reduced much of the former range of the plant to below nuisance levels. Rapid response development for the Lake Champlain Basin is also underway.

Unfortunately, limited funding and disconnected regulation/control efforts between government agencies and other interested parties, continues to restrict the scope and extent of much of the ANS work within the Park. At the same time, ANS continue to spread within the Park and new challenges from an ever-growing world-wide ANS problem continue to mount.

Invasive Plants

A variety of monitoring programs collect information directly or indirectly about the distribution of aquatic invasive plants in the Adirondack Park including the NYS DEC, Darrin Fresh Water Institute, Adirondack Watershed Institute of Paul Smith's College, lake associations and lake managers. In 2001, the Adirondack Park Invasive Plant Program (APIPP) compiled existing information about the distribution of aquatic invasive plant species in the Adirondack Park and instituted a regional long-term volunteer monitoring program. APIPP trained volunteers in plant identification and reporting techniques to monitor Adirondack waters for the presence of aquatic invasive plant species. APIPP coordinates information exchange among all of the monitoring

programs and maintains a database on the current documented distribution of aquatic invasive plants in the Adirondack Park.

As of 2005, there were 49 lakes in the Adirondack Park with a documented infestation of ANS (Fig. III.1). Documented ANS in the Adirondack Park are Eurasian watermilfoil (*Myriophyllum spicatum*), water chestnut (*Trapa natans*), curlyleaf pondweed (*Potamogeton crispus*), fanwort (*Cabomba caroliniana*), european frog-bit (*Hydrocharus morsus-ranae*), and yellow floating-heart (*Nymphoides peltata*). Species located in the Park that are monitored for potential invasiveness include variable-leaf milfoil (*Myriophyllum heterophyllum*), southern naiad (*Najas guadalupensis*), and brittle naiad (*Najas minor*). Additional species of concern in New York State but not yet detected in the Park are Hydrilla (*Hydrilla verticillata*), water hyacinth (*Eichhornia crassipes*) and brazillian elodea (*Egeria densa*).

Aquatic invasive plants are primarily spread via human activities, therefore much of the park (especially areas serviced by roads) are at risk of invasion. All aquatic invasive species pose a risk of spreading via transport mechanisms.

For species specific information regarding natural history, ecology, and reproduction, please refer to the Invasive Plant Atlas of New England program website http://webapps.lib.uconn.edu/ipane/search.cfm

Non-native fish

A variety of nonnative fish species were distributed into the Adirondack uplands via stocking efforts described by George (1980) as "nearly maniacal". He notes that many species were "…almost endlessly dumped upon the Adirondack upland [e.g. waters above 1000 foot contour as per 1932 Biological Survey of the Upper Hudson Watershed – Fig. III.2]." Nonnative species were introduced and the ranges of native species, which previously had limited distributions, were extended. The result has been a homogenization of fish communities. Certain native species, notably brook trout and round whitefish, have declined due to the introduction of other fishes. Other natives, brown bullhead and creek chubs, for example, are presently much more widespread than in the past, having been spread to many waters where previously absent. Consequently, fish populations in the majority of the waters in today's Adirondack Wilderness areas have been substantially altered by the activities of mankind. Of the 1,123 Adirondack ecological zone waters surveyed by the Adirondack Lake Survey Corporation (ALSC) during the years 1984-1987, 65% contained nonnative species.

Extensive fishery survey data was first collected in the 1930's, decades after the massive stockings and introductions of the late 1800's. Reviewing work by Mathers from the 1880's and others, George (1980) has summarized the available native vs. non-native fisheries information (Table III.1). It should be noted that the native classification does not mean those species were found in every water, nor even in a majority of waters. For example, of 1,123 waters surveyed by the Adirondack Lakes Survey Corporation in the 1980's which contained fish, white suckers and northern redbelly dace were found respectively in 51 and 19 percent of the lakes. The other species listed as native are less widely distributed. Such distributions, after a century of

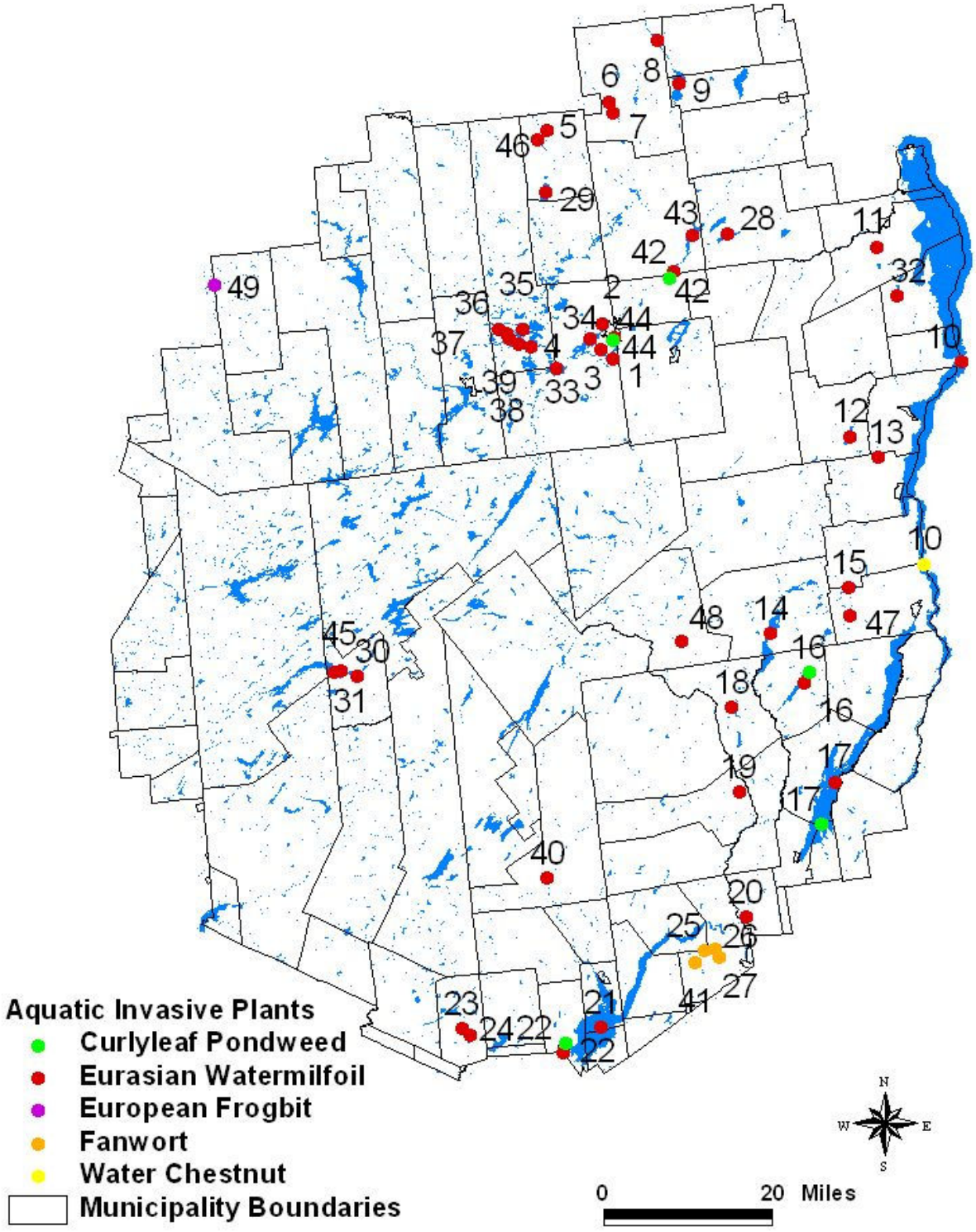

Figure III.1. Distribution of waters infested with aquatic nuisance species in the Adirondack Park in 2005. Map provided by the Adirondack Park Invasive Plant Program.

introductions, demonstrates that "native" does not necessarily imply a historically ubiquitous distribution. Barriers, high stream gradients, low stream fertilities and rigorous climatic conditions following retreat of the glacier resulted in low species diversity for fishes in most Adirondack waters. Low diversity allowed the brook trout to occur in large areas of the Adirondack upland.

Brook trout and lake trout were particularly successful at colonizing the Adirondack region and thrived in the relative absence of competing and predacious fishes. George (1980) states: "Under primeval conditions, the brook trout was nearly ubiquitous in the Adirondacks. Its agility, great range in size and facility in rapidly flowing water allowed it to spread widely, perhaps even concurrently with the demise of the glaciers, thus explaining its presence in unstocked waters above currently impassable waterfalls." Brook trout were reported to be native to nearly all Adirondack waters according to Calvins's Report to the Commissioners of Fisheries, Game and Forests, 1902-1903. The 1932 Biological Survey of the Upper Hudson Watershed Report reiterated that "Above the 1000 foot contour line most Adirondack waters are naturally suited and were originally inhabited by brook trout."

Many Adirondack waters were originally inhabited by brook trout or brook trout in combination with only one or two other species as indicated by the following passage, also from the 1932 Biological Survey: "In the survey of the Upper Hudson drainage, 51 trout ponds were studied where the trout is found in company with only a few other species." Natural fish barriers prevented the establishment of "native but widely introduced " (NBWI) fishes found downstream. Today, natural fish barriers are considered to be an indicator that a pond historically contained a very simple (i.e. few species) fish community. In these circumstances brook trout would have been capable of maintaining themselves by natural spawning.

Table III.1. Classification of common Adirondack Upland fish fauna into native, nonnative, and native but widely introduced. Adapted from George (1980), as presented in DEC final Siamese Ponds Wilderness Area UMP.

Native to Adirondack Upland	
Blacknose dace	Creek chubsucker
White sucker	Longnose dace
Longnose sucker	Slimy sculpin
Northern redbelly dace	Lake chub
Redbreast sunfish	Common shiner
Finescale dace	Round whitefish
Native Species Widely Introduced with the Adirondack Upland[1]	
Brook trout	Cisco
Brown bullhead	Lake trout
Pumpkinseed	Creek chub
Nonnative to Adirondack Upland	
Golden shiner	Smallmouth bass
Chain pickerel	Yellow perch
Largemouth bass	Fathead minnow[2]
Brown trout	Rainbow trout
Splake	Atlantic salmon
Lake whitefish	Walleye
Rainbow smelt	Central mudminnow
Bluegill	Redhorse suckers (spp.)
Northern pike	Black crappie
Rock bass	Fallfish[4]
Bluntnose minnow[5]	Banded killifish[3]
Pearl dace	Spottail shiner[6]

[1] These native fishes are known to have been widely distributed throughout the Adirondack uplands by DEC, bait bucket introduction, and unauthorized stocking. This means that their presence does not necessarily indicate endemicity. Other species listed above as native have been moved from water to water in the Adirondack Upland, but the historical record is less distinct.

[2] Not mentioned by Mather (1883) from Adirondack collections, minor element southern Adirondack Uplands (Greeley 1930-1935).

[3] Early collections strongly suggest dispersal as a bait form.

[4] Adventive through stocking.

[5] Not mentioned by Mather (1884) from Adirondack collections, widely used as bait.

[6] Smith, Lavett C. (1985) The Inland Fishes of New York State, 522 pp.

Impacts of Fish Introductions

"…the one outstanding reason why so many of the lakes, ponds and streams of … and other Adirondack areas are now unfit for the native species is that small-mouthed bass, perch, northern pike and other species of non-native warm water fishes have been introduced" (1932 Biological Survey of the Upper Hudson Watershed).

The decline in brook trout resulting from the introduction of other fish species is a result of both predation and competition for food. Brook trout feed primarily on invertebrates. Many other fish species, including white sucker, longnose sucker, redbreast sunfish, pumpkinseed, brown bullhead, yellow perch, and the cyprinids (shiners, dace, etc.) also feed primarily on invertebrates (Scott and Crossman 1973). In low fertility waters such as Adirondack ponds, competition for such forage can be intense.

In addition to competing with brook trout for food, many fishes prey directly on brook trout. Northern pike, largemouth bass, smallmouth bass, and rock bass are highly piscivorus. Species which may feed on eggs and/or fry include yellow perch, brown bullhead, pumpkinseed, creek chub, common shiner, white sucker and longnose sucker (Scott and Crossman 1973). The relative importance of competition versus predation in the decline of brook trout is not known for individual waters, but the result is the same regardless of the mechanism.

Competition and predation by introduced species has greatly reduced the abundance of brook trout sustained by natural reproduction. Only about 40 (10%) of the traditional brook trout ponds in public ownership in the Adirondack Park now support viable, self-sustaining brook trout populations, and they are vulnerable to reproductive failure if other fish species become established.

Human introductions of nonnative and native-but-widely-introduced (NBWI) fishes have nearly eliminated natural brook trout monocultures in the Adirondacks. The presence of brook trout monocultures is well known, and the survival of even a few such unique communities through the massive environmental disturbances and species introductions of the 19th and 20th centuries is quite remarkable.

Priority Aquatic Nuisance Species of Concern

With this draft of the Adirondack Park ANS Management Plan, 18 species are designated as priority species of concern. In developing this list, the ad hoc plan review committee largely relied on expert opinion of what is/should be listed as species of concern. Ideally and subsequent to the August 2005 *Managing Aquatic Nuisance Species in the Adirondack Park* conference, several criteria should be employed in the list revision. These criteria are: the severity of existing impacts, the scientific capability to resolve the problem, the cost of management or prevention, the existence of established management or prevention programs, the potential for species to expand their range within the Park and cause greater impacts, and the potential for species to enter the region and cause substantial impacts if introduced.

Ten of the 18 priority species occur within the Park. Priority plant species of concern include: purple loosestrife, water chestnut, Eurasian watermilfoil, curlyleaf pondweed, fanwort, Japanese knotweed, and phragmites, (total 7 species). The priority list of fish and invertebrates includes zebra mussels, sea lamprey, and alewife (total 3 species). Most of these are causing significant negative ecological and economic impacts and have a high potential of expanding their ranges throughout the Basin, (though perhaps not in the case of “nonnative to Adirondack Upland fish”)

causing even greater impacts. Some management activities, including education and outreach efforts, are ongoing for some of these species.

The remaining eight priority species are not known to occur in the Adirondacks at this time. These include: hydrilla, an aggressive aquatic plant, quagga mussel, a relative of the zebra mussel, and fishhook and spiny waterflea, (two species of zooplankton). Priority fish species yet to reach the Park include: Eurasian ruffe, round goby, Asian carp (silver and bighead) and northern snakehead. All occur in either Great Lakes, Mid-Atlantic, or New England regions and have the potential to enter the Park. These species have caused significant negative impacts elsewhere and would likely do so in the Adirondacks. Spread prevention, including public education, is an ongoing high priority in order to keep these highly invasive species out of the Park.

Following are descriptions of each of the eighteen high priority species of concern:

Within the Adirondack Park

Purple loosestrife (*Lythrum salicaria*)

Purple loosestrife, a perennial, wetland plant that spreads readily by seed has been locally common in marshes bordering Lake Champlain since at least 1929 (Muenscher, 1930). A native to Europe and Asia it likely advanced into Lake Champlain from the NY State Barge Canal where it had become established by the turn of the 19th century (Thompson et. al., 1987). Accidental releases from ornamental stocks and transport in raw wool or on sheep may have also facilitated its spread into the Basin. Purple loosestrife infestations now occur in more than 171 towns in Vermont (Copans and Garrity, 2003) and in an unknown, but considerable, amount of wetlands within the Lake Champlain Basin of New York and Quebec. Purple loosestrife out-competes cattails and other native wetland plants and provides unsuitable habitat for a wide range of native wetland animals.

In 2003, a researcher at SUNY-Plattsburgh, initiated a purple loosestrife biocontrol program in cooperation with Cornell Cooperative Extension, the Boquet River Association, and Master Gardener volunteers. The program is based on the culture and release of leaf-eating beetles (*Galerucella spp*.) with defoliating capabilities**.** They have released beetles at four sites in New York: Elizabethtown, Peru, Plattsburgh, and Wadhams. Staff and volunteers are conducting a 5-year post-release monitoring program to evaluate the effectiveness of the biocontrol program.

Eurasian watermilfoil *(Myriophyllum spicatum)*

Eurasian watermilfoil, a perennial, submersed aquatic plant native to Europe, Asia, and parts of Africa, was first discovered in New England in 1962 when it was reported in St. Albans Bay of Lake Champlain (Countryman, 1975). Now widely distributed throughout North America, the aquarium trade likely played a role in its initial introduction and spread (Couch and Nelson 1985). A 1976 survey of Lake Champlain showed Eurasian watermilfoil present in all areas of the Lake and estimated that several thousand acres of the Lake were infested. (Countryman, 1978). This species was also reported found in Eagle Lake in the late 1970's. Eurasian watermilfoil continues to occupy an extensive range throughout the Lake and it infests at least 40 other bodies of water throughout the Lake Champlain Basin, and much of the Adirondack Park.

New infestations of Eurasian watermilfoil are discovered nearly every year. Fragments attached to trailered boats are the likely cause of these overland introductions. Eurasian watermilfoil can proliferate in high densities in lakes causing impairments to water recreation such as boating, fishing and swimming and a reduction in native species. The establishment of Eurasian watermilfoil in Lake George, New York significantly reduced the number of native plant species in just two years (Madsen et al, 1991).

Numerous Eurasian watermilfoil control technologies have been employed within the Lake Champlain Basin including bottom barriers, suction harvesting, mechanical harvesting, hand-pulling, lake drawdowns, hydroraking, and biological controls. Several chemicals have been used to control Eurasian watermilfoil in bodies of water within New York (outside of the Adirondack Park). As of 2004, Waneta-Lomoka lakes represent the primary example of a whole lake treatment with the herbicide SONAR A.S. (active ingredient fluridone). In most cases, chemical controls are used in combination with several other methods as part of a lake's comprehensive, long-term management program.

The use of two aquatic insects as biological controls on Eurasian watermilfoil is being explored in the Basin. One of these insects is the non-native aquatic macrophyte moth, *Acentria ephemerella*. During 2000 and 2001, approximately 30,000 moths were released into various milfoil beds in Lincoln Pond, Elizabethtown, New York. In 2004, milfoil abundance levels were found to have declined relative to 2001, though linkage of this decline with moth releases remains somewhat speculative. *Acentaria* are vulnerable to predation by panfish, and fluctuations in panfish populations may explain some of the variance in the success of milfoil control in other regionsl.

The other aquatic insect currently under consideration is the native weevil, *Euhrychiopsis lecontei.* In 1990, the VTDEC, through a $500,000 grant from the US Environmental Protection Agency's Clean Lakes Program, initiated research to investigate the potential of the weevil to control Eurasian watermilfoil. Researchers from Middlebury College working on the project were able to demonstrate under laboratory and controlled field conditions that the weevils were effective at significantly reducing Eurasian watermilfoil biomass. Results were mixed, however, when open water field introductions were conducted. The VTDEC and Middlebury College reared and released more than 100,000 weevils into eight Vermont lakes between 1993 and 1997. At the sites where quantitative samples were collected, there were no significant declines that could be attributed to the weevils. It is not known whether augmenting the sites with higher numbers of weevils would have resulted in a more successful treatment. Currently, both weevils and moths are being used for Eurasian watermilfoil control on only a limited basis within the Basin.

The expense of Eurasian watermilfoil control programs can reach millions of dollars to implement successfully. For example, since 1982, more than $4.1 million of federal, state, and local funds (excluding salaries and administrative costs) and thousands of volunteer hours have been spent to control Eurasian watermilfoil populations in the State of Vermont. In one lake alone, the Upper Saranac Lake of New York, the cost of a three-year Eurasian watermilfoil control program initiated in 2004 will total $1.5 million.

Curlyleaf pondweed *(Potamogeton crispus)*
While some pondweeds (genus Potamogeton) are native, curlyleaf pondweed is a submerged aquatic plant from Europe, apparently introduced to the U.S. in the 1800's. It somewhat resembles the numerous native pondweeds present in Adirondack waters. Curlyleaf pondweed is the only pondweed that has leaves with toothed, jagged edges. Leaves are alternating, reddish-green, and stiff. Their wavy edges resemble lasagna noodles. The stems are branched and somewhat flattened. Curlyleaf pondweed produces overwintering buds called turions. They look like miniature floral arrangements and are hard and prickly. Curlyleaf pondweed exhibits rapid early season growth giving it a competitive advantage over native plants.
(info at http://www.adkinvasives.com/Aquatic/PlantID/Pondweed.html)

Fanwort *(Cabomba caroliniana)*
Fanwort a native to the southeastern U.S., but has invaded ponds, lakes and quite streams in the northeast, including four lakes in the southwestern Adirondacks. As with other non-native aquatics, it likely spread via aquarium releases. Like Eurasian milfoil, this pest can re-grow from fragments. This submersed macrophyte have both submersed and floating leaves of different shapes. Fanwort generally grows in three to ten feet of water, however, in the Adirondacks, it grows in much deeper water, suggesting it is highly adaptable to environments outside its normal range.(from:http://aquat1.ifas.ufl.edu/cacapic.htmland
http://www.adkinvasives.com/Aquatic/PlantID/Fanwort.html)

Japanese knotweed (*Fallopia japonica*)
Japanese knotweed, a semi-woody perennial plant, was likely introduced to the United States from eastern Asia as an ornamental in the late 1800s. While technically a terrestrial species, Japanese knotweed is commonly found around water sources and has become a dominant species along substantial stretches of rivers and streams throughout much of the Lake Champlain Basin. It also invades wetland areas (Shaw and Seiger, 2002). It spreads quickly, forming dense thickets in early spring that prevent the growth of native species and are of little value to wildlife. Annual die off of the plant leaves river and stream banks vulnerable to erosion. The plant's spread is facilitated by flooding and the downstream flow of rivers. Japanese knotweed is a difficult plant to control due to its ability to reproduce both vegetatively and from seeds. Mechanical and chemical methods are most commonly used to eliminate it. Single young plants can sometimes be pulled by hand, but all roots and runners must be removed to prevent re-sprouting. The application of an herbicide to freshly cut stems has proven effective. The Adirondack Park Invasive Plant Program is coordinating a Japanese knotweed management program within the Adirondack Park.

Water chestnut (*Trapa natans*)
Water chestnut, an annual aquatic plant native of Europe, Asia, and Africa was first documented in Lake Champlain in the early 1940s in shallow bays in the southern end on both the Vermont and New York shores. It is generally assumed that water chestnut seeds hitchhiked to Lake Champlain on boats traveling through the Champlain Barge Canal from the Mohawk or Hudson River where it had been previously established (Countryman, 1970). Water chestnut displaces other aquatic plant species, is of little food value to wildlife, and forms dense mats that alter habitat and interfere with recreational activities. Currently, extensive growth of water chestnut in southern Lake Champlain severely restricts boat traffic and other recreational uses. Populations

of water chestnut also exist in several inland lakes in the southern portion of Vermont. In 1998, the first population found in Quebec, Canada was located in the South River approximately 9 miles northwest of Missisquoi Bay, Lake Champlain (Bove, et.al., 2002). Plants have since been found in the Richelieu River and Pike River, Quebec (Hunt and Crawford, 2003).

Several water chestnut control technologies have been employed within the Lake Champlain Basin including mechanical harvesting and hand-pulling. Chemical controls have generally not been used in the past 25 years. Mechanical harvesting has been the main water chestnut control method. A demonstration project to investigate mechanical cutting with an airboat, a new method which cuts but does not collect cut plants, was initiated on Lake Champlain in 1994. An evaluation of the mechanical cutting showed that although the method is less costly and faster than conventional harvesting, cut water chestnut plants not removed are able to continue to mature and set seed. Based on this information, the use of mechanical cutting has been reduced due to concern over its potential to spread water chestnut.

Since its introduction in the 1940s, the water chestnut population in Lake Champlain has reached nuisance proportions on several occasions. In 1960, the Lake Champlain water chestnut population inhabited a 20 mile range in the extreme southern portion of the Lake. By 1967, a management program, which primarily involved hand-pulling, virtually eliminated the plant from the Lake. (The plant dies back annually and its populations can be effectively controlled if adequate harvesting is performed each year before seeds drop to the lake bottom.) Hand-pulling efforts were discontinued in 1971 and, by 1981, the population had rebounded. Mechanical harvesting of the Lake Champlain water chestnut population began in 1982. Between 1982 and 1990, a total of $1.7 million was spent on water chestnut management in the Lake, an average annual expenditure of $177,000. By 1990, the population, which at its peak covered between 200-300 acres over a range of 34 miles, was reduced by approximately 120 acres to a range of 20 miles. Between 1991 and 1996, the average annual expenditure was reduced to $74,000 and the water chestnut population spread to a range of 54 miles. In 1997, annual expenditures for water chestnut management began to increase and have been close to $500,000 for each of the last several years. Total expenditures in state and federal funds for water chestnut management on Lake Champlain between 1982 and 2003 were more than $5.2 million.

Phragmites (*Phragmites australis*)

This tall rather attractive plant is most abundant along the Atlantic Coast and in freshwater and brackish tidal wetlands of the northeastern United States as far south as North Carolina. It occurs in all eastern states and populations are expanding, particularly in the Midwest. At present, P. australis occurs throughout the entire United States (except Alaska and Hawaii) and southern Canada. In the Adirondack Park, it occurs along roadside ditches and wetlands.

"Phrag" can grow up to 6 meters high in dense stands and is long-lived. Phragmites is capable of reproduction by seeds but primarily through rigorous rhizomatic growth. Recent research has now shown that native and introduced genotypes of this species currently exist in North America.

Many authors suggest that invasion of wetlands by Phragmites alters the structure and function of diverse marsh ecosystems by changing species composition, nutrient cycles and hydrological

regimes. Recent research suggests that this plant preserves some ecological function in invaded sites. However, dense Phragmites stands in North America can crowd out native species, thereby decreasing native biodiversity and quality of wetland habitat, particularly for migrating waders and waterfowl species. As with many invaders it's appearance at a given local is often linked to disturbances (i.e. roadside ditch maintenance, road salting).
Adapted from:
http://www.invasiveplants.net/phragmites/Default.asp

Alewife (*Alosa pseudoharengus*)
Now in LC and Green Pond, Santa Clara, Franklin County in Saranac drainage. A total of seven individuals were found in L. Champlain in 2003 and 2004. Source of population is unclear, perhaps linked to a population established Lake St. Catherine in Poultney, Vermont, in the late 1990's. It's appearance in Lake Champlain may also be linked to the Richelieu river or some source other than Lake St. Catherine. In other waters (notably the Great Lakes), alewife have been linked to reproduction problems in the trout and salmon that feed upon them. This thyaminase-driven Early Mortality Syndrome has generated great concern within the Lake Champlain Fisheries Technical Committee, tasked with managing/establishing sustainable populations of lake trout and Atlantic land-locked salmon.

Sea lamprey (*Petromyzon marinus*)
Though recent genetic analysis indicates sea lamprey is a native species, it remains classified as a nuisance species with an enormous impact on lake trout, landlocked salmon, and other native fish in Lake Champlain. Its parasitic life style at the sub-adult stage results in extremely high wounding rates for its targeted species – primarily salmon and trout. The economic damage attributable to this species has not been calculated to date, though some costs have been tallied. Sea lamprey control is prominently listed in the Lake Champlain Basin Program ANS Plan, and is only mentioned for completeness in the Adirondack ANS Plan.

Native but widely introduced fish species (NWBI): not counted in priority species of concern. See table III.1 and related discussion.

Zebra mussel (*Dreissena polymorpha*)
(revise below text from LCBP ANS Plan)
The zebra mussel, a small freshwater mollusk native to Eastern Europe, likely entered Lake Champlain through the Champlain Barge Canal. It was first discovered in the southern end of the Lake in 1993 and can now be found throughout the entire length of the Lake. In 1997, zebra mussel larvae, known as veligers, were recorded at a level in excess of 400,000 veligers/m^3 in the southern end of the Lake. In many areas, all firm submerged surfaces are densely covered by adult zebra mussels.

In 1995, zebra mussels were found in the New York portion of the Lake Champlain Basin in Glen Lake in Queensbury, a few miles south of Lake George. In 1995 and 1997, zebra mussel veligers were found in Lake George, and adults were subsequently found in the southern part of the Lake. While active control and spread prevention programs are currently in place in Lake George, a new population of adult zebra mussels was discovered in 2004. The New York infestations were likely caused by the overland transport of contaminated boats. The upper

Richelieu River at the outlet of Lake Champlain in Quebec is also infested with zebra mussels, likely a result of a range expansion of populations in Lake Champlain.

The zebra mussel is highly opportunistic, reproduces rapidly and consumes plankton from the water column in large quantities. The potential impacts on the Lake Champlain fishery may be profound. Changes in food availability and alteration of spawning habitat are just a few of the possible impacts. Entire populations of Lake Champlain native mussels are disappearing due to heightened competition for food and because zebra mussels attach to their shells inhibiting their ability to feed, respire and reproduce. The Vermont state fish culture station in Grand Isle, Vermont has spent more than $3 million on the design and installation of zebra mussel control mechanisms. Municipal water facilities and industrial facilities that draw water from Lake Champlain have spent in excess of $2 million on cleaning, monitoring and controlling zebra mussels. Many of the Lake's hundreds of historic shipwrecks and other cultural artifacts, some of which date back to the Revolutionary War, are becoming encrusted with zebra mussels, diminishing their scientific and historic significance. Additionally, zebra mussels cover submerged surfaces in many of the Lake's popular swimming areas and swimmers complain of being cut by the sharp shells.

Though it is too late to prevent zebra colonization of Lake Champlain, scientists continue to monitor the lake's tributaries and many of the surrounding waters northern New York for signs of this pest. No zebra mussels were found in a recent survey of several New York tributaries to Lake Champlain. However, zebra mussels are now colonizing Glen Lake, and Saratoga Lake, in New York. Although low calcium levels in Lake George may limit zebra mussel growth, adult zebra mussels did become temporarily established in a small area of the lake in 1999, and were recently discovered near Ticonderoga.

Water chemistry analysis indicates that several Clinton and Essex County, New York lakes would provide suitable zebra mussel habitat. This suggests that these animals could easily colonize a large number of lakes in the eastern Adirondacks.

Currently, there are no environmentally sound methods to control populations of zebra mussels once they become established in a body of water. If such technologies emerge, they should be investigated for potential use within Lake Champlain and other bodies of water within the Lake Champlain Basin in order to reduce negative impacts and allow for the restoration of native ecological communities.

Outside the Adirondack Park

Hydrilla (*Hydrilla verticillata*)

Hydrilla, an aquatic plant native to Australia, Asia, and central Africa was identified in Florida in the 1960s and has since spread to numerous southern states as well as California and Washington. In recent years, populations of hydrilla have been found in Connecticut, Massachusetts, and Maine. Hydrilla has the ability to spread rapidly through stem fragmentation and the production of tubers. It forms dense mats which can completely clog waterways, posing significant threats to aquatic ecosystems, navigation, and recreational resources. Once established hydrilla replaces native aquatic vegetation and affects fish populations. Several

management methods are used on hydrilla including herbicides, grass carp, and mechanical removal. The use of insects has also been studied. (Langeland, 1996). Recreational boats can serve as vectors to accelerate the spread of hydrilla (Anderson, 1996). While the distribution of hydrilla is illegal it is sometimes confused with native plants and made available through aquarium outlets.

Round goby (*Neogobius melanostomus*)
The Round goby, a small bottom-dwelling fish native to the Black and Caspian Seas was first discovered in North America in 1990 in the St. Clair River in Ontario. By 1995 round gobies were present in all five of the Great Lakes. As of 2004, they have traveled over 25 miles down the Chicago Canal. Their rapid expansion appears to have been mediated by intra-lake ballast water transfer, bait bucket transfer, and active dispersion. They occur primarily in rocky nearshore habitats, but have been found as deep as 180 feet (J. Jonas, Michigan Dept. of Natural Resources, pers. comm.). They are aggressive and can displace native benthic fish, particularly mottled sculpin and darters (Janssen and Jude, 2001). They also consume eggs of native species, such as lake trout, and may threaten lake trout restoration. They are natural predators of zebra mussels and may create a biopathway for contaminants from zebra mussels to sport fishes, such as smallmouth and largemouth bass. Round goby are in eastern Lake Ontario, in the St. Lawrence River near Quebec City, and in Lake St. Francois near Massena, NY (de Lafontaine, 2002). They are, therefore, likely to enter Lake Champlain via either the Champlain or Chambly Canals.

Eurasian ruffe (*Gynocephalus cernuus*)
The Eurasian ruffe, a small, aggressive fish was found in the St. Louis River estuary at the western end of Lake Superior in 1986 and has since spread to Lake Michigan and Lake Huron. Introduced populations in Scotland and Russia have caused declines in yellow perch and whitefish, presumably due to egg predation. Ruffe are generalists and reproduce rapidly. They could compete with native fishes, such as yellow perch, walleye, and emerald shiner.

Quagga mussel (*Dreissena bugensis*)
The quagga mussel, a small bivalve mollusc native similar to the zebra mussel was first reported from the Erie Canal in 1991 (May and Marsden, 1992), and has since spread to Lake Erie and Lake Ontario, the St. Lawrence River, and the Mississippi and Ohio rivers (Mills et al. 1996). The quagga has the same nuisance aspects as the zebra mussel, i.e., biofouling, filter feeding, alteration of food webs, but has a higher tolerance for colder, deeper waters. In Lake Ontario, it was originally found in deep water (>100 m), but has steadily replaced zebra mussels in shallow water (Mills et al., 1996).

Spiny waterflea (*Bythotrephes cederstroemi*)
The spiny water flea is a tiny planktonic crustacean with a long, barbed spine. It is native to Europe, but was discovered in North America in Lake Huron in 1984, likely introduced through ballast water dumping. It has since spread to all of the Great Lakes and many inland lakes in Michigan, Minnesota, Ohio, and southern Ontario. It may be moved between waterbodies on boats, fishing tackle or other aquatic gear. Their viable eggs may also be moved in the guts of fish (Jarnagin, et. al., 2000). The spiny water flea has the ability to disrupt native zooplankton communities (Yan and Pawson, 1997) which may in turn affect fish communities.

Fishhook waterflea (*Cercopagis pengoi*)
The fishhook waterflea is a small predatory crustacean native to the Aral, Azov and Caspian Sea region. It was discovered in North America in Lake Ontario in 1998 and has since spread to Lake Erie, Lake Michigan, and several lakes in the finger lakes region of New York. Like the spiny waterflea, the fishhook waterflea can be spread between waterbodies by sticking to boats, fishing tackle and other aquatic gear. In Lake Ontario, the fishhook waterflea has contributed to the population declines of several zooplankton species (Focazio, 2004). This in turn may lead to changes in fish communities.

Asian Carp (counted as one species, but includes bighead carp, silver carp)
Bighead (*Hypophthalmichthys nobilis*) and sliver carp (*H. molitrix*) are invasive fish spreading to lakes, rivers and streams in several areas of North America, particularly in the Mississippi and Great Lakes basins. As filter-feeders, these fish compete for food directly with larval fishes, native mussels and some native adult fishes. This competition could lead to reduced numbers of native species, which would ultimately affect the entire food web.

These two Asian carp were brought to North America in the early 1970's to improve water quality in aquaculture ponds. By the early 1980's, both species had escaped to open waters of the Mississippi Basin. Use of juveniles as bait and transfer of adults into new habitats contribute to their spread. Early detection of isolated populations may help or restrict the spread of these Asian carp.

Northern snakehead
Introductions of northern snakehead to portions of the Potomac and Delaware Rivers since 2002 have generated numerous headlines. Northern snakehead are predatory, exhibit rapid growth, reach large size (i.e. 5 ft.), tolerant of low oxygen, and adapted to cold environments. Hence, biologists are concerned that these fish could out-compete more desirable Adirondack fish species as such as trout, pike, and bass. Eradication efforts since 2002 in Maryland, Virginia, Pennsylvania and New York City have show little effectiveness. Impacts to native fish communities are likely to be severe.

Non-native Species of Potential Concern

Information not available at this time see LCBP list in Appendix C.

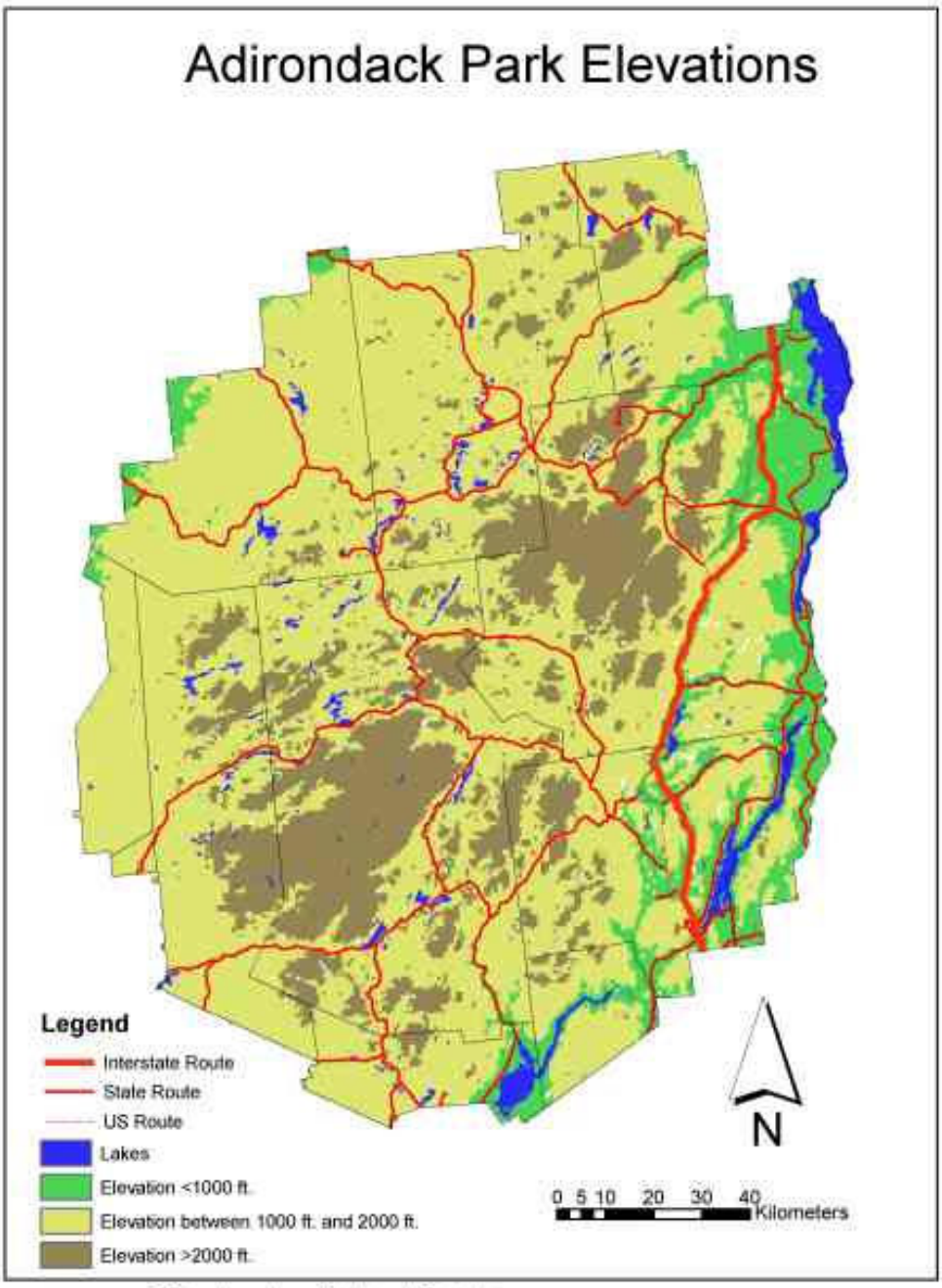

Figure III.2. Adirondack Park elevation zones.

IV. Authorities and Programs

Local

Local Government

The 105 towns and villages in the 12 counties of the Adirondack Park have a critical role to play in the Plan. Local government involvement in the Plan will facilitate coordination of ANS management activities across political boundaries within and between watersheds. New York State provides local governments with the following legal authorities that when enacted will facilitate coordination and implementation and provide funds for management: under Chapter 24 Article 5, municipalities (alone or jointly) are authorized to adopt and implement plans to control invasive species; and, under Chapter 62, Article 12, town boards may establish aquatic plant control districts which would include adopting and implementing plans and levying fees to fund management activities. Several towns in the Park have considered establishing aquatic plant control districts. See Appendix E for more details on these and other regulatory statutes related to invasive species. In addition to regulatory authority, local government can (and does) play a key role in education and outreach.

Lake, Watershed, and Fishing Groups

There are a number of organized lake and river associations within the Adirondack Park (Table IV.1). Many of these groups have ongoing ANS outreach and/or management programs. Activities include: distribution of ANS informational materials; posting of boater advisory signs; boater surveys; public presentations and workshops; ANS "watching"; milfoil weevil rearing; and Eurasian watermilfoil and water chestnut control. Funding for these programs comes from the towns; private donations; membership fees; and grants provided through the LCBP Local Grants Programs, and other grant programs. These groups will continue to provide an important link between the private and public sectors and will play a significant role in ANS education and management activities.

Table IV.1. Known organized lake and river associations and foundations within the Adirondack Park.

Adirondack Lakes Association,.Inc	Lake Colby Association
Auger Lake Assoc.	Lake George Association
Ausable River Association	Lake Luzerne Association
Big Moose Property Owners	Lake Ozonia Association
Big Wolf Lake Association	Lake Placid Shoreowners Association
Blue Mountain Lake Association	Lake Pleasant/Sacandaga Association
Boquet River Association	Lake Snow Association
Brandreth Lake Association	Lake Titus Association
Brant Lake Association	Lake Waccabuc Association
Brantingham Lake Association	Limekiln Lake Improvement Association
Butternut Pond Association	Lincoln Pond Association
Canada Lake Association	Little Wolf Association
Cranberry Lake Boat Club	Loon Lake Homeowners Association
Chateaugay Lakes Association	Lower Saranac Lake Association

Table IV.1 (continued)

Clear Pond Association	Minerva Lake Association
Conesus Lake Association	Mirror Lake Watershed Association
Copake Lake Conservation Society	Morehouse Lake Association
Cotton Point Association	Mountian View Lake Association
Crooked Lake Homeowners Association	Mt. Arab Lake Association
Dunhams Bay Association	NYS FOLA
Eagle Lake Property Owners Assoc.	Osgood Pond Association
Eagle Pond Association	Paradox Lake Association
East Caroga Lake Association	Penfield Pond Foundation
East Pond Association	Pine Cove Beach Association
East Shore Schroon Lake Association	Rainbow Lake
Elk Lake Club	Raquette Lake Property Owners Association
Fern Lake Association	Rondax Lake Property Owners
Forest Bay Association	Schroon Lake Association
Fourth Lake Association	Sixth & 7th Lake Association
Friends Of Long Pond	St. Regis Property Owners Association
Friends Point Association	Star Lake Association
Fulton Chain of Lakes Association	Tupper Lake Shore Owners Association
Glen Lake Association	Thirteenth Lake Association
Goodnow Flow Association	Upper Saranac Lake Association
Great Sacandaga Lake Assoc.	West Caroga Lake Association
Horseshoe Pond/Deer River Flow	White Lake Association
Indian Lake Association	Wolf Lake Association
Kiwassa Lake Association	The Fund for Lake George
Lake Abanakee Association	The Upper Saranac Lake Foundation
Lake Adirondack Association	The St. Regis Foundation Incorporated
Lake Clear Inn Association	New York State Council of Trout Unlimited

Soil and Water Conservation Districts

Conservation districts are government entities that help control the use of land and water. In New York State, SWCDs are organized by county. The function of the SWCD is to take available technical, financial, and educational resources, whatever their source, and focus or coordinate them so that they meet the needs of the local land user. Typical objectives of SWCDs include: (1) planning and implementation of water quality improvement and other natural resources programs, (2) provide conservation services and information to the public to help solve natural resource problems, (3) increase the public's awareness of soil erosion and water quality protection, (4) coordinate with other agencies and organizations to implement conservation practices, and (5) secure water quality funding from state, federal, and private sources.

Adirondack Park

Academic Institutions/Research Programs

Adirondack Watershed Institute of Paul Smith's College. The PSCAWI is a research, education, and community outreach organization dedicated to the conservation and protection of natural resources in the Adirondack region. The PSCAWI administers the largest volunteer lake water quality monitoring program and aquatic nuisance plant control efforts in the Adirondacks as well as a comprehensive lake stewardship program on several lakes.

Darrin Fresh Water Institute of Rensselaer Polytechnic Institute. The mission of DFWI is to present a world class research program in surface and groundwater systems science, and to conduct a leading environmental science education program. Over the past 35 years of working out of its field station on Lake George, the DFWI has become widely regarded for researching the impact of humans on fresh water systems and ecological processes in the Adirondacks.

Lake Champlain Research Institute of Plattsburgh State University. The primary objective of the LCRI is to promote undergraduate student research. Current affiliate activities include regional interdisciplinary investigations of biological, physical, economic, historical and educational issues. The Institute is actively involved in research in the Lake Champlain Basin that results in a better understanding of regional natural resources and provides reliable scientific information to environmental decision makers.

Adirondack Park Agency

The APA plays an advisory role to the DEC for the protection of the forest preserve, and reviews development proposals on the privately owned lands. The Agency prepared the State Land Master Plan, which was signed into law in 1972, followed by the Adirondack Park Land Use and Development Plan in 1973. Both plans are periodically revised to reflect the changes and current trends and conditions of the Park. The mission of the APA is to protect the public and private resources of the Park through the exercise of the powers and duties provided by law. This mission is rooted in three statutes administered by the Agency in the Park: (1) the Adirondack Park Agency Act, (2) The New York State Freshwater Wetlands Act and (3) The New York State Wild, Scenic, and Recreational Rivers System Act. The APA also conducts resource inventory and research that is relevant to aquatic invasive species.

Adirondack Park Invasive Plant Program

In 2001, the Adirondack Park Agency and partner organizations, including NYS Dept. of Conservation, Adirondack Nature Conservancy, Paul Smiths College, and the Franklin County Network of Shoreline Associations, submitted a proposal to the U.S. EPA to institute a centralized framework for aquatic invasive plant monitoring and educational-outreach in the Adirondack Park over a two-year period. Funding was awarded to support this baseline project, known as the Adirondack Park Aquatic Invasive Plant Project.

When the September 2003 completion date neared for the EPA funded Project, the partner organizations identified the need for the continuation of coordinated efforts for both aquatic and terrestrial invasive plant species. In the Spring of 2003, the NYS Departments of Environmental Conservation and Transportation, Adirondack Park Agency, and Adirondack Nature Conservancy formally established the Adirondack Park Invasive Plant Program (APIPP) and developed an Adirondack Park Invasive Plant Action Plan. The Action Plan is a strategic document that outlines and guides program planning, development, and implementation.

Although 'APIPP' is a recent designation, the APIPP partnership has been building and the two projects it facilitates have been active for a number of years: the Aquatic Invasive Plant Project (AIPP, initiated in 2001) and the Terrestrial Invasive Plant Project (TIPP, initiated in 1998). An APIPP Coordinator is currently funded by and housed at the Adirondack Nature Conservancy in Keene Valley, one of the partner organizations. The Coordinator and principle partners seek additional funding sources to sustain the APIPP in future years.

Lake George Park Commission

The Lake George Park was established, together with the Commission, by act of the New York State Legislature in 1961 under Article 43 of the Environmental Conservation Law. The Park consists of Lake George and its land drainage basin within specific boundaries established under the law. The Lake George Park is wholly within the Adirondack Park, and covers some 300 square miles, approximately 44 square miles of which are lake surface. Approximately one half of the Lake George Park is public ownership. The Lake George Park Commission is responsible to preserve, protect, and enhance the natural scenic beauty of the lake and its surrounding countryside and regulate the use of the lake and the area near or adjacent thereto for appropriate residential, conservation, health, recreational and educational purposes.

Specific activities of the Commission related to aquatic nuisance species include:

The Commission is involved in community efforts to monitor and control the introduction of invasive species into Lake George.

The Commission has been involved in the management of Eurasian Watermilfoil since the discovery of the invasive plant into Lake George in 1985. The Commission sponsors and manages the program using controls of hand harvesting, suction harvesting and benthic barriers.

The Commission has regulations stating that “No person shall launch a vessel into or remove a vessel from the waters of the park without inspecting the vessel and its trailer, if any, to ensure the detection of marine growth, including macrophytes (weeds), or any other hull contamination, and removing said growth and disposing of it so as to ensure that it is not discharged into the waters of the park.”

The Commission conducts investigations, secures evidence, holds hearings, issues orders and brings action in any court of jurisdiction for the abatement of any condition of pollution or the violation of any provisions of Article 43 or rules and regulations pursuant thereto.

The Commission conduct scientific investigations and research into the lake's ecosystem and factors influencing the lake's health and vitality.

The Commission has marine inspectors as part of its marine patrol to assist the public directly with conducting proper boat inspections for the detection of invasive species.

The Commission coordinates the efforts of many Federal, State and Local agencies and private groups who participate in efforts of Invasive Species Prevention/Management.

New York State

A complete list of NYS regulatory statutes related to ANS is in Appendix E.

New York State Aquatic Nuisance Species Management Plan

Following the passage of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA), the New York State Legislature amended Article 3-0301(2) of New York State Environmental Conservation Law to require the Department of Environmental Conservation to develop comprehensive management plans for preventing and controlling the introduction of nonindigenous aquatic nuisance species into New York State waters, as described in section 1204(a) of NANPCA. The Bureau of Habitat of the Division of Fish, Wildlife, & Marine Resources was assigned the responsibility of developing the nonindigenous aquatic species management plan. This plan was completed in November 1993, and approved by the national ANS Task Force in March 1994.

A major effort was undertaken and completed in the Spring of 2003 to revise and update New York's ANS management plan. The major revision of the plan was necessary because the National ANS Task Force published guidance for state ANS plans in March of 1998, and the original ANS Management Plan developed by New York in 1993 did not conform to that guidance.

New York's revised ANS Management Plan is built around the following five goals:

Goal 1. Provide effective and efficient ANS program management;

Goal 2. Prevent the introduction of new ANS into the waters of New York State and enforce ANS Laws and Regulations;

Goal 3. Control the spread of ANS species to new water bodies within the state, and mitigate adverse ecological, societal, and economic impacts resulting from an ANS introduction;

Goal 4. Involve and motivate the general public to take steps to prevent new ANS introductions and control the spread of ANS through education; and

Goal 5. Encourage, promote, and support ANS research in New York State.

There are a total of 23 objectives associated with the five goals. As called for in the Federal Guidance of 1998, New York's revised ANS Management Plan includes detailed implementation tables to describe 126 tasks that have been identified in order to accomplish the objectives. Additionally, the revised ANS Management Plan identifies 21 species already present in New York waters that could be classified as ANS, and an additional 18 potential ANS that have been introduced into the waters of North America but have not yet been found in the waters of New York State. New York's revised ANS Management Plan discusses the need for close coordination with existing programs like the Lake Champlain Basin Program to support the accomplishment of mutual goals and objectives, avoid duplication of effort, and to prevent the occurrence of conflicting activities or priorities.

NYS Invasive Species Task Force

In 2003, Governor Pataki signed legislation that called for a team to explore the invasive species issue and to provide recommendations to the Governor and the Legislature by November 2005. The statute describes the intended membership of the Task Force and directs that it be co-led by two New York State agencies: the Department of Environment Conservation and the Department of Agriculture and Markets. Other members of the Task Force include:

- New York State Department of Transportation
- New York State Thruway Authority (and Canals Corporation)
- New York State Museum (and Biodiversity Research Institute)
- New York State Office of Parks, Recreation and Historical Preservation
- New York State Department of State
- Adirondack Park Agency
- New York Sea Grant
- Cornell University
- Invasive Plant Council
- The Nature Conservancy
- New York State Farm Bureau
- Empire State Marine Trades Association
- New York State Arborists and Landscape Association

The Task Force has been meeting at various locations around New York. These meetings are open to the public and dates, times and locations are announced in the Environmental Notice Bulletin. Formal public review of the Draft Report of the Invasive Species Task Force will be accomplished through a combination of both in-person public meetings and internet communication. The draft report was released in August 2005.

It is expected that the recommendations provided by the Task Force will result in further modifications to the New York State Aquatic Nuisance Species Management Plan previously outlined.

Invasive Plant Council of New York State

The Invasive Plant Council of New York State (IPCNY), incorporated in 1999, provides coordination and guidance on the management of invasive plant species in order to protect the biodiversity of New York State. Through partnerships among public and private organizations, the IPCNY:

1. Promotes management projects in the field;
2. Compiles and facilitates access to information on invasives;
3. Defines policies and goals for invasives management;
4. Educates the general public about invasives;
5. Holds conferences and forums on invasives and their management;
6. Develops an "official" state list of invasive species; and
7. Develops a list of alternative plants to invasives.

New York regulatory statutes pertaining to ANS are listed in Appendix TBD.

Finger Lakes - Lake Ontario Watershed Protection Alliance (FL-LOWPA)

The Finger Lakes - Lake Ontario Watershed Protection Alliance (FL-LOWPA) was formed in 1996, and includes 25 New York State counties wholly or partially in the Lake Ontario watershed. These 25 counties are divided into three regions which are interrelated by geography or shared watersheds. The FL-LOWPA program focuses on pollution prevention and control of ANS. Four Adirondack counties, Hamilton, Herkimer, Lewis and Oneida are members of FL-LOWPA.

The governing body of FL-LOWPA is the Water Resources Board (WRB). Each participating county selects, through its local processes, one voting member to serve on the WRB. The WRB is comprised of county representatives from multiple disciplines and agencies, including Soil and Water Conservation Districts, Planning and Health Departments, and Water Quality Management Agencies. The Water Resources Board holds meetings monthly, with the Full Board (all 25 counties) meeting three times each year, regional groups meeting three times each year, and the seven-member Executive Committee meeting six times each year. The WRB makes decisions by consensus, or majority vote when necessary.

Funding for FL-LOWPA is provided through an annual appropriation by the New York State Legislature. Since 1984, more than $16 million has been granted to the current program or its predecessor (Finger Lake Aquatic Vegetation Control Program). The annual appropriation for FL-LOWPA has been $1.3 million in the New York State Environmental Protection Fund since SFY1997-98. Each county receives an equal share of funding to carry out water quality programming. The program has been heralded as unusually cost-efficient: fully 96 percent of funding has been passed through to counties for implementation of projects, with less than three percent retained for administration and activities coordinated through the Water Resources

Board. Member counties contribute staff and other resources to the program on an in-kind basis. In many counties, FL-LOWPA funds have leveraged additional moneys through grants and local appropriations.

Coalition of Lakes Against Milfoil (COLAM)

The Coalition of Lakes Against Milfoil was formed in 1991, and is a statewide organization comprised of lake association representatives, property owners, businesses and concerned individuals. COLAM is an advocacy group for the interests of people concerned about New York State's handling of the threat posed by Eurasian watermilfoil and other aquatic nuisance species. COLAM has called on New York State to streamline the permitting process to allow for rapid and effective response when invasive aquatic plant species are detected in a water body. The group would also like the State to act as partners with lake associations by providing funding and technical assistance with weed management projects.

Regional

Lake Champlain Basin Program

The Lake Champlain Basin Program (LCBP) was established to coordinate the activities envisioned by the *Lake Champlain Special Designation Act of 1990*. It is jointly administered by the U.S. Environmental Protection Agency, the states of Vermont and New York and the New England Interstate Water Pollution Control Commission. Other cooperating agencies include the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture, the U.S. Geological Survey, the National Oceanographic and Atmospheric Administration, the U.S. Army Corps of Engineers, and the National Park Service. Formal involvement of Quebec is through the Lake Champlain Basin Program's Steering Committee. The LCBP coordinated the development of *Opportunities For Action: An Evolving Plan for the Future of the Lake Champlain Basin* (*OFA*), which was first published in 1996 and revised in 2003. One of the top four priority issues in *OFA* is nonnative aquatic nuisance species. The LCBP conducts education and outreach activities for ANS throughout the Basin, facilitates discussion among ANS resource managers and has administered more than $1.3 million in grants for ANS research, monitoring, education, control and demonstration programs. About 20 percent of the Adirondack Park is contained within the Lake Champlain Basin. The LCBP has ex-officio representation on the national ANS Task Force and receives support through the Task Force for an ANS Coordinator.

Northeast Aquatic Nuisance Species Panel

The Northeast Aquatic Nuisance Species (NEANS) Panel was established in 2001, and is the fourth regional panel to be established under the auspices of the Federal Aquatic Nuisance Species Task Force (ANSTF), following the Great Lakes, Western Regional, and Gulf of Mexico panels. The mission of the NEANS Panel is to "protect the marine and freshwater resources of the Northeast from invasive aquatic nuisance species through commitment and cohesive coordinated action".

The NEANS Panel addresses issues and concerns relative to the freshwater and marine resources of the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut and New York, and the Canadian provinces of Quebec, New Brunswick and Nova Scotia. The panel's members represent state, federal and provincial governments, academia, commercial and recreational fishing interests, recreational boaters, commercial shipping, power and water utilities, environmental organizations, aquaculture, nursery and aquarium trades, tribal concerns, lake associations and the bait industry, among others. The panel has four working committees: Ballast Water; Communications, Education, and Outreach; Policy and Legislation; and Science and Technology.

Non-Governmental Organizations

The Lake Champlain Committee, the Lake Champlain Basin Science Center and The Nature Conservancy are just a few of the many non-governmental organizations within the Lake Champlain Basin that play an important role in ANS management. In particular, these organizations help to communicate information about ANS to the public and provide a critical link between management agencies and the public.

Federal

A complete list of federal agencies regulating the transport of live products is in Appendix D.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (the Service) has been involved in nonindigenous species issues and activities throughout its history. Recent activities throughout the United States include prevention of introductions, detection and monitoring of exotic fish; research and management focusing on sea lamprey, Asiatic clam, ruffe, and purple loosestrife; education and technical assistance; and state grants under the Federal Aid in Fish and Wildlife Restoration program, the Endangered Species program, and the National Aquatic Nuisance Species Task Force.

The primary role of the Service in the Adirondack Park has been assistance with controlling sea lamprey populations in Lake Champlain. In addition to its role in managing sea lamprey, the Service has provided assistance to determine the technical and fiscal feasibility of preventing alewife from becoming established in Lake Champlain and pursuing options to eradicate alewife from Lake Saint Catherine. The Service is also involved in partnership with The Nature Conservancy, the Lake Champlain Basin Program, and private foundations in an ongoing project to control water chestnut infestations in Lake Champlain wetlands using volunteers to hand-pull the plants. The Service also conducts annual surveys for water chestnut in Missisquoi National Wildlife Refuge, cooperates in propagation and release of beetles (*Galerucella* spp.) to control purple loosestrife infestations, supports research and outreach to address the effects of zebra mussels on native species, and provides technical assistance about invasive species for the U.S. Bureau of Customs and Border Protection and other agencies.

National Sea Grant

State Sea Grant Programs (primarily in the Great Lakes states) have been providing invaluable materials and technical assistance for ANS management, and education and outreach programs in New York for a number of years.

In 1998, New York Sea Grant (NYSG) (a partnership involving Cornell University and the State University of New York (SUNY), the University of Vermont (UVM), and Plattsburgh State University (PSU) submitted a proposal to the National Sea Grant Office to fund a *Lake Champlain Sea Grant Extension* project for the period 1999 to 2001. The grant, which enabled the hiring of two specialists (one at PSU and one at UVM), was administered by NY Sea Grant staff at Cornell University and SUNY Stony Brook. Approximately $147,000 was awarded for each of 3 years. *Lake Champlain Sea Grant* (via NYSG administration), began providing assistance for research in 2001 through development of an Request For Proposals and subsequent awards (totaling $140,000 for two years) for research on smelt population dynamics and cormorant diet and dispersal patterns.

Administration of the *Lake Champlain Sea Grant Extension* project switched to UVM (with partnership assistance from Plattsburgh SUNY) starting in 2002. Extension and education efforts continue to focus on watershed, fisheries, and invasive species topics throughout the Lake Champlain watershed. Four research projects totaling $145,000 were funded in 2004-2005. Current administrative efforts focus on developing a Coherent Area Program which will provide ongoing aquatic research, education and outreach accomplishments in Vermont and northeastern NY.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACOE) manages over five million surface acres of water at its reservoirs and through its navigation projects around the country. The USACOE's Aquatic Plant Control Research Program (APCRP) is the nation's only federally authorized research program directed to develop technology for the management of non-indigenous aquatic plant species. The program provides information on effective, economical, and environmentally compatible methods for assessing and managing problem aquatic plants.

In May of 1983, the Vermont Department of Environmental Conservation and the USACOE's New York District entered into an agreement to implement a cost-shared Aquatic Plant Control Program (APCP) for the control of water chestnut (*Trapa natans*) and Eurasian watermilfoil (*Myriophyllum spicatum*) in Lake Champlain. In 1994, the program was expanded to include other bodies of water within the basin. Since the program's inception, well over two million dollars of federal APCP funds have been spent to control water chestnut and Eurasian watermilfoil in the Lake Champlain Basin. USACOE funded under WRDA enabled milfoil surveys in Eagle Lake and 2 other Adirondack lakes in 2001.

U.S. Environmental Protection Agency

The Environmental Protection Agency (EPA) has a strong supporting role in the control of aquatic nuisance species at the international, national, and regional levels.

Internationally, EPA coordinates its work in the US with the North American Commission for Environmental Cooperation, including biodiversity and invasive species efforts. EPA participates in the United Nations' International Maritime Organization work to control ballast water discharges, as well as on the UN Biodiversity Convention's invasive species protection efforts. EPA also consults with the World Conservation Union to help improve global cooperation on ecosystems and invasive species and supports related work by the US Department of State. EPA further participates in invasive species issues through environmental reviews of proposed trade agreements with other countries.

Nationally, EPA is a member of the federal Aquatic Nuisance Species Task Force (ANSTF) and the National Invasive Species Council (NISC). EPA is an active member of the NISC, and has a major role in implementing the National Invasive Species Management Plan and other provisions of Executive Order 13112. EPA provides biopollution research and control grants through the Science to Achieve Results program. EPA also has authority under three federal statutes that can be used for controlling aquatic nuisance species. First, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires manufacturers and importers who produce or sell a pest control product to register the compound with the EPA. FIFRA is a critical statute for invasive species whenever pesticides are used to control or reduce the impact of invasive species. Examples include the use of a pesticide to control lamprey populations in the Great Lakes and the use of herbicides to control noxious weeds. FIFRA also gives EPA review authority for biological control agents when they are used to control invasive pests. EPA review of environmental impact statements under the National Environmental Policy Act is another statutory tool useful against invasive species. These reviews, conducted in EPA's regional offices, now include an explicit consideration of the proposed action with regard to invasive species. EPA may also have regulatory authority to manage invasive species through several provisions of the Clean Water Act. EPA is responsible for regulating ballast water in the Great Lakes under the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 and is engaged, in conjunction with the US Coast Guard, with development of the programmatic environmental assessment for the Mandatory Ballast Water Management Rule for marine waters.

Regionally, EPA is the primary funding source for the Lake Champlain Basin Program, which supports its strong aquatic nuisance species program. EPA also provides funding for invasive species control and prevention elsewhere in the New England region, and participates on the Aquatic Nuisance Species Task Force's regional Northeast Aquatic Nuisance Species Panel.

Abbreviations for key and potential key players are at the end.

V. Objectives, Strategies, and Actions

The 2005 Adirondack Park Aquatic Nuisance Species Management Plan (the Plan) was developed with close attention to the *New York State Aquatic Nuisance Species Management Plan* and the *Lake Champlain Aquatic Nuisance Species Management Plan*. The Plan incorporates many of the same concepts to ensure coordination, continuity, and consensus-based activities. The following **Objectives** (modeled largely after key themes in the *Final Report of the New York State Invasive Species Task Force*) provide a framework for the Strategies and Actions to accomplish the **Plan Goals**: to prevent new ANS introductions, to limit the spread of established ANS populations, and to abate impacts of ANS, as identified under Section II:

A. Coordination
B. Enforcement and Legislation
C. Education and Outreach
D. Early Detection and Monitoring
E. Management
F. Restoration
G. Research

Although these Objectives are not listed in order of priority, it is generally accepted that the first line of defense for minimizing impacts of ANS is to prevent future introductions and further spread of ANS. Each objective is inextricably linked to spread prevention. In addition, central to all of the Actions of this Plan are the ANS Coordinator (see Action A1a) and the ANS Advisory Committee (see Action A1c) whose roles will be to coordinate implementation of the Actions and to coordinate development of future iterations of this management plan. The Plan Objectives, Strategies, and Actions are as follows:

Objective A. Coordination

Strategy A1. Strengthen Coordination of Plan Implementation and other ANS Efforts at the Park-wide, State, and Regional Levels

Issue Statement: Effective implementation of the Adirondack Park ANS Management Plan requires Park-wide coordination and oversight to:

1. ensure that all Plan objectives and obligations are met;
2. ensure information is expeditiously and accurately shared among all individuals and organizations involved in the implementation; and
3. minimize redundancy of activities.

Coordination with state, regional, and national ANS management efforts will also ensure that efforts within the Park are informed by and shared among managers throughout the Northeast and the U.S. Coordinating implementation of the Plan is essential for the fulfillment of all three Plan Goals.

Actions

A1a. Park-wide ANS Coordinator
Secure annual funding to hire an ANS Coordinator to coordinate partners to implement the Plan and associated objectives and conduct specific Plan Actions as appropriate.
Lead: APANSMP Steering Committee
Potential key players: USFWS, NYSDEC

A1b. Additional North Country ANS Staff
Obtain funding to hire or maintain existing staff, such as the Lake Champlain Sea Grant and Adirondack Park Invasive Plant Program staff, to coordinate with the ANS Coordinator and to implement Plan activities, as appropriate.
Lead: APIPP, SUNY-LCSG, PSCAWI
Potential key players: USEPA, USFWS

A1c. ANS Advisory Committee
Develop and maintain an ANS Advisory Committee to guide Plan implementation and other local and state ANS initiatives, to set priorities for research and management on a regular basis, and to coordinate with the Lake Champlain ANS Advisory Committee.
Lead: APANSMP Steering Committee
Potential key players: USFWS, universities, lake groups, LG, tourism, industry

A1d. Coordination with NYS Plan
Coordinate Plan implementation with the New York State ANS Management Plan activities.
Lead: APANSMP Steering Committee
Potential key players: NYSDEC DFW, USFWS

A1e. Coordination with NYS Invasive Species Task Force
Coordinate information exchange with the New York State ISTF.
Lead: APANSMP Steering Committee
Potential key players: NYSDEC, NYSAPA, NYSDOT, TNC, IPCNYS

A1f. Northeast Coordination
Initiate participation in the Northeast Regional ANS Panel and other regional and local panels and workgroups.
Lead: APANSMP Steering Committee
Potential key players: USACE, USDA, USEPA, USFWS, SLELOWMA, LIWMA, IPANE, LG, IPCNYS, other state agencies, Canada

Objective B. Enforcement and Legislation

Although these Objectives are not listed in order of priority, it is generally accepted that the first line of defense for minimizing impacts of ANS is to prevent future introductions and further spread of ANS. Encouraging both regulatory and non-regulatory actions can help bolster this first line of defense. A need exists for a hard look at policies that would support prevention,

early detection, rapid response, management, restoration, and education. In addition, enforcement is an important part of any formalized program or new legislative package that includes new laws on issues.

Analysis of state regulations by the Environmental Law Institute shows that compliance with invasive species regulations is greater when adjacent geographic locations share the same regulations. Currently, numerous and varied laws and regulations in Vermont, New York, and Quebec pertain to the propagation, importation, sale, possession, and release of ANS (see Appendix J). There is a lack of resources to adequately implement many of these authorities. There are also significant gaps in the laws and regulations which could allow the introduction or spread of ANS within the Adirondack Park. Within the Lake George Basin, the Lake George Park Commission mandates that no person shall launch a vessel into or remove a vessel from the waters without inspecting the vessel and its trailer, if any, to ensure the detection of growth, including macrophytes (weeds), or any other hull contamination, and removing and disposing of it so as to ensure that it is not discharged into the waters. Local government can play an important role in ANS prevention and management by integrating relevant language in local zoning, site plan laws, and town and county laws.

Consistency in the laws is important to present a clear message to the public about the importance of ANS spread prevention. For ANS laws to be effective, greater efforts need to be taken throughout the Park to inform both the public and law enforcement officials of them. Attention should be given to encouraging compliance not punishment. Law enforcement officials must be encouraged to enforce the laws, and the public needs to be encouraged to voluntarily comply with the laws to protect the Park's water resources. By evaluating existing and potential regulations, and educating appropriate audiences, state and local government can be encouraged to craft better and more effective laws.

Strategy B1. Enforce Existing Laws Controlling the Transport of ANS and Consider New Legislation and/or Regulations Controlling the Propagation, Sale, Collection, Possession, Importation, Purchase, Cultivation, Distribution, and Introduction of ANS

Issue Statement: A number of NYSDEC's existing Environmental Conservation Laws may support invasive species prevention and mitigation. These laws must be compiled and made aware to the public.

Actions

B1a. Maintain a Current and Comprehensive List of NYS and Local Statutes and Rules/Regulations Pertaining to ANS

Compile, centralize, and maintain existing NYS statutes and rules and regulations.
Lead: NYSDEC
Potential key players: NYSAPA, LGPC, LG, NYSDOT, APIPP

B1b. Inform Public about ANS Regulations

Educate the public about laws pertaining to the propagation, sale, collection, possession, importation, purchase, cultivation, transport, distribution, and introduction

of ANS, the reasoning behind the laws and regulations, and the environmental consequences of not complying with them.
Lead: NYSDEC
Potential key players: DECEOs, APIPP, LG, NYSDOT, NYSDOS, AATV, ARTC, APIPP, SUNY-LCSG, LCBP, LGPC, USFWS, CWICNY, SWCD, lake groups, watershed associations

B1c. Provide Training to Officials about ANS Regulations
Provide training to state and local officials, fish and wildlife conservation officers, and other appropriate law enforcement officials about ANS and laws and regulations pertaining to the propagation, sale, collection, possession, importation, purchase, cultivation, distribution, and introduction of ANS.
Lead: NYSDEC
Potential key players: SUNY-LCSG, USFWS, APIPP, LCBP, LG, NY State Police

B1d. Improve Enforcement of ANS Laws and Regulations
Increase enforcement of laws and regulations controlling the propagation, sale, collection, possession, importation, purchase, cultivation, transport, distribution, and introduction of ANS.
Lead: NYSDEC
Potential key players: NYSDOT, USFWS, LGPC, LG enforcement officials, NY State Police

B1e. Examine Effectiveness of Existing Enforcement Procedures and Policies, eg. Limiting Boat Access; ANS Spread via Sale, Purchase, and Transport
Develop evaluation protocols to determine efficacy of existing procedures and policies.
Lead: NYSDEC
Potential key players: SUNY-LCSG

Strategy B2. Draft New Legislation

Issue Statement:
Legislation is an important component of an effective invasive species program and must reflect current and potential invasive species issues. Reviewing and evaluating current laws, statutes, rules and regulations to determine efficacy, and refining them accordingly, is essential to fulfill the 3 plan goals.

Actions
B2a. Review, Evaluate, and Pursue Changes to ANS Regulations
Review and evaluate existing ANS laws, regulations, and permit review processes throughout the Adirondack Park and other states. Evaluate effectiveness of existing policies and regulatory inhibitors. Pursue changes and coordinate new legislation as appropriate.
Lead: NYSDEC

Potential key players: AC, RCPA, TU, AATV, TNC, LG, LGPC, LGWC, NYSFOLA, USFWS, NYSDEC, NYSDOT, SUNY-LCSG, LCBP, COLAM, CWICNY, lake groups

B2b. Encourage Development of Approved "Green" List of Species for Use as Bait
Review other states green lists and adapt as appropriate.
Lead: NYSDEC
Potential key players: TNC, AC, RCPA, lake groups, LG, State legislature

Objective C. Education and Outreach

Again, although these Objectives are not listed in order of priority, it is generally accepted that the first line of defense for minimizing impacts of ANS is to prevent future introductions and further spread of ANS through a comprehensive education and outreach strategy,

Numerous agencies and organizations throughout the Adirondack Park develop educational materials, distribute information, and/or conduct outreach programs about ANS. Some organizations working in all or portions of the Park include the Adirondack Park Invasive Plant Program, Coalition of Lakes Against Milfoil, Cornell Cooperative Extensions, Lake Champlain Basin Program, Lake George Park Commission, Lake Champlain Sea Grant, Paul Smiths College Watershed Stewardship Program, Soil and Water Conservation Districts, and lake associations such as the Eagle Lake Property Owners Inc., Fulton Chain of Lakes Association, Lake Colby Association, Lake George Association, Lincoln Pond Association, Mt. View-Indian Lake Association, Rainbow Lake Association, Raquette Lake Property Owners Association, Upper Saranac Lake Foundation among many other lake and resident groups.

Both the State and non-governmental organizations developed a number of materials (e.g. web pages, fact sheets, slide presentations, posters, etc.) and programs to promote public awareness about the threat of ANS and spread prevention techniques. The Department of Environmental Conservation posts signs at public boat launches, includes ANS spread prevention guidelines in its Fishing Regulations Guide, developed an aquatic plant identification brochure and a spread prevention brochure, and is a partner in the national "Protect Your Waters" campaign. The Lake George Park Commission, another State agency, coordinates a variety of invasive species programs in the Lake George Basin. They developed three education programs including Zebra Mussel Aware, Invasive Species Prevention Participating Business Program, Invasive Species Prevention Marine Patrol Program as well as having several regulations preventing the launching of infected boats. The Adirondack Park Invasive Plant Program (APIPP), a partnership among the Adirondack Park Agency, Adirondack Nature Conservancy, NYS Dept. of Environmental Conservation, NYS Dept. of Transportation, and the Invasive Plant Council of New York, and numerous local partners, implements regional invasive plant monitoring, management, and education through training programs, inventory protocols, control projects, data management, distribution mapping, community presentations and information dissemination.

Other efforts are championed by non-governmental groups who created their own boat launch signs and adapted educational materials to suit their specific location and situation. Some examples may be found at:
http://research.plattsburgh.edu/LakeChamplainSeaGrantAquatics/ans.htm,
http://www.lcbp.org/nuissum.html, http://www.lakegeorgeassociation.org,
http://www.hamiltoncountyswcd.com/silentinvaders.pdf, http://www.eaglelake1.org, and
http://www.adkinvasives.com.
Additionally, boat wash stations located at boat launch areas is another spread prevention technique. Wash stations can increase public awareness about ANS spread prevention in addition to minimizing the risk of ANS introductions. Stations are currently located at launches on Upper St. Regis, Buck Pond, and Lake George.

Cooperation among partners is strong. More work needs to be done, however, to 1.) identify educational needs; 2.) develop targeted programs (i.e. a series of educational activities or products); and 3.) measure changes in stakeholder behavior as a function of this outreach. Educational materials predominantly focus on invasive plants, and additional attention needs to be given to other ANS. In particular, Park partners need to increase voluntary public compliance with spread prevention techniques and practices, and to raise support for ANS management activities. Increased resources are required to improve outreach programs, such as developing evaluation programs to measure the effectiveness of programs and materials. Additionally, improved coordination, cooperation, and agreement among agencies, organizations, local government, and businesses throughout the Park would increase education program efficiency and effectiveness.

Many excellent ANS education and outreach programs and resources exist throughout North America. Education and outreach efforts within the Adirondack Park have directly benefited from these resources. For example, Eurasian watermilfoil and purple loosestrife watchcards developed by the University of Wisconsin Sea Grant Program have been distributed throughout the Park. Recent funding awards have enabled Lake Champlain Sea Grant (with assistance from LCBP and VTDEC) to provide additional zebra mussel information via publication of a zebra mussel fact sheet
(http://research.plattsburgh.edu/LakeChamplainSeaGrantAquatics/zmlettersize.pdf). Linkages with Great Lakes Sea Grant Programs have resulted in the production of additional watch cards of round goby, Eurasian ruffe and two species of invasive zooplankton. Aquatic invasive plant fact sheets were adapted from Vermont Department of Environmental Conservation and Maine Center for Aquatic Invasive Plants. This type of networking increases program diversity while reducing costs and increasing the consistency of information being presented from one region to another. Coordination with other regional and national ANS education and outreach programs will continue to play an important role in ANS education and outreach efforts in the Adirondack Park.

Strategy C1. Evaluate, Improve and Expand Existing Adirondack Park ANS Education & Outreach Programs

Issue Statement: ANS spread prevention is the key to effectively address ANS issues and impacts. Spread prevention is achieved through aggressive and consistent educational

outreach programs and training that targets multiple audiences. Coordination among the various organizations delivering outreach programs is also necessary to maintain consistency and to increase the likelihood of voluntary compliance with ANS spread prevention measures. Evaluating, improving, and expanding ANS educational outreach programs will lead to increased public support, cooperation, and compliance necessary for reducing ANS impacts in the Park.

Actions

C1a. Plan, Coordinate, Implement, and Evaluate Comprehensive Educational Programs for Multiple Adirondack Park Audiences

Determine goals for behavioral change, refine message to target audiences (eg. lake users, stakeholders, civic organizations, youth camps, businesses, tradeshows, boat dealers, boating magazines, border crossings, general public, teachers, students, interest groups, residents, guests, zoning and planning boards, state and local officials), and identify the appropriate avenues to reach them.
Lead: SUNY-LCSG
Potential key players: APIPP, PSCAWI, LCBP, NYSDEC, IPCNYS, LG, USFWS, LGWC, SWCD, CCE, NYSFOLA, COLAM, CWICNY, AATV, ARTC, ACP, AFPEP, APAVICs, lake groups, watershed groups, universities

C1b. Post and Maintain ANS Advisory Signs

Redesign ANS advisory signs as needed and continue to post them at all boat access areas and other appropriate locations in the Adirondack Park. Signage throughout NYS should be consistent and compliment the message of signs used in neighboring states. Signs may also designate whether lakes are infected or uninfected.
Lead: NYSDEC
Potential key players: APIPP, SUNY-LCSG, LCBP, TU, AATV, SWCD, lake groups, sportsmen's groups, LG

C1c. Develop and Coordinate Regional Watershed Stewardship Program / Courtesy Boat Inspector Program

Support existing efforts to position stewards at boat launches. Adapt protocols developed by the Paul Smiths College Watershed Stewardship Program and other states to recruit, train, and coordinate volunteers to inspect boats at boat launch access sites.
Lead: PSCAWI
Potential key players: APIPP, NYSDEC, NYSFOLA, COLAM, LGWC, LGPC, AATV, LG, lake associations

C1d. Integrate ANS Information into Existing Training and Licensing Programs

Integrate information into existing training and licensing programs. Coordinate the program with other state, regional and national efforts as appropriate.
Lead: NYSDEC
Potential key players: NYSAPA, NYSDOT, USFWS, LG

C1e. Develop a Regional Invasive Species Prevention Participating Business Program

Evaluate LGPC's ISPPBP and adapt as necessary to expand throughout the Adirondack Park.
Lead: APIPP
Potential key players: LGPC, PSC, AATV, LG, businesses, tourism

C1f. Develop and Deliver Adirondack ANS Curriculum
Produce ANS activities, resources, and tool kits and make available to Adirondack teachers and schools. Coordinate with NYS Board of Education.
Lead: ACP
Potential key players: AFPEP, NYSAPAVICs, NYSDEC, APIPP, LCBP, LGA, NYSBOE

C1g. Develop Education Program about ANS Management and Permitting Techniques
Increase awareness among the general public and target audiences about management techniques and associated advantages, disadvantages, costs, and decision matrix.
Lead: SUNY-LCSG
Potential key players: APA, NYSDEC, LG, lake managers, lake groups

C1h. Develop or Acquire New ANS Educational Materials
Using information gathered in Action C1a, develop or acquire new ANS informational literature as necessary, and increase distribution and exposure of the materials to target audiences.
Lead: SUNY-LCSG
Potential key players: APIPP, NYSG, LCBP, NYSDEC, USFWS, NYIPC, LGWC, SWCD, CCE, NYSFOLA, COLAM, LG

C1i. Develop and Utilize Public Service Announcements (PSA's)
Using information gathered in Action C1a, develop or redesign PSA's as needed. Distribute PSA's to media outlets throughout the Park. Purchase air time to increase their exposure.
Lead: SUNY-LCSG
Potential key players: NYSDEC, APIPP, LCBP, USFWS, NYIPC, TU, LGWC, LG

C1j. Develop and Deliver Displays and Presentations
Using information gathered in Action C1a, develop, distribute, or present ANS visual displays and presentations at appropriate venues and events throughout the Adirondack Park. Develop or redesign new materials as needed.
Lead: APIPP
Potential key players: LCBP, SUNY-LCSG, USFWS, NYIPC, AC, TU, RCPA, ARTC, COLAM, CWICNY, SWCD, CCE, LG, paddling/boating clubs

C1k. Encourage Development of Hazard Analysis and Critical Control Point Plans
Support a full-time appointment to encourage and provide training to private and public organizations in developing hazard analysis and critical control point plans to prevent the spread of ANS in their daily business and resource management operations.

Lead: USFWS
Potential key players: SUNY-LCSG, NYSDEC, SWCD, LG

C1l. Develop / Evaluate New and Better Methods of Intercepting ANS at Boat Launches, eg. boat washes, stewards etc.
Using existing studies and regional case studies, assess the efficacy and education value of various ANS intercept strategies.
Lead: PSCAWI
Potential key players: LGPC, NYSDEC, SUNY-LCSG, DFWI, COLAM, lake associations

C1m. Designate an Adirondack Park Invasive Species Awareness Week
Identify guidelines for and select a time period to hold an annual invasive species awareness week.
Lead: NYSAPA
Potential key players: APIPP, NYSDEC, APANSMP Steering Committee

Strategy C2. Increase Opportunities for the Sharing of ANS Information throughout the Adirondack Park and Beyond

Issue Statement: There is a substantial amount of information currently being collected regarding ANS and associated monitoring, management, and education activities within the Adirondack Park. One avenue to share this information is through the Adirondack Park Invasive Plant Program's (APIPP) listserve http://groups.yahoo.com/group/Adirondack_Invasives/ or through the Adirondack Research Consortium listserve adkresearch@cedareden.com. The APIPP also maintains an aquatic invasive plant a database which is linked to its website www.adkinvasives.com and accessible by professionals and the public alike; however there is no established site at which information about other ANS can be stored and readily accessed. Coordinating with existing efforts and building such a repository will facilitate the timely transfer of ANS information between all such entities, help prevent duplication of efforts, and promote a more educated public. A process should also be developed to ensure that information is distributed to all appropriate entities in an expeditious manner. The database should also be coordinated with other state nonindigenous species databases including the Invasive Plant Council of New York State and Sea Grant National Aquatic Nuisance Species Clearinghouse.

Actions
C2a. Develop ANS Database Strategy
Develop strategy for sharing ANS distribution data throughout the Park in coordination with ongoing local, state, and regional ANS database efforts.
Lead: SUNY-LCRI
Potential key players: APIPP, NYSDEC, IPCNYS, PSCAWI, LCBP, SUNY-LCSG, USFWS, USGS, NYSSG, universities, lake groups

C2b. Create and Maintain ANS Database
Create and maintain a central repository for ANS-related information and make these materials readily available to the public and professionals.
Lead: APIPP
Potential key players: SUNY-LCRI, NYSDEC, PSCAWI

C2c. Create and Maintain ANS Website and Listserve
Evaluate and build upon APIPP's existing website and listserve to create clearinghouse of information readily available to the public and professionals.
Lead: APIPP
Potential key players: SUNY-LCRI, NYSDEC, PSCAWI

Objective D. Early Detection and Monitoring

A number of survey and monitoring programs within and adjacent to the Adirondack Park currently acquire information on the occurrence and distribution of ANS populations. Information from these programs is, or could be, used to:

- periodically assess the current level of the ANS problem within the Park;
- conduct risk assessments to determine ANS management priorities;
- evaluate the effectiveness of management efforts;
- identify ANS poised to enter the Park;
- establish management priorities for pathways by which ANS are introduced to, and spread throughout, the Park; and,
- assess restoration needs.

To accomplish these tasks, however, monitoring and survey program data need to be compiled and evaluated to determine if there are species that have not been adequately documented, or regions of the Park that are not sufficiently monitored. Ideally, monitoring protocols would also be standardized to facilitate data exchange and comparability and citizen scientists trained for data collection.

Strategy D1. Identify Pathways and Monitoring Needs

Issue Statement: Because of the magnitude of the Adirondack Park and the tremendous water resources including 12 watersheds, over 11,000 lakes and ponds, and 30,000 miles of rivers and streams, an effective early detection and monitoring program will depend on utilizing citizen scientist volunteers. A successful program will include training, mentorship, coordination, data management and quality control.

Actions
D1a. Compile Existing Information and Identify Pathways and Information Gaps
Continue to identify all existing and potential pathways of ANS introduction to and within the Adirondack Park for new species and those already introduced. Utilize

existing working groups (eg. All Taxa Biological Inventory) and information from Adirondack Park monitoring programs, as well as research conducted in other regions to assist in identifying and examining potential pathways and monitoring needs in coordination with other local, state, and regional ANS panels.
Lead: APIPP
Potential key players: NYSDEC, ATBI, DFWI, NYSDEC, NYSCC, NYSDOT, USCG, USFWS, USGS, NEANS Panel, NYIPC, LCBP, SLELOWMA, LIWMA, IPANE, IPCNYS, universities

D1b. Standardize Monitoring and Mapping Protocols
Identify existing protocols and develop consensus-based standardized protocols. Consider benefit of collecting additional plant/animal community information in addition to ANS information.
Lead: APIPP
Potential key players: NYSDEC, DFWI, LCBP, CU, LGPC, universities

D1c. Evaluate Methods to Field Mark Infestations
Evaluate different method for marking infestations so that they are detectable by volunteers, scientists and avoidable by boaters. Benefits also include avoiding duplication of inventories and spread of infestations.
Lead: NYSDEC
Potential key players: AATV, LG

D1d. Identify, Recruit and Train Citizen Scientists
Identify appropriate citizen groups (or existing working groups-ATBI) to recruit to assist monitoring programs outline in C1a., develop training programs accordingly, and provide associated coordination, data management, and quality control.
Lead: APIPP
Potential key players: ATBI, LG, lake associations, NYSDEC, universities

D1e. Identify and Maintain List of Taxonomists to Assist ANS Identification
Identify names and contact information of experts to assist the identification of ANS and
develop protocols to follow to submit inquiries and specimens.
Lead: APIPP
Potential key players: NYSDEC, ATBI, NYSNHP, LCBP, NEANS, universities

Strategy D2. Monitor ANS, Trends, and Pathways

Issue Statement: While the distribution and extent of several ANS populations, particularly aquatic and wetland plants, in the Park are well-known, the status of many other ANS is largely unknown. Developing a comprehensive understanding of the presence and distribution of all ANS in the Park through early detection surveys and monitoring programs is a prerequisite for formulating effective strategies to prevent new introductions of ANS, to limit the spread of existing ANS, and to abate the negative impacts of

established ones. Filling these ANS distributional information gaps is, therefore, essential to the fulfillment of all three Plan Goals.

Actions

D2a. Early Detection and Monitoring of Invasive Plants

Continue and expand APIPP's citizen training and aquatic invasive plant early detection and monitoring program, for species currently infesting lakes such as Eurasian watermilfoil, Water chestnut, Curlyleaf pondweed, Fanwort, European frog-bit and those plant species not yet reported in the Park. Compile information annually from individual lake monitoring efforts.
Lead: APIPP
Potential key players: NYSDEC CSLAP, DFWI, HCSWCD, PSCAWI, ATBI, LG, watershed groups, lake groups, local governments, sportsmen's groups, lake users

D2b. Early Detection and Monitoring of Invasive Fish

Continue to survey and document the range of nuisance fish species and help detect the occurrence of newly introduced fish species as part of the ongoing fish surveys.
Lead: NYSDEC
Potential key players: PSCAWI, APIPP, USFWS, sportsmen's groups, lake users, ATBI

D2c. Early Detection and Monitoring of Invasive Invertebrates

Continue monitoring lakes, including Lake George, for the presence of veligers and juvenile zebra mussels. Initiate the notation of the occurrences of nonindigenous aquatic species while analyzing zooplankton taken throughout Adirondack waters. Model protocol after Lake Champlain Zooplankton inventories.
Lead: NYSDEC
Potential key players: APIPP, DFWI, LGA, LGPC, lake associations, sportsmen's groups, lake users, PSCAWI, ALSC, ATBI

D2d. Develop and Maintain Current List of ANS in the Park

Compile information from ANS monitoring and survey programs to maintain a list of aquatic nuisance species and their distributions both within the Park and those with the potential to enter it in coordination with other local, state, and regional ANS panels.
Lead: APIPP
Potential key players: SUNY-LCSG, SUNY-LCRI, NYSDEC, USFWS, PSU, USEPA, LCBP, NEANS Panel, IPCNYS, ATBI

D2e. Conduct Distribution Analyses and Monitor High Risk Areas

Study distribution trends related to vectors, environmental conditions (water quality, habitat type), and the likelihood of spread of ANS currently in the Park to uninfected waters in the Park. Use modeling to predict where species are most likely to spread to inform and prioritize monitoring actions D2a-d, prevention, and management activities.
Lead: PSCAWI
Potential key players: APIPP, NYSDEC, universities

D2f. Coordinate Information Exchange with other Monitoring Programs

Stay informed about results of monitoring actions in Adirondack watershed systems including Lake Champlain, St. Lawrence River, Lake Ontario, Hudson River, and Mohawk River, ie. zebra mussel, zooplankton, alewife, lamprey, white crappie, white perch, Chinese Mitten Crab, nuisance plants, and forage fish surveys.
Lead: APIPP
Potential key players: NYSDEC, LCBP, SLELOWMA, ATBI, NYSNHP, universities

Strategy D3: Promote Long-term Monitoring of Management and Restoration Activities.

Issue Statement: Activities occur across our landscape through which valuable information can be attained. Long-term monitoring over a 3-5+ year time scale promotes important data collection. Data can be analyzed to evaluate trends in efficacy and influence adaptive management strategies that can better serve resource managers, citizens, and private groups.

Actions
D3a. Standardize Post-Management / Restoration Monitoring Protocols
Develop guidelines to measure the efficacy of management actions, including assessments of native / invasive plant recovery and fish and wildlife assemblages. These guidelines should be manageable and easily replicated by a variety of user groups whenever possible.
Lead: NYSDEC
Potential key players: NYSAPA, NYSDOT, APIPP, PSCAWI, DFWI, lake managers, lake groups, universities

Objective E. Management

Several species presently in the Park are actively managed to limit their distribution and to minimize their ecological, social and economic impacts. ANS management activities, however, are costly to implement and, in most cases, will not result in complete eradication of an invasive species population. Eurasian watermilfoil, for example, has been actively managed in Lake George since 1987. Because of the costs associated with managing nuisance species, and because of the potential impacts on nontarget species, existing management alternatives, as well as new techniques and approaches, should be evaluated carefully for their effectiveness at producing the desired results as well as for their secondary impacts.

Current ANS management approaches in the Park include physical, mechanical, chemical and biological controls and physical barriers. Often multiple approaches are used together and repeated over time to achieve and maintain desired results. For example, Eurasian watermilfoil has been managed through the use of bottom barriers, suction harvesting, mechanical harvesting, hand-pulling, lake drawdowns, hydroraking, and biological controls. Chemicals have been used to control sea lamprey in tributaries of Lake Champlain. Chemical control has not been used in the Park to control aquatic invasive plants such as Eurasian watermilfoil, however as of 2004,

SONAR A.S. (active ingredient fluridone) had been applied to more than 200 lakes and ponds in New York and numerous others across the country. Many of these approaches are still used on a trial basis for specific sites and require continual evaluation for their effectiveness and practicality. An integrated approach using a variety of techniques is necessary to successfully manage ANS in the long-term, both by halting its spread (through rapid response to discoveries of new infestations), and by providing a method of containing and eliminating those that are already in existence.

The majority of ANS control technologies currently in use within the Adirondack Park are physical. For some infestations, physical controls are cost effective while for others, they: 1) are labor intensive and costly to implement, 2) usually need to be repeated on an annual basis, and 3) may negatively impact native ecosystems. Physical controls may be effective for small populations but may not be effective for larger infestations. Mechanical controls and chemical treatments have been used for a variety of population sizes, however permits for mechanical harvesters and herbicide applications have not been issued in the Park to-date. Larger infestations may require biological control technologies, if properly developed and implemented, can: 1) have a relatively low cost, 2) be effective in the long-term, and 3) minimize impacts to non-target organisms.

Once a nuisance species becomes established, management is complicated and expensive. Management actions may focus on a species (e.g., water chestnut harvesting), on the associated pathways of introduction (e.g. aquarium trade or water gardening), groups of people potentially associated with the species introduction or transport (e.g., boaters, bait dealers), or groups of people negatively impacted by the species (e.g., lakeshore residents, anglers).

To the greatest extent possible, selected management actions should: 1) optimize the use of limited resources; 2) have negligible negative impacts on nontarget species, natural ecological communities, ecological processes, and human activities; and 3) not threaten public health or safety.

In the long-term, preventive measures such as pathway management would likely prove more cost-effective than managing the impacts once ANS are introduced. Electronic barriers and other exclusion device technologies continue to be implemented, evaluated, and refined in various applications around the world. Similarly, boat wash stations can be important facilities to prevent the ANS introductions and spread. These technologies should continue to be studied and evaluated and implemented where appropriate.

New technologies and methods developed and evaluated in Objective G must be incorporated into existing programs to strengthen their efforts and achieve greater levels of success. Likewise lessons learned from management actions need to inform activities in Objective D. Best management practices and control projects need to be integrated into pre-existing and on-going programs supervised by DOT, DEC Unit Management Planning Initiative, town planning, and county water and sewage management plants.

To the greatest extent practicable, evaluations of ANS management activities in other regions should be used to determine the potential usefulness of such activities within the Adirondack

Park. Similarly, evaluations of management activities conducted within the Park should be made readily available to resource managers in other regions to assist with their development of ANS management strategies.

Lastly, all regulated management activities should be designed in collaboration with appropriate agency staff to ensure compliance with processes and procedures, and in turn, regulatory staff should evaluate those processes and procedures to be sure they reflect current needs, and also be available to lend guidance when needed.

As of 2005, there were 49 water bodies reported with aquatic invasive plant infestations (Fig. III.1) and 2 lakes (including Lake Champlain) with alewife. Unfortunately the distribution of ANS is largely unknown, and therefore management actions are limited. Eurasian watermilfoil is the most widespread aquatic invasive plant infecting 44 water bodies, and its management is a priority for many lake groups. Approximately 25 lake groups and municipalities are managing using methods which range from volunteer hand-harvesting efforts to lake-wide integrated management programs (Fig. V.1; Appendix F). Several lake managers, academic institutions, and dive teams lend guidance and assist demonstration projects for ANS control.

Strategy E1. Prioritize and Select Target Management Goals

Issue Statement: New approaches to managing ANS and pathways in the Park need to be developed and researched. Meanwhile, new introductions of ANS populations into and throughout the Park occur regularly. Prioritizing nuisance species for management and prioritizing management options for a given species are necessary to expend resources in the most efficient manner possible.

A consistent approach to prioritizing species and determining management options needs to be developed and implemented on a regular basis by a team of resource managers throughout the Park. This approach should be informed by watershed form and function, and should be communicated to interest groups and local government. When necessary, full or modified risk assessments should be conducted on select ANS to determine the extent of the impacts caused or potentially caused by each species or specific populations of a species. Factors to consider when conducting the assessments include: the species' colonization potential, ecological impacts, socioeconomic impacts, management costs, and likelihood of successful control.

A prioritization method should also consider all potential pathways of introduction of ANS identified in Action D2d to determine which pathways pose the greatest risk of introduction of new ANS to the Adirondack Park or spread of existing ANS throughout the Adirondack Park. In some cases, targeting one or more pathways of introduction associated with the ANS may be the most efficient method for preventing the spread of an ANS. Targeting pathways may also have the added benefit of reducing the introduction or spread of multiple ANS.

Actions

E1a. Coordinate the Development of Risk Assessment and Prioritization Framework

Coordinate with regional and national efforts to develop risk assessment and prioritization model. Compile and assess existing protocols to develop a decision-making framework to assess ANS and prioritize infestations and pathways for management actions considering habitats and species at high risk, those with high social or ecological value, risk to non-target species, and likelihood of successful control.

Lead: APIPP

Potential key players: NYSDEC, LCBP, PSCAWI, USFWS, universities

E1b. Apply Prioritization Framework

Conduct comprehensive risk assessments on species and pathways. Create a list of priority management actions and demonstration projects. Periodically update prioritized list.

Lead: APIPP

Potential key players: NYSDEC, PSCAWI, USFWS, universities

Strategy E2. Streamline Regulatory Procedures

Issue Statement: Since control technologies are ever-changing, agencies should periodically review and update their regulatory procedures to ensure appropriate and effective policies and permit applications and to facilitate the efficient application of best management practices. Successful management requires timely movement through the permitting process, and agencies should make guidance and information readily available.

Actions

E2a. Review and Update Existing Regulatory Programs and Permitting Processes

Assess regulatory process related to ANS to identify redundancies or inadequacies and make necessary changes.

Lead: NYSDEC, NYSAPA

Potential key players: AATV, COLAM, lake associations, county, town, and village governments

E2b. Centralize Guidance Documents for Permitting Processes

Develop a repository online about frequently asked questions about ANS and ANS management and associated forms such as jurisdictional inquiry forms and ANS control applications.

Lead: NYSDEC, NYSAPA

Potential key players: APIPP, SUNY-LCSG

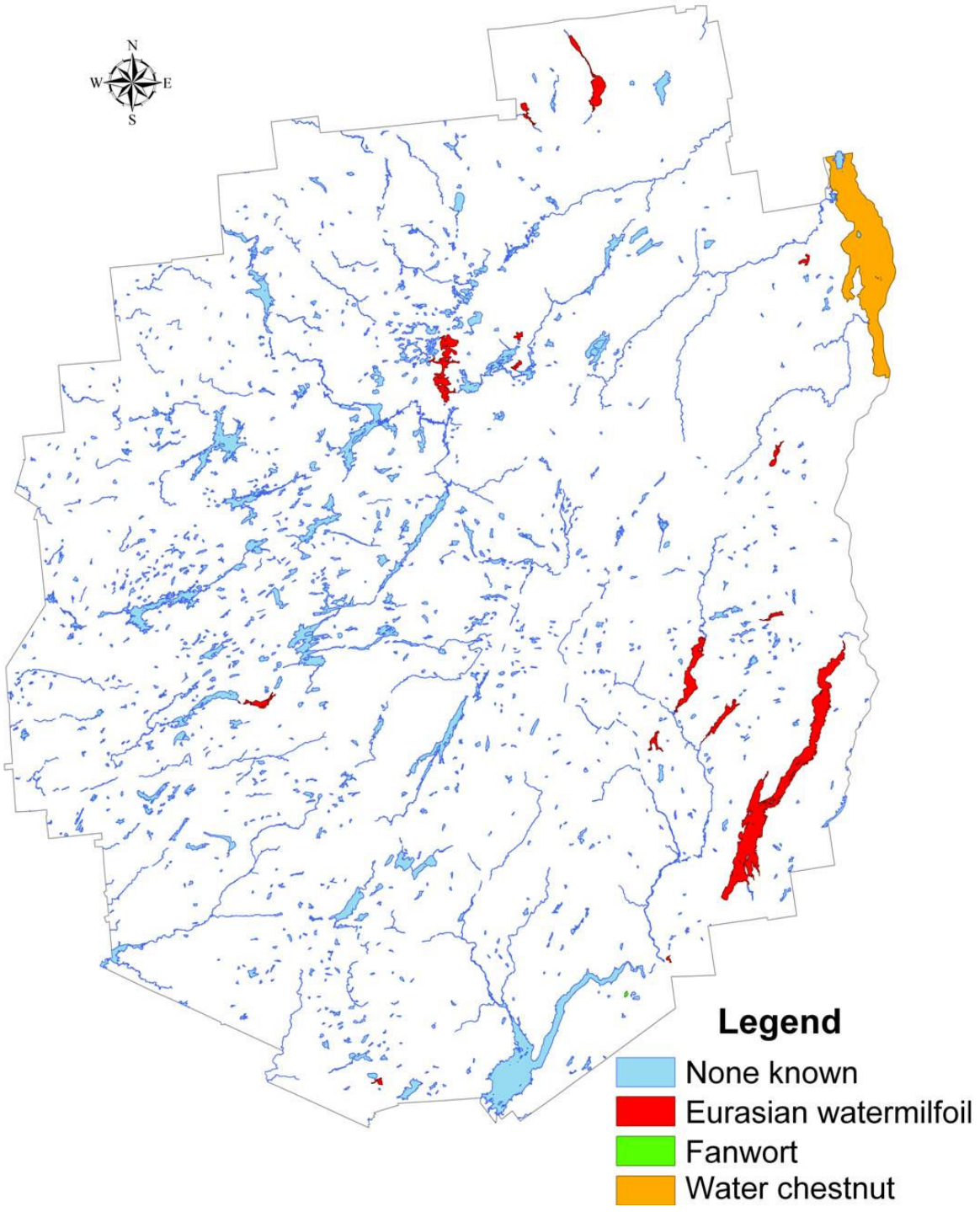

Figure V.1. Locations of ANS management efforts in 2005. Based on survey data in Appendix F.

Strategy E3. Develop and Implement Rapid Response Protocol for Addressing New Populations of Existing Species and New Species of ANS in the Adirondack Park

Issue Statement: Once ANS populations become established, eradication is nearly impossible and ongoing management is costly and complicated. New infestations must be detected early and acted upon swiftly to minimize economic, social, and ecological impacts, as well as to allow for the possibility of eradication. This requires coordination among multiple agencies and organizations, advance planning to balance rapid response deadlines with regulatory timetables, and available resources and personnel. Formulating a rapid response protocol and designating a rapid response network to take action once a new population of an existing species is reported, or a new species entirely, will help to minimize future impacts of ANS populations in the Park.

When planning for rapid response, special consideration must be given to identifying regulatory requirements that can be completed either generically or in advance to expedite rapid response capabilities, and to identifying rapid response techniques that require minimal regulatory oversight (or those than can be truly expedited or addressed in advance). Consideration must also be given to identifying (and subsequently minimizing) causes of bottleneck – regulatory structure, funding, capacity etc. – in implementing a rapid response action.

Actions

E3a. Develop Rapid Response Protocol

In coordination with state, regional, and national rapid response plan development, and using the Lake Champlain Rapid Response Protocol as a model, develop an Adirondack Park Rapid Response Protocol for addressing new species introductions of ANS populations. Identify roles and responsibilities for leadership, training, and coordination associated with the network, to include outlining a regulatory structure of a rapid response framework. Investigate the hiring of support staff to develop protocol and pursue funding sources.

Lead: APIPP

Potential key players: NYSDEC, NYSAPA, LCBP, LG, USFWS, SUNY-LCSG, TNC, COLAM, AATV, LGWC, DFWI, PSCAWI, lake managers, lake groups, universities

E3b. Develop Rapid Response Network

Form and utilize ANS Rapid Response Network to detect new ANS populations and to implement emergency control activities to eliminate a new population of an existing species to prevent populations from reaching nuisance levels, or a new species entirely.

Lead: APIPP

Potential key players: NYSDEC, USFWS, NYSAPA, LCBP, LG, SUNY-LCSG, TNC, LGWC, lake groups, watershed groups, universities

E3c. Train Citizens to Hand-harvest Aquatic Invasive Plants

Adapt training programs developed in other states to train citizens to hand-harvest aquatic invasive plant infestations. Provide associated coordination, supervision, and monitoring.
Lead: APIPP
Potential key players: NYSDEC, LGPC, LG, DFWI, PSCAWI, lake managers, APA

Strategy E4. Continue or Accelerate Existing ANS Control and Other Management Programs

Issue Statement: Currently, the primary ANS control programs being implemented in the Park address nuisance populations of Eurasian watermilfoil, water chestnut, purple loosestrife and sea lamprey. These control programs seek to reduce both short and long-term economic, social, and ecological impacts of nuisance species by reducing their populations and by minimizing their potential spread to uninfested waters and wetlands. Every control program, however, should also consider restoring the ecological integrity of a habitat to ensure the long-term success of the program.

Control programs require consistent funding and personnel to maintain their current levels of success. Existing programs may be eligible as competitive recipients of grant funding as demonstration projects for the development of management guidelines. Successful programs will also include a diverse collaboration of state and local governments, lake associations, and interest groups. In addition, new technologies and methods developed and evaluated in Strategy G must be incorporated into existing programs to strengthen their efforts and achieve greater levels of success. Private, public, and state-owned waters should be considered for management projects. Implementing, strengthening, and developing management programs for ANS populations and pathways are necessary to fulfill all three Plan goals.

Actions

E4a. Aquatic Nuisance Plant Management
Using information gathered in Strategy G2, implement and expand aquatic plant management programs in the Park in order to maintain the plant populations at, or below, nuisance levels and to prevent further spread. Private, public, and state-owned waters should be considered.
Lead: PSCAWI
Potential key players: APIPP, LGPC, DFWI, FCLA, NYSDEC, USFWS, lake groups, LG, independent contractors, SWCDs, VTANR, NYCC, NYSDEC, TNC, state and local governments

E4b. Semi-Aquatic Nuisance Plant Management
Continue to implement APIPP's wetland invaders monitoring and control program, ie. purple loosestrife, phragmites, yellow iris, Japanese knotweed, etc. Using information gathered in Strategy G2 to modify program as appropriate.
Lead: APIPP
Potential key players: lake groups, landowners, state and local governments

E4c. Statewide Purple Loosestrife Biocontrol Program
Continue to implement the purple loosestrife biological control and monitoring program at six Adirondacks sites in Wadhams, Elizabethtown, Peru, Saranac River, Willsboro, and Westport.
Lead: NYSDEC
Potential key players: SUNY Plattsburgh, BRASS, CCEEC, Master Gardeners, APIPP, state and local governments

E4d. Aquatic Nuisance Animal Management
Remove zebra mussels at high-risk Southern Lake George sites. Control priority populations of organisms resulting from Actions D2b and D2c.
Lead: DFWI, NYSDEC
Potential key players: BB, local volunteers**,** state and local governments

E4e. Develop and Maintain Current List and Assessment of Management Actions
Compile list of management actions including criteria such as locations, strategy, successes/challenges, funding, year initiated, active/inactive, and contacts, etc.
Lead: APIPP
Potential key players: PSCAWI, NYSFOLA, DFWI, LG, lake managers, lake associations

E4f. Develop Best Management Practices (BMPs)
Compile existing BMPs to manage ANS and develop guidelines with broad watershed applicability for use by community members, state and local officials, and highway departments.
Lead: PSCAWI
Potential key players: USFWS, NYSAPA, NYSDEC, NYSDOT, APIPP, LCBP, NYSG, DFWI, lake managers, lake groups, universities, highway departments

E4g. Weed and Watershed Management Improvement Districts
Assess the utility of forming weed and/or watershed management improvement districts to help fund local management actions.
Lead: AATV
Potential key players: lake associations, lake managers, LG

E4h. Develop a Template for Lake-wide Aquatic Invasive Plant Management Plan
Refine and utilize DEC's draft template "A Primer on Aquatic Plant Management in New York State" to provide guidance on how to prepare a lakewide aquatic invasive plant management plan.
Lead: NYSDEC
Potential key players: NYSAPA, NYSFOLA, COLAM, SUNY-LCSG, APIPP, DFWI, lake managers, lake associations, AATV, LG

E4i. Develop Containment Strategies for ANS

Consider containment strategies for each ANS during rapid response and management programs, eg. booms, barriers, restrictions, quarantines.
Lead: PSCAWI
Potential key players: NYSDEC, SUNY-LCSG, academic institutions, LG, lake groups, lake managers

E4j. Inform and Direct Research Activities, eg. Technology Transfer
Use information from Strategy E4 to inform and direct research activities in Strategy G1.
Lead: PSCAWI
Potential key players: SUNY-LCSG, NYSDEC, USFWS, APIPP, universities, lake groups, LG

Objective F. Restoration

A comprehensive approach to ANS management includes strategies not only for education, prevention, early detection, rapid response, and management, but also for restoration. This Plan emphasizes restoration that will accelerate recovery of native plant and animal communities and ensure long-term improvements in productivity, stability, and biodiversity. Restoring native communities requires the identification and prioritization of ecosystems at risk of further degradation, an assessment of their restoration potential, and selection of specific treatments needed for restoring the ecosystem. Without proper restoration, the same or new ANS can re-infest areas.

Current efforts to restore damaged aquatic ecosystems are limited. Restoring degraded areas to their proper ecological function to prevent ANS infestations or to prevent reoccurrence after ANS removal is important to fulfill all three Plan goals.

Strategy F1. Implement Restoration of Impacted Aquatic Ecosystems and/or Associated Upland Settings.

Issue Statement: Because each invasion is unique, specific restoration programs need to be designed at the appropriate level. The application of appropriate restoration concepts to ANS problems is a critical component of a fully functional ANS program. Each management action should consider including a restoration component. Restoration could include different levels of efforts that range from elimination of the problem species to replanting / restocking with native competitors to modifications to grade and substrate.

Actions
F1a. Assess and Prioritize Invaded Communities
Evaluate results from Strategy E1 and identify where and under what circumstances restoration activities should go beyond removal of the problem species, ie. native species should be restored, and how restoration will be maintained (eg. monitoring).
Lead: Principal Investigator TBD
Potential key players: USFWS, NYSDEC, NYSNHP, NYSAPA

F1b. Restore Degraded Aquatic Systems
Use information gathered in Strategy G6 and USFWS, NRCS, and other agency cost-sharing programs to control and eradicate infestations of invasive species and restore ecological form and function.
Lead: Principal Investigator TBD
Potential key players: PSU, SUNY, CU, PSCAWI, USFWS, TNC, universities

F1c. Restore Associated Upland Settings
Use information gathered in Strategy G6 and USFWS, NRCS, and other agency cost-sharing programs to control and eradicate infestations of invasive species and restore ecological form and function.
Lead: Principal Investigator TBD
Potential key players: PSU, SUNY, CU, PSCAWI, USFWS, TNC, universities

Objective G. Research

Research needs are compiled in this Objective, but it is important to recognize that research activities are inextricably linked to each objective and necessary to refine existing prevention and control practices to effectively fulfill the Plan's goals. Each objective should be informed by and adapted to information gained by actions listed in this Objective.

Research efforts are underway that examine the ecological role of ANS within habitats they invade, the impacts on associated flora and fauna, and the effectiveness of management practices. Some of the current projects include evaluating the adaptability of zebra mussels in Lake George, assessing the impact and management of Eurasian watermilfoil in Upper Saranac Lake, studying the occurrence and impact of alewife in Lake Champlain, and monitoring the effectiveness of biological control of Eurasian watermilfoil in Lincoln Pond.

Compiling monitoring data collected throughout the Park could be used in new ways to further our understanding of the ecological role and impacts of current ANS populations on ecosystems and human activities. Research programs could then be modified or developed and literature searches conducted to target identified information gaps and current information needs.

Strategy G1. Conduct Knowledge Assessment of ANS in the Park.

Issue Statement: Numerous groups have conducted research projects in the Adirondack Park, NYS, and nationwide. To determine the knowledge base and appropriateness to the Park, an information and needs assessment must be implemented to direct further action.

Actions

G1a. Conduct Literature Search on Existing Impacts and Associated Research Projects for Current Invaders, eg. Eurasian Watermilfoil, Zebra Mussels, Alewife etc.
Compile information from existing monitoring and research programs, including local and regional efforts such as the Adirondack Lakes Survey Corporation, to determine the ecological role of ANS, how invasion changes the ecology of the system, and applicability to the Adirondack Park
Lead: universities, Principal investigator TBD
Potential key players: ALSC, ARC, NYSDEC, USFWS, SUNY-LCSG, universities

G1b. Identify Information Gaps from Research and Regulatory Perspectives
Identify gaps and direct research accordingly.
Lead: universities, Principal investigator TBD
Potential key players: NYSDEC, NYSAPA, LGPC, ACOE, other regulatory agencies

G1c. Document Anecdotal Information about ANS (eg. movement of milfoil beds, associated plant communities, native plant succession)
Document anecdotal information (eg. movement of milfoil beds, associated plant communities, native plant succession)
Lead: universities, Principal investigator TBD
Potential key players: NYSDEC, PSCAWI, DFWI, LGPC, NYSNHP, lake associations, lake managers, universities

G1d. Conduct Literature Searches on Role of Potential Invaders
Conduct a comprehensive literature search for priority species (identified in Objective D) that are suspected to have the potential for entering the Adirondack Park to determine to what extent and in what ways they would impact the Park ecosystems if introduced.
Lead: universities, Principal investigator TBD
Potential key players: PSU, USFWS, SUNY-LCSG, LCBP, universities

Strategy G2. Study the Ecological Role of Aquatic Nuisance Species

Issue Statement: Developing an understanding of how each nonindigenous aquatic species interacts with the ecosystem it invades and identifying factors contributing to its success are essential for assessing the impacts a species has, or may have, on both the ecosystem and the people who use the ecosystem. It is also critical to the development of effective management techniques and is a necessary piece for risk assessments to determine which species merit management.

While there are numerous programs within the Adirondack Park that currently provide information that could be used to study the ecological role of ANS within the Park, much of the information is not specifically used for this purpose. This information should be compiled and used to develop an understanding of the ecological role ANS play within the Adirondack Park. As necessary, additional parameters should be added to existing monitoring programs or new programs should be developed. A comprehensive literature

search should be conducted for species that are believed to have the potential for entering the Adirondack Park to ascertain to what extent they would impact the Park ecosystems if introduced.

Actions

G2a. Determine Lake Susceptibility to ANS Invasion and Associated ANS Establishment and Expansion

Determine what environmental or anthropogenic conditions make lakes more susceptible to invasion (including lake management techniques and watershed activities eg. winter drawdown, state boat launches, public access sites, beaches, parks, erosion, drainage, salt etc), and how those conditions can be changed.
Lead: Principal investigator TBD
Potential key players: NYSDOT, universities

G2b. Research Biology and Impact of ANS, eg. Eurasian Watermilfoil

Conduct experiments on the expansion of specific milfoil beds; to better understand the impact of milfoil on native plant species and fish and wildlife assemblages; and to evaluate nutrient pumping by milfoil and where nutrients are limiting.
Lead: SUNY-LCRI
Potential key players: DFWI, PSCAWI, CU, lake managers, universities

G2c. Research Adaptability of Plants to Low Nutrient Lakes

Research adaptability of plants to low nutrient lakes.
Lead: Principal investigator TBD
Potential key players: universities

G2d. Research Zebra Mussel Adaptability

Conduct experiments to better understand zebra mussel adaptability to changing environmental conditions (e.g. calcium, pH, phytoplankton, etc.)
Lead: SUNY-LCRI
Potential key players: SKIO, DFWI, universities

G2e. Research Impact of Watched Species and Cryptogenic Species

Evaluate which conditions are favorable for invasion by species native to the U.S. but with potential to be regionally invasive and their associated impacts, eg. *Myriophyllum heterophyllum* and *Najas guadalupensis*.
Lead: universities, Principal investigator TBD
Potential key players: DFWI, PSCAWI, CU, NYSNHP, universities, lake managers

G2f. Evaluate, Modify and Add New Programs Examining Ecological Roles of ANS

Evaluate existing programs, recommend modifications to existing programs, and/or recommend new programs and/or research to obtain additional necessary information for determining the ecological role of ANS.
Lead: SUNY-LCRI

Potential key players: PSCAWI, DFWI, LCBP, ARC, NYSDEC, APIPP, USFWS, universities

Strategy G3. Research ANS Management Techniques

Issue Statement: It is essential that resources are used for management activities that will produce the greatest net positive results. The potential costs, impacts, and effectiveness of available management techniques for each species or pathway should be examined. At the same time, new approaches should be identified and evaluated for applicability in the Park.

Actions

G3a. Research and Evaluate Physical, Mechanical, Chemical and Biological Controls for Aquatic Nuisance Plants

Continue to evaluate the effectiveness, efficiency, and impacts of past and ongoing ANS physical control activities within the New York State, including the use of bottom barriers, hand-pulling, and lake drawdowns etc.; mechanical controls, including the use of suction harvesting, mechanical harvesting, and hydroraking etc.; chemical controls; and biological controls. There is a need for replicated field experiments to evaluate effectiveness and sites should be of varying geo-physical conditions.
Lead: universities, Principal investigator TBD
Potential key players: NYSDEC, USFWS, ARC, TNC, USDA, NYSAPA, COLAM, NYSFOLA, TU, CU, CCEEC, SUNY, USACE, USFWS, lake managers, lake groups, universities, ACOE, NYSAPMA, LGPC, LG

G3b. Research and Evaluate Physical, Mechanical, Chemical and Biological Controls for Aquatic Nuisance Animals

Conduct research to develop controls and evaluate impacts of alewife in Green Pond; zebra mussels in Lake George, and other fish and invertebrates as needed.
Lead: universities, Principal investigator TBD
Potential key players: NYSDEC, DFWI, LCBP

Strategy G4. Assess the Economic Impact of ANS on the Adirondack Park

Issue Statement: Tourism and water-based recreation are primary economic drivers in the Adirondack Park. Although the devastating economic impact of ANS is often referred to as a reason to prevent new introductions and manage existing infestations, little information is known about the current and potential impact of ANS to the Adirondack economy. Assessing the economic impact of ANS on the Adirondack Park would inform agencies and the public of the cost-benefit of ANS prevention and build the case for fulfilling the three Plan goals.

Action

G4a. Conduct Economic Impact Analysis

Compile figures for dollars spent annually on integrated ANS management in the Adirondacks. Compile figures for dollars generated annually by tourism and water-

based recreation. Evaluate the total economic impact of ANS on municipalities, tourism, businesses, residents, property value etc.
Lead: universities, Principal investigator TBD
Potential key players: ARTC, CAST, ASC, AATV, LG

Strategy G5. Provide Informational Support to Management Programs

Issue Statement: Restoration is a complex effort that requires an understanding of the structure and functions of the natural system, recognition of the human induced disturbances preventing recovery to a sustainable condition, and effective implementation of a broad range of actions designed to enable systems to recover as much of their natural functions as possible. Important considerations in this process include watershed and sub-watershed level assessment, identification of reference sites, developing clear and achievable goals, eliminating or remediating indirect impacts, establishing pre- and post-project monitoring, and minimizing the need for ongoing site maintenance.

Actions

G5a. Conduct Literature Searches on Restoration Ecology
Compile, highlight, and share information about existing restoration successes and challenges in the state, region, and country.
Lead: universities, Principal investigator TBD
Potential key players: PSU, SUNY, CU, PSCAWI, USFWS, TNC, universities

G5b. Conduct Research on Restoration Ecology
Support research projects that will increase information and knowledge base about native species, role of intact ecosystems, restoration ecology, disturbance ecology and ANS that are impacting the Park.
Lead: universities, Principal investigator TBD
Potential key players: BRI, ARC, NYNHP, universities

G5c. Develop Guidance Documents for Resource Managers
Take actions when and where possible during project implementation to protect intact ecosystems and restore degraded ones, eg. the Lake Algonquin dredging project.
Lead: universities, Principal investigator TBD
Potential key players: USEPA, NYSDEC, ACOE, NYSAPA

Abbreviations

AATV	Association of Adirondack Towns and Villages
AC	Adirondack Council
ACP	Adirondack Curriculum Project
AFPEP	Adirondack Forest Preserve Education Program
ALSC	Adirondack Lake Survey Corporation
APANSMPSC	Adirondack Park Aquatic Nuisance Species Management Plan Steering Committee
APIPP	Adirondack Park Invasive Plant Program
ARC	Adirondack Research Consortium
ARTC	Adirondack Regional Tourism Council
ASRA	AuSable River Association
ASC	Adirondack Sustainable Communities
ATBI	All Taxa Biological Inventory
BB	Bateau Below, Inc.
BRASS	Boquet River Association
BRI	Biodiversity Research Institute
CAST	Center for the Advancement of Sustainable Tourism
CCEEC	Cornell Cooperative Extension Essex County
COLAM	Coalition of Lakes Against Milfoil
CU	Cornell University
CWICNY	Champlain Watershed Improvement Coalition of New York
DECEOs	DEC Enforcement Officers
DFWI	Darrin Fresh Water Institute - Rensselaer Polytechnic Institute
ELPOA	Eagle Lake Property Owners' Association, Inc.
FCLA	Fulton Chain of Lakes Association
FLG	Fund for Lake George
FSU	Florida State University
HCSWCD	Hamilton County Soil and Water Conservation District
IPANE	Invasive Plant Atlas of New England
IPCNYS	Invasive Plant Council of NYS
LCBP	Lake Champlain Basin Program
LCFWC	Lake Champlain Fish and Wildlife Cooperative
LCRA	Lake Champlain Research Consortium
SUNY-LCSG	Lake Champlain Sea Grant at SUNY Plattsburgh
LG	Local Government
LGA	Lake George Association
LGPC	Lake George Park Commission
LGWC	Lake George Watershed Conference
LIWMA	Long Island Weed Management Area
NEANS Panel	Northeast Aquatic Nuisance Species Panel
NYSCC	New York State Canal Corporation
NYSG	New York Sea Grant
NYSAPMA	New York State Aquatic Plant Managers Association
NYSAPA	New York State Adirondack Park Agency

NYSAPAVICs	New York State Adirondack Park Agency Visitor Interpretive Centers\
NYSBOE	New York State Board of Education
NYSDEC	New York State Department of Environmental Conservation
NYSDEC DFW	New York State Department of Environmental Conservation Division of Fish and Wildlife
NYSDOT	New York State Department of Transportation
NYSFOLA	New York State Federation of Lake Associations
NYSISTF	New York State Invasive Species Task Force
NYSNHP	New York State Natural Heritage Program
PSC	Paul Smith's College
PSCAWI	Paul Smith's College Adirondack Watershed Institute
RCPA	Residents' Committee to Protect the Adirondacks
SKIO	Skidaway Institute of Oceanography
SLELOWMA	St. Lawrence Eastern Lake Ontario Weed Management Area
SUNY	State University of New York
SWCD	Soil and Water Conservation Districts
TNC	The Nature Conservancy
TU	Trout Unlimited
USACE	United States Army Corp of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USLF	Upper Saranac Lake Foundation
UVM	University of Vermont
VTANR	Vermont Agency of Natural Resources
VTDFW	Vermont Department of Fish and Wildlife
ZMTF	Zebra Mussel Task Force (Lake George)

Other groups that may serve as potential key players:

AFSC	Adirondack Federation of Sports Clubs
ALA	Adirondack Landowners Association
ALC	Adirondack League Club
WCS	Wildlife Conservation Society

VI. Implementation Table[1]

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective A. Coordination							
A1a.	Park-wide ANS Coordinator	Needed	APANSMP Steering Committee		$100,000 *(1 FTE)*	$104,000	$108,160
A1b.	Additional North Country ANS Staff	Ongoing	APIPP	SUNY-LCSG, PSCAWI	$100,000 *(1 FTE)*	$104,000	$108,160
A1c.	ANS Advisory Committee[6]	Needed	APANSMP Steering Committee		-	-	-
A1d.	Coordination with NYS ANS Plan	Needed	APANSMP Steering Committee		-	-	-
A1e.	Coordination with NYS Invasive Species Task Force	Needed	APANSMP Steering Committee		-	-	-
A1f.	Northeast Coordination	Ongoing	APANSMP Steering Committee		-	-	-
Subtotal					***$200,000***	***$208,000***	***$216,320***
Objective B. Enforcement and Legislation							
B1a.	Maintain a Current List of NYS Statutes and Rules/Regulations	Ongoing	DEC	APIPP	$5,000 *(0.05 FTE)*	$5,200	$5,408
B1b.	Inform Public about ANS Regulations	Needed	DEC	APIPP, PSCAWI, SUNY-LCSG	$25,000 *(0.25 FTE)*	$24,440	$25,418
B1c.	Provide Training to Officials about ANS Regulations	Needed	DEC	SUNY-LCSG	$25,000 *(0.25 FTE)*	$24,440	$25,418

[1] Funding estimates are approximate.
[2] Actions are neither listed, nor ranked, in priority order. Priority status will be determined by local groups based on the existing efforts and needs.
[3] This column indicates the FY06 (current) status of an action. A designation of "Ongoing" means that the action is being implemented in some capacity; however this is often at low levels. The costs of ongoing actions are not quantified at this time.
[4] Lead organization has responsibility for implementation and coordination of the given task. Funds may go to lead, supporting organizations and other potential key players for coordinated and targeted work.
[5] Costs are based on Full Time Equivalent (FTE) including salary, fringe, travel, supplies, and equipment estimated at $100,000 and 4% annual increase.
[6] Funding for actions A1c-f provided under action A1a.

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective B. (continued)							
B1d.	Improve Enforcement of ANS Laws and Regulations	Needed	DEC	NYSP, Constables	$10,000 *(0.10 FTE)*	$10,400	$10,816
B1e.	Examine Effectiveness of Existing DEC Enforcement Procedures and Policies	As Needed	DEC	Several other partners	$10,000 *(0.10 FTE)*	-	-
B2a.	Review, Evaluate, and Pursue Changes to ANS Regulations	Needed	DEC	Several other partners	$15,000 *(0.15 FTE)*	$24,440	$25,418
B2b.	Develop Approved "Green" List of Bait Species	Needed	DEC	Several other partners, NYS Legislature	$10,000 *(0.10 FTE)*	$10,400	-
Subtotal					***$100,000***	***$99,320***	***$92,478***
Objective C. Education and Outreach							
C1a	Plan, Coordinate, Implement, Evaluate Comprehensive Educational Programs for Multiple Adirondack Park Audiences	Ongoing	APIPP	SUNY-LCSG, PSCAWI	$100,000 *(1 FTE)*	$104,000	$108,160
C1b.	Post and Maintain ANS Advisory Signs[7]	Ongoing	DEC	Several other partners	$100,000 *(1 FTE)*	$104,000	$90,080 *(0.80 FTE)*
C1c.	Develop and Coordinate Regional Watershed Stewardship Program / Courtesy Boat Inspector Program	Ongoing	PSCAWI	APIPP	$100,000 *(1 FTE)*	$104,000	$108,160
C1d.	Integrate ANS Information into Existing Training and Licensing Programs	Needed	DEC	APA, several other partners	$10,000 *(0.10 FTE)*	$10,400	$10,816
C1e.	Develop a Regional Invasive Species Prevention Participating Business Program	Ongoing	LGPC	APIPP	$5,000 *(0.05 FTE)*	$100,000 *(1 FTE)*	$104,000
C1f.	Develop and Deliver Adirondack ANS K-12 Curriculum	Needed	ACP		$100,000 *(1 FTE)*	$104,000	$10,816 *(0.10 FTE)*
C1g.	Develop Education Program and Management and Permitting Techniques	Needed	SUNY-LCSG	Several other partners	$25,000 *(0.25 FTE)*	$24,440	$25,418

[7] Costs associated with printing and posting of signs.

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective C. (continued)							
C1h.	Develop New ANS Educational Materials (other than K-12)	As Needed	SUNY-LCSG		$25,000 *(0.25 FTE)*	$24,440	$25,418
C1i.	Develop and Utilize PSA's	As Needed	SUNY-LCSG	Several other partners	$25,000 *(0.25 FTE)*	$24,440	$25,418
C1j.	Develop and Deliver Displays and Presentations	Ongoing	SUNY-LCSG	Several other partners	$25,000 *(0.25 FTE)*	$24,440	$25,418
C1k.	Encourage Development of Hazard Analysis and Critical Control Point Plans	Needed	USFWS	SUNY-LCSG	$25,000 *(0.25 FTE)*	$24,440	$25,418
C1l.	Develop and Evaluate Better Methods of Intercepting ANS at Boat Launches	Needed	PSCAWI	DFWI, SUNY-LCSG	$25,000 *(0.25 FTE)*	$24,440	$25,418
C1m.	Designate an Adirondack Park Invasive Species Awareness Week	Needed	APA	DEC	-	-	-
C2a.	Develop ANS Database Strategy	Needed	SUNY-LCRI	APIPP, PSCAWI, DFWI	$25,000 *(0.25 FTE)*	-	-
C2b.	Create and Maintain ANS Database	Ongoing	APIPP	SUNY-LCRI	-	$5,200 (0.05 FTE)	$5,408
C2c.	Create and Maintain ANS Website and Listserve	Ongoing	APIPP	PSCAWI	$5,000 (0.05 FTE)	$5,200	$5,408
Subtotal					***$595,000***	***$683,440***	***$710,778***
Objective D. Early Detection and Monitoring							
D1a.	Compile Existing Information and Identify Pathways and Information Gaps[8]	Needed	APIPP	DEC	-	-	-
D1b.	Standardize Monitoring and Mapping Protocols	Ongoing	APIPP	PSCAWI, DFWI	-	-	-
D1c.	Evaluate Methods to Field Mark Infestations	Needed	DEC		$10,000 (0.10 FTE)	$10,400	$10,816
D1d.	Identify, Recruit, and Train Citizen Scientists	Ongoing	APIPP	PSCAWI, DFWI	-	-	-

[8] Funding for actions D1a, D1b, D1d, D1e, D2d, D2e, and D2f provided under actions D2a-c.

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	Short Description		Lead	Supporting	FY06	FY07	FY08
Objective D. (continued)							
D1e.	Identify and maintain list of taxonomists to assist ANS identification	Needed	APIPP				
D2a.	Early Detection and Monitoring of Invasive Plants	Ongoing	APIPP	PSCAWI, DFWI	$100,000 (1 FTE)	$104,000	$108,160
D2b.	Early Detection and Monitoring of Invasive Fish	Ongoing	APIPP	PSCAWI, DFWI	$100,000 (1 FTE)	$104,000	$108,160
D2c.	Early Detection and Monitoring of Invasive Invertebrates	Needed	APIPP	PSCAWI, DFWI	$100,000 (1 FTE)	$104,000	$108,160
D2d.	Develop and Maintain Current List of ANS in the Park	Needed	APIPP		-	-	-
D2e.	Conduct Distribution Analyses and Monitor High Risk Areas	Needed	PSCAWI	APIPP, DFWI	-	-	-
D2f.	Coordinate Information Exchange with other Monitoring Programs	Ongoing	APIPP		-	-	-
D3a.	Standardize Long-Term Monitoring Protocols for Management and Restoration Programs	Needed	DEC		$10,000 *(0.10 FTE)*	$10,400	$10,816
Subtotal					***$320,000***	***$332,800***	***$346,112***
Objective E. Management							
E1a.	Coordinate the Development of Risk Assessment and Prioritization Framework	Needed	APIPP		$25,000 *(0.25 FTE)*	-	-
E1b.	Apply Prioritization Framework	Needed	APIPP		-	$26,000 *(0.25 FTE)*	$27,040
E2a.	Review and Update Existing Regulatory Programs and Permitting Processes	Ongoing	DEC	APA	$10,000 *(0.10 FTE)*	$10,400	$10,816
E2b.	Centralize Guidance Documents for Permitting Processes	Needed	DEC	APA	$5,000 *(0.05 FTE)*	$5,200	$5,408
E3a.	Develop Rapid Response Protocol	Ongoing	APIPP	Several other partners	$25,000 *(0.25 FTE)*	$26,000	-
E3b.	Develop Rapid Response Network	Needed	APIPP	Several other partners	-	-	$27,040 *(0.25 FTE)*

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective E. (continued)							
E3c.	Train Citizens to Hand-Harvest Aquatic Invasive Plants	Needed	APIPP	PSCAWI, DFWI, SUNY-LCSG, LGPC	$25,000 *(0.25 FTE)*	$26,000	$27,040
E4a.	Aquatic Nuisance Plant Management[9]	Ongoing	PSCAWI		$5,000,000	$5,200,000	$5,408,000
E4b.	Semi-Aquatic Nuisance Plant Management	Ongoing	APIPP		$150,000 *(1.5 FTE)*	$156,000	$162,240
E4c.	Statewide Purple Loosestrife Biocontrol Program	Ongoing	DEC		$5,000 *(0.05 FTE)*	$5,200	$5,408
E4d.	Aquatic Nuisance Animal Management[10]	Ongoing	DEC		$150,000 *(1.5 FTE)*	$156,000	$162,240
E4e.	Develop and Maintain Current List and Assessment of Management Actions	Ongoing	APIPP		$5,000 *(0.05 FTE)*	$5,200	$5,408
E4f.	Develop Best Management Practices[11]	Ongoing	PSCAWI		-	-	-
E4g.	Weed and Watershed Management Districts	Ongoing	AATV		$25,000 *(0.25 FTE)*	-	-
E4h.	Develop a Template for Lake-wide Aquatic Invasive Plant Management Plans	Ongoing	DEC		$10,000 *(0.10 FTE)*	-	-
E4i.	Develop Containment Strategies for ANS	Needed	PSCAWI	SUNY-LCSG	$50,000 *(0.50 FTE)*	$52,000	$54,080
E4j.	Inform Research Actions / Technology Transfer	Ongoing	SUNY-LCSG	PSCAWI	$10,000 *(0.10 FTE)*	$10,400	$10,816
Subtotal					***$5,945,000***	***$5,522,400***	***$5,743,296***
Objective F. Restoration[12]							
F1a.	Assess and Prioritize Invaded Communities	Needed	USFWS		$25,000 *(0.25 FTE)*	$26,000	$27,040
F1b.	Restore Degraded Aquatic Systems	As Needed	TBD		$100,000 *(1 FTE)*	TBD	TBD

[9] Aquatic nuisance plant management costs estimated by calculating control costs of 49 infested lakes at $100,000 per year.
[10] Aquatic nuisance animal management costs estimated by assessing current annual costs for alewife and mussel control
[11] Funding for action E4f provided under E4a-d.
[12] Management and restoration actions are linked and need to be further defined.

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective F. (continued)							
F1c.	Restore Associated Upland Settings	As Needed	TBD		TBD	TBD	TBD
Subtotal					***$125,000***	***$26,000***	***$27,040***
Objective G. Research							
G1a.	Conduct Literature Search on Existing Impacts of Current Invaders and Associated Research Projects	Every 5 yrs	PSCAWI	DFWI, SUNY-LCRI	$25,000 *(0.25 FTE)*	-	-
G1b.	Identify Information Gaps from Research and Regulatory Perspectives	Needed	PSCAWI	DFWI, SUNY-LCRI, DEC, APA	$100,000 *(1 FTE)*	-	-
G1c.	Document Anecdotal Information about ANS	Every 5 yrs	PSCAWI	DFWI, SUNY-LCRI, others	$25,000 *(0.25 FTE)*	-	-
G1d.	Conduct Literature Searches on Role of Potential Invaders	Every 5 yrs	PSCAWI	DFWI, SUNY-LCRI, others	$25,000 *(0.25 FTE)*	-	-
G2a.	Determine Lake Susceptibility to ANS Invasion	Needed	PSCAWI	DFWI, SUNY-LCRI	$100,000 *(1 FTE)*	$104,000	$108,160
G2b.	Research Biology and Impact of ANS	Ongoing	SUNY-LCRI	PSCAWI, DFWI	$100,000 *(1 FTE)*	$104,000	$108,160
G2c.	Research Adaptability of Plants to Low Nutrient Lakes	Needed	DFWI	SUNY-LCRI, PSCAWI	$100,000 *(1 FTE)*	$104,000	$108,160
G2d.	Research Zebra Mussel Adaptability	Ongoing	DFWI	SUNY-LCRI	$100,000 *(1 FTE)*	$104,000	$108,160
G2e.	Research Impact of Watched Species and Cryptogenic Species	As Needed	SUNY-LCRI		$100,000 *(1 FTE)*	$104,000	$108,160
G2f.	Evaluate, Modify, and Add New Programs Examining Ecological Roles of ANS	As Needed	SUNY-LCRI	PSCAWI, DFWI	$100,000 *(1 FTE)*	$104,000	$108,160
G3a.	Research and Evaluate Physical, Mechanical, Chemical and Biological Controls for Aquatic Nuisance Plants	Ongoing	PSCAWI	DFWI, SUNY-LCRI	$250,000 *(2.5 FTE)*	$260,000	$270,400
G3b.	Research and Evaluate Physical, Mechanical, Chemical and Biological Controls for Aquatic Nuisance Animals	Ongoing	SUNY-LCRI	DFWI	$250,000 *(2.5 FTE)*	$260,000	$270,400

Objectives / Actions / Tasks[2]		Task Status FY06[3]	Organizations[4]		Funding Needs (FTE)[5]		
Task ID	**Short Description**		**Lead**	**Supporting**	**FY06**	**FY07**	**FY08**
Objective G. (continued)							
G4a.	Conduct Economic Impact Analysis	Needed	Cornell Univ.		$250,000 *(2.5 FTE)*	-	-
G5a.	Conduct Literature Searches on Restoration Ecology	Every 5 yrs	SUNY-LCRI		$25,000 *(0.25 FTE)*	-	-
G5b.	Conduct Research on Restoration Ecology	Needed	SUNY-LCRI	PSCAWI, DFWI	$250,000 *(2.5 FTE)*	$260,000	$270,400
G5c.	Develop Guidance Documents for Resource Managers	Needed	DEC		-	-	$10,816 *(0.10 FTE)*
Subtotal					***$1,800,000***	***$1,404,000***	***$1,470,976***
A. Coordination					***$200,000***	***$208,000***	***$216,320***
B. Enforcement and Legislation					***$100,000***	***$99,320***	***$92,478***
C. Education and Outreach					***$595,000***	***$683,440***	***$710,778***
D. Early Detection and Monitoring					***$320,000***	***$332,800***	***$346,112***
E. Management					***$5,495,000***	***$5,522,400***	***$5,743,296***
F. Restoration					***$125,000***	***$26,000***	***$27,040***
G. Research					***$1,800,000***	***$1,404,000***	***$1,470,976***
TOTAL					***$8,635,000***	***$8,275,960***	***$8,607,270***

Appendix A. Public Comments

2005 Adirondack Water Quality Conference

The second day of the 2005 Adirondack Water Quality Conference was devoted to seeking public input on the objectives of the ANS plan through breakout sessions. The notes from each breakout session are posted here.

Breakout Group B morning
Education, Outreach and Legislation

General Comments:

Why are we limited to number of votes? All seem important.

Think about which strategy will most likely change behavior.

Which strategy is sustainable.

Cost efficient

Encourage not punish

What are precursors.

Prefer not to limit – what are priorities?

Restructure around Adirondack Counties; not just Park area.

Education and outreach more appropriate than legislation, however, should go hand-in-hand. Public outreach important to make public aware, particularly the visiting public to the Adirondacks.

Boat registration/sticker program to allow for information to be passed on to public. (Lake George is already involved in this type of program which helps to generate revenue and fund enforcement actions).

Legislation does not always need to be regulatory – could be source for funding and coordination.

Has any thought been given to involving civic organizations in public outreach. Youth camps, also should be included in efforts to educate.
Business communities, tradeshows don't seem to be involved either.

Most important group is the boat owners to be targeted, i.e., via boat dealers, boating magazines, signage at border crossings, boat launches.

Concern raised that those waterbodies that have boat registration fees will cause a greater impact to those waterbodies that do not have such fees.

Signage is very important to the process. No signs indicating lake is already infested. State agency staff needs to be educated consistently as well so that public inquiries can be handled appropriately. Economic data might need to be provided to accomplish additional staff training needed.

There is no law that states that milfoil cannot be transported. Nor is there a law stating that Pet store owners cannot sell milfoil in their stores.

Regulations must not be cumbersome and fees should be consistent and across the state.

Make people aware that they are leaving an infested waterbody and they are responsible for potentially infesting another waterbody when transporting their boat.

Regulations must be able to be enforced. Fund steward programs.

Should monies go into regulations as opposed to education?

Public service announcements need to be all inclusive and target all groups to educate and make public aware, i.e., fishing groups, public and private camps, etc.

Not hearing enough emphasis being placed on prevention. Prevention should be a priority.

Behavior we need to change should begin with motor boat owners. At this level, we should be more concerned with this as opposed to legislation. How do we tell legislators that we want a funded entity?

The process has been that each plan has been given a slice of federal funding. Plan could be used as a template for the State.

We should not avoid the funding issue; we are looking at a possible 10 million dollar project to address the number of waterbodies that are impacted.

Strategy by funding: (B4???)

Start by talking about how this will impact the tourism industry. Define problem.

Add fees to fishing licenses, boat registrations, etc.

Hire staff; explore research funding from New York State.

Tap into resources such as Ways and Means Committee, Senators, Assembly members, North Country representatives, etc.

Funding should be on-going for control purposes and prevention. (i.e. EBF)
Local legislation, local constituency building.

Target widespread users of the park i.e., approach representatives from the lower portions of the state.

How much funding is available in other states?

Visible achievements and control need to be apparent.

Herbicides need to be part of the education process due to the large areas of milfoil to be controlled.

What are we looking for funding for? Zebra mussels, milfoil? Need to be specific.

Revenues need to be shared – dedicate funding.

Bring economic impact analysis to legislature.

Need specific plan of action to present to representatives. Provide suggestions of possible funding sources.

Change terminology from warden to conservation officers.

Strategy B1. Expand Adirondack Park ANS Education & Outreach Programs:

Consistent educational outreach programs and training that targets multiple audiences.

Action: B1a. Expand ANS Education and Outreach Programs
11
Integrate information into existing training and licensing program.

B1b. Evaluate.
5
B1c. Develop or Acquire New ANS Educational Materials
5
B1d. Post Advisory Signs
11

B1e. Develop and Utilize PSA's.
3
B1f. Develop and Deliver Displays and Presentations.
3

B1g. Curriculum.
0
B1h. Develop Watershed Stewardship Program/Courtesy Boat Inspector Program.
11
B1i. Encourage Development of Hazard Analysis and Critical Control Point Plans.
2
All seem to be elements of a program to be established.

Strategy B2. Increase Opportunities for the Sharing of Information throughout the Adirondack Park and beyond.

B2a. Develop Database strategy.
5
B2b. Create and maintain Database.
5
B2c. Create and maintain Website and Listserve.
6
All items listed under B2 seem to build on one another.

Strategy B3. Enforce existing laws controlling the transport of ANS and consider new legislation and/or regulations controlling the propagation, sale, collection, possession, importation, purchase, cultivation, distribution and introduction of ANS.

Action: B3a. Educate public about ANS regulations.
5
Similar to B1 -

B3b. Provide training to officials.
8
B3c. Evaluate legislative options implemented in other states.
8
B3d. Review, evaluate and pursue changes to ANS regulations.
9
B3e. Increase enforcement.
5

Breakout Group B Afternoon
Education, Outreach and Legislation

General Comments:

Information from yesterday's presentation; emphasis was on the education component and prevention used. Funding was through boat registrations for the State of Maine. Throughout New England there is consistent signage, something that we should do in New York State so that there is a consistent message.

Zoning/Planning Board involvement needed.

Monitoring contaminated lakes – boaters should be advised accordingly.

Regardless of boundaries – need educational processes that address everyone throughout the Park.

Political education process should encompass the entire State populas.

Wateredge education process. Political education process. Two different education processes.

Boat sticker approach – needs dedicated fund. Volunteer to contribute to invasive species fund.

Funding needs to address other waterways such as rivers, wetlands.

Encourage summer residents to vote.

Educational process – define target audience. Educate lake owners. Permitting process should be time sensitive.

Coordinate with NYS Board of Education a curriculum that includes ANS education.

Education should be refined to fit each target group.

Detection monitoring should be combined with education. Develop volunteer monitoring programs as a means of prevention.

Database maintenance could be placed under section C.

Strategy B1. Expand Adirondack Park ANS Education & Outreach Programs:

Consistent educational outreach programs and training that targets multiple audiences.

Action: B1a. Expand ANS Education and Outreach Programs

Integrate information into existing training and licensing program.

8

B1b. Evaluate.

5

B1c. Develop or Acquire New ANS Educational Materials

1

B1d. Post Advisory Signs

1

B1e. Develop and Utilize PSA's.

1

B1f. Develop and Deliver Displays and Presentations.

0

B1g. Curriculum.

6

B1h. Develop Watershed Stewardship Program/Courtesy Boat Inspector Program.

10

B1i. Encourage Development of Hazard Analysis and Critical Control Point Plans.
2

Strategy B2. Increase Opportunities for the Sharing of Information throughout the Adirondack Park and beyond.

B2a. Develop Database strategy.

8

How is data shared that is gathered by the numerous institutions? Who will compile the information? Needs to be user friendly; need to know target audience. Follow software development language.

B2b. Create and maintain Database.

1

Who are the owners?

B2c. Create and maintain Website and Listserve.

0

Strategy B3. Enforce existing laws controlling the transport of ANS and consider new legislation and/or regulations controlling the propagation, sale, collection, possession, importation, purchase, cultivation, distribution and introduction of ANS.

Action: B3a. Educate public about ANS regulations.

7

B3b. Provide training to officials.

3

B3c. Evaluate legislative options implemented in other states.

3

B3d. Review, evaluate and pursue changes to ANS regulations.

3

B3e. Increase enforcement.
5

B4: Strategy For Funding:

Lake Steward Program through Paul Smith's – must have individual present to monitor traffic; signage has minimal value. Tap into school system to hire interns for the summer to supplement the program.

Federal money fragmented as how it is dispersed – does not seem to be consolidated to address priority issues.

Lake associations that are not as established or organized should be addressed to help coordinate control. Many associations are duplicating their efforts to obtain funding from the same source. Write a grant that will serve all of the group's efforts.

How do we establish mandatory power and the funding needed available to the entire Adirondack Park?

Should specific legislation be written for the Adirondack Park or should it target invasive species throughout the State?

Local governments should all be enlisted to achieve coordinated funding requests and legislation.

Focus needs to be on local lake associations and local people.

What are other states doing – are there any that have dedicated funding for their lakes and rivers? How does the funding get to the local level? Prioritize at the State level.

Objective C, Morning Session:
Early Detection, Monitoring, and Research – Prevention

Objectives, Strategies, and Actions:

A. Coordinate
B. Educate
C. Detect, Monitor, Research
D. Develop, Evaluate, Prioritize
E. Implement
F. Restore

Strategy C1: Identify and Monitor ANS and Pathways

19 species that are a priority for Adirondack Park.

Needs to be coordinating body for recruitment and training of citizen component.

a. **Early Detection and Monitoring of Invasive Plants – developing acceptable marking system. Inventory of aquatic plants 10**
b. Monitor and Map Eurasian Watermilfoil
c. Monitor/Map Water Chestnut
d. Monitor/Map Curlyleaf Pondweed
e. Monitor/Map Fanwort
f. Conduct General Fish Surveys 1
g. Adk Forage Fish Surveys
h. Monitor/Map Zebra Mussels
i. Identify Locations and Habitats for Mollusks in Lake George
j. Adk Long-Term Monitoring Program – Zooplankton
k. Add'l ANS Monitoring Programs – expand sharing of data; citizen programs need supervision 1
l. **Standardize Monitoring Protocols 8**
m. Coordinate Info exchange with other monitoring programs. 2

n. Develop List of ANS in the Park 2
o. **Identify Pathways – list of infected lakes 4**
p. Develop TWIG (taxonomic working group)

Electronic sharing of data
Coordinate with DEC – markings of beds

All-Taxabiological Inventory (ATI)

Detection: identifying and marking

Str. C2: Study the Ecological Role of Aquatic Nuisance Species
a. Research impact of watermilfoil
b. Info on zebra mussels
c. research Zebra mussel adapability
d. Compiling monitoring data to determine role of ANS 3
e. Evaluate/Modify Programs examining ecological role of ANS
f. New Monitoring and Research Programs
g. Literature searches on role of potential invaders
h. Conduct Dist analysis & monitor high risk areas 3
i. research impact of Watched species 1

Assessment of Invasibility of various areas
Facets: population, animals

Risk assessment & Prioritization

Str. C3: Assess the Economic Impact of ANS on the Park

a. **Conduct Economic Impact Analysis 4**

Research

Little Adk research – collected from other regions. How accurate and applicable is this info to the Adks?

What are human impacts that make lakes vulnerable? How can that be changed?

Synthesis and critiquing of data

Data gaps 2

TWIG 2

Objective C, Afternoon Session:
Early Detection, Monitoring, and Research – Prevention

Objectives, Strategies, and Actions:

G. Coordination
H. Education & Outreach
I. Detect, Monitor, Research
J. Evaluate, Prioritize Management Actions
K. Implementing Management and Rapid Response
L. Restore

Strategy C1: Identify and Monitor ANS and Pathways

Mapping/Monitoring Invasive Plants 10

a. Early Detection and Monitoring of Invasive Plants – citizen monitoring. Value of public education
b. Monitor and Map Eurasian Watermilfoil
c. Monitor/Map Water Chestnut
d. Monitor/Map Curlyleaf Pondweed
e. Monitor/Map Fanwort

Mapping/Monitoring Invasive Fish

f. Conduct General Fish Surveys
g. Adk Forage Fish Surveys

Mapping/Monitoring Invasive Invert

h. Monitor/Map Zebra Mussels
i. Identify Locations and Habitats for Mollusks in Lake George
j. Adk Long-Term Monitoring Program – Zooplankton

k. Add'l ANS Monitoring Programs 1
l. Standardize Monitoring Protocols
m. Coordinate Info exchange with other monitoring programs. Lead needed here. Explore ALSC. 2
n. Develop List of ANS in the Park – needs lead in this 2
o. Identify Pathways (new species and those already introduced – how do they enter? How do they move around?) **1**
p. Recruiting and training other monitors

Strategy C2: Study the Ecological Role of Aquatic Nuisance Species

a. Research impact of watermilfoil on both plants, fish and animals 4
b. Info on zebra mussels LCTAC
c. research Zebra mussel adaptability
d. Compiling & monitoring data to determine role of ANS – how does this change the ecology? 1
e. Evaluate/Modify existing Programs and develop examining ecological role of ANS

and f. New Monitoring and Research Programs 5
Prioritize and promote research topics

Add'l research on plant adaptability 5

l. Evaluate conditions, both favorable and unfavorable

How plants pump nutrients from habitats that are nutrient-poor 2

g. Literature searches on role of potential invaders
h. Conduct Dist analysis & monitor high risk areas
i. research impact of Watched species
how are conditions favorable?

Strategy C3: Assess the Economic Impact of ANS on the Park

a. Conduct Economic Impact Analysis **8**

Should include effect on municipalities as well as tourism

How to justify staff and funds to implement the Plan – would need to start with an economic impact analysis

Other research: environmental conditions that are favorable.

Which groups decide which issues are most important?

Research into usages of species – give it economic feasibility.

Add'l research on adaptability

Evaluate conditions, both favorable and unfavorable

How plants pump nutrients into habitats that are nutrient-poor

What facts do the agencies need in order to answer the questions?

Objective D, Morning Session:
Research, Evaluate, and Demonstrate ANS and Pathway Management Alternatives

NEW: Develop alternative funding strategies and administration alternatives:
APA
DEC
New agency/reorganization
Other agencies
Develop Collaborative agency

D1/Issue Statement:

Resources Dispersed and fragmented
Limited/fragmented, rather than focused and directed and accessible.

Achieve best management practices rather than best net positive result.

***New* -- Promote global biological significance of the ADKs – means for additional funding**
Need central repository/authority for ANS in Adirondack park

D.1a:
Impacts: What kind of impacts? (e.g. ecological)

Research: Federal involvement?
Army Corps of Engineers
USDA

***NEW* – Develop pilot initiatives to control Da-Dk.**

D.1.b: No comments

D.1.c: No comments

D.1.d: include but not limit to the use of weevils, aquatic beetles, aquatic moths
Evaluate additional biological techniques

D.1.e: No comment

D.1.f:

***NEW* – Consolidate D.1.a – D.1.d**
Include all management techniques for aquatic plants under a single heading (e.g. aquatic plants control: biological, mechanical, physical, chemical)

***NEW* – Examine effectiveness of existing DEC enforcement techniques/policies limiting boat access (e.g. rooftop boat access).**

***NEW* – Consolidate D.1.e – D.1.f**

Include all management techniques for aquatic animals under a single heading (e.g. aquatic animals control: biological, mechanical, physical, chemical)

***NEW* – Examine current lake management techniques and watershed activities that may contribute to ANS establishment and expansion. (e.g. winter drawdown, state boat launches, public access sites, beaches, parks, erosion, drainage, salt)**

Add DOT to other potential key players to address above issues.

***NEW* – Identify regulatory inhibitors and recommend regulatory changes (e.g. permitting)**

D.1.i: BMPs should be highest priority under strategy D.1

***NEW* – Establish continuous funding for rapid response**
D.1.k:

Recommend boat wash stations at all public camp grounds with lake access

***New* -- Implement physical controls to prevent ANS propagation such as boat wash stations, signage, concrete ramps, etc.**

D.2/Issue Statement:
*needs to be rewritten and more succinct
*needs to focus more on demonstration grants to develop best management practices

***NEW* – Management techniques need to be applied on a watershed basis.**

D.2.a:
Need involvement of local/other organizations in the implementation and decision making process

*ANS plans must be integrated into pre-existing and on-going programs such as DOT, UMP, town supervisors, and county water and sewage management plans.

Water basin plans need to be managed/coordinated by local governments utilizing the willingness of summer residents.

D.2.b: No comments

D.2.c: No comments

1. Overarching Funding and Management/implementation

2. BMPs on watershed basis
3. Involvement of local governments
4. See new items!

Objective D, Afternoon Session:
Research, Evaluate, and Demonstrate ANS and Pathway Management Alternatives

Strategy D1:
Research Evaluate, and Demonstrate ANS and Pathway Management Alternatives.

Issue Statement:
Clarify the statement "resources available for managing ANS within the Adirondack Park are limited".
Perhaps remove first sentence or reorganize paragraph – actions do not speak to finances but issue statement does.

Actions
-D1a. – D1d. are one in the same activity, perhaps put the techniques in sub-groups
-Keeping them separate may increase funding opportunity.

New – need for replicated field experiments to evaluate effectiveness (sites should be of varying physical conditions).

New - Improve information sharing on effective techniques across NYS region as well as other areas.

D1a-D1f. add additional language – include research and demonstrate to all these actions.

New - New York State Aquatic Plant Managers Association as well as Lake George Park Commission should be included in list of key players

D11. add local and regional highway departments to list of key players
Incorporate existing BMP guidelines

D1j- standardized guidelines should be manageable and easily performed by citizens whenever possible.
D1j. NYSDEC redundant

Strategy D2: prioritize and select target management implication goals
Issue statement: needs to more concise and clear.

Actions

D2a. risk to non-target species should be added

D2c. clarify language

New – add section D3 that addresses seeking adequate and sustainable funding.

Priorities
D1a-D1d. = 9
D1g = 4

D1i = 5
D1j = 1
D3(new) = 7

Objective E, Morning Session:
Implement Rapid Response and Management Actions

General Notes

1. Some concern about the abbreviations of organizations –so many leads to confusion
2. Perhaps spell out the leads, instead of abbreviations – identify why they would have that position.
3. Identify one lead for <u>each</u> strategy
4. Organize actions based on those currently happening.
5. Clearly ID who to contact when an ANS is discovered.
6. Re: E2 revise issue statement to include new species as well as current species entering new locations
7. Switch E2 with E1
8. **Adding a new action in E: all actions in E should inform D and all actions in D should inform E. (structure for open communication between D and E).**
9. Re: E1b. is this action realistic? Suggest re-wording to "in the park" rather than "throughout the park"
10. Add a new objective specifically addressing the control of Eurasian Watermilfoil
11. Revise title of objective E. to: implement mgt actions. (rapid response just a strategy).
12. wetland ANS should not be overshadowed by ANS in lakes
13. E1l "template" should be plural
14. E2c – do you need a permit to hand harvest milfoil?
15. E2b define levels of "team" (perhaps there should be a network) Id lead, levels of responsibility, training, coordination etc..
16. E1g six Adirondack sites, note 4 add Willsboro and Westport.
17. E3 – streamline regulatory procedures should be E1
18. E3b needs a lead
19. **new strategy needed: centralized administrative coordination of objective E**

<u>Priorities</u>
1.Eurasian water milfoil mgt
2. Develop rapid response
3. employ rapid response team
3. centralize administration and coordination.

Objective E, Afternoon Session:
Implement Rapid Response and Management Actions

Implement Rapid Response and Management Actions

Strategy E1. Continue or Accelerate Existing ANS Control and Other Management Programs

Actions
E1a. Water Chestnut Management
E1b. Eurasian water milfoil mgt
E1c. curlyleaf pondweed mgt
E1d. fanwort mgt
E1e. European frogbit and yellow floating-heart mgt
E1f. regional control program
E1g. statewide purple loosestrife biocontrol
E1h. zebra mussel control
E1i. additional ans mgt
E1j. develop and maintain current list of mgt actions
Elk. Weed mgt districts
E1l. develop lake-wide aquatic invasive plant mgt plan template
Notes/Modifications:

- Define a standard "nuisance level" for all invasive species (e.g. Milfoil at a level that prevents spread by fragmentation and seed.) → Section D
- Reduce E1a –E1h to a three action list (e.g. aquatic plants, aquatic animals, and wetland plants invasives)
- Identify each individual species and define other unique information.
- State and local government involvement in lakes with AND without associations (E1f, E1d)
- Containment Strategies – How? Action needs to be defined for each invasive species for each category.
- Funding strategy must be considered perhaps as a new objective (Objective "G").
- Cross-reference/index action items.
- Differentiate policy vs. action, etc.
- Develop standard protocol for both new and existing ANS populations.
- In section E2, drop ANS committee reference.
- Also, funding, organization, and administration should be addressed separately as major topics and not implicit in other sections of the document text (see A1c)
- E1j: Current list and assessment instead of Current list
- E1k: Weed AND watershed districts vs. Weed districts.
- E1l: Provide guidance on Lakewide…
    - Delete "too shore owners"
    - Add AATV and local government to key players
- E2c: Delete "in New England states", replace with "in other states".

- APA should be added to Key Players.
- Pluralize "process" in E3a.
- County, town, and village governments must be included in E3a.

Action Priorities:

1. E1l
2. E1b
3. E2b

SESSION POINTS AND NEXT STEPS

Objective B: Education, Outreach, and Legislation
Morning: Which is most likely to change behavior, will encourage behavior? Restructure around regions and counties. Education and Outreach proceed legislation. Not always regulatory solution. Include public groups (ie. Kawanis) to use as vehicles for education, act as allies. Business communities, trade shows, summer camps – kids have impact on adults. Boat owners are important audience – boat magazines, multi-lingual, border crossings. Signage is important – some have too much information. PSAs.

Strategy B1a,d, h.
Strategy B2 – equal
Strategy B3 b, c, d

Funding – need to bring discussion of funding to the fore. Need to give legislators an idea of the funding required (millions?). Economic impacts. Discussion of fees and other revenue (sustainable). EPF. Clarify what's at stake if action isn't taken. Other state's funding.

Afternoon: Target audiences for education. Water edge: boaters in and out – stewardship programs and signage. Education at contaminated lakes as well as non-infested. Government: planning board, local gov to craft better local laws. State – why it's important and in need of funding. Broader education beyond the Park needed for those traveling to the Park. Classroom education – river systems, wetlands, ANS generally. Teaching unit on ANS, maybe specific to the ADKs or regional/local units for elective curriculum. Monitoring – part of education.

Political education as part of education: switch voter registration to seasonal residence or use their vote elsewhere in NY to influence legislator actions.

Need dedicating funding for ANS programs. Urging to avoid duplication of fund raising efforts.

Strategy B 1h – develop watershed stewardship program/courtesy

B1a – expand ANS Education and Outreach Programs.

B1g – Develop curriculum

B2b – Create and Maintain ANS Database
B2a – Develop ANS Database strategy
B3a
B3e

Objective C: Early Detection, Monitoring, and Research
Morning: standardizing monitoring protocol a priority. Citizen monitoring important, but need quality control. Create taxonomic working groups to help identify plants and other organisims. Data sharing needs to be improved regionally and between regions. Database needed to keep track of ANS, along with mapping. Need for study of lake chemistry etc. to determine where species are most likely to spread, and use to prioritize monitoring. Need for marking to save duplicate efforts and prevent spread. While monitoring it may be beneficial to collect additional information about plant communities. (concern for rare plants). Examine scientific information for applicability to the Adirondacks. Identify ultimate goals behind the plan – water quality, biodiversity, recreation etc.

C1a – Early Detection and Monitoring of Invasive Plants

C1L, C1o,C3a

Afternoon: Invasible? Opportunities to condense the information for legislators and others to focus attention on priorities. Larger categories by taxa. Need to identify leads and funding. Made some suggestions about leads, including support for APIPP continuing the lead.

Added research needs: economic analysis, management strategies, and several to help with early identification. Pathways – how ANS come in and move. Need for coordinating activities and sharing. Suggested that economic analysis might need to be pulled out and addressed first.

C1a-e: Early Detection and Monitoring of Invasive Plants. Scientist support for citizen training for monitoring efforts.

C3a: economic impact analysis – important for getting support for the plan.

C2e/f – existing monitoring and research and new monitoring and research programs. (with specific research ideas: evaluating conditions conducive to invasion, adaptability of plants to low nutrient lakes, documentation of anecdotal information – movement of milfoil beds.)
Objective D: Develop, Evaluate, and Prioritize ANS and Management Actions
Morning: Discussion of funding and institutional management arrangements. Strategy 2 – approaches for management should be researched on a watershed basis. Build in involvement of local governments. Alternative funding strategies/hybrid of groups and agencies? Introduction should underscore the global importance of the Adirondack Park. Focus prioritize to maximize funding. Use pilot initiatives to monitor and learn from. Look at effectiveness of existing policies and regulatory inhibitors. Contributors to invasiblity: water draw down etc. Continuous funding source for rapid response – permits.

Afternoon: Combine D1a-d. Research, evaluate and demonstrate existing controls for aquatic plants. Add funding and seek sustainable funding for above. Develop BMPs.

Objective E: Implement Rapid Response and Management Actions
Morning: Language – who's reading this – scientist, citizens. Be clear and straight forward to be understood by lay audience. Delete Rapid Response. Spell out acronyms when needed. Have only one lead for each action. Are the actions existing or new ideas to support strategy? Clarify. Strategy E2 – include new populations and new species – should be E1. Communication lines with Objective D. Include semi-aquatic species. E2b. Network to respond. (new) Need a centralized management.
Ewm. E1b, E2a, E2b/E2 new.

Afternoon: Worked on semantics and wording. E1a-h: join and talk about them similarly. Involve state and local governments where there is no lake association/group – surrounded by state land. Involve DEC. No specific actions – include some examples under different species. Discussed funding – how to pay for actions. E1l – Develop Lake-wide Aquatic Invasive Plant Management Plan Template. E1b – EWM management. Eb2 – employ rapid response team. Policy implications separate from management actions. Add a funding strategy. Invasible - correct spelling ☺

Missed?
Objective E: implementation of plan on specific lakes.

Objective D:
Objective C:
Objective B: Boat washes. Include as education and outreach tool. Zoning boards included with planning boards (local government).

Environmental Notice Bulletin

FROM Richard Hoffman (NY DOS) 2/8/06

Hi Dan,
The only comment I have on the Aquatic Nuisance Species Mgmt. Plan is that it does not appear to address roles for local government. Section IV on Local Authorities and programs addresses private groups as well as SWCD's, but I couldn't find a reference to the roles of counties, towns and villages. The Implementation Table also doesn't seem to list local governments. It may be that their role has been discussed and found to be marginal, but perhaps even that should be discussed. In any event I offer the following points for your consideration (my review is from the CD, which is less reader-friendly than a paper copy, so if I have missed something that's in the report, please excuse):

1. I'm frankly not well-informed on causal relationships between land use practices and aquatic invasives, and didn't notice that discussion in the Plan, but if there is such a relationship, obviously local zoning and site plan laws should take those concerns into account. (e.g., would it make sense for municipalities to require certain anti-invasive measures as a condition of approving a marina; do erosion and runoff controls play a role; etc.) 2. Sec. 190 of the NYS Town Law authorizes towns to establish "aquatic plant growth control districts". Under Article 5-A of the County Law, counties may establish lake protection and rehabilitation districts. Both of these types of improvement districts may generate funds for aquatic plant management through ad valorem assessments. This could potentially be a strong tool, particularly county districts which can transcend town boundaries. Under Gen. Mun. Law Art. 5-G, municipalities may jointly undertake governmental activities, so that multiple municipalities on a single lake, for example, could separately form aquatic plant control districts and administer them on a cooperative basis. Establishment of improvement districts also provides the advantage of instituting aquatic plant control as a potentailly permanent function of local government on a sustaining basis. 3. Municipalities might be able to play a role in providing or at least distributing information on aquatic invasives, particularly during the summer months. There are town and village halls and other municipal facilities in every community where boaters and others often visit, which could be sources for information.

Thank you for the opportunity to comment.

Appendix B. Adirondack Park ANS Plan Steering Committee Members

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Appendix C. Non-native Species of Potential Concern in the LCB

Within the Eastern Adirondacks/Lake Champlain Basin

Other nonnative plant and animal species that have the potential to become problematic are found throughout the Lake Champlain Basin portion of the Adirondack Park. Many of these species have not been well documented and the full extent of their distribution and impacts within the Basin is not known. The following list of all currently known non-native species of concern within the Basin was taken from a paper in progress by Dr. J. Ellen Marsden of the University of Vermont and Michael Hauser of Vermont Department of Environmental Conservation:
(*denotes a priority species)

Plants

flowering rush	(*Butomus umbellatus*)
European frog's bit	(*Hydrocharis morsus-ranae*)
common reed	(*Phragmites australis*)
yellow floating heart	(*Nymphoides peltata*)
curly leaf pondweed	(*Potamogeton crispus*)
slender-leaved naiad	(*Najas minor*)
yellow flag iris	(*Iris pseudacorus)*
water plantain	(*Alisma gramineum)*
great water cress	(*Rorippa amphibia)*
phragmites	(*Phragmites australis*)

Fish

gizzard shad	(*Dorosoma cepedianum*)
white perch	(*Morone americana*)
European rudd	(*Scardinius erythrophthalmus*)
blueback herring	(*Alosa aestivalis*)
common carp	(*Cyprinus carpio*)
goldfish	(*Carassius auratus*)
tench	(*Tinca tinca)*
rainbow trout	(Oncorhynchus mykiss)
brown trout	(Salmo trutta)
brook silverside	(*Labidesthes sicculus)*
white crappie	(*Pomoxis annularis)*
black crappie	(*Pomoxis nigromaculatus)*

(Black crappie is native to Lake Champlain, but is spreading to other lakes within the Basin. See also non-native but widely introduced species in Table 1 above

Mollusks

mud bithynia	(*Bithynia tentaculata)*
big-ear radix	(*Radix auricularia)*
banded mystery snail	(*Viviparus georgianus)*
buffalo pebblesnail	(*Gillia altilis)*

chinese mysterysnail	(*Cipangopaludina chinensis*)
globe siltsnail	(*Birgella subglobosa)*
woodland pondsnail	(*Stagnicola catascopium)*
sharp hornsnail	(*Pleurocera acuta)*
European fingernail clam	(*Sphaerium corneum)*
greater European pea clam	(*Pisidium amnicum)*
European stream valvata	(*Valvata piscinalis)*

Crustaceans

rusty crayfish	(*Orconectes rusticus)*
Allegheny crayfish	(*Orconectes obscurus)*
big river crayfish	(*Cambarus robustus)*
water flea	(*Eubosmina coregoni)*
gammarid amphipod	(*Gammarus fasciatus)*
cyclopoid copepod	(*Thermocyclops crassus)*

Other

freshwater jellyfish	(*Craspedacusta sowerbyi)*
flatworm	(*Schmidtea polychroa*)
water veneer moth	(*Acentria ephemerella*)

Outside the Lake Champlain Basin

Other aquatic or wetland species have the potential to be introduced to the Lake Champlain Basin, much of which lies with the Adirondack Park boundry. These species exist in nearby waters or are potentially available through the bait or aquarium trades. They currently are not known to be established in the wild within the Basin, but it is possible that some are established and have not been detected. The potential for their impact if introduced is not clear. The following list of species currently outside of the Basin, but with significant potential to enter the Basin was taken from a paper in progress by Dr. J. Ellen Marsden of the University of Vermont and Michael Hauser of Vermont Department of Environmental Conservation:
(*denotes a priority species)

Plants

*hydrilla	(*Hydrilla verticillata*)
Brazilian elodea	(*Egeria densa*)
parrot's feather	(*Myriophyllum aquaticum*)
variable-leaved watermilfoil	(*Myriophyllum heterophyllum*)

Fish

*round goby	(*Neogobius melanostomus*)
*Eurasian ruffe	(*Gynocephalus cernuus*)
tubenose goby	(*Proterorhinus marmoratus*)
*northern snakehead	(*Channa argus*)
*bighead carp	(*Hypophthalmichthys nobilis*)
*silver carp	(*Hypophthalmichthys molitrix*)

Mollusks

*quagga mussel	(*Dreissena bugensis*)
Asian clam	(*Corbicula fluminea*)
Chinese mystery snail	(*Cipangopaludina chinensis*)
Piedmont elimia snail	(*Elimia virginica*)
liver elimia	(*Elimia livescens*)
sharp hornsnail	(*Pleurocera acuta*)
Wabash pigtoe	(*Fusconaia flava*)
paper pondshell	(*Anodonta imbecilis*)
Atlantic rangia	(*Rangia cuneata*)
ridged lioplax	(*Lioplax subcarinata*)
green floater	(*Lasmigona subviridis*)
New Zealand mudsnail	(*Potamopyrgus antipodarum*)

Crustaceans

*spiny waterflea	(*Bythotrephes cederstroemi*)
waterflea	*(Daphnia lumholtzi)*
*fishhook waterflea	*(Cercopagis pengoi)*
amphipod	(*Echinogammarus ischnus*)
calanoid copepod	(*Eurytemora affinis*)
calanoid copepod	(*Skistodiaptomus pallidus*)
parasitic copepod	(*Argulus japonicus*)
Chinese mitten crab	(*Eriocheir sinensis*)
white river crawfish	(*Procambarus acutus acutus*)
gammarid amphipod	(*Gammarus daiberi*)

Oligochaetes

oligochaete	(*Ripistes parasita)*

Other Invertebrates

freshwater hydroid	(*Cordylophora caspia)*

Other

bacterium	(*Thioploca ingrica)*
cynobacterium	(*Cylindrospermopsis raciborskii*)
whirling disease (protozoan)	(*Myxobolus cerebralis*)

Appendix D. Federal Agencies Regulating Transport of Live Products

Organization	Description
APHIS	The Animal and Plant Health Inspection Service, U.S. Department of Agriculture, has broad mandates related to the importation and interstate movement of exotic species, under the Federal Plant Pest Act, the Plant Quarantine Act, and several related statues. The primary concern is species that pose a risk to agriculture. Restricts the movements of agricultural pests and pathogens into the country by inspecting, prohibiting, or requiring permits for the entry of agricultural products, seeds, and live plants and animals. Restricts interstate movements of agricultural plant pests and pathogens by imposing domestic quarantines and regulations. Restricts interstate transport of noxious weeds under the Federal Noxious Weed Act.
AMS	The Agricultural Marketing Service, U.S. Department of Agriculture, works closely with states in regulating interstate seed shipments. Regulations require accurate labeling and designation of "weeds" or "noxious weeds" conforming to the specific state's guidelines.
ARS	The Agricultural Research Service, U.S. Department of Agriculture, the research branch of USDA, conducts and funds research on the prevention, control, or eradication of harmful exotic species often in cooperation with APHIS. Projects include aquaculture techniques and disease diagnosis and control.
DEA	The Drug Enforcement Agency restricts imports of a few non-indigenous plants and fungi because they contain narcotics substances.
DOD	The Department of Defense has diverse activities related to non-indigenous species. These relate to its movements of personnel and cargo and management of land holdings. Armed forces shipments are not subject to APHIS inspections. Instead, the DOD uses military customs inspectors trained by APHIS and the Public Health Service.
FWS	The Fish and Wildlife Service, U.S. Department of the Interior, has responsibility for regulating the importation of injurious fish and wildlife under the Lacey Act. Maintains a limited port inspection program. In 1990, FWS inspectors inspected 22 percent of the wildlife shipments at international ports of entry. Interstate movement of stateBlisted injurious fish and wildlife is a federal offense and therefore potentially subject to FWS enforcement. Also provides technical assistance related to natural resource issues and fish diseases to state agencies and the private sector (aquaculture in particular). Helps control the spread of fish pathogens.
NOAA and NMFS	The National Oceanic and Atmospheric Association and National Marine Fisheries Service, U.S. Department of Commerce, inspect imported shellfish to prevent the introduction of non-indigenous parasites and pathogens. Cooperative agreements with Chile and Australia; Venezuela has requested a similar agreement.

PHS	The Public Health Service, U.S. Department of Health and Human Services, regulates entry of organisms that might carry or cause human disease.
CUSTOMS	Customs Service, U.S. Department of the Treasury. Customs personnel inspect passengers, baggage, and cargo at U.S. ports of entry to enforce the regulations of other federal agencies. They inform interested agencies when a violation is detected and usually detain the suspected cargo for an agency search.
USCG	The Coast Guard, U.S. Department of Treasury, was given certain responsibilities under the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990, relating to preventing introductions (mostly dealing with ballast water exchange).

Appendix E. Regulatory Statutes of New York State

New York Statutes

General Functions, Powers and Duties of the Department and the Commissioner - Chapter 43-B Article 3 § 3-0301 (partial)

1. It shall be the responsibility of the department [Environmental Conservation], in accordance with such existing provisions and limitations as may be elsewhere set forth in law, by and through the commissioner to carry out the environmental policy of the state set forth in section 1-0101 of this chapter. In so doing, the commissioner shall have power to:

j. Promote control of pests and regulate the use, storage and disposal of pesticides and other chemicals which may be harmful to man, animals, plant life, or natural resources;

k. Promote control of weeds and aquatic growth, develop methods of prevention and eradication, and regulate herbicides;

2. To further assist in carrying out the policy of this state as provided in section 1-0101 of the chapter the department, by and through the commissioner, shall be authorized to:

w. Shall prepare and submit to the federally appointed "Aquatic Nuisance Species Task Force" two comprehensive management plans, after notice and opportunity for public comment, for funding of New York state activities under the Federal Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990, Public Law 101-646, by January 1, 1992. One such plan shall identify those areas or activities within the state, other than those related to public facilities, where technical and financial assistance is needed within the state to eliminate or reduce environmental, public health and safety risks and to mitigate the financial impact upon the state associated with non-indigenous aquatic species, particularly zebra mussels. The other plan shall be a "public facility management plan" which is limited solely to identifying those public facilities within the state for which technical and financial assistance is needed to reduce infestations of zebra mussels. Each plan shall identify the management practices and measures that will be undertaken to reduce infestations of aquatic nuisance species, especially zebra mussels, and include the following: (1) a description of the state and local programs for environmentally sound prevention and control of the target species; (2) a description of federal activities that may be needed for environmentally sound prevention and control of aquatic nuisance species and a description of the manner in which those activities should be coordinated with state and local government activities; and (3) a schedule for implementing the plan, including a schedule of annual objectives. In developing and implementing these management plans, the department shall, to the maximum extent practicable, involve local governments, regional entities and public and private organizations that have expertise in the control of aquatic nuisance species. Copies of these plans shall also be submitted to the temporary president of the senate and the speaker of the assembly, and the department shall annually, on or before January first, submit to the temporary president of the senate and speaker of the assembly a report on the activities of the department under these plans.

Liberation of Fish, Shellfish and Wildlife - Chapter 43-B, Article 11 § 11-0507

1. Fish or fish eggs shall not be placed in any waters of the state unless a permit is first obtained from the department [Environmental Conservation]; but no permit shall be required to place fish or fish eggs in an aquarium.

2. No person shall liberate or import or cause to be imported for the purpose of liberation within the state any European hare *(Lepus europaeus*), European or San Juan rabbit (*Oryctolagus cuniculus*), Texas or jack rabbit (*Lepus californicus)*, gray fox (*Urocyon cinereoargenteus*), including captive bred gray fox, red fox (*Vulpes vuples*), including captive bred red fox or nutria (*Myocastor coypus*), whether taken from within or without the state. Nutria may be imported only by permit of the department for scientific, exhibition or for breeding purposes.

3. No person shall willfully liberate within the state any wildlife except under permit from the department. The department may issue such permit in its discretion, fix the terms thereof and revoke it at pleasure. These provisions do not apply to migratory game birds, importation of which is governed by regulation of the department.

4. No person shall intentionally liberate zebra mussels (*Dreissena polymorpha*) into any waters of the state. No person shall buy, sell, or offer to buy or sell, or intentionally possess or transport zebra mussels except under a license or permit issued pursuant to section 11-0515. Zebra mussels, except those lawfully held pursuant to a license or permit, may be destroyed by any person at any time.

Water Chestnut – Chapter 43-B, Article 11 § 11-0509

No person shall plant, transport, transplant or traffic in plants of the water chestnut or the seeds or nuts thereof nor in any manner cause the spread or growth of such plants.

Possession and Transportation of Wildlife – Chapter 43-B, Article 11 § 11-0511

No person shall, except under a license or permit first obtained from the department [Environmental Conservation] containing the prominent warning notice specified in subdivision nine of section 11-0917 of this article, possess, transport or cause to be transported, imported or exported any live wolf, wolfdog, coyote, coydog, fox, skunk, venomous reptile or raccoon, endangered species designated pursuant to section 11-0535 hereof, species named in section 11-0536 or other species of native or non-native live wildlife or fish where the department finds that possession, transportation, importation or exportation of such species of wildlife or fish would present a danger to the health or welfare of the people of the state, an individual resident or indigenous fish or wildlife population. Environmental conservation officers, forest rangers and members of the state police may seize every such animal possessed without such license or permit. No action for damages shall lie for such seizure, and disposition of seized animals shall be at the discretion of the department.

Taking for propagation and stocking; fish hindering – Chapter 43-B, Article 11 § 11-0511 (partial)

1. The department [Environmental Conservation] may take, or it may permit any person to take wildlife for propagation or stocking purposes, or fish or shellfish for propagation purposes.

2. It may also remove, or permit to be removed, in any manner it may prescribe, from either public or private waters, fish or shellfish which hinder the propagation of food fish or shellfish, or which are in imminent danger of being killed by pollution or otherwise. Such fish or shellfish shall be disposed of as the department may direct.

Farm fish ponds – Chapter 43-B, Article 11 § 11-1911 (partial)

1. "Farm fish pond" means a body of water, impounded by a dam, of not more than ten acres of water surface when full, lying wholly within the boundaries of privately owned or leased lands. It does not include any pond used in connection with any private camp, boarding house, hotel or other establishment catering to the public.

2. The department [Environmental Conservation] may issue to the owner or lessee of a farm fish pond a license, effective for a period of five years, entitling the holder to manage such fish pond for the production of fish. The department shall fix the terms of each such license and may include therein (a) permission to control undesirable fish, aquatic vegetation and insect life, interfering with the production of fish and (b) permission, notwithstanding any other provisions of this chapter to the contrary, to release, stock and propagate fish in the licensed pond. The department may specify in the license methods of control to be used and the manner of taking and type, size and mesh of gear to be used in taking fish. The department may, for cause, revoke or suspend any license issued pursuant to this section.

3. No person shall release any species of fish into a farm fish pond unless permission to do so is first obtained from the department.

Taking and sale of bait fish – Chapter 43-B, Article 11 § 11-1315 (partial)

1. a. Except as provided in subdivision 2, no person, without first obtaining the appropriate license from the department [Environmental Conservation], shall take for sale as bait, nor sell as bait the following fish: minnows (family *Cyprinidae*), except carp or goldfish; top minnows or killifish (family *Cyprinodontidae*); mudminnows (family *Umbridae*); darters (family *Estheostomidae*); sticklebacks (genus *Eucalia*); tadpole stone cats (genera *Noturus* and *Schilbeodes*); smelt or ice fish (*Osmerus mordax*); alewives, saw bellies or blueback herring (family *Clupeidae*); suckers (family *Catostomidae*).

b. Fish taken pursuant to such license shall be used only for bait in hook and line fishing. All carp, goldfish, and lamprey larvae (family *Petromyzonidae*) taken in nets operated pursuant to such license shall be destroyed immediately.

Control of Aquatic Plant Growth - Chapter 24, Article 5 § 99-j

Every municipal corporation is, and any two or more municipal corporations jointly are, hereby authorized and empowered to take such action as may be required to adopt plans and specifications and enter into a contract or contracts, or take such other action as may be required

for the control of aquatic growth as it may deem to be necessary or desirable, in the case of a joint project by two or more municipal corporations, the share of the cost of such project or activity to be borne by each such municipal corporation shall be fixed by contract. The expenditure of moneys for such purpose by a municipal corporation shall be deemed a lawful municipal purpose and the moneys appropriated therefor shall be raised by tax upon the taxable real property within the municipal corporation in the same manner as moneys for other lawful municipal purposes. Each municipal corporation is hereby authorized to accept and disburse grants of public or private money or other aid paid or made available by the state or federal government for any such purpose.

Establishment or Extension of Improvement Districts - Chapter 62, Article 12 §190 (partial, summarized)

Upon petition, a town board may establish or extend an aquatic growth plant district. Expenses will be borne by the district. No such district shall be established in a city. No such district shall be established in an incorporated village, unless consent is expressed by a local law, ordinance, or resolution, subject to a referendum.

Powers of Town Boards with Respect to Improvement Districts - Chapter 62, Article 12 § 198.10-e

After an aquatic growth control district has been established, the town board may take such action as may be required to adopt plans and specifications and enter into a contract or contracts, or take such other action as may be required, for the control of aquatic growth within the district as it may deem to be necessary or desirable.

Expenses of Improvement; How Raised - Chapter 62, Article 12 § 202.3 (partial, summarized)

The expense of establishing an aquatic plant growth control district, and of providing improvements and/or services, shall be assessed, levied, and collected from the lots and parcels of land in the district.

Notice of Hearing; Cost to Typical Property - Chapter 62, Article 12-A § 209-d (partial, summarized)

In its order describing the aquatic growth control district, the town board may state that the costs of obtaining lands for the aquatic growth control shall be assessed by the town board as proportionally as possible to the benefit that each lot or parcel will derive from the control.

Prevention of Introduction of Injurious Insects, Noxious Weeds, and Plant Diseases – Chapter 69, Article 14 § 163

1. The commissioner [Department of Agriculture & Markets] shall take such action as he may deem necessary to prevent the introduction into this state of injurious insects, noxious weeds, and plant diseases, provided that he shall consult with the commissioner of environmental conservation prior to the commencement of any action to eradicate noxious weeds.

2. All nursery stock shipped into this state shall bear or carry on the container thereof an unexpired certificate, or copy thereof, to the effect that (a) the contents of such container have been inspected by a duly authorized official and that the contents appear to be free from all injurious insects or plant diseases, or (b) that the nursery stock of the grower of such contents had been examined by a duly authorized official and had been found to be apparently free from all injurious insects or plant diseases. Such certificate shall be the certificate of the chief horticultural inspector, by whatever name known, of the country, province or state in which such shipment originated. There shall be shown in the certificate or by a separate tag attached hereto the name and address of the consignor or shipper, the name and address of the consignee or person to whom the nursery stock is shipped, and the general nature of the contents together with labels upon each variety of nursery stock declaring the name thereof and a statement by the consignor or shipper that such nursery stock is in a live and vigorous condition.

3. Any person within the state receiving nursery stock from without the state not accompanied by the certificate described in subdivision two of this section, shall immediately notify the commissioner of the receipt of such nursery stock and shall not unpack the same unless permitted by the commissioner so to do, and shall not allow such nursery stock to leave his possession until it has been inspected and released by the commissioner.

4. It shall be unlawful for any person to offer for sale or to sell dead nursery stock.

Control and Eradication of Injurious insects, Noxious Weeds, and Plant Diseases - Chapter 69, Article 14 §164

1. The commissioner [Department of Agriculture & Markets] shall take such action as he may deem necessary to control or eradicate any injurious insects, noxious weeds, or plant diseases existing within the state.

2. All trees, shrubs, plants and vines or other material, including soil infected or infested with injurious insects or plant diseases, or which have been exposed to injurious insects or plant diseases, or which are hosts of such insects or plant diseases or other material including soil, and noxious weeds are hereby declared public nuisances and may be destroyed or ordered destroyed by the commissioner.

3. The commissioner may order the owner or person in charge of any infected or infested trees, shrubs, plants and vines or other material including soil or host plants, and noxious weeds or the owner or person in charge of the farm or premises upon which they have been grown or on which they exist or in which they have been stored, or of the vehicles or cars in which they have been conveyed, to take such measures to eradicate or control the said infestation, infection, or noxious weeds as the commissioner may deem necessary or proper. Such orders may be communicated by personal service, service through the mails, or by newspaper publication, as the commissioner deems expedient. Such owner or person in charge shall promptly carry out the order of the commissioner within the period of time designated in the order. If such owner or person in charge shall refuse or neglect to carry out any such order, the commissioner may apply

such eradication or control measures at the expense of the owner. Upon the completion of such eradication or control measures the owner shall, upon demand of the commissioner, forthwith pay the cost thereof into the state treasury, and upon his neglect or refusal so to do, the amount thereof shall be recovered in a civil action to be brought and prosecuted by the attorney-general in the name of the people of the state.

Shipment of Live Pests – Chapter 69, Article 14 §164-a

No person, shall sell, barter, offer for sale, or move, transport, deliver, ship, or offer for shipment, into or within this state any living insects in any state of their development, or noxious weeds, living fungi, bacteria, nematodes, viruses or other living plant parasitic organisms without first obtaining a permit from the commissioner [Department of Agriculture & Markets]. Such permit shall be issued only after the commissioner has determined that the insects, noxious weeds or living bacteria, fungi, nematodes, viruses or other plant parasitic organisms in question are not injurious to plants or plant products, if not already present in the state, or have not been found to be seriously injurious to warrant their being refused entrance or movement, if known to be already established within the borders of the state; provided, that the commissioner may at his discretion exempt the sale and transportation of specific insects, noxious weeds, fungi, bacteria, and other plant parasitic organisms from the provisions of this section if such sale and transportation is not considered harmful to the health and welfare of the people of the state, or for scientific purposes under specified safeguards determined by the commissioner.

Access to Premises; Quarantines; Rules and Regulations – Chapter 69, Article 14 §167 (partial)

1. The commissioner [Department of Agriculture & Markets] or his representatives shall have full access to all premises, places, farms, buildings, vehicles, airplanes, vessels and cars for the purpose of enforcing the provisions of this article. The commissioner or his representatives may examine trees, shrubs, plants and vines, soil, or host plants or any other material which are infested or infected or susceptible to infestation or infection by injurious insects or plant diseases, or contaminated by noxious weed. He or they may open any package or other container, the contents of which may have been so infested or infected or contaminated with noxious weed or which have been exposed to such infestation, infection or contamination. It shall be unlawful to hinder or defeat such access or examination by misrepresentation, concealment of facts or conditions, or otherwise.

2. The commissioner is hereby authorized to make, issue, promulgate and enforce such orders, by way of quarantines or otherwise, as he may deem necessary or fitting to carry out the purposes of this article.

3. The commissioner may adopt and promulgate such rules and regulations to supplement and give full effect to the provisions of this article as he may deem necessary including, but not limited to, the designation of any plant as a noxious weed.

New York Invasive Species Task Force - Chapter 324, 2003 Law (partial, summarized)

The New York Invasive Species Task force is created. It will assess the invasive species problem, respond to the problem, and by November 30, 2005 prepare a report that makes specific recommendations for the governor and the legislature.

New York Rules/Regulations

Fish Dangerous to Indigenous Fish Populations - 6 NYCRR §180.9

(a) Purpose. The purpose of this section is to list species of native or non-native fish that present a danger to the health or welfare of indigenous fish populations, and to the health or welfare of people of the state.

(b) Prohibitions.

(1) Except as provided in subdivisions c and d of this section, no person shall buy, sell or offer for sale, possess, transport, import or export, or cause to be transported, imported or exported live individuals or viable eggs of the following species of fish, which the Department of Environmental Conservation (department) has determined present a danger to indigenous fish populations:

(i) Silver carp (*Hypophthalmicthys molitrix*)

(ii) Bighead carp (*Hypophthalmichthys nobilis*)

(iii) Black carp (*Mylopharyngodon piceus*)

(iv) Snakehead fish of the genera Channa and Parachanna (or the generic synonyms of Bostrychoides, Opicephalus, Ophiocephalus, and Parophiocephalus) of the Family Channidae, including but not limited to:

(a) *Channa amphibeus* (Chel or Borna snakehead)
(b) *Channa argus* (Northern or Amur snakehead)
(c) *Channa asiatica* (Chinese or Northern Green snakehead)
(d) *Channa aurantimaculata*
(e) *Channa bankanensis* (Bangka snakehead)
(f) *Channa baramensis* (Baram snakehead)
(g) *Channa barca* (barca or tiger snakehead)
(h) *Channa bleheri* (rainbow or jewel snakehead)
(i) *Channa cyanospilos* (bluespotted snakehead)
(j) *Channa gachua* (dwarf, gaucha, or frog snakehead)
(k) *Channa harcourtbutleri* (Inle snakehead)
(l) *Channa lucius* (shiny or splendid snakehead)
(m) *Channa maculata* (blotched snakehead)
(n) *Channa marulius* (bullseye, murrel, Indian, great, or cobra snakehead)
(o) *Channa maruloides* (emperor snakehead)
(p) *Channa melanoptera*
(q) *Channa melasoma* (black snakehead)
(r) *Channa micropeltes* (giant, red or redline snakehead)
(s) *Channa nox*
(t) *Channa orientalis* (Ceylon of Ceylonese Green snakehead)
(u) *Channa panaw*
(v) *Channa pleurophthalmus* (ocellated, spotted, or eyespot snakehead)
(w) *Channa punctata* (dotted or spotted snakehead)
(x) *Channa stewartii* (golden snakehead)
(y) *Channa striata* (chevron or striped snakehead)
(z) *Parachanna africana* (Niger or African snakehead)
(aa) *Parachanna insignis* (Congo, square-spotted African, or light African snakehead)
(bb) *Parachanna obscura* (dark African, dusky or square-spotted snakehead)

2) No person shall liberate to the wild any species listed in this section, cause such species to be liberated to the wild or allow such species to exist in a state or condition where it is likely to escape into the wild.

(c) Exceptions. Notwithstanding the prohibitions contained in this section, Bighead carp may be sold, possessed, transported, imported and exported in the five boroughs of the City of New York (Manhattan, Bronx, Queens, Brooklyn, and Staten Island) and the Westchester County Towns of Rye, Harrison, and Mamaronek and all the incorporated cities or villages located therein. Bighead carp offered for sale in any retail establishment shall be killed by the seller before the purchaser takes possession of said fish.

(d) Permits. The department may issue permits, the term of which shall not exceed one year, to possess, transport, import or export species of live fish listed in this section only for educational, exhibition or scientific purposes, as defined in section 175.2 of this chapter. Permits issued pursuant to this section may contain terms, conditions and standards designed to prevent escapement while fish species listed in the permit are held in captivity, and to ensure safe disposition of those species following expiration of the permit or cessation of the permitted activity. The permit fee shall be $500, except that the fee may be waived for bona fide employees, representatives or affiliates of accredited colleges or universities, research institutions, government agencies, or public museums or aquariums.

(e) Seizure. Environmental conservation officers, forest rangers and members of the state police may seize species of fish listed in this section that are possessed without a permit. No action for damages shall lie for such seizure, and disposition of seized animals shall be at the discretion of the department.

<u>Round Goby</u>
Part 10, paragraph 10.1(c)(3): no person when fishing in the waters of the state shall use or possess as bait round goby, *Neogobius melanostomus*.

<u>Chinese Mitten Crabs</u>
Part 44, paragraph 44.8: Chinese Mitten Crabs (*Eriocheir sinensis*).

(a) No person shall liberate Chinese Mitten Crabs (*Eriocheir sinensis*) into the waters of the State.
(b) No person shall possess, import, transport, buy, sell or offer to buy or sell Chinese mitten crabs, whether alive or dead, in New York State.
(c) Chinese mitten crabs, except those lawfully held pursuant to a license or permit issued under section 11-0515, shall be destroyed.

Appendix F. Known ANS Management Efforts in 2005

Resource List of Aquatic Plant Management Projects on Adirondack Lakes

In 2005, lake representatives responded to a request asking for an update about non-native, invasive aquatic plant management projects they work on. The following is a summary of those results. It is intended to allow lake associations to contact each other directly to learn about a particular project. As of 2005, at least 40 Adirondack waters were documented with aquatic invasive plant infestations, representing both private and public waterways. A subset of the infested lakes are listed below, and additional projects may be occurring that are not represented. The Adirondack Park Invasive Plant Program (APIPP) will update this listing periodically. Groups may add to the listing by contacting APIPP at 518-576-2082x 131. Regional invasive plant information available at www.adkinvasives.com.

Lake or Pond / County	Association	Contact Person	Control Strategy	Annual Cost	Species	Years	Spread Prevention	Comments
Augur Lake, *Essex*	Augur Lake Property Owners' Association	Robert Shaw, 203-426-6979	Grass Carp	$13,500 (total cost); $6/fish	Eurasian watermilfoil	1997 - present (fish introductions in 1998, 1999, and 2000)	encourage boat washing	very pleased, improved water recreation, hired a biologist for professional assessment, deemed a success.
Eagle Lake, *Essex*	Eagle Lake Property Owners' Association, INC.	Rolf Tiedemann, 518-597-3619 (summer), 585-647-2514 (winter), campfouchstone@yahoo.com	Handharvest / Benthic mats	$25,000 total available ($5,000 in equipment spent in 2005)	Eurasian watermilfoil	Awaiting equipment, divers and permit approval	Newsletter education, signage	will run out of money before running out of milfoil; difficult to find divers; Tim LaDue is a wealth of information about equipment / techniques.
Lincoln Pond, *Essex*	Lincoln Pond Association	Anita Deming, PO Box #393, Westport, NY 12993, 518-962-4810, ald5@cornell.edu	Acentria moth release; Monitoring acentria moth weevil midge and caddisfly predation on Eurasian watermilfoil	$10,000 cost of moths, $20,000 monitoring (total)	Eurasian watermilfoil	Acentria ephemerella released in 2001 and 2002	educational brochure	had significant dieback of milfoil; large numbers of weevils and low number of moths; inconclusive whether moths were the cause.
Schroon Lake, *Essex/Warren*	Schroon Lake Association, Schroon Lake East Shore Association	Bob McLean, 518-621-9395, 518-532-7793, rmclean2@verizon.net	Handharvest / Benthic mats	NA	Eurasian watermilfoil	NA	Milfoil Watch citizens group	need more coordinated survey, control, and education efforts lakewide and lake user guidelines.
Indian Lake, *Franklin*	Mountain View Association	Jerry Hickey, 518-493-5362 (sum), 585-637-2090 (win); geraldhickey@frontiernet.net	Handharvesting using SCUBA divers from Adirondack Watershed Institute; 10 year APA permit granted	$10,000 (total with Mt. View Lake)	Eurasian watermilfoil	First discovered in 1997. Volunteer handharvest through 2000. 2002 to-date SCUBA divers.	annual reminders in summer newsletter; presentations at annual meetings.	advise groups to work with professional to study lakes and formulate a plan; found DEC and APA to be very helpful.
Indian Lake, *Franklin*	Belmont MVI Lakes Foundation, Inc.	Bob Heet, 518-493-7593, robert.heet@verizon.net	Working with Cornell to investigate biological control and assess watershed practices	Projected cost of watershed management plan and invasive plant mitigation $295,000 to $435,000 during next 10 years	Eurasian watermilfoil	NA	NA	early detection and rapid response has benefited the effort; a coordinated, community-wide communications program is important; a website is a good communication tool - www.mountainviewlakes.com
Lake Colby, *Franklin*	Lake Colby Association	Lee Keet; lee@lakecolby.com	Handharvest / Benthic mats	$15,000-$20,000	Eurasian watermilfoil	2002-present	signage	don't mist seeded plants, pick same area clean at least 3 times, pick early, pick upwind first; www.lakecolby.org
Lake Kiwassa, *Franklin*	Kiwassa Lake Shorewaters' Association	Claude Roland, 1054 Kiwassa Lake Road, Saranac Lake, NY 12983 518-891-5549 crolandsag@yahoo.com	Handharvest (Scarlet to spot milfoil and SCUBA for removal)	Volunteer effort. About $200 for refilling tanks of divers	Eurasian watermilfoil	2002-present	signage at inlet requesting that anglers be harassed; signage at boat launch, annual meeting	method and intensity of harvest has resulted in demonstrable reductions; an area eradicated the previous year will have very sparse growth the following year; the areas with the densest growth seem to correlate with the areas down-current of the heaviest boat traffic; harvest before the plants start breaking up; return to same spots annually to get stragglers; lots of topside fragment collections; important to have a few passionate people who will lead and communicate the main messages.
Mt. View Lake, *Franklin*	Mountain View Association	Jerry Hickey, 518-493-5362 (sum), 585-637-2090 (win); geraldhickey@frontiernet.net	Handharvesting using SCUBA divers from Adirondack Watershed Institute; 10 year APA permit granted	$10,000 (total with Indian Lake)	Eurasian watermilfoil	First discovered in 1997. 1997-09 benthic barrier used. 2002 to-date SCUBA divers.	annual reminders in summer newsletter; presentations at annual meetings; had signs installed at boat launch	advise groups to work with professional to study lakes and formulate a plan; found DEC and APA to be very helpful.
Mt. View Lake, *Franklin*	Belmont MVI Lakes Foundation, Inc.	Bob Heet, 518-493-7593, robert.heet@verizon.net	Working with Cornell to investigate biological control and assess watershed practices	Projected cost of watershed management plan and invasive plant mitigation $295,000 to $435,000 during next 10 years	Eurasian watermilfoil	NA	NA	early detection and rapid response has benefited the effort; a coordinated, community-wide communications program is important; a website is a good communication tool - www.mountainviewlakes.com
Upper Saranac Lake, *Franklin*	Upper Saranac Lake Foundation	Curt Stiles, 518-359-7053, curtiles@adelphia.net, PO Box 554 Saranac Lake, NY 12983	Handharvest / Benthic mats	$550,000 annually from 2004-05; $100K annually thereafter	Eurasian watermilfoil	1995-present	signage, steward boat wash, literature, public forums, and newsletters	success is relative - major progress has been made by the private sector against a long term problem. Transient boat traffic will continue to infest the lake through state boat launches and public campsites; www.usil.org
Lower, Upper, and Narrows of Chateaugay Lake *(Clinton and Franklin)*	Chateaugay Lakes Association	Mary McLean Johnson, 759 Sunset Rd. Lyon Mountain, NY 12952, mlmassocAICP@aol.com	No coordinated control strategy in place yet. Researching a strategy to control Eurasian watermilfoil.	NA	Eurasian watermilfoil	NA	pending approval to install an information kiosk at boat launch; newsletter column called Weed Watch	To be determined

East Caroga Lake, *Fulton*	East Caroga Lake Protective Association	Dona Goldman, 518-842-0929 (H), 518-835-4176 (Camp)	Selective suction harvest	$11,000 annual	Eurasian watermilfoil	approx. 15 years	Literature and sign postings.	controlled but not solved.
Seventh Lake, *Hamilton*	6th-7th Lakes Association, Fulton Chain	Bill Landmesser, 315-357-3059 (summer); 610-369-7637 (winter)	Drawdown annually; Deep drawdown	Hudson / Black River Water Regulating District	Eurasian watermilfoil	2001-2002; 2002-2003	displays at annual picnic; fliers	encourage lakes to work with regulating district; encourage deep drawdowns; looking to establish a systematic process so that deep drawdown happens annually without needing annual requests.
Sixth Lake, *Hamilton*	6th-7th Lakes Association, Fulton Chain	Ron Smith, smithrs@frontiernet.net	Drawdown annually; deep drawdown in 2001; Preliminary quantitative monitoring; intend to handharvest / suction pump in 2005	Volunteer Labor	Eurasian watermilfoil	2001-2002; 2002-2003	displays at annual picnic; brochures	easier to handharvest the plants prior to partial drawdown.
Fifth Lake, *Hamilton*	Fulton Chain of Lakes Association	Ron Smith, smithrs@frontiernet.net	Handharvest / Suction pump	Volunteer Labor	Eurasian watermilfoil	2003-present	education; signage at launches and marinas	NA
Lake Champlain	The Nature Conservancy - Southern Lake Champlain Valley Program	Paul Marangelo, SLCVP; 115 Main Rd. West Haven, VT 05743; 802-265-8645x22; pmarangelo@tnc.org	Hand pulling of water chestnut with volunteers in high-quality wetlands	$22,000	Water chestnut	1999-present	NA	controlled water chestnut at over 20 sites in the Southern Lake Champlain Valley in Vermont and New York. At the majority of the sites we treat, the plant still persists at low very densities, but no longer has ecological impacts.
Lake Champlain (Ferrisburg, VT to 2 miles south of Benson Landing Vt, Bulwagga Bay (near Port Henry) - 2 miles south of Putnam Station)	Vermont Department of Environmental Conservation	Tim Hunt; 802-241-3758, tim.hunt@state.vt.us	Mechanical harvest / Handharvest	$258,000 Mechanical harvesting; $100,000 Hand-pulling (avg 200-325K for mechanical; avg 100K for handpulling)	Water chestnut	1982-present	lake survey inspection	need annual funds for effective long-term control but currently making progress with annual action; waterflow is perceived as a primary vector.
Effner Lake, *Saratoga*	Effner Lake Association	Robert McGraw; rmcgraw47@aol.com 215-902-1332 (H) 518-654-2410 (Camp)	Handharvest to remove floating and shoreside fragments	Volunteer Labor	Fanwort	2001-present	education (wash boats)	NA
Lake Luzerne, *Saratoga*	Lake Luzerne Association (town-wide association of homeowners)	Dr. Robert Forte, 518-696-2400; rvforte@frontiernet.net	Handharvest to remove plants near beach and in front of property owners	Volunteer Labor	Eurasian watermilfoil	professional plant surveys in 1992, 1999, 2004	handouts, meetings	limited success, increase in Eurasian milfoil, most techniques appear to be limited in efficacy, not practical, and expensive - only SONAR seems to be effective.
Brant Lake, *Warren*	Brant Lake Foundation	Doug Payton, rdpayton@aol.com	Handharvest / Benthic mats; plan to hire a dive team to hand harvest larger patches, estimated at $6,000. Might hire a consultant.	No out of pocket costs yet other than the cost of the barrier and its initial cost of laying it ($10,000) plus research.	Eurasian watermilfoil	barriers placed in 1990 and moved in 2003	education	limited success; lots of work but effective in controlling the growth at the site.
Lake George, *Warren*	Lake George Park Commission	Michael White, LGPC, P.O. Box 749 Fort George Road, Lake George, NY 12845, 518-668-9347	Handharvest / Suction harvest / Benthic mats	$60,000	Eurasian watermilfoil	1985-present	public education, special regulations, enforcement, launch inspectors	The Commission's Eurasian Watermilfoil Management Plan has been updated with anticipated adoption by the Park Commission sometime during 2005. This management plan provides a cost projection over the next 5 years, using approved physical control methods, of $1.5 million dollars.
Loon Lake, *Warren*	Loon Lake Park District Association	Rob Freligh, rad4h2o@aol.com; 518-494-4043	Handharvest (snorkeling and SCUBA)	Volunteer Labor	Eurasian watermilfoil	2004-present	alerted marina to monitor boats, 2005 plant survey, kayak plant patrol	NA
Infected Adirondack waters not listed above:	*Bartlett Pond, Copperas Pond, Daggett Lake, Deer River Flow, Fish Creek Pond, Floodwood Pond, Follensby Clear Pond, Franklin Falls Flow, Great Sacandaga Lake, Grasse River (near Lampson Falls), Horseshoe Pond, Hunt Lake, Jenny Lake, Lake Algonquin, Lake Flower, Little Square Pond, Long Pond, Lower Saranac Lake, Mayfield Lake, Meacham Lake, Middle Saranac Lake, Mill Pond, Minerva Lake, Oseetah Lake, Putnam Pond, Taylor Pond, Union Falls Flow, West Caroga Lake*							

Appendix G. Signed Resolutions of Support

Resolution of Support for the Adirondack Park Nuisance Aquatic Species Management Plan

Whereas, the lakes, ponds and rivers across the Adirondack Park in many way underwrite the Adirondack Park economy of many communities through recreation, tourism, and high property values and provide tremendous experiences for visitors and residents alike;

Whereas, one of the long-term threats to Adirondack waters is from invasive aquatic nuisance species such as Eurasian Watermilfoil, water chestnut, zebra mussels, phragmities, purple loosestrife, among others.

Whereas, 49 lakes across the Adirondack Park have been found to be infested with invasive aquatic nuisance species and that the great majority of water bodies across the State of New York are currently infested with invasive aquatic nuisance species;

Whereas, there is a great opportunity to prevent further infestation of Adirondack waters through planning for early detection and prevention, education, monitoring and through management and control actions;

Whereas, the State of New York currently has appointed the Invasive Species Task Force to develop a strategy for management and control of invasive species across New York and expects to issue a final report by the end of 2005;

Whereas, local governments, state agencies, environmental organizations, lake associations, academic institutions, and other organizations worked to develop the Adirondack Park Aquatic Nuisance Species Management Plan;

Whereas, the purpose of the Adirondack Park Aquatic Nuisance Species Management Plan is designed to foster regional collaboration and coordination wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved;

Whereas, the Adirondack Park Aquatic Nuisance Species Management Plan has been submitted to the Invasive Species Task Force as a plan for the Adirondack Park and a model for regional planning;

Whereas, the implementation of the Adirondack Park Aquatic Nuisance Species Management Plan will help to minimize the spread of invasive aquatic nuisance species and protect the waters of the Adirondack Park enjoyed by residents and visitors alike;

It is hereby resolved that the NYS Federation of LAKE ASSOCIATIONS on the date of 1/22/06 hereby supports and endorses the Adirondack Park Aquatic Nuisance Species Management Plan.

Vice-President, NYSFOLA

Essex County Board of Supervisors

Resolution No. 104 ***April 3, 2006***
Regular Board Meeting

RESOLUTION OF SUPPORT FOR THE ADIRONDACK PARK AQUATIC NUISANCE SPECIES MANAGEMENT PLAN

The following resolution was offered by Supervisor Dedrick, who moved its adoption.

Upon the passage of a motion to consider from the floor, and the same appearing proper and necessary.

WHEREAS, the lakes, ponds and rivers of the Adirondack Park underwrite the economy of many Adirondack Park communities through recreation, tourism, and high property values and provide tremendous experiences for visitors and residents alike; and

WHEREAS, one of the long-term threats to Adirondack waters is from invasive aquatic nuisance species such as Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others; and

WHEREAS, at least forty nine waters across the Adirondack Park have been found to be infested with invasive aquatic nuisance species and that the great majority of water bodies across the State of New York are currently infested with invasive aquatic nuisance species; and

WHEREAS, there is a great opportunity to prevent further infestation of Adirondack waters through planning for prevention, early detection, education, monitoring, and through management and control actions; and

WHEREAS, there is an urgent need for a significant commitment to aggressively control and eradicate where possible known infestations of Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others, to prevent the spread to other areas within the Park; and

WHEREAS, the Invasive Species Task Force was created by the State of New York to develop a strategy for management and control of invasive species across New York and has issued its final report on November 30, 2005 that recognizes the need for proper planning to pro-actively address invasive species issues throughout the State; and

WHEREAS, local governments, state agencies, environmental organizations, lake associations, academic institutions, and other organizations worked to develop the Adirondack Park Aquatic Nuisance Species Management Plan; and

WHEREAS, the purpose of the Adirondack Park Aquatic Nuisance Species

Management Plan is designed to foster regional collaboration and coordination and leverage funding for programs and localities wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved; and

WHEREAS, the Adirondack Park Aquatic Nuisance Species Management Plan has been submitted to the Invasive Species Task Force as a plan for the Adirondack Park and a model for regional planning; and

WHEREAS, the implementation of the Adirondack Park Aquatic Nuisance Species Management Plan will help to minimize the spread of invsaive aquatic nuisance species and protect the waters of the Adirondack Park enjoyed by residents and visitors alike.

NOW, THEREFORE, BE IT RESOLVED, that the Essex County Board of Supervisors hereby supports and endorses the Adirondack Park Aquatic Nuisance Species Management Plan; and be it further

RESOLVED, that the Clerk of the Board of Supervisors be, and is hereby, authorized and directed to forward a certified copy of this Resolution to the Adirondack Park Invasive Plant Program, P.O. Box 65, Keene Valley, NY 12943.

This resolution was duly seconded by Supervisor Moses, and adopted.

STATE OF NEW YORK, COUNTY OF ESSEX)ss:

I, DEBORAH L. PALMER, Clerk of the Essex County Board of Supervisors, do hereby certify that I have compared the foregoing copy with the original resolution filed in this office on the 3rd day of April, 2006, and that it is a correct and true copy thereof.

IN TESTIMONY THEREOF, I have hereunto set my hand and affixed my official seal this 3rd day of April, 2006.

Deborah Palmer

Deborah L. Palmer
Clerk of the Essex County Board of Supervisors

Adk Park Invasive Plant Prog

RESOLUTION NO. 297-05

RESOLUTION OF SUPPORT FOR THE ADIRONDACK PARK AQUATIC NUISANCE SPECIES MANAGEMENT PLAN

DATED: DECEMBER 1, 2005

BY MR. HUTCHINS:

WHEREAS, the lakes, ponds and rivers across the Adirondack Park in many ways underwrite the Adirondack Park economy of many communities through recreation, tourism, and high property values and provide tremendous experiences for visitors and residents alike, and

WHEREAS, one of the long-term threats to Adirondack waters is from invasive aquatic nuisance species such as Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others, and

WHEREAS, at least forty nine waters across the Adirondack Park have been found to be infested with invasive aquatic nuisance species and that the great majority of water bodies across the State of New York are currently infested with invasive aquatic nuisance species, and

WHEREAS, there is a great opportunity to prevent further infestation of Adirondack waters through planning for early detection, prevention, education, monitoring, management and control actions, and

WHEREAS, there is an urgent need to aggressively control and eliminate where possible known infestations of Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others, to prevent the spread to other lakes within the Park, and

WHEREAS, the State of New York currently has appointed the Invasive Species Task Force to develop a strategy for management and control of invasive species across New York and expects to issue a final report by the end of 2005, and

WHEREAS, local governments, state agencies, environmental organizations, lake associations, academic institutions, and other organizations worked to develop the Adirondack park Aquatic Nuisance Species Management Plan, and

WHEREAS, the purpose of the Adirondack Park Aquatic Nuisance Species Management Plan is designed to foster regional collaboration and coordination and leverage funding for programs and localities wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved, and

WHEREAS, the Adirondack Park Aquatic Nuisance Species Management Plan has been submitted to the Invasive Species Task Force as a plan for the Adirondack Park and model for regional planning, and

WHEREAS, the implementation of the Adirondack Park Aquatic Nuisance Species Management Plan will help to minimize the spread of invasive aquatic nuisance species and protect the waters of the Adirondack Park enjoyed by residents and visitors alike, and

WHEREAS, the Hamilton County Board of Supervisors supports the referenced initiatives, but would also support a more significant commitment to eradicate, now, therefore, be it

RESOLVED, that the Hamilton County Board of Supervisors goes on record requesting consideration for a more significant commitment to eradication, and be it further

RESOLVED, that the Hamilton County Board of Supervisors hereby supports and endorses the Adirondack Park Aquatic Nuisance Species Management Plan, and be it further

RESOLVED, that a certified copy of this resolution be forwarded to the Adirondack Park Invasive Plant Program.

Seconded by Mr. Edwards and adopted by the following vote:

AYES: BERNIER, MORRISON, EDWARDS, HUTCHINS, RISLEY, MEZZANO, FARBER AND TOWERS

NAYS: NONE

ABSENT: WALLACE

STATE OF NEW YORK)

COUNTY OF HAMILTON) SS:

SUPERVISORS' CHAMBERS)

I, Laura A. Abrams, Clerk of the Board of Supervisors of Hamilton County hereby certify that I have compared the foregoing resolution with the original resolution, adopted by the Board of Supervisors of said County, at a duly called and held meeting of said Board on the 1st day of December, 2005 and the same is true and correct transcript therefrom and the whole thereof.

Witness my hand and official seal this 6th day of December, 2005.

Laura A. Abrams

Clerk of the Board

WELLS TOWN BOARD

Wells, N.Y. 12190

Brian E. Towers
Town Supervisor
Deborah Taylor
John Anderson

The Council

Mari G. Wilson
Town Clerk
Roberta Chamberlain
John Morrison

RESOLUTION NO. 150

RESOLUTION DATE: December 12, 2005

SUPPORT FOR THE ADIRONDACK PARK AQUATIC NUISANCE SPECIES MANAGEMENT PLAN

Moved BY: Councilman Anderson

WHEREAS, the lakes, ponds and rivers across the Adirondack Park in many ways underwrite the economy of many communities through recreation, tourism, and property values and provide tremendous experiences for visitors and residents alike, and

WHEREAS, one of the long-term threats to Adirondack waters is from invasive aquatic nuisance species such as Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others, and

WHEREAS, at least forty nine waters across the Adirondack Park have been found to be infested with invasive aquatic nuisance species and that the great majority of water bodies across the State of New York are currently infested with invasive aquatic nuisance species, and

WHEREAS, there is a great opportunity to prevent further infestation of Adirondack waters through planning for early detection, prevention, monitoring, management and education, and

WHEREAS, there is an urgent need to aggressively control and eliminate where possible known infestations of Eurasian watermilfoil, common reed grass, water chestnut, zebra mussels, and purple loosestrife, among others, to prevent the spread to other lakes within the Park, and

WHEREAS, the State of New York currently has appointed the Invasive Species Task Force to develop a strategy for management and control of invasive species across New York and expects to issue a final report by the end of 2005, and

WHEREAS, local governments, state agencies, environmental organizations, lake associations, academic institutions, and other organizations worked to develop the Adirondack park Aquatic Nuisance Species Management Plan, and

WHEREAS, the purpose of the Adirondack Park Aquatic Nuisance Species Management Plan is designed to foster regional collaboration and coordination and leverage funding for programs and localities wherein the threat of aquatic nuisance species will be minimized and the vitality of the Adirondack Park's varied ecosystems and the socioeconomic prosperity of the people who live in the Park will be preserved, and

WHEREAS, the Adirondack Park Aquatic Nuisance Species Management Plan has been submitted to the Invasive Species Task Force as a plan for the Adirondack Park and model for regional planning, and

WHEREAS, the implementation of the Adirondack Park Aquatic Nuisance Species Management Plan will help to minimize the spread of invasive aquatic nuisance species and protect the waters of the Adirondack Park enjoyed by residents and visitors alike, and

WHEREAS, the Wells Town Board supports a significant commitment to eradicate Aquatic Nuisance Species, now, therefore, be it

RESOLVED, that the Wells Town Board hereby supports and endorses the Adirondack Park Aquatic Nuisance Species Management Plan, and be it further

RESOLVED, that the Wells Town Board goes on record requesting consideration for a more significant commitment to eradication, and be it further

RESOLVED, that a certified copy of this resolution be forwarded to the Adirondack Park Invasive Plant Program.

Seconded by Councilman Chamberlain

AYES: Towers, Morrison, Anderson, Chamberlain, Taylor

NAYS: 0

ABSENT: 0

STATE OF NEW YORK
Hamilton COUNTY } ss.
Office of the Clerk of the
TOWN OF Wells

(SEAL)

TOWN CLERK CERTIFICATE NO. 439

This is to certify that I, Mari Wilson, Town Clerk of the Town of Wells in the said County of Hamilton, have compared the foregoing copy of Res. #150-2005 "Support For...Nuisance Species Management Plan" with the original now on file in this office, and that the same is a correct and true transcript of such original and the whole thereof.

In Witness Whereof, I have hereunto set my hand and affixed the seal of said Town this 13th day of December, 20 05.

Mari Wilson

Town Clerk of the Town of Wells
Hamilton County, New York

Appendix H. Glossary

aquatic invasive species: species which establish a population, reproduce rapidly, and displace native species. An invasive species can be a native species that becomes locally aggressive, usually because of some human-caused habitat change, or an invasive species may be a non-native species.

aquatic nuisance species: largely synonymous with *aquatic invasive species*. Garden weeds represent good examples of nuisance species.

biodiversity - the variety of plants and animals, their genetic variability, and their interrelationships and ecological processes, and the communities and landscapes in which they exist.

biofouling - the undesirable accumulation of microorganisms, plants and animals on artificial surfaces.

ecosystem - a community of living organisms and their interrelated physical and chemical environment.

herbaceous - green and leaflike in appearance or texture. Not woody.

invasive exotic plant - a nonindigenous plant species which is able to proliferate and aggressively alter or displace native biological communities.

macroinvertebrate - invertebrate animals (animals without backbones) large enough to be observed without the aid of a microscope or magnification.

monoculture - an ecosystem dominated by a single species.

native species: plants and animals present in the Adirondacks at the time of European contact.

non-indigenous species: any species or other viable biological material that enters an ecosystem beyond its historic range.

non-native species: essentially synonymous with nonindigenous species. Typically a plant or animal accidentally or intentionally distributed outside of its historic range by human activities. For example, a species from Eurasia transported to the Great Lakes (i.e. zebra mussel) is considered non-native. Humans may also transport species to regions outside of their native range, but which are still within the USA. As an example, smallmouth bass were native to parts of New York State but were originally not part of the native Adirondack fish assemblage (except for Lake George and Lake Champlain). They are now widespread in most Adirondack watersheds due to stocking efforts that began in 1872.

Appendix I. Bibliography

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