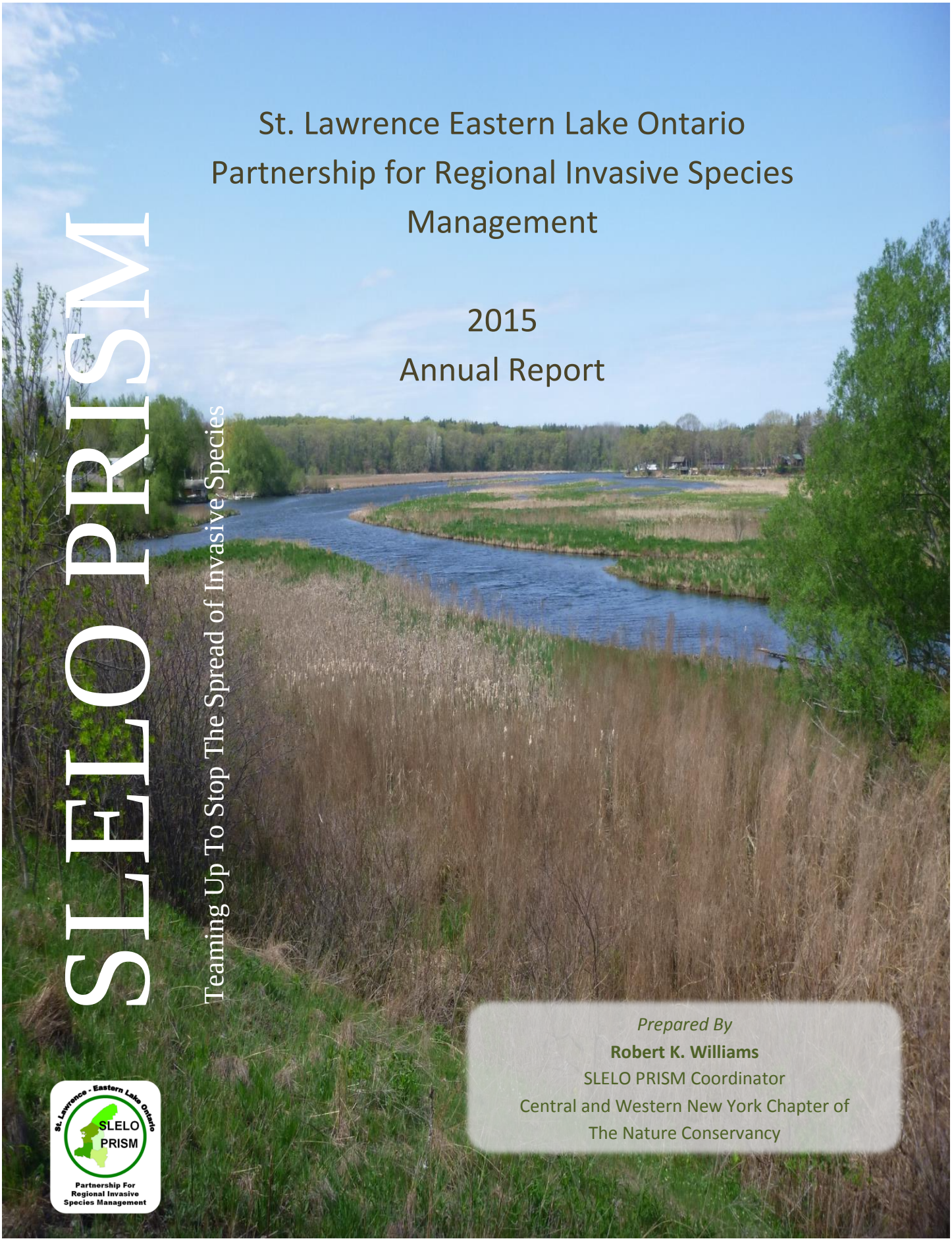

St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management

2015 Annual Report

SLELO PRISM

Teaming Up To Stop The Spread of Invasive Species

Prepared By

Robert K. Williams

SLELO PRISM Coordinator

Central and Western New York Chapter of The Nature Conservancy

About SLELO – PRISM

The St. Lawrence Eastern Lake Ontario Partnership for Regional Invasive Species Management (collectively SLELO PRISM) is one of eight partnerships in New York State. It encompasses St. Lawrence, Jefferson, Oneida, Lewis and Oswego counties outside of the Adirondack Park.

Our mission is to protect native habitats, biodiversity, ecosystem processes, natural areas including preserves, refuges, freshwater resources and open space using a collaborative and integrated approach to invasive species management. The emphases of these activities are prevention, early detection/rapid response, education and restoration.

Copies of this report can be obtained
from the SLELO-PRISM website:

www.sleloinvasives.org

Under the menu item:
Resources/Information Sharing/Downloads / 2015 Annual Report

Cover Photo:
Salmon River Estuary, R. Williams 2015 ©

2015 Strategic Measures Summary

Accomplishments

SLELO PRISM Partners strive to protect the ecological integrity of the Eastern Lake Ontario region and Northern New York's natural & cultural resources from the threat of invasive species. In 2015 partners collaborated on making the following accomplishments, a.k.a. strategic measures:

- *Completed habitat restoration efforts along the Salmon River by suppressing 86% of Japanese knotweed populations and restoring 21 sites with native grasses and live plantings.*
- *Successfully responded to a new introduction of a prevention species, water hyacinth (Eichornia crassipes)*
- *Initiated two intensive forest pest surveys for Hemlock Woolly Adelgid (Adelges tsugae) and Emerald Ash Borer (Agrilus planipennis).*
- *Supported the development of biological controls for water chestnut (Trapa natans).*
- *Completed early detection surveillance on nine priority conservation areas within the PRISM region.*
- *Began work on developing environmental DNA as an early detection tool.*
- *Controlled ten high priority invasive species on 110 individual sites.*
- *Exceeded our education and outreach targets by 70 %.*

Nice Work Partners!

Acknowledgements

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Invasive Species Coordination Unit
-
The New York State Invasive Species Council
-
The numerous partner organizations and their representatives who contribute their expertise, time and resources to the development and success of the SLELO PRISM.

Why we're involved

Invasive species are a factor in the decline of 49 percent of all threatened or endangered species. (Pimentel 2004).

❖

Invasive species are the second largest threat to biodiversity after habitat loss. (Pimentel 2004). But when considered as a type of habitat loss, invasive species then compete for first place (Williams, 2013).

❖

Invasive species pose a "ground level" threat to whole systems, human health, municipal infrastructures, cultures and economies. (Williams 2013).

Evidence Based Conservation

The colonization of ecologically important natural areas by invasive species negatively impacts the diversity and abundance of native flora and fauna requiring conservation to restore, sustain and create resiliency.

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Collaboration & Partnerships

Conservationists, in particular, realize the benefits of working together to achieve an environmental goal; establishing a set of goals, objectives and strategies requires expertise and collaboration. SLELO partners have established a strong sense of collaboration and this collaboration is perhaps one of the leading components of our PRISM's success since our formal inception. Our efforts cannot be realized, however, without the support we receive from the Central and Western New York Chapter of The Nature Conservancy as our "host organization", the support we receive from iMapinvasives and from the New York State Invasive Species Coordination Unit and Invasive Species Council.

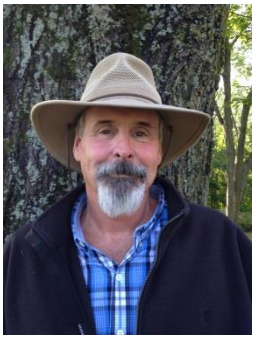
New Partner

In 2015 the Central New York Regional Planning and Development Board became a new partner of the PRISM at the Cooperating Affiliate level of participation.

Strategic Approach

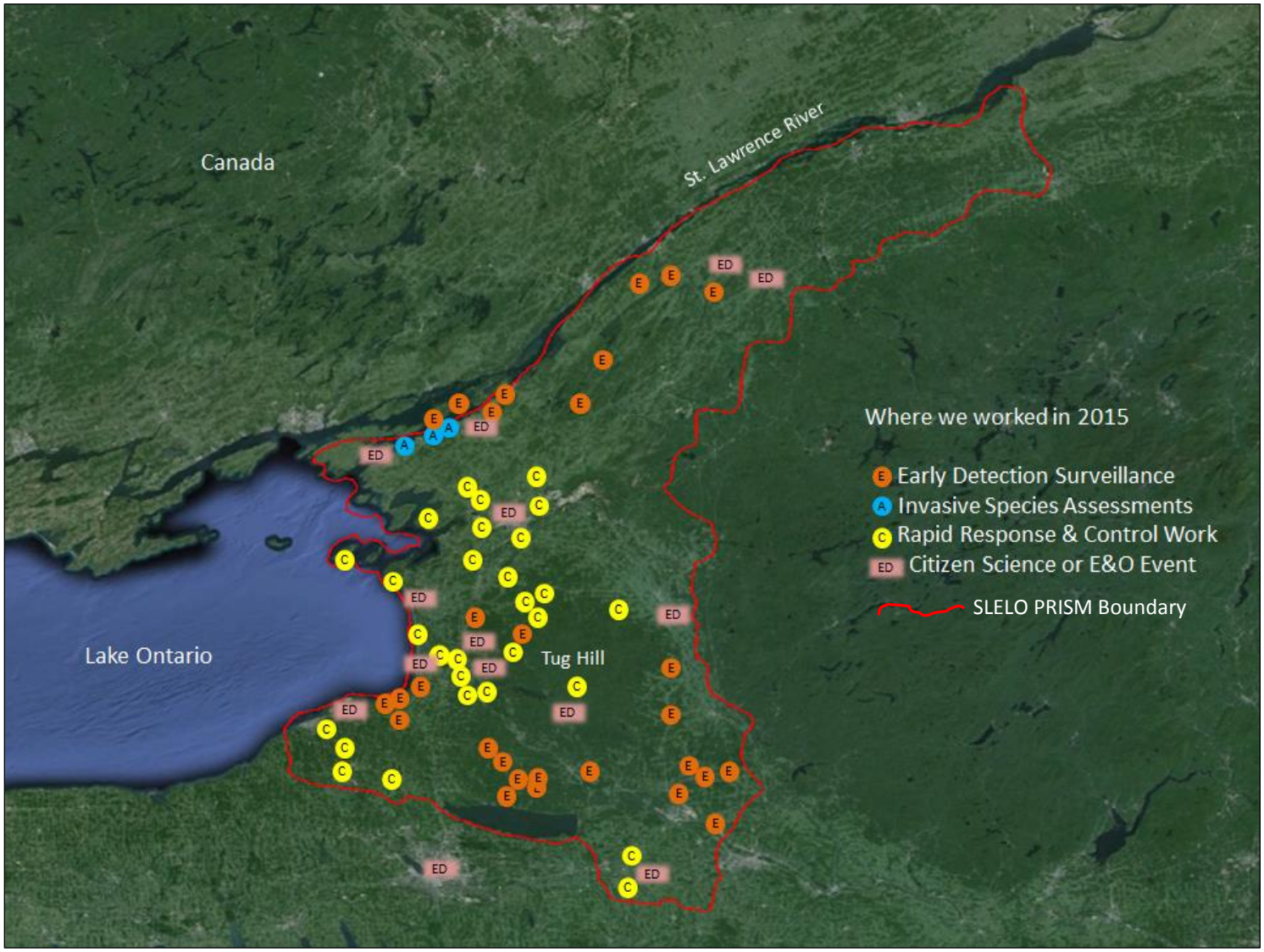
During our strategic planning phase, our partners recognized the importance of linking our specific strategies to our objectives, and subsequently linking our objectives to our goals. More importantly our partners recognized that by following this approach we increase the likelihood of success. **This report reflects our calendar year 2015 accomplishments in direct relation to the seven goals identified by our partners**.

"Many of our accomplishments are achieved not by default, but through commitment and robust collaboration within our partners. The numbers tell a great story, but it's how we as a partnership set up our strategic plan and since everything is directly linked to this plan, it's safe to say were on a roll. I hope you will be as pleased as I am with the progress that the partners of the SLELO PRISM have made in 2015. "



~*Rob Williams*
PRISM Coordinator

Where we worked in 2015:



(Figure 1) Showing spatial distribution of partner efforts.

In 2015 partners of the SLELO PRISM completed early detection surveillance on nine Priority Conservation Areas, control work on 110 sites and invasive species assessments on three sites throughout the region. We collaborated on a combined 25 education, outreach and citizen science events many of which cannot be shown spatially but cover substantial areas and target audiences.

SLELO PRISM

Goal 1 – PREVENTION

Prevent the introduction of invasive species into the SLELO PRISM's Priority Conservation Areas.

PARTICIPATION WITH THE NEW YORK STATE INVASIVE SPECIES ADVISORY COMMITTEE:

The New York State Invasive Species Advisory Committee (ISAC) was formed to provide information, advice and guidance on invasive species issues to the New York State Invasive Species Council. The SLELO PRISM Coordinator continues to represent all New York State PRISM's on the ISAC. This representation includes participation at quarterly meetings, highlighting PRISM activities from across the state and engaging in meaningful dialog all of which aids in the prevention of invasive species introductions and spread.

ENCOURAGING THE CALL-OUT OF AQUATIC INVASIVE SPECIES IN THE NEW YORK STATE BOATER SAFETY CERTIFICATION:

All individuals born on or after 5/1/96 are now required to successfully complete an approved course in boater safety education in order to operate a powerboat in New York State. The course covers a range of topics from navigation and safe operation to boating emergencies. A component of the coursework offers a basic understanding of aquatic invasive species. Although the coursework includes an aquatic invasive species (AIS) component, the SLELO PRISM partners recommended to the ISAC and the program sponsor that the instructors become more familiar with AIS and that the AIS portion of the safety course be highlighted.

PROMOTING RESPONSIBLE CLEAN EQUIPMENT, SITE DEVELOPMENT AND TOPSOIL RELOCATION PROTOCOLS:

In cooperation with the Ontario Invasive Plant Council of Canada, SLELO partners created a document to supplement a booklet titled "Clean Equipment Protocol for Industry". The supplemental document provided actions that can be taken by developers, engineers and heavy equipment contractors to reduce the spread of invasive species from construction sites and through topsoil relocation. 300 copies were sent directly to developers, engineers and heavy equipment contractors in the SLELO region.

SLELO PRISM

Goal 2 – EARLY DETECTION & RAPID RESPONSE

Rapidly detect new and recent invaders and eliminate all individuals within a specific area. ED/RR is the next highest priority after prevention.

Timing is critical when responding to the initial detection of an emerging invasive species in any area. Early Detection and Rapid Response (ED/RR) – spotting and responding to the invasion of an unwanted plant, animal or other organism before it can become established – is the first step in eradicating or effectively managing a newly-arriving invasive species. Our partnership developed an ED/RR protocol which outlines two types of early detection along with three response levels. Copies of this protocol can be obtained by contacting the SLELO-PRISM Coordinator or from the SLELO PRISM website, www.sleloinvasives.org. In 2015, early detection surveillance was conducted on nine Priority Conservation Areas (PCA's).

Salmon River Estuary:

The estuary was surveyed by the SLELO-PRISIM Early Detection team on June 22nd to assess the invasive species present in previously established highly probable areas (HPA's). Species such as hydrilla (*Hydrilla verticillata*) and water chestnut (*Trapa natans*) are of high concern in this estuary as they drastically impact the ecological structure of water bodies. The HPA's within the Estuary were sampled with a standard rake-toss method to determine invasive and native species present. **There were no Prevention "watch-list" species observed in 2015.** HPA's 1 through 3 had no Target Management species seen. At HPA 4, Water chestnut, which was previously observed on the east side of the dock, was found on both sides of the Pine Grove boat launch in this 2015 survey. Water chestnut was also observed at new locations within the estuary and recorded on the GPS. HPA 5 had no new invasive species present in the area. HPA 6 was added by the Early Detection Field Crew in 2014. This HPA had water chestnut, Eurasian water-milfoil, European frogbit, and curly leaf pondweed present in both the rake toss and visual surveys

Delta Lake:

Delta Lake is located in Oneida County near Rome New York. An aquatic survey was conducted at previously established HPA's including the DEC's public boat launch and offshore of the Teugega Country Club, and locations with shallow or slow-moving water. Aquatic surveys involved performing rake-tosses and making visual observations to determine what species were present. HPA 2 was not visited in 2015, following the reasoning set by previous visits to Delta Lake: unsuitable conditions for invasive aquatic vegetative species—steep banks and water depth—and safety concerns regarding its proximity to the overflow dam. Growth of aquatic plants appeared to be inhibited by the unusually cool and rainy season. Reduced and delayed growth in aquatic plants has also been observed at other sites during this year's rotation. **No Prevention "Watch-list" species were observed in 2015.** Identified but not labeled as invasive in the 2013 report, curly-leaf pondweed (*Potamogeton crispus*) was observed at HPA's 1 and 8 in 2015. A survey for rusty crayfish (*Orconectes rusticus*) was also implemented at HPA 8. Only native crayfish were found.

Fish Creek Wildlife Management Area:

The Early Detection team surveyed Fish Creek Wildlife Management Area in June of 2015. The team surveyed previously established terrestrial highly probable areas (HPA's) and aquatic sites that were established by the 2013 field crew. At each HPA glossy buckthorn (*Rhamnus frangula*) was present. Most HPA's and roadsides surrounding the Management Area had wild parsnip present. Every water body surveyed had European frogbit (*Hydrocharis morsus-ranae*) present. Smaller creeks along Factory Road had large amounts of frogbit present, which was not noted in the 2013 field report. At HPA 1 purple loosestrife (*Lythrum salicaria*) was found along the trail and while canoeing to the aquatic sites. HPA 5 also had loosestrife along the creek. A small stand of ash trees was noted though may not be accessible for survey due to being located on private property. It did not show obvious signs of emerald ash borer.

Little John Wildlife Management Area:

Surveying was conducted on Routes 5A and 5B within the management area as well as roads bordering the area. The snowmobile trails were also surveyed, while some sections were not completed due to impassable conditions. Due to technical difficulties, not all of the tracks were recorded on the GPS unit. Previously established HPA's were re-visited to note any invasive species of concern.

Hemlock stands along the snowmobile trails and main roads were examined and noted in the GPS unit for future monitoring of Hemlock Woolly Adelgid (HWA). In all stands surveyed no signs of HWA were present. **All sites that were treated for Phragmites in 2014 had no plants present in 2015**. A previously recorded site of coltsfoot and periwinkle was seen again in 2015. Buckthorn was present in many areas throughout Littlejohn. Some large patches were recorded.

Upper and Lower Lakes Wildlife Management Area:

A survey was conducted in 2015 on the perimeter of the management area and an aquatic survey was conducted at boat launches and fishing access points. At each HPA a terrestrial survey was conducted and areas with paths were surveyed. At aquatic HPA's a rake-toss was preformed to determine the species present. **There were no Prevention "Watch-list" species observed in 2015.** At most HPA's wild parsnip (*Pastinaca sativa*) was observed. HPA 5 had a large amount of wild parsnip present along both sides of the unmaintained road. This was the largest population of wild parsnip observed in the Wildlife Management Area. The perimeter of Upper and Lower lakes also had wild parsnip, common buckthorn, and glossy buckthorn present.

French Creek Wildlife Management Area:

On July 24th a terrestrial survey was conducted on previously established HPA's. One new terrestrial HPA (HPA 8) was added to the survey. HPA 8 is marked on the French Creek WMA map as a gated road with a parking area, which makes it highly susceptible to invasives as a locus for automobile traffic.

No Prevention "Watch-list" species were found in the 2015 survey. Wild parsnip (*Pastinaca sativa*) was present in areas surrounding the WMA and at HPA's 1, 2, 3, 5, and 8. Common buckthorn (*Rhamnus cathartica*) was present at HPA 8 along the gated road and at some points surrounding the WMA. Areas with wild parsnip should be of high concern because it can overtake areas quickly.

Mud Lake:

A terrestrial survey was conducted by hiking the Mud Lake ATV Trail which was comprised of three HPA's. **No Prevention "Watch-list" species were found in the 2015 survey.** Throughout the ATV trail occurrences of spotted knapweed (*Centaurea maculosa*) populations were observed. Some populations consisted of fewer than 5 plants, whilst others entailed more individuals and accordingly spanned across larger areas.

Tug Hill I.S.P.Z.

The Tug Hill Invasive Species Prevention Zone (ISPZ) was surveyed by the SLELO-PRISM Early Detection team on June 12th and June 16th specifically looking for signs of Hemlock Woolly Adelgid (HWA). Hemlock Woolly Adelgid (*Adelges tsugae*) is on the SLELO-PRISM Prevention "watch-list" and can devastate forest habitats. It has been detected in a neighboring PRISM, the Finger Lakes PRISM, but not known to be in the SLELO-PRISM currently. Other invasive species were also surveyed for. **No prevention "watch-list" species were recorded during this survey**. Very few hemlock stands were found. Many of the stands that were seen include balsam, spruce, and various pines. None of the typical signs of HWA were observed.

Dexter Marsh – Muskellunge Creek:

Situated seven miles west of Watertown New York, at the head of the Black River Bay, Dexter Marsh is a predominantly wetland area. Northern pike, bass and panfish are found in the shallow to deep water areas including Muskellunge Creek. A variety of ducks, black terns, shore birds and marsh waders utilize the area as well as Canada geese and occasional Bald eagles. Water-hyacinth (*Eichornia crassipes*) (Figure 2) was observed for the first time in Muskellunge Creek and a rapid response was undertaken. The water hyacinth was likely introduced as a commercial water garden plant.

Rapid Response

On August 7th, partners at the NYS DEC Region 6 field office discovered and responded to a new introduction of water hyacinth (*Eichornia crassipes)*

Figure 2: (*Eichornia crassipes)*. Pedro Tenorio-Lezama, Bugwood.org

SLELO PRISM

Goal 3 – CONTROL OF INVASIVE SPECIES

Control invasives using three basic levels of control; ERADICATION – to eliminate all individuals and the seed bank; CONTAINMENT – contain established infestations to prevent spreading; SUPPRESSION – reduce the density of invasives to promote & restore native growth.

Eradicated 14 Giant Hogweed sites:

Giant hogweed (*Heracleum mantegazzianum),* (Figure 3), is considered invasive and poses a real threat to human health. Sap from this plant can cause severe burns to skin. In 2015, partners of the SLELO-PRISM collaborated to control 31 giant hogweed sites in three counties within the PRISM region. Of the sites treated over the past five years (including sites previously treated by DEC), 14 sites have shown no regrowth in the past three years and are considered eradicated.

Root cut manual technique = 10 sites

Foliar herbicide treatment = 21 sites

Figure 3: SLELO PRISM's rapid response team Mike Parks and Ed Miller.

Treated 96 Swallow-wort sites in 10 Priority Conservation Areas:

Figure 4: Swallow-wort (*Cynanchum spp*.)

Swallow-wort (*Cynanchum spp.*) (Figure 4), are problematic wherever they become established. In 2015, SLELO's licensed pesticide applicator Mike Parks along with Field Technician Ed Miller treated 96 sites in 10 priority conservation areas. Areas included: Deer Creek WMA, Eldorado/Black Pond, Black River Trail, Mud Bay Site, OBI Couch Easement, Cooke Road Site, Chaumont Barrens Preserve, Three Mile Creek, Lakeview WMA and Limerick Cedars Preserve.

Water Chestnut Control:

Partners of the SLELO PRISM collaborated on the hand harvesting of countless water chestnut plants (*Trapa natans)* within the SLELO PRISM region. Noteworthy is that all sites are still producing plants, although some chemically treated sites show reduced abundance and new populations are being identified primarily in backwater, previously undetected areas. Fifty seven individuals participated this year on water chestnut hand pulls sponsored by the NYS DEC, the SLELO PRISM and the Oneida Lake Association (figure 5).

Figure 5: Volunteers assisting with water chestnut pull at Lakeview Wildlife Management Area.

Other Species:

Using multiple techniques, the SLELO partners reduced the spread of ten highly invasive species from 110 sites. Control activities were a collaboration among our rapid response team, our special project sub-awardees and independent contractor efforts. Species controlled in 2015 included: **swallow-wort**, ***Phragmites*****, water chestnuts**, **giant hogweed**, **purple loosestrife**, **Japanese knotweed**, **honeysuckle**, **buckthorn, autumn olive and water hyacinth**.

Conservation Outcomes from Control Activities:

Control efforts help reduce the spread of invasives and foster the growth of native species which support the ecological balance and health of our native habitats.

Goal 4 – EDUCTION / OUTREACH / CITIZEN SCIENCE

Increase public awareness and understanding of invasive species issues.

Engaging the general public on various issues related to invasive species is at the forefront of our long-term management effort. Increasing stakeholder and public awareness of invasive species and accompanying negative impacts along with management options is a goal of SLELO's educational efforts (Table 1).

In 2015 we exceeded our education and outreach targets by 70%

Table 1: Education and outreach accomplishments in 2015.

2015 EVENTS	DATE/ LOCATION	ETSIMATED # PEOPLE ENGAGED
Tug Hill Commission Local Gvnt. Conference	March 26, Watertown, NY	650
Derby Hill Bird Festival	April, Derby Hill / Oswego	?
iMap Spring Training	May 20, CCE/ Watertown	27
Eastern Lake Ontario Symposium	June 10, Selkirk Shores St. Park	96
Eastern Lake Ontario Dunes Workshop	June 18, Selkirk Shores St. Park	50
Oswego County Agriculture Safety Day	June 11, Sandy Creek Fairground	80
Thousand Islands Land Trust, Picnic	June 12, Zenda Farm,Clayton	60
Herb and Flower Festival	June 20,Oneida County CCE	100
TILT Bug Bonanza Event	July 29,Zenda Farm, Clayton NY	19
NY Outdoor Guide Summer Rendezvous	July 31, Tailwater Lodge, Altmar	4
NYS Woodsmen Field Days	August 21, Booneville Fairground	100
Wild & Scenic Film Festival	September 12, Potsdam, NY	35
The Nature Conservancy Day Hike	Sept 19, Salmon River Falls	7
NYS Conservation/Sportsmen Fall Convention	September 20. Syracuse, NY	8
Salmon River Fish Hatchery Open House	September 29, S.R. Fish Hatchery	50
Environmental Days	Sept 26th / Fort Drum	140
Ontario Invasive Plant Council	Burlington Ontario, Canada	89
Potsdam Local Government Conference	October 13th/ SUNY Potsdam	20
Great Lakes Exploration Trip	October 15th/ Black Pond	12
Watercraft Inspection Steward Webinar Series	October 28th/ Webinar	70
Cornell In-Service Conference	November 2-4, Ithaca NY	60
Total No. people engaged		**1,581**

Our Education and Outreach Committee also developed two new educational pamphlets and revised and reprinted 3,000 copies of our popular Invasive Species Handbook.

River Stewardship:

A unique effort in 2015 was the initiation of a River Steward along the Salmon River. As part of our Salmon River Initiative, this component focused on teaching anglers about invasive species that they were likely to encounter and that are easily spread by fishing activities (Table 2). Species included: Japanese knotweed, didymo and rusty crayfish. The effort revealed that anglers reported knowing about Japanese knotweed but they were not as familiar with didymo and rusty crayfish. The River Steward component helped raise awareness about steps that anglers can take to prevent the spread of these invasive species to their favorite fishing spots (Figure 6).

At the onset of the Salmon River Initiative, people fishing the river were randomly asked if they knew about Japanese knotweed, most responded by saying no, but after showing them a knotweed plant they followed up by identifying the plant as bamboo. At the close of this project the majority of randomly selected anglers stated that they were familiar with Japanese knotweed and could identify it.

Table 2: River Stewardship Events.

2015 RIVER STEWARD	DATE/LOCATION	Estimated # People
SLELO River Steward	September 3, 2015/Dec Fishing Access Sites	7
SLELO River Steward	September 10, 2015/ Dec Fishing Access Sites	22
SLELO River Steward	September 11, 2015/ DEC Fishing Access Sites	11
SLELO River Steward	September 23, 2015/ Dec Fishing Access Sites	25
Total people reached		**64**

Figure 6-Right: SLELO PRISM Educator Megan Pistolese reaching out to anglers along the Salmon River in 2015.

Volunteering / Citizen Science:

Volunteers are critical partners of and participants of invasive species activities throughout the Eastern Lake Ontario and St. Lawrence region. Citizens voluntarily participating in community activities such as water chestnut hand harvesting or invasive species surveying are important and accepted cultural forms of reciprocity. Volunteering extends our capacity and increases our effectiveness in conservation activities while at the same time provides for a valuable learning experience for volunteers.

In 2015 there were numerous opportunities to interact with volunteers. Notable were the volunteers that participated with various water chestnut hand pulls throughout the region. Table 3 below summarizes this year's volunteer events:

Table 3: Volunteer events.

2015 Volunteer Events	**DATE/ LOCATION**	**ESTIMATED PEOPLE ENGAGED ABOUT SLELO & INVASIVES**
SLELO PRISM Water Chestnut Pull	July 11th, 2015/ Pine Grove Boat Launch	15 attendees (15 bags, totaling 266.1 pounds collected)
DEC Water Chestnut Pull	July 14th , 2015/ Lake View	20 attendees (36 bags collected)
DEC Water Chestnut Pull	July 23rd, 2015/ Lake View	15 attendees (26 bushels collected)
Oneida Lake Association Water Chestnut Pull	August 5th , 2015 Oneida Lake	7 attendees (25 bags were collected)
Total number of volunteers		**57 individuals**

In 2015, 34 individuals participated in two separate citizen science events. The first was the Bug Bonanza sponsored by the Thousand Islands Land Trust (TILT) at the Zenda Farm Preserve in Clayton, NY. SLELO PRISM Educator Megan Pistolese lead a "hands-on" training that focused on invasive forest pests. Another event was held at the Pine Grove boat launch in Port Ontario NY. This hands-on event focused on the identification of several aquatic invasive species.

SLELO PRISM

Goal 5 – COOPERATION

Facilitate opportunities for sharing resources, including funding, personnel, equipment, information and expertise.

Working together towards a common cause is perhaps one of the SLELO Partnership's strongest attributes. Our partners are interested in the subject matter, there is a tremendous amount of expertise within the partnership, and we are engaged, motivated and work extremely well together. Highlights from 2014 include:

- Seasonal employees from various partner organizations collaborated on various activities such as water chestnut hand pulls at multiple locations.
- Partners designed, implemented and helped to set up for our second Eastern Lake Ontario Invasive Species Symposium (Figure 6).
- Our Education and Outreach Committee collaborated to promote education and awareness activities.
- We implemented special projects through our partners to extend the work that is needed.
- Partners continued to promote a cooperative forum at monthly meetings.
- Partners were invited to participate and/or volunteer at events/exhibits & public speaking.

Figure 7: SLELO partners helping to set up for our Eastern Lake Ontario Symposium. From left: Elizabeth Macewen, Caitlin Muller, Megan Pistolese, Sue Gwise, Katie Malinowski, Christopher Sherwood.

SLELO PRISM

Goal 6 – INFORMATION MANAGEMENT & SHARING

Collect, utilize, and share information regarding surveys, infestations, control methods, monitoring, and research

Providing and sharing information in a way that is easily accessible is an important aspect of regional collaboration. To manage and share information among SLELO partners and the public, and to maintain continuity in reporting, our partners maintained several initiatives in 2015 including:

- **Field Reports**: Standardized field reports were developed for all field activities. These reports are sent directly to partners and posted on the SLELO website.
- **In-Situ Treatments Page:** In 2015 a new page was added to our website that shares information and maps of rapid response and treatment areas within the PRISM.
- **iMapinvasives**: iMapinvasives is an effective database used for collecting invasives species information. In 2015 training was provided to 24 SLELO partners and guests.
- **SLELO PRISM Website**: The SLELO PRISM website has become an important medium for managing and sharing information. The popular site is used to: announce partner meetings, display field reports, share information on invasive species management and post relevant information. In 2015 our site had just over 27,000 visits with the most popular pages being the "Species" page, the "Field Reports" page and our "Resources" page.
- **Quarterly Newsletter**: Four issues of the SLELO PRISM newsletter were published in 2015. This was accomplished with volunteer commitment from several of our partners along with our education and outreach coordinator.
- **Partner Roundtable Reports**: All partner meetings begin with a roundtable opportunity for partners to share information regarding invasive species. Meetings end with an open dialog.
- **Participation with Statewide Webcasts**: Partners participate in and facilitate monthly webcasts.

SLELO PRISM

Goal 7 – HABITAT RESTORATION

Develop and implement effective restoration methods by reducing the impact of invasive species on ecosystem processes and conducting restoration in areas that have been degraded by invasive species.

Restoring and protecting the biodiversity of unique habitats and cultural resources from the negative impacts posed by invasive species is the core purpose for our work. This, and sustaining the habitat which supports rare, threatened or endangered species, is at the forefront of our mission. Invasive species are problematic for many reasons including ecosystem impacts on both natural systems and managed systems such as forests, our food supply, including not only agriculture but also harvested wildlife, fish and shellfish and our man made environments, including landscaping, infrastructure, industry and gardens. Areas that have been treated for the suppression of invasive species may be considered as disturbed areas and can be restored more effectively with intentional planting of native species.[1]

Salmon River Initiative:

In 2013, SLELO partners (Figure 8) began implementation of a special project known as the Salmon River Initiative. The purpose of this initiative is to restore the stream corridor to a more natural state similar to that prior to the invasion of Japanese knotweed (*Polygonum cuspidatum*). Objectives of this initiative include: 1) Suppression of Japanese knotweed. 2) Native plant restoration and 3) Education and outreach.

Figure 8: Garrett Brancy on the Salmon River adjacent to restored area.

Based on the original project goal to suppress knotweed populations, it is reasonable to conclude that we achieved a 65% suppression rate. Site restoration using native grass seed and live stakes made from on-site plant materials ranges from moderate to good. Two monitored sites DOT-1 and DSR-2 show little or no knotweed regrowth and very good native plant and grass growth. This same observation is noticed at additional sites treated along the river. Site DSR-1 shows good suppression, but some knotweed regrowth. A separate report is available for this project.

[1] Salon P.R. and C. F. Miller. 2012. A Guide to: Conservation Plantings on Critical Areas for the Northeast USDA, NRCS, Big Flats Plant Materials Center, Corning, NY.

SPECIAL PROJECTS and PARTNER INITIATIVES

Deliverables that help to meet contractual obligations and deliver invasive species management.

Forest Pest - Hemlock Wooly Adelgid Survey, SLELO PRISM:

During the summer of 2015, the SLELO PRISM early detection team embarked on an intense effort to survey hemlock stands in the area for the presence of the Hemlock Woolly Adelgid (Figure 9). The focus area was the southern Tug Hill region within the lower half of the PRISM region. The PRISM's two person early detection team inspected a total of 821 hemlock trees within 14 Priority Conservation Areas. So far no HWA have been observed.

Figure 9: HWA infestation. Photo by Mark Whitmore, Cornell.

Forest Pest - Emerald Ash Borer Survey, SLELO PRISM:

In 2015, early detection surveys for Emerald Ash Borer (EAB) were conducted at state parks along the St. Lawrence River within the SLELO-PRISM. These state parks included Jacques Cartier State Park, Keewaydin State Park, and Kring Point State Park. EAB has been detected on the other side of the St. Lawrence River in Canada. Due to its close proximity, the SLELO-PRISM determined that a survey for signs of EAB in this area was important. Several ash stands were observed for any significant signs of EAB. Signs of EAB include epicormic growth on the tree, canopy dieback, D-shaped exit holes, significant amounts of woodpecker damage, and any emerald green beetles found. There were no clear signs of Emerald Ash Borer seen during this survey.

Ducks Unlimited Perch River, Point Peninsula and Black Pond Project:

Ducks Unlimited, Inc. (DU) received funding from the St. Lawrence – Eastern Lake Ontario Partnership for Regional Invasive Species Management in August 2015 to support grassland enhancement efforts in the St. Lawrence Valley (SLV). DU partnered with NY State Department of Environmental Conservation (NYSDEC) to advance enhancement of three acres of grassland through invasive species control of pale swallow-wort (*Cynanchum rossicum*).

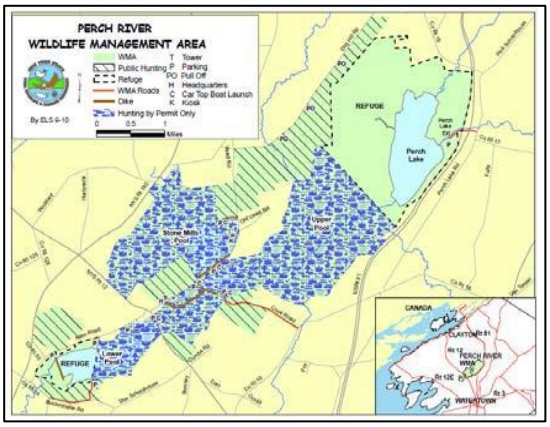


Figure 10 above: Perch River area.

The project goal was to eradicate occurrences of Pale Swallow-wort at Perch River (Figure 10) and Point Peninsula (Figure 11) Wildlife Management Areas (WMA) and at Black Pond (Figure 12). These areas are a priority for Invasive species eradication due to their diversity of plants and animals including threatened and endangered species, such as Bald Eagle (*Haliaeetus leucocephalus),* Black Tern (*Chlidonias niger*), Least Bittern (*Ixobrychus exilis*), Pied-billed Grebe (*Podilymbus podiceps*), Northern Harrier (*Circus cyaneus*), Upland Sandpiper (*Bartramia longicauda*), Sedge Wren (*Cistothorus platensis*) and Henslow's Sparrow (*Ammodramus henslowii*). Grassland fields at Perch River are known to support nesting Henslow's Sparrows.

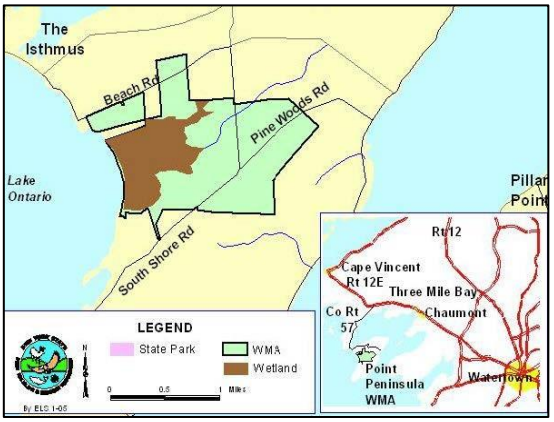


Figure 11 above: Point Peninsula Pine Woods Road.

The total area of treatment in 2015 at Perch River, Point Peninsula, and Black Pond WMAs was **9-acres**.

~ Sarah Fleming
Regional Biologist, Ducks Unlimited

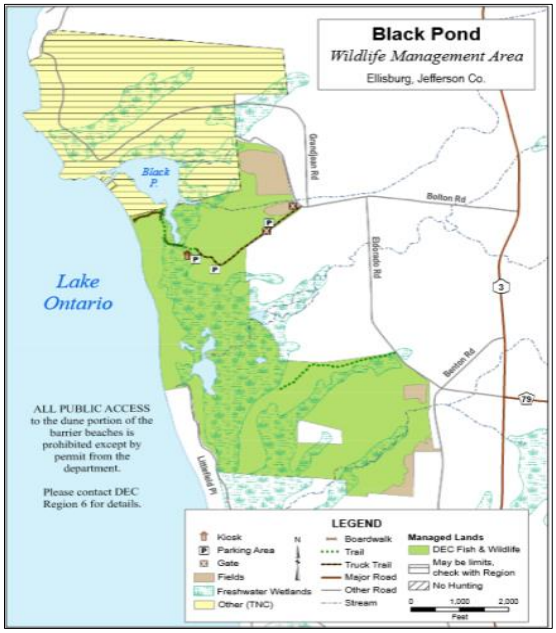


Figure 12 above: Black Pond WMA.

The Nature Conservancy, Chaumont Barrens Restoration Project:

In 2015 The Nature Conservancy received a special project award for invasive species management on the Chaumont Barrens Preserve located in Jefferson County, NY. This preserve features alvar grasslands that contain globally rare native plant communities. Adjacent to each of these meadows are cedar and hardwood forests where glacial action left deeper layers of soil than the near - bare limestone that characterize the alvars.

An 80 acre target area of the preserve was chosen for suppression efforts. The area was chosen based on the documented presence of rare plant species e.g. Prairie Smoke *(Geum triflorum)* and (Great Plains Ladies'Tresses (*Spiranthes magnicamporum)* and because a public hiking trail runs through it and features the meadow and its flora in the interpretive materials associated with the trail.

A 70-90% mortality rate amongst the perimeter patches of buckthorn, and a 60%-80% mortality rate amongst the interior patches of buckthorn and honeysuckle was achieved as a result of this effort.

~Brian Roat

NNY Conservation Lands Manager, TNC

TILT, Invasive Species Assessments and Volunteer Stewardship:

In 2015, with the assistance of a SLELO-PRISM sub-award, the Thousand Islands Land Trust initiated a Stewardship Volunteer program on all seven TILT Preserves. Once trained, volunteers assisted staff using iPads and GPS in the field to collect invasive species data at four preserves: Foster-Blake Woods Preserve, Ingerson Preserve (Rivergate Trail), Otter Creek Preserve and Chippewa Bay Preserve. Invasive species identification was focused on ten terrestrial species. As a part of the Tributary Stewardship, training volunteers located aquatic invasive species, including Eurasian watermilfoil, curly-leaved pondweed, purple loosestrife, and flowering rush. Following the collection of the field data, the information was downloaded into ArcGIS and maps were generated in concert with graphic software to summarize volunteer and staff efforts. A separate report is available detailing this project.

~Robin Turbolino

Thousand Islands Land Trust

NYS DEC Region 6 - Botulism E and Invasive Species:

Invasive species: zebra and quagga mussels and round gobies all play a role in the build-up of and spread of the Botulism E toxin. The role that these invasives play goes as follows: zebra and quagga mussels filter plankton making the water more clear, this allows sunlight to penetrate at deeper depths thus increasing algae production. Accumulation of dead algae on the lake bottom promotes the growth of the toxic strand of Botulism E. Mussels ingest this toxin and are not effected; however, the toxin is passed onto round goby and other fish that eat the infected mussels allowing botulism to bio accumulate through the food web impacting birds that may feed on the infected fish (Figure 13).

Figure 13: Dead Common Loon – Botulism E suspect Photo Compliments of Irene Mazzocchi.

Common Loons and Long-tailed ducks appear to be extremely sensitive to the Botulism E toxin and make up a large number of the dead birds observed on the shorelines of Lake Ontario. In addition, species such as Red-breasted Mergansers, Red-necked Grebes, and Great Black-backed Gull have also died from this disease. In the fall of 2015, the bodies of over 87 birds including: 63 Common Loons and 16 Long-tailed Ducks and several other bird species were found along the eastern basin of Lake Ontario. Although, the numbers of birds killed by Botulism E in 2015 are not as high as seen in past years, 2006 with 226 recorded bird mortalities and in 2007 with 235 bird mortalities, this disease is still causing a negative impact on fish eating bird populations.

~Irene Mazzochi

Biologist NYS DEC Region 6

Save The River – Volunteer Project:

During the summer of 2015, the Save The River organization made a significant milestone with their Riverkeeper Volunteer Program by reaching a total of 1,000 trained volunteers. Through this program volunteers are trained to identify and report invasive species observations, native species die-off's and pollution incidences. This collaboration enhances the SLELO partnership's ability to track invasive species occurrences along the St. Lawrence River.

~Kate Breheny

Save The River

SLELO PRISM

RESEARCH PRIORITIES

As requested by the New York State DEC Invasive Species Coordination Unit and the NYS Invasive Species Council.

Biological Control – Water Chestnut *(Previously submitted to the NYS Invasive Species Council)*

Water chestnut (*Trapa natans*) continues to pose a significant threat to the ecology of our waterways resulting in an ongoing strain to economic, recreational and human resources. In New York State alone, 32 counties representing nearly 60% of the state now have chestnut populations. Populations are found in nine states in the northeastern United States including at least two Canadian provinces. Tremendous monetary and human resources have gone into the control of *Trapa natans* for many years. For example, in the Oswego River alone nearly $500,000.00 has been spent on mechanical harvesting with an equal amount spent on chemical treatments and that's just for one site! Much more has been spent on efforts in Lake Champlain. Estimates suggest that millions of dollars are directed annually to suppressing water chestnuts. These costs are not subsiding – but increasing as are the continued impacts to the ecological integrity of our freshwater resources, tourism and recreation.

In 2014, the SLELO PRISM submitted a research priority request to the New York State Invasive Species Coordination Unit resulting in a $250,000 award to the New York Invasive Species Research Institute at Cornell University in 2015.

Researchers at Cornell University have completed some initial studies indicating that (*Galerucella. birmanica)* is a prime candidate for the biological control of water chestnut *(Trapa natans).* To continue the work on this biological control agent for water chestnut, additional research over an estimated three year period will be needed to confirm this biological control as being effective and safe. It is understood that researchers from China are ready and willing to collaborate.

Program Expenses by Function:

In 2015 program expenses were grouped together based on functional/programmatic categories (Figure 14). This allows for a general understanding of the current program focus and does not reflect a financial report.

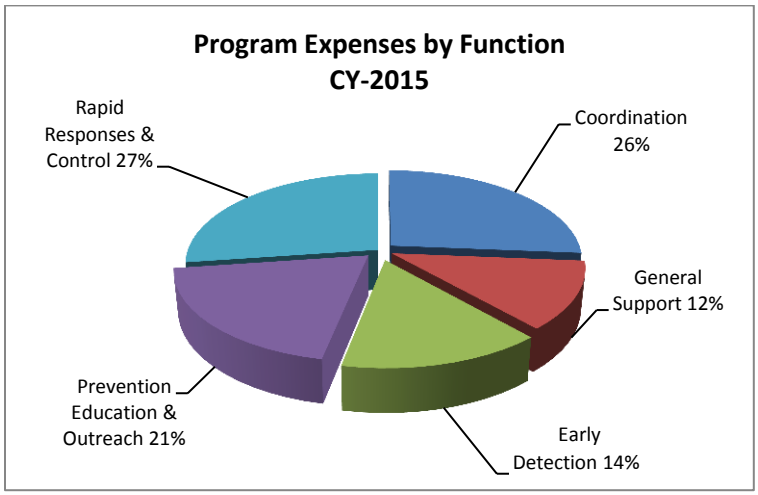


Figure 14: Program expenses grouped by function.

Rapid Response and Control includes:	Licensed seasonal pesticide applicator and field technician, one control related sub-award.
Coordination includes:	Activities and expenses related to administering the program and the Program Director.
Prevention Education & Outreach includes:	Supplies and materials, contracted special project x1. Full time Educator.
Early Detection includes:	Seasonal employees x2 to conduct early detection surveillance. Included was the Thousand Island Land Trust special project for early detection assessments.
General Support includes:	Travel, communications, etc.

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Figures with accompanying photo credits:

Tables:

Appendix A: List of Current PRISM Participants (**P**=Principal Partner, **A**=active, **I**=interested)

Bertuch, Kathleen	(A)	Central New York Regional Planning and Development Board
Billhardt, Nichelle	(A)	Lewis County Soil and Water Conservation District
Bonanno, Sandy	(A)	Oswego County Environmental Management Council / Independent Contractor
Breheny, Kate	(A)	Save The River
Jim Brophy	(I)	Selkirk Shores State Park Manager
Brown, Matt	(I)	St. Lawrence County Soil and Water Conservation District
Chairvolotti, Joe	(IA)	Oswego County Soil and Water Conservation District
Covey, Julie	(I)	Ontario Bays Initiative, Consultant
Dehollander, John	(A)	Oswego County Soil and Water Conservation District
Drosse, Richard	(A)	Oswego County Environmental Management Council
Durant, Michael	(I)	Lewis County Soil and Water Conservation District
Farquhar, James	(**PA**)	New York State Department of Environmental Conservation, Region 6
Freese, Robert	(A)	New York State Department of Environmental Conservation Pesticides Unit
Ganter, Travis	(A)	Fort Drum Military Installation
Garret, Linda	(I)	Tug Hill Tomorrow Land Trust
Gwise, Sue	(**PA**)	Jefferson Co. Cooperative Extension
Harvill, Jennifer	(I)	Tug Hill Commission
Hetzler , Paul	(A)	St. Lawrence Cooperative Extension.
Holzworth, Casey	(I)	NYS Parks, Recreation and Historic Preservation.
Hughes, Tom	(I)	NYS Parks, Recreation and Historic Preservation.
Malinowski, Kate	(A)	Tug Hill Commission
Malitz, Christina	(I)	Fort Drum Military Installation
Mazzochi, Irene	(A)	New York State Department of Environmental Conservation, Region 6
Merrell, Amber	(I)	Extension NYS - I.S. Clearing house
Miller, Rebecca	(**PA**)	New York State Department of Transportation
Parton, Bonnie	(A)	New York State Department of Environmental Conservation, Region 7
Payette Joshua	(**PA**)	New York State Department of Parks, recreation and Historic Preservation
David MacNeill	(**PA**)	Sea Grant New York
Ripka, Mary	(I)	The Nature Conservancy, CWNY
Roet, Brian	(**PA**)	The Nature Conservancy, CWNY
Sherwood, Christopher	(I)	Forester, New York Power Authority
Shupe, Scott	(I)	Oneida Lake Association
Smith, Gerry	(I)	Audubon, CNY Chapter
Surprenant, Leslie	(IA)	New York State Department of Environmental Conservation Invasive Species Coordination Unit
Tibbles, Jake	(**P**)	Thousand Islands Land Trust
Williams, Rob	(A)	The Nature Conservancy, CWNY
Willbanks, Lee	(A)	Save The River

Appendix B: SLELO PRISM's Current Species Lists

PREVENTION SPECIES

- ✓ Mile-A-Minute Vine (*Polygonum perfoliatum*)
- ✓ Didymo (*Didymosphenia geminate*)
- ✓ Hydrilla (*Hydrilla verticillata*)
- ✓ Asian Long horned Beetle (*Anoplophora glabripennis)*
- ✓ Hemlock Woolly Adelgid (*Adelges tsugae*)
- ✓ Silver, Big Head and Grass Carp (*Ctenopharyngodon spp*.)
- ✓ New Zealand Mud Snail (*Potamopyrgus antipodarum*)
- ✓ Hemimysis (*Hemimysis anomala*)
- ✓ Asian Clam (*Corbicula fluminea*)
- ✓ Kudzu (*Pueraria lobata*)
- ✓ Feral swine (*Sus scrofa* Linnaeus)
- ✓ Porcelain Berry (*Ampelopsis spp.)*
- ✓ Water Soldier *(Stratiotes aloides)*
- ✓ Rusty Crayfish *(Orconectes rusticus)*
- ✓ Water Hyacinth (*Eichornia crassipes)*

TARGET MANAGEMENT SPECIES

- ✓ Black & Pale Swallow-wort (*Cynanchum spp*.)
- ✓ Water Chestnut (*Trapa natans*)
- ✓ Giant Hogweed (*Heracleum mantegazziamum*)
- ✓ Emerald Ash Borer (*Agrilus planipennis*)
- ✓ Phragmites (*Phragmites australis*)
- ✓ Purple Loosestrife (*Lythrum salicaria*)
- ✓ Japanese Knotweed (*Polygonum cuspidatum*)
- ✓ Glossy Buckthorn (*Rhamnus spp*.)
- ✓ Japanese Stiltgrass (*Microstegium vimineum*)