SLELO PRISM

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

2019 Annual Report

Protecting our lands and waters from the impacts of invasive species.

INVASIVE SPECIES MANAGEMENT
SAINT LAWRENCE
EASTERN LAKE ONTARIO - PRISM

The Nature Conservancy
Protecting nature. Preserving life.

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Teaming Up to Stop the Spread of Invasive Species

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

www.sleloinvasives.org

Under the menu item:
Resources / Downloads / 2019 Annual Report

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Cover photo:
Lake Ontario Shoreline – Henderson NY
©TNC/Rob Williams

2019 Strategic Accomplishments

- *Strategically aligned conservation efforts within a new five-year service agreement with NYS DEC to administer invasive species management efforts to protect our lands and waters.*
- *Increased our professional capacity by recruiting a Terrestrial Restoration & Resiliency Coordinator and an Aquatic Restoration & Resiliency Coordinator.*
- *Launched an Urban Forest Sustainability Initiative focused on assisting local communities to prepare for invasive pests and climate issues affecting municipal trees and urban forests.*
- *Received international exposure for our work at the North American Invasive Species Management Association's Annual Conference.*
- *Assisted with a Tug Hill Restoration and Resiliency Project to suppress invasive plants and pathogens and to reestablish 35,000 native, climate adaptable trees.**
- *Intercepted aquatic invasive species on 280 occasions during the course of a three-year spread prevention effort.*
- *Participated in the New York State "Reimagining the Erie Canal" initiative and advocated for improved water quality and invasive species prevention.*
- *Successfully eradicated 64% of giant hogweed plants protecting people from this poisonous plant.***
- *Engaged with 96 education and outreach events across a five-county region directly engaging 3,533 individuals.*

Nice Work Partners!

**The Nature Conservancy's Healthy Forest Scorecard*

***To be considered eradicated there must be no reoccurrence for a minimum of 3 years.*

Acknowledgements

This report was prepared by:
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Invasive Species Program Manager
*
Peer review provided by: Mary Ripka
*
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Megan Pistolese, Education/Outreach Coordinator
Brittney Rogers, Aquatic Restoration /Resiliency Coordinator
Robert Smith, Terrestrial Restoration/Resiliency Coordinator
Mike Parks (Millers Turf), Rapid Response Team

*
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-
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-
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Invasive Species Coordination Section

The New York State Invasive Species Council and the New York State Department of Agriculture and Markets

The numerous partner organizations and their representatives who contribute their expertise, time and resources to the development and success of the SLELO PRISM.

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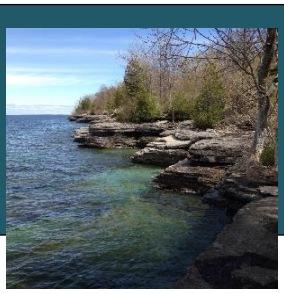


Executive Summary

After many months of critical thinking, planning, scoping and gathering input from our partners and various teams and committees, I am very excited to continue the journey of protecting our lands and waters from the adverse impacts of invasive species.

Having completed a review of our PRISM's Strategic Plan and under our service contract with NYS DEC, we continue to align our programs and initiatives in such a way as to have greater, longer lasting conservation impact while at the same time broadening our scope to include such considerations as climate change, carbon issues and restoration/resiliency efforts. Our core program to include: prevention, early detection/rapid response, education and outreach and ecological restoration will be robust and carried out in such a way as to maximize the benefits to nature and people.

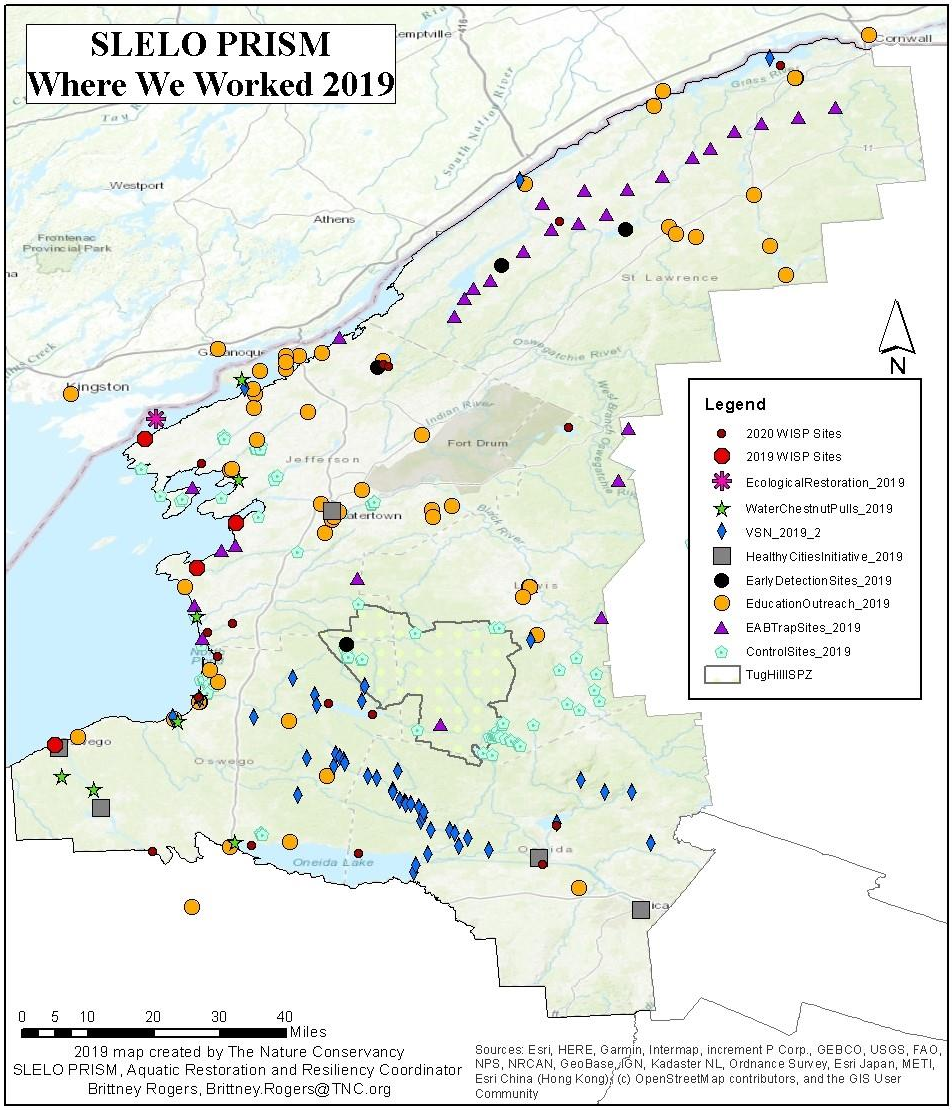
We will move forward with invasive species control, site preparation and tree planting on our Tug Hill ISPZ with a focus on restoration, climate adaptability, carbon storage and forest pest resiliency. We will be engaging municipal leaders on the development of Urban Forest Sustainability Plans including native street tree planting. We will be significantly expanding our watercraft inspection and stewardship efforts to prevent the introduction and spread of aquatic invasive species. Included in our efforts are innovative ways to utilize and learn from aquatic invasive species nutrient analysis to inform management along with expanding our efforts to restore sites and systems to support native species in the wake of a changing climate.

These efforts will become more apparent over the coming years and my hope is that soon, we will all *pledge-to-protect* the health of our lands and waters.

~*Rob Williams*
PRISM Manager

Where we worked in 2019

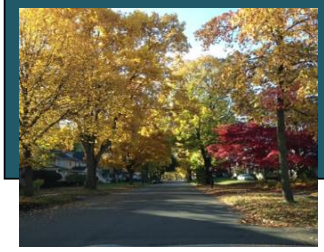
(Figure 1) Showing spatial distribution of partner efforts.



160

Number of places we worked in 2019 around the SLELO region.

In 2019, SLELO partners collaborated on a wide variety of invasive species initiatives throughout the region. Our efforts included prevention, early detection, rapid response, restoration, citizen science and education/outreach and community preparedness.



2019 SPECIAL INITIATIVES

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

Urban Forest Sustainability Initiative

In recognition of the importance healthy trees play in our communities, partners have begun developing an initiative to help our communities sustain urban forest health by maintaining diverse, climate adaptable and invasive species resistant trees. Over the coming years our partnership will be providing guidance resources to cities that will better enable these communities to develop Urban Forest Sustainability Plans that include an insight on climate adaptability, carbon storage, tree diversity and invasive species components.

Aquatic Invasive Macrophyte Nutrient Analysis

During the summers of 2018 and 2019, partners of the SLELO PRISM hand harvested over 68,000 pounds (34 tons) of *Trapa natans* plants each year. By knowing the nutrient content of the plant material (Table 1), we can better understand the potential implications this species may have on internal nutrient loading and its effects on water quality in general and possibly harmful algae blooms. Additionally, knowing the carbon content of the plants may help us to better inform managers as to proper disposal of unwanted *Trapa* plants so as not to release carbon into the atmosphere.

Table 1: Results of select nutrient analysis of water chestnut plants.

Harvest Year	Average amount of nutrients removed from 4-Eastern Lake Ontario embayment's as contained in *Trapa natans* samples (composite) based on percentage of wet ash calculations.		
	Nitrogen	*Phosphorus*	*Carbon*
2018	128 pounds	19 pounds	2,850 pounds
2019	130 pounds	21 pounds	2,750 pounds
2-year total	**258 pounds**	**40 pounds**	**5,600 pounds**

Tug Hill Forest - Climate & Resiliency Project:

In recent years, the SLELO Rapid Response Team assisted with invasive species control to benefit an on-going, restoration and resiliency project on Tug Hill. This project includes a large-scale tree planting effort, focusing on species diversity to promote both climate adaptable and invasive species resilient forest succession. One goal is to accelerate regeneration and enhance species diversity by planting tree seedlings from 26 different species over two years. Long lived legacy trees include; sugar maple and red spruce. Northern edge species included oaks, native pine and hickory (Sargis 2018)[1]. In 2018 35,000 seedlings were planted. In 2019, partners prepared plans to plant an additional 7,000 seedlings.

Above, Terrestrial Coordinator conducting a site visit on Tug Hill. TNC©Brian Roet

Monitoring and Managing Ash Framework - MaMA

SLELO PRISM has partnered with Jonathan Rosenthal, Director of the Ecological Research Institute (ERI), and Dr. Radka Wildova, their Senior Scientist to implement appropriate steps from ERI's MaMA (Monitoring and Managing Ash) framework and promoting the adoption of this frame-work more broadly by land managers including agencies, municipalities, private landowners, NGOs and citizen scientists throughout the SLELO region. Four workshops were held across the SLELO region in partnership with MaMA, New York State Department of Environmental Conservation, Tug Hill Tomorrow Land Trust, The Nature Conservancy and Cornell Cooperative Extension of Oneida County. 79 people participated in these workshops and there is a lingering ash monitoring plot established in each SLELO county.

Above: A youth volunteer with a tag that can be used to monitor all types of trees including ash. ©TNC/ Megan Pistolese

[1] Sargis Gregg. 2018 Improving the health and resilience of our forests. PowerPoint.

International Exposure on Invasive Species Efforts

Above, L-R: Robert Smith, Megan Pistolese, Rob Williams and Brittney Rogers presenting our work to an international audience.Photo Credit: Carrie Brown Lima.

Over four hundred individuals from seven countries attended the 2019 North American Invasive Species Management Association's Annual Conference in Saratoga Springs New York. Both the SLELO PRISM and The Nature Conservancy were well represented. Rob Williams, SLELO PRISM Manger was moderator for a session entitled "Advances in eDNA Technology in Aquatic and Terrestrial Systems". Megan Pistolese presented a poster titled "Aquatic Invasive Species Spread Prevention Efforts". Robert Smith presented a poster titled "Salmon River Restoration Initiative" and Brittney Rogers presented a poster titled "eDNA and Underwater Video Surveillance as Early Detection Tools". Combined, SLELO representatives directly engaged individuals from: Guam, South Africa, Switzerland, Canada, Italy and the US.

Additionally, The Nature Conservancy (both the NY Division and the North American Division) shared an exhibit featuring "Don't Move Firewood" and New York State invasive species information.

Save The River AIS Citizen Science Project

© Patricia Shulenburg-STR

In 2019 our partners at Save The River implemented a project geographically centralized in St. Lawrence and Jefferson counties throughout the international section of the St. Lawrence River that brought together a multinational cohort of volunteers and partner organizations. The project was designed to support invasive species citizen science projects, increase education and outreach programming and expand invasive species volunteer surveillance networks along the St. Lawrence River.

Tiered Species List

Historically, the SLELO PRISM has utilized two lists of species to inform management decisions, the Prevention List and the Target Management List. Recognizing the need to further define actions related to a particular species, the SLELO PRISM collaborated with the New York iMapinvasives team to develop a tiered system of species (Figure 2) which also allows us to communicate appropriate management actions between other NY PRISMs. The new Tiered System is as follows:

Tier 1 - Prevention/Early Detection Species

Not in PRISM, but within 100-mile buffer or introduction pathway exists. Highest level of early detection survey efforts.

Tier 2 – Eradication Species

Present in PRISM, but at low abundance making eradication feasible within Priority Conservation Areas (PCA's).

Tier 3 -Suppression Species

Too widespread for eradication from PRISM. Targeted management to suppress the population within Priority Conservation Areas (PCA's).

Tier 4 - Local Control Species

Present / widespread throughout PRISM with no chance of eradication. Localized, landowner management applied to protect high priority resources like rare plant or recreation assets.

Tier 5 - Species

These are species that may or may not be in PRISM but are difficult to respond to or that require more knowledge of. Monitor the species.

Figure 2: Tiered Species Chart

Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Prevention/Early Detection Spp. Not in PRISM, but within 100 mile buffer or introduction pathway exists. Highest level of early detection survey efforts.	*Eradication* Present in PRISM, but at low abundance making eradication feasible within Priority Conservation Areas (PCA's).	*Suppression* Too widespread for eradication from PRISM.Targeted managemet to supress the population within Priority Conservation Areas (PCA's).	*Local Control* Present / widespread throughout PRISM with no chance of eradication. Localized, landowner mgnt applied to protect high priority resources like rare plant or recreation	*Monitor* - Species that may or may not be in PRISM but are difficult to respond to or that require more knowledge of.

Eastern Lake Ontario Invasive Species Symposium

This year's biennial Eastern Lake Ontario Invasive Species Symposium featured seven expert presenters on topics ranging from the "Implications of Climate Change on Invasive Species in the Northeast" by Carrie Brown-Lima- New York Invasive Species Research Institute to "The Challenge of Managing Invasive Species in Restoration Projects" by Dr. Tom Whitlow-Cornell University.

The event was held at the Tailwater Lodge in Altmar New York and included field sessions, numerous exhibits and continuing education credits for nine professional certifications. Over 116 participated in this biennial event.



Left: Symposium held at the TailWater Lodge in Altmar NY. © Patricia Shulenburg. Middle: Symposium Walk-N-Talk. Molly Marquand Leads a discussion on native seed collection. ©Josh Payette. Right: Symposium networking opportunities and exhibits. ©Patricia Shulenburg.

Lake Ontario Harbor Initiative

2019 marked the completion of field sampling on a collaborative effort with the Finger Lakes and Western New York PRISMs, along with the Atkinson Center for a Sustainable Future at Cornell University. The project serves to strengthen early-detection capability in Lake Ontario and the St. Lawrence Seaway with a focus on four high-risk shipping ports located in, Buffalo, Rochester, Oswego and near the St. Lawrence-Lake Ontario confluence. These Great Lakes ports have been identified by Sea Grant as having a high invasion risk from invasive Ponto-Caspian (central European) species. The project involved collecting water samples near these ports and analyzing the samples for environmental DNA (eDNA). This effort will play an important role in developing post-implementation data following the International Convention for the Control and Management of Ship Ballast Water and Sediment Agreement which took effect in September 2017.

Above: The container ship Evans Spirit at the Port of Oswego. ©TNC/Rob Williams.

Goal 1 – PREVENTION

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

Eastern Lake Ontario Aquatic Invasive Species Spread Prevention

SLELO PRISM's Watercraft Inspection Steward Program is part of a larger program throughout New York State. Other partners are also promoting aquatic invasive species spread prevention efforts via watercraft inspection stewards. These combined efforts should significantly slow the spread of aquatic invasive species throughout New York State and waters of the northeast.

Beginning in 2020, SLELO PRISM will be expanding our program to 20 high-use boat launches, from as far north as Massena and south to Rome. This will more than double the number of stewards previously staffed at launches, to 10 stewards rotating between sites. Cumulative metrics are presented in (Table 2).

SLELO PRISM WISP Stewards TNC© Rob Williams

Table 2: Metrics from watercraft inspections

Cumulative Metrics – Watercraft Inspection Steward Program
➢ *3,647 boaters engaged.*
➢ *Engaged boaters from 15 states and 2 provinces.*
➢ *AIS interceptions = 280.*
➢ *8.3% of all watercraft are contaminated with AIS.*
➢ *92.4% of all participants received AIS "Clean-Drain-Dry" literature.*
➢ *Top 3 travel routes identified: Route 3, Route 81, Route 12-E.*
➢ *Furthest areas recently boated: Canada, Florida, Texas and Alaska.*

Participation with the New York State Invasive Species Advisory Committee, ISAC

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. This includes discussions and recommendations regarding the prevention of invasive species introductions into New York State along with spread prevention across PRISM regions. In 2019, the SLELO PRISM Manager served in dual capacity on the committee as the New York PRISM Representative and the Secretary to the committee.

Participation with the "Reimagining the Canal" visioning and community engagement

In 2019, New York State in cooperation with the Rockefeller Institute, initiated a community engagement effort as part of a plan to invigorate the Erie Canal as a social, economic and environmental asset to New York. In recognition that the canal is a major invasive species pathway with connectivity across the entire state, representatives from the SLELO PRISM and The Nature Conservancy participated and provided information regarding best management practices to mitigate the spread of aquatic invasive species through the canal system as well as practices to improve water quality by reducing stormwater runoff into the canal. Floodable landscapes (pocket-scape's) for ecological benefit were also encouraged.

Photo: Canal NY

Goal 2 – Early Detection

Search for new and recent invaders and respond strategically before they become established.

Timing is critical when responding to the initial detection of an emerging invasive species in any area. Detecting 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.

Scouting for Invasives Within Priority Conservation Areas

There are currently 25 Priority Conservation Areas or PCA's within the SLELO region. These are areas that have ecological significance or that are host to rare native species. To maximize efficiency, each PCA is scouted on a two-year rotation by our terrestrial and aquatic coordinators. This season only a portion of PCA's were surveyed due to the transition from seasonal staff to full time staff.

111

Number of Highly Probable Areas searched by our Early Detection Team

Above and left: SLELO PRISMs Terrestrial Coordinator Robert Smith and Aquatic Coordinator Brittney Rogers scouting invasives. ©TNC/Megan Pistolese and Brian Roat.

Second Early Detection of Porcelain Berry
(Ampelopsis glandulosa var. brevipedunculata)

In 2019, an observation of a Tier 1 (prevention-list) species was discovered in St. Lawrence County. This was the second confirmed observation of porcelain berry (*Ampelopsis glandulosa var. brevipedunculata*) (Figure 4) in Northern New York and one of the very few confirmed observations in upstate New York. Although the plants were not found in one of SLELO's PCA's it is important that these plants be eradicated to prevent further spread. Working with the landowner, all specimens were removed and properly disposed of and the landowner has agreed to monitor the property for new emergence of this invasive plant.

Figure 4 – above: Porcelain berry (*Ampelopsis glandulosa var. brevipedunculata*), being removed by volunteers and staff of the SLELO PRISM.

Goal 3 – RAPID RESPONSE, CONTROL & MANAGEMENT

Control invasive plants using three basic levels of control; Eradication, Containment/Exclusion, Suppression.

In 2019 the SLELO PRISM contracted with Millers Turf® in an effort to increase control initiatives within the region. Their job is to respond to invasive species that are in low abundance and control them to varying degrees. Multiple techniques are used to include manual, mechanical and chemical. Below is a summary of control work completed during the 2019 field season also shown in Table 3, and percentages of effort in Figure 7.

Giant Hogweed: (*Heracleum mantegazziamum*)

28 sites with no germination (3years+)
13 sites root cut
9 sites herbicide treatment

Swallow-wort: (*Cynanchum spp*.)

77 sites being managed
16 PCA's
79.31 acres under management

Japanese Knotweed: (*Fallopia japonica*)

5 sites being managed
2 PCA's and Tug Hill I.S.P.Z.
0.65 acres under management

Phragmites: (*Phragmites Spp*.)
14 sites being managed
3 PCA's and Tug Hill I.S.P.Z.
0.80 acres under management

64%

of giant hogweed eradicated

59%

were treated manually to reduce the use of herbicides

Table 3, Summary of control work completed during the 2019 field season.

Priority Conservation Area or Location	Species Controlled	Number of sites and treatment type
Multiple	Giant Hogweed	28 sites - most manual
Black River Bay Boat Launch	Swallow-wort	1 site herbicide
Chaumont Barrens	Swallow-wort	27 sites herbicide
Carleton Island	Swallow-wort	1 site herbicide
Deer Creek WMA	Swallow-wort	25 sites herbicide
Deer Creek WMA Eldorado-Black Pond	Japanese Knotweed	1 site herbicide
	Swallow-wort	4 sites herbicide
Eldorado-Black Pond	Japanese Knotweed	1 site herbicide
	Phragmites	3 sites herbicide
	Japanese Knotweed	2 sites herbicide
Invasive Species Prevention Zone, ISPZ	Phragmites	1 site herbicide
Invasive Species Prevention Zone	Swallow-wort	3 sites herbicide
	Phragmites	8 sites herbicide
Lakeview WMA	Swallow-wort	4 sites herbicide
Limerick Cedars	Swallow-wort	1-site herbicide
Little John WMA	Swallow-wort	2 sites herbicide
Mud Bay Boat Launch	Swallow-wort	1 site herbicide
Ontario Bay Initiative- Couch	Swallow-wort	2 sites herbicide
Pine Grove Boat Launch	Phragmites	2 sites herbicide
Point Peninsula WMA	Swallow-wort	2 sites herbicide
Selkirk Fen	Swallow-wort	1 site herbicide
Three Mile Bay WMA	Swallow-wort	1 site herbicide
Three Mile Creek	Swallow-wort	1 site herbicide
Tryon Road	Swallow-wort	1-site herbicide
Upper & Lower Lakes WMA	Swallow-wort	1-site herbicide
Total: 122 sites treated		

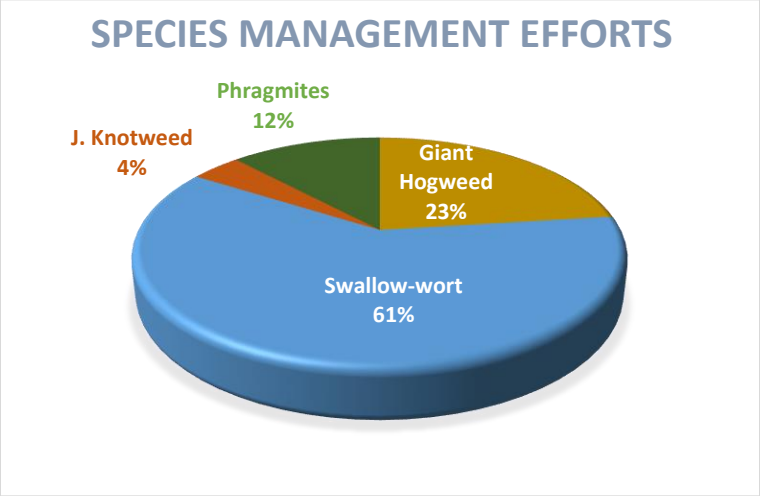


Figure 3, left. Percentage of control efforts as related to species.

Biological Controls

SLELO PRISM is participating in the release of a biological control designed to suppress swallow-wort populations. In collaboration with the United States Department of Agriculture, Animal Plant Health Inspection Service (USDA-APHIS), SLELO partners assisted with the release and monitoring of 825 (*Hypena opulenta*). This moth, native to the Ukraine, feeds exclusively on swallow-wort. In 2018, two field cages were placed in Henderson New York and were populated with *Hypena* larvae. Each cage was monitored weekly until October with several adults emerging.

In late spring of 2019, a single adult moth emerged from our sun-cage, but subsequently no moths, larvae or pupae were observed in either cage. According to researchers, most, if not all of the moths released in New York succumbed to a unicellular parasite known as microsporidia. Researchers are seeking healthy insects to restart the colony for field distribution in 2020.

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.

Port Ontario Water Chestnut pull 2019. ©SWCD Joe Chairvolotti

Numerous individuals participated this year on hand pulls sponsored by the New York State Department of Environmental Conservation, Soil and Water Conservation Districts, Office of Parks Recreation and Historical Preservation, the Oneida Lake Association and other SLELO PRISM partners.

35,389 pounds / 17.7 tons

Amount of water chestnut plants hand-harvested in the SLELO region.

Goal 4 – EDUCATION / OUTREACH / CITIZEN SCIENCE

Increase public awareness and understanding of invasive species issues.

Increasing public awareness and understanding of invasive species issues is a goal of SLELO's educational efforts. In 2019 SLELO partners held **96 events directly engaging 3,533 individuals.** Efforts included education and outreach along with citizen science efforts. A complete list of events in 2019 are shown in Appendix C. (Figures 4 and 5) show metrics of our efforts.

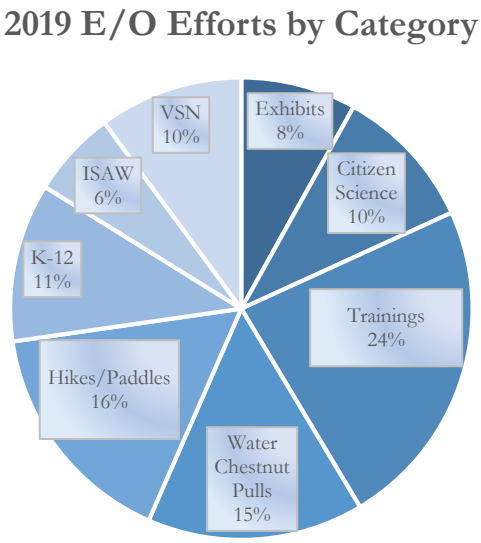


Figure 4, Above: In 2019, 24% of our efforts were targeted towards trainings, 15% were water chestnut pulls, 16% guided hikes/paddles, 10% Citizen Science & Volunteer Surveillance Network 11% geared towards K-12), 8% were exhibits, 6% were Invasive Species Awareness Week (ISAW) events.

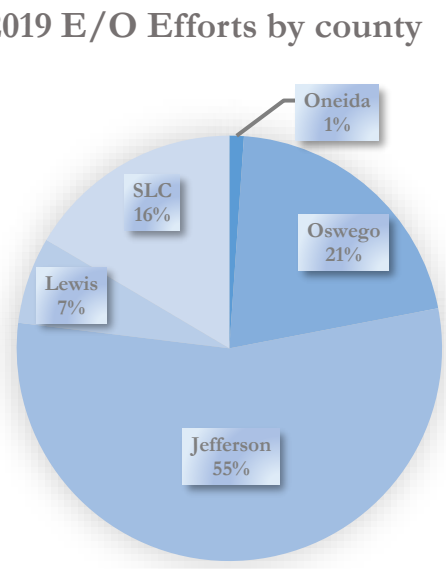


Figure 5, Above: Shows a breakdown of events held per county: 55% in Jefferson, 21% in Oswego, 16% in St. Lawrence, 7% in Lewis County, and 1% in Oneida and.

The SLELO Education/Outreach Committee is a small group of committed partners who volunteer their time and contribute their expertise to provide support for invasive species outreach initiatives. We would like to acknowledge the members of this committee:

Megan Pistolese, Committee Lead
Maria MoskaLee- DEC Region 7
Peter Zimmer- OPRHP
Patricia Shulenburg- Save the River
Sue Gwise-Jefferson County CCE
Carla Fowler- Tug Hill Commission
Maria Cipullo- OPRHP
Heidi Sourwine- IRLC
Irene Mazzocchi- Region 6 DEC
Josh Payette- OPRHP
Alaina Young- TILT
Emily Sheridan- DEC Region 6

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. Cooperative highlights from 2019 include:

- We collaborated with the Atkinson Center for a Sustainable Future along with two other PRISM's on a Lake Ontario eDNA project targeting multiple aquatic invasive species.
- We collaborated with the Cornell Nutrient Analysis Lab on our AIS nutrient analysis project.
- We collaborated with the Cornell Biocontrol Lab to monitor local releases of *Hypena opulenta*—the biocontrol agent for invasive swallow-wort.
- Seasonal employees from various partner organizations collaborated on various activities such as water chestnut hand pulls at multiple locations.
- Our Education and Outreach Committee collaborated to promote education and awareness activities, including the Eastern Lake Ontario Invasive Species Symposium.
- We implemented special projects through our partners to complement our invasive species work.

HWA Walk n' Talk at Forest Park photo taken by Frank Williams-SLELO volunteer.

- Partners continued to promote a cooperative forum at monthly meetings.
- Partners were invited to participate and/or volunteer at events/exhibits & public speaking engagements.

Volunteer Surveillance Network (VSN)

Prevention and early detection continue to play a key role in our mission. Engaging the public to learn to recognize and report invasive species greatly strengthens early detection efforts and encourages stewardship of our lands and waters. SLELO PRISM has been actively recruiting and training volunteers to survey for priority invasive species through our Volunteer Surveillance Network or (VSN). In 2019 we worked with VSN members to strengthen early detection efforts for the following species: fanwort (*Cabomba caroliniana*), emerald ash borer (*Agrilus planipennis*), hemlock wooly adelgid (*Adelges tsugae*), spotted lanternfly (Lycorma delicatul), tench (*Tinca tinca*) and porcelain berry (*Ampelopsis brevipedunculata*).

Above left to right: Super volunteer, Ed DeMattia monitoring for EAB for the SLELO Adopt a Trap Project, Project WHIRL students learning to survey for Hemlock Woolly Adelgid, volunteer Daun Martin-Poole aiding a rapid response effort for porcelain berry. ©TNC/Megan Pistolese

148

Number of volunteers who have joined early detection efforts for specific priority species in our region.

Adopt-A-Trap Project

2019 marked the third year of the SLELO Adopt-a-Trap Project. This year, 13 volunteers adopted 30 green funnel traps to monitor for emerald ash borer. The traps deployed in strategic locations in Jefferson, Lewis and St. Lawrence counties. Analysis of the specimens collected from the traps is being done by the DEC Division of Lands & Forests, Forest Health Diagnostic Lab and results are pending. New observations of EAB were also confirmed in Jefferson County near Clayton and Southwick beach via iMapInvasives.org.

Above, 2019 Adopt a Trap Project. ©Moira Reagan-DEC.

Goal 6 – INFORMATION MANAGEMENT & SHARING

Collect, utilize, and share information regarding invasive species

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 2019 including:

- Partner Roundtable Reports: All partner meetings begin with a roundtable opportunity for partners to share information and end with an open dialogue as well.

- Field Reports: Field reports are sent directly to partners and posted on the SLELO website. http://www.sleloinvasives.org/field-reports/

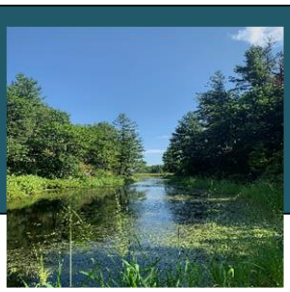
- In-Situ Treatments Page: In 2019, treatment pages were added to our website that share information and maps of rapid response and treatment areas. http://www.sleloinvasives.org/field-reports

- SLELO PRISM Website: The SLELO PRISM website has become an important medium for managing and sharing information. The popular site is used to post relevant information. In 2019 there were over 84,530 visitors to our website. http://www.sleloinvasives.org/

- Social Media: In 2019 the SLELO PRISM initiated a social media presence on Facebook® and expanded our presence on Youtube®

- Seasonal Newsletter: Four issues of the SLELO PRISM newsletter were published in 2019. This was accomplished with a commitment from our Education and Outreach Committee and can be viewed at http://www.sleloinvasives.org/newsletter/

- Participation with Statewide Webcasts: Partners participate in and facilitate monthly New York statewide webcasts.



Goal 7 – ECOLOGICAL RESTORATION

Develop and implement effective restoration methods

Restoring and protecting the biological diversity 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. Areas that have been treated for invasive species may be considered as disturbed areas and can be restored more effectively with intentional planting of native species boosting the resiliency of these sites.[2]

Treatment Sites – General:

As a general practice and where appropriate, the SLELO team plants native grass seed to expedite the growth of ground cover to reduce the susceptibility of the site to the infestation of a non-native species. Annual ryegrass (*Lolium spp.*), perennial ryegrass (*Lolium perenne*) and little bluestem (*Schizachyrium scoparium*) is used as a standard, recovery seed mix. In some instances, native tree seedlings are planted along with live staking of resident plant material.

Tug Hill Forest

The SLELO PRISM has assisted with restoration efforts on Tug Hill following invasive species suppression. One goal is to accelerate regeneration and enhance species diversity by planting tree seedlings from 26 different species over two years. Legacy trees include; sugar maple and red spruce. Northern edge species included oaks, native pine and hickory (Sargis 2018)[3]. In 2018, 35,000 seedlings were planted. In 2019, partners prepared plans to plant an additional 13,000 seedlings.

[2] 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.

[3] Sargis Gregg. 2018 Improving the health and resilience of our forests. Powerpoint.

GOAL 8 - INNOVATION

Develop and implement innovative technologies that help us to better understand, visualize, alleviate or manage invasive species and their impacts or that serve to strengthen ecosystem function and/or processes.

In early 2019, SLELO PRISM Partners conducted a review of our five-year Strategic Plan. One outcome of this review was to include a new goal establishing innovation as a target conservation practice and to integrate available technologies into our invasive species work. Towards this end, partners adopted a renewed interest in utilizing the following innovative technologies.

Environmental DNA

Partners of the SLELO PRISM along with The Nature Conservancy and the Department of Microbiology and Immunology at Cornell University have implemented early detection efforts using environmental DNA or eDNA which is a highly specialized process for determining the presence of genetic material released by both invasive and native aquatic animals. Using eDNA as an early detection tool will continue to be incorporated into our work.

Underwater Video Technology

Underwater video technology has been utilized in the SLELO region as a hands-on citizen science tool and as an early detection tool. The equipment used by the PRISM is a high resolution SeaViewer® underwater color video camera and recording unit. It has proven to be a practical and innovative means by which to assess both native and invasive aquatic organisms.

Microscope

Currently used at the SLELO PRISM office is a ©KenaVision microscope which integrates with desktop computer systems for real-time viewing and recording. In recent years, this system has proven beneficial in positively identifying hemlock woolly adelgid crawlers (sistens). In 2019, the brown hemlock needle-miner (*Coleotechnites macleodi*) was identified in Tug Hill hemlock stands. The BHNM is a moth found in the north-eastern parts of the United States, as well as Canada.[4]

[4] https://en.wikipedia.org/wiki/Coleotechnites_macleodi

SLELO PRISM METRICS 2019 (Tables 6,7,8,9)

Presence Records (by type)	2019*	Total* 2010-Present
Animal	28	2,751
Plant	208	10,356
Not Detected	*12*	*2,800*
TOTAL	**236**	**13,107**

* Data entry date as of 12/11/2019 *Not Detected* records are not included in the total Insects are included in the animal totals.

2019 TRAINING CLASSES

Date	Trainer	Training Class Name	Location
2/15/2019	Megan Pistolese	SLELO Hemlock Woolly Adelgid Workshop & iMap Survey	Lowville
3/13/2019	Frank Williams/Megan Pistolese	SLELO Spotted Lanternfly Workshop	Constantia
5/14/2019	Frank Williams/Megan Pistolese	2019-SLELO PRISM/DEC- Invasive Species & Citizen Science Workshop for Teachers	Philadelphia
5/17/2019	Frank Williams/Megan Pistolese	2019-SLELO PRISM & THTLT- iMap Walk & Talk St. Joseph A. Blake Wildlife Sanctuary	Rodman
6/6/2019	Frank Williams/Megan Pistolese	2019-SLELO PRISM- iMapinvasives Spring Blitz Training	Lowville
6/20/2019	Patricia Shulenburg	2019-SLELO- Eastern Lake Ontario Invasive Species Symposium iMap Walk & Talk Session	Altmar
6/22/2019	Patricia Shulenburg	Inv. Spp. Workshop with TILT and Save The River	Clayton
7/19/2019	Megan Pistolese	2019-SLELO- iMapInvasives Training	Canton
10/25/2019	Megan Pistolese	2019_SLELO_HWA Walk/Talk	Canton

Top 10 Reported Species 2019*	
Water Chestnut	21
Oriental Bittersweet	13
Emerald Ash Borer	12
NOT-Detected HWA	10
Common Buckthorn	8
Pale Swallow-wort	7
Tree-of-heaven	7
Garlic Mustard	6
Honeysuckle (species unknown)	6
Purple Loosestrife	5

Top 10 Observers 2019*	
Brian Siklinski	17
Brittney Rogers	14
Robert Smith	13
Aaron Barrigar	10
Philip Bossert	10
Frank Williams	7
Emily Sheridan	5
Steve Kinne	4
Ally Jones	3
Beverly Levreault	3

RESEARCH PRIORITIES

As requested by the New York State DEC Invasive Species Coordination Section, the NYS Invasive Species Council and the NYS Invasive Species Research Institute.

Research items submitted by the SLELO PRISM Partnership to the New York Invasive Species Research Institute include the following:

Carbon Loss Model:

To develop a carbon loss model which estimates the amount of carbon released into the atmosphere as the result of deforestation by invasive forest pests and pathogens. This can be used to determine the potential impacts on climate change as a result of deforestation.

Biological Control Rearing Facility:

To develop and sustain large-scale biological control rearing facilities.

Expanded Invasive Macrophyte Nutrient Analysis

To gain a better understanding of the impact that aquatic invasive plants (AIP) have on internal nutrient loading of lakes and embayment's and the potential of AIP's to facilitate harmful algae blooms.

Pheromone Based Bait (Prior submission)

A new research item submitted was for the development of a species-specific pheromone-based bait and netting protocol for confirmation, capture and removal of invasive fish.

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Figures with accompanying photo credits:

Figure 1: Spatial distribution of partner efforts. Created by Megan Pistolese.
Figure 2: Tiered Species Chart
Figure 3: Percentage of species control by our Rapid Response Team.
Figure 4: Education and outreach efforts by category. Created by Megan Pistolese.
Figure 5: Education and outreach efforts by county. Created by Megan Pistolese.
Figure 6,7,8,9: iMapinvasives 2019 metrics.

Page Headers:

Photos by ©TNC/Rob Williams, ©TNC/Brittney Rogers. Tench photo by the Mohawk Nation at Akwesasne. Spotted lanternfly photo by Lawrence Barringer, Pennsylvania Department of Agriculture, Bugwood.org. Group photo page 19 by Frank Williams. Hemlock inspection page 23 by Emmanuel Vaucher. *Aphalara itadori knotweed biocontrol* (Credit: Fritzi Grevstad, Oregon State University).

Tables:

Table 1: Nutrient analysis for water chestnut
Table 2: Watercraft inspection and survey cumulative metrics
Table 3: Summary of 2019 control work

Appendix A: List of Current PRISM Partners

Principle Partners:

- New York State Department of Environmental Conservation
- The Nature Conservancy, CWNY
- Cornell Cooperative Extension
- New York State Department of Transportation
- New York State Department of Parks Recreation and Historic Preservation
- Sea Grant of New York
- Thousand Islands Land Trust

At-Large Partners:

- St. Lawrence County Representative, Cooperative Extension
- Jefferson County Representative, vacant
- Lewis County Representative, Soil & Water Conservation District
- Oneida County Representative, vacant
- Oswego County Representative, Soil & Water Conservation District

Cooperating Affiliates:

- Ducks Unlimited
- Tug Hill Tomorrow Land Trust
- Tug Hill Commission
- Fort Drum Military Installation
- Save The River Organization
- Audubon Central New York
- Private Consultant
- New York Power Authority
- CNY Regional Planning and Development Board
- United States Coast Guard Auxiliary
- Indian River Lakes Conservancy
- St. Regis Mohawk Tribe at Akwesasne

Appendix B: SLELO PRISM's Current Species Tiers

Tier 1 - Prevention/Early Detection Species - Not in PRISM, but within 100-mile buffer or introduction pathway exists. Highest level of early detection survey efforts.

Mile-A-Minute Vine - (Polygonum perfoliatum)
Asian Long horned Beetle - (Anoplophora glabripennis)
Hemlock Woolly Adelgid - (Adelges tsugae)
Kudzu - (Pueraria lobata)
Slender false brome - (Brachypodium sylvaticum)
Spotted lanternfly - (Lycorma delicatula)
Water Soldier - (Stratiotes aloides)
Hydrilla - (Hydrilla verticillata)
Water lettuce - (Pistia stratiotes)
Silver, Big Head and Grass Carp
Didymo - (Didymosphenia geminate)

Tier 2 – Eradication Species - Present in PRISM, but at low abundance making eradication feasible within Priority Conservation Areas (PCA's).

Porcelain Berry - (Ampelopsis spp.)
Giant Hogweed - (Heracleum mantegazziamum)
Yellow Iris - (Iris psuedacorus)
Fanwort - (Cabomba caroliniana)
Water Hyacinth - (Eichornia crassipes)

Tier 3 -Suppression Species - Too widespread for eradication from PRISM. Targeted management to suppress the population within Priority Conservation Areas (PCA's).

Tree-of-heaven - (Ailanthus altissima)
Black & Pale Swallow-wort - (Cynanchum spp.)
Common Buckthorn - (Rhamnus spp.)
Glossy Buckthorn - (Rhamnus spp.)
Japanese Knotweed - (Polygonum cuspidatum)
Phragmites/Common Reed – (Phragmites australis)
Japanese Stiltgrass - (Microstegium vimineum)
Wild Chervil - (Anthriscus silvestris)
Feral swine - (Sus scrofa Linnaeus)
Rusty Crayfish - (Orconectes rusticus)
Water Chestnut - (Trapa natans)

Tier 4 - Local Control Species - Present / widespread throughout PRISM with no chance of eradication. Localized, landowner management applied to protect high priority resources.

Purple Loosestrife - (Lythrum salicaria)
Leafy Spurge - (Euphorbia esula L.)
Spotted Knapweed – (Centaurea stoebe L.)
Wild Parsnip - (Pastinaca sativa)
Eurasian Water Milfoil – (Myriophyllum spicatum)
European Frogbit - (Hydrocharis morsus-ranae)
Zebra/Quagga Mussel - (Dreissena spp.)
Curly Leaf Pondweed - (Potamogeton crispus)
Round Goby - (Neogobius melanostomus)
Emerald Ash Borer - (Agrilus planipennis)
Spiny waterflea - (Bythotrephes longimanus)
Asian Clam – (Corbicula fluminea)

Tier 5 – Species - Species that may or may not be in PRISM but are difficult to respond to or that require more knowledge of. Monitor the species.

Tench – (Tinca tinca)
Hemimysis - (Hemimysis anomala)

Appendix C: SLELO PRISM's 2019 Education & Outreach Events

Event Title	Date	County	Total Engaged	Event Title	Date	County/Place	Total Engaged
Emerging Invasives Workshop	1/16/2019	SLC	48	Save the River Workshop	5/21/2019	Jefferson	126
Save the River Junior River Keeper	1/23/2019	Jefferson	146	Save the River Keeper	5/23/2019	Jefferson	45
STR Winter Conference	2/3/2019	Jefferson	13	Save the River-Riverkeeper	5/28/2019	Jefferson	55
HWA Walk and Talk/iMap	2/15/2019	Lewis	18	Save the River Jr. Riverkeeper	5/29/2019	Jefferson	49
THTLT snowshoe HWA Talk	2/16/2019	Oswego	31	Save the River Keeper	5/29/2019	Jefferson	12
X-Mas Tree Workshop	2/20/2019	SLC	32	IRLC Pollinator Workshop	5/30/2010	Jefferson	15
SLF workshop	3/13/2019	Oswego	14	Save the River Keeper	6/4/2019	Jefferson	57
Integrated Pest Management	1/28/2019	SLC	21	Save the River Keeper	6/6/2019	Jefferson	78
THC Local Gvnt. Conf.	3/28/2019	Jefferson	14	SLELO iMap training	6/6/2019	Lewis	10
Emerging Forest Pests: Identification, Prevention & Management	3/29/2019	SLC	21	Save the River Keeper	6/7/2019	Jefferson	44
Rod Gun Club Expo	4/6-7/2019	SLC	8	Save the River-learn to fish	6/8/2019	Jefferson	33
Sustainable Gardening	4/10/2019	SLC	10	Parks girl Scout Jamboree	6/8/2019	Jefferson	74
Save the River Habitats Workshop	4/13/2019	Jefferson	28	Environmentally Friendly Gardening	6/10/2018	Lewis	18
A2A symposium	4/11/2019	Jefferson	32	Save the River Keeper	6/18/2019	Jefferson	41
Earth Week Exhibits & Presentations	4/11-4/26 2019	Jefferson	27	SLELO symposium	6/20/2019	Oswego	116
Environthon	5/2/2019	SLC	80	TILT/STR AIS workshop	6/22/2019	Jefferson	14
Save the River Keeper	5/14/2019	Oswego	77	Save the River-Tench Outreach	6/27/2019	Jefferson	13
DEC Invasive Species Citizen Science iMap workshop	5/14/2019	Jefferson	13	Save The River: Tench Outreach	6/28/2019	Jefferson	4
Save the River Keeper	5/15/2019	Jefferson	89	SLELO EAB Trap Project	5/20-9/1 2019	SLC, Jefferson, Lewis	15
Save the River Keeper	5/16/2019	Jefferson	78	Tench Workshop	6/27/2019	Jefferson	11
THTLT iMap walk/talk	5/17/2019	Jefferson	3	Oswego River WCP	multiple	Oswego	7

Event Title	Date	County	Total Engaged	Event Title	Date	County/Place	Total Engaged
Lakeview WCP	7/1/2019	Jefferson	5	River Keeper Paddle	8/7/2019	Jefferson	8
AIS workshop	7/2/2019	SLC	15	STF Fishing Tournament-tench Outreach	8/10-8/11	SLC	39
Sportsman Club Tench Outreach	7/8/2019	Jefferson	12	Wounded Warriors TNC Walk	8/14/2019	Jefferson	7
ISAW Lakeview WCP	7/9 Lakeview	Jefferson	22	STF Fishing Tournament Tench Outreach	8/15-18/2019	SLC	96
Save the River Keeper	7/10/2019	Jefferson	13	STR Junior Riverkeeper	8/16/2019	Jefferson	17
Battle Island WCP	multiple	Oswego	17	STF Fishing Tournament Tench Outreach	8/15-18/2019	SLC	96
Project WHIRL	Tuesdays between 7/9/-8/13/2019	Jefferson	4	MaMa	8/2/2019	Lewis	11
ISAW STR- Kayak Paddle	7/10/2019	Jefferson	13	MaMa	8/3/2019	Jefferson	27
ISAW Pinegrove WCP	7/11/2019	Oswego	22	MaMa	8/5/2019	Oswego	11
ISAW Documentary viewing	7/12/2019	Jefferson	6	MaMa	8/6/2019	Oneida	18
ISAW guided paddle	7/12/2019	SLC	4	Trash Bash/iMap Talk	9/11/2019	Lewis	8
ISAW Battle Island WCP	7/10/2019	Oswego	13	Fishing Tournament/Tench	9/12/2019	SLC	45
ISAW Oneida Lake WCP	7/13/2019	Oswego	5	Protecting Goosebay Workshop	9/13/2019	Jefferson	8
Utica Marsh WCP	7/16/2019	Oneida	8	Save the River- tench outreach	9/14-15/2019	Jefferson	31
Save the River Keeper	7/17/2019	SLC	19	31st annual Oswego County Conservation Field Day	9/19/2019	Oswego	275
Gardening in a Warming Climate	7/18/2019	Jefferson	10	Fish Hatchery Open House	9/28-9/29	Oswego	114
iMap Training	7/19/2019	SLC	7	Save the River- Tench outreach	9/20-21/2019	Jefferson	57
Grindstone WCP	7/23/2019	Oswego	15	Trash Bash & Invasives	9/28/2019	Jefferson	10
Grindstone WCP	7/23/, 8/1	Oswego	15	NAISMA/ Exhibit/ Posters	9/30-10/3	Saratoga	87
Guffin Bay WCP	7/24/2019	Jefferson	19	Save the River in the schools	10/4/2019	Jefferson	30
Little Salmon River WCP	7/30/2019	Oswego	7	Save the River in the schools	10/7/2019	Jefferson	228
Mexico Point WP	7/30/2019	Oswego	4	NY Power Authorities Training	10/10/2019	Onondaga	319
Save the River-Tench Outreach	8/2-8/4 2019	Canada	70	ELOSC webinar	10/28/2019	Oswego	14

Save the River Keeper/tench	8/7/2019	Jefferson	8	Tree Watertown Planting	11/2/2019	Jefferson	62
Rice Creek WCP	8/7/2019	Oswego	7	96 TOTAL EVENTS			3552 People Engaged

Appendix D - Summary of Priority Conservation Areas where early detection took place in 2019.

Priority Conservation Area	Number of HPAs Searched	Tier 1-Prevention Species Found
Fish Creek WMA	**10**	None
Happy Valley WMA	**5**	None
Lake Julia Preserve	**6**	None
Little John WMA	**14**	None
Mad River State Forest	**4**	None
Mexico Point State Park	**6**	None
Mud Lake (Redwood, NY)	**10**	None
Selkirk Shores State Park	**7**	None
Upper and Lower Lakes WMA	**49**	None
9 PCAs Surveyed	**111**	None
Fish Creek WMA	**10**	None
Happy Valley WMA	**5**	None
Lake Julia Preserve	**6**	None

HPA: Highly Probable Areas where invasive species are most likely to be found.
WMA: Wildlife Management Area