2023 Annual Report

SLELO PRISM

Sustaining resilient lands and waters through invasive species prevention, management, and ecological restoration

INVASIVE SPECIES MANAGEMENT
St. Lawrence Eastern Lake Ontario
PRISM

www.sleloinvasives.org

Copies of this report can be obtained from the SLELO-PRISM website: www.sleloinvasives.org

Cover photo:

Whetstone Reservoir
Tug Hill Plateau
©TNC-Brittney Rogers

Report Produced By

The Nature Conservancy

SLELO PRISM

Printed in USA

NYS DEC Contract C011256

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

Note: Some of the metrics contained in this report are subject to ongoing quality assurance and data analysis and may change slightly from those shown in this report.

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Acknowledgments

A Special Thanks To:
The New York State Department of Environmental Conservation
Invasive Species Coordination Section

The Nature Conservancy as Host Organization

New York State Legislature
For supporting this program within the New York State Environmental Protection Fund
NYS DEC Contract No. C011256

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 success of the SLELO PRISM.

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Milestones

This year we completed 100% of our special initiatives and 93% of our specific tasks in support of our 2023 Annual Work Plan. This strengthens our impact on our ability to suppress invasives and recover/restore ecosystem resilience.

Above: Swamp white oak seedling planted at South Sandy Creek. ©TNC Robert Smith

- 45 volunteers and staff planted over **6,670 native plants** of 24 different species to restore a 30-acre riparian area along South Sandy Creek.
- Completed invasive species suppression on **122 sites** and ecological restoration efforts on 6 sites designed to promote **biodiversity** and increase resilience to changes in climate.
- Implemented a **WISP** program resulting in the interception of aquatic invasive species on **1,452 occasions** preventing their spread to and from other North American waterbodies.
- Maximized the liberation of biological control agents on multiple target invasives exceeding **9,400 insects** released.
- Participated with an **eDNA** early detection effort to include a 'likely range of spread' for Hemlock woolly adelgids in key lakeshore areas.
- Developed an on-line dashboard to better engage and track our **Volunteer Surveillance Network** (VSN) activities.
- Directly and indirectly engaged over **47,000 individuals** through sponsored events, social media, SLELO sponsored websites and via Watercraft Stewardship.

Conservation Impact
Biological Diversity & Climate

In support of and to strengthen conservation outcomes of the NYS DEC's Comprehensive Invasive Species Management Plan, the SLELO PRISMs strategic approach addresses invasive species issues by aligning with key strategies. This includes an integrated approach to protecting, enhancing, and preserving lands and waters in the Eastern Lake Ontario region that leverages science, innovation, and a proven track record of success. To meet our objectives, we consider the following when developing programs and projects, the reflections of which are presented in this report:

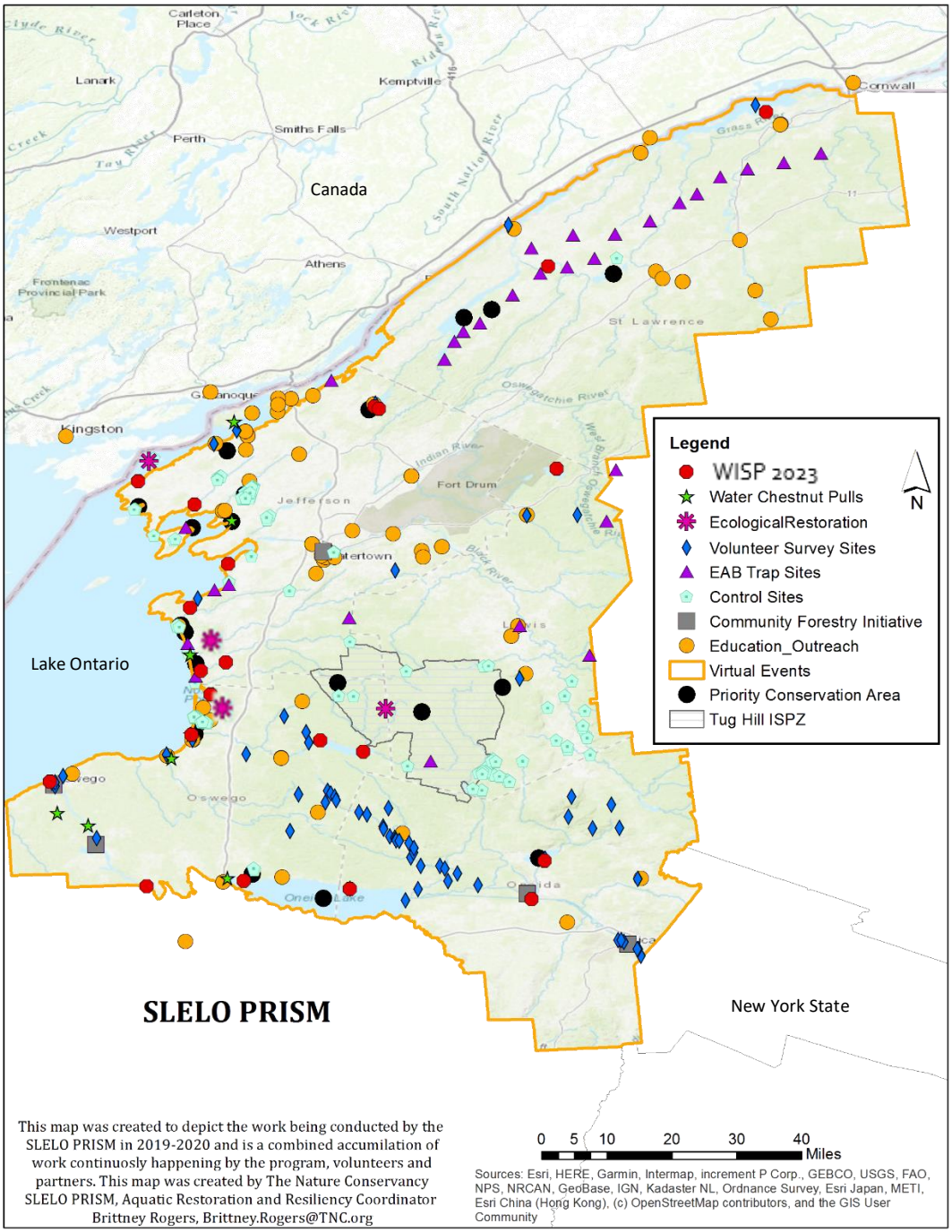
Natural Climate Solutions via Green Infrastructure: By implementing ecological-restoration measures post invasive species management, we foster biological diversity and ecosystem site stability which play a key role in sustaining healthy stable natural areas e.g., climate-ready green infrastructure.

Carbon Sequestration: Maintaining the carbon sequestration potential of places like Tug Hill by reducing the threat from invasive species is an important strategy for success. A recent study showed forest plots damaged by insect pests stored 69% less carbon than less disturbed plots and plots recently impacted by disease stored about 28% less carbon (Quirion et al 2021). SLELO's efforts to slow the spread of forest pests and pathogens is a key strategy for sequestering carbon in regional forests.

Conservation of Connected Lands and Waters:
Incorporated into the work of the SLELO PRISM is a resilient and connected lands approach that allows us to maximize conservation impact at-scale and the ability of natural systems to sustain themselves in the realm of climate change. The combined work of the SLELO PRISM and multiple partners across the region continues to minimize the impact of invasive species on 7.4 million acres of NY's resilient and connected lands, waters, and wetlands that are at risk.

Recover Ecosystem Resilience and Promote Biodiversity:
Implementing effective management on public and private lands to improve the resilience and health of terrestrial and aquatic systems is paramount to maintaining healthy lands and waters. In the Eastern Lake Ontario and St. Lawrence Region, SLELO partners are helping to prevent new infestations of invasive species and are restoring invaded lands to natural conditions. This success directly contributes to shared managing for resilience goals and to the conservation benefits desired under the NYS Invasive Species Comprehensive Management Plan.

The Places We Work



Special Initiatives I

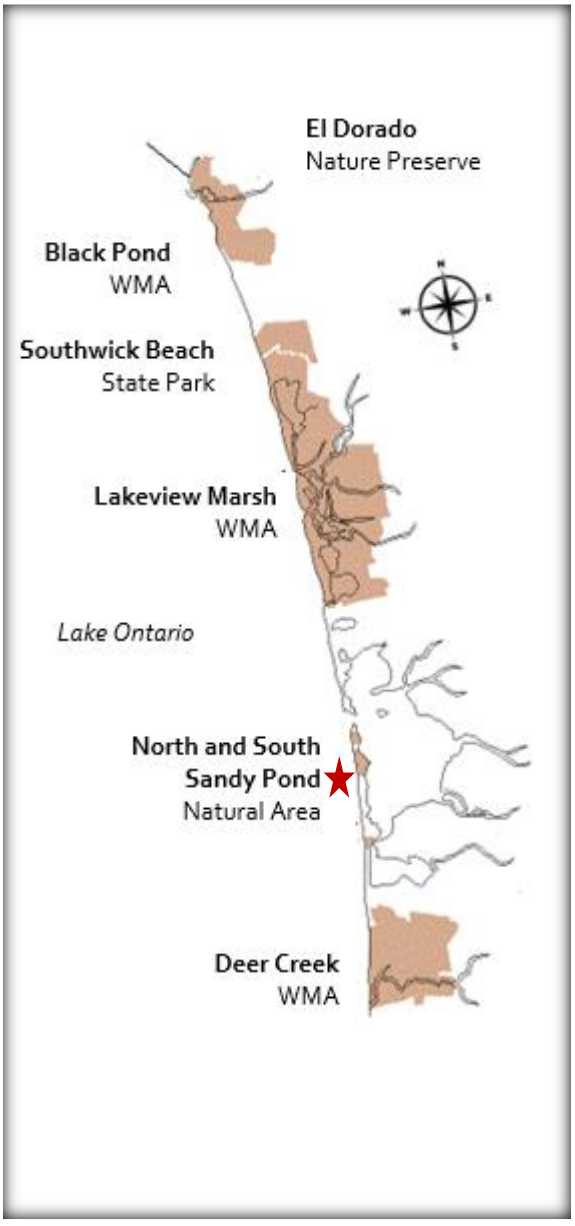
Recovering Ecosystem Resilience

Eastern Lake Ontario Dunes Restoration and Monitoring Phase

The Eastern Lake Ontario Dunes is a 17-mile (5,800 acre) barrier beach Priority Conservation Area designated as unique and important by multiple organizations. Threats to the dune ecosystem include invasive species, decreased native plant composition and habitat alteration.

To recover ecosystem resilience, SLELO Partners began a multi-year project to suppress populations of phragmites and planted **1,500** individual plants of twenty native species (Appendix C) to strengthen dune resiliency. This effort took place at the North Sandy Pond natural area. ★

In 2023 additional Phragmites management and initial species monitoring took place.



Special Initiatives II

Recovering Ecosystem Resilience

South Sandy Creek Riparian Restoration Phase III

As recommended in the New York State Invasive Species Comprehensive Management Plan[1], this project was designed to recover ecosystem resilience post invasive species management and with climate and carbon considerations. Approximately **3.24 total acres** of knotweed, phragmites and goutweed were suppressed followed by ecological restoration.

In 2023, some 45 volunteers planted just over **6,670 native plants** of 24 different species on riparian areas along sections of South Sandy Creek. This project was designed to alleviate invasive species from the system and strengthen these areas to their native biology.

Far left: Volunteers at South Sandy Creek. Top: Brittney Rogers planting native plugs: Bottom right: Robert Smith planting native plants at South Sandy Creek. ©TNC-SLELO

[1] https://www.dec.ny.gov/docs/lands_forests_pdf/iscmpfinal.pdf

Special Initiatives III

Forest Health

Suppressing Invasive Species with 9,400 Approved Biological Control Agents

SLELO PRISM has implemented a biological control program that may offer long-term suppression of target invasive species. By introducing approved biocontrols, we can lessen the labor and cost of other management techniques. This enhances the PRISM's goal of managing lands and forests for resiliency and regeneration by reducing the impacts of invasive species.

By suppressing monocultures of invasive plants and forest pests, we can preserve the native composition and biological integrity of priority conservation areas through the liberation of approved biological controls. This year (2023) we released close to **5,000 parasitoids** (of 3-different species) for the long- term protection of ash trees from the invasive emerald ash borer. Parasitoids released include:

**Oobius agrili*
**Spathius galinae*
**Tetrastichus planipennisi*

Biocontrol releases for hemlock woolly adelgid also occurred in 2023. Locations, quantities, species, and partner organizations are as follows:

- Selkirk Shores: 1,347 (*Leucotaraxis piniperda*) (OPRHP).
- Independence Park: 2,032 (*Laricobius nigrinus*) (OCSWCD).
- Battle Island State Park: 913 (Laricobius osakensis (OPRHP.

Also released were 600 (*Hypena opulenta*) moths to suppress swallowwort and encourage forest regeneration.

These efforts are designed strengthen these land and forest resources towards their native composition making the sites more resilient to external stressors.

Above Left: Hypena opulenta readying for release.
Right: Hypena opulenta. © SLELO PRISM

Special Initiatives IV

Less herbicides – more muscle!

Hemlock Woolly Adelgid Survey & Treatment

Each year during the winter months, when hemlock woolly adelgid (HWA) egg masses are most visible, SLELO PRISM field representatives search Highly Probable Areas (HPAs) for the presence/absence of HWA. Hemlock trees are inspected visually, and data is recorded using Survey123.

SLELO PRISM staff completed hemlock woolly adelgid (HWA) surveys at 18 properties between January and April 2023. Approximately 500-acres containing 33 highly probable areas (HPAs) were surveyed for signs or symptoms of HWA. **No HWA was detected by SLELO staff in 2023**. Sites searched in winter 2022-23 include the following:

- Altmar State Forest
- Camp Zerbe
- Deer Creek WMA
- Derby Hill Bird Observatory
- Frank E Jadwin Memorial State Forest
- Great Bear Recreational Area
- Happy Valley WMA
- Jackson Hill State Forest
- Lake Julia Preserve
- Little John WMA
- Rainbow Shores Preserve
- Sandy Creek State Forest
- Three Mile Bay WMA
- Winona State Forest
- Trenton Greenbelt
- Salmon River Falls
- Forest Park
- Joseph Blake Wildlife Sanctuary

Referrals: Each time HWA is positively identified at a site the finding is reported to the landowner and/or land manager along with a referral to manage the adelgids to protect hemlock trees. This year, in cooperation with the New York Hemlock Initiative, and USDA, **2,032** (*Laricobius nigrinus*) biocontrol insects were released at Independence Park in Oswego County to suppress hemlock woolly adelgid.

<u>Additional Metrics:</u>
PCA's Searched = 18
HPA's Searched = 33
Average Crown Density = 81-100%
Needleminor present at 9 of 18 PCA's
Tip Blight present at 9 of 18 PCA's


HWA Woolly Masses- ©R. Smith


Adelgid: U.S. National Park Service

Special Initiatives V

Freshwater / Riparian Health

Yellow Iris Management

Commonly grown and transplanted for its showy yellow flowers, the yellow flag iris (*Iris pseudacorus*) has invaded wetlands and other aquatic and semi-aquatic habitats. It forms very dense mats of vegetation that decrease biodiversity and displace desirable native plant species. *Iris pseudacorus* can be found at the edges of streams and ponds, in open and forested flood plains, along shorelines, and in freshwater and brackish marshes.

In 2023, a total of **867** yellow iris plants were removed manually from Black Pond WMA, South Colwell Pond Lakeview WMA, and Dorado Preserve. These removal efforts were conducted with the support from partners with the NYS Department of Environmental Conservation, NYS Office of Parks Recreation and Historic Preservation, and the Student Conservation Association, along with SLELO volunteers.

SLELO representatives with NYS DEC and volunteers' hand-digging yellow iris at Black Pond. 867 individual plants were removed.

Special Initiatives VI

PCA Score Cards

Progress on Priority Conservation Area – Score Card(s)

Progress was made this season towards the development of Score Cards for the PRISMs 25 Priority Conservation Areas. These score cards help us to determine whether the ecological health of our Priority Conservation Areas (PCA's) is getting better, worsening, or maintaining as the result of our invasive species management and restoration strategies.

Various inputs can be quantified and averaged based on either extent-based or density-based measures. Ecological restoration measures that successfully occur can be applied to the overall score for each PCA. Each score card includes an in-depth analysis of the following:

- *Site or PCA description.*
- *Rare native species and communities.*
- *Carbon storage/benefits.*
- *Resilience, connectedness, landscape diversity (**RCD**).*
- *Conservation Significance.*
- *Invasive species abundance and management.*
- *Restoration initiatives.*

Sample Score Cards Developed in 2023

Oneida Lake & Three Mile Bay PCA
(+) Above average terrestrial resilience
(+) Invasive species management objectives met

Little John PCA
(+) Slightly above average terrestrial resilience
(+) Significant progress made toward mgmt. objectives

Deer Creek Marsh PCA
(+) Slightly above average terrestrial resilience
(+) Limited distribution of target invasive species

Fish Creek PCA
(+) Slightly above average terrestrial resilience
(+) Limited distribution of target invasive species

French Creek PCA
(-) Average terrestrial resilience
(+) Limited distribution of target invasive species

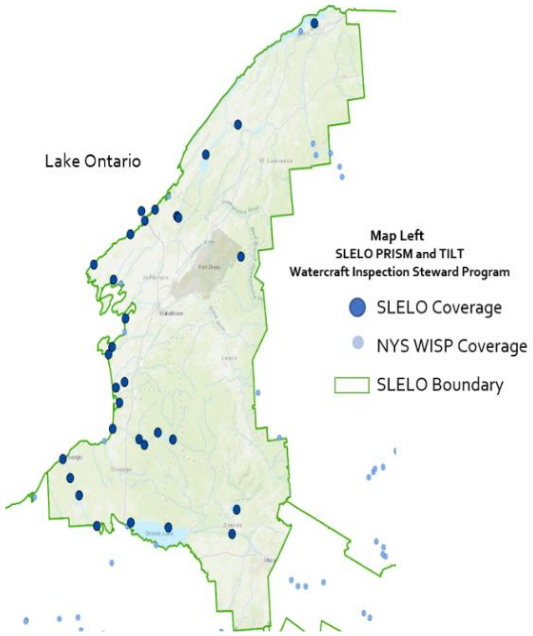
Prevention
Goal Number 1

Healthy Freshwater
Watercraft Inspection Steward Program (WISP)

In 2023, SLELO PRISM partnered with the Thousand Islands Land Trust (TILT) to co-administer our Watercraft Inspection Steward Program and to continue coverage at 27 high-use boat launches, from as far north as Massena NY and south to Rome NY. This year we employed 11 stewards throughout the summer and into fall.

<u>2023 Metrics Summary:</u>

- 10,723 inspections.
- Launch visitors from 43 states.
- 2,211 “dirty” boats with species.
- **Over 1,452 AIS interceptions**.
- AIS encountered include Eurasian watermilfoil, curly leaf pondweed, zebra mussels, brittle naiad, water chestnut, spiny water flea, starry stonewort and more.
- Native species encountered include elodea, coontail, Richardson’s and flat stem pondweeds, duckweeds and more.
- 25,910 visitor engagements.
- 99% boater engagement.
- Visit SLELO’s WISP webpage to view our detailed report, launch profiles and more.



Continuous improvements to this program helped us to have another successful season and to effectively prevent the spread of aquatic invasive species to and from waterbodies across North America.

Advisory Boards

Participation

New York 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 2023, the SLELO PRISM Director participated with the New York ISAC and the New York Invasive Species Council by attending at least one joint meeting.

TNC North America ISAC

This year marks the third year of our participation on The Nature Conservancy's North American Invasive Species Advisory Committee. The SLELO PRISM Director engages with this committee for shared representation and to address shared concerns for invasive species issues. In 2023 the committee made substantial progress on two- year Work Plan (WP) that recognizes 3-main categories (organizational, communications and strategic initiatives). The WP balances high-altitude initiatives with landscape level management support. In addition to our two-year Work Plan we developed and adopted a Communications Strategy. This strategy included a periodic Webinar Series launched in 2023.

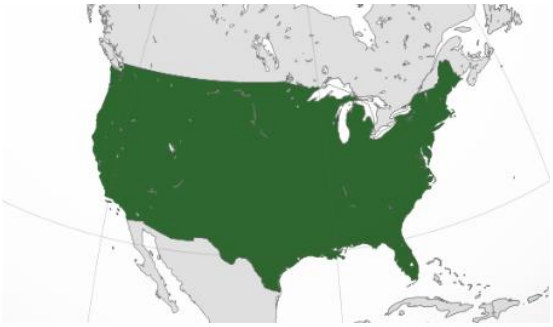


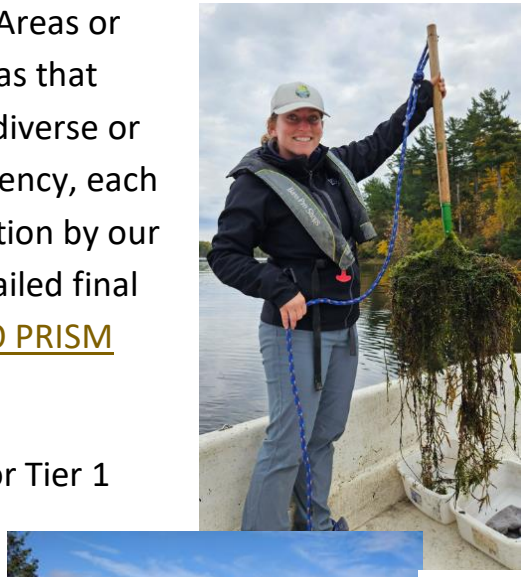
Photo insert Right: Public domain

Early Detection

Goal Number 2

Priority Conservation Areas

There are currently 25 Priority Conservation Areas or PCA's within the SLELO region. These are areas that have ecological significance, are biologically diverse or that are host to rare native species. For efficiency, each PCA is currently surveyed on a two-year rotation by our terrestrial and aquatic coordinators. The detailed final report can be found on our website at: SLELO PRISM Field Reports.



Photos.
Top: B. Rogers at Black Lake. Middle: Alvar Community. Bottom: R. Smith at Black Lake.
©TNC/SLELO PRISM

In 2023 the following PCA's were searched for Tier 1 and Tier 2 species along with notable native species. A total of **295** terrestrial and aquatic Highly Probable Areas (HPA's) were searched. [2]

Surveys have been completed at:
Fish Creek WMA (B)
French Creek WMA (B)
Little John WMA (T)
Mud Lake (A)
Tug Hill ISPZ (T)
Whetstone Reservoir (A)
Limerick Cedars (T)
OBI/Three Mile Creek (T)
Black Lake (A)
Upper/Lower Lakes (B)

A = Aquatic, T = Terrestrial,
B = Both

No Tier-1 Species Were Observed in 2023

[2] See Appendix (A) for SLELO Tiered Species List

Spotted Lanternfly Surveys

The spotted lanternfly (*Lycorma delicatula*) or SLF, is a non-native invasive insect that threatens a wide variety of plants such as hops, grapes, walnut, fruit trees and maple trees. Its preferred host is an invasive plant called tree of heaven (*Ailantus altissima*).

In 2023, SLELO PRISM partnered with the New York State Department of Agriculture and Markets to monitor for spotted lanternfly within the Eastern Lake Ontario region. This was coordinated by establishing SLF traps in Highly Probable Areas or HPAs where SLF may be introduced.

Based on the data collected by our watercraft inspection stewards, boaters have reported visiting public boat launches in the SLELO PRISM region within two weeks of also having been in areas were SLF are known to exist, including Pennsylvania, New Jersey, Delaware and Maryland. A total of 12 traps were deployed in along Eastern Lake Ontario and checked every two-weeks. Traps were placed at the following launches:

- Butterfield Lake, NYSDEC
- Delta Lake State Park
- Godfrey Point, NYSDEC
- Grass Point State Park
- Indian Point Landing, City of Fulton
- Keewaydin State Park
- North Sandy Pond, NYSDEC
- Pine Grove Boat Launch – Selkirk Shores State Park
- Pineville Pool Drift Boat Launch
- Redfield, Salmon River Reservoir, NYSDEC
- South Sandy Creek, NYSDEC
- Wrights Landing Marina, Oswego NY

Above: Spotted Lanternfly trap ©SLELO PRISM

<u>No</u> spotted lanternflies were detected in SLELO traps in 2023.

Volunteer Surveillance Network

Enhanced Early Detection & Distribution Surveys

Empowering Community Scientists

Early detection of invasive species greatly increases the opportunity for successful management. Since 2016, SLELO has coordinated a Volunteer Surveillance Network (VSN) to enhance early detection efforts for priority invasive species that are in low abundance or not present in but approaching the PRISM. The VSN is a community science initiative that provides participants with training on how to identify priority species and report their findings using iMapInvasives. As a component of the VSN, online maps are used to show the location of suggested survey sites for each focal species.

Recently, SLELO PRISM updated its VSN webpage with a more modern, user friendly web mapping experience. The new application provides species identification information and suggested survey sites for six focal species: **hemlock woolly adelgid, spotted lanternfly, elm zigzag sawfly, porcelain berry, fanwort, and tench**. Users can navigate species-specific pages to find a suite of information about the target invasives.

One new feature of the web mapping application is a convenient online survey form that can be used to report survey efforts. By selecting a suggested survey site from the map, VSN participants can indicate whether they found the focal species, whether they reported data to iMapInvasives, and the total time spent surveying the location. In a future update of the VSN web mapping application, we will feature a data dashboard that summarizes the survey efforts of all VSN participants. Additionally, each user will be able to compare their individual contributions against collective survey efforts. Users who submit the most observations will rise up on the list and can claim bragging rights as SLELO's top surveyor!

To view the new VSN web mapping application, Click Here. VSN Dashboard

Above: Hemlock Woolly Adelgid Walk and Talk at Whetstone State Park. Training community members on surveillance technique. ©SLELO PRISM

Water Chestnut Suppression

Oswegatchie River

The water chestnut (*Trapa natans*) is a highly aggressive invasive species. This species, introduced from Eurasia, grows dense floating mats that result in multiple negative impacts to our freshwater resources.

Of the many sites that water chestnut occurs within the SLELO PRISM Region, recent efforts have focused on the Oswegatchie River. If not managed, the infestation of water chestnuts on the Oswegatchie River can easily spread to connecting waterbodies, like Black Lake.

This effort is being supported by:

- SLELO PRISM
- Black Lake Association
- NYS Office of Parks and Recreation
- NYS Dept. of Environmental Conservation
- Indian River Lakes Conservancy
- Save The River
- Thousand Island Land Trust
- Cornell Coop. Ext. of St. Lawrence County
- Village of Heuvelton Fire Department
- City of Ogdensburg Fire & Rescue
- Town of Morristown
- Brookfield Energy
- Chippewa Bay Fish and Game Club
- Chippewa Yacht Club
- Black Lake Fish & Game Association
- St. Lawrence Waterfowlers
- St. Lawrence Valley Sportsman Club
- St. Lawrence Sportsmen's Federation
- St. Lawrence Federal Credit Union
- Comprehensive Weed Control of Northern New York, and many volunteers.

Metrics from summer 2023 include:

- **11** volunteers, **14** partners.
- **3+ miles** paddled.
- **350 pounds** removed by hand.
- **1300 tons** removed by harvesters (*estimated*).

Photos: Oswegatchie River. Top - volunteers from multiple organizations. Middle - water chestnut plant. Bottom - lone volunteer on a hot day. ©SLELO PRISM

Notable Native Species Finds

Each year, while conducting early detection searches, our team observes un-common native species. These observations are important in that they confirm that these species have survived in their natural state despite changes in the environment. Although we refrain from reporting their precise location, observing these species supports biological diversity and validates our work.

Rams Head Lady's Slipper (*Cypripedium arietinum*)

Photo: ©TNC-Robert Smith

This orchid has a limited distribution across northeastern and central Canada and the U.S., from Quebec to Wisconsin.

Freshwater Bryozoan *(Pectinatella magnifica)*

Bryozoans are microscopic colonial invertebrates that live in aquatic habitats. Colonies can be found in both fresh and salt waters. Other notables can be viewed on the SLELO PRISM website at: www.sleloinvasives.org

Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Promoting Biological Diversity

Through Rapid Response & Management

Goal Number 3

Often, invasive plants create monocultures on the landscape thereby reducing native plant diversity. By suppressing invasive plants and promoting native plant recovery, either through natural succession or intentionally through ecological restoration, we can increase biodiversity on these sites. Biologically diverse areas are more resilient to external stressors such as a changing climate. In 2023 a total of **42** giant hogweed sites and **80** other tier species on **186.76** acres were managed.

Summary of 2023 Management Work

Hemlock Woolly Adelgid
1 referral
2,032 biocontrol beetles released.

Emerald Ash Borer
10,199 parasitoids released.

Giant Hogweed:
19 Sites with no germination
5 Sites root cut
12 Sites herbicide treatment
4 Sites Retired/Eradicated

Giant Hogweed (Oswego SWCD)
25 sites under treatment
15 sites with no germination
7 sites no access

Pale Swallowwort:
584 Sites being managed (mostly chemical)
12 PCAs
135.45 Acres under management

Invasive Knotweed:
8 Sites being managed (chemical)
4 PCAs
10.35 Acres under management

Phragmites:
6 Sites being managed (chemical)
4 PCAs
17.54 Acres under management

Invasive O. Bittersweet:
10 Sites being managed (chemical)
3 PCAs
25.46 Acres under management

Yellow Iris:
2 Sites being managed.
1 PCA
1.59 acres under management
867.0 Plants removed.

Above: Rapid Response contractor afield. ©Millers Turf LLC

Education, Outreach, Community Science

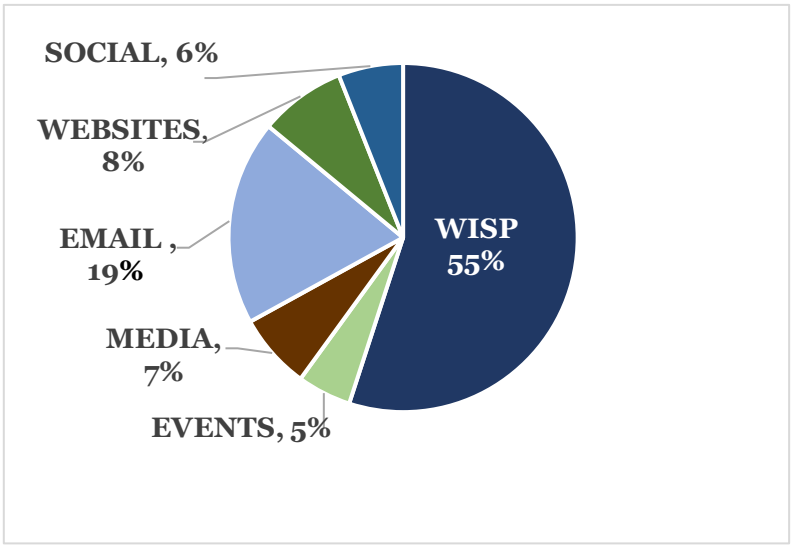
Goal Number 4

Education and outreach (E/O) are vital components to invasive species prevention and management and a primary goal of the New York State Comprehensive Invasive Species Management Plan and SLELO PRISM. E/O initiatives aim to bridge the gap between information and action through public engagement. There are many ways in which SLELO PRISM engages the public including but not limited to, in-person and virtual events, community science, social media, website, and other virtual engagements.

E/O efforts (Appendix-E) are supported by our committee consisting of committed partners who contribute their time and expertise. The purpose of the committee is to enhance invasive species education and outreach efforts through collaboration and information sharing among PRISM partners. Participating members include:

- Megan Pistolese- SLELO PRISM, Lead
- Sue Gwise-Jefferson County CCE
- Emily Fell- DEC Region 6/CCE
- Maria Cipullo- OPRHP
- Gabby Padewska- OPRH
- Kim Cullen-OPRHP
- Haley Sylvan-NYS Zoo
- Linda Gibbs-THTLT
- Lauren Eggleston-STR
- Daniel Bellinger-STR (formally Robin Hall)
- Heidi Sourwine- IRLC
- Anna Hardiman-IRLC (formally Erin Ermine)

2023 Outreach Metrics



47,190 people were *directly* engaged via social media, website views, media, events, and via *watercraft inspections*.

43 events were held in 2023.

423 social media posts created with **2,694** engagements.

11,073 email blogs were opened.

25,910 people engaged by WISP stewards.

Newsletter

Each year, four quarterly newsletters are developed by the SLELO team in collaboration with multiple partners.

Featured articles include invasive species management initiatives, prevention methods, early detection/rapid response efforts, SLELO and partner special projects, species spotlights, upcoming events and much more!

We have over 3K subscribers, and distribution of the newsletter includes multiple statewide list-serves with **5,798 shares** in 2022-2023. Our newsletter can be viewed on our website and receives strong recognition by our peers and the public.

Eastern Lake Ontario Invasive Species Symposium

Our biennial symposium is our premier event. In 2023 the event attracted:

- **115** attendees.
- **22** presenters.
- **15** exhibits.

Held at the Tailwater Lodge in Altmar NY, this year's symposium was a huge success.

Swallowwort Collaborative

The Eastern Lake Ontario Swallowwort Collaborative (ELOSC) is a platform focused solely on swallow- wort where the most up-to-date research and best management practices of this highly aggressive invasive species are shared with stakeholders. We currently have 156 subscribers for the ELOSC exclusive listserv, and 8 contributing partners listed below. Presentations showcasing management, research updates, and initiatives are hosted annually. Visit www.swallowwortcolaborative.org to learn more and subscribe to the listserv!

ELOSC Collaborators include:

- NY Invasive Species Research Institute
- Wells College
- University of Rhode Island
- 1000 Islands Land Trust
- The Nature Conservancy
- NYS Parks and Recreation
- Cornell Cooperative Extension
- SLELO PRISM

Eastern Lake Ontario
Swallow-wort collaborative
Linking People, Information & Action Through Enhanced Communication

Marketing, Communications and Media

Our Pledge to Protect (P2P) marketing initiative has been well received since its launch in the summer of 2021. Currently **262** individuals have taken the Pledge. Each month, pledgers receive monthly email blogs that share simple yet impactful actions to prevent the spread of invasive species while enjoying the outdoors. View an archive of P2P blogs on our website.

To measure the impact of the P2P we utilize Constant Contact, an email marketing platform. In 2023, 12 P2P blogs have been shared with pledgers with an average open rate of 43%. Our Pledge to Protect initiative was showcased on DiscoverUpStateNY.com which receives state-wide and national coverage. A direct link to our P2P webpage received **590,053 impressions** and 2,284 clicks, and four exclusive blogs were shared on this platform accumulating a total of 838 views.

In 2023, a total of 5 billboards were strategically placed throughout the SLELO region receiving **2,646,836** public impressions. View billboard designs and locations on our website.

SLELO PRISM was mentioned in local, regional, and national online media, and television platforms a total of 13 times, including a feature in the WPBS Weekly "Inside the Stories". Media coverage reached an estimated audience of 704K on combined coverage platforms, and 23K views and 121 engagements on social media. These media metrics were collected using analytics from CoverageBook®. Links to online media mentions can be viewed on our SLELO in the News page on our website.

Above: Lands & Waters Billboard
Below: Pledge to Protect cover page sample.

Cooperation
Goal Number 5

Working together towards a common cause is perhaps one of the SLELO Partnership's strongest attributes. Our partners[3] are interested in the subject matter, have a tremendous amount of expertise within the partnership, are fully engaged, and work extremely well together. Cooperative highlights from 2023 include:

- We participated in and presented at international conferences to include the North America Invasive Species Management Association (NAISMA) Annual Conference.

- Participated with the New York Statewide (monthly) PRISM calls, providing roundtable reports and assisting with call facilitation.

- We collaborated with both the Forest Health Network and the Ottawa Valley Chapter of the Canadian Institute of Forestry on Forest Pests issues.

- Our Volunteer Surveillance Network (**VSN**) continued with searches for tench, fanwort, hemlock woolly adelgid, spotted lanternfly, porcelain berry, and elm zig zag sawfly.

- We responded to multiple invasive species inquiries from the public.

Above: Megan Pistolese, Brittney Rogers, Robert Smith and Rob Williams, participating with the NYS Invasive Species Expo! © SLELO PRISM

- **NYS Invasive Species Expo**.
  The New York State Departments of Environmental Conservation, Agriculture and Markets and Office of Parks, Recreation and Historic Preservation in collaboration with New York's PRISMs, hosted the New York Invasive Species Expo. Held at Saratoga Spa State Park from Sept. 24 to 26, this event was a huge success.

[3] See Appendix B for SLELO's List of Partners

Information Management

Goal Number 6

SLELO staff, contractors, and volunteers collected over 12,000 data points this year through the WISP program, PCA surveys, and various community science projects. This dataset is critical to support our science-driven approach to invasive species management.

Boat Launch Data

SLELO's Conservation and GIS Analyst Zack Simek, continued development of an R script that generates summary reports of SLELO's WISP data. The reproducible script distills and summarizes the robust WISP dataset into a concise list of key insights that can be used by program staff to evaluate steward performance, analyze boat launch use trends, and evaluate program impact. A digital data dashboard can be accessed on the SLELO webpage.

VSN Dashboard Development

Recently, SLELO PRISM updated its VSN webpage with a more modern, user friendly web mapping experience. The new application provides species identification, information and suggested survey sites for six focal species. Users can navigate species-specific pages to find a suite of information about the target invasives.

PCA Score Cards

As an effort to determine the level of impact our management and restoration work may have on our Priority Conservation Areas, our entire team helped to create a PCA Score Card. This score card utilizes multiple datasets to determine changes in the overall health of our biologically diverse natural areas. In 2023, score cards were created for five Priority Conservation Areas.

Field Team Tools

Tablets (iPads) are a central piece of our field data collection. This year our tablets were equipped with Field Maps and Survey 123 software, and paired with Garmin GLO GPS units, to enhance data collection and information management.

NY iMapinvasives

iMapinvasives is an important piece of data capture. See Appendix (F) for 2023 iMap metrics.

Recovering Ecosystem Resilience

(for Biological Diversity) Goal Number 7

Restoring native plant assemblages post invasive species suppression, helps to recover the resiliency and biodiversity of treatment sites, and closes the loop between suppression and recovery. Our work demonstrates that although there are some smaller suppression sites that recover with natural succession, larger sites or treatment sites that result in bare ground and other variables such as the adjacent seed banks[4], often do repopulate with non-natives and therefore these sites do benefit from intentional restoration. [5] A lesson we've learned is that there is no universal standard that affects all treatment sites.

As a general practice and where appropriate, the SLELO team plants native seed and shrubs to expedite the growth and recovery of native plants and to reduce the susceptibility of the site to the reinfestation of a non-native species. Specialized seed species varies from site to site and may incorporate up to twenty-five different native species.

Above: Brittney Rogers and Robert Smith readying for native plant restoration ©TNC-Brittney Rogers

Black Pond Restoration Area:

After phragmites suppression this site was raked to clear ground of debris allowing direct contact of seeds with the soil. Dead phragmites was mulched in-place. Approximately 1.087 lbs of soft rush and 13.6 lbs. of wild ryegrass was spread throughout restoration site (2022). An additional 178 and 295 native species were planted in 2022 and 2023 respectively. Site size 2,000 sq ft.

[4] Williams, R.K. 2015. Salmon River Restoration Project Report. TNC, Pulaski, NY.

[5] 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.

Deer Creek Marsh Restoration Area:
Post invasive knotweed suppression, the site was raked to clear the ground of debris allowing direct contact of seeds with the soil. Garlic Mustard was found, and hand pulled from the site. 6 lbs of little bluestem and 12.5 lbs of wild ryegrass was spread throughout the restoration site. An additional 78 native species were planted in 2023. Site Size: 1800 sqft.

El Dorado Restoration Area:
Following suppression of pale swallowwort, the site was raked to clear ground allowing direct contact of seeds with the soil. 8.5 lbs. of little bluestem and 17.5 lbs. of wild ryegrass was spread throughout this restoration site along with 24 nannyberry shrubs in 2022. An additional 131 native species were planted in 2023. Site Size: 2500 sqft.

Combined, our restoration coordinators with help from volunteers, planted **1,908** live plants, **83** live-stems and over **59** pounds of native seed in 2022 and **914** live plants and **32** live stems at terrestrial restoration sites in 2023.

Planting native species: Top: Brittney Rogers. Middle: Sue Gwise. Bottom Megan Pistolese Shaw ©SLELO PRISM

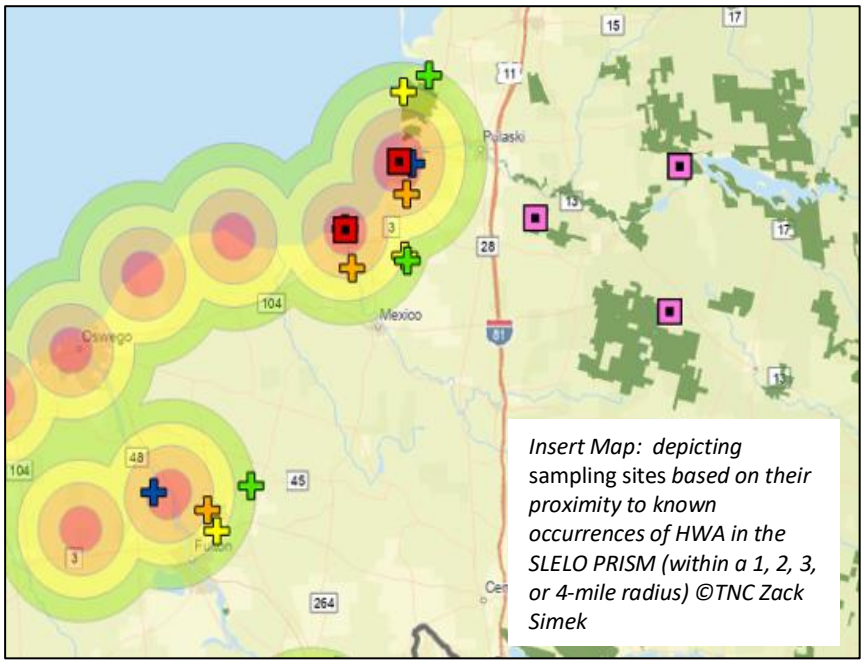
Innovation

Goal Number 8

Environmental DNA
Hemlock Woolly Adelgid

Early detection of hemlock woolly adelgid (HWA) can increase opportunities for management interventions that slow the insects spread and save hemlock trees. But how do we effectively detect an insect that is smaller than a sesame seed? The answer could be environmental DNA (eDNA). Recent research led by the New York State Hemlock Initiative (NYSHI) suggests that eDNA is more sensitive than visual surveys when HWA is at low densities.

In Spring 2023, SLELO's Conservation and GIS Analyst collected hemlock branch samples from 18 locations in the PRISM to be analyzed by NYSHI for the presence of HWA eDNA. Sample sites were selected based on their proximity to known occurrences of HWA in the PRISM (within a 1, 2, 3, or 4-mile radius). In addition, four "early detection" sites were sampled, located greater than 4-miles from known occurrences from HWA. All "early detection" sites have been visually surveyed by SLELO staff for at least two seasons, providing a unique opportunity to compare the sensitivity of eDNA to boots on the ground surveys. Two "positive control" sites – where HWA is known to be present were also sampled to validate the laboratory process. **Analysis of the samples are pending QA/QC.**



Insert Map: depicting sampling sites *based on their proximity to known occurrences of HWA in the SLELO PRISM (within a 1, 2, 3, or 4-mile radius) ©TNC Zack Simek*

Full project reports are available on our website at: www.sleloinvasives.org/eDNA

Research Priorities

The New York Invasive Species Research Institute (NYISRI) periodically requests research related items that are evaluated and prioritized. Those deemed most feasible are considered for development. Recent research requests considered and/or submitted by the SLELO PRISM include:

Biological Control Rearing Facility

To develop and sustain large-scale biological control rearing facilities as biological controls are approved.

Augmentation of Biocontrol's via Chemical Ecology:

Using natural chemical compounds released by plants may be used to enhance weed biocontrol by increasing host specificity.

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 and carbon storage. This remains a research priority.

Pheromone Based Bait

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

Expenses by Function:

In 2023 program expenses were estimated and grouped together based on functional/programmatic categories (Figure 20). This allows for a general understanding of the current program focus and does not reflect a financial report.

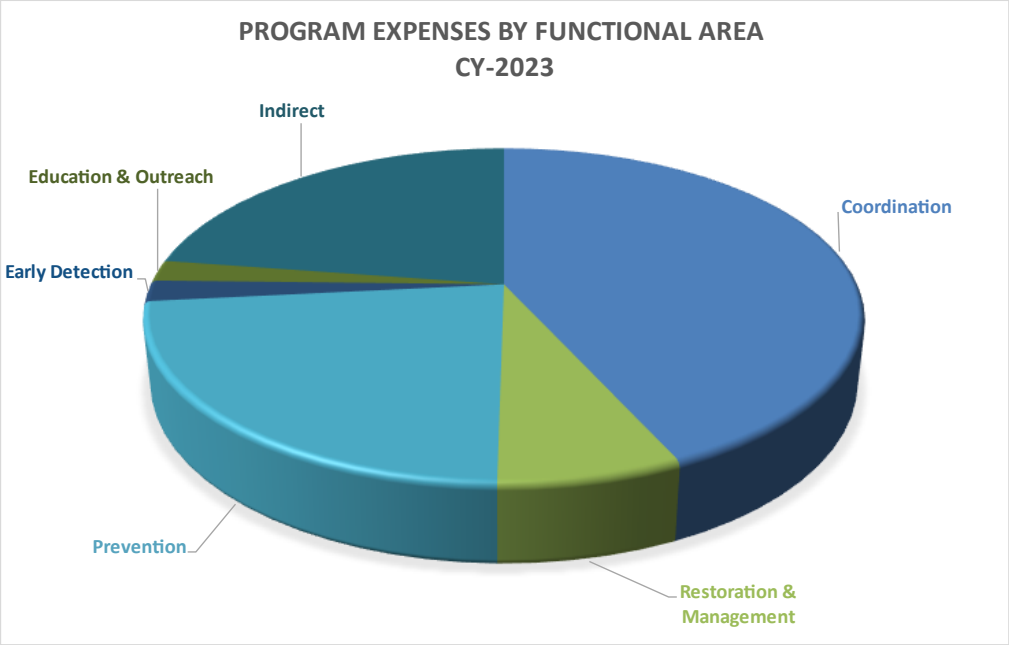


Figure 20: Program expenses grouped by function.

Function	Description
Program Coordination	Activities and expenses related to administering the program including full-time staff.
Prevention & WISP	Implementation of Watercraft Inspection & Stewardship Program.
Education, Outreach and Communications	Subcontract marketing firm, supplies and materials related to education, outreach including billboards.
Early Detection Surveillance	Site assessments and PCA surveys.
Restoration/Management	Ecological restoration and management costs.
Indirect	As a percent of total – host organization

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Page 32. Expense by Function Graphic by Rob Williams

Appendix A: 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.

Invasive Longhorned Beetle - (*Anoplophora glabripennis*)
Hydrilla - (*Hydrilla verticillata*)
Kudzu - (*Pueraria montana* var. *lobata*)
Mile-A-Minute Vine - (*Persicaria perfoliata*)
Silver, Big Head and Grass Carp (Hypopthalmichthys molitrix),(Hypopthalmichthys nobilis), (Mylopharyngodon piceus), and (Ctenopharyngodon idella)
Slender False Brome - (*Brachypodium sylvaticum*)
Spotted Lanternfly - (*Lycorma delicatula*)
Water Lettuce - (*Pistia stratiotes*)
Water Hyacinth - (*Eichhornia crassipes*)
Water Soldier - (*Stratiotes aloides*)

Tier 2 – Eradication Species - Present in Prism, but at low abundance with suitable treatment methods available to make eradication feasible within Priority Conservation Areas (PCA's).

Elm Zigzag Sawfly (*Aproceros leucopoda*)
Bloody Red Shrimp (*Hemimysis*)
Fanwort - (*Cabomba caroliniana*)
Giant Hogweed - (*Heracleum mantegazzianum*)
Porcelain Berry - (*Ampelopsis glandulosa*)
Tench - (*Tinca tinca*)

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

Common & glossy Buckthorn (*Rhamnus spp*)
Invasive Swallow-worts - (*Vincetoxicum* spp.)
Hemlock Woolly Adelgid (*Adelges tsugae*)
Invasive J. Knotweed - (*Reynoutria japonica*)
Invasive J. Stiltgrass - (Microstegium vimineum)
Invasive/Oriental Bittersweet – (*Celastrus orbiculatus*)
Phragmites/Common Reed – (*Phragmites australis*)
Rusty Crayfish - (*Orconectes rusticus*)
Starry Stonewort - (*Nitellopsis obtusa*)

Spiney waterflea (*Bythotrephes longimanus*)
Tree-of-heaven - (*Ailanthus altissima*)
Water Chestnut - (*Trapa natans*)
Wild Chervil - (*Anthriscus sylvestris*)
Yellow Iris - (*Iris pseudacorus*)

Tier 4 - Local Control Species - Present and widespread throughout PRISM with no chance of eradication. Localized (landowner) management applied to protect high priority resources like rare plant or recreation assets.

Broad-leafed helleborne (*Epipactis helleborine*)
Invasive clam (*Corbicula fluminea*)
Curly Leaf Pondweed - (*Potamogeton crispus*)
Emerald Ash Borer - (*Agrilus planipennis*)
Invasive Water Milfoil - (*Myriophyllum spicatum*)
Invasive European Frogbit - (*Hydrocharis morsus-ranae*)
Feral Swine - (*Sus scrofa*)
Honeysuckle spp. (*Lonicera spp.)*
Leafy Spurge - (*Euphorbia virgata*)
Purple Loosestrife - (*Lythrum salicaria*)
Round Goby - (*Neogobius melanostomus*)
Spotted Knapweed – (*Centaurea stoebe* ssp. *micranthos*)
Wild Parsnip - (*Pastinaca sativa*)
Zebra/Quagga Mussel - (Dreissena spp.)

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

Invasive Jumping Worm (*Amynthas spp.)*
Beech leaf disease (BLD)

Appendix B: List of Current PRISM Partners

Principle Partners:

- New York State Department of Environmental Conservation
- The Nature Conservancy
- 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, vacant
- 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
- 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
- Algonquin to Adirondacks Collaborative | A2A
- New York Natural Heritage Program

Appendix C: Native plant species planted at the Eastern Lake Ontario Dunes Project Site

Asclepias incarnata - eastern swamp milkweed
Asclepias syriaca - common milkweed
Elymus virginianus - virginia wild rye
Eupatorium perfoliatum - boneset
Euthamia graminifolia - common goldenrod
Hibiscus moscheutos - swamp rose mallow
Calamagrostis canadensis -Canada bluejoint grass
Persicaria amphibium - water smartweed
Pontederia cordata - pickerel weed
Sagittaria latifolia - common arrowhead
Schoenoplectus acutus - hard-stemmed bulrush
Schoenoplectus pungens - three-square bulrush
Sparganium eurycarpum - giant bur-reed
Arctostaphylos uva-ursi - bearberry
Cephalanthus occidentalis - buttonbush
Cornus racemose - gray dogwood
Juniperus virginiana - eastern red cedar
Rosa virginica - Virginia Rose
Salix discolor - pussy willow

Appendix D: Native plant species planted at the South Sandy Creek Project Site

Big Bluestem (Andropogon gerardii)
Swamp Milkweed (Asclepias incarnata)
Purplestem Aster (Aster puniceus)
Flat Topped White Aster (Aster umbellatus)
Hop Sedge (Carex lupulina)
Lurid Sedge (Carex lurida)
Blunt Broom Sedge (Carex scoparia)
Fox Sedge (Carex vulpinoidea)
Canada Wildrye (Elymus canadensis)
Virginia Wildrye (Elymus virginicus)
Boneset (Eupatorium perfoliatum)
Grassleaf Goldenrod (Euthamia graminifolia)
Spotted Joe-Pye Weed (Eutrochium maculatum)
Sneezeweed (Helenium autumnale)
Soft Rush (Juncus effusus)
Great Blue Lobelia (Lobelia siphilitica)
Monkeyflower (Mimulus ringens)
Wild Bergamot (Monarda fistulosa)
Smooth Beardtongue (Penstemon digitalis)
Narrowleaf Mountainmint (Pycnanthemum tenuifolium)
Blackeyed Susan (Rudbeckia hirta)
Woolgrass (Scirpus cyperinus)
Wrinkleleaf Goldenrod (Solidago rugosa)
Blue Vervain (Verbena hastata)
Golden Alexanders (Zizia aurea)

Appendix E: SLELO PRISM's 2023 Education & Outreach Event Participation

DATE	EVENT TYPE	ATTENDEES	DATE	EVENT TYPE	ATTENDEES
01/27/23	VSN	3	6/14/23	Exhibit	15
2/8/23	Webinar	46	6/14/23	Conference	96
2/10/23	VSN	9	6/22/23	Conference	115
2/13/23	Webinar	54	6/24/23	Restoration	45
2/24/23	Conference	23	7/13/23	Removal	11
2/24/23	Conference	33	7/15/23	Removal	25
3/8/23	Webinar	89	8/19/23	Exhibit	150
3/8/23	Webinar	61	9/14/23	Webinar	27
3/16/23	VSN	3	9/21/23	K-12	200
3/29/23	Webinar	85	9/23/23	Exhibit	150
3/31/23	VSN	2	9/24/23	Exhibit	271
4/4/23	Webinar	6	9/25/23	Conference	27
4/6/23	VSN	4	9/26/23	Conference	11
5/11/23	Workshop	10	9/30/23	Walk/Paddle	44
6/6/23	NYISAW	30	10/16/23	K-12	20
6/7/23	NYISAW	25	10/17/23	Conference	64
6/7/23	NYISAW	70	11/1/23	Conference	43
6/8/23	NYISAW	5	11/20/23	VSN	13
6/8/23	NYISAW	8	11/21/23	K-12	7
6/9/23	NYISAW	1	12/6/23	Webinar	30
6/9/23	NYISAW	8	12/13/23	Webinar	169
6/9/23	NYISAW	60	**TOTAL**	**43 events**	**2124 attendees**

Appendix F: NY iMapinvasives Select 2023 Metrics Summary:

NY iMapInvasives is an online, collaborative, GIS-based database and mapping tool that serves as the official invasive species database for New York State. This database can be used for: reporting invasive species, recording treatment efforts, early detection email alerts, mapping invasive species distributions, data analysis and generating reports. In partnership with the iMapinvasive program, the following metrices for the 2022 calendar year are reported.

Acres of searched areas in SLELO = 21,961 acres or 8.6% of statewide total.

Number of Unique Species Reported (presence data only)

Number of Species Reported Statewide = 238

Number of Species Reported in SLELO = 61

Top 10 Species Reported in SLELO Region

Eurasian Watermilfoil	152
Bush Honeysuckle	151
Buckthorn	138
Water Chestnut	138
European Swallowwort	104
Giant Hogweed	96
Garlic Mustard	77
Zebra Mussel	71
Common Frogbit	69
European Common Reed	67

New Species within PRISM geography

Species Name	County
Rudd	Lewis
European Lily-of-the-valley	Oneida
Japanese Raspberry	Oneida
Himalayan-berry	Oswego
Elecampane	Oswego
Blue Plantain-lily	Oswego
Yellow Arch-angel	Oswego
Japanese Tree Lilac	Oswego