2022 Annual Report

SLELO PRISM

Creating resilient lands and waters through invasive species prevention & management

INVASIVE SPECIES MANAGEMENT
SAINT LAWRENCE
EASTERN LAKE ONTARIO
SLELO PRISM

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

Cover photo:

Dunes Restoration
Eastern Lake Ontario
©TNC-Brittney Rogers

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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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Milestones

It takes several seasons and a lot of teamwork to plan, scope, develop and reach an impactful threshold, it just doesn't happen overnight. This year the SLELO PRISM has reached several milestones each of which increase our overall impact on our ability to suppress invasives and recover/maintain ecosystem resilience.

- Completed invasive species suppression and **ecological restoration** efforts on riparian corridors of South Sandy Creek and sections of the Eastern Lake Ontario Dunes designed to promote biodiversity and increase resilience to changes in climate.
- Extended **WISP** program resulting in the interception of aquatic invasive species on **1,110** occasions preventing their spread to and from other North American waterbodies.
- Maximized the liberation of biological control agents on multiple target invasives exceeding **8,500** insects released.
- Developed a '**Score Card**' allowing us to determine improvements to our Priority Conservation Areas as the result of our suppression and restoration initiatives.
- Our **communications**, media and outreach efforts have been scaled-up reaching a highpoint of inclusion in statewide primetime news.
- Communities across the region have established native **street trees,** a result of our Urban Forestry efforts.
- Made advancements to recover ecosystem resilience on **(6) major biomes** (pg. 9,10,27,28 of this report).

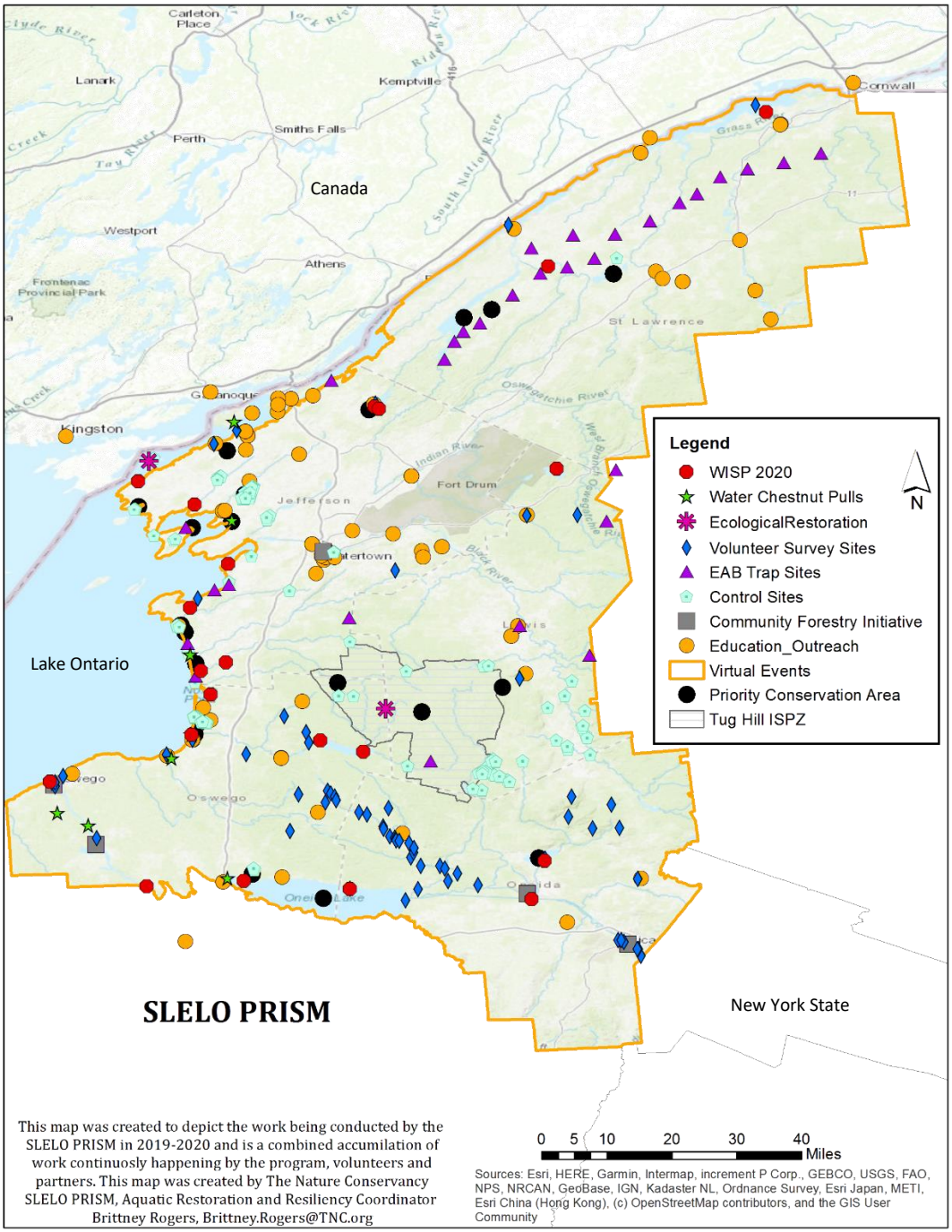
Conservation Impact
Biological Diversity & Climate

Invasive species of plants, animals, insects and microorganisms are among the most serious threats to the health of our lands and waters. Invasive species are opportunistic and almost always out-compete, damage, or replace native species resulting in serious disruptions in ecosystem processes and balance. These processes include such things as the interdependency on food and habitat, hydrology, carbon release, nutrient cycling, natural succession, soil erosion and water quality. Invasive species also cause a significant decline in the biodiversity of our lands and waters. Our work is designed to sustain native biodiversity and to support the New York State Comprehensive Invasive Species Management Plan.

Natural climate solutions are essential to New York's climate mitigation goals. Maintaining the carbon sequestration potential of NY's forests 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. Nationally it was estimated that the amount of reduced carbon storage in disturbed forests is equivalent to the carbon dioxide emissions from over 10 million passenger vehicles driven for a year. The combined efforts of SLELO and other New York PRISMs to slow the spread of forest pests and pathogens are key to ensuring the potential for sequestering carbon in NY forests. (Van Ryn, Williams)

A recent assessment of regional *connectivity* within the SLELO region resulted in metrics that suggests that our invasive species suppression and restoration work results in a total land and waterscape protection of nearly 5 million acres. Our work has far greater impact than just within our own regional footprint, e.g., the Great Lakes. By protecting and promoting native species we are creating more resilient landscapes. Resilient to changes in climate, stresses by non-native species and stresses by human encroachment.

The Places We Work



Special Initiatives I

Recovering Ecosystem Resilience

Eastern Lake Ontario Dunes Restoration

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 in collaboration with the Eastern Lake Ontario Dunes Coalition, the Town of Sandy Creek and Cardno®, suppressed populations of phragmites and completed significant restoration plantings of twenty native species (Appendix C) to strengthen dune resiliency. Restoration included the following native plant metrics:

Number of species planted = 20
Quantity of plants planted = 1,500
Container size includes, plugs, deep plugs, tubeling and gallon size.

Additionally, 83 stems of (*Salix cordata*) were transplanted from adjacent areas with 50% survival.

Above top: Cardno personnel suppressing phragmites followed by native plant restoration (middle/bottom) to rehabilitate the dunes system. © TNC-Brittney Rogers

South Sandy Creek Riparian Restoration

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.

In 2022, SLELO subcontracted with Cardno® to continue suppression and ecological restoration efforts 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.

Combined approximately **3.24** total acres of *knotweed* and *phragmites* were suppressed. Re-seeding with 25 native species occurred in 2022 (Appendix D).

Our work demonstrates that although there are some smaller suppression sites that recover with natural succession, larger treatment sites that result in bare ground often do repopulate with non-natives and therefor these sites do benefit from intentional restoration. That said, a lesson learned is that there is no universal standard that affects all treatment sites.

Left: Post treatment restoration taking place along riparian areas of South Sandy Creek and Eastern Lake Ontario ©TNC-Brittney Rogers

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

Special Initiatives III

Forest Health

Suppressing Invasive Species with Approved Biological Controls

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 (2022) we released close to **6,000 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*

We have also released over **500** (*Hypena opulenta*) insects to suppress swallowwort and encourage forest regeneration and **2,000** (*Laricobius nigrinus*) a biocontrol to suppress hemlock woolly adelgid affecting hemlock trees. This effort is designed strengthen these land and forest resources towards their native composition making the sites more resilient to external stressors.

Left and middle: Rob Williams, Brittney Rogers and Robert Smith releasing biocontrols for extended suppression of forest pests. Bottom: Spathius galinae ready for release. ©TNC-Robert Smith and Brittney Rogers.

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 for the presence/absence of HWA. Hemlock trees are inspected visually, often using visual aids and data is recorded using Survey 123 software. Between December 2021 and May 2022, 32 Highly Probable Areas (HPAs) within the 17 Priority Conservation Areas were surveyed by Robert Smith, Brittney Rogers, Rob Williams, Megan Pistolese, Frank Williams, and other volunteers for signs and symptoms of HWA. Of the 32 HPAs searched, HWA was detected at 1 HPA (Noyes Bird Sanctuary). Sites searched in 2021-22 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
- Noyes Bird Sanctuary (HWA Found)
- Rainbow Shores Preserve
- Salmon River Falls
- Sandy Creek State Forest
- Three Mile Bay WMA
- Trenton Greenbelt
- Whetstone Gulf State Park

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 NY Hemlock Initiative [2], 2,000 (*Laricobius nigrinus*) biocontrol insects were released to suppress hemlock woolly adelgid.

Photo inset above: HWA nymphal molt. © NYSHI

[2] New York State Hemlock Initiative (cornell.edu)

Special Initiatives V

Forest Health

Urban Forest Sustainability Initiative

In recognition of the importance healthy, climate adaptable and invasive species resistant trees play in our communities, SLELO PRISM has completed efforts to help our communities sustain urban forest health by maintaining diverse native street tree populations.

Urban or community forests exist in communities of different shapes and sizes from small villages to large cities. They exist as street trees, parks, landscaped boulevards, gardens, coastal boardwalks and so on. These forests are a component of a city or town's green infrastructure on which communities, i.e., people, depend and provide critical benefits to people and wildlife.

To date the communities of Watertown, Massena, Canton, Ogdensburg, Potsdam, Sackets Harbor and Pulaski have received a monetary reimbursement for the planting of non-invasive street trees through this program.

To qualify, each community was required to receive a presentation of our **Urban Forest Sustainability Guide** which enables communities to develop community tree programs that include climate adaptability, carbon storage, tree diversity and invasive species components. This guide, which communities are encouraged to adopt is available at: Urban Forest Sustainability Guide.

SLELO representatives with community members from Watertown NY planting trees. Photographer unknown

Special Initiatives VI

Measuring Success

Priority Conservation Area – Score Card

One reoccurring question that the SLELO PRISM core team is asking is whether or not the 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? To answer this, the SLELO PRISM has developed scorecard for each PCA based on 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.*

These 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 and these 'benchmark scores' can be applied over time as management and restoration measures occur.

An ecological restoration factor is based on the success or failure of native plant recovery and can be accounted for either by natural succession or intentional restoration. If the observer notices the recovery to natives, the individual can add a (+) to the score. If the observer notices the return to non-natives, the individual can add a (-) to the score. This is known as a Discretionary Restoration Adjustment or DRA. All scores are specific, measurable, achievable, realistic and timebound (SMART) and expressed as:

Example:

RCD Score (1.18 + 1.08 + 1.35)/3 = 1.20 = A (95)
IS Density Score(s) – A (95)
Yellow Iris – A (95)
Swallow-wort – A (95)
TOTAL Score = ((**95**+**95**))/**2** = 95 = A

TOTAL Score = $\frac{(95+95)}{2}$ + DRA = 95 or A+

Prevention

Goal Number 1

Healthy Freshwater

Watercraft Inspection Steward Program (WISP)

In 2022, SLELO PRISM partnered with the Thousand Islands Land Trust (TILT) to co-administer our Watercraft Inspection Steward Program and to expand our program to 30 high-use boat launches, from as far north as Massena NY and south to Rome by hiring 12 stewards.

Top/Middle: 2022 Stewards on duty. Bottom milfoil plant. ©TNC Brittney Rogers

2022 Metrics Include:

- 13,592 total inspections
- 1,110 AIS interceptions
- 29,922 visitor engagements
- 95% compliance rate
- 43 states recently visited by local launch users including Alabama, Connecticut, Delaware, Massachusetts, Maryland, Maine, New Jersey, Pennsylvania.
- Visit SLELO WISP Program for additional metrics.

Continuous improvements to this program helped us to have our most successful season to date 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 2022, the SLELO PRISM Director continued to represent The Nature Conservancy on ISAC.

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 2022 the committee adopted a first-ever, 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 helps us to identify what types of information the conservation, stewardship and protection communities desire, preference of dissemination methods and frequency of communications.

Photo: ©-TNC Rob Williams

Early Detection

Goal Number 2

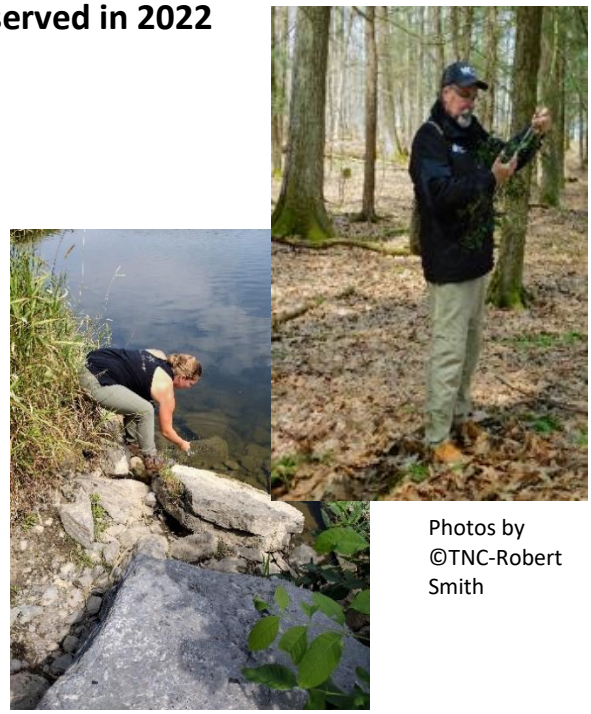
Priority Conservation Areas

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. To maximize efficiency, each PCA is 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.

In 2022 the following PCA's were searched for Tier 1 and Tier 2 species along with notable native species. 233 terrestrial and aquatic Highly Probable Areas (HPA's) were searched. [3] **No Tier-1 Species Were Observed in 2022**
Surveys have been completed at:

- Black Pond WMA (B)
- Chaumont Barrens Preserve (T)
- Chaumont Bay (A)
- Deer Creek WMA (B)
- El Dorada Preserve (T)
- Lakeview WMA (B)
- Oneida Lake and Three Mile Bay WMA (B)
- Salmon River Estuary (A)

A = Aquatic, T = Terrestrial, B = Both



Photos by ©TNC-Robert Smith

Porcelain berry Eradication: In 2019, an observation of a Tier 1 (prevention-list) species was discovered in St. Lawrence County. The observed species was porcelain berry (*Ampelopsis glandulosa* var. *brevipedunculata*). At that time a rapid response was initiated and annual monitoring continues. In 2022, a few small sprouts were removed by the landowner.

[3] 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, maple trees. Its preferred host is an invasive plant called the tree of heaven (*Ailantus altissima*).

In 2022, 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 8 traps were deployed in along Eastern Lake Ontario.

A summary of steward led trap checks resulted in the following observations:

- August 22 – no SLF Found
- August 26 – no SLF Found
- August 28 – no SLF Found
- September 3 – no SLF Found
- September 9 – no SLF Found
- September 11, 2022 – no SLF Found in trap, but 1 dead adult found on trailer
- September 16, 2022 – No SLF Found
- September 23, 2022 – No SLF Found
- September 30, 2022 – No SLF Found
- October 7, 2022 – No SLF Found
- October 14, 2022 – No SLF Found

Above: Spotted Lanternfly. Lawrence Barringer, Bugwood.org

Above: Tree of Heaven branch. ©TNC-Brittney Rogers

Volunteer Surveillance Network

Enhanced Early Detection & Distribution Surveys

Empowering Community Scientists

Detecting invasive species before they become established is advantageous to invasive species prevention and management strategies. Enhancing our ability to conduct early detection on a broader scale enhances invasive species management strategies.

To achieve this the SLELO PRISM recruits and trains volunteers to become members of our invasive species Volunteer Surveillance Network or VSN.

As of 2022, we now have six (6) species specific VSN's to include: fanwort, hemlock woolly adelgid, spotted lanternfly, tench, porcelain berry and tree of heaven. In cooperation with the Department of Environmental Conservation we are currently establishing a new VSN for the elm zig zag sawfly, discovered in 2022 in St. Lawrence County.

Currently there are **123** members trained to recognize and report priority invasive species to iMapInvasives through our Invasive Species Volunteer Surveillance Network (VSN). To raise awareness of the VSN and the priority species we've developed a story-map through a collaboration with the NYS Natural Heritage Program and iMapInvasives. In addition, a webpage showcasing elm zig-zag sawfly information and suggested survey sites is available.

Above and left: Hemlock Woolly Adelgid VSN members received training on surveillance technique. ©Megan Pistolese and Laura Nachbauer.

Notable Native Species Finds

Each year, while conducting early detection searches, our team observes un-common or rare native species. These observations are important in that they confirm that these species have survived in their natural state despite changes in the environment. Observing these species supports biological diversity and validates our work.

Prairie Smoke (*Geum triflorum*)

This is a state threatened species that is native to sandy prairies, savannahs, and alvars near the Great Lakes region. In New York it is only found at Chaumont Barrens Alvar in Jefferson County.

Photo ©Gala Smith

Sassafras (*Sassafras albidum*)

Sassafras is a regionally uncommon species, only found at one PCA – Three Mile Bay. This is because the southern end of SLELO PRISM is located at the northernmost limit of the range of this tree. It is a source of mast for wildlife.

Photo by Katherine Wagner-Reiss

Other notables from previous years include:

- Twinleaf (*Jeffersonia diphylla*)
- Green dragon (*Arisaema dracontium*)
- Pirate perch (*Aphredoderus sayanus)*
- Pale Jewelweed (*Impatiens pallida*)
- Mosquito Fern (*Azolla cristata*)
- Rock Elm (*Ulmus thomasii*)

Promoting Biological Diversity

Through Rapid Response, Control & 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.

Summary of 2022 Control Work

Hemlock Woolly Adelgid
1 referral
2,000 biocontrol beetles released

Emerald Ash Borer
6,000 parasitoids released

Giant Hogweed:
27 Sites with no germination
4 Sites root cut
11 Sites herbicide treatment
4 Sites Eradicated

Swallow-wort:
56 Sites being managed
13 PCAs
97.69 Acres under management

Japanese Knotweed:
9 Sites being managed
3 PCAs
10.49 Acres managed (mainly herbicide)

Phragmites:
12 Sites being managed
7 PCAs
12.55 Acres managed (mainly herbicide)

Oriental Bittersweet:
10 Sites being managed
2 PCAs
10.97 Acres under management

Yellow Iris:
2 Sites being managed
2 PCAs
0.21 Acres managed (mainly hand dig)

Above: Terrestrial Coordinator Robert Smith conducting a field inspection: ©TNC-Brittney Rogers

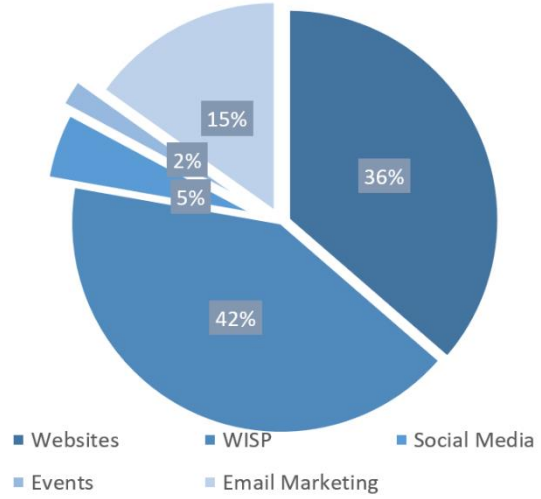
Education, Outreach, Community Science

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
- Peter Zimmer- OPRHP
- Maria Cipullo- OPRHP
- Gabby Padewska- OPRHP
- Kim Cullen-OPRHP
- Heidi Sourwine- IRLC
- Erin Ermine-IRLC
- Haley Sylvan- Thompson Park Zoo
- Shannon Walter- TILT
- Robin Hall-STR
- Gabriel Yerdon-THC
- Linda Gibbs-THTLT

Percentage of People Engaged per Outreach Type



A Closer Look at E/O Metrics

68,929 people were directly engaged via social media, website views, events, and watercraft inspection
58 events were held in 2022
382 social media posts created with **3,738** engagements
10,557 related email blogs were opened
29,922 people engaged by WISP stewards

Newsletter

In 2022, four quarterly newsletters were published in-house using MS Publisher. These newsletters are created by the SLELO team in collaboration with multiple partners each making literary contributions to the content.

Articles are based primarily on science and how invasive species their prevention and management are interrelated with ecological processes and wellness.

Newsletters typically include:

- Timely cover story
- Terrestrial program reports
- Aquatic program reports
- E&O Committee information
- A partner spotlight
- Select species profile
- Pledge-to-Protect Activities
- Upcoming events

Distribution of the newsletter includes multiple statewide list-serves and **13,875 shares** in 2021-2022. It is published quarterly and receives strong recognition by our peers and the public. SLELO Newsletter.

Swallowwort Collaborative

The Eastern Lake Ontario Swallowwort Collaborative (ELOSC) www.swallowwortcolaborative.org is a platform for sharing the most up-to-date research and best management practices to inform stakeholders about the prevention and management of this highly aggressive invasive species. ELOSC continues to foster collaboration between different stakeholder groups to improve control and spread prevention focused solely on swallow-wort. Periodic presentations and website updates are integrated into this initiative .

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 **171** people 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. Since August of 2021, twenty-five P2P blogs have been shared with pledgers with an average open rate of 51%. Collaborating with Break the Ice Media®, a marketing firm, resulted in 10 press releases and 24 articles featured on local, regional, and national media channels gaining **1,550,982.00** media impressions (data provided by BTIM). In addition, special recognition of the P2P was featured in the Watertown Public Broadcasting Station (WPBS) and North Country Public Radio (NCPR).

In addition, 18 billboards were strategically placed throughout the SLELO region receiving **14,314,015** public impressions. Three were placed in urban area shelters located near public outdoor spaces and trails in Utica resulting in **77,373.00** 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 73 times (combined) with an estimated media impression reaching an audience of over **8 million.** Online 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: One of SLELO PRISMs Billboards. Below: One of the (shelter) advertisements located in the City of Utica © TNC- Megan Pistolese Shaw

Cooperation
Goal Number 5

Working together towards a common cause is perhaps one of the SLELO Partnership's strongest attributes. Our partners[4] are interested in the subject matter, there is a tremendous amount of expertise within the partnership, we are fully engaged and work extremely well together. Cooperative highlights from 2022 include:

- We participated in the Cornell In-Service Conference and national conferences to exchange invasive species awareness and knowledge.
- We collaborated with the Eastern Lake Ontario Dunes Foundation and Dunes Coalition including lakeshore partners to implement a Dunes Management Plan.
- Participated with the New York Statewide (monthly) PRISM calls, providing roundtable reports and assisting with call facilitation.
- We collaborated on extensive biological control releases with multiple partners and local volunteers.
- Our Education and Outreach Committee collaborated to promote awareness activities through our Pledge-To-Protect marketing initiative.
- 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.

[4] 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 comprehensive dataset is critical to support our science-driven approach to invasive species management.

Conservation & GIS Analyst

Boat Launch Data Analysis & Score Card Development

SLELO's Conservation and GIS Analyst Zack Simek, developed a script using the statistical program R to generate 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.

Photo left: Garmen Glo GPS

As an effort to determine the level of impact our management and restoration work may have on our PCA's, 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.

Field Team Tools

Information Management Tools

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

NY iMapinvasives

iMapinvasives is an important piece of data capture. See Appendix (F) for 2022 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[5], often do repopulate with non-natives and therefore these sites do benefit from intentional restoration. [6] 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

Three Mile Bay Area Restoration: Approximately 206 plants were planted in treatment areas to include: buttonbush (*Cephalanthus occidentalis*), redosier dogwood (*Cornus sericea*), swamp milkweed (*Asclepias incarnata*), blue-flag iris (*Iris versicolor*), soft rush (*Juncus effusus*), common three square (*Scirpus Pungens*), arrowood viburnum (Viburnum dentatum) and nannyberry (Viburnum lentago).

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

[6] 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.

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 Canada wild rye was spread throughout restoration site. Site Size: 2000 sqft. An additional 178 native species were also planted.

Deer Creek Marsh Restoration Area:
Post Japanese knotweed suppression the site was raked to clear 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 Canada wild rye was spread throughout restoration site. 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 Canada wild rye was spread throughout this restoration site along with 24 nannyberry shrubs. Site Size: 2500 sqft.

Combined our restoration coordinators planted 1,908 live plants, 83 live-stems andover 59 pounds of native seed on restoration sites. Included were an uncounted number of plugs and propogules.

Above: Brittney Rogers planting native plants at Three Mile Bay PCA. ©TNC-Robert Smith

Innovation

Goal Number 8

Environmental DNA - Connected Waters

Partners of the SLELO PRISM along with The Nature Conservancy and the Department of Biology at SUNY Oswego continued to implement 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.

In 2022, SLELO PRISM collaborated with the Adirondack PRISM to conduct early detection on waterways that connect inland waters with Lake Ontario and the St. Lawrence River. Sixty-six sites were sampled two times.

Above: Gabriel Yerdon and Brittney Rogers with eDNA apparatus. Below: Rob Williams and Gabriel Yerdon processing a connected waters sample ©TNC Tammara Van Ryn

Invasive Species Sampled for: (Preliminary Results)

- Black carp (*Mylopharyngodon piceus*) -negative
- Silver carp (*Hypophthalmichthys molitrix*) -negative
- Bighead carp (*Hypophthalmichthys nobilis*) -negative
- Grass carp (*Ctenopharyngodon idella*) -negative
- Northern Snakehead *(Channa argus)* -negative
- Tench *(Tinca tinca)* -negative
- Tubenose goby *(Proterorhinus semilunaris)* -negative
- Round goby (*Neogobius melanostomus*) -positive 6-sites
- Rusty Crayfish *(Orconectes rusticus)* -positive 4-sites
- Hydrilla (*Hydrilla verticillate*) -negative
- Eur. water milfoil (*Myriophyllum spicatum*) -positive 10-sites

Connected waterways /	**Number of sites:**
Black River Watershed	14
Oswegatchie River Watershed	11
Grass River Watershed	11
Raquette River Watershed	12
St. Regis Watershed	12
Eastern Lake Ontario	3
Species Specific Sites	3
Total samples Collected	*= 168*

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 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.

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.

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.

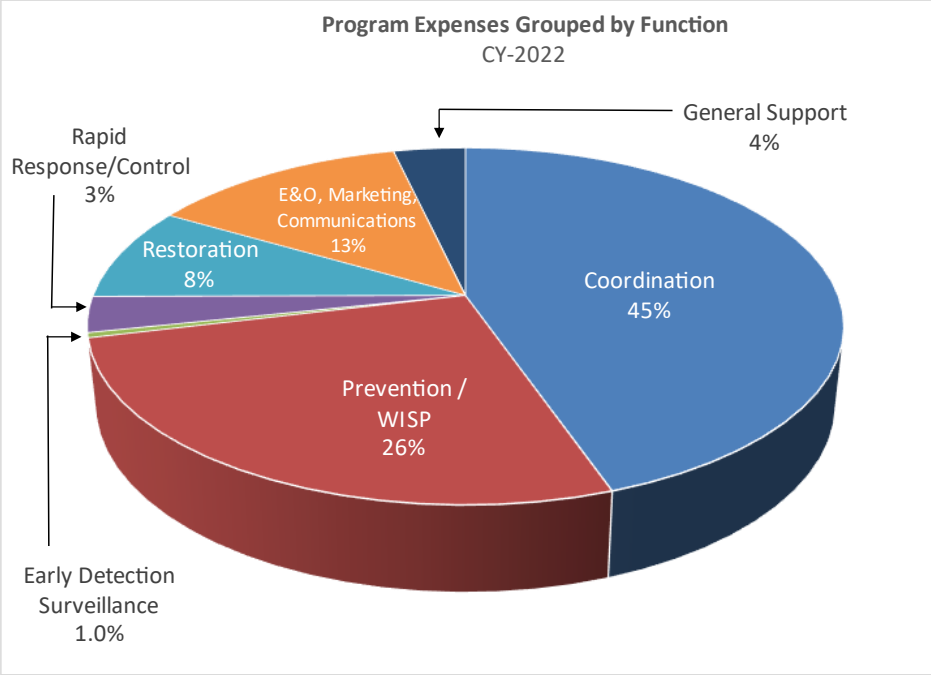
Pheromone Based Bait

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 2022 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
Rapid Response and Control Activities	Licensed seasonal pesticide applicator team, field technician, control related subcontract.
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	eDNA and PCA surveys.
General Support	Travel, misc. supplies, etc.
Restoration	South Sandy Creek and ELO Dunes site restoration and terrestrial sites. Subcontracts, native grass seed, seedlings, plant materials.

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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.

Asian Longhorned Beetle - (*Anoplophora glabripennis*)
Hydrilla - (*Hydrilla verticillata*)
Kudzu - (*Pueraria montana* var. *lobata*)
Mile-A-Minute Vine - (*Persicaria perfoliata*)
Silver, Big Head and Grass Carp
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)
Black & Pale Swallow-wort - (*Vincetoxicum* spp.)
Hemlock Woolly Adelgid (*Adelges tsugae*)
Japanese Knotweed - (Reynoutria japonica)
Japanese Stiltgrass - (Microstegium vimineum)
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.

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.

Asian Jumping Worm (*Amynthas spp.)*

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 2022 Education & Outreach Events

Event Description	Date	County	Total Engaged
iMap Volunteer Training	01/06/22	virtual	1
NEAPMS poster session	01/12/22	virtual	98
VSN Training	1/13/22	virtual	1
eDNA TNC Lands Team presentation	01/19/22	virtual	15
Urban Forest Sustainability Initiative	01/26/22	virtual	10
Winter Carnival Hike	02/06/22	Jefferson	24
Black River Trail Feasibility Study Webinar	02/08/22	virtual	31
Salmon River Falls HWA Survey Training	02/15/22	Oswego	11
Trenton Greenbelt HWA Survey Training	03/10/22	Oneida	1
ELOSC	03/23/22	virtual	132
ARI webinar	04/16/22	virtual	52
IRLC Lake Leaders Meeting	04/17/22	virtual	7
THC Local Government Conference	04/19/22	Oneida	37
Creating Wildflower Meadows in Landscape	04/19/22	Jefferson	40
Landscape Pests	04/23/22	Jefferson	13
Chase Lakeshore Association	05/05/22	virtual	13
Message in a Molecule	05/11/22	virtual	34
NYISAW: Native Alternatives to Invasive Garden Plants	6/7/22	virtual	40
Black River Watershed Conference Presentation	6/8/22	Lewis	60
Black River Watershed Conference Exhibit	6/8/22	Lewis	14
Watertown Farmers Market	6/8/22	Jefferson	100
Sandy Creek Experience: Walk, Paddle, Demonstrations	6/11/22	Oswego	21
"Uninvited" Documentary Viewing	06/11/22	St. Lawrence	12
Swallow-wort Hand Pull	06/11/22	Jefferson	3
Walk and Talk	6/12/22	St. Law	27
Oswegatchie WC Removal	06/25/22	St. Law	52
Water chestnut hand pull	multiple	Oswego	6
Water chestnut hand pull	multiple	Oswego	6
Water chestnut hand pull	multiple	Oswego	6
Deer Creek WMA	07/05/22	Oswego	5
Metzger's Pond WCP	07/09/22	Oswego	17
Urban Forest Initiative	07/11/22	St. Law	6
Water chestnut hand pull	7/12-15	Oswego	6
Hyde Lake Association Volunteer Training	07/12/22	virtual	3
Lakeveiw water chestnut	07/21/22	Jefferson	Nr

Event Description	Date	County	Total Engaged
ReLeaf Conference	7/21-23	Jefferson	14
Thompson Park Zoo's Zoofari Program	07/22/22	Jefferson	19
ReLeaf Conference	07/23/22	Jefferson	44
Great Lakes Ecosystem Education Exchange Summer Teacher & Educator workshops	07/25/22	St. Lawrence	4
Swallow-wort/Yellow Iris Hand Pull	07/26/22	Oswego	5
Yellow iris/Swallow wort hand pulls	07/26/22	Oswego	4
Great Lakes Ecosystem Education Exchange Summer Teacher & Educator workshops	07/26/22	Oswego	5
Oneida Lake (Muskrat Bay)	07/27/22	Oneida	2
WHIRL Hike	07/28/22	Jefferson	7
Guffin Bay WCP	08/01/22	Jefferson	23
WHIRL Paddle	08/02/22	Jefferson	11
Water chestnut hand pull	8/2/2022	Oswego	6
Water chestnut hand pull	8/4-8/5	Oswego	6
eDNA Webinar	08/25/22	virtual	40
iMap Volunteer Training	09/30/22	virtual	1
iMap Volunteer Training	10/03/22	virtual	1
Common invasive plants and how to control them	10/04/22	St. Lawrence	11
Elm Zigzag Sawfly is Here, Now What?	10/24/22	virtual	81
Alternatives for common invasives	11/02/22	St. Lawrence	7
TNC ISAC-Language of Invasive Species- Messaging and Naming	11/04/22	virtual	48
Mid-Western Invasive Species Conference: Implementing a Regional Aquatic Restoration Initiative to Protect Our Waters	10/24-27	Out of state	201
Cornell IN-Service (IPMDAT)	11/15-17	Ithaca NY	38
Cornell IN-Service (PCA Score Card)	11/15-17	Ithaca NY	38
Total Engaged via events			**1,519**
Total Number of Events			**58**
*Nr = not reported			

Appendix F: NY iMapinvasives 2022 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.

Top 10 Species Reported in SLELO Region

Zebra Mussel	710
Water Chestnut	332
Eurasian Water-milfoil	253
Common Frogbit	212
Narrowleaf Cattail	193
Reed Canarygrass	142
Bush Honeysuckle, (species unknown)	104
Buckthorn	95
Glossy False Buckthorn	83
Purple Loosestrife	79

New Species within PRISM geography

Species Name	County
Tubenose Goby	Jefferson
Broadhead planarians (species unknown)	Jefferson
Narrowleaf Cattail	Jefferson, Oswego
Euro. Stream Valvata	Oneida
Freshwater Jellyfish	Oneida, Oswego St. Lawrence
Flowering-rush	Oneida
Beech leaf disease Nematode	Oneida, Oswego
Japanese primrose	Oneida
Japanese Honeysuckle	Oneida
Narrowleaf Cattail	Oneida
Grass Carp	Oswego
Banded Mystery snail	Oswego
Tench	St. Lawrence
Elm zigzag sawfly	St. Lawrence

Acres of searched areas in SLELO = 13,643 acres or 14% of statewide total.

Number of Unique Species Reported (presence data only)

Number of Species Reported Statewide = 240

Number of Species Reported in SLELO = 57