



2017-2018 ANNUAL REPORT



FINGER LAKES INSTITUTE



fingerlakesinvasives.org

Prepared by Hilary R. Mosher, FL-PRISM Coordinator

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Introduction Letter from the Coordinator Partners,

We have successfully closed the books on the 2017-2018 fiscal year as of March 31, 2018 and I am happy to report on the amazing invasive species work in the region.

The Finger Lakes-PRISM saw much growth over this past year. We trained **318** people in the iMapInvasives mapping system and recorded 4,113 observations for the region. We engaged partners to place bootbrush stations and currently have 51 in the region. We sponsored Clean, Drain, Dry billboards across the Finger Lakes resulting in 7.77M impressions. *Hydrilla verticillata* detected in Aurora, NY in the fall of 2016 was managed and treated by the US Army Corp of Engineers with coordination and facilitation from the Finger Lakes PRISM. And, the goals and objectives of the Finger Lakes PRISM strategic plan were further met through prevention, coordination with partners, early detection/rapid response, education and outreach to the community and K-12 students, information management and communication, and legislation and support from federal, state and local funding sources.

Some highlights from the FLI Finger Lakes PRISM 2017-2018 fiscal year include:

- \$979,999 in competitive funding for invasive species work from state and federal sources
- 49 workshops with 2,979 community members engaged on invasive species*
- 17 Tabling events with over 74,000 people in attendance*
- 23 Presentations conducted that conveyed invasive species programming to 938 people*
- **318** people trained to use iMapInvasives across **18** programs
- Watercraft steward program inspected **35,468** boats at **17** launches across the Finger Lakes and engaged **79,084** people in Clean, Drain, Dry messaging
- **70** events held across the region in honor of NY Invasive Species Awareness Week
- Water chestnut control team removed **774.8 acres** of water chestnut across **16** sites and surveyed **3,198 acres** for high priority aquatic invasive species
- **30** acres of giant hogweed were controlled and an additional **91.6** acres were surveyed for high priority terrestrial invasives
- **250** acres of invasives and **30** acres of honeysuckle at Ganondagan were mapped as part of Finger Lakes Institute (FLI) USFS CWMA grant
- **37 miles** of trail were mapped for invasive species on the Finger Lakes National Forest as part of the FLI US Forest Service Cooperative Weed Management Area grant
- Facilitated Cayuga County *Hydrilla verticillata* task force, actively sought funds for treatment, worked with USACE Hydrilla Collaborative and state and federal government to seek funds, and presented at various meetings on the need for funding.

*includes FLI Environmental Education Program data

These are just a few of the highlights from the work across the region. We have many things for which to be proud in our Finger Lakes PRISM region. I look forward to a successful 2018-2019!

In service,

Hilary R. Mosher, Coordinator, Finger Lakes-PRISM

Acknowledgements

I am thankful to our host organization, the Finger Lakes Institute at Hobart and William Smith Colleges, and our New York State (NYS) partners which include the NYS Department of Environmental Conservation (DEC) Invasive Species Coordination Unit, the NYS Invasive Species Council, the NYS Invasive Species Research Institute, the NYS Invasive Species Clearinghouse at Cornell University, and the New York Invasive Species Database known as iMapInvasives.

I am also very thankful to our Steering Committee, Agriculture, Aquatic, Education & Outreach, and Terrestrial Working Group members for their dedication, expertise, and commitment to furthering the mission of the Finger Lakes PRISM. A big thank you to our grant collaborators and partners who work tirelessly to survey, identify, report, and control invasives across the region. There is no 'Partnership' without our partners and we are grateful for your service.

The Finger Lakes PRISM is funded by the Environmental Protection Fund, through contract between the NYS Department of Environmental Conservation and Hobart and William Smith Colleges.

About

The Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) is a collaborative program designed to address the threat of invasive species. Housed within the Hobart and William Smith Colleges Finger Lakes Institute (FLI), the program is one of eight across New York that focuses on managing invasive species, developing detection programs, employing response efforts, providing education programs and outreach, and working with communities. PRISM programs are administered through the New York State Department of Environmental Conservation.

Hobart and William Smith are nationally recognized liberal arts colleges defined by a longstanding focus on educating across academic disciplines and an intellectual environment that cultivates faculty and student connections. With a strong commitment to inclusive excellence, the Colleges have a distinguished history of interdisciplinary teaching and scholarship, curricular innovation and exceptional outcomes. Hobart and William Smith provide robust programs in career development, study abroad, service, leadership and athletics. There are 45 majors and 67 minors. With an enrollment of 2,237, more than 60 percent of students study abroad through the No. 1 global education program in the country and all participate in community service. Located in the heart of the Finger Lakes region, Hobart and William Smith enjoy a lakeside campus on the shore of Seneca Lake. Originally founded as two separate colleges (Hobart for men in 1822 and William Smith for women in 1908), Hobart and William Smith students share the same campus, faculty, administration and curriculum.

Background

In response to the 2005 report to the NYS Invasive Species Task Force, eight Partnerships for Regional Invasive Species Management (PRISMs) were formed statewide to address the economic, ecological, and human health impacts of invasive species within New York (Figure 1). Developed based on the Cooperative Weed Management Areas (CWMA) from the western United States, the PRISMs represent a unified strategy in dealing with invasive species.

The Finger Lakes-PRISM covers the 17 counties of the Finger Lakes and brings together the resources of a diverse range of organizations to prevent, detect, control, and manage invasive species; ultimately reducing their proliferation and impacts. With the cost to control invasive species within the United States at estimated between \$120B and \$137B annually (Pimentel *et al.* 2005, Runyon *et al.* 2012), the Finger Lakes-PRISM allows for sharing and leveraging of limited resources within the partnership while representing a highlyvisible program that builds community awareness and participation.

Prior to securing funding in 2014, the Finger Lakes PRISM consisted of a group dedicated to forwarding the mission of invasive species management. The Finger Lakes PRISM launched terrestrial, aquatic, and education & outreach working groups and developed a 2008 work plan with five major objectives including: strengthening partnership, identifying funding sources, education and outreach, eradication and control, and monitoring and inventory. Without funding and a structure to support the Finger Lakes PRISM, the group stopped

convening as a unit. In late 2013, the Finger Lakes PRISM contract was awarded to the Finger Lakes Institute at Hobart and William Smith Colleges and by the beginning of the 2014-2015 fiscal year, the program was fully functioning. Working groups and steering committee members were solicited to participate and a five-year strategic plan was developed for 2016-2021 available online http://fingerlakesinvasives.org/wpcontent/uploads/2014/01/PRISM-Invasivespecies-strategic-plan-002.pdf. With help from the steering committee, the Finger Lakes PRISM publishes an annual work plan which helps guide the work and focus of the program (Appendix B).



Figure 1. Partnerships for Regional Invasive Species Management (PRISMs) in New York State

Finger Lakes Region

With breathtaking vistas and a wealth of historical perspectives, the Finger Lakes hosts travelers, recreationists, and avid enthusiasts from across the world who visit the beautiful land and lakes. Native American legend explains that the Creator looked upon this land with special favor and when reaching out to bless it, left an imprint of His hand on the landscape. Hence, the Finger Lakes were created, per legend. Of course, geological history has a different, more scarring tale to tell about its origin. During the Pleistocene, a glacial sheet over a mile thick in locations gorged out the land and created enormous holes that filled in to become lakes as the glaciers retreated across the landscape. The incredible gorges, waterfalls, and natural panoramas of the area were born from this incredible geological process. Notably, the Finger Lakes region offers state parks such as Letchworth and Watkins Glen, ranked numbers one and three respectively in the 2015 USA Today's Reader's Choice Award for Best State Park (Appendix C), as well as the Finger Lakes National Forest, and the gorges of Ithaca (Figure 2), among others.

Some other prominent features include:

- Harriet Tubman Home in Auburn, NY,
- Waterloo, the birthplace of Memorial Day,
- the home of aviation pioneer Glenn Curtiss, in Hammondsport,

• Elmira, home to Mark Twain in his later years

- Corning Museum of Glass
- Hornell, a major railroad center

• Conesus, the oldest producer of pure grape sacramental wine in the Western hemisphere

• Seward House of Auburn, a National Historic Landmark

• Seneca Falls, home of the Women's Rights National Historic Park, National Women's Hall of Fame, and setting for Frank Capra's classic movie 'It's a wonderful life'

• Hemlock-Canadice State Forest covers two lakes and has 6,684 acres

- Hemlock is home to the state's oldest pair of nesting bald eagles dating back to the 1960s
- Montezuma Audubon Center

The Finger Lakes PRISM region encompasses over 7.3 million acres with the City of Rochester to the west, the City of Syracuse to the east, and Elmira-Corning to the south. According to census data from 2010, 2,351,253 people live in the Finger Lakes region which encompasses Broome, Cayuga, Chemung, Chenango, Tompkins, Tioga, Steuben, Wayne, Yates, Cortland, Livingston, Madison, Monroe, Onondaga, Ontario, Schuyler, and Seneca counties .



The mean household income of the region is \$63,978 and the average individual percent poverty rate is 13.39% (Census Data, 2010). Given the unique features, aesthetic value, and ease of access to major cities, the Finger Lakes region is reported to be the largest tourism area in New York State, north of the Hudson Valley (Finger Lakes Tourism Alliance, 2016). In fact, in 2016, travelers to the Finger Lakes region added \$3B in traveler spending and supported 59,326 jobs, equating to 5% of the total traveler spending within NYS and 18% of the upstate traveler spending. The amount of traveler spending to the Finger Lakes then is more than any other region outside of the New York City, Long Island, and Hudson Valley tourist locations, which collectively, made up nearly 80% of traveler spending. (Finger Lakes Tourism, 2016).

Upstate Traveler Spending, 2016



*Tourism data excludes the financial impact of Madison, Broome, and Chenango counties, which were included in the Central New York tourism data.

Fishing also has a major impact in the Finger Lakes region. According to the Economic Contributions of Recreational Fishing per U.S. Congressional Districts report produced by Southwick Associations for the American Sportfishing Association (October 2015), NY anglers contributed nearly \$4B to the NY economy of which the Finger Lakes region accounted for over 25% of the total angler contributions (\$1.032B).

There are over 40 State Parks and Historic Sites within the region ranging from Hamlin Beach State Park in Monroe County to Green Lakes State Park in Onondaga County (Appendix C). Additionally, the Finger Lakes boast <u>Zurich Bog</u>, a National Natural Landmark with its unique wetland preserve that is home to several threatened and endangered species on 650 acres in the town of Arcadia. The Finger Lakes is also home to the Finger Lakes National Forest in Hector, NY, a beautiful 16,600 acre retreat in the watersheds of Seneca and Cayuga Lakes.

Problem Statement

Invasive species (IS), as defined by the NYS DEC, pose a significant threat to the Finger Lakes region given the multitude of vectors for transmission. Especially of concern to our region is the massive population of giant hogweed, common reed located along almost every major transportation corridor, and an actively managed population of Hydrilla in the Cayuga inlet and Tinker Nature Park. These invasives and others are taking foothold in our region even as other populations are poised for invasion via the Erie Canal and other transmission routes. It is imperative that we protect our ecosystems and safeguard our picturesque region from additional outbreaks of new or invading species.

Mission

The mission of the Finger Lakes Partnership for Regional Invasive Species Management (Finger Lakes PRISM) is to reduce the introduction, spread, and impact of invasive species within the Finger Lakes PRISM region through coordinated education, detection, prevention, and control measures (adopted by the Steering Committee, June 2014).

Vision

The Finger Lakes PRISM is recognized as the primary organization for invasive species detection, prevention, control, and education and outreach within the 17-

county region of the Finger Lakes. The Finger Lakes PRISM will work collaboratively with its partners and the public to provide education and mitigate the impacts of invasive species within our region.

Finger Lakes PRISM Steering Committee, Working Groups, and Staff

The Finger Lakes PRISM consists of partners working together to help stop the invasion of plants, animals, diseases, and vectors of transmission for invasive species. The Finger Lakes Institute staff working on invasive species-related projects or programs includes Dr. Lisa Cleckner, Director of the Finger Lakes Institute; Hilary R. Mosher, Finger Lakes PRISM Coordinator; Patty Wakefield-Brown, Volunteer and Outreach Coordinator for the Finger Lakes PRISM and Giant Hogweed Programs; Kate Des Jardin, Water Chestnut Project Manager; Nadia Harvieux, Education Program Manager; and Sam Beck-Anderson, Project Manager, Watercraft Steward Program.

The partnership committees are divided among working groups and a steering committee to encourage on-the-ground education & outreach, prevention, and control of invasive species through public forums, trainings, outreach, presentations, and invasive species surveys throughout the region. The Finger Lakes PRISM operates from the expertise and guidance of a Steering Committee (SC), Agricultural Working Group (AgWG- on hiatus), Aquatic Working Group (AWG), Education & Outreach Working Group (E&OWG), and a Terrestrial Working Group (TWG) (Appendix A). The purpose of each working group along with the priorities of each group is listed below.

1. Steering Committee (SC) *Purpose:*

To guide the five-year strategic planning process, plan, and set overall direction for priority areas and priority IS and ensure that major goals and their timeline are achieved. The SC will set the annual work plan and monitor progress, which may include tracking timelines and evaluation procedures. The SC will provide strategic direction and coordination for the four working groups through the varied expertise and connections of the SC.



Bruce Gilman (FLCC) works with teachers on identifying invasive plants for a teacher training at Muller Field station

Structural Statement

The steering committee is made up of representatives from the Finger Lakes with an interest in the governance of the Finger Lakes PRISM. The structure of the PRISM, the steering committee, and working groups is designed to ensure consistency in decision-making for the Finger Lakes region.

Strategies to accomplish this include:

- Establish a good working relationship with partners and working groups;
- Work in partnership with the working groups to develop priorities such as identifying key IS to monitor and control, and key target locations in the FL region;

• Adopt a monitoring strategy for IS in the FL-region based on the outcomes from the WGs;

• Adopt an Early Detection Rapid Response (ED/RR) plan that will help communities detect and respond to IS introductions, based on outcomes from the WGs;

• Develop the specifics of the annual work plan that brings together various stakeholders to enhance synergy among experts to tackle IS within the community through clear and concise strategies for prevention, control and remediation;

• Help communicate the priority list of IS and methods of introduction, which will include information about pathways s of transmission and information about where IS are coming from, and where they are moving to, which will be disseminated via Finger Lakes PRISM website; and

• Develop a marketing and communication strategy, including a robust and all-inclusive website, to enable the community to recognize and consider the Finger Lakes PRISM website first for information, management ideas, ED/RR, and all things invasive in the region.



Tabling at Earth Day at Seneca Park Zoo2. Agricultural Working Group (AgWG)*Purpose*

• To create agriculture-specific priorities for IS management and prevention, determine highly probable locations and conditions appropriate for invasion, and develop an agricultural IS management plan. This working group will develop an agriculture-focused work plan, support best management practices intended to reduce or control IS, and support the steering committee as needed.

Strategies to accomplish purpose:

• Establish good working relationships with partners and NYS agencies such as farmers, USDA Natural Resources Conservation Service, County Soil and Water Conservation Districts, Cornell, DEC, Ag and Markets, and others;

• Working in concert with the E&OWG and the SC, determine target audiences in order to provide Ag IS-specific toolbox with items to effectively and efficiently educate people about the impact of Ag IS and how to detect, prevent, mitigate, and report Ag IS;

• Develop or identify a monitoring strategy, including monitoring protocols, for Ag IS in the FL-region;

• Create an ED/RR plan that will help communities detect and respond to Ag IS coming into the region;

• Develop or identify a mitigation strategy with best management practices to reduce impacts and help farmers deal with impacts;

• Develop or identify a prevention, management, and work plan that brings together various stakeholders to enhance the synergy necessary to tackle Ag IS within the community through clear and concise strategies for prevention, control, and remediation;

• Develop or identify a protocol for the FL-region to deal with Ag IS issues at locations such as hedgerows, fallow fields, etc. to provide consistent and clear messaging;

• Develop or identify a priority list and methods of introduction, which will include information about pathways of transmission, information about where Ag



Plants

1. Autumn and Russian olive, *Elaeagnus umbellate, Elaeagnus angustifolia*

2. Canada thistle, *Cirsium arvense*

3. Field bindweed, Convolvulus arvensis

4. Japanese knotweed, *Polygonum cuspidatum* Siebold & Zucc.

5. Johnson grass, Sorghum halepense

6. Spotted knapweed. *Centaurea maculos*

7. Swallow-wort, *Cynanchum spp.*

8. Velvetleaf, *Abutilon theophrasti Medic.*

9. Wild parsnip, *Pastinaca sativa*

Diseases

1. Basil downy mildew, *Peronospora belbahrii*

2. Grape crown gall, *Agrobacterium tumefaciens*

3. Late blight, *Phytophthora infestans*

4. Phytophthora blight, *Phytophthora capsici*

5. Plum pox virus, *Potyvirus*

Insects/Invertebrates

1. Brown marmorated stink bug (BMSB), (Halyomorpha halys)

2. Garlic bloat nematode, (*Ditylenchus dipsaci*).

IS are coming from and where they may go, and how to prevent them to be disseminated via Finger Lakes PRISM website;

• Synthesize and disseminate data to the public via the Finger Lakes PRISM website;

• Create material on priority Ag IS for the FL-region (fliers, handbooks, datasheets, etc.);

Priority invasives of concern:

3. Golden nematode, (*Globodera rostochiensis*) - *not an insect but should be included*

4. Spotted wing drosophila, (*Drosophila suzukii*)

5. Swede Midge, (Contarinia nasturtii)

3. Aquatic Working Group (AWG)

Purpose

• To develop aquatic- specific IS priorities, determine highly probable areas, create an aquatic IS management strategy, and create a work plan;

• To help in the prevention of new IS introductions into the region, focus on ED/RR of AIS, and support the steering committee as needed;

• To serve as the direct point of reference for AIS and establish a simple and effective means for preventing, detecting, reporting, controlling, and managing priority AIS of concern;

• To develop a robust website that serves as a clearinghouse for AIS issues (prevention, detection, response, management, control) in the FL region; and Secondary Focus

• To focus on containment and management of established invaders within the region

• To focus on providing information about conferences, workshops, and literature to the SC and E&O WG

Strategies to accomplish purpose:

• Establish good working relationships with partners such as NYS OPRHP, DEC, NYS Federation of Lake Associations (NYSFOLA), and others;

• Develop IS prevention protocols for lakes without stewards;

• Working in concert with the E&OWG and the SC, determine the Finger Lakes PRISM target audiences and how to provide an AIS-specific toolbox to effectively and efficiently educate people about the impact of AIS and how to detect, prevent, mitigate and report AIS;

• Develop a monitoring strategy including monitoring protocols for AIS in the FL-region;

- Create an ED/RR plan that will help communities detect and respond to AIS coming into the region;
- Develop a prevention, management, and work plan that brings together various stakeholders to establish the synergy necessary to tackle AIS within the community through a clear and concise strategies for prevention, control, and funding of projects;

• Develop a priority list and methods of introduction, which will include information about pathways of transmission, information about where AIS are coming from and where they could potentially spread to, and AIS prevention to be disseminated via Finger Lakes PRISM website;

• Synthesize and disseminate watercraft steward/boat steward information to the public via the Finger Lakes PRISM website;

• Develop a consistent marketing strategy to convey the importance of

watercraft stewards to the public (i.e., Clean, Drain, Dry!, Stop Aquatic Hitchhikers!);

• Create material on priority AIS for the FL-region (fliers, handbooks, datasheets, etc.);

• Establish the Finger Lakes PRISM website as the primary location for all information on AIS in the Finger Lakes PRISM region; and

• Develop a decision tree to use when determining priority organisms and locations for AIS invasion and management and create information about regional AIS and then lake-specific AIS



Bill Ebert takes a rake toss on Cayuga Lake. Photo: Lisa Cleckner

Invasive Species Protection Zones:

- Boat launches
- Primary inlets and tributaries
- Marinas and bait shops

• Highly Probable Areas of Invasion (HPA) as defined by the AWG

Priority invasives of concern:

Macrophytes

- Hydrilla verticillata*
- Water chestnut, Trapa natans *
- Water lettuce, *Pistia stratiotes* Macroalgae

• Starry stonewort, *Nitellopsis obtusa* Invertebrates

• Bloody red shrimp, *Hemimysis anomala* Fish and Fish Diseases

- Round goby, *Neogobius melanostomus*
- Oriental weatherfish, *Misgurnus anguillicaudatus* (Cantor, 1842)
 Connection to Harmful Algal Placems (HABs)
- Connection to Harmful Algal Blooms (HABs)
- Asian clam, Corbicula fluminea
- Education and Outreach Working Group (E&OWG)

Purpose:

- To establish a strong connection between Finger Lakes PRISM and the general public, volunteers, institutions of higher education, NGOs, agencies, and other stakeholders;
- To promote Finger Lakes PRISM, to foster awareness of our mission, generate interest in being a partner, and enhance visibility within agencies and the Finger Lakes region to increase general knowledge (detection, prevention, control) of IS;
- The E&OWG will educate the Finger Lakes community on IS issues and provide the tools necessary to make sound management decisions;
- The E&OWG will determine appropriate means for education and outreach based on resources available; and
- The E&OWG will seek to demonstrate to the general public and others the mutual benefit of investing human and economic resources in the Finger Lakes PRISM



Giant hogweed workshop given to NYSDOT

• Dreissenids (Zebra and Quagga mussels) *Also listed on the Great Lakes Governors and Premiers List of Least Wanted Species in the Great Lakes

Strategies to accomplish purpose:

- Generate and increase IS awareness and education within the Finger Lakes PRISM;
- Create a network of information sharing for marketing collateral and resource sharing across the Finger Lakes PRISM;
- Create a strong web-presence for the Finger Lakes PRISM to include necessary resources for managers, general public, lake associations, etc. on dealing with IS;
- Create fact sheets and information for professionals and educators;
- Sponsor education and outreach conferences, symposia and public forums to increase IS awareness across the region;
- Offer technical training on IS identification and management options for professionals and educators in the region;
- Support the Agricultural, Aquatic, and Terrestrial WGs to ensure that their priorities and products are delivered to the general public and the Finger Lakes PRISM

5. Terrestrial Working Group (TWG) *Purpose:*

• To guide terrestrial-specific IS priorities, determine highly probable areas for invasion and engage in IS detection, control, and restoration;

• The TWG will develop a terrestrialfocused work plan and IS management plan;

• The TWG will assist in the prevention of new IS into the region, focus on ED/RR of

IS, and support the steering committee as needed;

• A secondary focus of the TWG will be to contain and manage established invaders within the region and provide information on terrestrial IS of concern, conferences, workshops, and literature to the E&O committee;

• TWG will engage in regional monitoring on terrestrial IS (TIS); and

• TWG will promote the Finger Lakes PRISM as a central clearinghouse for TIS in the Finger Lakes PRISM region

Strategies to accomplish purpose:

• Prevent new invasions through rapid detection and remediation of new invasions of plants;

• Manage invaded areas;

• Promote native planting (i.e., as landscaping) thereby decreasing potential for invasion;

• Collaborate and network with regional IS educational institutions;

• Inventory, survey, and map populations of invasive plants;

• Restore sites where weed management and control have occurred; and

• Monitor changes and evaluate management results

Invasive Species Protection Zones:

a. Areas where the infestation is low on the invasion curve and efforts can make a difference—i.e., Japanese knotweed in the Finger Lakes National Forest is in very low abundance; b. Easily
accessible areas for
recreation where
plants can be
spread—highly
probably areas
(HPAs) for invasion;
c. Edge of
ecological important
communities;

d. Transportation corridors/right-of-ways;

Priority invasives of concern:



Photo: NYSHI

1. Emerald ash borer, Agrilus planipennis

2. Giant hogweed, Heracleum

mantegazzianum

3. Hemlock woolly adelgid, *Adelges tsugae*

4. Japanese knotweed, *Fallopia japonica* (Houtt.)

5. Oriental bittersweet, *Celastrus orbiculatus*

6. Swallow-wort (pale and black), *Cynanchum spp.*

High priority early detection invasive species:

1. Japanese stiltgrass, *Microstegium vimineum*

2. Mile-a-minute vine, *Persicaria perfoliata*

3. Slender falsebrome, *Brachypodium sylvaticum*

SUMMARY of Finger Lakes PRISM 2017-2018 Fiscal Year

Finger Lakes PRISM- Subcontract Projects

Hydrilla survey work in the Upper Susquehanna Basin, Paul Lord, SUNY Oneonta Water chestnut control and outreach in Onondaga County, CCE Onondaga County Program review of marketing and partner strategy of the Finger Lakes PRISM, Don Fisher, Axis Digital HWA and high priority invasive survey and workshop in Southern Livingston County, CC Environment and Planning,

External Funding Awards for 2017-2018

Hydrilla verticillata Control in New York's Great Lakes Basin (\$598,960) Starry Stonewort Collaborative for the Great Lakes Region (\$299,414) USFS CWMA work on Finger Lakes National Forest (\$39,999) and OPRHP Ganondagan (\$40,000)

SUMMARY OF PROJECTS Water chestnut (2017-2019)

A water chestnut strike team (n=6) and team lead were hired, trained, and directed to survey and manage water chestnut in compliance with goals, objectives, and quality assurance protocols of the EPA-funded GLRI control project. The crew began on June 26, 2017 and spent 26 days surveying 25 sites (3,198 acres). Water chestnut management through hand-pull and mechanical harvest occurred throughout 774.8 acres across 16 sites, almost 600 more acres and four more sites than in 2016. The area measurements were calculated using



hand-held GPS units and mapping software (Google Earth Pro and ESRI ArcGIS) consistent with the protocol outlined in the Quality Assurance Project Plan (QAPP).

This project has made significant strides towards fulfilling the Finger Lakes PRISM annual plan and strategic plan objective and goals through survey, management, and outreach to the region. The project team is on the verge of complete control of populations in locations such as Braddock Bay and the Genesee River (92.8% and 70.1% reductions by weight in population, respectively). Additionally, this project increases the capacity of the region to address newly discovered populations through survey and due to increased outreach and information dissemination via presence at events and through training sessions.



Kathleen Cuddy, MPH Public Health Director Cayuga County Health Department 8 Dill St. Auburn, NY 13021



For Immediate Release: Friday April 7, 2017

Hydrilla in Cayuga Lake

In September 2016, Hydrilla a highly invasive aquatic weed, was confirmed in Cayuga Lake south of the Wells College dock in the Village of Aurora. Hydrilla spreads rapidly and, if left unchecked, will form into a thick map of vegetation, making swimming and boating impossible and reducing fish populations. The impact to the local economy can be significant.

Education and outreach to the region was highlighted by the 70 events that took place over the New York Invasive Species Awareness Week (July 11-16), participation at events such as Science Exploration Days, Owasco Lake Days, volunteer water chestnut pulls, and high participation across seven Finger Lakes for the macrophyte pilot project.

Hydrilla Update

Facilitated a Hydrilla task force that included the President of Wells College, the Mayor of Aurora, and others to determine the appropriate strategy for Hydrilla control and outreach. Finger Lakes PRISM facilitated conference calls and the state Hydrilla call prior to the USACE securing funding from two additional sources for Hydrilla control- one with EPA and one with USFWS. Additionally, Finger Lakes PRISM worked with the Cayuga County legislature to potentially provide additional



Senator Schumer urging Congress to support GLRI and IS legislation in response to Hydrilla in NY

funding for this project should none of the other projects receive funding.

Cayuga Lake in Aurora has been treated by the USACE and the monitoring for tuber and plants has been supported by the FL-PRISM this season. They were able to treat using two different herbicides- fluridone and komeen and a report of these efforts will be made available at the end of the season. USACE has allocated funding to treat and monitor this population in 2018.

Tioga County had plant surveys conducted by Paul Lord and Amanda Barber from SUNY Oneonta and Hartwick Colleges. They found Hydrilla had breached the dam where it was originally reported and is currently in the small creek which flows into the Susquehanna. SOLitude treated this population this season and Tioga County SWCD will have the infestation treated over the next two seasons using NYSDEC Rapid Response and Control grant funds (Appendix E).

Giant hogweed in Finger Lakes (USDA NRCS funding 2016-2020)

Three field crew members were hired and trained alongside the NYSDEC giant hogweed project and one 0.50FTE education and outreach coordinator were funded by this project. This greatly increased the capacity of the region to control and provide outreach regarding giant hogweed.

The giant hogweed project had presence at activities/events/meetings to increase information and outreach regarding giant hogweed. Additionally, the Finger Lakes PRISM was able to increase collaboration with partners in Monroe, Cayuga, and Wayne County to develop/refine materials and solicit information about giant hogweed outreach in these areas. Working with the staff at NYSDEC, new giant hogweed maps were created for Monroe and Wayne Counties that included a more robust determination of control area based on parcel size. The maps included survey and control areas for Monroe and Wayne Counties. In 2017, 91.6 acres have been surveyed for giant hogweed and 30.0 acres have been controlled in these two counties. There has been a 20.09% change in number of sites controlled and monitored for giant hogweed over 2015 data which represents the Finger Lakes PRISM contribution to the state control program.



Finger Lakes National Forest (USFS CWMA funding 2017-2019)

Invasive species technicians were hired and trained with the help of the USFS Green Mountain and Finger Lakes National Forest Botanist and non-native invasive plant program coordinator to map invasive species using their federal mapping program. In 2017, the field crew mapped nearly the entire 37 miles of trails at the FLNF and have been finding an incredible amount of invasive species such as buckthorn, knapweed, and autumn olive. This information will be used to determine which trails need to be manually treated for invasive and which can be chemically treated. Next year we will need to have multiple invasive species volunteer events to help remove invasives on the national forest.

Ganondagan Project (two USFS CWMA projects 2016-2019)

Number of acres surveyed and mapped for invasive species in conservation target areas that impact water quality – (100) 250 acres mapped in 2016,

Number of acres manually or mechanically controlled for invasive species that impact water quality – (30) 30acres *Lonicera tatarica* and Rosa multiflora removed, fall 2016, >5acres removed from adjacent habitats, summer 2017, outlying populations of *Cynanchum rossicum* removed summer 2017

Number of acres chemically controlled for invasive species that impact water quality – (30)





27acres *Cynanchum rossicum* chemically treated in 7/2016, 38.5acres 8/2016, 38.5 acres treated 8/2017, spot treatment in 2018 Number of acres of floodplain forest, wetlands and adjacent uplands restored that will improve water quality – 100

Number of acres of grassland restored that will improve water quality – (60) in progress Number of acres restored using native flora in conservation target areas – (25) seeded in upland adjacent to grassland, summer 2017

FLI spread prevention program (USFWS and NYSDEC funding)

Regular season steward coverage ended on Labor Day.

Extended fall coverage will continue on Cayuga and Canandaigua Lakes until the end of October.

Fall coverage for Owasco Lake will be continued until the end of October

17 launches, 35,468 boats inspected, 79,084 people engaged. We had 2 coordinators and a full time manager, instead of a just one seasonal coordinator. Decontamination station at Conesus Lake. Tablets at Conesus all summer, and a pilot program for largescale tablet data entry. Coverage and outreach at over 50 fishing tournaments, and outreach/tabling at around 10 public events.

1. Coordination with Partners

Partnership and Collaborative work Over the past fiscal year, the Finger Lakes PRISM actively recruited partners from the region using networks established such as the working groups and steering committee as well as social media, use of the Cornell listserv, presentations at various meetings, and networking with stakeholders. The steering committee and working groups met to discuss invasive species issues throughout the PRISM. Through these groups, the Finger Lakes PRISM has made strides to involve partners and allow for open communication and opportunities for engagement across the region. The Agricultural Working Group took a hiatus during this fiscal year due to the change in role for some members which limited participation. The working groups and steering committee updated the high priority invasive species, kept apprised of partner activities, and sought to collaborate on activities within the region.

Finger Lakes Institute Watercraft Steward Program

During the summer of 2017, the FLI watercraft steward program provided education and outreach on the significance of New York's aquatic ecosystems and the threat of the spread of invasive species at 17 launch sites. The FLI had inspected 35,468 boats and engaged 79,084 people. The highest launch in the Finger Lakes saw an average of 69 boats per day.

Partnership Meetings

During the 2017-2018 fiscal year, the Finger Lakes PRISM hosted a full partnership meeting on May 16 where nearly 30 people







You Are Invited! FL-PRISM Full Partner Meeting May 16, 11:30-3:30 Baltimore Woods Nature Center 4007 Bishop Hill Road, PO Box 133 Marcellus, NY 13108 http://baltimorewoods.org/visit/interpretive-center-trails/

Agenda

11:30	Welcome & introductions	Everyone
11:45	Baltimore Woods Nature Center and Central New York Land Trust Invasive Species Inventory and Management Tracking Using iMapinvasives	Julie Grinstead, 2016 Invasive Species Mapping Intern, Baltimore Woods
12:00	Control and monitoring of populations of Microstegium vimineum (Trin.) Camus in Ithaca, Tompkins County, NY	Brittany Lagaly, City of Ithaca
12:15	HWA Monitoring in the Canandaigua Lake Watershed	Lindsey McMillan and Steve Lewandowski, CLWA
12:30	Early detection and range expansion of the invasive bloody-red shrimp, <i>Hemimysis anomala</i> in the Finger Lakes: A citizen science and survey-based approach	Brent Boscarino, PDS
12:50	Break	
1:15	Invasive species early detection, monitoring, and co- occurrence	Kathryn Amatangelo, The College at Brockport, SUNY
1:35	Early Detection Survey for Hydrilla verticillata in the Three Rivers System of Onondaga County	Russ Nemecek, OCDOH
1:55	Engaging the community in early detection and monitoring, a pilot project	Patty Wakefield, FLI
2:10	FL-PRISM update and outreach vents at Island Cottage Woods Preserve, Genesee Land Trust	Hilary Mosher, FL-PRISM Coordinator
2:30	Field tour of the nature trails and Invasive species project	Fran Lawlor

were in attendance to hear presentations on the findings and reports from the 2016 subcontract awards (full list of funded programs available here:

http://fingerlakesinvasives.org/resources/funding-opportunities/). Additionally, the Finger Lakes PRISM and FLI hosted the Finger Lakes Research Conference on November 17 where 110 people were in attendance to hear presentations from experts on the round goby, starry stonewort, and other threats to the Finger Lakes region.

Listserv:

The Finger Lakes PRISM listserv added 33 people to the list 10.2% increase over the past year. The listserv serves as an important way to communicate with the community about invasive species and events within the Finger Lakes PRISM. The Finger Lakes PRISM averages two emails to the list per week to keep the members informed about important invasive species work across the region.

Social media:

The Finger Lakes PRISM maintains a Facebook , Instagram, and Twitter presence. Facebook has had 381 page followers since its creation who follow the posts specific to invasive species in the region. Twitter has had 343 followers, 542 tweets, and is following 477 twitter-users. The Finger Lakes PRISM also has an Instagram account and has posted 35, has 53 followers, and is following 122 accounts.

Educational Materials and Media:

The Finger Lakes PRISM has created brochures, helped edit factsheets and other outreach materials, and projects have been highlighted in various media outlets including the Rochester Democrat and Chronicle, the Messenger Post, WETM 18 News, Finger Lakes Times, WXXI, and Fox News Rochester.

Website Platform:

The fingerlakesinvasives.org website to promote all things invasives in the region. Based on an analysis by Website Grader, the Fingerlakesinvasives.org website received a 72 and a rating of 'OK' and rated number 2 in traffic compared to NYIS.info and other state invasive species websites.

Based on PRISM priorities across the state, the working groups engaged in a prioritization of 80 invasive species into tier 1-4 based on abundance in region, difficulty of control, and other regional priorities. Of the 80 ranked, 33.75% were a tier 4 ranking and 28.75 were tier 3. The full list of tiered species is available online at fingerlakesinvasives.org.

Table 1. Finger Lakes Tiered Species List

NYS Ranking		Tier	Tier	Tier	Tier
Number					
ranked		1	2	3	4
VH	36	5	6	11	13
н	34	8	5	9	10
м	6			2	3
NA (no NYS					
rank)	8	6		1	1
Total Marine					
Species (NA)	-4				
TOTAL N	84	19	11	23	27
Percent of					
sample		23.75	13.75	28.75	33.75





<u>County Soil & Water Conservation Districts</u> implement County Water Quality Strategies to address nonpoint source water pollution and other water quality issues through County Water Quality Coordinating Committee. While some committees are more active than others, the Finger Lakes PRISM has had representation at nearly two-thirds of the active water quality meetings during the year (Table 2).

Broome	No information about meetings available
Cayuga	Actively participating
Chemung	No information about meetings available
Chenango	No information about meetings available
Tompkins	Actively participating in outreach meetings by proxy
Tioga	No information about meetings available
Steuben	Actively participating
Wayne	Actively participating
Yates	No information about meetings available
Cortland	No information about meetings available
Livingston	Actively participating
Madison	No information about meetings available, recently put on meeting notes
Monroe	Actively participating, presented at meetings, on list for meeting agenda and notes
Onondaga	Presented at meetings, on list for meeting agenda and notes
Ontario	Presented at meetings, on list for meeting agenda and notes, participation by proxy
	(Finger Lakes Institute)
Schuyler	Actively participating
Seneca	Actively participating

Table 2. Participation at County Water Quality Coordinating Committee

Selected Partner Projects

Non-native Invasive Plant Program Success Stories for Plants on the Finger Lakes National Forest

Finger Lakes National Forest staff, partners, contractors, and volunteers made headway against non-native invasive plants through several projects in 2017. The most far-reaching of those was invasive plant inventory of all FLNF trails (36.9 miles), funded through Great Lakes Restoration Initiative (GLRI) funds received by the Finger Lakes PRISM, that will lead to treatment in 2018 and beyond. Other highlights are listed below.

Contractors were hired to treat infestations at 4 sites with foliar spot-sprayed herbicide, and retreat infestations at 2 other sites, totaling 84.5 acres.

Japanese stiltgrass surveys by local volunteers and a VT YCC crew, also funded through GLRI, continued in the Breakneck Creek sub-watershed, and we are happy to report no new infestations found, and existing infestations manually removed, including on adjacent private land.

A "buckthorn baggie" experiment came to an end when a VYCC crew and a local volunteer collected data from baggies installed a year ago. The results: 36% complete control, 24% partial control, and 40% minimal control – not the panacea we were hoping for!



Fig.2. Buckthorn Baggies put on cut stumps in 2016 were removed 1 year later (Photo by volunteer Martin Vandergrinten).



Fig. VYCC crew assisted with Japanese stiltgrass inventory and control, and buckthom baggie experiment data collection (photo by seasonal botanist Marybeth Hanley). Partners: Finger Lakes PRISM (Partners for Regional Invasive Species Management), Hobart and William Smith College, landowners, VT YCC, and local volunteers

Costs Trails inventory: \$7680 Herbicide contracts: \$36782.37 VT YCC: \$5600 Total: \$50,062.37 plus staff time

Contact: MaryBeth Deller mdeller@fs.fed.us OR 802-767-4261 x 5524



Finger Lakes National Forest 5218 State Route 414 Hector, NY 14841

New York State Hemlock Initiative



2017 Annual Report

New York State Hemlock Initiative



The mission of the New York State Hemlock Initiative (NYSHI) is to coordinate state-wide efforts of land owners, state and federal agencies, government officials, and concerned citizens to conserve New York State's hemlock trees. Our research focuses on the management of hemlock woolly adelgid (HWA), a non-native invasive insect, using biological control. Additionally, our work involves public outreach to engage stakeholders and increase awareness of the threats posed by HWA and other invasive forest pests.

Executive Summary -

2017 was a landmark year for the New York State Hemlock Initiative (NYSHI). Thanks to support from New York State's Department of Environment and Conservation (NYS DEC), the US Forest Service, and the US Department of Agriculture, the Initiative established New York's first biocontrol research facility for hemlock woolly adelgid (HWA), a non-native invasive insect species that threatens to functionally remove hemlocks from New York's forests. Our substantial growth included laboratory construction, increased personnel, and growing research, biocontrol research and development, and outreach programs. We continued to help coordinate the state and regional response to HWA, collaborated with NYS DEC for HWA mapping and management, worked with New York's Partnerships for Regional Invasive Species Management (PRISMs), supported new programs in Michigan and Nova Scotia, continued to participate in the national HWA program led by the USFS, conducted outreach to landowners and potential volunteers, and added new and expanded outreach tools and resources.

NYSHI's new HWA biocontrol research facility is housed in Morrison Hall on Cornell campus in Ithaca, NY, which was renovated to meet the the program's needs. Growth chambers, microscopes, cages, insect handling equipment and more were installed, and NYSHI's director Mark Whitmore hired two post-docs, a second field technician, two full-time laboratory technicians and a handful of student workers to provide expertise and staffing for the research laboratory. Exploration for HWA predators in the Pacific Northwest commenced in April and laboratory staff reared Silverflies (*Leucopis* species) to adulthood from April – June, then conducted experimental releases of these insects. In October and November field collections of *Laricobius* beetles from the Pacific Northwest were used to establish a colony in the new laboratory, and the grand opening of the lab was held on November 17th.

In 2018, the NYSHI's programs will continue to mature. With our research program, we will refine our understanding of HWA and its biocontrols, moving us closer to implementing a viable biocontrol option for HWA. Goals in the laboratory include experimental manipulation of the HWA growth, and work to more fully understand development of *Leucopis spp*. and *Laricobius spp*. in order to maximize predator survival and develop efficient lab production. We will continue our exploration for predator sources in the Pacific Northwest, including British Columbia where more cold-tolerant biotypes may be found. Releases of predators and evaluation of their establishment will continue across New York State with a focus on hard-hit areas in the Southern Catskills. In our coordination role, we will continue to collaborate with New York's PRISMS, iMap, and hemlock conservation stakeholders to ensure that data collection and HWA management are consistent through the state. We will also continue to provide the best knowledge available to New York's public through presentations, citizen science programs, and train the trainer activities and tools.

MACROPHYTE RAKE SURVEYS IN CANANDAIGUA LAKE, 2016-2017, WITH MAPPED SPATIAL PATTERNS FOR AQUATIC INVASIVE SPECIES.

Kim McGarry

Canandaigua Lake Watershed Council 205 Saltonstall Street, Canandaigua, New York 14424

Bruce Gilman

Department of Environmental Conservation and Horticulture Lakes Community College 3325 Marvin Sands Drive, Canandaigua, New York 14/24

Objectives: to determine aquatic macrophyte richness calculate relative abundances, map species phytogeography. document depth distribution patterns, and discover the extent of aquatic invasive species establishment.



Methods: Replicate sampling (369 total rake tosses) occurred at 55 locations representative of all shoreline habitats. Overall abundance and individual species abundances were estimated using a semi-quantitative scale developed by the New York State Department of Environmental Conservation Citizens Statewide Lake Assessment Program (CSLAP). Water depth and GPS coordinates were recorded at each location.



FingerLakes



Acknowledgments: Ontario County Water Resources Council, Canandaigua Lake Watershed Council, Canandaigua Lake Watershed Association, Finger Lakes Community College and volunteer citizen scientists.



Brittany Lagaly leads volunteers to learn to identify invasive species on the **Finger Lakes** National Forest (above) and students from Allendale Columbia School learning to identify invasives at **Durand Eastman** Park (right)



2. Recruit and Train Volunteers

The Finger Lakes PRISM engaged in various recruitment and training opportunities across the region during the past fiscal year. Volunteer training occurred throughout various programs and included invasive species identification workshops and at 18 iMapInvasives trainings. Between the period between 4/1/17 to 3/31/18, 318 people were trained to use the database iMapInvasives for the region.

The Finger Lakes Institute hosted a training for watercraft stewards from across the region in May, 2017. There were 30 people prevent the spread and impact of AIS, and how to engage in education and outreach to recreationists to enable the public to remain diligent in the fight to #stoptheinvasion through Clean, Drain, Dry practices. Weekly updates and meetings were held at FLI to enhance steward knowledge and ability to identify high risk invasive species.

In July, teachers from around the region came together at Muller Field Station in Ontario County and Wells College in Cayuga County for two days of hands-on invasive species training. The course content included both terrestrial and aquatic invasive background, identification, and reporting and teachers were able to model projects to include in their classrooms. The program was such a success people are already signed up for the 2018 course.

In 2017, a Macrophyte Pilot Project was launched through the Finger Lakes Institute. Eleven volunteers across seven Finger Lakes participated in the year one program to survey, identify, and report high-priority invasive species. Luckily, no Hydrilla or additional water chestnut was reported.

By the numbers

1,251 community members attended Finger Lakes PRISM workshops

760 community members attended a presentation by the Finger Lakes PRISM

318 community members were trained to use iMapInvasives to map invasive species

73,730 community members attended events where outreach materials were available



3. Identify and Meet the Finger Lakes PRISM Education and Outreach Needs



Steward, Bill Heck, Myers Point. Photo: H. Lambert The Finger Lakes PRISM actively worked with community member and stakeholders to bridge the gap between resources and need in the community. For NYISAW, partners were provided with materials for their projects and programs and included fact sheets, NYSIAW buttons, and marketing materials.

In addition to the iMapInvasives training and ID session, education and outreach was conducted at meetings, conferences, briefings, and water quality coordinating committees.

The Finger Lakes PRISM held 13 workshops where 1,251 people were educated on spread prevention and invasive species identification and reporting. Additionally, we presented at 21 programs to 760 community members and tabled at 14 events where an estimated 73,730 people were in attendance.

Partnering with Wildlife Forever, the Finger Lakes PRISM secured billboards that promote Clean, Drain, Dry messaging across the state. The billboards remained in place

Macrophyte Pilot Program Participants



through March of 2018, an additional seven months without cost to the Finger Lakes PRISM.

Finger Lakes PRISM also engaged AXI Digital to help with partnership building and leveraging of content across multiple stakeholders. The program is working with partners to help increase social media presence, communication across program areas, and deliver content where needed.

The Finger Lakes-PRISM hosted the Finger Lakes Research Conference in November 2017 Over 100 people were in attendance to hear presentations from experts on invasive species and other threats to the Finger Lakes. Participants were able to learn more about the round goby, starry stonewort, and status of our Keuka Lake fishery.

The Finger Lakes PRISM also engaged partners to help place bootbrush station to promote the Play, Clean, Go campaign that



encourages people to remove seeds or other invasive species that may hitch a ride on shoes while hiking. Currently, we have over 50 bootbrush stations in welladvertised locations for

recreationists. Partners are excited to help design and implement this outreach tool that help #stoptheinvasion.



The education program at FLI, run by Nadia Harvieux, is focused on developing curricular materials and resources that support and extend middle school and high school inquiry-based environmental education. The FLI creates, disseminates, and coordinates a variety of educational initiatives in the Finger Lakes region including the Science on Seneca and Finger Lakes Regional Stream Monitoring programs. Programs include invasive species presentations, workshops, or training to students in K-12, training to teachers, and engagement with the community. Overall engagement during the 2017-2018 year reached 2241 people and breaks down as follows: 1,713 engaged at workshops or field trips, 178 attended invasive species presentations, and 350 reached at outreach or tabling events.

4. Monitoring Network for Early Detection of Invasive Species

iMapInvasives trainings and invasive species identification and detection sessions were held throughout the 2017 season. During this period, there were 4,113 observations made in the Finger Lakes.

The Finger Lakes PRISM also helped promote and bring volunteers to survey for mile-a-minute in Livingston County. Approximately 1,500 plants were removed from this site which reduced the spread potential. This season two NYSDEC interns will continue to survey for this plant. Landowners within a 1mile radius of the infestation were mailed a postcard warning of the dangers of MAM to the region.

Thanks to funding from the US EPA GLRI, USFS CWMA, and USDA NRCS, the Finger Lakes Institute water chestnut field crew was able to survey 3,198 acres for highpriority AIS and the giant hogweed field crew surveyed 91.6 for high priority terrestrial invasive species. The USFS CWMA grant projects mapped 37 miles of invasives along trails at the Finger Lakes National Forest, and 250 acres were



Meeting with Congressman Reed to discuss status of invasive species work in the region.



surveyed at Ganondagan State Historic Site. These projects have been invaluable due to leveraging of the PRISM programming and securing external funding for adding more eyes on the ground to #stoptheinvasion.



US Army Corp of Engineers, Finger Lakes PRISM, and HWS student help monitor for Hydrilla.

The Department of Biology at Hobart and William Smith Colleges has a strong interest in invasive species. Meghan Brown (Associate Professor of Biology) teaches an invasion ecology course and works with the bloody-red shrimp (*Hemimysis*) in Cayuga Lake and has published on the effects of *Bythotrephes longimanus* in waterbodies and effects of other species invasions in the Finger Lakes. Brown also maps the current spread of invasives, explores ways to limit their range expansion, and quantifies the effect of invasives on native species. Kristen Brubaker (Assistant Professor of Environmental Studies) teaches a capstone course focusing on invasive species, and Beth Newell (Professor of Biology) works with students to address EAB and European fire ants. Brad Cosentino, Assistant Professor of Biology, is studying the impact of the invasive earthworm on native populations of salamanders in the Finger Lakes.

5. Support Academic Research Through Citizen Science

The Finger Lakes PRISM working groups determined the needs of the region for invasive species issues. The identified projects were sent to Carrie Brown-Lima, Coordinator for the Invasive Species Research Institute. The organisms of interest for the region included Hydrilla, EAB, and hemlock woolly adelgid. Hydrilla is being actively managed in the Finger Lakes and HWA is ravaging our important hemlocks. The Finger Lakes region encompasses 17 counties and there are many invasive species here or encroaching on our region. Some of the major organisms of concern from the working groups are listed above but include HWA, EAB, and Hydrilla. Work currently supported includes investigating round goby distribution in the Finger Lakes (Susan Cushman, HWS), participation on the prioritization project with NYISRI, and collaboration with Chris Badurek, SUNY Cortland, using the FLNF data to help create a risk model for invasion on the forest.

 Implement Eradication Projects to Remove Invasive Species
 Highlights of eradication projects in the Finger Lakes:

Water Chestnut: 774.8 acres controlled, 15 volunteer pulls, 1,210 volunteer hours

Giant hogweed: 30 acres of control across 33 sites

Ganondagan State Historic Site: 38.5 acres of pale swallowwort and 5 acres of invasive honeysuckle and multiflora rosa.

MAM: 1,500 plants removed from Livingston County.



Giant hogweed field crew, Joe Ordway, tackling a large plant in Wayne County. Photo: D. Hurd



- 7. Description of Obstacles to Achieving Objectives (Steering Committee, 2015)
- Making sure that partners knew about the PRISM and communicated events
- The Finger Lakes region consists of 17 counties and has incredibly diverse ecosystems
- There are many waterbodies for consideration including five watersheds
- The 11 Finger Lakes often overshadow the smaller waterbodies
- The waterbodies often overshadow the agricultural and terrestrial invasive species
- State agency regions or jurisdictions don't line up with PRISM boundaries and often no 'dedicated' representative to sit on one PRISM or another
- Lack of funding for significant control of infestations such as common reed, Japanese knotweed, Eurasian watermilfoil
- Lack of dedicated boat washing stations that have proven effective in controlling invasives within the lakes
- Lack of strong relationship/coordination/communicati on with CCE education efforts
- Lack of name recognition of Finger Lakes PRISM for coordination with partner organizations
- Southern Tier has a focus limited to forest and streams
- Water and transport connections to outside the region
- Members will come and go (soft funding, loss of institutional knowledge)
- Bias on steering committee towards Aquatics; need more Ag & Terrestrial
- Some parts too far from Great Lakes and Chesapeake Bay to get funds
- Lack of organizations for forestry; lack of connections

- Terrestrial IS affect aquatics but people may not make the connection; lack of holistic view of IS and interest in different ecosystems
- Terrestrial and Ag don't have a rallying point that lakes provide
- Prevention can't prove a negative
- Messaging is telling people what they should not be doing
- Initial messaging/framing may not serve the cause (can we only watch IS spread)
- We vs Them can be set up (need good framing)
- Lack of skills on risk messaging
- Message of hopelessness leads to negative environmentalism
- Realistic messaging is needed
- Too much to do; too many species
- Groups with hierarchies that need to be understood and respected (Native Nations, Amish)
- General public has low skills for identification
- Lack of support for ID
- Unclear what level of service should/could be provided since the level of service varies
- Consistency of approach is difficult
- Unclear what are the top few priorities, what species are not consistently prioritize/priorities not communicated
- Regionality: different regions have different priorities
- Potential Solutions to Obstacles and/or Resources Needed (Steering Committee, 2015)
 - PRISM System is in place, CCE IS team in place
 - Finger Lakes in the region serve as a rallying point
 - Academic institutions, FLI: expertise, research

- Cornell NYS Invasives Species Institute hired coordinator
- Diversity of the region: ecosystem, climate (a lot of, water, open space)
- Impact of Lake Ontario to moderate weather/temperatures
- Geography: central NY, bordered by 4 PRISMS
- People: volunteerism, passionate, good communication (DEC, DOT, Parks meet together), capacity for communication
- Stakeholders: Lake Associations, NYS Forest Owners, etc.
- Economic drivers are tied to natural resources, gets the attention of legislators
- Federal lands- National Forest & Montezuma
- Active TNC and land trusts
- Southern Tier has large warm water stream
- Water Connections to outside the region
- Clean Drain Dry NYS regulation
- Preventions Act
- CCE invasives species team
- Army Corps regulations to limit IS in mitigation
- DEC regulation IS Part 575 and Part 576
- Public awareness is growing as increased legislation occurs
- Finger Lakes PRISM is part of Great Lakes basin – funding potential, Sea Grant and other working on the region
- Several PRISM programs in place for years and leading the way
- National model for PRSIM type system in place since early 90s
- Funding: Great Lakes restoration funds, current 5 year funding
- Elected officials are thinking about IS
- Lake Associations, trail associations, NYS forest owner's assoc., rod and gun

clubs/federations, Isaak Walton league, etc.

- High profile IS that provide the opportunity to engage people. HWA tie terrestrial and water systems together
- Opportunities to engage Higher Educational Institutions, public agencies, and NGOs
- NRCS: EQIP, WHIP funds could be used
- There is a constant need for increased resources, human and otherwise. With a region as expansive as the Finger Lakes, it is impossible to carry-out all the education and outreach, prevention, and early detection/rapid response work that is needed to effectively manage invasive species. In the near term, a prevention specialist and administrative support are of utmost priority to obtain to provide support to the Finger Lakes PRISM.
- 9. Coordinate with other PRISMs and Office of ISC

The Finger Lakes PRISM actively participated in events and regional conferences during the fiscal year 2017/2018. Each month, New York has a Statewide Invasive Species Speaker Series where each PRISM provides an update for the region. The Finger Lakes PRISM has participated on each of these calls and has supported the Office of Invasive Species Coordination and other PRISMs by attending in-person meetings and the Invasive Species In-service sponsored by Cornell Cooperative Extension in Ithaca, NY. Additionally, Finger Lakes PRISM participated in the invasive species comprehensive management plan workshop. Additionally, Finger Lakes PRISM wrote several letters of support for work on the WNY PRISM EPA GLRI project, work at

Cornell, work on eDNA in the SLELO region, Lower Hudson PRISM contract renewal, and for NYS Parks.

In support of the Strategic Recommendations for New York State Invasive Species Education & Outreach, the Finger Lakes PRISM supported over 70 events held within the region for New York **Invasive Species Awareness Week** (NYISAW). Programs included Hydrilla Hunts, surveys for macroinvertebrates in the Finger Lakes, Bioblitz, invasive species hikes, tabling events, and watercraft steward outreach. Partners were able to communicate their successes and look forward to participating in the 2018 NYS ISAW. Additionally, the Finger Lakes PRISM attended both in-person PRISM meetings and attended the Great Lakes Action Agenda Meetings, NEANS Panel and Great Lakes Panel on ANS to stay abreast of the issues that will affect the Finger Lakes.

10. Support NY ISC regular IS conference

The Finger Lakes PRISM attended and presented at the Invasive Species track of the Cornell Cooperative Extension Agriculture and Food Systems In-Service in Ithaca, NY in November, 2017. The Finger Lakes PRISM has remained in contact with the NY ISC and is willing to present or serve as a proxy for any and all conferences or workshops in the region.

Partner Reports

Number of Partners Responding: 14 Total Amount Spent on Invasive Species: \$1,184,100 Total Participants Reached: 1,980 reached Total Staff Time: 14,390 hours

Total Volunteer Hours: **2,340 hours**

Cayuga Lake Watershed Network, Hilary Lambert, Steward/Executive Director

Program Highlights

- Hydrilla Hunters program & i.d. kits distributed lakewide
- Coordinator for outreach for Cayuga Lake south-end & Aurora hydrilla areas
- Season-end public reporting – Hydrilla



- Winter-spring Hemlock Wooly Adelgid surveys
- Published 3 articles about IS in newsletter
- We published and distributed five issues of "Hydrilla Hunter Happenings," a onepage newsletter (online and printed) updated frequently during the long hydrilla season on Cayuga Lake.
- We updated our Hydrilla Information flyer, and it was included in each of the 300 (estimated) hydrilla i.d. kits distributed at 40 sites around Cayuga Lake, which also included DEC identification materials.
- We created and handed out simple Hemlock Wooly Adelgid i.d. materials on our surveys, along with materials provided by the HWA experts at Cornell U.

Amount spent on IS: \$10,000 Staff time: 300 hours Volunteer hours: 300hrs Total Participants: 100 people *Cayuga County Planning, Michele Wunderlich, Associate Planner* **Program Highlights**

- Asian Clam survey of 123 acres on Owasco Lake.
- Protect Cayuga County from Invasive Species! trainings
- Invasive Species, Conservation Field Days, Emerson Park, Owasco Lake Day
- Invasive Threats to Water Quality lecture
- SWCD did harvesting of Owasco Lake, Cayuga Lake, Lake Como and Little Sodus Bay and handpulled the waterchestnut in Little Sodus Bay.
- Conservation Field Days reaches approximately 125 children per day.
- Citizen Articles to increase information disseminated to the community

Amount spent on IS: ~\$4,000 Staff Time: 145 hours Volunteer hours: 20 Total Participants: 160



Asian clam survey on Owasco Lake. Photo: M. Wunderlich

Cornell Cooperative Extension Broome County, Kevin Mathers, Resource Educator Program Highlights

- Hosted iMapInvasives NY training;
- Conducted workshop/training on EAB/HWA & Jumping Worms;
- Tabled about IS at Regional Farmer's Market
- Master Forest Owner volunteer visit landowners and include discussions of invasive forest insect pests and plants

Amount spent on IS: \$5,000 Staff Time: 200 hours Volunteer Time: 50 hours Total Participants: 100

Cornell University, New York Hemlock Initiative, Caroline Marscher, Outreach coordinator for NYS Hemlock Initaitive

Program Highlights 2017 was a landmark year for the New York State Hemlock Initiative (NYSHI).



Photo: NYSHI

Thanks to support from New York State Department of Environment and Cons ervation (NYS DEC), the US Forest Service, and the US Department of Agriculture, the Initiative established New York's first biocontrol research facility for hemlock woolly adelgid (HWA), a non-native invasive insect species that threatens to functionally remove hemlocks from New York's forests. Our substantial growth included laboratory construction, increased personnel, and growing research, biocontrol research and development, and outreach programs. We continued to help coordinate the state and regional response to HWA, collaborated with NYS DEC for HWA mapping and management, worked with New York's Partnerships for Regional Invasive Species Management (PRISMs), supported new programs in Michigan and Nova Scotia, continued to participate in the national



HWA program led by the USFS, conducted outreach to landowners and potential volunteers, and added new and expanded outreach tools and resources.

NYSHI's new HWA biocontrol research facility is housed in Morrison Hall on Cornell campus in Ithaca, NY, which was renovated to meet the program needs. Growth chambers, microscopes, cages, insect Photo: Isis Caetano

installed, and NYSHI's director Mark Whitmore hired two post-docs, a second field technician, two full-time laboratory technicians and a handful of student workers to provide expertise and staffing for the research laboratory. Exploration for HWA predators in the Pacific Northwest commenced in April and laboratory staff reared Silverflies (Leucopis species) to adulthood from April – June, then conducted experimental releases of these insects. In October and November field



Photo: Jessi Lyons

collections of Laricobius beetles from the Pacific Northwest were used to establish a colony in the new laboratory, and the grand opening of the lab was held on November 17th.

Survey over 100 acres across 15 sites

Amount spent on IS: \$500,000 Staff Time: 10,000 hours Volunteer Time: 100 hours Total Participants: 364 Total Programs in Finger Lakes: 16 *Cortland-Onondaga Federation of Kettle Lake Assoc., President*

Program Highlights

- C-OFOKLA participates in several county wide events through the year. We table at local festivals and share information about AIS, specifically.
- Kettle Lake Speaker events which include AIS outreach component, but do not always focus on, AIS.
- We also assist at our member lake association meetings to provide additional outreach information.
- Education and Outreach is our main role, however, all or our lakes participate in CSLAP.
- In 2017, we held four Kettle Lake Speakers Series events and provided AIS education to approximately 600 fifth graders at the Cortland County Conservation Field Days.
- We provided education on AIS (with samples) at (at least) four events in 2017
- We worked with Cortland County Soil and Water to develop the "Stop the Invasion" program. This is a three year program through a DEC grant, to train watercraft stewards to guard public boat launch sites and provide signage for all our lakes (public and private),

with improvements to current DEC cleaning stations on LYL and Tully Lake. http://www.ccstoptheinvasion.org/

- Purple Loose strife (2015). This is documented well with USDA, but a brief here includes mapping and distributing 1,000 nanophyes, 500 galerucella, 150 hylobius.
- We monitor, but the treatment was effective in reducing purple loose strife around riparian areas and wetlands.

Finger Lakes Community College, Bruce Gilman, Professor

Program Highlights

- Invasive aquatic macrophyte rake surveys in Canandaigua Lake,
- NYS master science teacher training workshop on limnology and AIS,
- Community AIS program at Onanda Park,
- Water chestnut post-airboat removal inspection in West River,
- Dreissenid mussel dredge survey in Canandaigua,
- College classroom instruction in aquatic and terrestrial invasives, removal of invasives at Muller Field Station
- Two workshops, multiple college classes, one presentation to Canandaigua Lake Watershed Council
- water chestnut: 3000 meters along
 West River, garlic mustard: 10 hectares,
 EAB: 5 hectares

Amount spent on IS: \$3,500 Staff time: 70 hours Volunteer hours: 25 Total Participants: 235

Little York Lake Preservation Society, Inc, Don Fisher, Treasurer Program Highlights

- We published our first lake management plan and began implementing it using a group of volunteers collaborating with Cortland Soil and Water Conservation District.
- We produced a small community engagement flyer to try and expand community involvement with AIS at our lake.
- We ran two pilot programs, one with benthic barriers and the other with hand harvesting.
- We are surveying the sites where the benthic barriers were deployed to determine residual impact

Amount spent on IS: \$15,000 Volunteer hours: 80 hours Total Participants: 40 people during presentations, 150 during tabling events

Morrisville State College, Rebecca Hargrave- Assistant Professor

Program Highlights

- Developed a train-the-trainer on invasive species directed at loggers and foresters through NY Logger Training, Inc.
- Personally not organizationally: Modular Train the trainer powerpoints on Invasive Species for Loggers and Foresters- through NY Logger Training. Two magazine articles on invasive species in Northern Logger. Organizationally - just course related materials.
- woody invasive shrubs- 4 areas 25 acres, goldfish/rusty crayfish - 1 acre
- Acres of survey: 48

Staff time: 450 hours Volunteer hours: 221 Total Participants: 100

New York State Department of Environmental Conservation, Mark Gooding, Regional Forester

Program Highlights

- Mile-A-minute survey/treatment,
- Oak wilt educational programming and oak wilt control,
- Mange 65,00 acres of state forest land; assist private forest owner woodlot management in 11 counties and assist municipal urban forestry efforts
- Mile-a-minute pulled approximately 10 acres.
- Knotweed sprayed 25 acres.
- Swallowort sprayed 2 acres.
- Honeysuckle/olive/other fire 100 acres.

Amount spent on IS: \$10,000 Staff time: 375 hours Volunteer hours: 240 Total Participants: Tabling: 250, Presentations: 100, Workshop: 50

New York State Department of Environmental Conservation, Jim Eckler, Wildlife Biologist

Program Highlights

- Our MARSH program in the Montezuma Wetlands Complex is a collaborative volunteer effort to make a positive effect on wildlife habitats, especially the management of invasive plants.
- DEC hosted 10 events, some of these events were joint events with MWC partners USFWS and Mont. Audubon.
- We also actively control phragmites with herbicide at several DEC Wildlife Management Areas.
- Management is our primary role, but we educate as well. Giving volunteers meaningful and enjoyable tasks has also

been beneficial in connecting more people to the outdoors and the MWC.

- NM WMA, 8,000 acres; Junius Ponds Unique Area, 70 acres; Lake Shore Marshes WMA 5,000 acres.
- Phragmites, herbicide, 200 acres;
- Purple Loosestrife, distribution of biocontrol agents, 200 acres;
- invasive honeysuckle, hand pulling, 5 acres:
- Water Chestnut, hand pulling, 20 acres
- Restore native wetland and wet meadow habitats, 30 acres

Amount spent on IS: \$3,000 Staff time: 700 hours Volunteer hours: 500 Total Participants: 130

New York State Department of Transportation, Jon Harman, Landscape Architect

Program Highlights

 Equipment washing on construction sites, IS control with herbicide, pulling & disposal.

Areas within the highway boundaries

 Phragmites on the I-390/ I-490 reconstruction project consisting of about 5000 cubic yards of removal and disposal.

Amount spent on IS: \$83,600 Staff Time: 400 hours Total Participants: 4

Tioughnioga Lake Preservation Foundation, Carol Jeschke, President

Program Highlights

\$500,000 to hire professionals to help us figure out how to deal with the issues of invasive species we already have and those we don't want here.

Thank you for your good work!

United States Fish and Wildlife Service, Nick Vermeulen, Biological Technician

Program Highlights

- We have a MARSH! program that meets Wednesdays and Saturdays between April and October doing different invasive and restoration work.
- There were 29 workdays over the last year doing invasive species removal, control, and outreach
- Created an invasives guide for volunteers to use while doing work on the refuge. Also introduced early detection species to volunteers using different fact sheets.
- Japanese barberry hand pulling approx. 40 acres,
- Autumn olive cut stem treatment with herbicide approx. 15 acres,
- Common reed cutting with hand spade approx. 1 acre,
- Japanese stiltgrass hand pulling approx. 6 acres,
- Honeysuckle spp. hand pulling approx. 2 acres

Staff time: 1400 hours

Volunteer hours: 764 hours Total Participants: 191 people

United States Forest Service, Mary Beth Deller, Botany Program Coordinator

Program Highlights

Completed inventory for Japanese stiltgrass along streams in a target sub-watershed; completed a study on use of buckthorn baggies instead of herbicide to control common buckthorn; completed invasive species inventory on all 37 miles of trails (collaborative project with FL PRISM); hired contractors to spray herbicide on invasive species on 85 acres. 1) A-House West grassland: woody species (multiflora rose, honeysuckle, common buckthorn, autumn olive) - buckthorn baggies, 76 acres

2) Shannon pasture: knapweeds and thistlesbroadcast herbicide, postponed until this summer

3) Riparian & roadside knapweeds - foliar spot spray herbicide, 12 acres

4) Sawmill Creek and North TerryBerry woody species (multiflora rose, honeysuckle, common buckthorn, autumn

olive) - 56 acres

5) Japanese stiltgrass manual control - 6 acres

The goal is healthy ecosystems. 150 acres have now been improved.

Amount spent on IS: \$50,000 Staff time: 350 hours Volunteer hours: 40 hours Total Participants: 6 people

11. Summary of project expenses

Figure 3 depicts the breakdown of program expenses by category for the 2017-2018 fiscal year to run the Finger Lakes PRISM program.



Figure 3. Total Finger Lakes PRISM costs by category for 2017-2018 fiscal year

Conclusion

The 2017-2018 year was saw engagement from hundreds of individuals, organizations,

and municipalities. While there is much work to be done in the future, we take pride in the fact that together we made strides towards increasing regional partnerships, identifying and leveraging our resources, and increasing our capacity. Over the lifetime of the Finger Lakes PRISM, we have secured over \$2.25M dollars in invasive species management, survey, and control we have received additional funding from state and federal sources to administer the WSP program making an impact across the region. We are poised to make a significant progress in the management of invasive species.

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Pimentel, D., L. Lach, R. Zuniga and D. Morrison. 2004. "Update On The Environmental and Economic Costs Associated With Alien Invasive Species in the United States". http://ipm.ifas.ufl.edu/pdf/EconomicCosts_ invasives.pdfCensus data 2010

The Economic Impact of Tourism in NY. Tourism Economics. Online at: <u>http://www.fingerlakes.org/uploads/pages/</u> <u>pdf/NYS%20Tourism%20Impact%20-</u> <u>%20Finger%20Lakes.pdf</u> Accessed on February 21, 2015.

Appendices

Appendix A. List of Participating Members of Steering Committee and Working Groups *Partners*

Steering Committee

Christopher Anderson, NYS DOT, Environmental Specialist, Region 3 Kathy Bertuch, Program Manager, Central New York Regional Planning Development Board

Pauline Burnes, NYS DOT Region 6, Hornell, NY (on email list for SC news and updates) Lisa Cleckner, Director, Finger Lakes Institute

Aimee Clinkhammer, Watershed Coordinator, Finger Lakes Water Hub Don Cook, Finger Lakes Regional Watershed Alliance, New York State Federation of Lake Associations

Bruce Gilman, Professor, Finger Lakes Community College

Dorothy Gronwall, Honeoye Valley Lake Association

Terry Gronwall, Honeoye Valley Lake Association

Carri Marschner, Invasive Species Specialist, NYS Hemlock Initiative, Cornell University, Web Pearsall, NYS DEC, Region 8, Fisheries Mary Underhill, Conesus Lake Watershed Manager, Livingston County Planning Department

Gregg Sargis, Director of Ecological Management, The Nature Conservancy, (on email list for SC news and updates) Emily Staychock, Invasive Species Education

Program, Cornell Cooperative Extension Yates County

Richard Steele, NYSDOT, Region 3

Agriculture WG (on hiatus)

Emily Staychock, Invasive Species Education Program, Cornell Cooperative Extension Marion Zuefle, IPM Experimental Station, Geneva, NY Elaine Dalrymple, Schuyler County Soil and Water Conservation District

Aquatic WG

Fred Blom, President, NYS B.A.S.S. Nation Lisa Cleckner, Director, Finger Lakes Institute Don Cook, Finger Lakes Regional Watershed Alliance, New York State Federation of Lake Associations Bill Foster, Cayuga Lake Floating Classroom Bruce Gilman, Professor, Finger Lakes Community College Dorothy Gronwall, Honeoye Valley Lake Association Terry Gronwall, Honeoye Valley Lake Association Roxanne Johnston, City of Ithaca (on email list for AWG for news and updates) Web Pearsall, NYS DEC Region 8, Fisheries Mary Underhill, Conesus Lake Watershed Manager, Livingston County Planning Department Dave Scudder, President, Save Our Sodus Emily Staychock, Invasive Species Education Program, Cornell Cooperative Extension

Michele Wunderlich, Associate Planner, Cayuga County Planning and Economic Development

Education & Outreach WG

Fred Blom, President, NYS B.A.S.S. Nation Kristina Farrare, Team Coordinator, Forestry, Agriculture & 4-H Youth Development, Cornell Cooperative Extension, Onondaga County , (on email list for AWG for news and updates) Bill Foster, Cayuga Lake Floating Classroom Bruce Gilman, Professor, Finger Lakes Community College Rebecca Hargrave, Assistant Professor, SUNY Morrisville Hilary Lambert, Executive Director, Cayuga Lake Watershed Network, (on email list for EOWG for news and updates) Anna Stalter, Associate Curator and Extension Botanist, CALS School of Integrative Plant Science, (on email list for EOWG for news and updates) Emily Staychock, Cornell Cooperative **Extension, Invasive Species Education** Program Russ Welser, Cornell Cooperative Extension, **Ontario County** Michele Wunderlich, Associate Planner, Cayuga County Planning and Economic Development Carri Marschner, Invasive Species Specialist, Finger Lakes Hemlock Initiative, Cornell University

Terrestrial WG

Sylvia Albrecht, Citizen Advocate Kathryn Amatangelo, Assistant Professor, The College at Brockport SUNY Mary Beth Deller, Botanist and Non-native Invasive Plant Program Coordinator, USDA Forest Service Kristina Ferrare, Team Coordinator, Forestry, Agriculture & 4-H Youth Development, Cornell Cooperative Extension, Onondaga County Mark Gooding, NYS DEC, Forester 3, Region 8

Bruce Gilman, Professor, Finger Lakes **Community College** Jules Ginenthal, Cornell Plantations, Natural Areas Stewardship Coordinator, (on email list for TWG news and updates) Jason Gorman, Finger Lakes Land Trust, (on email list for TWG news and updates) Jon Harman, Landscape Architect, NYS DOT, Region 4 Rebecca Hargrave, Assistant Professor, SUNY Morrisville Gary Koplun, NYS DEC, Region 8 Bruce Natale, Cayuga County Planning Walt Nelson, Horticulture Program Leader, **Cornell Cooperative Extension Monroe** County (on email list for TWG news and updates) Chris Olney, Finger Lakes Land Trust, (on email list for TWG news and updates) Marcus Riehl, NYS Parks, (on email list for TWG news and updates) Anna Stalter, Associate Curator and Extension Botanist, CALS School of Integrative Plant Science, (on email list for TWG news and updates) Zeb Strickland, Cornell Plantations, (on email list for TWG news and updates) Emily Staychock, Cornell Cooperative Extension, Invasive Species Education Team Kristy Sullivan, Cornell Cooperative Extension, (on email list for TWG news and updates) Carri Marschner, Invasive Species Specialist, Finger Lakes Hemlock Initiative, Cornell University after July 2015

Appendix B. 2017-2018 Work Plan for the Finger Lakes PRISM

2017/2018 Work Plan			
Scope of Work Element			
1. Coordinate PRISM partner invasive species (IS) management activities			
Utilize electronic and social media networks and communication outlets to engage			
partners and share information (listserv, etc)			
Coordinate full partnership meetings on a regular basis (2 full partnership per year)			
and working group meetings (Steering Committee, Agriculture, Aquatic, Education &			
Outreach, Terrestrial Working Groups) as necessary (no less than 4x a year)			
Utilize the FL-Website as a means of information sharing (fingerlakesinvasives.org)			
Share information on IS management activities and participate in activities as			
appropriate			
2. Recruit and train volunteers			
Present IS issues at various community outreach and education events (WQCC,			
school groups, etc.)			
Utilize electronic and social media networks and communication outlets to engage			
partners and share information (listserv, etc)			
Host iMapInvasives trainings per year or as needed			
Use CCE Master Gardeners, Master Forest Owners, lake associations, and other			
groups for volunteers			
3. Identify and meet PRISM Education and Outreach needs			
Present IS issues at various community outreach and education events (WQCC, etc.)			
Coordinate with E&O WG to assess FL regional needs			
Create and maintain a robust website that fulfills all the needs of the FL region			
Encourage and support partners to develop E&O materials			
Create and distribute E&O materials to partners			
Create a toolbox for outreach that includes educational materials and information			
4. Establish monitoring network for early detection of invasive species			
Train watercraft stewards, volunteers, and community members within the region			
Create and maintain an ED/RR protocol for the region and for specific, high priority			
organisms			
Utilize the WG and SC to gather information from partners about invasive species			
distribution in the region			
Create and maintain a priority IS list and ISPZ			
Create a database of groups that are likely users of priority locations (areas likely to			
be invaded)			
Utilize the INIap Invasive training and software app to increase participation in			
monitoring			
Lineate and support a train the trainer program to encourage use of IVIapInvasives			
Host or support inviapinvasive workshops to input data into program for the region			
5. Support academic research as needed through citizen science			

	Create and support a train the trainer programs
	Support CSLAP, iMap, and other avenues for data collection
	Utilize the CSLA model to collect terrestrial data
	Utilize the Finger Lakes PRISM website as a means of sharing data
	Utilize groups such as Boy Scouts, Hikers, biking, etc. to collect data for the region
	Identify research needs for prevention, ED/RR, and control
6.	Develop a PRISM Strategic Plan
	Develop a strategic plan to include input from all partners based on NYS format
7.	Develop Finger Lakes PRISM-specific IS Management Plan
	Coordinate with leading researchers to develop species-specific management plans
	Coordinate with conservation targets to develop a location-specific plan
	Identify funding sources for implementation of IS Mgmt plans
8.	Implement eradication projects to remove invasives species
	Utilize the partnership to leverage resources for IS work
	Support demonstration and eradication projects
	Utilize BMPs for control
	Monitor management areas for restoration success
9.	Develop annual work plan
	Develop 2018 AWP utilizing SC and WGs
10.	Develop annual report to include:
	Progress towards priority objectives outlines in strategic plan
11.	Coordinate access to private and public lands
	Develop a protocol/plan to access lands for IS work
	Create a plan to provide information for private owners about permitting, funding,
etc. and	make available on website
12.	Coordinate with other PRISMs and OISC
	Keep an open dialogue and collaborate with other PRISMs and the NYS ISAC
	Provide updates during PRISM calls as needed
	Attend PRISM leader in-person meetings and other IS conferences
13.	Support NY ISC regular invasive species conference
	Support regular conference through participation, presentation, and attendance

COUNTY	NYS OPRHP	Address	City
Broome	1. Chenango Valley State Park	153 State Park Rd	Chenango Forks
	2. Oquaga Creek State Park	5995 County Route 20	Bainbridge
Cayuga	3. Fair Haven Beach State Park	14985 State Park Rd POBx 16	Fair Haven
	4. Filmore Glen State Park	1686 State Route 38	Moravia
	5. Long Point State Park	2063 Lake Rd	Aurora
Chemung	6. Mark Twain State Park	201 Middle Rd	Horseheads
	7. Newtown Battlefield State Park	2346 County Route 60	Elmira
Chenango	8. Bowman Lake State Park	745 Bliven Sherman Rd	Oxford
Livingston	9. Conesus Lake State Marine Park	1 Letchworth State Park	Castile
	10. Letchworth State Park	1 Letchworth State Park	Castile
	11. Genesee Valley Greenway	1 Letchworth State Park	Castile
Madison	12. Chittenango Falls State Park	7900 Green Lakes Rd	Fayetteville
	13. Old Erie Canal State Historic Park		
Monroe	14. Hamlin Beach State Park	1 Camp Rd	Hamlin
	15. Irondequoit Bay State Marine Park	1 Camp Rd	Hamlin
Onondaga	16. Green Lakes State Park	7900 Green Lakes Rd	Fayetteville
	17. Clark Reservation State Park	6105 East Seneca Turnpike	Jamesville
	18. Old Erie Canal State Historic Park		
Ontario	19. Canandaigua Lake State Marine Park	620 South Main St	Canandaigua
	20. Harriet Hollister Spencer Reservation Area	1082 Route 36 South	Dansville
	21. Honeoye Marine Park	6150 East Lake Rd	Honeoye
	22. Sonnenberg Gardens & Mansion Historic Pk	151 Charlotte St	Canandaigua
	23. Ganondagan State Historic Site	State Route 444	Victor
Schuyler	24. Watkins Glen State Park	Route 14	Watkins Glen
	25. Catharine Valley trail	PO Box 304	Watkins Glen
Seneca	26. Bonavista State Park Golf Course	7194 County Rd 132	Ovid
	27. Cayuga Lake State Park	2678 Lower Lake Rd	Seneca Falls
	28. Deans Cove Boat Launch	2678 Lower Lake Rd	Seneca Falls
	29. Sampson State Park	6096 Route 96A	Romulus
	30. Lodi Point State Park	6096 Route 96A	Romulus
	31. Seneca Lake State Park	1 Lakefront Dr	Geneva
Steuben	32. Stony Brook State Park	1082 Route 36 South	Dansville
	33. Pinnacle State Park and Golf Course	1904 Pinnacle Road	Addison
Tioga	34. Two Rivers State Park Recreation Area	105 Enfield Falls Rd	Ithaca
Tompkins	35. Allan H. Treman State Marine Park	105 Enfield Falls Rd	Ithaca
	36. Buttermilk Falls State Park	105 Enfield Falls Rd	Ithaca
	37. Robert H. Treman State Park	105 Enfield Falls Rd	Ithaca
	38. Taughannock Falls State Park	2221 Taughannock Rd	Trumansburg
Wayne	39. Chimney Bluffs State Park	7700 Garner Rd	Wolcott
Yates	40. Keuka Lake State Park	3560 Pepper Rd	Bluff Point

Appendix C. List of NYS Parks within the Finger Lakes Region

	Institute of Higher Learning	Student Population
	SUNY Binghamton	14800
Broomo	Broome Community College	6697
Broome	Davis College	270
	Ridley-Lowell Business and Technical Institute	
Covura	Wells College	500
Cayuga	Cayuga Community College	4749
Chomung	Elmira College	1200
Chemung	Elmira Business Institute	200
Chenango		
Cortland	SUNY Cortland	7110
	Genesee Community College at Lima	
Livingston	Genesee Community College at Dansville	6965
	SUNY Geneseo	5445
	SUNY Morrisville	3028
Madison	Colgate University	2927
	Cazenovia College	1000
	Monroe Community College	16,458
	Nazareth College	2823
	Roberts Wesleyan College	1752
Monroe	Rochester Institute of Technology	18292
	St. John Fisher College	2700
	SUNY Brockport	8413
	University of Rochester	9308
	Syracuse University	21267
	SUNY ESF	2250
Onondaga	SUNY Upstate Medical	1542
	LeMoyne College	3400
	Onondaga Community College	13018
Ontario	Finger Lakes Community College	6539
	Hobart & William Smith Colleges	2272
Schuyler		
Seneca		
Steuben	Corning Community College	5500
Tioga		
	Cornell University	22400
Tompkins	Ithaca College	6723
	Tompkins Cortland Community College	3384
Wayne		
Yates	Keuka College	1769

Appendix D. List of the Institutions of Higher Education in the Finger Lakes region

Appendix E. Final Reports for Subcontract Work

Little Nanticoke Creek & Susquehanna River *Hydrilla verticillata* Survey 2017

Owego, NY



Bed of Hydrilla verticillata located on the stream's edge of Little Nanticoke Creek on the Robinson Farm Property.

Paul H. Lord paul.lord@oneonta.edu

SUNY Oneonta Biological Field Station

Prepared by Hilary R. Mosher, Finger Lakes PRISM Coordinator

5838 State Highway 80 Cooperstown, New York 13326

2017 Project Report:

Little Nanticoke Creek and Susquehanna River (Owego, NY) Hydrilla verticillata Survey

Award Number 78527

Project 1140583

Project Report

August 2017



Invasion of Hydrilla at Spencer Pond (left) and close up of Hydrilla (right).

Prepared for the

Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) Fingers Lake Institute (Attn: Hillary Mosher) 300 Pulteney St. Geneva, NY 14456

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SUNY Oneonta Biological Field Station 5838 State Highway 80 Cooperstown, New York 13326

Summary

The Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) requested surveys for *Hydrilla verticillata*. Hydrilla is known to be in Spencer Pond in Owego, New York. A detailed survey of Little Nanticoke Creek downstream of Spencer Pond to the Susquehanna River was conducted along with a qualitative survey of the river immediately downstream of the confluence. *Hydrilla* fragments and beds were located along the Little Nanticoke Creek with more persistent presence found in the northern part of the creek near Spencer Pond. It is recommended treating Spencer Pond systemically and then treating the remaining beds in the Little Nanticoke Creek with contact herbicides.

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Background

Hydrilla verticillata is a highly invasive submersed aquatic plant that can result in significant negative economical, ecological and recreational impacts

(<u>http://www.dec.ny.gov/docs/lands_forests_pdf/hydrillafs.pdf</u>). *Hydrilla* is a relatively new invader to New York. A large population has been recently discovered in a recreational pond, named Spencer Pond, located in Owego, NY (Figure 1 and 2).



FIGURE 1. Spencer Pond (Owner David Spencer) located on Spencer Road in Owego, NY. Assumed site of *Hydrilla verticillata* introduction into the Owego area.



FIGURE 2. Hydrilla verticillata submersed and floating at Spencer Pond (Owego, NY). Photo by A. Barber

Methods

Field surveys were conducted in Owego, NY on 26th of July and the 31st of July 2017 to the 2nd of August 2017 (Figure 3). Our surveys consisted of a detailed survey of the Little Nanticoke Creek and a qualitative survey of the Susquehanna River immediately downstream of the confluence with Little Nanticoke Creek.



FIGURE 3. Google Maps[®] image of the Little Nanticoke Creek. Our survey was conducted from Spencer Pond to the confluence with the Susquehanna River and further downstream in the river. Spencer Pond is located on Spencer Road (Top Right Corner of Map) with the Little Nanticoke Creek flowing southwest into the Susquehanna River at Hickories Park (Lower Left Corner of Map) in Owego, NY. The creek reach between the yellow dots was surveyed 31July2017; the creek reach between the orange dots was surveyed 1August2017; and river reach between the green dots was surveyed 2August2017.

During the weeks prior to the survey dates, land use permissions were sought from 20 landowners whose property abutted the creek. Phone calls were made to each property owner, and contact letters were sent via postal mail service. Letters explained the reason for surveying the creek, and asked permission to be present in the creek from their property. Landowner permissions were obtained from enough property owners for a sufficient survey. One property owner (1026 Day Hollow Road Owego, NY) denied us access from her property to the Little Nanticoke Creek.

On 26th of July 2017, the lead author surveyed the Little Nanticoke Creek from Spencer Pond to the Susquehanna River evaluating stream substrates, stream depth, and access sites to develop the plan for our detailed survey (Figure 4 and 5). While doing so, flood debris was examined to ascertain the presence of Hydrilla.



Figure 4. Spencer Pond emergency spillway at the time of the reconnaissance survey.



Figure 5. Little Nanticoke Creek in Hickories Park at the time of debris removal and reconnaissance survey on 26July2017.

Our July 31st, 2017 survey day consisted of searching the Little Nanticoke Creek from the railroad trestle (directly south of Route 17C) downstream to the bridge in Hickories Park near the confluence with the Susquehanna River. This section of the creek was chosen to be surveyed first due to its silty bottom substrates believed to be suitable for *Hydrilla* fragment rooting. Viewing tubes, snorkels and SCUBA (Figure 6) were used to search the creek for beds, rooted stems, or fragments of *Hydrilla*. Three snorkelers split the creek (one in middle, one at river right and one at river left) while they searched. A SCUBA diver and another searcher carrying a view tube followed behind searching. The creek bottom was mainly unconsolidated gravel with depths ranging inches to seven feet. An abundance of storm debris was encountered throughout the Creek in Hickories Park, which was likely due to the high water that occurred the week before our survey (Figures 5 and 6). *Hydrilla* surveyors paid careful attention to the debris piles looking for presence of *Hydrilla* caught within.



Figure 6. SCUBA diver in Little Nanticoke Creek in deep water within storm debris on 31July2017.

Our August 1st, 2017 survey day consisted of searching the rest of the Little Nanticoke Creek. This day encompassed a total length of approximately 1.75 miles with depth ranging from inches to 1 ½ feet. Due to denial of permission from one landowner on this stretch of creek, approximately 1000 ft. were not surveyed (Figure 7).



Figure 7. Google Maps[®] image of a section of the Little Nanticoke Creek. The yellow line indicates the stretch of stream that was unsurveyed during August 2017 due to denied landowner permission.

The search started at the southern part of the Robinson Farm property and progressed upstream towards the emergency spillway of Spencer Pond. Five searchers were employed with three view tubes (Figure 8).



FIGURE 8- Pictured is two of the five searchers walking the creek behind the Robinson Farm Property using viewing tubes.

Our August 2nd, 2017 survey day consisted of exploring the confluence of the Little Nanticoke Creek and the Susquehanna and approximately 500 feet down river. SCUBA divers surveyed from shore-to-shore using compasses for guidance (Figure 9 and 10). Currents in the river were mild along river edges becoming stronger (moderate) in the middle of the river. For the most part, divers were able to maintain straight lines across the river while they searched, although some downstream drift occurred.



Figure 9. Divers, with kayak tenders, searching the Susquehanna River near the confluence with the Little Nanticoke Creek.



Figure 10. Divers, with kayak tenders, searching the Susquehanna River near the confluence with the Little Nanticoke Creek.

Any *Hydrilla* fragments that were encountered were photographed, documented, and put on land uphill and away from probable creek reentry. Any rooted plants in beds smaller than $1/20^{\text{th}}$ of a meter were documented and then destroyed by removing the plants to upstream terrestrial location. Any beds larger than $1/20^{\text{th}}$ of a meter were documented and then left alone. They were not pulled up to limit fragments floating downstream in the creek.

A further search was performed downstream of the confluence of the Little Nanticoke Creek and the Susquehanna River. Aquatic plant rakes (Figure 10) were tossed numerous times in a section of the river that contained obvious aquatic vegetation and known as a favorable fishing spot (Figure 11).



Figure 11. Google Maps[®] image of the location (42.095604, -76.272676) on the Susquehanna River where aquatic plants were surveyed to look for the presence of *Hydrilla* downstream of the confluence of the Little Nanticoke Creek.

Results

- 26July2017 Search: *Hydrilla* identified in Spencer Pond, but none was found located in searches of storm debris.
- 31July2017 Search: Abundance of debris located and searched. A few aquatic plants were encountered but no *Hydrilla* was found in this section of the creek.
- 1August2017 Search Day: *Hydrilla* beds and fragments found down from Spencer Pond/Spillway behind Robinson Farm property (Figure 12).



FIGURE 12. Google Maps[®] image of a section of the Little Nanticoke Creek showing locations of *Hydrilla verticillata* on behind the Robinson Farm Property. "F" indicates a fragment located while "B" indicates a bed of *Hydrilla* found.

Hydrilla	Latitude	Longitude
Location		-
F1	N42 06.370	W76 11.550
F2	N42 06.370	W76 11.557
B1	N42 06.361	W76 11.537
B2	N42 06.367	W76 11.542
B3	N42 06.367	W76 11.541
B4	N42 06.366	W76 11.632
B5	N42 06.356	W76 11.667

Table 1. GPS coordinates of the locations of *Hydrilla verticillata* found on the stretch of the Little Nanticoke Creek behind the Robinson Farm Property. Table 1 corresponds with Figures

12.



FIGURE 13. Locations of *Hydrilla verticillata* on the Little Nanticoke Creek starting at Spencer Pond downstream to Youngs Road Crossing. "F" indicates a fragment located while "B" indicates a bed of *Hydrilla* found.

Table 2. GPS coordinates of the locations of *Hydrilla verticillata* found on the stretch of the Little Nanticoke Creek starting at Spencer Pond downstream to Youngs Road crossing. Table 2 corresponds with Figure 13.

Hydrilla	Latituda	Longitudo
Location	Lautude	Longitude
F1	N42 06.370	W76 11.550
F2	N42 06.370	W76 11.557
F3	N42 06.345	W76 11.683
F4	N42 05.859	W76 12.464
B1	N42 06.361	W76 11.537
B2	N42 06.367	W76 11.542
B3	N42 06.367	W76 11.541
B4	N42 06.366	W76 11.632
B5	N42 06.356	W76 11.667
B6	N42 06.345	W76 11.683
B7	N42 06.351	W76 11.694

2August2017 Search Day: one fragment of Hydrilla was located at the confluence of the creek and river. It was located in the water column about 2 inches above the bottom flowing towards the Susquehanna River (Figures 14).



FIGURE 14. Locations of *Hydrilla verticillata* found on the Little Nanticoke Creek (Owego, NY) from Youngs Road crossing downstream to the Susquehanna River. "F" indicates a location where a fragment of *Hydrilla* was found and a "B" indicates a bed of *Hydrilla*.

Table 3. GPS coordinates of the locations of *Hydrilla verticillata* found at the confluence of the Little Nanticoke Creek and the Susquehanna River. Table 3 corresponds with Figure 14.

Hydrilla Location	Latitude	Longitude
F	N42 05.532	W76 13.712

Discussion (Recommendations)

There may be a window of opportunity left to deal with this infestation if it is acted upon this growing season (2017). We recommend treating Spencer Pond systemically and then treat

the remaining beds in the Little Nanticoke Creek with contact herbicides. Most landowners spoken with are supportive and willing to grant permission to take care of the invasion.

Hemlock Woolly Adelgid Training and Survey Report

PREPARED FOR:

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1.0 Project Overview

CC Environment & Planning (CC) was contracted by Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) to perform a hemlock woolly adelgid (*Adelges tsugae*) (HWA) identification training seminar and coordinate volunteer surveys in southern Livingston County, New York. These contracted activities built upon other HWA activities that CC was already performing, and the synergy between these activities was to the benefit of all.

CC has become active in promoting HWA awareness and monitoring in Livingston County and surrounding areas. This area contains many large stands of eastern hemlock (*Tsuga canadensis*), which occur not only on private lands but important public lands such as Ossian State Forest, Canaseraga State Forest, Letchworth State Park, and Rattlesnake Hill Wildlife Management Area as well. CC coordinated a training exercise with Mark Whitmore from Cornell University at Letchworth State Park on March 16, 2018. A second training was led by CC on March 23, 2018. This additional training was scheduled to accommodate a relatively large number of interested attendees and served to increase the number of trained individuals for the volunteer surveys. Upon completing the two trainings, CC coordinated a volunteer HWA monitoring effort in the region to gain a better understanding of the species distribution in the area.

2.0 HWA Identification Training

A total of 46 people attended HWA identification trainings on March 16 and 23, 2018. Attendees included private landowners and state agency personnel from NYS Department of Environmental Conservation, US Department of Agriculture- Natural Resources Conservation District, Cornell Cooperative Extension-Steuben County, and Monroe County Soil and Water Conservation District. The training covered basic HWA identification, biology, impacts on eastern hemlock, and up-to-date status on various control methods including chemical and biological means. Upon completion of the training lectures, all attendees were shown an active infestation inside Letchworth State Park. This portion was critical to teach volunteers methods on HWA identification and detection in the field under conditions they would be in while performing surveys. Finally, attendees were given the opportunity to perform a guided survey in a previously unmonitored section of woods in Ossian, NY during the March 16 training. This final training exercise gave all attendees the opportunity to use their newly-acquired skills and begin generating data to inform future invasive control decisions. In total, volunteers logged approximately 115 hours at these trainings.

3.0 Field Survey Results

Volunteers surveyed eastern hemlock stands in five counties, with the majority of surveys occurring in southern Livingston County (Figures 2 and 3). Twenty eight stands totaling 435.5 acres were surveyed, with HWA being detected in only nine stands. These 28 stands represent more forests than those initially identified in Figure 1 due to the higher than anticipated volunteer turnout coupled with local knowledge of smaller stands by volunteers. Figure 3 shows the "Additional Areas Surveyed" that were identified by volunteers in Southern Livingston County. Additionally, locations in Genesee, Monroe, and Chautauqua County survey locations were identified by volunteers.

Stand level infestations were highly variable, with most stands showing no infestation while one large stand was highly infested. This stand is located near Geiger Road in Ossian, NY on the border of Livingston and Steuben counties, and continues northeast of the property and into Poag's Hole. Poag's Hole is part of a larger stream and gully formation that creates an eastern hemlock corridor along Canaseraga Creek and connects to Stoneybrook State Park. Detecting HWA at this location is troublesome given connectivity to both public lands as well as to eastern hemlock stands where surveys did not detect HWA.

A second HWA infestation area was found approximately 2.5 miles due west of the Geiger Road infestation (Figure 2). This woodlot was smaller and contained fewer infested trees; however, this stand provides riparian cover and stabilization for Sugar Creek. Sugar Creek is designated as a Trout Stream by NYS Department of Environmental Conservation and provides habitat to a self-sustaining population of wild brown trout (*Salmo trutta*). Additionally, this smaller HWA population is close to many public and private hemlock forests that HWA was not detected.

The final Livingston County HWA infestation detections were in the northeastern corner of Letchworth State Park. Multiple detections were found by volunteer surveyors. While the stands of eastern hemlock in this section of Livingston County are small and patchy compared to the more southern stands, their close proximity to each other may allow for HWA to migrate along this corridor.

Hemlock woolly adelgid was detected in two locations outside of Livingston County. The first detection was in Wyoming County but also within Letchworth State Park. Finding HWA in this location is not surprising as it was less than one mile from a previously known infestation in the park near River's Edge Lodge. The second HWA detection outside of Livingston County was on a private property on Somershire Drive in Rochester, NY, which is near other infestations detected in Irondequoit, NY.

All presence/absence location data are provided in Figures 2 and 3, and the associated point shapefile will be provided with this report. Finally, presence/absence data will be uploaded into iMapInvasives for future data queries and management decision making.

4.0 Volunteer Reporting

A total of 46 people attended the two HWA identification and survey trainings (Table 1). In turn, these attendees surveyed over 400 acres of forest. These surveyed areas were primarily in Livingston County; however, areas of Cattaraugus, Genesee, and Monroe Counties were surveyed as well. Over 150 volunteer hours were logged between attending the HWA training and performing field surveys.

Table 1- Volunteer Training and Survey Effort Results			
Total Volunteers Trained	46		
16-Mar	25		
23-Mar	21		
Total Acres Surveyed	435.5		
Total Volunteer Hours	152		
Trainings	115		
Surveys	37		

5.0 Conclusions and Future Plans

Eastern hemlock is a species of upmost importance in the Finger Lakes and Southern Tier regions of New York State. It is a foundation species that shapes the ecological functioning of many forests, provides shade and stability for streams, and creates habitat for many wildlife species. The results from this effort show a continuing spread of HWA throughout the area and documents new populations in the landscape. Given the ecological importance and continuing threat, a multi-faceted approach is needed to conserve these areas for the benefit of the environment and future generations.

CC Environment & Planning is working with area landowners that have had HWA detected on their land to provide recommendations for treatment and conservation measures. Local contractors have been contacted to determine chemical treatment costs and next steps for preserving hemlocks on private property. While chemical treatments are not an economically viable long-term solution to preserve eastern hemlock in the region, they can save trees of socioeconomic or ecological importance until a better solution is developed. Ongoing development of biocontrols by the New York State Hemlock Initiative will provide a viable long-term solution and CC is working with communities and landowners to support the biocontrol program and provide information to assist with predator release opportunities and priorities.

Releasing biocontrols in southern Livingston County has the potential to preserve not just eastern hemlock, but the pristine forested character of both private and public lands in the region. As a result of this education and monitoring effort, local landowners have been identified that are wiling to assist in expanding a biocontrol program in the region. This assistance includes both financial contributions as well as hosting small-scale biocontrol development programs on their property. Cultivating these partnerships and developing a regional biocontrol effort will provide for a better long-term solution for managing HWA in the Finger Lakes.

Figures





Prepared by Hilary R. Mosher, Finger Lakes PRISM Coordinator





Lewis Point Water Chestnut Patches

Approximately 2.5 acres

Water chestnut project with CCE Onondaga County, summer 2017

100

900 ft

Google Earth











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