FINGER LAKES PRISM

Partnership for Regional Invasive Species Management

2015-2016 ANNUAL REPORT

FINGER LAKES INSTITUTE

HOBART AND WILLIAM SMITH COLLEGES

STOP THE INVASION • Protect New York From Invasive Species •

Prepared by Hilary R. Mosher,
FL-PRISM Coordinator

fingerlakesinvasives.org

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Thank you to Dr. Lisa Cleckner and Ren Workman for their careful review, comments, and edits of this report.

Introduction

Letter from the Coordinator

Partners,

We have successfully closed the books on the 2015-2016 fiscal year as of March 31, 2016 and I am happy to report on the amazing invasive species work in the region.

The FL-PRISM saw much growth over the 2015-2016 fiscal year. We trained nearly 120 people in the iMapInvasives mapping system which saw 3618 observations input into the mapping system for the region. We engaged eight partners to pilot bootbrush stations on their trails and properties; the FL-PRISM sponsored five AIS billboards across the Finger Lakes and statewide which saw 1.6M impressions over the course of their contract; Hydrilla verticillata was detected in Henrietta, NY in the fall of 2015 and within four weeks, we had a management strategy in place to eradicate the plant; and nearly 7 tons of water chestnut was removed from Braddock Bay while new infestations were recorded in high profile locations such as the Genesee River.

Highlights from the 2015-2016 include:

- **$967,767 in funding awarded** to the FL-PRISM for invasive species work from state and federal sources
- **23** workshops with nearly **1100 community members engaged on invasive species**
- **5** educational institutions engaged
- Watercraft steward program inspected **~20,000** boats on **511** days with the highest launch seeing an average **75** boats per day
- **15** unique events in honor of NY Invasive Species Awareness Week
- Water chestnut removed from Braddock Bay for a total project cost of **$4,820**
- Hydrilla verticillata control project in Tinker Nature Park at a cost of **$19,865**
- 28 partners spent **$31,468,484* on invasive species work**
- Partners reached **11,631* community members with invasive species outreach**
- Partners calculated **38,327* hours of staff time spent on invasive species work**
- Partners calculated **15,425* hours of volunteer time for work on invasive species**

*partner data still being calculated

We have many things for which to be proud in our Finger Lakes PRISM region. I look forward to continuing to work with you all in the 2016-2017 years!

In service,

Hilary R. Mosher, Coordinator, FL-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, the Cornell Cooperative Extension (CCE) Invasive Species Education Program (contract ended July 1, 2015) and 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 FL-PRISM. There is no 'Partnership' without our partners and we are grateful for their service (Appendix A).

The FL-PRISM is funded by the Environmental Protection Fund, through the NYS Department of Environmental Conservation.

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 FL-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 FL-PRISM allows for sharing and leveraging of limited resources within the partnership while representing a highly-visible program that builds community awareness and participation.

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

Prior to securing funding, the FL-PRISM consisted of a group dedicated to forwarding the mission of invasive species management. This first meeting of the FL-PRISM was held on March 22, 2007 at the Montezuma Audubon Center in Savannah, NY, and was facilitated by John Dickerson. Key questions and concerns over boundaries of the FL-PRISM, mission, vision, and naming of the PRISM were topics for this opening meeting, which had nearly 70 people in attendance. In September 2007, the first press release was distributed asking for commitment from key partners who were interested in

learning more about invasive species and partnership opportunities. Gregg Sargis was the acting-chair of the interim steering committee which consisted of members from the Finger Lakes Institute, The Nature Conservancy, DEC Region 8, Sea Grant/Invasive Species Task Force, Cornell Cooperative Extension of Monroe County, NYS Department of Transportation (DOT), Finger Lakes-Lake Ontario Watershed Protection Alliance (FLLOWPA), New York State Federation of Lake Associations (NYSFOLA), NYS Ag & Markets, and Maple Hill.

The FL-PRISM launched terrestrial, aquatic, and education & outreach working groups. The working groups developed a 2008 work plan with five major objectives including: strengthening partnership, funding sources, education and outreach, eradication and control, and monitoring and inventory. The last recorded meeting minutes were from a meeting that took place on March 8, 2008. Without funding and a structure to support the FL-PRISM, the group stopped convening as a unit. In late 2013, the FL-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. Creating working groups and a steering committee, the FL-PRISM created and maintains an annual work plan (Appendix B) to help guide the work for the region.

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 of the Finger Lakes region 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
- Hemlock-Canadice State Forest covers two lakes and has 6,684 acres

- Hemlock is also home to the state's oldest pair of nesting bald eagles dating back to the 1960s
- Montezuma Audubon Center
- Institutions of higher education (Appendix D)

Figure 2. Map of the Finger Lakes.

The FL-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 (Table 1). 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, 2014). In fact, in 2014, travelers to the Finger Lakes region added $2.9B in traveler spending and supported 59,238 jobs, equating to 5% of the total traveler spending

within NYS. 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, 2014).

*Tourism data excludes the financial impact of Madison, Broome, and Chenango counties, which were included in the Central New York tourism data, and equates to an additional 3.8M dollars in traveler spending and increases the contribution of the region by 0.6 % (Central New York Focus Data, 2014).

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 Zurich Bog, 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 16,212 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 (FL-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 FL-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 FL-PRISM will work collaboratively with its partners and the public to provide education and mitigate the impacts of invasive species within our region.

FL-PRISM Steering Committee, Working Groups, and Staff

The FL-PRISM consists of multiple partners working together to help stop the invasion of plants, animals, diseases, and vectors of transmission for invasive species. The staff includes Dr. Lisa Cleckner,

Director of the Finger Lakes Institute, Hilary R. Mosher, FL-PRISM Coordinator, and Emily Staychock, Finger Lakes Institute, AIS Watercraft Steward Education and Outreach Coordinator.

The partnership committees are divided among five working groups and 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 FL-PRISM has 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.

Structural Statement

The steering committee is made up of representatives from the Finger Lakes with an interest in the governance of the FL-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 FL-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 FL-PRISM website first for information, management ideas, ED/RR, and all things invasive in the region.

2. 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 IS are coming from and where they may go, and how to prevent them to be disseminated via FL-PRISM website;
- Synthesize and disseminate data to the public via the FL-PRISM website;
- Create material on priority Ag IS for the FL-region (fliers, handbooks, datasheets, etc.);
- Establish the FL-PRISM website as the key location for information on IS in the FL PRISM region; and
- Develop a decision tree to use for determining priority organisms and locations for IS management

Priority invasives of concern:

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).*
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

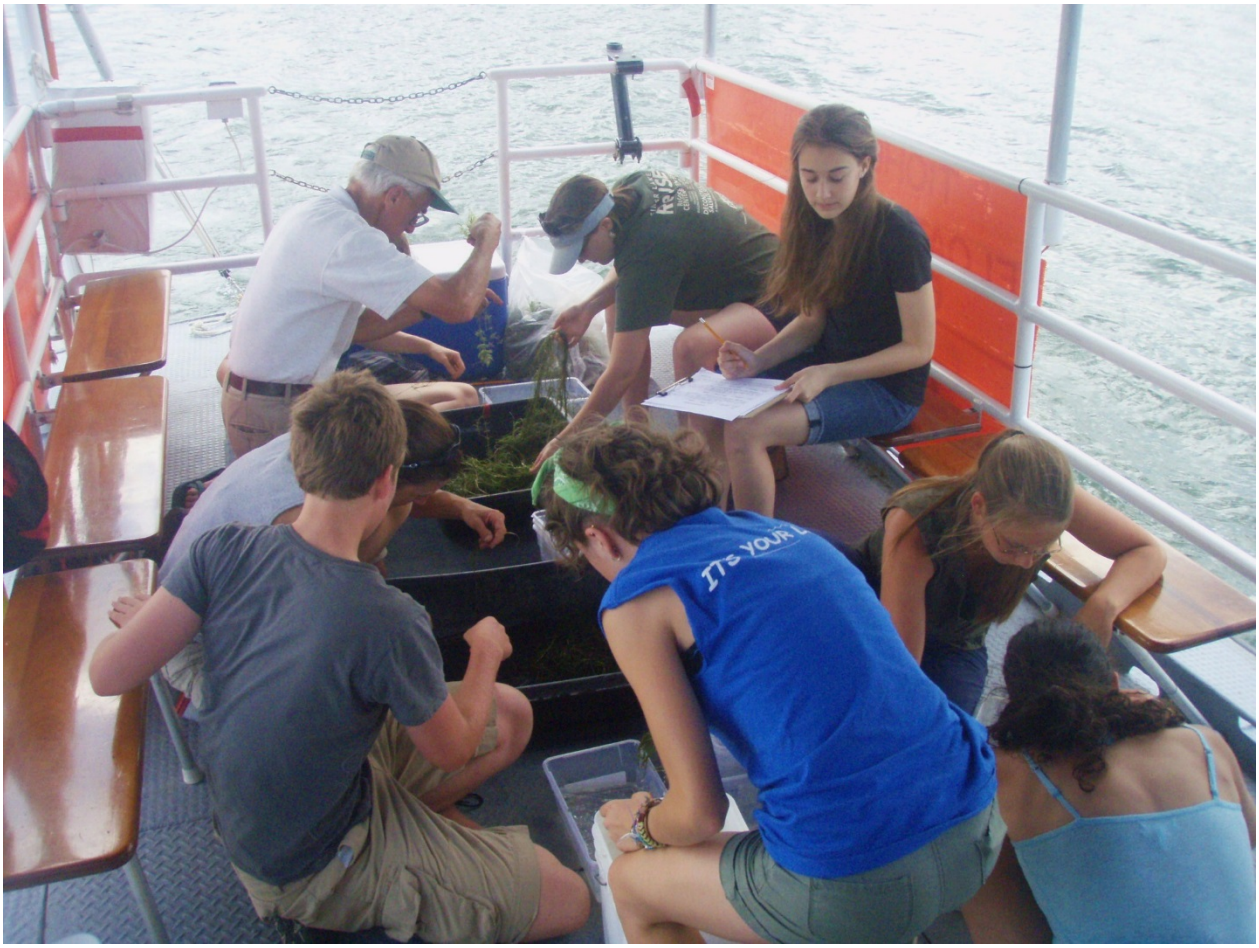
Secondary Focus

- 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 FL-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 mitigation strategy with best management practices to mitigate impacts and help communities deal with impacts;
- 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 protocol for the FL-region to deal with AIS issues at locations such as boat launches, marinas, etc. at all the waterbodies in the region to provide consistent and clear messaging (Lake Ontario, Sodus Bay, Finger Lakes, Oneida Lake, Erie Canal, small glacial lakes, etc.);
- Develop a priority list and methods of introduction, which will include information about pathwayss of transmission, information about where AIS are coming from and where they could potentially spread to, and AIS prevention to be disseminated via FL-PRISM website;
- Synthesize and disseminate watercraft steward/boat steward information to the public via the FL-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 FL-PRISM website as the primary location for all information on AIS in the FL-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



Volunteers on the Cayuga Lake Floating Classroom - learning together as they survey the lake for Hydrilla verticillata and other aquatic invasives. Photo credit: Bill Foster

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*

Hydrilla verticillata located in Tinker Nature Park, Henrietta, NY on 9/25/15. Photo credit: Hilary Mosher

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 Blooms (HABs)

- Asian clam, *Corbicula fluminea*
- *Dreissenids* (Zebra and Quagga mussels)

*Also listed on the Great Lakes Governors and Premiers List of Least Wanted Species in the Great Lakes

Community Education and lake sampling aboard the Cayuga Lake Floating Classroom. Photo credit: Bill Foster

4. Education and Outreach Working Group (E&OWG)

Purpose:

- To establish a strong connection between FL-PRISM and the general public, volunteers, institutions of higher education, NGOs, agencies, and other stakeholders;

- To promote FL-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 FL-PRISM

Strategies to accomplish purpose:

- Generate and increase IS awareness and education within the FL-PRISM;
- Create a network of information sharing for marketing collateral and resource sharing across the FL-PRISM;
- Create a strong web-presence for the FL-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;
- Develop a list of venues/events to offer opportunities to raise awareness about the FL-PRISM and IS;
- 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;
- Create a list of experts in the field to draw upon for a speaker series, and a list of who is doing what; and
- Support the Agricultural, Aquatic, and Terrestrial WGs to ensure that their priorities and products are delivered to the general public and the FL-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 terrestrial-focused 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 FL-PRISM as a central clearinghouse for TIS in the FL-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;

Participant mapping a patch of invasive species during a teacher training. Photo credit: Nadia Harvieux

Priority invasives of concern:

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.*

Japanese knotweed taking over the riparian zone of Seneca Lake. Photo credit: Hilary Mosher

High priority early detection invasive species:

1. Japanese stiltgrass, *Microstegium vimineum*
2. Mile-a-minute vine, *Persicaria perfoliata*
3. Slender falsebrome, *Brachypodium sylvaticum*

FL-PRISM Goals and Accomplishments from 2015-2016 Fiscal Year

1. Coordination with Partners

Partnership and Collaborative work

The FL-PRISM actively recruited partners from the region through networks, use of the Cornell listserve, presentations at various meetings, and networking with stakeholders. The working groups met quarterly to discuss invasive species issues throughout the PRISM. Through these groups, the FL-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 Steering Committee met on a monthly or bi-monthly basis. 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. We are proud of our accomplishments for the region and are optimistically looking to the 2016/2017 year.

Partnership Meetings

During the 2015-2016 fiscal year, the FL-PRISM hosted two full partnership meetings (May 15, and November 12) with over 100 people in attendance over the two events.

Volunteer Cost

Volunteer hours (n=10) over 7 days at 4 hours per day times at the national rate of $23.07 an hour = $6459.60

Boat use from citizen volunteers: 3 boats x 5 days = $1875

Gasoline use from volunteer boat use: 2 boats x 5 days x 5 hours = $100

Food (FLI) = $145

Total Event Cost = $8,579.60

*Does not including paid employee time, use of boats, and boat gas by NYS DEC, USFS, FL-PRISM, NYS Parks and other paid, agency people.

Coordinator Projects- Water Chestnut

Braddock Bay

The FL-PRISM Coordinator, along with multiple partners, helped facilitate a large-scale water chestnut removal in Braddock Bay, a protected wetland and Wildlife Management Area in the Lake Ontario Area of Concern. The College at Brockport, NYS B.A.S.S. Nation and their Youth Angler program, NYS DEC Region 8, Genesee Valley Audubon Society, NYS Parks, and citizen volunteers pulled nearly six tons of water chestnut from the waters. Nearly 280 volunteer hours were charted in a multi-week event that spanned seven working days. The Finger Lakes Institute graciously sponsored food donations.

NYS B.A.S.S. Nation Youth Anglers helping pull water chestnut from Braddock Bay. Photo credit: Hilary Mosher

Brenna and Katie Richardson and Tabetha Garver-Mosher help pull water chestnut from Braddock Bay. Photo credit: Hilary Mosher

A volunteer from the College at Brockport, SUNY is in the thick of the water chestnut infestation at Braddock Bay. Photo credit: Hilary Mosher

Genesee River Volunteer Cost:

15 volunteers * $23.07 National volunteer rate * 4 hours = $1384.20

Boat use of volunteers: 10 boats at $75/day = $750.00

Food sponsored by the Finger Lakes Institute: $100

Total Cost: $2234.20

Genesee River

The FL-PRISM received confirmation of an infestation of water chestnut on the Genesee River from the US Fish and Wildlife Service. The FL-PRISM took swift action to organize a water chestnut pull which had over 20 people in attendance to pull 80 bags of water chestnut from the River. The group also surveyed above and below the current infestation to determine if water chestnut was established in other locations. The plant was located within the boat slips, a heavily used area along the River where personal boats are docked. Future education and outreach is warranted to this population to stay ahead of this infestation.

Water chestnut pull in the Genesee River. Photo credit: Hilary Mosher

***Hydrilla verticilla* in Tinker Nature Park**

On September 25, 2015, Hydrilla was discovered in a small, 2-acre, created wetland in a nature park in the Town of Henrietta. Upon discovery, photographs were sent to James Balyszak for confirmation of the organisms and subsequent samples were brought to Bob Johnson, Cornell University. The specimen was positively identified as Hydrilla and a rapid response was undertaken. Key stakeholders were brought together to discuss options for controlling the infestation given the constraints of the waterbody and pathways of movement. Grass carp and benthic mats were determined to be the most effective means of controlling Hydrilla based on the waterbody and timing. The Town of Henrietta took the lead on submitting the emergency permit to NYSDEC; Monroe County Soil and Water Conservation District sponsored the 16 triploid grass carp farmed from a location in Naples, NY; and NYS DEC sponsored the cost of the benthic mats to be placed during the 2016 field season. Bob Johnson, of Racine-Johnson Aquatics, will manage the benthic mat project and determine tuber densities in the pond. Additionally, a workshop was held at Tinker Nature Park to showcase the infestation, help attendees recognize the plant and other harmful macrophytes, and speak with experts from NYSDEC and Finger Lakes Community College. There were nearly 40 people in attendance at this workshop and overall feedback was very positive. The total cost of the Hydrilla infestation to date: $19,865.

Aerial photograph taken of Tinker Nature Park pond with extent of Hydrilla infestation. Photo credit: Craig Eckert

Hydrilla workshop organized in response to the Hydrilla infestation. Photo credit: Hilary Mosher

"Godzilla" of invasive plants found in Henrietta

Steve Orr, @SOrr1 11:53 p.m. EDT September 30, 2015

(Photo: Hilary Mosher, Finger Lakes Partnership for Regional Invasive Species Management)

A fast-growing aquatic plant dubbed the Godzilla of invasive species has been found in a small pond in Henrietta — by a Pittsford invasive species expert who happened to go there on a walk with her son.

The plant, *hydrilla verticillata*, has been the focus of prolonged and expensive control efforts in southern Cayuga Lake near Ithaca and a stretch of the Erie Canal in Niagara and Erie counties.

Hydrilla is one of the most-feared invasive species in the country because it grows fast and spreads easily and can become so thick it chokes out other forms of life in a lake or a stream. It has done this numerous places in Florida and other southern states where it is much more widespread.

Unexpectedly, hydrilla has now turned up in the pond in Tinker Nature Park on Calkins Road — spotted and identified a few days ago by Hilary Mosher, who is coordinator of the Finger Lakes Partnership for Regional Invasive Species Management.

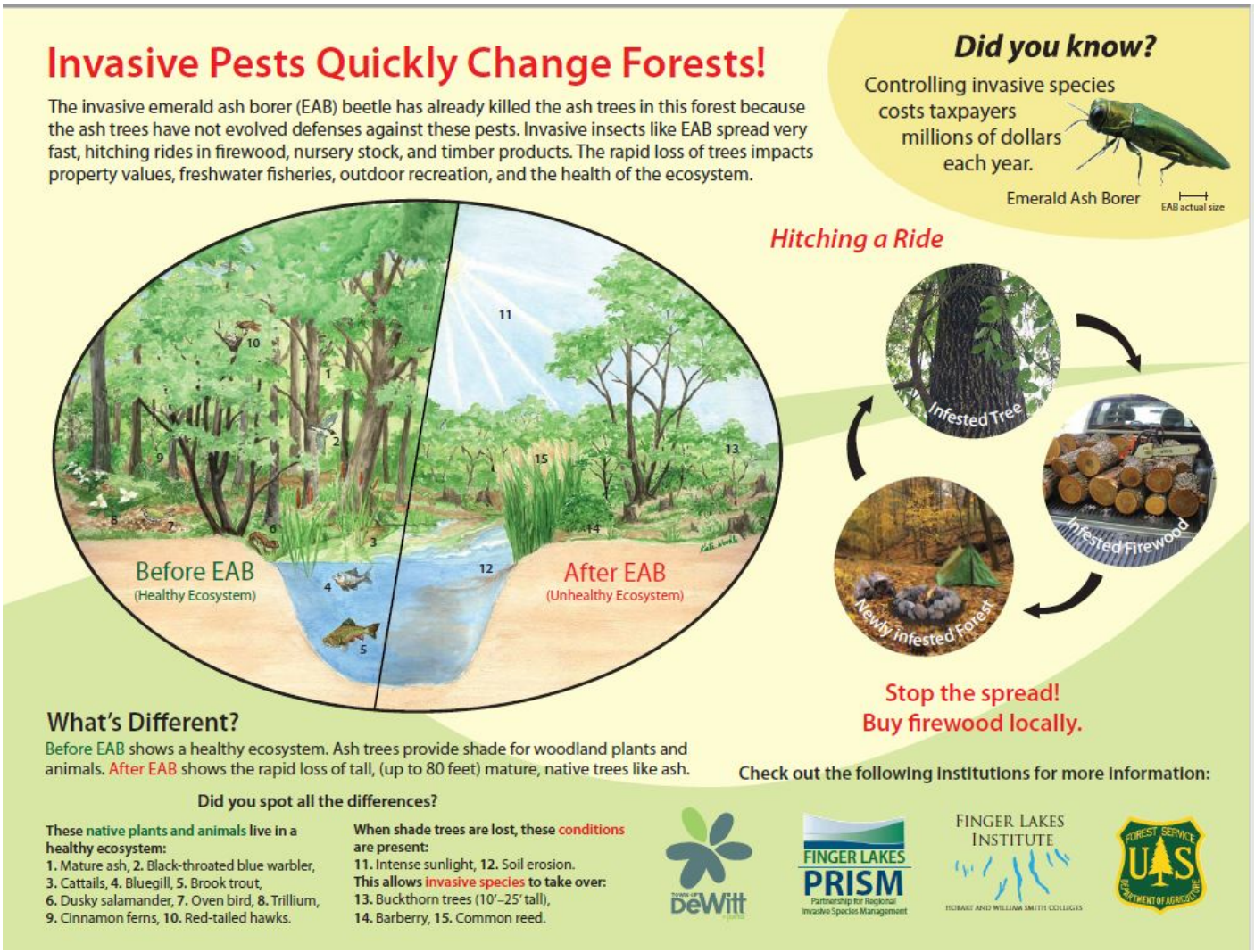
"I live right down the road from there," said Mosher, who announced the discovery in a news release Wednesday. "Ironically, I was there with my son, went to the pond and saw a plant that seemed to be a bit too much like what we're on the lookout for."

Mosher grabbed a sample, took it to a member of the hydrilla task force at Cayuga Lake, and got confirmation Monday that the green aquatic herb she'd found was indeed hydrilla.

Democrat and Chronicle article regarding the Hydrilla discovery in Tinker Nature Park. Source: Democrat and Chronicle.

Parker Mosher gets a closer view of the Hydrilla infestation. Photo credit: Hilary Mosher

Notice posted at Tinker Nature Pond informing recreationists that grass carp have been stocked to control the population of Hydrilla. Photo credit: Hilary Mosher



Interpretive sign educating people about the emerald ash borer in the Town of Dewitt. Funding for this sign came from the 2014-2015 round of subcontract awards from the FL-PRISM

The FL-PRISM awarded nine subcontract awards totaling $44,805 during the 2014-2015 fiscal year.

The following organizations were recipients of funding for invasive species work in the Finger Lakes. Final reports for each of the subcontract awards are located in Appendix E.

Award Number	Proposal Title	Organization	Award $$
1	Managing Invasive Wild Parsnip through Removal and Replacement with Native Plants	Keuka College	4999
2	Doubling Dow on Hydrilla and HWA Across the Cayuga Lake Watershed	Cayuga Lake Watershed Network	5000

3	Montezuma Audubon Center MARSH! Program Coordinator	Montezuma Audubon Center	5000
4	Slowing the Spread; Mitigate, Monitor, and Manage EAB	Town of Dewitt	5000
5	4-H Invasive Forest Pest Citizen Scientists	CCE Broome County	5000
6	Managing Invasive Plants to Facilitate Forest Regeneration at Island Cottage Woods	Genesee Land Trust	4900
7	Cayuga Lake Watershed Hydrilla Project: Hydrilla and Plant Community Monitoring and Sampling	Hydrilla Task Force	5000
8	Suburban Landscapes as a Source of Exotic Invasive Plant Species	The College at Brockport	4906
9	Selective Preservation of Ash Trees Through Trunk Injection in Response to the Presence of EAB in Onondaga County	Onondaga Soil and Water Conservation District	5000
		TOTAL	**44805**

Finger Lakes Institute Watercraft Steward Program

During the summer of 2015, 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 13 launch sites. The FLI had presence over 511 days and inspected ~20,000 boats. The highest launch in the Finger Lakes saw an average of 75 boats per day.

Watercraft Stewards Program 2015, Canandaigua Marine State Park & Woodville DEC Launches Canandaigua Lake

Garrett Crowe '16, Lisa Cleckner, Hilary Mosher,
FLI, HWS, 2015

Introduction

The Finger Lakes Watercraft Stewards Program (WSP), led by the Finger Lakes Institute at Hobart and William Smith Colleges, takes aim at the prevention, early detection, and general public education of aquatic invasive species (AIS) both present in and threatening the Finger Lakes. In recent years there is a growing concern over the increasing presence of AIS found in the Finger Lakes. As the Finger Lakes region's economy relies heavily on its lakes, it is important to ensure that AIS do not adversely impact the ecosystem integrity of the lakes. The 2015 program placed watercraft stewards at 13 different boat launches across four Finger Lakes: Honeoye Lake, Canandaigua Lake, Seneca Lake and Cayuga Lake.

All watercraft stewards are trained to identify the predominant aquatic species and AIS found in or currently threatening the Finger Lakes. While at the launch, they provide education to raise boaters' awareness of how to prevent the spread of AIS. They also inspect all boats for the presence of aquatic organisms and collect data on their findings.

This year a particular focus was placed on Canandaigua Lake and its two major public boat launches: Woodville DEC Launch and Canandaigua Marine State Park (MSP) Launch. Over the period from 5/22/15 to 9/29/15, more that 12,000 boats were documented by stewards at these two launches (Table 1). Canandaigua is a well-recreated lake, approximately 25 Km^2 long, and with an average depth of 39.3 m[1]. The lake is the public water supply for ~70,000 people[2]. The importance of this lake as a water supply, as a recreation and tourist attraction, and as a source of local economic stimulation, leaves heightened concern for the potential effects of AIS in the lake[3].

Methods

Figure 1: Map of the locations of the two Canandaigua Lake boat launches: Canandaigua MSP Launch and Woodville DEC Launch inspected during the summer of 2015

Watercraft stewards were stationed at two boat launches on Canandaigua Lake --Woodville DEC Launch and Canandaigua MSP Launch (Figure 1). At the launch, stewards were responsible for educating the public about AIS and performing inspections of all boats entering and exiting the lake for the presence of aquatic organisms. The information collected in these inspections includes: time of day, type of boat, state where boat is registered, size of group, if boat is launching or retrieving, if any organisms were found and if any samples were collected, if the boaters collected any AIS information materials, the purpose of the visit, and the last water body the boat visited.

Stewards were responsible for recording this information on data sheets while at the site, then later entering this data into an excel sheets and emailing them to the FLI. The hard copies were collected biweekly, then the hard copies and excel copies for each date were crossed checked for accuracy. Once checked the data was entered into a master excel file compiling all the data for a given boat launch for the summer.

Results

Table 1. Watercraft Steward data recorded at two launches on Canandaigua Lake during the summer of 2015

Boat Launch Statistics		
	Woodville	Canandaigua
Dates on Site	103	117
Total Boats Checked	3384	8804
Maximum Boats Per Day	161	288
Minumum Boats Per Day	1	2
Mean Boats Per Day	33	75
Total Number of Boaters	7438	21555

Results (Continued)

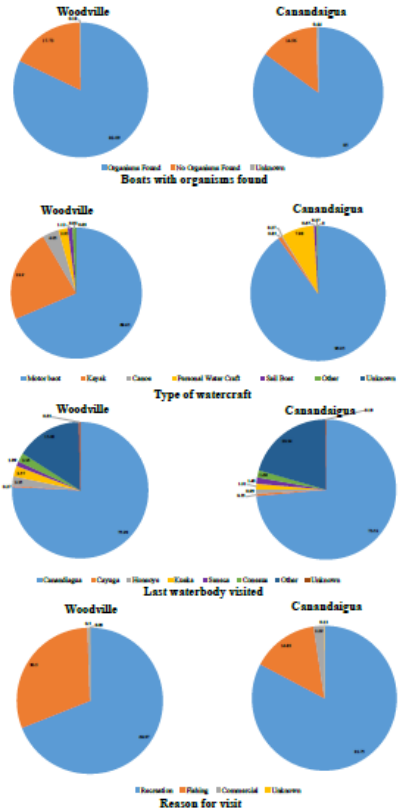


Figure 2: Boats with organisms found, type of boat recorded, last water body visited and the purpose of the visit for boat encountered at the Woodville DEC launch versus Canandaigua MSP.

Results (Continued)

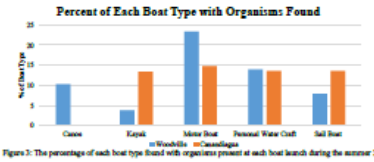


Figure 3: The percentage of each boat type found with organisms present at each boat launch during the summer 2015

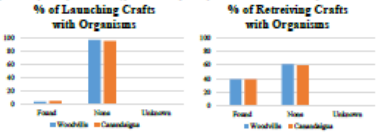


Figure 4: The percentage of watercraft launching and receiving where organisms were found or where none were detected at the Woodville DEC and Canandaigua WSP launches. Unknown represents where no data was recorded.

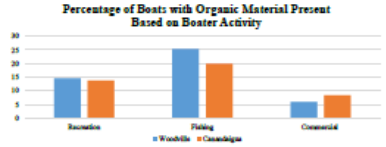


Figure 5: The percentage of aquatic organisms found on boats based on user activity across all launches during summer 2015

Discussion

From the data collected, it was found that Woodville DEC Launch and Canandaigua MSP Launch have many similarities and differences in boating patterns and in the presence of aquatic organic matter. From this summer's data it was found that 3% more boats had organic material present at Woodville than Canandaigua, see figure 2. The reason for this difference is likely due to the fact that over 30% of boaters were fishing at Woodville, while less than 15% of boaters at Canandaigua were fishing (Figure 2). From figure 5, it is clear that boaters who are fishing have an increased risk of organic matter attaching to their water craft, and therefore the larger percentage of fisherman at Woodville is likely to have caused the larger number of boats with organics found. Along with this, less than 70% of boaters at Woodville were using motor boats, while 90% of boaters at Canandaigua were using motor boats (figure 2). While it has been thought that different boat types have more or less of a chance of organic material being present, it can be seen that from figure 3, that no such correlation exists. Finally, while Woodville did have a higher percentage of boats with organic material being found, Canandaigua saw a much larger amount of boat traffic (table 1). Canandaigua also saw a larger percentage of boaters having last visited a body of water other than Canandaigua Lake (figure 2). Both these statistics, put Canandaigua at a heightened risk of aquatic invasive species when compared to Woodville. In such a way, both Launches are susceptible to the introduction of invasive for differing reasons.

References

"Canandaigua Lake." New York State Department of Environmental Conservation. N.p., n.d. Web. 29 Sept. 2015. <http://www.dec.ny.gov/>.

"Large Map Of Canandaigua Lake." Map. New York State Department of Environmental Conservation. N.p., n.d. Web. 29 Sept. 2015. <http://www.dec.ny.gov/>.

Olvany, Kevin, et al. 2014 Comprehensive Update of the Canandaigua Lake Watershed Management Plan. N.p.: n.p., 2014. Print.

Acknowledgments

Support for this summer research project was provided by the FLI Endowment


BOAT
INSPECTION POINT
STOP


Canandaigua Lake
Fishing Access Site
STATE OF NEW YORK
Department of
Environmental Conservation

Listserve:

The FL-PRISM listserve contained 245 names for distribution prior to April 2015. As of February 2, 2016, the listserve contains 273 members, an 11.5% increase over the past year. This was the primary way to communicate with the community about invasive species and events within the FL-PRISM. The FL-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 FL-PRISM maintains a Facebook , Instagram, and Twitter presence. Facebook has had 209 page likes/followers since its creation who follow the posts specific to invasive species in the region. Twitter has had 258 followers, 305 tweets, and is following 443 twitter-users.

Educational Materials and Media:

The FL-PRISM has created brochures, helped edit factsheets and the Great Lakes Panel on Aquaitc Nuisance Species outreach materials, and there have been projects that were 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:

A common theme at the various working group meetings was the need for an on-line location for regionally-specific invasive species information. With this in mind, the FL-PRISM secured a contractor to create a fingerlakesinvasives.org website to promote all things invasives in the region. By January, 2015, the website was fully functional and partners are able to find information relevant to the region through this media (Figure 6).

Figure 6. The Fingerlakesinvasives.org website created by MyDigitalNature with content shared from ADKinvasives.org, with permission and information from the Finger Lakes.

County Soil & Water Conservation Districts implement County Water Quality Strategies to address nonpoint source water pollution and other water quality issues through a County Water Quality Coordinating Committee. While some committees are more active than others, the FL-PRISM has had representation at nearly two-thirds of the active water quality meetings during the year (Table 1).

Table 1. Participation at County Water Quality Coordinating Committee

Broome	No information about meetings available
Cayuga	Actively participating by proxy
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 by proxy
Seneca	Actively participating

Selected Partner Projects

Hemlock woolly adelgid partnerships

The hemlock woolly adelgid has been pervasive within the Finger Lakes. Our waterbodies are in danger of water quality issues related to the demise of hemlocks due to this infestation. As such, trainings and surveys were held across the region during the winter of 2015 and into 2016. Mark Whitmore secured funding from the US Forest Service to establish a Finger Lakes Hemlock Initiative to provide education and outreach to save some of the Finger Lakes' most precious resource. Opportunities to engage the partnership were abound as the Finger Lakes region discovered infestations in some of the most remote hemlock groves. The Hemlock Initiative worked with Canandaigua Lake Watershed Association and Yates and Onondaga County Cornell Cooperative Extension, NYS DEC, Finger Lakes Land Trust, to help bring attention to HWA in the region. It is imperative that the partnership communicate moving forward as we look to safeguard our keystone terrestrial species in our watershed.

2. Recruit and Train Volunteers

Coordinator Projects

The FL-PRISM engaged in various recruitment and training opportunities across the region. Examples of some of the educational events and activities are listed below. Volunteer training included invasive species identification workshops and iMapInvasives trainings across the region. Over 100 people were given access and training on reporting invasive species in the region (Table 2). Between the period of 4/1/15 to 3/31/16, there were 3618 total observations reported in iMapInvasives for the region. Eurasian watermilfoil was the most predominate observed organism (n=1400) followed by starry stonework (n=1396), and common reed (n=267) (www.imapinvasives.org).

Table 2. iMap Invasives Trainings in the Finger Lakes-PRISM, 2014

Date	Description	Participants

1/15/2015-6/1/15	SUNY Morrisville	14
4/17/15	2015 Finger Lakes PRISM Training	23
6/1/15	2015 FORCES Training	24
11/11/15	Cornell Field Biology Course	20
2/1/16-6/1/16	SUNY Morrisville	14
2/1/16-6/1/16	Excelsior Conservation Corp	22
		117

The Finger Lakes Institute hosted a training for watercraft stewards from across the region in May, 2015. There were 20 people in attendance to learn about AIS, how to 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.

3. Identify and Meet the FL-PRISM Education and Outreach Needs

The FL-PRISM established an Education & Outreach Working Group and developed priorities and strategies to accomplish goals of the group. With a framework in hand, the group engages the community in important education and outreach through a targeted strategy specific to the region.

Coordinator Projects

In addition to the iMapInvasives training and ID session, education and outreach was conducted at meetings, conferences, briefings, and water quality coordinating committees. The NYS Envirothon oral presentation and multiple choice test were both written by the FL-PRISM for use by all successful Envirothon participants who advanced to the state testing.

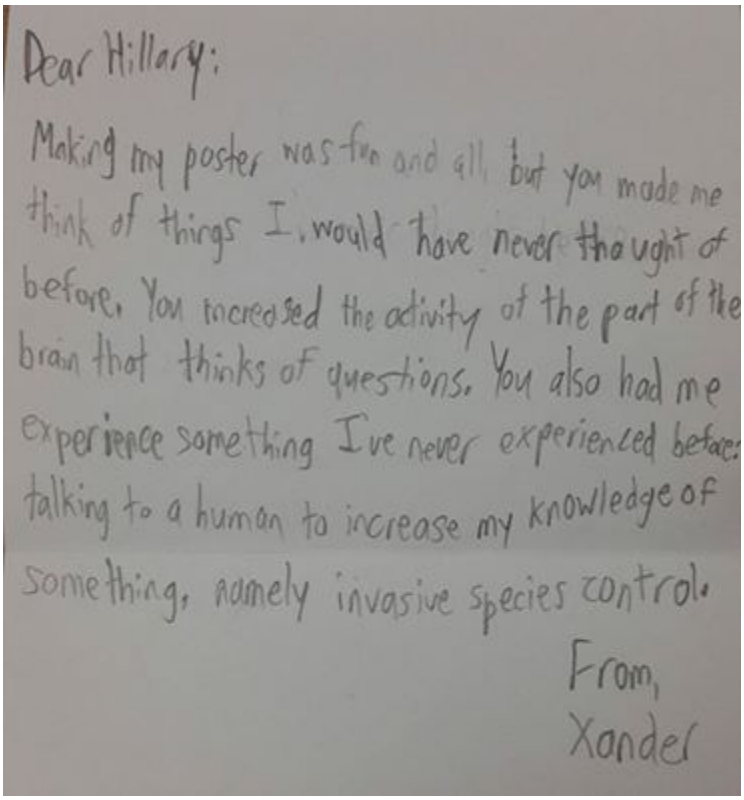


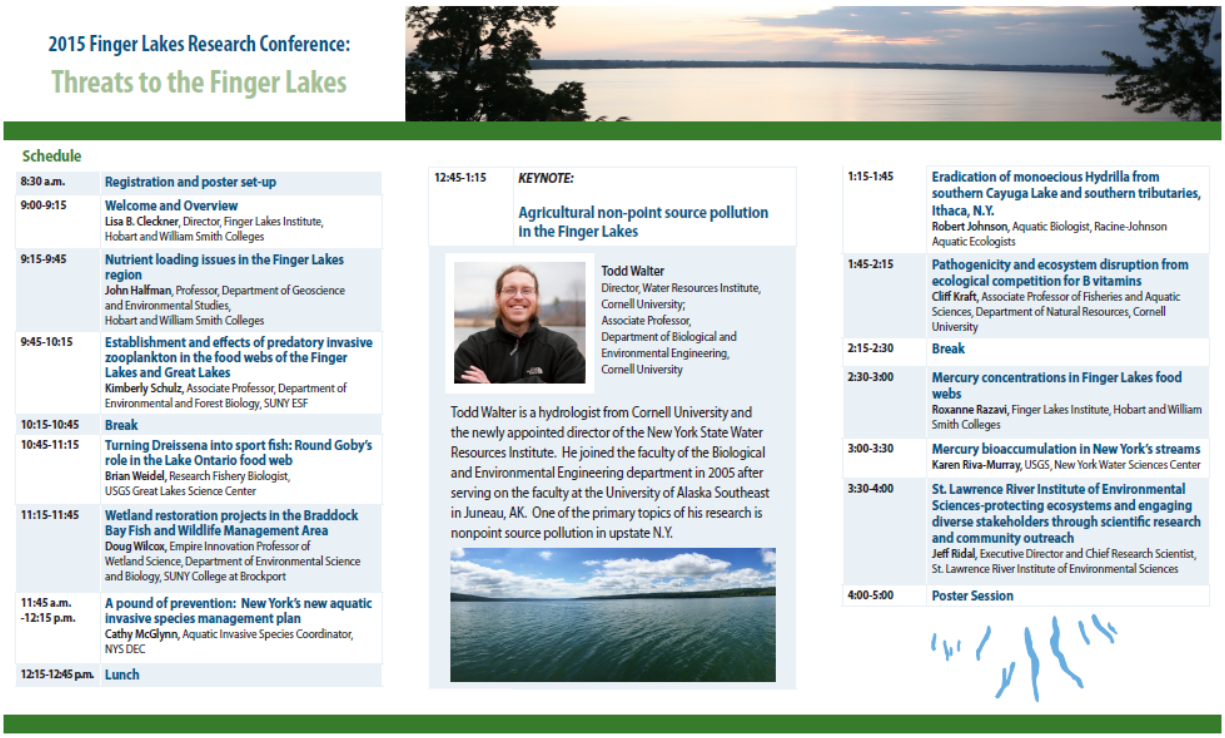
Table 3. Presentations given by the FL-PRISM staff during the 2014/2015 Fiscal Year.

DATE	PRESENTATION LOCATION	Presenter
Bi-monthly	Monroe County EAB Task Force Meetings, Highland Park, Rochester, NY	Hilary Mosher
April, 2015	Great Lakes Panel on ANS, Madison, WI,	Hilary Mosher (attendee)
April, 2015	Environmental Science Capstone Course, The College at Brockport, Brockport, NY,	Hilary Mosher
April, 2015	Town of Irondequoit Technical Committee Meeting, Irondequoit, NY,	Hilary Mosher
May, 2015	NYSFOLA, Madison County	Hilary Mosher
May, 2015	HWA survey work at Tanglewood Nature Preserve with TNC, Chemung County	Hilary Mosher
May, 2015	ADK Annual Meeting, Monroe County,	Hilary Mosher
May 2015	Watercraft steward training program, Ontario County, NY	Hilary Mosher/ Lisa Cleckner
June 2015	Finger Lakes Issues Briefing, Ontario County, NY	Hilary Mosher
June 2015	Onondaga Water Quality Coordinating Committee, Onondaga County, NY	Hilary Mosher
June, 2015	Hobart and William Smith Reunion Tour, Hanley Preserve, Seneca County, NY	Hilary Mosher

June 2015	Ecosystem Invaders, Ithaca, Tompkins, County, NY	Hilary Mosher
August 2015	NE Chapter of Realtors presentation, Canandaigua, Ontario County, NY	Hilary Mosher
September 2015	Iroquois Chapter of Master Forest Owners Presentation in Sherbourne, Madison, County	Hilary Mosher
9/22-9/23	Monroe County Conservation Field Days, Monroe County, NY	Hilary Mosher
October 2015	Hydrilla Workshop, Tinker Nature Park, Monroe County	Hilary Mosher
October 2015	Penfield Conservation Board, Monroe County, NY	Hilary Mosher
November 2015	Keynote at the Rochester Academy of Sciences, Ontario County, NY	Hilary Mosher
November 2015	Presenter for the Conference to Landscape Professionals, Monroe County, NY	Hilary Mosher
December 2015	South Hill Central School District Presentation to 5th graders, Tompkins County, NY	Hilary Mosher
June 2015	East Irondequoit Middle School, Monroe County, NY	Hilary Mosher
August 2015	AIS Identification Workshop, Loon Lake, Steuben County	
August 2015	Stormwater Coalition of Monroe County, NY	Hilary Mosher
July 2015	Sodus Point Save our Sodus Education and Outreach Event	Hilary Mosher
June 2015	Owasco Lake Days, Auburn, NY,	Tabling

Other Meetings and Working Groups: Wayne County Water Quality Coordinating Committee (WQCC), Monroe County WQCC, Ontario County WQCC, Onondaga County WQCC, Schuyler County WQCC, Steuben County WQCC, Cayuga County WQCC, CNY EAB Task Force, Monroe County EAB Task Force, Cayuga N/S Hydrilla Calls, Statewide Hydrilla Conference Calls, NYS Sea Grant Water Craft Steward Program Committee Conference Calls, Water chestnut mitigation conference calls, Great Lakes Basin Working Group, Finger Lakes Regional Watershed Alliance Meetings,

The Finger Lakes-PRISM hosted the Finger Lakes Research Conference in November 2015 Over 80 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, invasive zooplankton, Hydrilla, and the NYS aquatic invasive species management plan.



2015 Finger Lakes Research Conference:

Threats to the Finger Lakes

Schedule

8:30 a.m.	**Registration and poster set-up**
9:00-9:15	**Welcome and Overview** **Lisa B. Cleckner**, Director, Finger Lakes Institute, Hobart and William Smith Colleges
9:15-9:45	**Nutrient loading issues in the Finger Lakes region** **John Halfman**, Professor, Department of Geoscience and Environmental Studies, Hobart and William Smith Colleges
9:45-10:15	**Establishment and effects of predatory invasive zooplankton in the food webs of the Finger Lakes and Great Lakes** **Kimberly Schulz**, Associate Professor, Department of Environmental and Forest Biology, SUNY ESF
10:15-10:45	**Break**
10:45-11:15	**Turning Dreissena into sport fish: Round Goby's role in the Lake Ontario food web** **Brian Weidel**, Research Fishery Biologist, USGS Great Lakes Science Center
11:15-11:45	**Wetland restoration projects in the Braddock Bay Fish and Wildlife Management Area** **Doug Wilcox**, Empire Innovation Professor of Wetland Science, Department of Environmental Science and Biology, SUNY College at Brockport
11:45 a.m. -12:15 p.m.	**A pound of prevention: New York's new aquatic invasive species management plan** **Cathy McGlynn**, Aquatic Invasive Species Coordinator, NYS DEC
12:15-12:45 p.m.	**Lunch**

12:45-1:15	***KEYNOTE:*** **Agricultural non-point source pollution in the Finger Lakes**

Todd Walter
Director, Water Resources Institute, Cornell University;
Associate Professor, Department of Biological and Environmental Engineering, Cornell University

Todd Walter is a hydrologist from Cornell University and the newly appointed director of the New York State Water Resources Institute. He joined the faculty of the Biological and Environmental Engineering department in 2005 after serving on the faculty at the University of Alaska Southeast in Juneau, AK. One of the primary topics of his research is nonpoint source pollution in upstate N.Y.

1:15-1:45	**Eradication of monoecious Hydrilla from southern Cayuga Lake and southern tributaries, Ithaca, N.Y.** **Robert Johnson**, Aquatic Biologist, Racine-Johnson Aquatic Ecologists
1:45-2:15	**Pathogenicity and ecosystem disruption from ecological competition for B vitamins** **Cliff Kraft**, Associate Professor of Fisheries and Aquatic Sciences, Department of Natural Resources, Cornell University
2:15-2:30	**Break**
2:30-3:00	**Mercury concentrations in Finger Lakes food webs** **Roxanne Razavi**, Finger Lakes Institute, Hobart and William Smith Colleges
3:00-3:30	**Mercury bioaccumulation in New York's streams** **Karen Riva-Murray**, USGS, New York Water Sciences Center
3:30-4:00	**St. Lawrence River Institute of Environmental Sciences-protecting ecosystems and engaging diverse stakeholders through scientific research and community outreach** **Jeff Ridal**, Executive Director and Chief Research Scientist, St. Lawrence River Institute of Environmental Sciences
4:00-5:00	**Poster Session**

Partnering with Wildlife Forever, the FL-PRISM secured five billboards that promote Clean, Drain, Dry messaging across the state. Five billboards were estimated to provide 1.6M impressions.

The FL-PRISM engaged partners to pilot a 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. Eight partners agreed to place bootbrush stations in well-advertised

locations for recreationists. The campaign began in 2015 and will be carried into the 2016 season and expanded.

Bootbrush station erected at Rob's Trail in Canadice, NY. The Nature Conservancy was one of several partners who agreed to put bootbrush stations across the region. Photo credit: Mat Levine, TNC.

The bootbrush station signage to encourage Play, Clean, Go.

4. Monitoring Network for Early Detection of Invasive Species

Coordinator Projects

Several iMapInvasives trainings and invasive species identification and detection sessions were held throughout the 2015 season. During this period, there were 3618 total observations found in 16 counties of the Finger Lakes. There were 61 different species observed from across 28 different organizations. Tompkins County had the most entries with 3209 observations.

In September, 2015, the FL-PRISM was alerted about an infestation of European fire ants. Appropriate local, county, and state representatives were alerted and a survey was conducted of the infestation. Currently, the FL-PRISM lacks the capacity to mitigate this infestation or survey the size of this patch. The infestation size is NOT KNOWN and survey work will need to be undertaken to determine size and distribution.

HOBART AND WILLIAM SMITH COLLEGES

FINGER LAKES PRISM Partnership for Regional Invasive Species Management

CONTACT PERSON: Hilary R. Mosher
ORGANIZATION: Finger Lakes - Partnership for Regional Invasive Species Management
TELEPHONE NUMBER: (315) 781-4385

FINGER LAKES INSTITUTE

FOR IMMEDIATE RELEASE

29 September 2015

Contacts:
Hilary R. Mosher, FL-PRISM, mosher@hws.edu,
Russ Welser, Ontario County CCE, rw43@cornell.edu

EUROPEAN FIRE ANT REPORTED IN WOODLOT IN ONTARIO COUNTY

The Department of Biology at Hobart and William Smith Colleges has a strong interest in invasive species. Meghan Brown (Associate Professor of Biology) recently confirmed the presence of 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. 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

Coordinator Projects

The FL-PRISM working groups were surveyed to determine 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. The partner survey asked respondents to list items in need for the 2015 season. In addition to the request for a million dollars, respondents to the partner survey conducted in the winter of 2016 asked for more education materials, biocontrols for invasives, and more time to devote to invasive species control.

6. Implement Eradication Projects to Remove Invasive Species

Coordinator Facilitated Projects

Highlighted cost for eradication projects:

Water Chestnut Pulls

Braddock Bay- 7 tons over 7 days - $8,579

Genesee River- 80 bags - $1,820.32 per day for volunteers and boats

Cayuga Lake North- mechanical harvesting - $1,500 for harvester rental

Little Sodus Bay- mechanical harvesting - $1,500 for harvester rental

Hydrilla verticillata

Tinker Nature Park, Henrietta, NY-

Benthic mats and survey: $19,000

Grass carp and delivery: $315

Permit cost: $200 (expected)

Workshop: 30 participants, $350 honorarium

TOTAL COST: $19,865

Partner Reports:

Number of Partners Surveyed: 28
Total Amount Spent on Invasive Species: **$31,468,484**
Total Participants Reached: **11,631 reached**
Total Staff Time: **38,327 hours calculated**
Total Volunteer Hours: **15,425 hours calculated**

Canandaigua Lake Watershed Association, Lindsay McMillan, Administrative Coordinator
Amount spent on IS: $25,000
Staff Time: 120 hours, 550 hours - AIS Project Manager
Volunteer Time: 650+ hours

About
Watercraft Steward Program / AIS Initiative

Program Highlights
- Hemlock Woolly Adelgid Initiative with Workshops
- Old Brookside Habitat Improvement Project
- Watercraft Steward Training session with FLI, PRISM, and NYS B.A.S.S. Nation
- CLWA Board and Annual Meeting- Canandaigua NY; HWA Presentation by Mark Whitmore
- 3 Farmers Market events in Canandaigua NY
- Staffing of 2 Trout Derbies in Naples, NY
- Outreach to over 6,000 with use of brochures, articles, fact sheets, etc.

Total Participants: 2,518

Cayuga Lake Floating Classroom, Bill Foster, Director
Amount spent on IS: $10,000
Staff Time: 120 hours
Volunteer Time: ~180 hours

About
Citizen monitoring for Hydrilla & ID of invasive aquatic species, high school student investigation of Round Gobies in Ithaca Creeks, and 5th Grade student research on invasive species impacting streams in Tompkins County

Program Highlights
- Assisted with presentations at three HWA training sessions hosted by Cayuga Lake Watershed Network

• Sessions on identification of aquatic plants and other organisms in Cayuga Lake, geared toward training citizen scientists to survey for Hydrilla verticillata and Nitellopsis obtusa
• Public education workshops with other partner organizations, such as the Cayuga Watershed Network
• Round Gobies/Stream Invader educational sessions with 10 classes of 5th graders
• Public education workshops and presentations for 5th graders conducting research on invasive species impacting stream areas
This organization produced the first set of aquatic macrophyte field ID sheets, designed specifically for use by individuals and classes working in the field. Their goal is to update this collection periodically, adding new species as appropriate.

Cayuga Lake Watershed Network, Hilary Lambert, Steward/Executive Director
Amount spent on IS: $7,500.00
Staff Time: 660 hours

About
The Cayuga Lake Watershed Network (Network) is part of the Outreach team for the Hydrilla Task Force on Cayuga Lake. They provide public outreach including tabling, publications, mailings, presentations, and teamwork with other groups including the Floating Classroom, Finger Lakes Institute, FL PRISM, and other groups. The Network's Steward is President of the Finger Lakes Regional Watershed Alliance (FLRWA), made up of groups from each of the Finger Lakes and other partners, hosted by the Finger Lakes Institute and informed by FL PRISM. The FLRWA has focused on sharing hydrilla, Hemlock Wooly Adelgid, and other invasives information across the region and on obtaining legislative and funding support for AIS (Aquatic Invasive Species) staff for DEC, and funding to implement the legislative actions supported by DEC over the past two years.

Program Highlights
• Hemlock Wooly Adelgid workshops, presentations, provided HWA i.d. kits, worked with Cornell researchers, and assisted Chris Foito in completing and showing his film, "Hemlock Wooly Adelgid: Death of an Ecosystem"
• Helped organize and fund a new volunteer group on the northwest side of Cayuga Lake to do water quality sampling, and which will be doing invasives detection work around the north end of the lake starting in 2016 in cooperation with the FLI
• Helped publicize (with a press release) a discovery of Water Chestnut in the northwest shore area of Cayuga Lake in summer 2015. Steward Lambert did two interviews for local media
• Distributed their newsletter Network News, in the online/print newsletter Hydrilla Hunter Happenings, on their website and Facebook page, and via sharing these materials with cooperating groups
• Continued 2015 participation as a member of the south end-focused Cayuga Lake Watershed Hydrilla Task Force.

• Provided follow-up to the Floating Classroom hydrilla and invasives i.d. cruises, focused on communities around the lake.
Funding: $3k from Town of Ithaca via CCE. $3k from FL PRISM. $1500 from Howland Fund of Tompkins County Community Foundation.

Cayuga County Planning, Michele Wunderlich, Associate Planner
Amount spent on IS: ~$23,335
Staff Time: 142 hours

- Asian Clam survey of 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.
- Used PRISM materials in the July classes.
- Citizen Articles

Total Participants: 491

College at Brockport, SUNY, Kathryn Amatangelo, Assistant Professor
Amount spent on IS: $10,000

Program Highlights
• Survey of suburban native and exotic species in yard of the Rochester area; Comparison of traits of native and non-native phylogenetic species pairs; evaluation of the utility of goats as a control method for invasive species
• Swallowwort (Invasive Vine): Passenger or Driver of Change? Scott Ward and Kathryn Amatangelo. Brockport Scholar's Day
• Swallowwort: Analyzing the effects of a twining invasive forb in two Monroe County Parks. Scott Ward and Kathryn Amatangelo. SUNY Undergraduate Research Conference 2015, Brockport, NY.
• Exotic plant species dominate suburban gardens. Scott Ward and Kathryn Amatangelo. Finger Lakes Research Conference 2015 (poster).
• Using Goats to Control Invasive Plant Species - A Pilot Project
Kira Hansen, Dr. Kathryn L. Amatangelo, Dr. Marcie Desrochers, Dr. Lori-Ann Forzano. Finger Lakes Research Conference (poster).
Total Participants: 60

Conesus Lake Association, Michael Parker, Director
Amount spent on IS: ~$10,000
Staff Time: no paid staff
Volunteer Time: hundreds of hours

About

Cooperative Extension in partnership with the Conesus Lake Association and the Conesus Lake Watershed Council. Conesus Lake Watercraft Steward Program managed by Livingston County Cornell.

Program Highlights

- Preliminary investigation of watercraft decontamination station equipment, techniques, and experience from existing operations.
- One CLA member conducted a self initiated search of Conesus Lake for the Chinese mystery snail after finding a suspected shell, and also conducted an informal survey of ditches and streams leading to the Conesus Lake for phragmites and Japanese knotweed.
- Participated in AIS training for Conesus Lake Watercraft Stewards. (Training program managed by SeaGrant and the Livingston County Cornell Cooperative Extension).
- Many AIS training programs throughout the region
- Presented review of 2014 Conesus Lake Watercraft Steward Program at the Annual FOLA Conference. Joint presentation with Livingston County Cooperative Extension Program.
- Attended the Annual FOLA Conference, with primary attendance at AIS presentations
- Attended hydrilla monitoring and training program on the Floating Classroom on Cayuga Lake

Cornell Cooperative Extension Broome County, Kevin Mathers, Resource Educator

Amount spent on IS: $8,000
Staff Time: 400 hours
Volunteer Time: 40 hours

Program Highlights

- 4-H Invasive Species Citizen Scientists project
- NYSEG EAB/HWA training
- CCE Garden
- Master Gardener training
- Forest Insect Pest First Detector training
- LYCEUM Invasive Forest Insect presentation

Total Participants: 158

Cornell Cooperative Extension of Livingston County Mark Wittmeyer, Youth Development Team Leader

Amount spent on IS: $15,400
Staff Time: 1,500 hours
Volunteer Time: 175 hours

Program Highlights

- Conesus Lake Boat Steward Program
- Invasive species workshop Chip Holt Nature Center Summer Youth Program
- Conesus Lake Boat Steward Program, all invasive species, manual removal and proper disposal

Total Participants: 138

Cornell Cooperative Extension Monroe County, Walt Nelson, Horticulture Specialist

Staff Time: 30 hours
Volunteer Time: 15 hours

About

Invasive species related work through staff time outreach, ADK outing, and various individual contacts

Program Highlights

- Participated in one water chestnut pull

Cornell Cooperative Extension Onondaga, Jessi Lyons, Environmental Educator

Amount spent on IS: $82,000
Staff Time: 3000 hours
Volunteer Time: 350 hours

Program Highlights

- Hemlock Woolly Adelgid, Aquatic Invasives, Emerald Ash Borer,
- iMap Trainings
- HWA monitorings, hikes, public forums, presentations
- Aquatic Invasives trainings
- Ash seed collections
- EAB Task Force, forums, meetings, education, etc.
- Invasives outreach for NYSDOT meeting (4/29/15, 7 people),
- Farmer's market and NYS Fair invasives tabling
- Tick public forum

Total Participants: 7624

Cornell Cooperative Extension Onondaga County, Roy Widrig, Community Educator

Amount spent on IS: $30,000
Staff Time: ~875 hours
Volunteer Time: ~360 hours

Program Highlights

- Aquatic Invasive Species ID Presentations

- iMapInvasives Training
- Hemlock Hikes
- Monitoring of HWA
- Otisco Lake Water Chestnut Removal

Cornell Cooperative Extension Yates, Emily Staychock, IS educator
Amount spent on IS: $3,000
Staff Time: 156 Hours

About
Assisted the Keuka Lake Association in developing and implementing their first watercraft steward program in the summer of 2015. With FL-PRISM funding she worked with Keuka College on an invasive species management and mapping project on the Keuka Outlet Trail. Staychock held multiple workshops to teach the public about IS identification, reporting and management. She also helped facilitate a treatment plan for HWA at a Town of Canandaigua Park. She is a member of the FL-PRISM steering committee and working groups.

Program Highlights
- Invasive Species Identification and management
- Keuka Lake Outlet Trail/Penn Yan Village boat launch invasive species scavenger hunt,
- Forest Pest First Detector Training
- Hemlock Woolly Adelgid Woods Walk
- Aquatic Invasive Species Trainings
- Guided Trail Walk on the Keuka Outlet Trail
- Keuka Outlet Trail wild parsnip monitoring and removal project
- Master Gardener IS training

Cornell University, Caroline Marschner, Extension Associate
Amount spent on IS: ~$30,000
Staff Time: 2450 hours

Program Highlights
- Hemlock conservation, HWA biocontrol; information sessions
- Invasive Species Lab, Cornell University IPM course
- Presentation at GEN 16 Cornell Cooperative Extension webinar conference

Total Participants: 195

Additional Funding Received: $89,000 from the Finger Lakes National Forest

Finger Lakes Community College, Bruce Gilman, Professor
Amount spent on IS: $5,000.00
Staff Time: 400 hours

Program Highlights

- Conducted invasive aquatic plant rake surveys, hemlock woolly adelgid surveys, water chestnut surveys and removal, initial starry stonewort sampling in Canandaigua Lake, removal of multiflora rose at FLCC's Muller Field Station
- Aquatic plant identification session at Tinker Nature Center (presenter), participant in preparation of video about techniques of aquatic plant rake sampling
- Attendee at Cornell Cooperative Extension Invasive Species programs
- Water chestnut, hand pulling, West River tributary to Canandaigua Lake.
- Advertise invasive species field experience opportunities to our students through the department's Facebook page.
- Media coverage of the Rochester Academy of Science Fall Papers Day
- Ongoing mapping of aquatic plant species in Canandaigua Lake, dredging for zebra and quagga mussel densities in Canandaigua Lake, fall standing crop biomass of starry stonewort in Canandaigua Lake

Finger Lakes Land Trust, Jason Gorman, Nature Preserve Manager

Amount spent on IS: $2,500
Staff Time: 40 hours
Volunteer Time: 12 hours

Program Highlights

- Hemlock Woolly Adelgid treatments, and non-native invasive plant spraying.
- Co-hosted HWA ID hikes with CCE of Onondaga
- Mechanical removal of species

Genesee Land Trust, Kevin Farrell, Land Stewardship Director

Amount spent on IS: $5,000 Regeneration at Island Cottage Woods Preserve
Staff Time: 35 hours
Volunteer Time: 4 hours

Program Highlights

- Water Chestnut Hand pull
- Treated Invasive Shrubs (privet, honesuckle, rose, buckthorn), cut stem, treated with glyphosate

Honeoye Valley Lake Association, Steering Committee Member, FL-PRISM, NYSFOLA, Donald Cook, Member of Board of Directors

Amount spent on IS: $300
Staff Time: 20 hours
Volunteer Time: 50 hours

Program Highlights

- Rake toss plant survey
- Volunteer boat launch steward training by Parks and Recreation Steward
- Organized and ran a regional NYSFOLA Conference

Hydrilla Program Manager, James A. Balyszak

Amount spent on IS: $400,000
Staff Time: In excess of 3000 hours
Volunteer Time: Several hundred hours

About

Our training sessions were overseen by the Hydrilla Task Force Outreach Committee stakeholders (Cornell Cooperative Ext.-Tompkins County, Cayuga Lake Watershed Network, Cayuga Lake Floating Classroom). Hydrilla/AIS monitoring cruises were held aboard the Cayuga Lake Floating Classroom, and further Hydrilla Hunter training/coordination was overseen by the Cayuga Lake Watershed Network. A full list of individuals trained/date can be provided by CLWN and the Floating Classroom.

Program Highlights

"What's in Your Watershed: Ecosystem Invaders" lecture series

- BOTH extensive pre- and post-treatment hydrilla/plant community monitoring was conducted during 2015
- Updated and produced the primary "Stop hydrilla" tri-fold brochure for the 2015 season. Approximately 500 brochures were printed and distributed in 2015.

NYS DEC Region 7, Jim Eckler, Wildlife Biologist

Amount spent on IS: $30,000 in 2015
Staff Time: 2,000 hours
Volunteer Time: ~4,000 hours

Program Highlights

Montezuma Complex M.A.R.S.H. volunteer effort (water chestnut pulls, garlic mustard pull, honeysuckle popping), Phragmites herbiciding at Junius Ponds UA and NMWMA, Galerucella beetle collection and distribution within NY for loosestrife biocontrol.
No formal training held, but informal for the volunteers in the MARSH program.

NYSDEC Region 8, John Gibbs, NRS

Staff Time: 100 hours
Volunteer Time: 4 hours
Invasive species of concern: EAB, GH, HWA,

NYSDEC Region 8, Mark Gooding - Regional Forester
Staff Time: 650 hours
Amount spent on IS: $22,000

Program Highlights
- Assist with HWA Laricobius beetle release
- Western Finger Lakes ReLeaf - EAB Death Spiral workshop; Fall 2015; Monroe Co; 60 attendees.
- DEC Forestry Giant Hogweed and EAB workshop for Genesee Co DPW

Total Participants: 100

- Reg 8 State Forests - 30 acres Jap Knotweed sprayed
- Ten acres Oriental Bittersweet sprayed
- DEC private forestry in association with NRCS EQIP - treated invasive plants on an estimated 350 acres on pvt forestland in 11 counties
- Certify treated acres post treatment for NRCS EQIP.

NYS DOT Region 4, Jon Harman, Landscape Architect
Amount spent on IS: $43,000

Program Highlights
- Invasive material was removed and disposed of, and equipment cleaning to prevent the spread of invasives in many areas

NYS OPRHP, Alyssa Reid, Invasive Species Field Project Coordinator
Amount spent on IS: $64,447
Staff Time: 4,512 hours

- Strike team and one chemical treatment project in the FL PRISM
- Treated over 8,00 inches DBH of hemlocks in Taughannock Falls SP

NYS OPRHP, Becky Sibner, FORCES Program Specialist
Amount spent on IS: $8,000
Staff Time: 1070 hours
Volunteer Time: 380 hours

- Invasive plant control (Pale swallowwort, Japanese barberry, Asiatic bittersweet, Brachypodium sylvaticum, Japanese knotweed)
- FORCES Summer Stewards training- Invasive Species ID and Removal
- Tabling at NYS Fair
- Attended Cornell Invasive Species In-service
- Work with South Hill Elementary on invasive species research projects at Buttermilk Falls
- Hosted screening of Hemlock Woolly Adelgid documentary

Onondaga County, Department of Health, Russell Nemecek, Water Quality Management Program Coordinator,
Amount spent on IS: $80,000
Staff Time: ~200 hours

- Water Chestnut Control-Chemical, Mechanical Harvesting and Nut Sampling to assess its use as a predictive tool for water chestnut coverage and treatment success
- Starry Stonewort-Mechanical Harvesting.
- Eurasian watermilfoil- Mechanical Harvesting and diver hand removal.
- Presented with John DeHollander of Oswego County SWCD concerning latest successes and efforts related to water chestnut control at the NALMS Symposium

Onondaga County Soil and Water Conservation District, Eva Sztechmiler, Resource Conservation Specialist
Amount spent on IS: $350,000
Staff Time: 2,000+ hours
Volunteer Time: 20 hours

Program Highlights
- Implementing Onondaga County's Ash Tree Management Strategy in response to EAB; cutting/removing ash trees, treating/injecting ash trees, monitoring EAB populations.
- The Soil and Water Conservation District Employee's Association tabled at the NYS Fair and the table's theme was invasive species
- OCSWCD had information on our work with Onondaga County's ash trees and EAB at our table at the WEP Open House

SUNY Morrisville, Rebecca Hargrave Assistant Professor
Amount spent on IS: $10,000
Staff Time: 150
Volunteer Time: 750

- Students removing invasive species in class (our property and state property)
- iMapInvasives Training for students
- 4-H Forestry
- Students created PSA videos and disseminated them on Twitter

Total Participants: 72

USFS Finger Lakes Nationa Forest, MaryBeth Deller, Non-native Invasive Plant Program Coordinator
Amount spent on IS: ~$67,000
Staff Time: 807 hours

- Used broadcast sprayed herbicide to treat knapweeds and thistles in 782 acres of grassland
- Used foliar spot spray to tree woody NNIP in a riparian area
- Controlled HWA using a combination of coretect tablets and dinotefuran basal bark spray
- Treated infestation of HWA on approximately 30 acres

7. Description of Obstacles to Achieving Objectives (from 2015 Steering Committee)

- 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/communication with CCE education efforts
- Lack of name recognition of FL-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
- Economic potential of IS to wipe out a crop
- 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

8. Potential Solutions to Obstacles and/or Resources Needed (From 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
- FL-PRISM is part of Great Lakes basin – funding potential, Sea Grant and other working on the region
- Some PRISM 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 owners 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 FL-PRISM.

9. Coordinate with other PRISMs and Office of ISC

The FL-PRISM actively participated in events and regional conferences across the state during the fiscal year 2015/2016. Each month, New York has a Statewide Invasive Species Speaker Series where each PRISM provides an update for the region. The FL-PRISM has actively 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.

New York Invasive Species Awareness Week (NYISAW) was successful in the Finger Lakes with many events that were held within the region. Programs included Hydrilla Hunts, surveys for macroinvertebrates in the Finger Lakes, and watercraft steward outreach. Partners were able to communicate their successes and look forward to participating in the 2016 NYS ISAW.

Attended the 2015 Cornell invasive Species Prioritization workshop held by Carri Marschner and Carrie Brown-Lima to determine invasive species needs within the state and locally.

Attended both in-person PRISM meetings

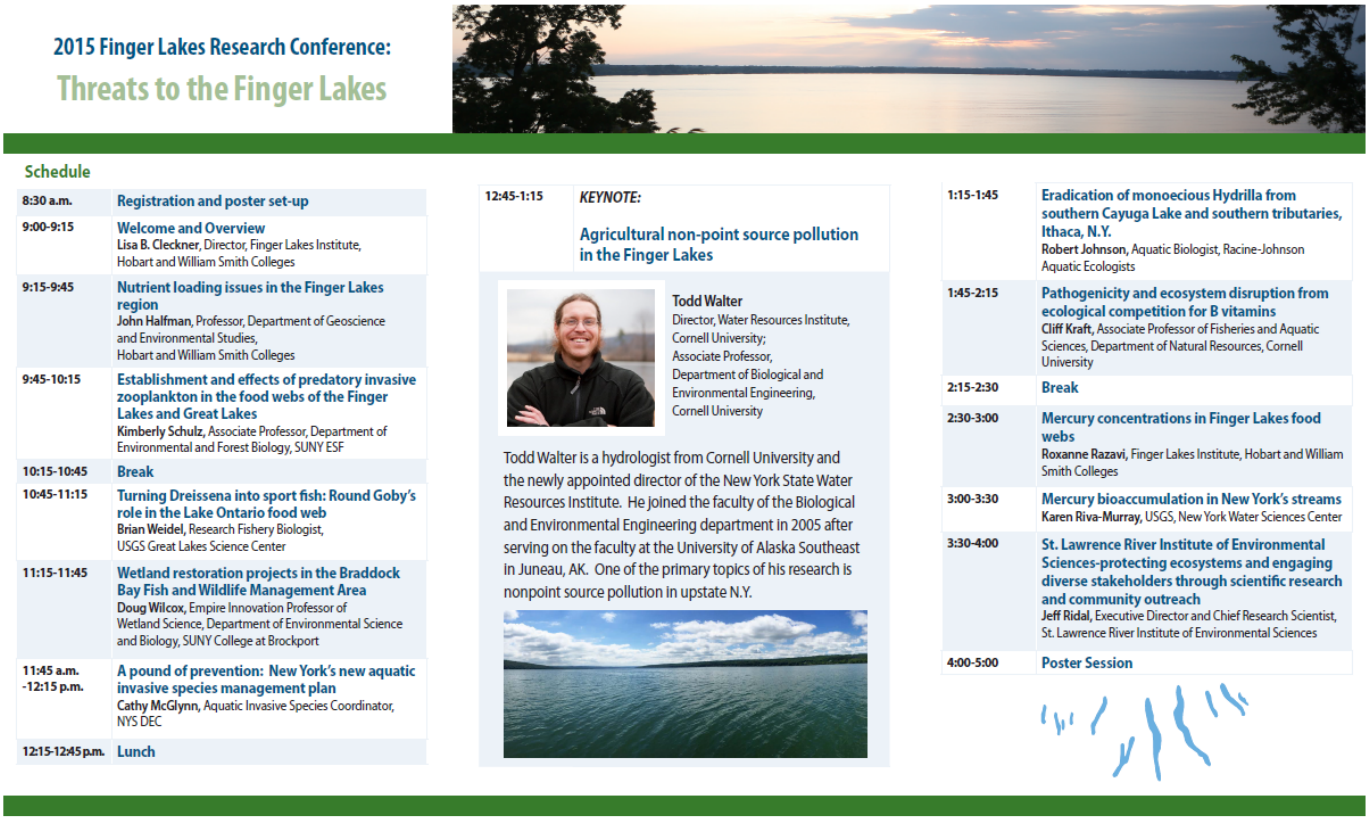
Attended the Great Lakes Action Agenda Meetings and provided input on invasive species in the region.

Coordinated with WNY PRISM for a Great Lakes –Canal Barge Routes proposal to ensure that increased barge traffic will not increase the spread and impact of invasive species.

10. Support NY ISC regular IS conference

The FL-PRISM attended the Invasive Species track of the Cornell Cooperative Extension Agriculture and Food Systems In-Service in Ithaca, NY in November, 2015. The FL-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.



2015 Finger Lakes Research Conference:

Threats to the Finger Lakes

Schedule

8:30 a.m.	Registration and poster set-up
9:00-9:15	Welcome and Overview Lisa B. Cleckner, Director, Finger Lakes Institute, Hobart and William Smith Colleges
9:15-9:45	Nutrient loading issues in the Finger Lakes region John Halfman, Professor, Department of Geoscience and Environmental Studies, Hobart and William Smith Colleges
9:45-10:15	Establishment and effects of predatory invasive zooplankton in the food webs of the Finger Lakes and Great Lakes Kimberly Schulz, Associate Professor, Department of Environmental and Forest Biology, SUNY ESF
10:15-10:45	Break
10:45-11:15	Turning Dreissena into sport fish: Round Goby's role in the Lake Ontario food web Brian Weidel, Research Fishery Biologist, USGS Great Lakes Science Center
11:15-11:45	Wetland restoration projects in the Braddock Bay Fish and Wildlife Management Area Doug Wilcox, Empire Innovation Professor of Wetland Science, Department of Environmental Science and Biology, SUNY College at Brockport
11:45 a.m. -12:15 p.m.	A pound of prevention: New York's new aquatic invasive species management plan Cathy McGlynn, Aquatic Invasive Species Coordinator, NYS DEC
12:15-12:45 p.m.	Lunch
12:45-1:15	*KEYNOTE:* Agricultural non-point source pollution in the Finger Lakes

Todd Walter
Director, Water Resources Institute, Cornell University;
Associate Professor, Department of Biological and Environmental Engineering, Cornell University

Todd Walter is a hydrologist from Cornell University and the newly appointed director of the New York State Water Resources Institute. He joined the faculty of the Biological and Environmental Engineering department in 2005 after serving on the faculty at the University of Alaska Southeast in Juneau, AK. One of the primary topics of his research is nonpoint source pollution in upstate N.Y.

1:15-1:45	Eradication of monoecious Hydrilla from southern Cayuga Lake and southern tributaries, Ithaca, N.Y. Robert Johnson, Aquatic Biologist, Racine-Johnson Aquatic Ecologists
1:45-2:15	Pathogenicity and ecosystem disruption from ecological competition for B vitamins Cliff Kraft, Associate Professor of Fisheries and Aquatic Sciences, Department of Natural Resources, Cornell University
2:15-2:30	Break
2:30-3:00	Mercury concentrations in Finger Lakes food webs Roxanne Razavi, Finger Lakes Institute, Hobart and William Smith Colleges
3:00-3:30	Mercury bioaccumulation in New York's streams Karen Riva-Murray, USGS, New York Water Sciences Center
3:30-4:00	St. Lawrence River Institute of Environmental Sciences-protecting ecosystems and engaging diverse stakeholders through scientific research and community outreach Jeff Ridal, Executive Director and Chief Research Scientist, St. Lawrence River Institute of Environmental Sciences
4:00-5:00	Poster Session

11. Summary of project expenses

Conclusion

The 2015-2016 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. We are poised to make a significant progress in the management of invasive species.

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The Economic Impact of Tourism in New York. Tourism Economics, an Oxford Economics Company. Online at: http://www.fingerlakes.org/uploads/pages/pdf/NYS%20Tourism%20Impact%20-%20Finger%20Lakes.pdf Accessed on February 21, 2015.

APPENDICES

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

Partners

Steering Committee

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
Don Cook, Finger Lakes Regional Watershed Alliance, New York State Federation of Lake Associations
Bruce Gilman, Professor, Finger Lakes Community College
Deb Grantham, Invasive Species Education Program, Cornell Cooperative Extension (until July 1, 2015)
Dorothy Gronwall, Honeoye Valley Lake Association
Terry Gronwall, Honeoye Valley Lake Association
Web Pearsall, NYS DEC, Region 8, Fisheries
Miranda Reid, 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 Sheridan, Great Lakes Watershed Program, NYS DEC (on email list for SC for news and updates)
Emily Staychock, Invasive Species Education Program, Cornell Cooperative Extension Yates County

Agriculture WG

Emily Staychock, Invasive Species Education Program, Cornell Cooperative Extension
Deb Grantham, Invasive Species Education Program, Cornell Cooperative Extension (until July 1, 2015)
Caroline Marschner, Invasive Species Education Team, Cornell Cooperative Extension (until July 1, 2015)
Marion Zuefle, IPM Experimental Station, Geneva, NY
Elaine Dalrymple, Schuyler County Soil and Water Conservation District
Sharon Bachman, Invasive Species Education Team, Cornell Cooperative Extension (until July 1, 2015)

Aquatic WG

James Balyszak, Hydrilla Program Manager
Kathy Bertuch, Program Manager, Central New York Regional Planning Development Board
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
Sarah Fleming, Ducks Unlimited (on email list for AWG for news and updates)
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
Angel Hinickle, Tompkins County Soil and Water Conservation District (on email list for AWG for news and updates)
Roxanne Johnston, City of Ithaca (on email list for AWG for news and updates)

Kristy LaManche, Finger Lakes-Lake Ontario Watershed Protection Alliance, Coordinator
Dave MacDonald, President, Save Our Sodus, (on email list for AWG for news and updates)
Russ Nemecek, Onondaga County, Soil and Water Conservation District, (on email list for AWG for news and updates)
Web Pearsall, NYS DEC Region 8, Fisheries
Miranda Reid, Conesus Lake Watershed Manager, Livingston County Planning
Marcus Riehl, NYS Parks, (on email list for AWG for news and updates)
Dave Scudder, President, Save Our Sodus
Emily Sheridan, NYS DEC, Great Lakes Watershed Program (on email list for AWG for news and updates)
Emily Staychock, Invasive Species Education Program, Cornell Cooperative Extension
Roy Widrig, Cornell Cooperative Extension, Onondaga County
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
Deb Grantham, Invasive Species Education Program, Cornell Cooperative Extension (until July 2015)
Rebecca Hargrave, Assistant Professor, SUNY Morrisville
Hilary Lambert, Executive Director, Cayuga Lake Watershed Network, (on email list for EOWG for news and updates)
Jessi Lyons, Natural Resources Team Coordinator, Cornell Cooperative Extension, Onondaga County
Emily Sheridan, NYS DEC, Great Lakes Watershed Program, (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
Kristy Sullivan, Cornell Cooperative Extension, (on email list for EOWG for news and updates)
Russ Welser, Cornell Cooperative Extension, Ontario County
Michele Wunderlich, Associate Planner, Cayuga County Planning and Economic Development
Carri Marschner, Invasive Species Education Program, Cornell Cooperative Extension until July 2015, Invasive Species Specialist, Finger Lakes Hemlock Initiative, Cornell University after July 2015

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
Jessi Lyons, Natural Resources Team Coordinator, Cornell Cooperative Extension, Onondaga County
Bruce Natale, Cayuga County Planning
Walt Nelson, Horticulture Program Leader, Cornell Cooperative Extension Monroe County
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)
Emily Sheridan, NYS DEC, Great Lakes Watershed Program, (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)
Mark Whitmore, Cornell University, (on email list for TWG news and updates)
Carri Marschner, Invasive Species Education Program, Cornell Cooperative Extension until July 2015, Invasive Species Specialist, Finger Lakes Hemlock Initiative, Cornell University after July 2015
Juliana Quant, Post-doc candidate, SUNY ESF, until January 2016

Appendix B. 2015-2016 Work Plan for the Finger Lakes PRISM

2015/2016 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 (listserve, 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 (listserve, 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 iMap Invasive training and software app to increase participation in monitoring** • **Create and support a train the trainer program to encourage use of iMapInvasives** • **Host or support iMapinvasive 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 FL-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 FL-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 2016 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

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

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 PO Box 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 State Historic Park	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 D. List of the Institutions of Higher Education in the Finger Lakes region

	Institute of Higher Learning	Student Population
Broome	1. SUNY Binghamton	14800
	2. Broome Community College	6697
	3. Davis College	270
	4. Ridley-Lowell Business and Technical Institute	
Cayuga	5. Wells College	500
	6. Cayuga Community College	4749
Chemung	7. Elmira College	1200
	8. Elmira Business Institute	200
Chenango		
Cortland	9. SUNY Cortland	7110
Livingston	10. Genesee Community College at Lima	
	11. Genesee Community College at Dansville	6965
	12. SUNY Geneseo	5445
Madison	13. SUNY Morrisville	3028
	14. Colgate University	2927
	15. Cazenovia College	1000
Monroe	16. Monroe Community College	16,458
	17. Nazareth College	2823
	18. Roberts Wesleyan College	1752
	19. Rochester Institute of Technology	18292
	20. St. John Fisher College	2700
	21. SUNY Brockport	8413
	22. University of Rochester	9308
Onondaga	23. Syracuse University	21267
	24. SUNY ESF	2250
	25. SUNY Upstate Medical	1542
	26. LeMoyne College	3400
	27. Onondaga Community College	13018
Ontario	28. Finger Lakes Community College	6539
	29. Hobart & William Smith Colleges	2272
Schuyler		
Seneca		
Steuben	30. Corning Community College	5500
Tioga		
Tompkins	31. Cornell University	22400
	32. Ithaca College	6723
	33. Tompkins Cortland Community College	3384
Wayne		
Yates	34. Keuka College	1769

Appendix E. Final Reports for Subcontract Work with the FL-PRISM

Appendix E. Final Technical Reports from the FL-PRISM Sub-contract Awards, 2014-2015

Award Number	Proposal Title	Organization	Award $$
1	Managing Invasive Wild Parsnip through Removal and Replacement with Native Plants	Keuka College	4999
2	Doubling Dow on Hydrilla and HWA Across the Cayuga Lake Watershed	Cayuga Lake Watershed Network	5000
3	Montezuma Audubon Center MARSH! Program Coordinator	Montezuma Audubon Center	5000
4	Slowing the Spread; Mitigate, Monitor, and Manage EAB	Town of Dewitt	5000
5	4-H Invasive Forest Pest Citizen Scientists	CCE Broome County	5000
6	Managing Invasive Plants to Facilitate Forest Regeneration at Island Cottage Woods	Genesee Land Trust	4900
7	Cayuga Lake Watershed Hydrilla Project: Hydrilla and Plant Community Monitoring and Sampling	Hydrilla Task Force	5000
8	Suburban Landscapes as a Source of Exotic Invasive Plant Species	The College at Brockport	4906
9	Selective Preservation of Ash Trees Through Trunk Injection in Response to the Presence of EAB in Onondaga County	Onondaga Soil and Water Conservation District	5000
		TOTAL	**44805**

Finger Lakes PRISM Sub-Contract Award Final Report
The Keuka Lake Outlet Trail Wild Parsnip Removal Project

Bill Brown, from Keuka College, was the primary investigator on this project, and Emily Staychock, from Cornell Cooperative Extension Yates County, was the collaborating partner. Bill and Emily used funds provided by the PRISM sub-contract award to hire Keuka College student Emily Bower to assist with project implementation. Emily Bower also earned college credit for her work, which was undertaken as part of her Keuka College Field Period™ responsibilities. Bill Brown and Emily Staychock will be referred to as "the project team" in this document.

Wild Parsnip Removal

Emily Bower and Bill Brown removed approximately 900 wild parsnip plants from along the outlet trail through the month of June, at which time Emily Bower's Field Period™ responsibilities were completed. Several hundred more wild parsnip plants were removed during July, August, and September, including regrowth of wild parsnip plants mowed during routine trail maintenance earlier in the season as well as those initially missed. Most of the invasive wild parsnip plants were located near the eastern end of the trail. Although numbers of wild parsnip plants were greatly reduced by these efforts, the species has not been eradicated from the trail. Continued removal will be required to keep numbers low. The easiest method of wild parsnip removal in this local situation, we found, was pulling plants out of the ground by hand after saturating rains, like those that occurred early in the summer. Pulling by this method also removed the roots. Removal by any method was challenging later in the summer when rain was scarce and the ground was hardened. Digging wild parsnip from hardened ground with a shovel or pick was not at all successful nor time effective.

Joe-pye weed and turtlehead propagation

Joe-pye weed and turtlehead seeds were germinated at Keuka College's greenhouse and at Bill Brown's residence. In both locations, germination of joe-pye weed was very successful and germination of turtlehead seeds was poor. Several hundred joe-pye weed plants were transplanted to the Outlet Trail in late June through early July. Approximately 100 joe-pye weed plants were protected from deer and other potential predators by circular cages of page wire approximately 2.5 feet in diameter and 4 feet tall. All six surviving turtlehead plants were similarly protected. Due to lack of rain from July through September, transplanted plants were watered by hand twice a week during that time period. Transplanted joe-pye weeds did not develop as quickly as wild joe-pye weeds found along parts of the trail but were vigorous nonetheless and nearly all survived through September. Very likely, most of these plants will emerge in the spring. Turtlehead transplants did not grow well and, although all survived through September, it is doubtful that they will return in the spring. Planting bare-root turtlehead plants, which were not available anywhere in the spring of 2015, might be a better method of introducing turtlehead to the trail.

Approximately 12 of the wire cages were vandalized or removed from their supporting posts during August and September. Some cages were relocated along other areas of the trail and were reinstalled and others were replaced. A check on the posts and cages in early February 2016 revealed that vandalism had occurred again since last fall. If vandalism continues, it may

be more feasible and more productive to remove the protective cages altogether; this situation will continue to be monitored.

iMap Observations

In June 2015 the project team trained Emily Bower to identify the following invasive plants that occur along the Keuka Lake Outlet Trail: wild parsnip, Common/European buckthorn, invasive honeysuckle species, multiflora rose, Tree of Heaven, and Japanese knotweed. Emily Staychock trained Emily Bower to record observations of all of these species on iMap with the exception of invasive honeysuckle; invasive honeysuckle species are present almost continuously along the trail and it would have been impractical to record individual plants. In June, Emily Bower recorded the locations of these invasive species along the Outlet Trail, and Emily Staychock recorded observations throughout the summer as well. This resulted in over 70 new iMap observations along the Outlet Trail. It was noted that Japanese knotweed was present in extensive populations that stretch a mile or more along the banks of the Outlet Creek.

Educational Trail Signs

The project team designed an educational trail sign that described the wild parsnip removal project. They contracted KG Graphics in Penn Yan to create the two identical metal signs. The signs will be placed along the trail in the areas where wild parsnip was removed and replaced with Joe-pye weed. The intent was to place the signs along the trail during the fall 2015, but vandalism was reported to other structures along the trail during the fall and the project team will wait until spring 2016 to place the signs in hopes of avoiding vandalism. The project team also designed educational signs that show invasive plants present along the trail: wild parsnip, invasive honeysuckle, Common/European buckthorn, multiflora rose, Tree of Heaven, and Japanese knotweed. Paper copies of this sign will be placed by the Friends of the Outlet Trail in the glass cases located at three entrances along the Outlet Trail. The Friends of the Outlet Trail were provided with a PDF of this sign for their future use.

Volunteer Recruitment and Training

The project team recruited volunteers to assist with monitoring Joe-pye weed and wild parsnip along the trail, as well as wild parsnip removal in 2016. A volunteer training was held on September 24 for five volunteers. A follow-up training in the spring of 2016 is planned for these volunteers as well as other recruits. Volunteers will monitor the growth of Joe-pye weed that was planted in wild parsnip removal areas, and will monitor for wild parsnip regrowth. Volunteers will report their findings to the project team. Volunteers will assist with wild parsnip removal in 2016.

Field Period™ [internship]

Emily Bower completed requirements for a Keuka College Field Period™ as part of this project, which is a credit-bearing course. Emily learned to identify many invasive and native plant species and was exposed to many other aspects of natural history along the trail. She learned about iMap, why invasive species were of concern, what was being done to manage for some of them, and that educational efforts were an important aspect of the management process. She also explored career possibilities in this area.

Positive public relations and free publicity for FL-PRISM resulted from the communications office at Keuka College featuring our work along the Outlet Trail on the Keuka

College web site. The story was carried in the Finger Lakes Times and also featured on materials related to Keuka College's 125 year anniversary celebration. The web site and newspaper story are included here.

From http://news.keuka.edu/from-the-field/college-garners-5k-grant-to-replant-outlet-trail

College Garners $5K Grant to Replant Outlet Trail

Published May 15, 2015 at 12:27 pm in Academic News, From the Field, Points of Pride,Top Story by Rachel E. Dewey.

Dr. Bill Brown and Emily Bower '18 will collaborate on a project to remove wild parsnip from the Yates County Outlet Trail.

From Penn Yan to Dresden, the 7-mile Outlet Trail beckons anyone wishing to enjoy the beauty of nature while walking, riding horseback, bicycling, hiking, or traversing mid-winter on snowshoes or cross-country skis. The scenic trail now popular with artists and photographers once served as an old right-of-way for a former railroad connecting Keuka and Seneca Lakes.

Despite its natural beauty, the trail harbors something unpleasant —an infestation of wild parsnip, which can blister human skin when sap from its leaves, stems, flowers or fruit is exposed to sunlight. So it's ideal that Keuka College recently won a $4,999 grant to remove large patches of wild parsnip along the trail and replace it with two native flowering plant species —turtlehead and joe-pye weed.

Wild Parsnip, the plant which will be removed from the Outlet Trail through this project.

The project, which was funded through the Finger Lakes Partnership for Regional Invasive Species Management (PRISM), headquartered at the Finger Lakes Institute at Hobart and William Smith Colleges, will begin June 1 and will serve a dual purpose as a Keuka College Field Period™ research project for rising sophomore Emily Bower ’18. Under the guidance of Dr. Bill Brown, assistant professor of biology and environmental science at Keuka College and Emily Staychock, an invasive species educator for Cornell Cooperative Extension of Yates County, Bower will dig out large sections of wild parsnip at the roots and then replant the same areas with the two native flowering species. To protect the new plants from disturbance by deer, they will be fenced with 6-foot high “page wire,” Brown said.

Emily Bower '18 and Dr. Bill Brown along the Outlet Trail

Digital learning is a new objective for Keuka College and is being woven into the curriculum and its signature Field Period™ program. As such, Bower’s Field Period™ will also contain a digital component: assisting Staychock in creation of a GPS-based map and database documenting locations of many invasive plant species along the trail including honeysuckle, Japanese knotweed, spotted knapweed, Tree of Heaven, and common buckthorn. Bower and Staychock will use iMap to plot locations of the invasive plants for further monitoring or later removal by others.

“All my friends walk the trail and visit the waterfalls, so having the opportunity to help something we use all the time is wonderful and it’s also great to give back to the community,” Bower said. “I’ve always been interested in doing research and having a research project. My family has a small farm and they’ve had to deal with invasive plant species so gaining more experience in that area will help.”

Bower said she was eager to conduct her second Field Period™ this summer because she plans to conduct most within the medical field, to reach her goal of becoming a pediatrician. Since she plans to submit applications to grad schools such as UNC-Charlotte and Syracuse Upstate Medical University in her junior year, she wants to finish as many of her four required Field Period™ experiences before then as she can.

“This [one] was different,” she described, adding that the outdoor setting, summer housing and financial stipend to complete the Field Period™ project added to its appeal. “I couldn’t say no.”

Bower added that she’s hoping to glean as much as she can from working with Dr. Brown and also to confirm her choice to focus on a bio-medical concentration during her undergraduate years, versus going into research or another area, such as botany.

Joe-Pye Weed in flower, image courtesy WikiMedia

“The hands-on experience is really what interests me, and it’s where I learn the best,” Bower said. “110 percent of the reason why I came to Keuka is for the Field Period™ [program] and the small school atmosphere.”

As the wild parsnip is removed during the project, the three scientists will be studying whether the new plantings of turtlehead and joe-pye weed will “suppress future growth of wild parsnip, and we’ll see if they attract more pollinators, and therefore increase local butterfly populations,” Brown said.

The turtlehead plant, image courtesy WikiMedia

“I chose the turtlehead on purpose because the Baltimore Checkerspot butterfly requires it for part of its life cycle. The adults will nectar on the flowers, eggs will hatch on the leaves, then the caterpillars will eat the leaves as they develop on the plant,” Brown said. Other butterflies that could be attracted to the new plants also include the Great Spangled Fritillary and the Silver-spotted Skipper, he said.

After Bower’s Field Period™ concludes, Brown and volunteer members of the Friends of the Outlet Trail organization will continue to monitor the new plantings to assess the long-term effect on the trail’s plant life and butterfly populations, “probably for the next few years,” he said.

From http://www.fltimes.com/news/keuka-team-targets-invasive-species-on-outlet-trail/article_e44883fe-09fb-11e5-85ea-db7ebab9eeb8.html

Keuka team targets invasive species on Outlet Trail

By TEAGANNE FINN ftimes@fltimes.com

Jun 3, 2015

Thanks to a grant from the Finger Lakes Partnership for Regional Invasive Species Management, Keuka College professor Dr. Bill Brown and sophomore Emily Bower have begun removing wild parsnip from the Outlet Trail.

TORREY — Keuka College is using grant money to rid the Outlet Trail of an invasive species.

They got a little help from Mother Nature too.

Dr. Bill Brown, an assistant professor of biology and environmental science at Keuka, and Emily Bower, a Keuka sophomore, began removing wild parsnip from the trail Monday. They pulled one plant at a time — roots and all whenever possible — a process made easier by the weekend rainfall, Brown said.

Keuka received a $4,999 grant from the Finger Lakes Partnership for Regional Invasive Species Management. The objective is to remove large patches of wild parsnip and replace it with two other plant species.

“I’ve always been interested in doing research and having a research project,” Bower said in a press release. “My family has a small farm, and they’ve had to deal with invasive plant species, so gaining more experience in that area will help.”

Brown, a Penn Yan resident, said wild parsnip is overtaking the seven-mile-long Outlet Trail that runs between Penn Yan and Seneca Lake. The plant can irritate human skin when its toxic sap is exposed to sunlight. It can cause a rash, blistering and discoloration.

Total root removal is the best way to tackle the problem, Brown added.

Bower, who is using this project as her Keuka field period — she is working under the supervision of Brown and Emily Staychock, the latter an invasive species educator for Cornell Cooperative Extension of Yates County.

Bower starts the replacement process by digging out large sections of wild parsnip at the root. She then plants two native flower species in the same spot, turtlehead and joe-pye weed. The observation of the new plants is vital to the study, as Brown and his colleagues want to see if they will suppress future growth of wild parsnip — “and we’ll see if they attract more pollinators, and therefore increase local butterfly populations,” he said.

Brown said it’s their hope that more butterfly species will use the new plants as the spot for their life cycle.

In an effort to protect the new plantings, 6-foot-high wire fencing will be installed to keep deer and other animals away.

There will be a digital component to the project. Staychock will use a GPS-based map and database to locate and document the other invasive species along the trail. Bower will play a role too, as she and Staychock will use iMap to plot locations for future tracking and/or removal of a certain plant species.

The use of digital learning is something that Keuka College is trying to implement into the curriculum and its field period program; the college has created a new minor called Digital Studies.

The project is the second of Bower's four required field periods as a Keuka student. A resident of Fillmore, Allegany County, she noted this field period is different than her first because of how she works with her mentors in an outdoor setting.

"I couldn't say no," she said.

Brown said Tuesday the only complication he and Bower have encountered are some roots that can't be pulled by hand and must be left behind. He added that the pair will spot-check the trail throughout the summer to find out what happens next.

Final Report
to the
FL-PRISM Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM) for the subcontract titled:

Doubling down on Hydrilla and Hemlock Wooly Adelgid Across the Cayuga Lake Watershed
Recruiting & Training Volunteers for Invasive I.D. Mapping:
Responding to the Double Threat of Hydrilla and
Hemlock Woolly Adelgid on Cayuga Lake

work carried out by the
Cayuga Lake Watershed Network and the Cayuga Lake Floating Classroom

March 1, 2016

A. The Floating Classroom

The Floating Classroom continued its work with the Cayuga Lake Watershed Network to increase public understanding of invasive species and to develop a sustainable invasive species volunteer monitoring program during the period of this grant. The following actions were accomplished pursuant to three goals identified for the Floating Classroom in the proposal. These training opportunities were made available to individuals or groups from throughout the Finger Lakes region.

1. To supplement its ongoing education/outreach activities related to Hydrilla verticillata and other invasive species on the lake, the Floating Classroom will bring the MV Haendel to Aurora and Cayuga on two specific occasions to provide 3-hour training cruises and off-shore survey opportunities during the late summer and fall of 2015.

   The MV Haendel traveled to Aurora on two separate occasions and completed one three hour program and one (storm-shortened) 1.5 hour program for a total of 15 prospective Hydrilla Hunters. Weather conditions also forced the cancellation of programs at Sheldrake Point and at Cayuga (going to Mud Lock) during the fall. Unfortunately, schedule constraints for the MV Haendel precluded the rescheduling of these trips during 2015. We anticipate returning to the north end of the lake in 2016, with separate funding.

2. The Floating Classroom will also provide staff time for volunteer training and general educational cruises.
   Four volunteer training cruises were completed from Ithaca during the project period, on July 13, 16, 21 and 28. An additional 23 prospective Hydrilla Hunters attended these programs.

   Presentations on Hydrilla and other invasive species were offered to the public during weekly summer eco-cruises.

A number of youth groups also receive more in-depth, hands-on training in sampling techniques and identification of aquatic plants, Hydrilla, Nitellopsis obtusa and other invasive species. These groups include: Plastic Tides Junior, GIAC Pre-Teen Greens, the Wells College Green Team, Seneca Falls STEM camp for girls, and the Floating Classroom high school intern program.

3. The project partners will also utilize recently completed public education/outreach materials during these programs.

   All volunteers received, or were offered, a set of Aquatic Macrophyte ID sheets completed by the Floating Classroom, and CLWN's Hydrilla Hunters and HWA Heros citizen scientist info kits. Additionally, they were provided information on the citizen monitor data-reporting webpage prepared by the Finger Lakes Institute.

B. The Cayuga Lake Watershed Network

The Cayuga Lake Watershed Network (Network) worked with the Floating Classroom, FL PRISM, Finger Lakes Regional Watershed Alliance, Bass Nation, and the Hydrilla Task Force of Cayuga Lake to reach the public through the 2015 hydrilla public education season (April to November). Beginning in the autumn 2015 into March 2016, we focused on the Hemlock Wooly Adelgid wintertime public education/mapping season, working with Mark Whitmore at Cornell U, FL PRISM, and supporting local Ithaca filmmaker Chris Foito with his new HWA film.

Specifically, the Network accomplished the following tasks outlined in our grant proposal:

- Continued 2015 participation as a member of the south end-focused Cayuga Lake Watershed Hydrilla Task Force. This included monthly to weekly meetings, public presentations, public tabling at local water and lake-focused events: Ithaca Farmers Market on 6 weekends from Memorial Day (May) to Labor Day (September), the Dragon Boat Festival (July), the SUP Cup event (August), the Cayuga Lake Watershed Network Annual Meeting and Picnic (August), the CanYou Canoe Cayuga paddling event (September), and at three official hydrilla informational meetings/volunteer thank-you events (May, November).
- Provided followup to the Floating Classroom hydrilla and invasives i.d. cruises, focused on communities around the lake. Followup included email contact, and mailing of 100 Hydrilla I.D. kits (July - October).
- Attended and presented as needed at professional meetings for hydrilla and HWA, specifically the spring and fall public meeting updates in Ithaca (2) and Seneca Falls (2).
- Shared five issues of the "Hydrilla Hunter Happenings" online and print one-page newsletter to a wide audience (hundreds of individuals and many listservs) across the watershed and beyond (two issues attached).
- Coordinated hydrilla information sharing across the Finger Lakes in cooperation with NYS Federation of Lake Associations, the Finger Lakes Institute, the Finger Lakes Regional Watershed Alliance, and the FL PRISM .
- Provided updates and articles via our website, Facebook page, listserv, and newsletter.

- Helped organize and run two season-end Hydrilla Hunter thank you/public information events at the south and north end of the lake on November 2 and 4, respectively.
- During August and September, began recruitment of Hemlock Guardians and planning of EARLY winter workshops and mapping expeditions, in cooperation with Carri Marschner and Mark Whitmore at Cornell, and FL PRISM, via email and announcements in the Network's newsletter and in the final issue of Hydrilla Hunter Happenings.
- Shared HWA i.d. kits, FL PRISM, DEC and Hydrilla Task Force materials via mail and at events.
- Provided information, photos, site locations with Carri Marschner to help establish and strengthen a region-wide HWA identification and mitigation network, with agencies, municipalities and volunteers.
- Participated and presented at two HWA presentations in Ithaca with Chris Foito, Mark Whitmore (February 19 and 27, 2016).
- We are providing one or two free public HWA i.d. expeditions in March 2016 on Cayuga Lake's west and north shore.

In addition to the contracted activities above, the Network's Steward Hilary Lambert and Cayuga Lake's #1 Hydrilla Heroes, Dave and Joyce Heck of Lansing, carried out the following related activities:

- Coordinated public agency stakeholders at the North and South ends of Cayuga Lake via regular phone call meetings (Lambert).
- Ongoing: Integrating Hydrilla, HWA and other invasives information and initiatives into the updated Cayuga Lake Watershed Restoration & Protection Plan. Lambert is manager of this watershed-wide project ('15-'17), funded via NY Department of State through the Town of Ithaca and sponsored by the Cayuga Lake Watershed Intermunicipal Organization.
- Volunteers Dave and Joyce Heck developed and regularly serviced thirty-three hydrilla information sites lakewide at marinas, state parks and launches, private launches, waterside restaurants, town and village offices. The Hecks reported that 660 Hydrilla I.D. kits were taken from the dispensers during 2015.

C. Summing Up and Conclusions

The Network, Floating Classroom and partners publicized and shared information about hydrilla, HWA and related events via the Network's newsletter; Website; listserv announcements, posts to the Network, Floating Classroom and Stophydrilla.org Facebook pages; press reports to area media, and announcements of cruises and HWA training and monitoring sessions. The project partners disseminated information materials, the Aquatic Macrophyte ID Booklet, and the Hemlock Guardian and Hydrilla Hunters I.D. kits.

A high public profile about hydrilla was maintained as in the previous years since hydrilla was first discovered in 2011, focused on up-to-date public information, easily used hydrilla identification tools and trainings, and the message that it is necessary to maintain an active eradication program, in order to prevent our lake and water-focused activities being adversely impacted by this aggressive invasive plant.

Hydrilla awareness and publicity has been successfully expanded around the north end of Cayuga Lake, providing first steps for further work in training volunteers to identify and report hydrilla, and better awareness among the public of problems resulting from boats transporting hydrilla and other invasive species from one launch or water body to another. These recruits now know what an invasive species is, why it is detrimental, and how it can harm their local waterbody. Town supervisors, mayors and clerks of 16 lakeside municipalities receive regular updates. All receive the email newsletter, "Hydrilla Hunter Happenings," which is also circulated widely to local and regional community and invasives-focused listservs.

In summary, during 2015 and into 2016, large outreach efforts were carried out successfully via 6 public eco-cruises and hydrilla i.d. training cruises; hydrilla information kit dispensers at 33 sites; and tabling at over one dozen public events, ensuring that 770-plus people directly received hydrilla i.d. kits during 2015, and up-to-date information was shared with several hundred, probably thousands more, across the Finger Lakes region. Our message: "Help find hydrilla early, when it is easily removed by experts, so your community does not have to spend money and risk the use of chemicals."

Hemlock Wooly Adelgid identification and response information is being shared via public presentations, the new film "Death of an Ecosystem," and via the Network and Floating Classroom working with cooperating partners to publicize events and share information via online and print media. The new Hemlock Initiative will soon be launched via Cornell, to more effectively map and manage this scourge to reduce its impacts to our trees, lands and waters.

D. Thank You to the FL PRISM and Finger Lakes Institute of Hobart and William Smith Colleges

The Cayuga Lake Watershed Network and Floating Classroom are deeply grateful to the FL PRISM and Finger Lakes Institute of Hobart and William Smith Colleges for their vision, leadership and guidance.

See attached additional materials:

- Two *Hydrilla Hunter Happenings* issues from 2015;
- Photos of volunteers tabling, Caring for Cayuga Hydrilla/HWA event 2/27/16;
- Three 2015 *Network News* issues containing Hydrilla Hunter/Clean Boating and HWA information.

Our Final Invoice is attached separately.

Respectfully compiled and submitted by:

Hilary Lambert, Steward/Executive Director
Cayuga Lake Watershed Network
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steward@cayugalake.org 607-229-9870
www.cayugalake.org

Finger Lakes PRISM Grant Final Report
Subaward Agreement FLPRISM 2015-3

November 9, 2015

Project Title: MARSH! Program Coordinator

Project Leader:
Chris Lajewski
Montezuma Audubon Center
2295 State Route 89, PO Box 187, Savannah, NY 13146
Phone: (315) 365-3588
Fax: (315) 365-3582
Email: clajewski@audubon.org

The Montezuma Audubon Center (MAC), located in Savannah, NY, utilized the $5,000 grant from the Finger Lakes PRISM to hire a contractor to coordinate the Montezuma Alliance for the Restoration of Species & Habitats (MARSH!) program during the 2015 field season. MARSH! is part of a larger effort to restore, protect, and enhance wildlife habitat on nearly 50,000 acres in the Montezuma Wetlands Complex (Montezuma). The MARSH! Coordinator monitored and mapped invasive species and control efforts (water chestnut, honeysuckle, garlic mustard, European frogbit, and phragmites), and disseminated educational materials on invasive species. Additionally, the MARSH! Coordinator connected with new audiences to increase MARSH! participation. The Coordinator used traditional and social media to connect with the following groups: college and university students and staff, homeschoolers, Scouts, paddling clubs and religious groups.

Results

- 1,000 acres inventoried and/or managed
- 55 pounds of native wetland vegetation seed collected
- 3,800 pounds of invasive species removed from forest and wetland habitats
- 266 volunteers (798 volunteer hours) participated in MARSH! events
- Promoted MARSH! program and internship opportunities at Finger Lakes Community College, Wells College, Hobart & William Smith Colleges, and several area middle schools and high schools.

Expenses

- $4,800.00 MARSH! Coordinator salary
- $ 100.00 travel
- $ 100.00 invasive species education materials
- **$5,000.00 total**

Final Technical Report

Program Administrator:
Christine E. Manchester
Grantee Name:
Town of DeWitt
5400 Butternut Drive
East Syracuse NY 13057
Contract Number:
FLPRISM 2015-4
Project Name:
Slowing the Spread: Mitigate, Monitor, and Manage EAB
Grant Period Covered by Report:
5/1/2015-2/29/2016
Submission Date: 3/1/2016

Contents

Introduction

This funding opportunity allowed the Town of DeWitt to address the threat of emerald ash borer (EAB) by hiring an intern, creating outreach material, and producing a beautiful interpretive sign that will be displayed in two DeWitt parks. Slowing the Spread: Mitigate, Monitor, and Mange EAB was a success

Background

We highlighted the following objectives in the proposal submitted:

1) Educate private residents, land owners, and homeowners on the immediate threat of EAB and associated impacts through education and outreach;
2) Manage and monitor ash trees on 82 acres of frequently visited public lands and create a visible demonstration area complete with signage.

The following goals were identified to help us achieve our objectives:

1) Develop a comprehensive sustained EAB outreach project,
2) Monitor the condition of the ash trees in the focus area,
3) Provide input for the creation of an interpretive sign regarding ash trees and EAB.

Stephanie Nick, MPS student from SUNY-ESF, was hired to take the lead on education and outreach efforts, monitoring, and the creation of an interpretive sign. Below is a copy of her bio:

Stephanie Nick received a Bachelor's of Arts in Conservation and Environmental Science from the University of Wisconsin-Milwaukee. During that time she volunteered in the Milwaukee Public School System helping students learn about conservation. As a weekend volunteer at a Nature Center, Stephanie led children in nature based activities and crafts. After spending 2 years working in public health, she began to pursue a Masters degree in Environmental Interpretation at the State University of New York (SUNY) College of Environmental Science and Forestry. She received a research fellowship from the SUNY-Research Foundation to provide STEM enrichment in low performing Syracuse City School District Schools.

The Town hired graphic artist Kate Woodle to create the illustration, and provide layout and design guidelines. Kate retired as an Exhibits Artist from the Rosamond Gifford Zoo and now works as a freelance artist.

Discussion

The EAB infestation was first discovered in the northern portion of the Town in 2013. Experts believe that the beetle was likely here for five to seven years prior to discovery, making the infestation eight to ten years old. Ash trees on private lands and unmanaged spaces are in serious decline. Raising awareness throughout the entire Town has been underway for approximately two years. Additionally, visitor safety in our parks is of equal importance. Therefore, monitoring the condition of the ash trees was also a top priority as we secured funding for removal and replacement. The assistance of an intern was sought to help with these very critical pieces.

Develop a comprehensive sustained EAB outreach project

Stephanie designed outreach material to be distributed and have available to residents within the Town of Dewitt. **See Figures 1 and 2 in Appendix A.**

Stephanie and other grad students attended the following Town events during 2015 with interactive materials regarding invasive insects for participants **(See Figures 3 and 4):**

> Franklin Park Festival, Butternut Creek Recreation and Nature Trail unveiling,
> Canal Day, Fishing Derby

Monitor the condition of the ash trees in the focus area

Purple prism traps were hung in prominent locations along frequently visited recreational trails and parks within the Town of DeWitt to achieve two important objectives. First, in effort to help educate visitors about EAB, we hung a brightly colored explanation of the purpose of the trap at eye level. **See Figure 5**. Second, we wanted to gain an understanding of the current insect dispersal, therefore three areas chosen, had ash in decline, but not positive confirmations yet. **See Figure 6.**

	Trap Location	Beetles Collected
1)	Butternut Creek Recreation and Nature Trail near Vernal Pool	9
2)	Old Erie Canal State Park at aqueduct	0
3)	Ryder Park	0
4)	Maxwell Park	13

The trap at Maxwell Park, the northern most Town owned park, confirms presence of EAB for the first time. While we assume that the old Erie Canal State Park and Ryder Park are also infested, adult beetles have not yet been found.

Stephanie made monthly visual assessments of the ash in the parks where the traps were collected. The ash trees in public Right of Ways were treated with a basal insecticidal injection of emamectin benzoate in 2014. However, many of the park trees are not candidates due to the proximity to mammals and sensitive insects and amphibians within the adjacent wetlands and creeks **(See Figure 7)**. The ash are scheduled for removal in early 2016 followed by replacement.

Provide input for the creation of an interpretive sign

We wanted to create an interpretive sign to be installed in Ryder Park that was simple, direct, and visually pleasing about invasive insects, specifically EAB. A small team of individuals met to define: Theme, Subtheme, Title, and content. This was a laborious, time consuming, and somewhat frustrating process as opinions, ideas, and concepts were discussed. At no fault of the intern, the project stalled for a few months as other pressing projects took priority and we digested the various ideas. However, the endless feedback and the numerous iterations yielded an exceptional design that delivered all of our initial key points: simple, direct, and visually pleasing. **See Figure 8.** We are so pleased with the final design and layout that this sign will be displayed in prominent locations in both our Ryder Park and the Butternut Creek Recreation and Nature Trail.

Conclusion

This funding opportunity afforded us the opportunity to create a long lasting project within the Town of DeWitt. DeWitt is also very fortunate to have received notification of grant funding from the US Forest Service that will allow us to replant the trees that will be lost in Ryder Park from EAB. Efforts will continue through the years to come to manage EAB and other invasive pests.

I, Chrisitne E. Manchester, oversaw, coordinated, facilitated, and supervised all work accomplished under this grant. All work has been completed according to our standards.

Appendix A

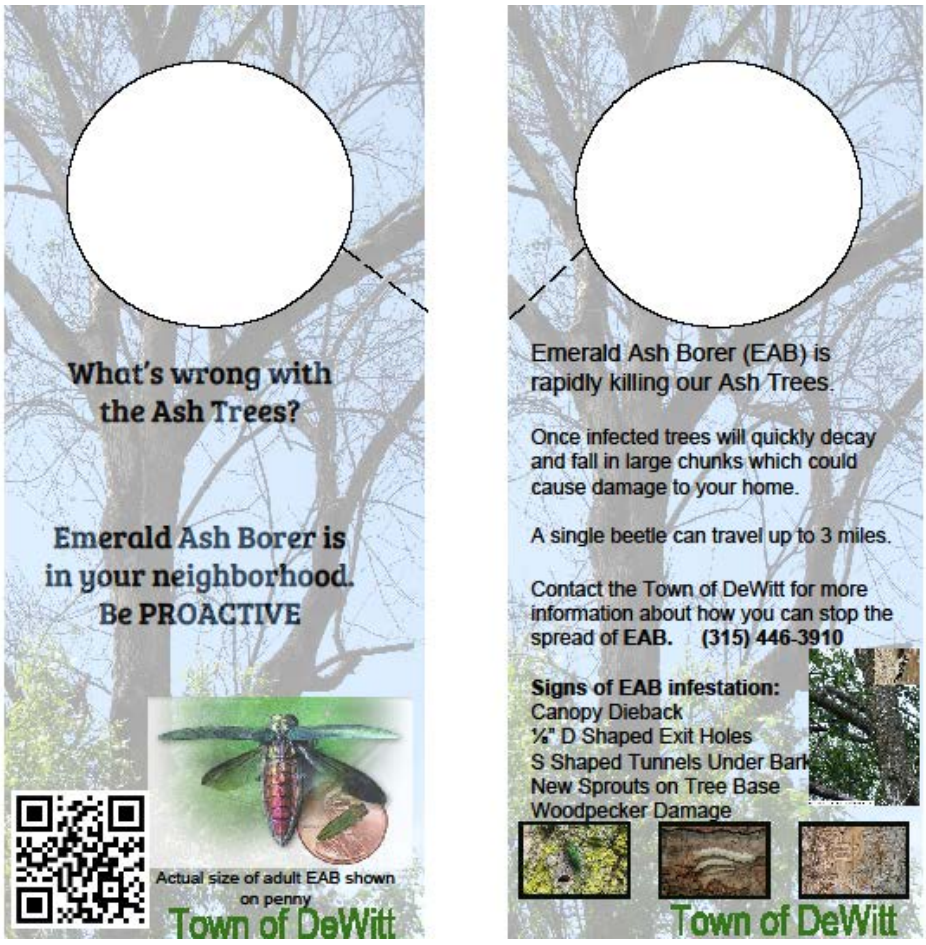


Figure 1: Door Hanger

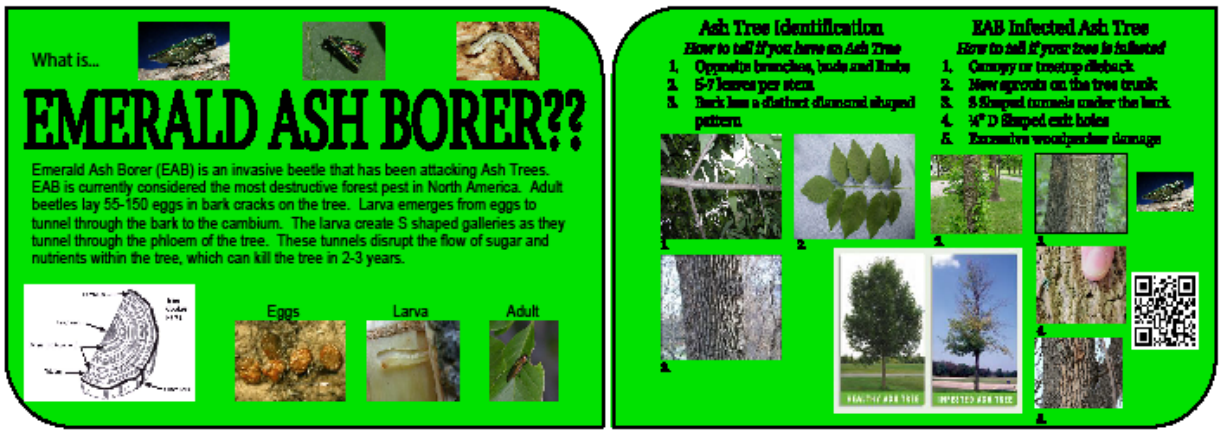


Figure 2: EAB Identification Card

Figure 3: Stephanie at Canal Day teaching about EAB

Figure 4: Mike Jones, ESF Grad student, teaching youngsters about EAB

Emerald Ash Borer Monitoring in Progress

This is an Ash Tree

Common characteristics include:

- Opposite leaves and branches
- Most have 5-9 leaflets per leaf
- Diamond shaped bark pattern

Purple Prism Trap

Telltale signs of Emerald Ash Borer

1. Tree top begins to die
2. New Sprouts begin to grow on the trunk
3. Excessive woodpecker damage
4. ¼ inch D shaped exit holes
5. S shaped tracks under the bark

1. 2. 3. 4. 5.

Figure 5: Ash tree monitoring explanation on 8 ½" x 11, hung at eye level

Emerald Ash Borer Monitoring in Progress

The Town of DeWitt is monitoring the movement of the Emerald Ash Borer.

The Emerald Ash Borer is an invasive beetle from Asia that is killing Ash Trees.

This is important because up to half of the trees in DeWitt are Ash Trees. This includes the trees in your yard.

Ash trees die within 5 years of infestation.

Ash trees rot quickly after dying which can cause property damage.

A Purple Prism Trap has been placed in this tree to attract and catch adult Emerald Ash Borer Beetles

For info or if you have questions about your trees contact:

- Cornell Cooperative Extension 315.424.9485
- Town of Dewitt 315.446.9250
- Smnick@syr.edu

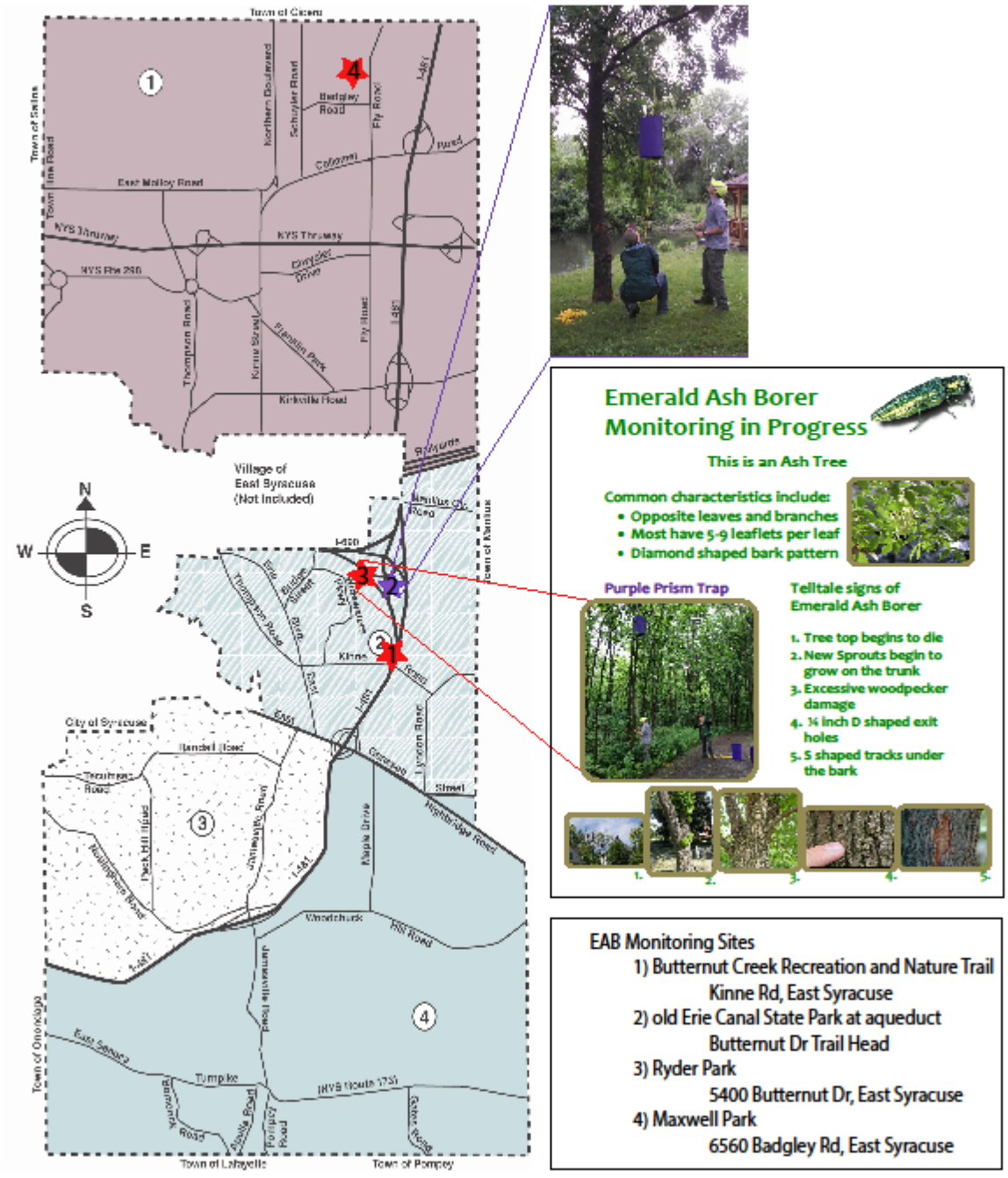


Figure 6: EAB Monitoring Sites

Figure 7: This ash tree in Ryder Park shows recent activity of a beaver. The tree had received injection in 2014

Invasive Pests Quickly Change Forests!

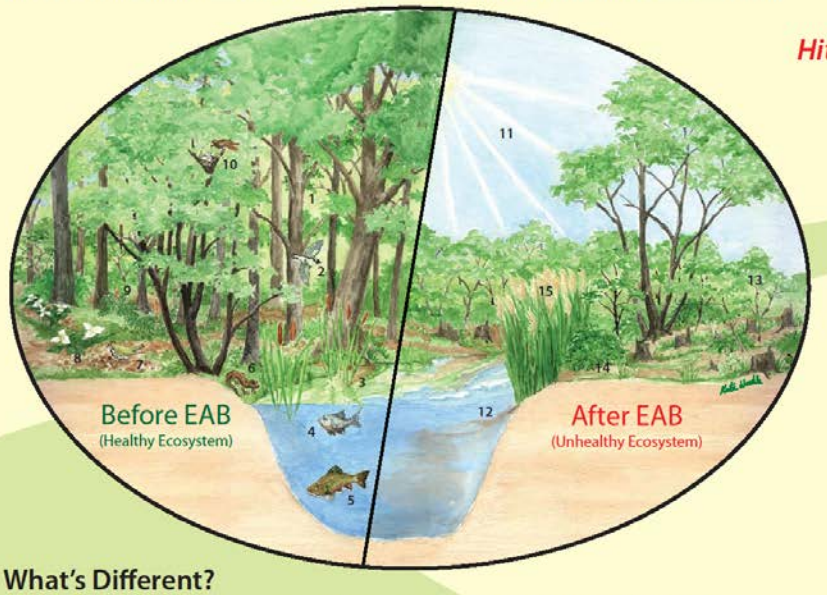
The invasive emerald ash borer (EAB) beetle has already killed the ash trees in this forest because the ash trees have not evolved defenses against these pests. Invasive insects like EAB spread very fast, hitching rides in firewood, nursery stock, and timber products. The rapid loss of trees impacts property values, freshwater fisheries, outdoor recreation, and the health of the ecosystem.

Did you know?

Controlling invasive species costs taxpayers millions of dollars each year.

Emerald Ash Borer

EAB actual size



Hitching a Ride

Stop the spread!
Buy firewood locally.

What's Different?

Before EAB shows a healthy ecosystem. Ash trees provide shade for woodland plants and animals. After EAB shows the rapid loss of tall, (up to 80 feet) mature, native trees like ash.

Did you spot all the differences?

These native plants and animals live in a healthy ecosystem:
1. Mature ash, 2. Black-throated blue warbler, 3. Cattails, 4. Bluegill, 5. Brook trout, 6. Dusky salamander, 7. Oven bird, 8. Trillium, 9. Cinnamon ferns, 10. Red-tailed hawks.

When shade trees are lost, these conditions are present:
11. Intense sunlight, 12. Soil erosion.
This allows invasive species to take over:
13. Buckthorn trees (10'–25' tall), 14. Barberry, 15. Common reed.

Check out the following institutions for more information:

DeWitt

FINGER LAKES PRISM
Partnership for Regional Invasive Species Management

FINGER LAKES INSTITUTE
HOBART AND WILLIAM SMITH COLLEGES

FOREST SERVICE U.S. DEPARTMENT OF AGRICULTURE

Cornell Cooperative Extension
Broome County

840 Upper Front Street
Binghamton, New York 13905-1500
t. 607.772.8953
f. 607.723.5951
w. ccebroomecounty.com

Project Summary for the 4-H Forest Pest Citizen Scientists project

During 2015 and early 2016 Cornell Cooperative Extension of Broome County conducted the 4-H Forest Pest Citizen Science Project. The project was designed to engage youth in a "real world" science and community service experience that addresses the impacts of invasive forest insect pests on community resources. Both emerald ash borer (EAB) and hemlock woolly adelgid (HWA) are now present in Broome County, and municipalities and other landowners will need to respond to the impacts these insects will cause. The tree inventories, maps and reports generated by this project will hopefully help landowners/managers understand the importance of tree inventories and preparedness planning.

Nineteen youth participated in the project received training about emerald ash borer and hemlock woolly adelgid, ash and hemlock tree identification, and how to conduct basic tree inventories. While some of the youth participating in the project had previous experience using GPS units, all participants in the tree inventory aspects of the project received field training on GPS units. Many of the youth also learned how to enter field data into EXCELL spreadsheets and see how the data is used to create the ArcGIS maps. A few youth are also using this project as a subject for a 4-H public speaking presentation they will be doing. Arrangements have been made with an outside printing service for the production of large display posters that will incorporate the site maps and other information about the project. The posters will displayed in public areas to help increase the project's public outreach efforts.

Tree inventories for ash and/or hemlock trees were completed at three locations for this project:

Otsiningo Park, a popular Broome County Park located near the City of Binghamton

Arnold Park, a Town of Vestal Park located in a rural setting

Floral Park Cemetery, a large private cemetery located in the Village of Johnson City

The managers of the parks and cemetery where the tree inventoried were conducted have been provided with site reports. The reports provide background information on EAB and HWA, a summary of the site visits and data collected, hardcopies of the Arc GIS maps, and links to the interactive ArcGIS maps. Electronic versions of these reports are included with this summary.

CCE-Broome County is also reaching out to local media contacts to share the results of this project. We hope this will help improve the public's awareness of the threat posed by non-native invasive insects, and highlight the valuable experience gained by our 4-H Citizen Scientists.

Site Report, Otsiningo Park, Broome County, NY

4-H Invasive Forest Pest Citizen Scientists Project, Cornell Cooperative Extension of Broome County

Prepared by Kevin Mathers, CCE Resource Educator, and Anne Glasgow, CCE Community Educator

Introduction

Two non-native insect pests that infest trees, the emerald ash borer (EAB) and the hemlock woolly adelgid (HWA), have recently become established in Broome County. These insect pests will eventually kill nearly all native ash and eastern hemlock trees that have not been treated with protective insecticides. Municipalities and other property owners need to understand the risks and management options for dealing with the impacts created by EAB and HWA.

In early 2015 Cooperative Extension of Broome County applied for and received a grant from the Finger Lakes Partnership for Regional Invasive Species Management (Finger Lakes PRISM). The grant funded a 4-H youth Citizen Science project that provided the youth with hands-on experience learning about invasive forest insect pests and using GPS units and geographic information systems. During the summer and fall of 2015 nineteen 4-H members participated in the project by gathering field data at three locations in Broome County and using the data to help create ArcGIS geospatial maps. Handheld GPS units and tree inventory sheets were used to document the location, health, and hazard potential of ash and hemlock trees at Arnold Park, Otsiningo Park, and Floral Park Cemetery. The information and maps generated by this project are intended to help communities and other property owners understand the value of conducting tree inventories, and encourage them to develop preparedness plans to address the negative impacts caused by these insect pests.

The remainder of this report is divided into the following sections: background information on EAB and HWA, a summary of the tree inventory/site conditions, information on the ArcGIS maps, a brief discussion of management options, and appendix.

Background on Emerald Ash Borer and Hemlock Woolly Adelgid

EAB was first detected in the U.S. in Michigan, and has since spread to a number of other states including New York where it was first detected in 2009. EAB infests and kills all native ash trees (Fraxinus spp.), including white, green and black ash. Thus far it has killed millions of ash trees in the U.S., and all of New York's native ash trees are at risk. In 2014 EAB was detected in Broome County for the first time on a detection trap (purple, prism-shaped trap) in the Town of Conklin. In 2015 the NYS DEC deployed numerous traps in Broome County, and reported finding EAB on traps at four locations: in the Towns of Conklin, Fenton, and Vestal; and the Village of Johnson City.

HWA has killed millions of eastern hemlock trees (Tsuga Canadensis) since it was first reported in the U.S. in Virginia. After becoming established in New York in 1985, HWA has slowly spread across the State, and was detected in Broome County in 2010 in the Town of Vestal. There are now reports of HWA infested hemlock trees in numerous locations in the County.

In order to respond to the threat posed by EAB and HWA municipalities and other landowners/managers need to understand the level of risk they face. An important early step in the planning process is a tree inventory that identifies the number and location of susceptible trees. Once that information is gathered landowners/managers can develop plans to address potential safety

hazards and aesthetic, ecological and economic impacts. Insecticide treatment can protect ash and hemlock trees from EAB and HWA, and many communities have decided to utilize insecticide treatments as part of their overall preparedness plans. There are numerous resources available to help municipalities and other landowners develop plans for responding to EAB/HWA including the New York State Department of Environmental Conservation (www.dec.ny.gov) and the New York Invasive Species Clearinghouse (www.nyis.info).

Summary of Otsiningo Park Tree Inventory

4-H youth and CCE-Broome County staff visited Otsiningo Park four times during the summer and early fall to inventory the park for ash and/or hemlock trees. Data collected during the inventory included tree location (GPS coordinates), size, health, and hazard potential. The inventory was conducted at the southern end of the park, roughly from the area where the maintenance building is located southward. Only trees that were located in developed areas of the park (maintained by regular mowing) were included in the inventory. During the inventory numerous ash trees were located, but no hemlock trees were found. Although only the developed areas of the park were surveyed, it was noted that numerous ash trees exist in the wooded areas of the park bordering the Chenango River.

75 ash trees (Fraxinus spp.) were found in the park, widely scattered, but often occurring as groups. The trees ranged in size from 5 to over 30 inches diameter at breast height (dbh), with the majority of trees over 15 inches dbh. Most of the park's ash trees are in good health, but a few did show significant signs of stress. Many of the ash trees were located in potentially hazardous locations, near park roads, trails, or picnic tables. If (or when) necessary most of the trees could be removed without the use of a bucket truck utilizing directional felling by a skilled chainsaw operator.

ArcGIS Map Information

ArcGIS Map Information

The tree inventory data was entered in EXCELL spreadsheets by 4-H youth, and the spread sheets were then used to create an ArcGIS geospatial map. A hardcopy of the map is attached to this report. The on-line link to the ArcGIS map is: http://arcg.is/20VesGe All ash trees are identified with a red dot on the map and a corresponding number. Left clicking on a dot will bring up a data box that provides the tree ID number, site name, latitude/longitude, tree measurement (diameter at breast height, dbh), condition, and hazard potential. The tree numbers also correspond to information on the print outs of the EXCELL files that are attached to this report. The numbers assigned for tree condition ranking are: 1. Good, 2. Fair, 3. Poor. These were determined by quick visual inspection that included looking for signs of branch dieback, decay, and loose bark.

Management Options

Any ash trees in poor health could be removed preemptively because it is safer to remove trees before they die and become brittle. This will also leave fewer trees to remove once EAB infests trees at the Park. The County may want to consider protecting some of the ash trees at Otsiningo Park and other County parks/facilities with insecticides. Insecticide treatment costs for EAB are significant, but many communities are electing to protect some of their larger, healthy ash trees to help mitigate some of the negative impacts caused by EAB. An excellent resource about insecticide treatment for EAB, *Insecticide Options for Protecting Ash Trees from Emerald Ash Borer*, can be found at: http://www.emeraldashborer.info/

Although no hemlock trees were found during the inventory at Otsiningo Park, other County Parks contain numerous hemlock trees. Hemlock trees in NY State Parks and other natural areas have been treated with insecticides to protect them from HWA. In 2015 a large number of Hemlock trees at the IBM Glen and Ross Park Zoo were treated for HWA. A resource that explains options for insecticide treatments for HWA can be found at: http://blogs.cornell.edu/foresthealth/insecticide-treatment-for-hwa/

Site Report, Arnold Park, Town of Vestal, NY

4-H Invasive Forest Pest Citizen Scientists Project, Cornell Cooperative Extension of Broome County

Prepared by Kevin Mathers, CCE Resource Educator, and Anne Glasgow, CCE Community Educator

Introduction

Two non-native insect pests that infest trees, the emerald ash borer (EAB) and the hemlock woolly adelgid (HWA), have recently become established in Broome County. These insect pests will eventually kill nearly all native ash and eastern hemlock trees that have not been treated with protective insecticides. Municipalities and other property owners need to understand the risks and management options for dealing with the impacts created by EAB and HWA.

In early 2015 Cooperative Extension of Broome County applied for and received a grant from the Finger Lakes Partnership for Regional Invasive Species Management (Finger Lakes PRISM). The grant funded a 4-H youth Citizen Science project that provided the youth with hands-on experience learning about invasive forest insect pests and using GPS units and geographic information systems. During the summer and fall of 2015 nineteen 4-H members participated in the project by gathering field data at three locations in Broome County and using the data to help create ArcGIS geospatial maps. Handheld GPS units and tree inventory sheets were used to document the location, health, and hazard potential of ash and hemlock trees at Arnold Park, Otsiningo Park, and Floral Park Cemetery. The information and maps generated by this project are intended to help communities and other property owners understand the value of conducting tree inventories, and encourage them to develop preparedness plans to address the negative impacts caused by these insect pests.

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HWA has killed millions of eastern hemlock trees (Tsuga Canadensis) since it was first reported in the U.S. in Virginia. After becoming established in New York in 1985, HWA has slowly spread across the State, and was detected in Broome County in 2010 in the Town of Vestal. There are now reports of HWA infested hemlock trees in numerous locations in the County.

In order to respond to the threat posed by EAB and HWA municipalities and other landowners/managers need to understand the level of risk they face. An important early step in the

planning process is a tree inventory that identifies the number and location of susceptible trees. Once that information is gathered landowners/managers can develop plans to address potential safety hazards and aesthetic, ecological and economic impacts. Insecticide treatment can protect ash and hemlock trees from EAB and HWA, and many communities have decided to utilize insecticide treatments as part of their overall preparedness plans. There are numerous resources available to help municipalities and other landowners develop plans for responding to EAB/HWA including the New York State Department of Environmental Conservation (www.dec.ny.gov) and the New York Invasive Species Clearinghouse (www.nyis.info).

Summary of Tree Inventory

On July 30, 2015 CCE-Broome County staff and 4-H youth visited Arnold Park in the Town of Vestal to inventory ash and hemlock trees in the developed areas of the park. Data including the location (GPS coordinates), size, relative health, and hazard potential of the ash trees were recorded during the field visit. Only trees that were in developed locations (situated in or surrounded by mowed areas) were inventoried. Only ash trees were found in the developed areas, although both ash and hemlock trees are found in the adjacent natural areas of the park. There were no confirmable indications of EAB infestations in the park's ash trees, nor were infestations of HWA noted on a few hemlock trees that were examined near the nature trail.

In the portion of the park east of Andrews Road, where the play area is located, 13 ash trees were found, and nearly all of these trees were white ash (Fraxinus americana). These ash trees were fairly evenly distributed in this area, and ranged in size from 6 to 27 inches diameter at breast height (dbh). Most of the trees appeared reasonably healthy, but a few were in poor health. The soils in this area of the park are somewhat poorly drained, and white ash frequently struggle on sites that are wet. Some of the trees were located in potentially hazardous locations, near park roads, utility lines or other infrastructure.

In the ballfield area west of Andrews Road there is a row of 13 green ash trees (Fraxinus pennsylvanica). These trees ranged in size from 5 to 13 inches diameter at breast height (dbh). Most of these the trees appeared to be in good health, but almost all did have bark wounds (from mowing) that may lead to decay issues in the future.

ArcGIS Map Information

The tree inventory data was entered in EXCELL spreadsheets by 4-H youth, and the spread sheets were then used to create an ArcGIS geospatial map. A hardcopy of the map is attached to this report. The on-line link to the ArcGIS map is: http://arcg.is/20VdR7w All trees are identified with a red dot on the map and a corresponding number. Left clicking on a dot will bring up a data box that provides the tree ID number, site name, latitude/longitude, tree measurement (diameter at breast height, dbh), condition, and hazard potential. The tree numbers also correspond to information on the print outs of the EXCELL files that are attached to this report. The numbers assigned for tree condition ranking are: 1. Good, 2. Fair, 3. Poor. These were determined by quick visual inspection that included looking for signs of branch dieback, decay, and loose bark.

Management Options

Any ash trees in poor health could be removed preemptively because it is safer to remove trees before they die and become brittle. This will also leave less trees to remove once EAB infests trees at the Park. The Town may want to consider protecting some of the ash trees at Arnold Park and other Town parks with insecticides. As noted above, many communities are electing to protect larger, healthy ash trees with insecticides to help mitigate some of the negative impacts caused by EAB. This reduces the visual impact and spreads the costs of removing large numbers of trees over longer time frame. An excellent resource about insecticide treatment for EAB, Insecticide Options for Protecting Ash Trees from Emerald Ash Borer, can be found at: http://www.emeraldashborer.info/

The Town may also want to consider treating some of the hemlock trees in its parks with insecticides to protect them from HWA. Although no hemlock trees were found in the developed areas of Arnold Park, some were found during a quick inspection of a portion of the nature trail. In 2015 a large number of Hemlock trees at the IBM Glen and Ross Park Zoo were recently treated for HWA. A resource that explains options for insecticide treatments for HWA can be found at: http://blogs.cornell.edu/foresthealth/insecticide-treatment-for-hwa/

Site Report, Floral Park Cemetery, Johnson City, NY

4-H Invasive Forest Pest Citizen Scientists Project, Cornell Cooperative Extension of Broome County

Prepared by Kevin Mathers, CCE Resource Educator, and Anne Glasgow, CCE Community Educator

Introduction

Two non-native insect pests that infest trees, the emerald ash borer (EAB) and the hemlock woolly adelgid (HWA), have recently become established in Broome County. These insect pests will eventually kill nearly all native ash and eastern hemlock trees that have not been treated with protective insecticides. Municipalities and other property owners need to understand the risks and management options for dealing with the impacts created by EAB and HWA.

In early 2015 Cooperative Extension of Broome County applied for and received a grant from the Finger Lakes Partnership for Regional Invasive Species Management (Finger Lakes PRISM). The grant funded a 4-H youth Citizen Science project that provided the youth with hands-on experience learning about invasive forest insect pests and using GPS units and geographic information systems. During the summer and fall of 2015 nineteen 4-H members participated in the project by gathering field data at three locations in Broome County and using the data to help create ArcGIS geospatial maps. Handheld GPS units and tree inventory sheets were used to document the location, health, and hazard potential of ash and hemlock trees at Arnold Park, Otsiningo Park, and Floral Park Cemetery. The information and maps generated by this project are intended to help communities and other property owners understand the value of conducting tree inventories, and encourage them to develop preparedness plans to address the negative impacts caused by these insect pests.

The remainder of this report is divided into the following sections: background information on EAB and HWA, a summary of the tree inventory/site conditions, information on the ArcGIS maps, a brief discussion of management options, and appendix.

Background on Emerald Ash Borer and Hemlock Woolly Adelgid

EAB was first detected in the U.S. in Michigan, and has since spread to a number of other states including New York where it was first detected in 2009. EAB infests and kills all native ash trees (Fraxinus spp.), including white, green and black ash. Thus far It has killed millions of ash trees in the U.S., and all of New York's native ash trees are at risk. In 2014 EAB was detected in Broome County for the first time on a detection trap (purple, prism-shaped trap) in the Town of Conklin. In 2015 the NYS DEC deployed numerous traps in Broome County, and reported finding EAB on traps at four locations: in the Towns of Conklin, Fenton, and Vestal; and the Village of Johnson City.

HWA has killed millions of eastern hemlock trees (Tsuga Canadensis) since it was first reported in the U.S. in Virginia. After becoming established in New York in 1985, HWA has slowly spread across the State, and was detected in Broome County in 2010 in the Town of Vestal. There are now reports of HWA infested hemlock trees in numerous locations in the County.

In order to respond to the threat posed by EAB and HWA municipalities and other landowners/managers need to understand the level of risk they face. An important early step in the planning process is a tree inventory that identifies the number and location of susceptible trees. Once that information is gathered landowners/managers can develop plans to address potential safety

hazards and aesthetic, ecological and economic impacts. Insecticide treatment can protect ash and hemlock trees from EAB and HWA, and many communities have decided to utilize insecticide treatments as part of their overall preparedness plans. There are numerous resources available to help municipalities and other landowners develop plans for responding to EAB/HWA including the New York State Department of Environmental Conservation (www.dec.ny.gov) and the New York Invasive Species Clearinghouse (www.nyis.info).

Summary of Tree Inventory

Cornell Cooperative Extension staff and eight 4-H members visited Floral Park Cemetery in Johnson City on October 1 and 8, 2015 to inventory hemlock and ash trees. Data including the location (GPS coordinates), size, health, and hazard potential of the trees were recorded during the inventory. The survey was restricted to the developed portion of the cemetery only. The wooded areas on the south and west sides of the cemetery were not surveyed. Twenty hemlock trees and 3 ash trees were identified on the cemetery property. The hemlock trees were distributed across the park with the highest concentration in section K where a row of trees was located behind a mausoleum. The 3 ash trees were located in section N, all in close proximity. The ash trees did not show any obvious signs of EAB infestation, but all the hemlock trees were infested with HWA, and many appeared to have been infested for several years. Nearly all the trees were located near grave sites, and in some cases also near roads.

ArcGIS Map Information

ArcGIS Map Information

The tree inventory data was entered in EXCELL spreadsheets by 4-H youth, and the spread sheets were then used to create an ArcGIS geospatial map. A hardcopy of the map is attached to this report. The on-line link to the ArcGIS map is: http://arcg.is/20Ve7TT Hemlock trees are identified with a blue dot and ash trees with a red dot on the map. Left clicking on a dot will bring up a data box that provides the tree ID number, site name, latitude/longitude, tree measurement (diameter at breast height, dbh), condition, and hazard potential. The tree numbers also correspond to information on the print outs of the EXCELL files that are attached to this report. The numbers assigned for tree condition ranking are: 1. Good, 2. Fair, 3. Poor. These were determined by quick visual inspection that included looking for signs of branch dieback, decay, and loose bark.

Management Options

The hemlock trees in this cemetery are already infested with HWA infestation, and most of them appear to have been infested for a number of years. There are two options for addressing this situation, treat the trees with insecticides, or remove them (either prior to or after they die). Some of the hemlock trees are fairly small, and thus would be relatively easy to remove. The large trees will most likely require a bucket truck or a skilled tree arborist. Since the hemlock trees at the cemetery are already showing signs of stress from the infestations they will need treatment soon before they suffer irreversible decline. Treating the larger trees may be less expensive than removing them, even if the

cost of repeated insecticide treatments over a fairly long time frame are factored in. A resource that explains options for insecticide treatments for HWA can be found at: http://blogs.cornell.edu/foresthealth/insecticide-treatment-for-hwa/

The three ash trees in the cemetery could be protected with insecticides, but they are not large and are in a location that would make removal relatively simple. The cost of treating these trees with insecticides could be evaluated in the context of how much it would cost to remove them. An excellent resource about insecticide treatment for EAB, *Insecticide Options for Protecting Ash Trees from Emerald Ash Borer*, can be found at: http://www.emeraldashborer.info/

Final Report

Managing Invasive Plants to Facilitate Forest Regeneration at Island Cottage Woods Preserve

Project Leader
Kevin Farrell
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kfarrell@geneseelandtrust.org

Collaborators
Lorna Wright
Genesee Land Trust
46 Prince Street, Suite LL005
Rochester, NY 14607
(585) 256-2130
lwright@geneseelandtrust.org

June Summers
Genesee Valley Audubon Society
P.O. Box 15512
Rochester, NY 14615
summers@frontiernet.net

Amount Approved: $4,900.00
Actual Costs: $4,899.81

Final Report: Managing Invasive Plants to Facilitate Forest Regeneration at Island Cottage Woods Preserve

Since the submission of our Initial Progress Report on May 27th, 2015 we have been moving along with our restoration objectives at Island Cottage Woods Preserve in Greece, NY. The majority of the funding we were granted from FL-PRISM was budgeted for contractor services. After meeting with three different contractors that provide woody invasive species management, we selected Jim Engel from White Oak Nursery in Canandaigua to perform the work based on price, familiarity working with him in the past and his knowledge of invasive plants. Jim began work on the initial 7.4 acre restoration area on July 21st. After completing this area, we were able to expand the restoration area and treat an additional 3.5 acres by the end of July. On October 30th, Jim conducted follow-up treatment of the entire 10.9 acres to target any missed individuals and any regrowth. At this time of year, most of the native vegetation had dropped its leaves making it easier to find invasive shrubs. With the remaining funds, Jim came back to the site for a final visit on December 4th and treated 4.1 acres located north of the original restoration area, targeting edges and patches of invasives that get more sunlight and produce more fruit. In total, we were able to treat 15 acres of invasive plants at the Preserve.

Earlier in the year on April 26th, Genesee Land Trust and Genesee Valley Audubon Society hosted over 20 SUNY Brockport students for a tree planting event. With funding from Audubon New York, the groups were able to plant over 80 native saplings including swamp white oak, bur oak, nannyberry, hackberry, serviceberry and American hornbeam. All of these trees were planted in the initial 10.9 acre restoration area. On October 15th, with assistance from additional students from SUNY Brockport, 40 of these trees were monitored. Out of the 40 that were monitored, 36 were successfully planted and thriving (90%); thanks in part to the invasive plant management made possible by FL-PRISM. Recently, Genesee Land Trust has been selected for funding by the U.S. Forest Service through the Great Lake Restoration Initiative program to continue these efforts at Island Cottage Woods. This spring, we will begin planting 520 trees out of a total of 2,580 over the next two years.

With regard to the project budget, two additional trips to the site were required than initially budgeted (3 trips budgeted-$41.25, 5 trips actual-$68.75) and the cost of public notice in the Greece Messenger Post was higher than initially budgeted ($100 budgeted, $116.59 actual). Kevin Farrell spend an additional 1.75 hours on the project (16 hours budgeted, 17.75 hours actual) but Lorna Wright spent less time than anticipated (8 hours budgeted, 5.75 hours actual). In-kind match was provided for this project through staff and volunteer time to plant and monitor trees within the restoration area.

Final Invoices, FL-PRISM 2015-6 (New York State DEC Prime Award C006866)

	Budgeted Costs	Actual Costs	Costs Covered by Grant
Contractor Services from White Oak Nursery			
July 21st, 22nd and 23rd- 7.4 acres cutting and herbicide treatment & 3.5 acres cutting and herbicide treatment		$ 2,600.00	$ 2,600.00
October 30th- 10.9 acres follow-up/foliar treatment		$ 475.00	$ 475.00
December 4th- 4.1 acres cutting and herbicide treatment		$ 500.00	$ 500.00
	$ 3,600.00	$ 3,575.00	$ 3,575.00
Office Support			
NYS DEC Freshwater Wetlands Permit Application Fee	$ 200.00	$ 200.00	$ 200.00
Public Notice for Permit, Messenger Post Newspapers	$ 100.00	$ 116.59	$ 116.59
	$ 300.00	$ 316.59	$ 316.59
Salary			
Kevin Farrell (2 days, $143/day)	$ 286.00	$ 317.29	$ 317.29
Plus fringe benefits ($33.42 per diem calculation)	$ 33.42	$ 37.08	$ 37.08
Lorna Wright (1 day, $170.35/day)	$ 170.35	$ 122.42	$ 122.42
Plus fringe benefits ($23.91 per diem calculation)	$ 23.91	$ 17.19	$ 17.19
	$ 513.68	$ 493.98	$ 459.03
Travel			
3 trips to the site (25 miles, $.55/ mile)	$ 41.25	$ 68.75	$ 68.75
	$ 41.25	$ 68.75	$ 68.75
Indirect Costs			
de minimus rate of 10%	$ 445.49	$ 445.49	$ 445.49
Totals	$ 4,900.00	$ 4,899.81	$4,899.81

WHITE OAK NURSERY

801 W. Washington St.
Geneva NY 14456
(315) 789-3509 fax None

Invoice No. 724150019

INVOICE

Customer

Name	Genesee Land Trust				
Address	46 prince St, Suite LLoo5				
City	Rochester	State	NY	ZIP	14607
Phone	585 256-2130				

Date	7/24/2015
Order No.	
Rep	
FOB	

Qty	Description	Unit Price	TOTAL
	Control invasive plants at Island Cottage Woods		
1	Treat invasives on 7.4 acres 7/21, 7/22, 7/23	$1,800.00	$1,800.00
1	Treat invasives on 3.5 acres 7/23	$800.00	$800.00

SubTotal		$2,600.00
Shipping & Handling		
Taxes	7.500%	$0.00
TOTAL		$2,600.00

Payment Details

- ○ Cash
- ○ Check

Office Use Only

Send check payable to James Engel
to 801 W. Washington St.
Geneva, NY 14456

FALSE

Invoice

WHITE OAK NURSERY

801 W. Washington St.
Geneva NY 14456
(315) 789-3509 fax None

Invoice No. 724150019

INVOICE

Customer

Name	Genesee Land Trust				
Address	46 prince St, Suite LL005				
City	Rochester	State	NY	ZIP	14607
Phone	585 256-2130				

Date	10/4/2015
Order No.	
Rep	
FOB	

Qty	Description	Unit Price	TOTAL
	Control invasive plants at Island Cottage Woods		
8.5	Treat invasives on 7.4 acres 9/30	$50.00	$425.00
2	Travel time 2 hours	$25.00	$50.00

SubTotal		$475.00
Shipping & Handling		
Taxes	7.500%	$0.00
TOTAL		$475.00

Payment Details

- ○ Cash
- ○ Check

Office Use Only

Send check payable to James Engel
to 801 W. Washington St.
Geneva, NY 14456

FALSE

Invoice

WHITE OAK NURSERY

801 W. Washington St.
Geneva NY 14456
(315) 789-3509 fax None

Invoice No. 124150017

INVOICE

Customer

Name	Genesee Land Trust				
Address	46 prince St, Suite LL005				
City	Rochester	State	NY	ZIP	14607
Phone	585 256-2130				

Date	12/4/2015
Order No.	
Rep	
FOB	

Qty	Description	Unit Price	TOTAL
	Control invasive plants at Island Cottage Woods		
10	Treat invasives on 4.1 acres 12/4	$50.00	$500.00

SubTotal		$500.00
Shipping & Handling		
Taxes	7.500%	$0.00
TOTAL		$500.00

Payment Details

- ○ Cash
- ○ Check

Office Use Only

Send check payable to James Engel
to 801 W. Washington St.
Geneva, NY 14456

FALSE

Invoice

New York State Department of Environmental Conservation
Environmental Permits, Region 8
6274 East Avon-Lima Rd, Avon NY 14414-9516
Phone: (585) 226-5400 • **Fax:** (585) 226-2830
Website: www.dec.ny.gov

Joe Martens
Commissioner

NOTICE TO ALL DEC PERMIT APPLICANTS REGARDING NEW PERMIT APPLICATION FEES FOR FRESHWATER WETLANDS PERMITS EFFECTIVE APRIL 1, 2009

Please be advised that the NYS Legislature passed legislation amending Section 70-0117 of the Environmental Conservation Law (Uniform Procedures) to require application fees for certain regulated activities requiring a permit from the Department. Any applications received on or after April 1, 2009 will be subject to the following fee schedule for each application, as applicable, before the Department can issue a permit decision.

Freshwater Wetlands Permits (ECL Article 24)

Minor projects (go to http://www.dec.ny.gov/permits/6275.html) $50
Modifications to Permits $50
Residential projects defined as associated with one single family dwelling and customary appurtenances thereto $50
Multiple family dwellings and customary appurtenances thereto $100
Other projects $200

No cash or credit cards may be used for payment at this time. Only checks or money orders will be accepted, made payable to the New York State Department of Environmental Conservation (NYSDEC). The cancelled check will be your receipt. There are no provisions for partial or full refund once you file an application, regardless of project changes or permit decision. If you have any questions regarding these requirements, please contact the DEC Region 8 Division of Environmental Permits at 585-226-5400. Thank you for your cooperation.

PLEASE DETACH AT DOTTED LINE & RETURN WITH YOUR CHECK OR MONEY ORDER PAYABLE TO "NYSDEC". MAIL FORM AND REQUIRED PAYMENT TO:

NYSDEC - DEP
ATTN: SARAH WHEELER
6274 E. AVON-LIMA RD
AVON, NY 14414

DEC ID #: 8-2628-00759/00003

ALIAS CODE: R702

REQUIRED FEE AMOUNT: $ 200.00

DEC ANALYST: Haley

CHECK NUMBER: _____ PAID BY: _____

Classified Advertising Invoice

Messenger Post Newspapers
73 BUFFALO ST
CANANDAIGUA, NY 14424-1085
Phone: (585) 394-0770
Fax: (585) 394-6837

14

GENESEE LAND TRUST *LE*
KEVIN FARRELL
46 PRINCE ST
SUITE LLOO5
ROCHESTER, NY 14607

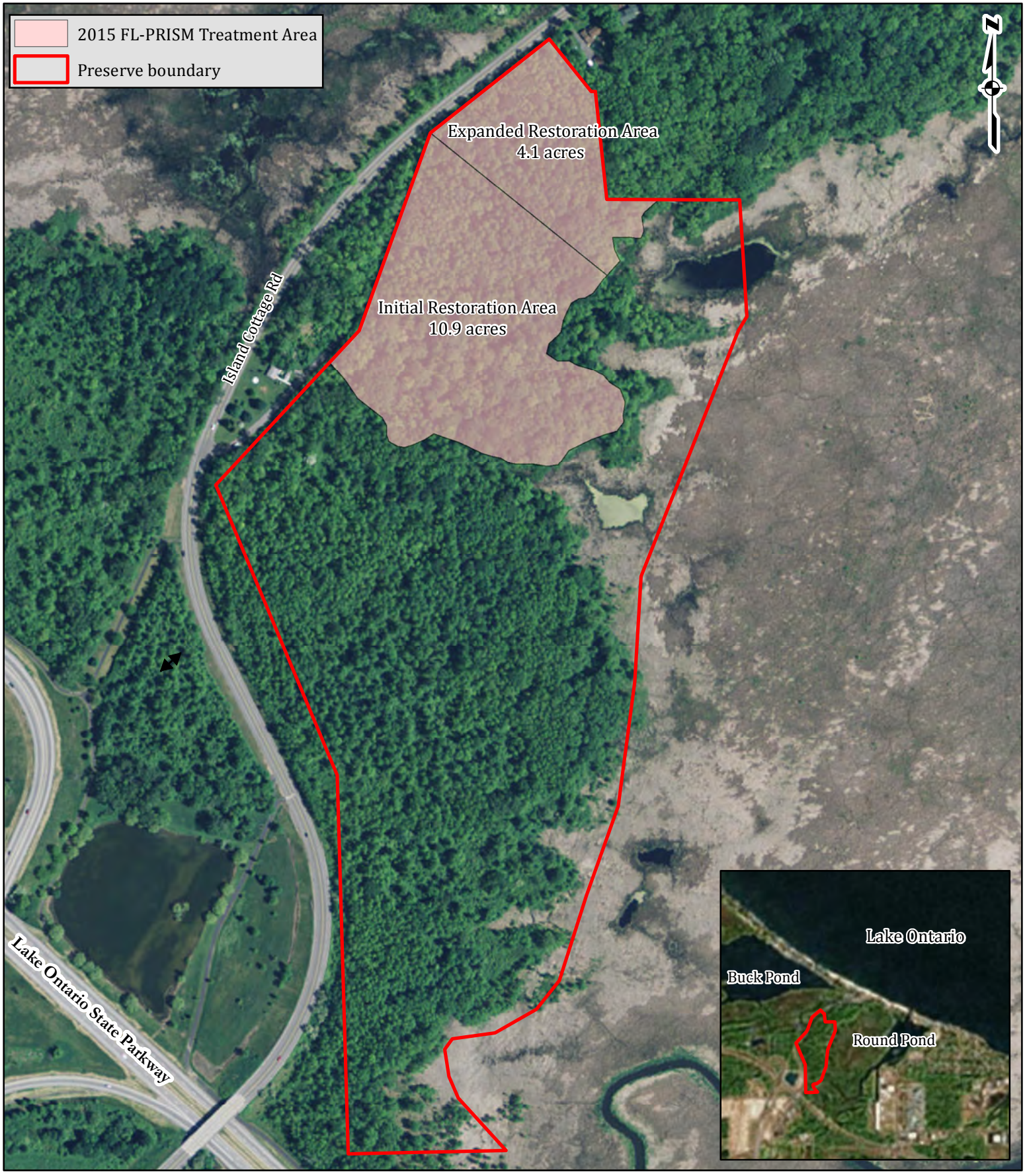
Cust#: 02103339-000
Phone: (585)256-2130
Date: 06/18/15
Due Date: 07/28/15

Ad#	Text	Start	Stop	Days	Amount	Prepaid	Due
02549327-001	02549327 dec	06/18/15	06/18/15	1	116.59	0.00	116.59

Please return a copy with payment **Total Due** **116.59**

FL-PRISM Treatment Area- Island Cottage Woods Preserve

61 acres | Greece, NY



All locations are approximate.
Map created 12/16/2015

0 500 1,000 Feet

ESRI Technology CONSERVATION

Genesee Land Trust preserve. protect.

7-23-2015

7-23-2015


7-28-2015

7-23-2015

7-23-2015

8-4-2015

8-4-2015

Cayuga Hydrilla Project
FL-PRISM 2015 Grant
Final Technical Report

Background/Problem Statement:
The Cayuga Lake Watershed Hydrilla Project is an ongoing, comprehensive management project to address hydrilla infestations within the Cayuga Lake Watershed (Ithaca, NY). Overseen by the Hydrilla Task Force of the Cayuga Lake Watershed (HTF), Project efforts were first initiated in late 2011 following the discovery of the highly invasive hydrilla plant in Cayuga Inlet. Herbicide and physical management activities have been implemented from 2011 – 2015, and will continue in 2016 and beyond.

Through Project initiatives, the HTF, consultants, and stakeholders have actively managed and eradicated hydrilla in:

- Approximately 100-acres of Cayuga Inlet (and connecting tributaries of Six Mile Creek, Linderman Creek, and Cascadilla Creek)
- Approximately 25-acres of Fall Creek
- Approximately 30-acres in the southeast corner of Cayuga Lake

Management has been accomplished through the use of contact (endothall) and systemic (fluridone) herbicides within the treatment zones (note above). Additional management strategies have included small-scale physical removal (by hand) and the installation of benthic barriers in 2013 and 2014 to prevent further hydrilla growth and spread in the southern end of Cayuga Lake.

From these efforts, the HTF has observed great progress since Project initiation in 2011. Incredible reductions in overall hydrilla biomass and tuber populations in Cayuga Inlet have been observed. In summer 2013, the Project area was expanded to include the adjacent Fall Creek tributary and the southeast corner of Cayuga Lake, following the discovery of satellite hydrilla infestations. Similar management strategies and approaches will be utilized in Fall Creek and southern Cayuga Lake to transition the same success observed in the Inlet to these new treatment areas. The HTF has already observed positive results from treatments, and a reduction in the overall hydrilla population in Fall Creek. With that said, the presence of remaining small-scale infestations will require that active management and eradication activities continue in 2016 and beyond.

In conjunction with ongoing hydrilla management/eradication activities, extensive plant community and hydrilla tuber monitoring and sampling efforts are conducted each season. These monitoring activities are overseen and conducted by Racine-Johnson Aquatic Ecologists (RJAE. Project contractor). For the Project, a total of approximately 800+ acres of Cayuga Inlet (incl. tributaries), Fall Creek, and the southern end of Cayuga Lake were monitored in 2015 (**See Figure 1, below**). A primary goal of extensive monitoring activities is the Early Detection of hydrilla, which involves monitoring for new populations and potential spread. The HTF is also interested in monitoring for potential non-target impacts to the native plant community.

As part of the ongoing Cayuga Hydrilla Project, funding provided through the FL-PRISM in 2015 ($5,000) was utilized to cover a portion of the extensive hydrilla/plant community monitoring in southern Cayuga Lake. Under FL-PRISM funding provided in 2015, monitoring and sampling activities surveyed the shallow southern shelf of Cayuga Lake, including areas of historical hydrilla patches in the southeast corner of the Lake. The goal of this monitoring was the Early Detection of hydrilla (presence/absence) outside of the current treatment zones, and the determination of overall plant community composition. These activities will provide the greatest opportunity for Early Detection of isolated hydrilla patches, which will inform the rapid management response of the HTF.

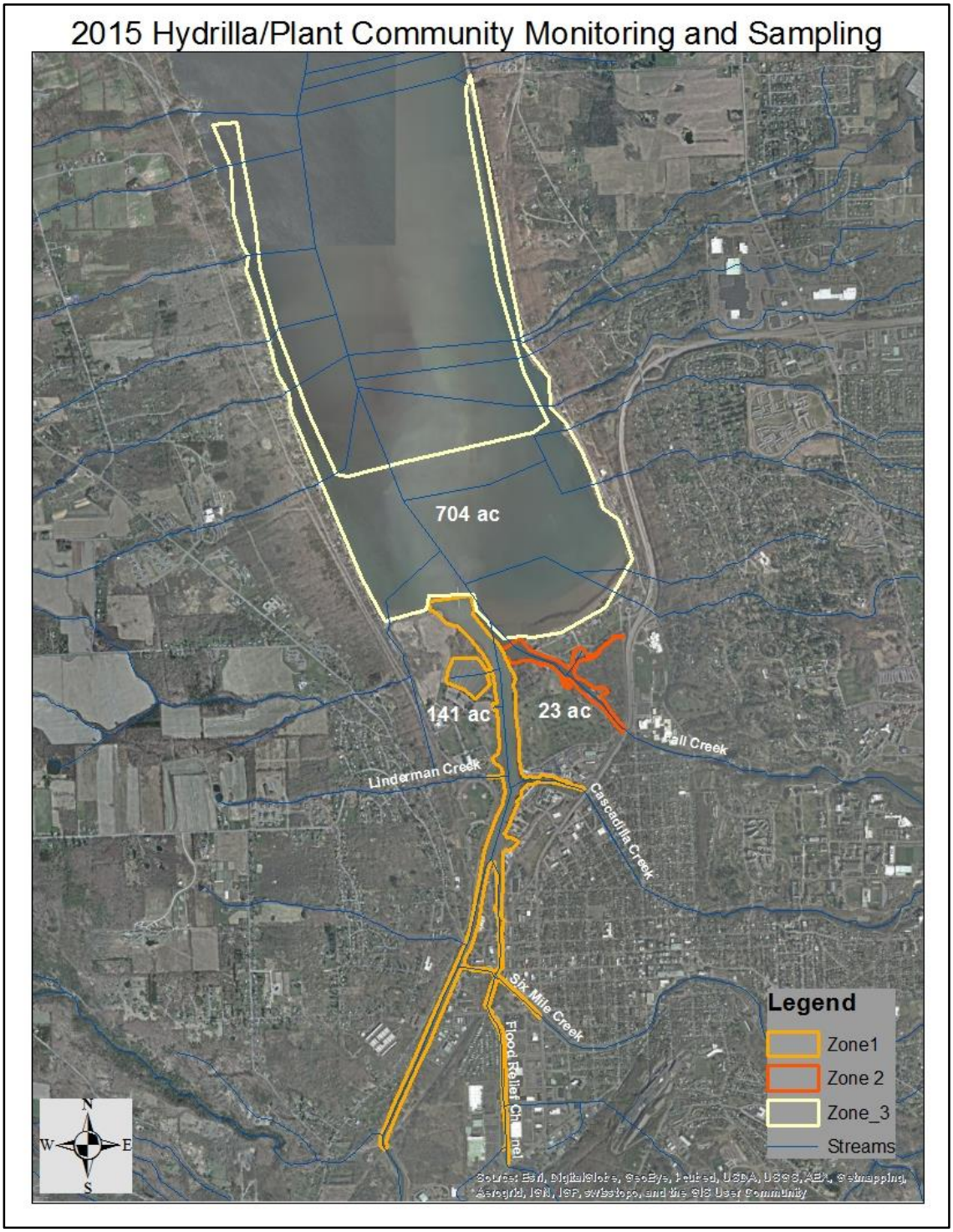


Figure 1: *Map of 2015 Hydrilla/Plant Community Monitoring Zones*

Methods:

Plant community monitoring took place in the shallow southern shelf of Cayuga Lake (western to eastern shoreline, and extending north from the southern shoreline), and in the Cayuga Inlet and Fall Creek treatment zones (including adjacent tributaries of Six Mile Creek, Linderman Creek, and Cascadilla Creek).

Monitoring was conducted by qualified scientists and crewmembers of Racine-Johnson Aquatic Ecologists, using standard aquatic plant measures. Both 25 x 25 meter and 50 x 50 meter grids were used to determine sampling points using the point-intercept method while recording GPS coordinates. Two (2) separate rake-toss samples were conducted at each sampling point from a pontoon boat. Metrics collected included: plant species presence, composition, abundance, and GPS locations following time-tested methodology commonly used to

evaluate management efficacy. Native and rare plant presence and abundance were a part of this monitoring as well. Most importantly, measures of hydrilla status (present/absent, dead, alive, re-growth, roots, tubers, turions) were quantified after each survey to determine infestation density and the need for possible management options (if present).

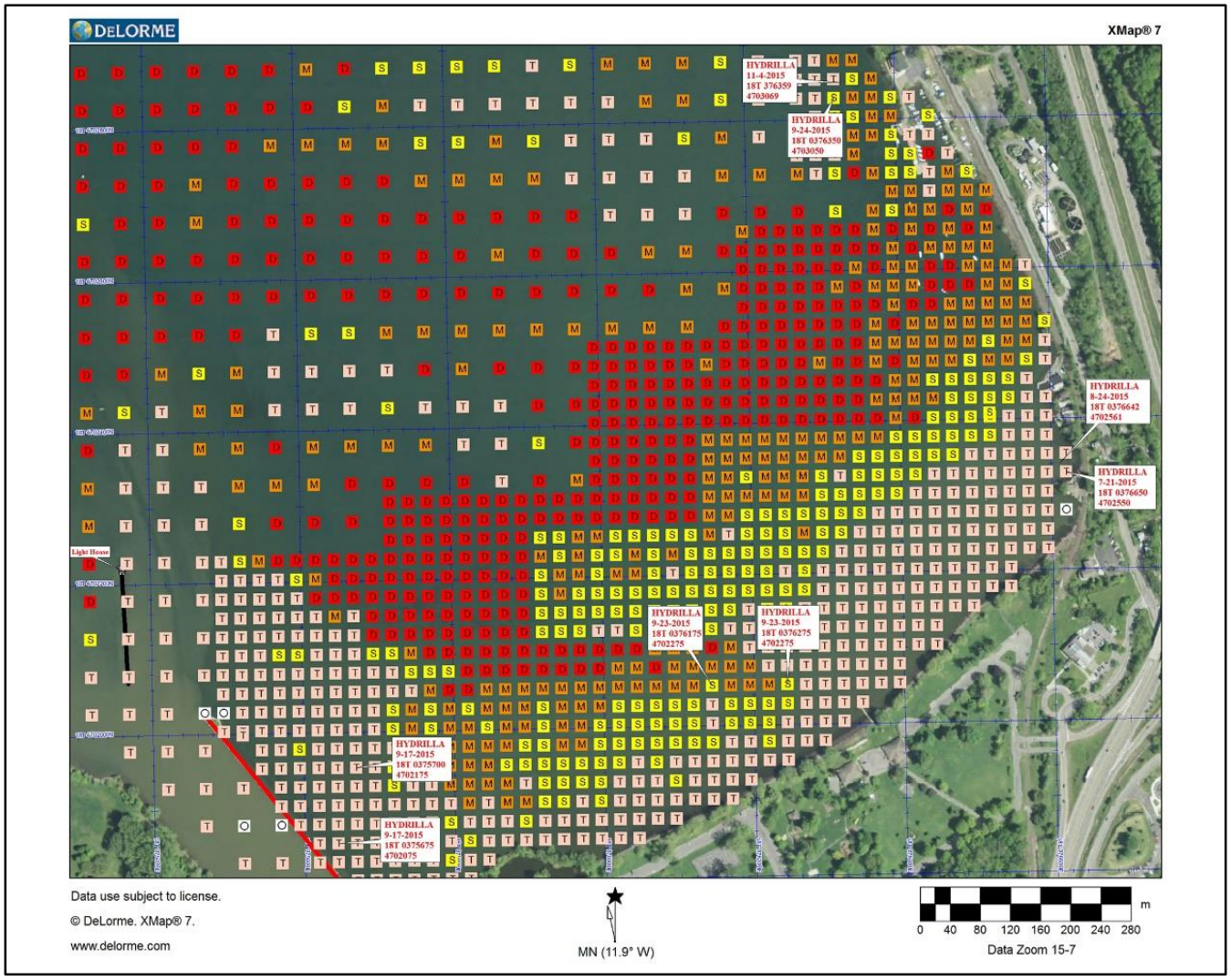


Figure 2: *Monitoring Locations in Southern Cayuga Lake for 2015. Colored squares represent plant community abundance (Trace =Pink, Sparse = Yellow, Moderate = Orange, and Dense = Red). Hydrilla finds denoted with White Text Boxes and Arrow.*

Both light and temperature have been the leading environmental factors indicated as the triggers for hydrilla germination and emergence from the sediment. The monitoring location in the southeast corner of Cayuga Lake is ideal, in that it is a shallow open-water system. This will allow sediments in the area to warm up quickly with exposure to higher light intensity early in the season. Monitoring in this location of Cayuga Lake will also provide a perfect location to get added information on the first emergences of hydrilla in a Northeast lake setting. This will be important in assessing when efforts across New York State should be starting to search for hydrilla in a season. The HTF has excellent GPS locations for potential hydrilla in the SE corner of Cayuga Lake, based on observations from 2013 and 2014. These coordinates provided a starting point for Project monitoring efforts.

2015 Observations & Discussion:

Overall, plant community AND hydrilla growth was significantly delayed in 2015. This delay was likely due to water/sediment temperatures warming slowly following a historically cold winter. Initial Aquathol-K (contact herbicide) treatments were postponed from original early-August dates due to absence of hydrilla biomass in

Cayuga Inlet and Fall Creek. These treatments were pushed back to late August, with follow-up Sonar treatments (systemic herbicide) beginning in early September, and carrying through early October. Only trace/sparse amounts of hydrilla biomass were observed prior to treatment in 2015. These observations were in Fall Creek. No hydrilla biomass was observed in Cayuga Inlet.

Under funding from the FL-PRISM, a total of 125 individual locations were sampled (constituting 200 person hours) in the southeast corner of Cayuga Lake during the 2015 season. 25 x 25 meter UTM grids were used in these locations, which was done to provide the best coverage of the lake bottom in an area at high risk for the hydrilla presence. Monitoring/sampling efforts were also concentrated in this area because the SE corner was the first open water area of Cayuga Lake to be treated with herbicide product (Sonar H4C). The HTF was interested in observing impacts of Sonar H4C to hydrilla patches AND possible impacts to the native aquatic plant population in the SE corner.

Only sparse hydrilla fragments were observed in 2015 within the Sonar H4C treatment zone (30-acres) and immediately adjacent (**See Figure 3, below**). This includes areas where physical removal and benthic barrier installation was conducted in 2013 and 2014. No significant adverse impacts were observed in non-target plant populations from the Sonar H4C treatments. Trace presence of non-growing hydrilla fragments in the SE corner treatment area is promising, but extensive monitoring efforts will need to continue in 2016 and beyond to ensure hydrilla plants have not spread and established.

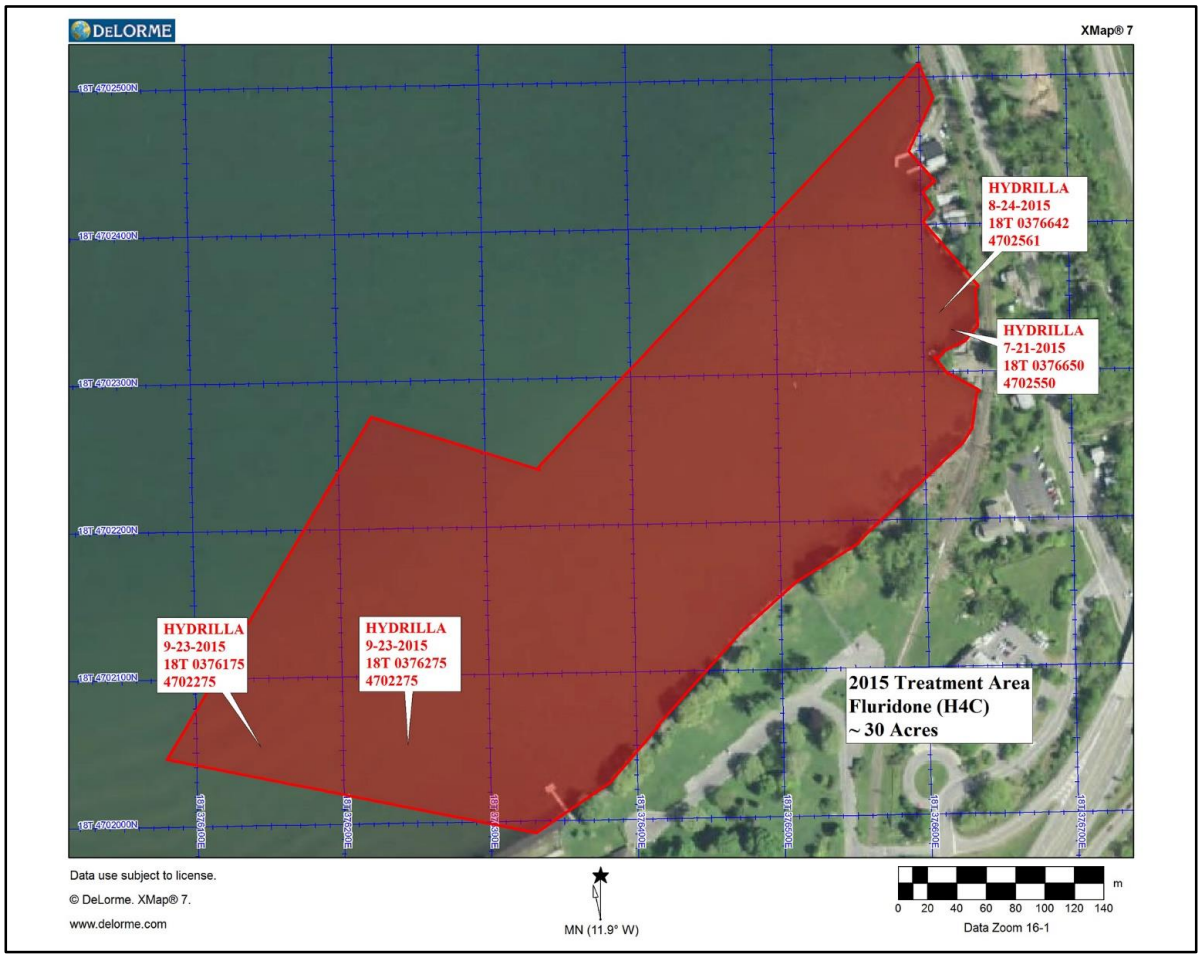


Figure 3: *2015 Sonar H4C (fluridone) Treatment Area.*
Hydrilla fragment finds denoted with White Text Boxes and Arrows.

Outside the 30-acre Sonar H4C treatment zone, a single patch of rooted, growing hydrilla was discovered in late September 2015 (**See upper right corner of Figure 2, above**). This patch is located in approximately 3 to 3.5 meters of water, offshore from the Cornell Sailing Center. Members of Racine-Johnson made the initial

discovery, and conducted extensive follow-up surveys to delineate and pinpoint the GPS location of the hydrilla patch. This patch location will be of primary concern for monitoring and management efforts during the upcoming 2016 treatment season. The discovery of this previously unknown hydrilla patch supports the value of the Project's extensive monitoring and sampling efforts. Early Detection has provided the HTF with the opportunity to plan and develop management response efforts for the upcoming season. The goal will be to address this hydrilla patch before it has the chance to further establish itself and spread.

Outside of FL-PRISM funded monitoring/sampling locations, Racine-Johnson evaluated 3,416 rake-toss locations within Cayuga Lake in 2015, up from 2,616 in 2014 and 1,886 in 2013. The number of rake-tosses made in 2015 to evaluate the ongoing Cayuga Inlet and Fall Creek herbicide treatments was 1,462, up from 1,364 in 2014 and 1,184 in 2013. Additionally, sediment core sampling for hydrilla tubers (providing the HTF with a measure of hydrilla tuber depletion, central to its eradication goal) totaled 3,952 cores or approximately 33 tons of sediment that were hand-screened in 2015. Total personnel-hours dedicated to this monitoring project in 2015 by Racine-Johnson Aquatic Ecologists was in excess of 7,500.

No hydrilla biomass/tubers were observed in Cayuga Inlet in 2015. Post-treatment hydrilla biomass and regrowth was observed in Fall Creek (primarily in Fall Creek cove and the golf course lagoon). It is likely that some hydrilla survived initial Aquathol-K treatments in Fall Creek (August 25th – 27th), and was too mature for subsequent low-level Sonar treatments to impact significantly. Moving forward, Fall Creek and the southern end of Cayuga Lake will be primary areas of concern for ongoing monitoring/sampling AND active hydrilla management activities of the Cayuga Lake Watershed Hydrilla Project.

Project Photos:

Figure 4: *Crewmembers from Racine-Johnson Aquatic Ecologists conducting extensive plant community/hydrilla sampling in southern Cayuga Lake using the Rake-Toss method. (Photo Credit: Bob Johnson)*

Figure 5: *Crewmembers from Racine-Johnson Aquatic Ecologists separate plant material from extensive rake-toss sampling in Cayuga Lake Watershed. Data will be collected on plant community composition, abundance, and hydrilla presence/absence. (Photo Credit: Bob Johnson)*

Figure 6: *Crewmembers from Racine-Johnson Aquatic Ecologists separate plant material from extensive rake-toss sampling in Cayuga Lake Watershed. (Photo Credit: Bob Johnson)*

Figure 7: *Sediment core samples collected by crewmembers of Racine-Johnson Aquatic Ecologists. Individual sediment cores are collected using a post-hole digger (lower right photo). You can see the difference in size between the sediment core samples collected by the HTF (post-hole digger) vs. a classic sediment core sampler (lower right). Data is collected on hydrilla tuber presence/absence, germinated/un-germinated, alive/dead. (Photo Credit: Bob Johnson)*


People and Plants: Does the suburban landscape support native species?

Scott Ward and Kathryn Amatangelo

Department of Environmental Science and Biology, The College at Brockport, SUNY

The College at BROCKPORT
State University of New York

Introduction:

Landscaping and Exotic plant introductions, historical and current…

Landscaping has served as the leading force behind plant introductions in North America (Reichard 1997). Some sources date back to 1631 as the first year in which ornamental plant trading began in the United States (Hobhouse 1992). A 2007 census of the United States' horticulture industry estimated total earnings at 11.7 billion dollars (USDACES 2009), a figure that is largely driven by landscaping.

Does introducing an exotic plant species come at a price?

Although most exotics merely grow where they are planted, a handful of species introduced as ornamentals have escaped to neighboring natural areas, potentially displacing native species. In addition, garden exotics and invasive species may provide little to no benefit to our native insects (Tallamy 2010), and may also fail to provide the same nutritional value that native fruit-bearing species offer (Smith et al. 2007). Although exotics may satisfy aesthetic purposes, they may fall far short in their ability to fulfill similar ecological functions that our native species can.



Oriental bittersweet (left), Chinese wisteria (middle) and Pale swallowwort (right) are all exotic invasive plant species that originated from horticultural trade.

How does this relate to our area?

In 2010, urban and suburban areas of the United States contained approximately 80% of the United States population (US Census Bureau 2010). Because suburban properties typically have larger yards, they serve as an interesting study platform for research on gardening trends. Suburban neighborhoods dominate the surrounding residential areas of Rochester.

Questions:

Although many ecologists and horticulturalists have pointed to a preference for exotics in landscaping, little qualitative evidence exists in the scientific community. From this research, we sought to answer the following questions:

1. What are the most popular exotic and native species in northeast landscaping?
2. Do suburban landscape trends preferentially favor exotic species over natives?
3. Can property size, age, or mortgage rate assist in predicting the total number of species and proportion native species per property?

Above: Often suburban gardens, in addition to favoring exotic garden plants, harbor invasive species such as purple loosestrife (*Lythrum salicaria*).

Methods:

- Suburban and mobile homes were chosen at random from an assortment of neighborhoods. Upon entering the neighborhoods, permission was requested from homeowners to access the entirety of the properties.
- A full inventory was then taken of all planted species within the managed portion of the property. Zillow mortgage rates, property size and age were then acquired for each property.
- Each species was then given a rating of native or exotic based upon historical ranges. Species were categorized as native if their historical range fell in an area east of the Mississippi river in the United States.

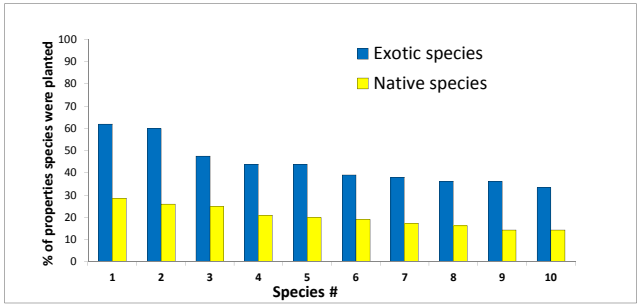


Figure 1. Twenty most popular native and exotic species in suburban gardens

Species #	EXOTIC		NATIVE	
	Species name	% found	Species name	% found
1	*Hemerocallis sp.*	62	*Thuja occidentalis*	29
2	*Hosta sp.*	60	*Rudbeckia sp.*	26
3	*Berberis thunbergii*	48	*Picea glauca*	25
4	*Hydrangea macrophylla*	44	*Echinacea purpurea*	21
5	*Spiraea japonica*	44	*Fraxinus sp.*	20
6	*Buxus microphylla*	39	*Juniperus horizontalis*	19
7	*Euonymus alatus*	38	*Acer rubrum*	17
8	*Chamaecyparis pisifera*	36	*Rhododendron catawbiense*	16
9	*Syringa vulgaris*	36	*Acer saccharinum*	14
10	*Acer palmatum*	33	*Matteuccia struthiopteris*	14

Table 1. Twenty most popular native and exotic species in suburban gardens

Daylilies (*Hemerocallis sp.*) originated from Eurasia

Native arborvitae (*Thuja occidentalis*) are commonly used as border shrubs

Hostas (*Hosta sp.*) originated from NE Asia

Black eyed susans (*R. hirta*) and orange coneflower (*R. fulgida*) are popular natives

Japanese barberry (*Berberis thunbergii*) originated from Asia

White spruce (*Picea glauca*) is most often seen in the dwarf cultivar form 'Conica'

Acknowledgements: We would like to thank the College at Brockport's Institute for Engaged Learning for funding, property owners for survey permission and K. Hansen and C. Wolfanger for assistance in the field.

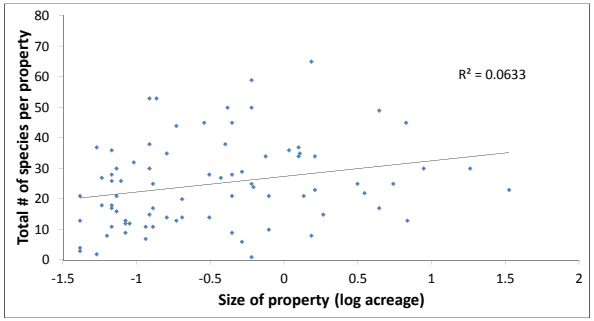


Figure 2. Number of species found per property based on property size. This analysis only includes suburban single-family homes.

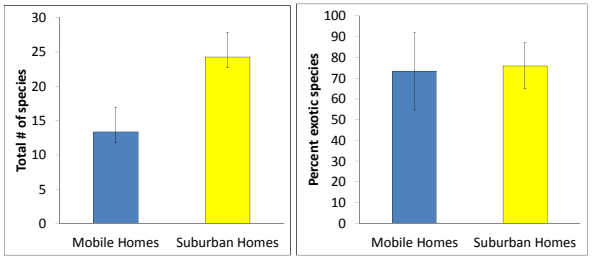


Figure 3. Comparison of plant characteristics between mobile home and suburban single-family homes. Left: Total number of species; Right: Percent exotic species.

Results and Discussion:

Daylilies (*Hemerocallis sp.*) were the most popular exotic species found at 62% of total sampled properties, and arborvitae (*Thuja occidentalis*) was the most popular native species found at 29% of gardens (**Figure 1; Table 1**). Interestingly, the top 10 most popular species overall were exotic.

Of the 104 properties sampled, the average proportion of exotics per site was 75%. In addition, we found that this proportion could not be significantly correlated with any of our 3 predictor variables of property size, age or mortgage. Landscape practices are similar regardless of housing characteristics, with exotic species being highly preferred.

Although our predictor variables could not be correlated with the type of the species found in gardens, they did predict the total # of species found on the property (**Figure 2**). Mortgage rate and lot size were positively related to the number of species found.

Where mobile home parks on average contained 13 species per property, suburban neighborhoods contained an average of 24 species per property (**Figure 3**). This is likely because in general, suburban neighborhood properties are larger than those of mobile homes.

References

1.) Hobhouse P. 1992. Gardening through the Ages. New York: Simon and Schuster

2.) Reichard, S. H., & P. White. 2001. Horticulture as a pathway of Invasive plant Introductions in the United States: most invasive plants have been introduced for horticultural use by nurseries, botanical gardens, and individuals. *BioScience*, *51*: 103-113.

3.) Smith, S. B., McPherson, K. H., Backer, J. M., Pierce, B. J., Podlesak, D. W., and S.R. McWilliams. 2007. Fruit quality and consumption by songbirds during autumn migration. *The Wilson Journal of Ornithology 119*: 419-428.

4.) Tallamy, D.W., M. Ballard, and V. D'Amico. 2010. Can alien plants support generalist insect herbivores? *Biological Invasions* 12:2285–2292

5.) U.S. Census Bureau. 2010. http://www.census.gov

6.) [USDA] United States Department of Agriculture. 2007. 2007 Census of agriculture. Washington (DC): USDA.

Onondaga County Soil & Water Conservation District

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September 10, 2015

Final Report to FL-PRISM

Project Title:
Selective preservation of ash trees through trunk injection in response to the presence of Emerald Ash Borer in Onondaga County.

Project Leader:

(Eva Sztechmiler, Technician, Onondaga County Soil and Water Conservation District, 6680 Onondaga Lake Parkway, Liverpool, NY 13088, 315-457-0325, 315-457-0410, esztechmiler@ocswcd.org)

Project Collaborators:

(Mark Burger, Executive Director, Onondaga County Soil and Water Conservation District, 6680 Onondaga Lake Parkway, Liverpool, NY 13088, 315-457-0325, 315-457-0410, mburger@ocswcd.org)
(Travis Glazier, Director, Onondaga County Office of the Environment, 421 Montgomery Street, 14th Floor, Syracuse, NY 13202, 315-435-2647, 315-435-8582, TravisGlazier@ongov.net)

Amount Requested:
$5,000.00 (Five Thousand Dollars)

The Onondaga County Soil and Water Conservation District (District) has completed all work outlined in the 2015 project proposal. The District began work on this project on May 1, 2015. Using the Onondaga County Ash Tree Inventory database, the District created maps of ash tree locations in Willow Bay. A site visit was conducted over a period of two days, during which every ash tree in Willow Bay was located and assessed. Trees were categorized into two categories: candidate for treatment or not a candidate for treatment. Trees considered to be potential candidates were measured (DBH) and marked with orange paint. Next, the District met with the Park Superintendent for another site visit. Trees marked as potential candidates were re-assessed, this time with a stronger focus on their value in the park landscape. Also, the trees had fully leafed out at this point since their last assessment, and the condition of their health was much more discernible. The pool of candidates was narrowed down and trees were once again marked accordingly.

On May 28th, 2015, the District began treating the trees with the insecticide Tree-Age via trunk injections. Injections continued throughout the summer and those funded through this grant were completed on July 31st, 2015. Onondaga County funded additional treatments which were completed September 3rd, 2015. The following tables summarize the work that was accomplished with the FL-PRISM funding and with the match from Onondaga County. Invoices for the purchase of materials are also included with this report. Cost of treatment is based on a unit cost of $5.00 per diameter inch.

Table 1: Total Number of Diameter Inches Treated per Funding Source

		Funding Source		
		Onondaga County (diameter inches)	FL-PRISM (diameter inches)	
Date	5/28/2015	170		
	6/2/2015	251		
	6/3/2015	253		
	6/4/2015	150		
	6/11/2015	211		
	7/23/2015		311	
	7/28/2015		426	
	7/31/2015		263	
Total Inches		**1035**	**1000**	**2035**

Table 2: Total Number of Trees treated per Funding Source

		Funding Source		
		Onondaga County (diameter inches)	FL-PRISM (diameter inches)	
Date	5/28/2015	7		
	6/2/2015	10		
	6/3/2015	9		
	6/4/2015	5		
	6/11/2015	10		
	7/23/2015		14	
	7/28/2015		19	
	7/31/2015		14	
Total Trees		**41**	**47**	**88**

The District is also pleased to report that this project made the local news on two occasions. News stories can be found at the following links:

http://www.syracuse.com/news/index.ssf/2015/06/emerald_ash_borer_onondaga_lake_park_new_york_inoculation.html

http://cnycentral.com/news/videos/onondaga-county-races-to-save-ash-trees-with-pesticide-injections

On the left, an ash tree that was not selected for treatment due to the severe level of decay observed at the base of the tree.

5/19/15
ES

Sales Invoice

JOHN DEERE LANDSCAPES

East Syracuse NY #574
6030 Drott Dr
East Syracuse, NY 13057-2943
W: (315)437-3423

Sold To:
ONONDAGA COUNTY SWCD (#1073840)
6680 Onondaga Lake Pkwy
Liverpool, NY 13088-5061
W: (315)457-0325

Ship To:
ONONDAGA COUNTY SWCD (#1073840)
6680 Onondaga Lake Pkwy
Liverpool, NY 13088-5061
W: (315)457-0325

Ordered	Order#	PO#	Invoiced	Invoice#
05/11/2015	80548079		05/19/2015	71836758

Printed	Requested for	Ship Via	Customer Contact	Sales Associate
05/19/2015		Customer Pick up	Eva Sztechmiler	Dean Newton

Special Instructions:

License Holder: Eva Sztechmiler (Crew Member)
License #: C7866309
Exp Date: 1/2016
Category(s): 3A

LN	Item #	Description	Qty Ordered	Qty Shipped	Qty Open	Unit Price	Ext. Price
1	040-4100N	Arborjet Tree-Age Rup 1 Liter (New Label)	16	16	0	494.000 / EA	7904.000
2	070-0155	Arborjet Plugs #4 100/Pk	15	15	0	45.000 / EA	675.000

Please remit payment to:
JOHN DEERE LANDSCAPES, LLC
24110 NETWORK PLACE
CHICAGO, IL 60673-1241

Terms: NET 15TH

Pay by 06/15/2015

Subtotal:	$8579.00
Sales Tax:	$0.00
Freight:	$0.00
Total:	$8579.00
Total Payment:	$0.00
Amount Due:	$8579.00

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CUSTOMER SIGNATURE: _____