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Executive Summary

The Invasive Species Program of the NYS Environmental Protection Fund (EPF) recognizes that an important aspect of saving special places is protecting them from invasive species that can cause ecological and economic damage. EPF funding supports eight private-public grassroots Partnerships for Regional Invasive Species Management (PRISMs) throughout the state; information tools such as iMapInvasives database (<http://www.nyimainvasives.org/>); an information clearinghouse (<http://www.nyis.info/>); research; grants to local organizations and municipalities; and public outreach. The *NYS Environmental Protection Fund Annual Report, 2013*, p6 notes that the Lower Hudson PRISM was one of the last of the eight PRISMs to receive funding.

Informally, the Lower Hudson PRISM has attracted members who have attended and participated in informal Lower Hudson PRISM meetings since 2006 under the leadership of Ed McGowan, Palisades Interstate Park Commission-OPRHP. The Lower Hudson PRISM received funding effective August 12, 2013, at which time Linda Rohleder, Ph.D. became its Coordinator. Dr. Rohleder is the Director of Land Stewardship for the New York-New Jersey Trail Conference, the Lower Hudson PRISM's host organization. Under Dr. Rohleder's leadership, the PRISM's efforts for 2013 into early 2014 have focused on attracting PRISM Partners for coordination and collaboration, identifying specific priorities and goals based on optimal outcomes identified by those Partners to form the foundation of our 5-Year Strategic Plan, and determining specific actions to reach tangible objectives for our 2014 action plan. The PRISM views its ultimate success as dependent upon leveraging financial and Partner resources to achieve specific conservation goals, so it is developing its action plan in concert with drafting its organizational foundations-- its Partner Agreement, Steering committee definition and governance structure.

Two thousand fourteen will see the election of the Lower Hudson PRISM's Steering Committee and the ongoing development and execution of its action plan as incorporated into the final version of its five-year Strategic Plan.

2013 Year in Review

The Lower Hudson PRISM met on April 11, July 17, September 25, November 11, and December 5, 2013. The earlier meetings addressed the question of funding and began the conversation on priority issues such as invasive species prevention zones and invasive species management tools. At the April meeting, individual Partners made presentations on existing projects that address specific invasive species threats and on-going management and remediation efforts within the PRISM. During the July 17 meeting, the Lower Hudson PRISM hosted leaders from two neighboring PRISMs, CRISP and LIISMA, who presented an overview of the activities and programs their PRISMs were involved with. At the September meeting, Lower Hudson PRISM partners, NY City Parks, and The Invasives Project - Pound Ridge, gave presentations on their programs. The November 11, and December 5, 2013 meetings were intensive planning sessions devoted to the development of the Lower Hudson PRISM's Strategic Plan and action plan. During these meetings, the Partners identified key issues related to effective invasive species management in the Lower Hudson Valley, agreed on 6 priority goals to guide our efforts over the next 5 years and organized working groups to begin drafting objectives and actions towards achieving these goals. The strategic planning process will continue into early 2014.

The Lower Hudson PRISM's Priority Goals are:

1. *The Lower Hudson PRISM has a robust public identity, strong internal structure and a sustainable resource base to continue its mission.*
2. *The Lower Hudson PRISM protects the rich, native biodiversity of the Lower Hudson Valley by focusing on priority targets for conservation.*
3. *The Lower Hudson PRISM supports and optimizes regional conservation through strategic invasive species management.*
4. *The Lower Hudson PRISM reaches out to new audiences and delivers education that communicates the positive impacts of invasive species management on ecosystems. The Lower Hudson PRISM offers clear steps for action on personal and community levels.*
5. *PRISM has a coordinated program to prevent species introduction by focusing on pathways.*
6. *The establishment of an information exchange allows Lower Hudson PRISM partners and other professionals to strategically manage and integrate information relevant to the management of invasive species and offer that information to any person, group, agency (partner and non-partner alike).*

Accomplishments

At year end, the PRISM has 42 partners varying in size from large organizations such as New York State Parks to concerned citizens remediating invasive species as individuals. The accomplishments of the PRISM in 2013 are comprised of the collective accomplishments of its Partners as described below.

Bedford Audubon Society

Bedford Audubon Society partnered with several other organizations to create The Invasives Project - Pound Ridge, the activities of which are detailed below.

Bronx River Alliance

In 2013, the Bronx River Alliance planted 2,353 native trees, 937 shrubs, and 44 herbaceous plants in New York City parks located along the Bronx River in the Bronx. We cleared invasive species from an area of 381,304 square feet (8.75 acres). The primary invasive species we target are Japanese knotweed, mugwort, porcelainberry, Oriental bittersweet, and Japanese hops. Approximately 1,000 volunteers provided over 4,000 hours of their time, helping with weeding, debris removal, planting, mulching, watering, and assisting with canoeing and other Alliance events throughout the year.

Bronx River Conservancy

In 2013, the Bronx River Conservancy conducted 15 vine cutting sessions on the Bronx River Reservation in Westchester. We worked at 15 different sites along the river from Mount Vernon/Yonkers north to Valhalla. In all 200 volunteers spent 400 hours cutting bittersweet and porcelain berry vines from signature trees.

The Bronx River Conservancy also helped coordinate, and participated in, an invasive vine cutting "SWARM" in the fall, when 175 volunteers cleared vines and other exotic invasives from a one quarter mile stretch of the South County Trailway along the Saw Mill River in Ardsley, New York during one 4-hour workday.

The Conservancy also maintains the "www.vinecutter.com" website, which explains our invasives removal program and serves to educate the public.

Constitution Marsh Audubon Center and Sanctuary

In the 2013 field season, we reduced the size of our largest patch of *Phragmites* which was just over an acre by 20% using mechanical methods. We also treated 2 acres of *Phragmites* that was spread out over several small patches using mechanical and chemical methods. We also worked with volunteers to remove Multiflora rose, privet, oriental bittersweet, periwinkle, and garlic mustard from our nature center's grounds.

Cornell Cooperative Extension – Orange Co.

In 2013, Cornell Cooperative Extension – Orange Co. trained twenty-five new volunteers to identify invasive plants and insects as participants in our Master Gardener Volunteer Training Program. Four Master Gardener Volunteers received additional training from the NY-NJ Trail Conference as Trail Surveyors.

The Cooperative created poster display boards on Emerald Ash Borer and Brown Marmorated Stink Bug which were displayed at six Ask a Master Gardener events, and in the lobby of our office. Cornell Cooperative Extension – Orange Co.'s additional invasive species remediation efforts include a presentation on invasive plants given to a local garden club attended by twenty-eight garden club members; answering thirty-one Garden Helpline calls pertaining to invasive species; identifying five plant samples brought to our diagnostic lab as invasive species; writing an article for our gardening column in the Times Herald Record newspaper on an invasive species; and holding a Weed Walk program where we highlighting several invasive species, which was attended by six participants.

Cornell Cooperative Extension – Putnam Co.

Emerald Ash Borer (EAB) Outreach to Municipal Officials and Advisory Committees

Cornell Cooperative Extension – Putnam Co. has partnered with the Putnam County Soil and Water Conservation District to develop an outreach campaign to build awareness and encourage municipal planning for Emerald Ash Borer. In January, 2013, New York State Department of Environmental Conservation first-detector training was provided to alert public officials to this imminent threat. Following the workshop an information packet was sent to forty-two county and town officials and citizen advisors providing additional EAB information and offering our organizations' assistance in planning. This letter was reinforced with local newspaper coverage and personal callbacks to each addressee.

Responses from the municipalities showed an increase in awareness of, and preparedness for, Emerald

Ash Borer impacts. Specific results from these efforts included promises to add EAB links to town websites; letters read at three town board meetings; applications for Urban and Community Forestry Grants through DEC for proposed tree inventories; requests for fliers and fact sheets for highway crews; and requests for speakers at town boards and Citizen's Advisory Committee meetings.

Cornell Cooperative Extension - Rockland Co.

During 2013, the Cornell Cooperative Extension - Rockland Co. Horticulture lab distributed informational literature advising members of the public of the imminent danger posed by Emerald Ash Borer.

Environmental Committee: Village of Tuxedo Park

- Coordinated and supervised the removal of Eurasian Water Milfoil from three lakes
- Lake water sampling for algal evaluation
- Coordinated macroinvertebrate sampling in parts of Warwick Brook, Patterson Brook and the unnamed Pottingshed Stream
- Part I creation of Strategic Plan
- Created approach to Barberry removal from Village lands
- Provided information to community regarding role of Barberry and Garlic Mustard in promoting tick-borne illnesses
- Partnered with the Tuxedo Park Library and the Tuxedo Park Garden Club for a presentation by Dr. Rick Ostfeld of the Cary Institute on the ecology of Lyme disease
- Joined PRISM
- Reassembled volunteer group for continued participation in Citizens Statewide Lakes Assessment Program

Friends of Old Croton Aqueduct

The Friends of the Old Croton Aqueduct hosted an event as part of the statewide Parks and Trails-NY sponsored "I Love My Park Day" on May 4, 2013. We had about 35 participants and worked to remove garlic mustard, porcelainberry, oriental bittersweet, multi-flora rose and barberry during the event. We were pleased to have been visited by NYS Commissioner of Parks, Rose Harvey. The event served to both improve the trail and to educate the participants about identification and removal of invasive species.



Figure 1 Volunteers at Old Croton Aqueduct invasive plant removal work day

GroundWork Hudson Valley's Saw Mill River Coalition

Groundwork Hudson Valley's Saw Mill River Coalition sponsored its first SWARM event to remove invasive vines along the Saw Mill River. More than 174 volunteers attended and over 500 trees were freed from invasive vines along the Saw Mill River. There were 18 groups that participated including [Groundwork Hudson Valley's](#) Saw Mill River Coalition, American Field Service students, Boy Scout Troop 25, Bronx River Conservancy, Croton Conservation Advisory Committee, Croton Vine Cutters, Friends of the Old Croton Aqueduct, The Garden Club of Irvington, Hastings High School Environmental Club, Hastings Vine Squad, HelpHalsey123, New York State DOT local office, NY-NJ Trail Conference Invasives Strike Force, Saw Mill River Audubon, Somers Land Trust, Trail Mix, Westchester County Parks, and the Yonkers Land Conservancy.

This event was so successful we plan to continue to organize multi-organizational SWARM events to tackle invasive species problems in the area.



Figure 2 SWARM volunteers gather for lunch and networking

Hudsonia

Dr. Bob Schmidt continued his studies of mitten crabs in Hudson River tributaries.

We also worked with Cary Institute of Ecosystem Studies, The Nature Conservancy, and other collaborators to draft a guidance document for *Phragmites* management in Hudson River wetlands.

Hudsonia supported a collaborative intern project with Lea Stickle on a study of bryophytes associated with purple loosestrife and swamp loosestrife (*Decodon*) which is currently being written up for publication.

Dr. Erik Kiviat presented at the Reeds as a Renewable Resource conference in Germany, and with three co-authors, completed a journal paper analyzing the feasibility of using North American *Phragmites* as a fuel pellet feedstock.

Hudsonia also published an extensive review of habitat functions and other ecosystem services provided by *Phragmites* in North America.

Mianus River Gorge

In 2013, Mianus River Gorge had 5 volunteers and a total of 15 volunteer hours for invasive control.

We have focused on controlling mile-a-minute at multiple sites on our preserve and on private land adjacent to our preserve, as well as black swallowwort on one site in our preserve. Our volunteers also focused on controlling barberry on our preserve.

Mianus River Gorge staff often give public lectures about forest and plant ecology, and these talks always mention invasive species (i.e. impacts, IS ecology). In the past year, staff gave a talk that was

specifically focused on Japanese stilt-grass ecology.

New York City Department of Environmental Protection

- Developed an Invasive Species Communication Plan to advance early detection goals from the NYC DEP Early Detection Plan and began implementation of specific outreach objectives:
 - Delivered trainings to Operations staff (~40 people) on early detection species to look for, Police Dive Team members (10 people) on aquatic species that they may encounter, Academy cadets(27 people) on invasive species regulations and early detection species
 - Developed content for the NYC DEP Invasive Species webpages
 - Developed an Unwanted Invaders poster for DEP boat launch areas
- Coordinated manual invasive species control projects and survey efforts for 8 member SUNY Ulster intern field crew
 - Controlled mile-a-minute at four early detection sites in LH PRISM (~25 acres)
 - Controlled invasive plants in a partnership project with NYS Parks in LH PRISM
 - Surveyed for giant hogweed at sites in LH PRISM in partnership with NYSDEC Giant Hogweed Control Program
 - Initiated a survey of aquatic plants; four reservoirs were surveyed East of Hudson and results entered in iMap
- Submitted comments to New York State and US Department of Agriculture on:
 - USDA Feral Swine Report
 - Asian Carp Regulations
 - Invasive Species Regulations
- Participated in the NYS ISAC and became Chair of the Education and Outreach Working Group
- Worked to update DEP Forestry Conservation Practices to include measures to protect project areas from invasive plant introduction via harvesting equipment
- Submitted a bulk upload of invasive species information to iMapinvasives (>3,000 entries)

New York City Parks

Natural Areas Volunteers (NAV), part of the Forestry, Horticulture and Natural Resources division of New York City Department of Parks and Recreation, is a service program that recruits, trains, and supports volunteers for ecological projects across the city. In 2013, Natural Areas Volunteers led a total of 37 invasive vegetation related projects in Manhattan and the Bronx. These projects consisted of invasive removal, applying layers of mulch as a weed barrier around trees, and planting trees, shrubs, and herbs in areas where invasives once grew.

Bronx: 28 projects with 618 volunteers totaling 1,943 volunteer hours

Manhattan: 9 projects with 328 volunteers totaling 834.5 volunteer hours

Additionally, Natural Areas Volunteers trained 16 Bronx NAVigators-our top-tier, dedicated volunteers who receive training in invasive weed identification and removal techniques in return for a commitment

to volunteer at least 12 independent hours in their designated reforestation sites. In 2013, 5 NAVigators from the Bronx logged 314.5 independent volunteer hours removing invasive vegetation.

Number of training sessions on ID, monitoring, management or prevention of invasives: 77

Number of volunteers: 946

Total hours volunteered: 2,778

Description of activities projects consisted of invasive removals, applying layers of mulch as a weed barrier around trees, and planting trees, shrubs, and herbs in areas where invasives once grew.

Number of education programs: 77

Number of eradication projects 63, list of species treated, acres treated N/A, sites where eradication was conducted (park, or municipality level), Riverdale Park, Burr Avenue Site, Highbridge Park, Pelham Bay Park, Inwood Hill Park, Soundview Park, Bronx River Forest, Van Cortlandt Park, Garrison Park and Raoul Wallenburg Forest. Species targeted were: Mugwort, Oriental bittersweet, Porcelainberry, Japanese knotweed, Bedstraw, Norway Maple, Buckthorn, Multi-flora rose, Wineberry, Bush honeysuckle, Japanese honeysuckle, Mile-a-minute and English ivy.

New York – New Jersey Trail Conference

The Trail Conference held seven training sessions to train 77 volunteers for our Invasives Strike Force how to identify invasive plants and conduct surveys.

The Trail Conference's Invasives Strike Force volunteers surveyed 135 miles of hiking trails in New York over 25 different parks in 2013 bringing our three year total to 264 miles surveyed. We engaged 65 volunteers who donated approximately 800 hours surveying for invasive plants in New York. They recorded nearly 5,300 observations of 14 common invasive plants and 25 emerging invasive plant species such as Japanese angelica tree, black swallowwort and mile-a-minute.

Trail Conference also planned and led several invasive plant removal volunteer work days. East of the Hudson, three work days were held with 25 volunteers donating 138 hours to remove invasive plants at Teatown Lake Reservation, Westchester Wilderness Walk, and the South County Trailway. West of the Hudson, six work days were held with 51 volunteers donating 345 hours to remove invasive plants at Bear Mountain State Park, High Tor State Park, and Storm King State Park.

The Trail Conference also conducts our Invasives Strike Force program in northern New Jersey where we held four training workshops, surveyed over 122 miles of trail and held seven volunteer work days to remove invasive plants in 2013.

In addition, we attended several events to speak about invasive plants, the Invasives Strike Force, and the PRISM. Several articles about invasive species were also published in our quarterly newspaper, and we kept Invasives Strike Force volunteers informed via monthly newsletters.



Figure 3 Volunteers removed 5 truckloads of barberry at Bear Mountain

New York State Department of Environmental Conservation – Region 3

Staff spent about 48 hours on Tree-of-Heaven control. Matt Paul, Stewart State Forest, injected and cut about 400 *Ailanthus* (Chinese Tree of Heaven) along roadways and parking lots at Stewart State Forest, and an *Ailanthus* removal project was conducted at Turkey Point, north of Kingston.

We also helped suppress black swallowwort at Castle Rock in Dutchess County via mowing over about 4 days.

At Stewart in Orange County, we continue to monitor the Mile-a-minute biocontrol releases, but no new releases were done in 2013.

About 30 hours were spent clearing Water Chestnut from 2 ponds at Stewart State Forest. We intend to do about the same in 2014.

Staff spent approximately 47 hours to control a of Kudzu patch in Plattekill. Jason Denham and the Albany DEC crew brush-hogged the site beforehand to facilitate access and Naja Kraus's group conducted spraying.

In the Hudson Valley, there were 20 sites treated and monitored by the Giant Hogweed program - one in Orange County, four in Dutchess County, and 15 in Putnam County.

I attended events in Woodstock, Stone Ridge, Kingston, Ulster County,. Millbrook on EAB, and gave people info in Cold Spring, Mamakating, New Paltz, Poughkeepsie,, Mamaroneck and Newburgh (Symposium at the Orange County Community College). These outreach activities reached approximately 170 people .

DEC's Region 3 Bureau of Wildlife also conducted one invasive species control project in 2013 at Bog

Brook Unique Area, Putnam County, Town of Southeast. The project consisted treating 10 acres of *Phragmites* with herbicide.

New York State Office of Parks, Recreation and Historic Preservation - Taconic Region and Palisades Region

Phragmites Treatment Projects

- Iona Island - 32 acres. We also did follow up spot treatment of *Phragmites* patches in an additional 10 acres of Iona Marsh, where we had worked previously from 2008-2010 under a DEC Eradication grant. Total area of patches was ca. 1/2 acre.
- Sterling Forest - 5 acres (for Golden-winged Warbler habitat management)
- Hudson Highlands (Constitution Marsh - managed by Audubon) - multiple patches covering about 1 acre
- Margaret Lewis Norrie State Park - 1.75 acres
- Taconic State Park (Medium Fen habitat) - 2.3 acres

We also contracted with Ecology and Environment Inc. for a feasibility study of using tidal inundation to control *Phragmites* in a 4-acre section of Iona marsh. Based on the report, we are moving forward to construct a tide gate to allow water level manipulation of the area.

Black Swallow-wort Treatment Projects

- Sterling Forest - 15 acres
- Hudson Highlands (Red Cedar Rocky Summit Community) - about 1 acre

We continue to facilitate long-term BSW research by USDA researchers (Lindsey Milbrath et al.) at Iona Island. His team is examining growth habits, native predators, and seed dispersal characteristics of BSW.

Mile-a-Minute project

Mile-a-Minute (MaM) project through Ed McGowan and Matthew Shook. Mike Adamovich, MaM Coordinator, removed 3-4 acres of MaM with volunteers - mostly on park land, including an acre of removal at Margaret Lewis Norrie State Park, with some DEC land included on the east side of the Hudson, as well.

As the mile-a-minute project coordinator for the lower Hudson Valley, Mike Adamovich surveyed 6 prior biocontrol release areas (some with multiple sites) monthly to track levels of weevil feeding and damage.

Mike also searched for new MaM locations and followed up on reports of occurrences. One positive sign was that weevils had dispersed to most “new” MaM patches on their own, even at distances up to 10 miles away from release sites.

Other removal projects

- Bear Mountain - Black Swallowwort and Japanese Barberry control at Perkins Tower (with NY-NJ

Trail Conference)

- Trailside Museum and Zoo (Bear Mountain) - Japanese knotweed (1/3 to 1/2 acre) and Japanese Barberry (1/3 to 1/2 acre) with volunteer group and Trailside Museum and Zoo staff.

EAB Monitoring

- 10 EAB Traps hung at the following State Parks on both sides of the Hudson River: Sterling Forest (1 - Orange County), Storm King (1 - Orange County), Bear Mountain (Doodletown) (2 - Rockland County), Harriman (2 - Rockland County. One of these at the Beaver Pond Campground), Lake Taghkanic (1 - Columbia County - at campground), Taconic State Park (1 - Dutchess County - at Rudd Pond campground), Margaret Lewis Norrie (1 - Dutchess County), Clarence Fahnestock (1 - Putnam County)

New York State Office of Parks, Recreation and Historic Preservation - Invasive Species

The two 2013 Invasive Species Strike Teams consisted of two supervisors and either crew member summer seasonals who worked from late May to late August (12 weeks). The Statewide team spent one week in every region; traveled in state vehicles and camped in State Parks to reduce travel costs. The Hudson Valley team spent one week at Minnewaska and one week camping in either the Taconic or Palisades Region, and performed some day trips to smaller or closer projects. Teams were responsible for collecting data on every removal project large and small, and then entered all data into the iMapInvasives online geodatabase during inclement weather.

The Natural Resource Steward Biologists, the Natural Heritage Program, the Trailside Zoo Science Director, and invasive species staff all had input into prioritizing projects. A variety of high priority invasive species projects were selected for protection. High priorities include protection of rare, threatened or endangered species, significant habitats, and other important resources. Other projects include Invasive Species Prevention Zone delineation through survey and early detection/rapid response removal in highly threatened or vulnerable habitats. Projects selected were primarily multi-day projects to best utilize the skills and maximize travel time. The teams enabled the completion of a variety of invasives projects across the state to bolster the on the ground efficiency of the Invasive Species Program.

Strike Team Stats

- Protection of 2 rare plants and 1 rare bird habitat
- Assisted with Invasive Species Prevention Zone surveys in 4 state parks
- Article on the statewide strike team appeared in the Albany Time Union, "Rooting out an invasive species" written by Cameron J. Caston, published July 21 2013
- OPRHP staff educational invasive species ID and management training in Clay Pit Ponds Preserve on Staten Island
- Attended the NY State Fair for education/outreach
- Partnered with NYC DEP, Mohonk Preserve, SUNY ESF, The Nature Conservancy, the Lower Hudson PRISM, NY/NJ Trail Conference, the Palisades Interstate Park Commission, Mile a Minute Hudson Valley, New Paltz High School

- Approximately 100 new observation points entered into iMapInvasives, with many more plots controlled throughout the summer, including addressing at least 5 ED/RR occurrences
- Statewide the strike teams performed more than 120 controls and 40 monitoring events

Another major focus of OPRHP activities in 2013 was Hemlock Woolly Adelgid (HWA). The agency put out 4 contracts for treatment of infested trees in the Finger Lakes and Genesee Regions. Over 800 trees received treatment to kill HWA. In addition, two Hemlock Woolly Adelgid Specialists were hired in Watkins Glen State Park to perform public education, survey for the invasive insect, and set up permanent monitoring plots. HWA was detected at Letchworth State Park and a rapid response ensued, treatment of 400 trees will occur in early 2014. In conjunction with Cornell University, State Parks has received and released biological control in 3 parks to aid in our efforts and further research at the university. Hundreds of visitors were educated on HWA and the devastation the insect causes to Eastern Hemlock.

Scenic Hudson

Scenic Hudson staff and Student Conservation Association (SCA) members spent about 1200 hours in 2013 devoted towards invasive plant management and restoration activities. These activities included work done for the Lower Hudson PRISM such as attending meetings and strategic planning work.

Treatment

Throughout the 2013 field season, Scenic Hudson hosted 16 volunteer workdays focusing on invasive plant control in addition to staff workdays. In total, 160 volunteers spent over 680 hours removing targeted species. Total area worked was 47894 m² (~11 acres). Percent cover of infestation area varied depending on site. Targeted species included *Ailanthus altissima*, *Allaria petiolata*, *Artemisia vulgaris*, *Clematis terniflora*, *Cynanchum louiseae*, *Echinochloa crusgalli*, *Elaeagnus umbellata*, *Fallopia japonica*, *Lonicera maackii*, *Lonicera japonica*, *Micostegium vimineum*, *Rubus phoenicolasius*, and *Securigera varia*.

Mapping

Staff mapped 130 invasive species occurrences at Esopus Lakes Preserve in Esopus, NY. Work was done in preparation for a park development conceptual plan/design.

Restoration

In 2013 Scenic Hudson planted 400 native tree, shrubs, and ferns across six parks. Sources of planting material include DEC Saratoga Tree Nursery, DEC/HREP Trees for Tribes program, and locally collected seeds stock from Scenic Hudson parks and preserves.

Teatown Lake Reservation

During 2013, Teatown Lake Reservation in Ossining, New York implemented small scale invasive plant control activities. Invasive plants targeted included winged euonymus (*Euonymus alatus*), purple loosestrife (*Lythrum salicaria*), Japanese stiltgrass (*Micostegium vimineum*), garlic mustard (*Alliaria petiolata*) and wineberry (*Rubus phoenicolasius*). Staff and volunteers from local high schools, colleges, trail crews and other individuals passionate about restoring the ecosystems at Teatown were involved in

the activities.

The Invasives Project – Pound Ridge

During 2013, The Invasives Project – Pound Ridge (TIP-PR) made progress against invasive species on several fronts including in the media, by holding events, providing invasives species consultation services, training volunteers in identifying, surveying and controlling invasive species, by promoting native species with a focus on rare native species such as a rare Sedum identified at Lions Park, and by organizing work crews to remove invasive plant populations.

Readers of the Pound Ridge Daily Voice, The Record/Review, and the Pound Ridge Dispatch were regularly kept abreast of The Invasive Project's efforts during the year through 10 press releases issued by TIP-PR. TIP-PR also held quarterly community forums on invasive species at the local library, made two presentations to master gardeners, had an invasive plant display at an event a Conant Hall, tabled at Pound Ridge Harvest Festival, and presented at the September Lower Hudson PRISM meeting.

Events and training included seminars on invasive vine cutting, iMapInvasives database mapping, and a Pride Day to celebrate native plants. TIP-PR held an invasive plant removal workdays at Bertrand park which involved 5 volunteers, assessed the level of invasion at East Woods Preserve and offered free invasive plant identification consulting services and site visits by volunteers to 7 homeowners. TIP-PR also supported the evaluation of local hardy kiwi populations and facilitated the confirmation of a population of a rare Sedum at Lions park. Through TIP-PR has developed a much better understanding of our localized invasive plant threats like Japanese Stiltgrass, Black Swallow-wort, and Japanese Angelica Tree, and including emerging species of concern to the entire PRISM such as Kudzu, Giant Hogweed and Hardy Kiwi.

Many of these initiatives saw their inception during 2013. The positive response portends well for the TIP-PR's on-going efforts to engage naturalists, homeowners, and our other partners to work towards comprehensive invasive species control.

The Native Plant Center

The Native Plant Center Accomplishments for 2013 are:

- 20-30 volunteers work on invasive plant removal on the Westchester Community College campus
- Completed an inventory of the Native Plant Center Gardens including the invasive plants that have invaded the gardens and need to be managed
- Taught 2 invasive species and management courses in Go Native U program
- Provided education and outreach of native alternatives to invasive plants including a native plant appreciation weekend at a local nursery that provided personal shopping advice and education walks through the nursery about native plant alternatives.

The New York Botanical Garden – Horticulture department

In 2013 the Horticulture Department actively managed 75 acres of upland forest and riparian forest for invasive plant species.

- Had 3700 hours of volunteer help in invasive species management and monitoring efforts.
- Held education seminars and courses on invasive species. Including plant identification walks for the School of Professional Horticulture, Managing Urban Woodlands from Invasives to Natives for the New York City Parks Department, Hosted the 2013 NYC Restoration Practitioners Meeting, Hosted New York Turf and Landscape Association annual field days including tours and talks about invasive species and management.
- Posted information about invasive species on the Forest Website <http://www.nybg.org/gardens/thain-family-forest/index.php> and NYBG blog, nybg.org/plant-talk
- Provided outreach information to inquiries and trained Garden tour guides about invasive species to be used in ongoing Garden tours for general visitors.
- Conducted ecological research that involved monitoring and managing invasive species specifically Japanese knotweed, viburnum leaf beetle
- Tracked and mapped management treatments with GPS and GIS, main target species include *Phellodendron amurense*, *Ranunculus ficaria*, viburnum leaf beetle, *Aralia elata*, *Lonicera japonica*, *Hedera helix*, and *Fallopia japonica*.

Collaborated with Bronx and Regional Partners with local invasive species management.

The New York Botanical Garden – Science department

Early detection and rapid response

Persicaria extremiorientalis (Vorosch.) Tzelev (Russian lady's thumb). This native of the Russian Far East (hence the epithet, "extremiorientalis") made its North American debut in Queens in 1961. Unrecognized as a distinct species for nearly fifty years, it spread north to the New Hampshire border and south to North Carolina. It is becoming more common throughout the region and today can be found in nearly every urban area from Massachusetts to North Carolina. It was found in several sites in Central Park during the 2013 Central Park BioBlitz. Specimens are deposited in the William and Lynda Steere Herbarium of the New York Botanical Garden. Collection data will be uploaded to iMapInvasives.

Cyperus iria L. (rice-field flat sedge). This species is one of the commonest weeds in rice fields throughout the world. In North America it is principally found in container ornamentals, plant nurseries and occasionally in wet ditches and roadsides from Texas to New York. This is the first report of this species for Central Park. Specimens are deposited in the William and Lynda Steere Herbarium of the New York Botanical Garden. Collection data will be uploaded to iMapInvasives.

Cyperus microiria (lesser rice-field flat sedge). Like the preceding, this Asian species is a common weed of moist sand and gravel in disturbed areas such as agricultural fields, nurseries and gardens. It is expanding its range throughout the region. This is the second collection in Manhattan and the first for Central Park. Specimens are deposited in the William and Lynda Steere Herbarium of the New York Botanical Garden. Collection data will be uploaded to iMapInvasives.

Torrey Botanical Society

In 2013 the Torrey Botanical Society published one article with “invasive species” as a keyword. Provided a public lecture by Jennifer Dean at the Brooklyn Botanical Garden “Invasive Species Mapping.” Hosted NYC wildflower week held over 30 events promoting native plant conservation in New York City. Hosted 23 field trips that took TBS members and members of the public on botanical walks that included areas with invasive plants.

Westchester County Parks

Westchester County Parks is dedicated to invasive species management. With a large volunteer base and committed staff, we manage thousands of acres on an on-going basis and conducted approximately 200 management projects. An invasive pest policy was instituted, which also includes a lengthy list of invasive plants that are banned from being planted and urged to be managed. The most common invasives managed throughout the County Parks include: Porcelain Berry, Oriental Bittersweet, Japanese Barberry, Garlic Mustard, Water Chestnut, Japanese Stiltgrass, Norway Maple, Mile-a-Minute Weed, Mugwort, Tree of Heaven, Black Swallowwort, Common Reed, and Japanese Knotweed. Our management techniques mainly consist of hand-pulling, lopping, sawing, digging out, girdling, and mowing. Educating staff, volunteers and the general public plays a key role and over 22 training sessions were provided. The Conservation Division offered 10 in-house and outreach interpretive programs on invasive species. Nearly 2,000 volunteers provided 4,450 hours of invasive species management services.

West Point Military Academy

West Point Natural Resources Branch (NRB) continued to monitor and manage for problematic invasive species, but specifically focused on the removal of Water Chestnut and Mile-a-Minute vine. Water Chestnut was 95% eradicated by hand from six bodies of water encompassing 215 acres all together (Upper and Lower Cragston Lakes, Stilwell Lake, Mine Lake, Lusk Reservoir, and Long Pond). Three new Mile-a-Minute (MaM) infestations were discovered and reported to the Mile-a-Minute Project of the Hudson Valley coordinator; one of the three patches was hand-pulled in an early eradication effort and has not returned. In addition, 2,000 MaM weevils (*Rhinoncomimus latipes*) were released at a ca. 3 acre infestation. NRB staff will continue to monitor the progress of the MaM weevils and will be releasing at two new sites in 2014.

Approximately 10 acres of Russian olive and Japanese barberry were mowed in September 2013.

Traps were placed in a tributary of the Hudson River during the juvenile upstream migratory period (late summer) to monitor for the presence of Chinese mitten crabs; no evidence of mitten crabs was observed.

Westchester Land Trust

Conservation Partnerships

- Participated in public programs and work sessions sponsored by The Invasives Project – Pound Ridge including three lectures for landowners/members of the public and an invasives-removal field day at Pound Ridge Town Park;
- Hosted a Spring and a Fall training workshop conducted by the NY-NJ Trails Conference Invasives Strike Force(NY-NJ TC ISF) featuring identification and mapping techniques; and
- Mapping of invasive plants along the 6.5 miles of trails at the WLT owned Westchester Wilderness Walk/Zofnass Family Preserve (WWW/ZFP) in Pound Ridge by NY-NJ TC ISF intern.

Work Days

- Removal of invasives and planting of native trees, shrubs and perennials at a 10-acre property with conservation easement hosted by the landowner with participation of neighbors and other invited landowners;
- Two work sessions at the WWW/ZFP by volunteers from the NY-NJ TC ISF removing invasive shrubs, primarily *Euonymus alatus* and *Photinia villosa*, (cutting and herbicide application to larger specimens) from along the Northern Loop and Southern Loop trails;
- Removal of Stiltgrass from trail heads at the WWW/ZFP and removal of an isolated patch of Japanese knotweed from along the road shoulder and edge of wetlands by repeat cutting;
- Removal of multiflora rose and planting of 60 tree seedlings within the floodplain of the Hunter Brook Preserve in Yorktown in partnership with the Watershed Agricultural Council (WAC); and
- Removal of Norway maples and *Photinia villosa* from meadow areas at WLT's Sugar Hill Farm headquarters in Bedford Hills.

Education & Outreach

- Inclusion of a discussion of invasive plants, their impact on forest health, and value of planting native species in a Spring program – lecture, demonstration workshop, field walk - presented in cooperation with the Bedford Audubon Society, Pound Ridge Land Conservancy, and Mianus River Gorge Preserve; and
- Inclusion of a discussion of invasive plants, their impact on forest health, and value of planting native species in a fall program, part of the Hudson River Valley Ramble event, presented in cooperation with the New York Botanical Garden.

These programs and activities reached an estimated 140 people and benefited from the participation of 30 volunteers.