LOWER HUDSON PRISM

2022 ANNUAL REPORT

LOWER HUDSON PARTNERSHIP FOR REGIONAL INVASIVE SPECIES MANAGEMENT

NEW YORK - NEW JERSEY TRAIL CONFERENCE

LOWER HUDSON PRISM

NEW YORK STATE INVASIVE SPECIES MANAGEMENT

Lower Hudson Partnership for Regional Invasive Species Management
2022 Annual Report

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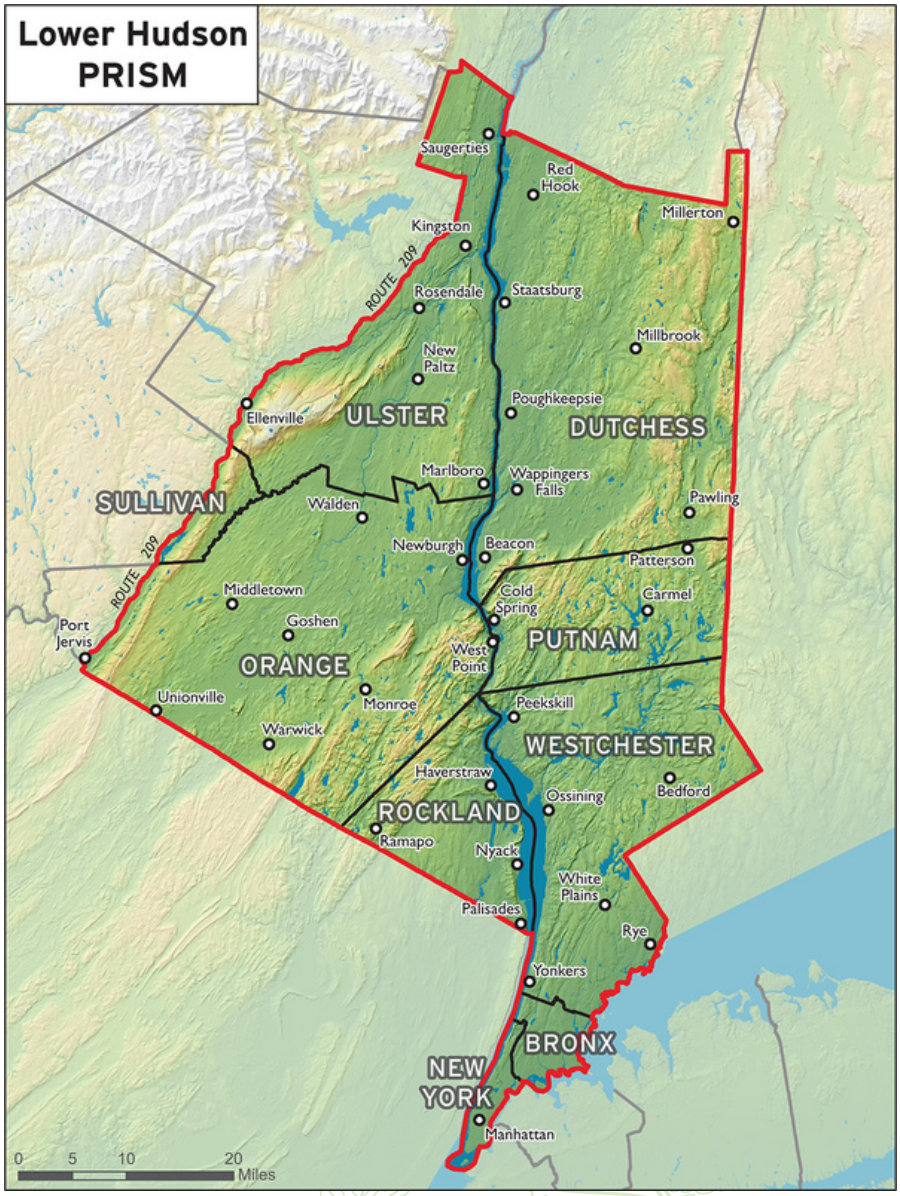


The above map represents the area served by the Lower Hudson Partnership for Regional Invasive Species Management (LH PRISM). The LH PRISM is hosted by the New York –New Jersey Trail Conference using funds from the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation.

Mission

The mission of the Lower Hudson Partnership for Regional Invasive Species Management is to protect the rich biodiversity and ecosystems of the Lower Hudson region through partnerships and collaborations that focus on controlling the introduction, spread, and harmful impact of invasive species.

The overarching goals guiding LH PRISM's strategic approach and mission:

Capacity Building: *The LH PRISM has a robust public identity, strong internal structure and a sustainable resource base to continue its mission.*

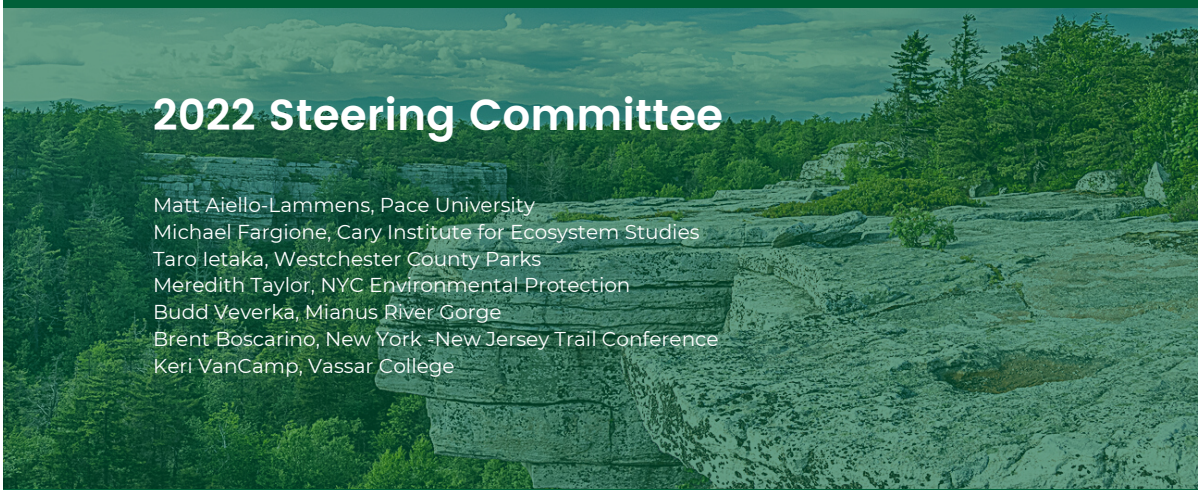
Conservation Targets: *The LH PRISM protects the rich, native biodiversity of the Lower Hudson Valley by focusing on priority targets for conservation.*

Strategic Invasive Species Management: *The LH PRISM supports and optimizes regional conservation through strategic invasive species management.*

Education and Outreach: *The LH PRISM reaches out to new audiences and delivers education that communicates the positive impacts of invasive species management on ecosystems. The LH PRISM offers clear steps for action on personal and community levels.*

Mitigating Pathways of Invasion: *LH PRISM has a coordinated program to prevent species introduction by focusing on pathways*

Information Exchange: *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).*



2022 Steering Committee

Matt Aiello-Lammens, Pace University
Michael Fargione, Cary Institute for Ecosystem Studies
Taro Ietaka, Westchester County Parks
Meredith Taylor, NYC Environmental Protection
Budd Veverka, Mianus River Gorge
Brent Boscarino, New York -New Jersey Trail Conference
Keri VanCamp, Vassar College

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Summary of Accomplishments

The Lower Hudson PRISM understands the importance of education, early detection, rapid response and long-term strategic management in mitigating the spread and negative impacts of invasive species. In 2022, LH PRISM staff and partners engaged in 271 projects that spanned 1,106 acres in the lower Hudson Valley. Many of these projects involved the collaborative work of our region's extensive volunteer network with an LH PRISM record-breaking number of 4,176 volunteers dedicating 17,203 hours to invasive species-related projects in 2022.

Summary of Accomplishments

2022
at a glance

We reached
223,873
individuals across our social media platforms

271
management projects over
1,106
acres

316
workshops, presentations, and outreach events educating over
6,300
people about invasive species

4,176
volunteers dedicated
17,203
hours of service

255
interns engaged

As part of our region's overall monitoring and management effort, LH PRISM's Terrestrial and Aquatic Invasives Strike Force Crews took on 37 high-priority projects that targeted 16 Tier 2 (emerging) invasive species to help protect our region's natural areas from the threats posed by invasive species. We also helped champion several youth engagement and internship program initiatives in historically underrepresented communities in the environmental field that helped drive many of this year's successes.

LH PRISM staff and partners placed a particular emphasis on beech leaf disease (BLD) and spotted lanternfly (SLF) education, outreach, monitoring and management in 2022. The Invasives Strike Force Trail Survey Program, for example, engaged 106 volunteers that dedicated 1,112 hours to detecting and reporting BLD and SLF to iMapInvasives in 2022 in addition to targeting invasive jumping worm, tree of heaven, and a monthly rotating invasive plant. Several of this year's LH PRISM subcontract projects focused on these high-priority species as well to help ensure our programs spanned the geographic reach of our constituents and the ecosystems we serve to protect.

The LH PRISM also attained new heights in terms of digital education and outreach initiatives this past year. This included the creation of a new LH PRISM Instagram account which, in partnership with our region's ground-breaking Conservation Dogs Program, created over 200 invasive species-related posts that reached 69,390 people in 2022. The LH PRISM Facebook and YouTube platforms saw similar historic jumps in digital engagement this past year. LH PRISM staff and partners also led 316 in-person and online events that engaged an additional 6,318 community members in invasive species-related topics. When put together cumulatively, these historic education and outreach numbers represent LH PRISM's ability to adapt to and find innovative ways to connect to our extended community in an increasingly hybrid learning environment.

Invasives Strike Force (ISF) Program Reports

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SECTION 1:

TERRESTRIAL INVASIVES STRIKE FORCE CREW

Strategic Management of Terrestrial Invasive Species on a Regional Scale

The Invasives Strike Force (ISF) is an AmeriCorps crew hosted by the New York-New Jersey Trail Conference's (NYNJTC) Trail Conference Conservation Corps (TCCC). This boots-on-the-ground crew works throughout the Lower Hudson Valley and is tasked with protecting terrestrial natural resources through strategic invasive species management utilizing best management practices. The ISF acts as an early detection, rapid response crew that prioritizes the management of new and emerging invasive species throughout the Lower Hudson Valley.

ISF Crew Leader, Claire, ready for action.

ISF Crew Member, Danny, removing Japanese spiraea.

The crew also endeavors to protect valuable resources such as rare or threatened species and habitats, areas of high biodiversity and low invasive species cover, or areas of high cultural or recreational value. One of the most effective strategies in invasive species management is prevention. The ISF contributes to prevention through engaging the public in volunteer workdays, raising awareness about invasive species ecology and management techniques, as well as reinforcing the value of healthy, native habitats. These efforts are planned and coordinated by the Terrestrial Invasive Species Project Manager and are made possible by support from PRISM and NYNJTC staff, the NYS DEC, project partners, and volunteers. In 2022, the Terrestrial ISF crew completed 25 projects throughout the Lower Hudson Valley working with 44 different species. Of these species, 16 were Tier 2 (emerging), 9 were Tier 3 (established), 17 were Tier 4 (widespread), and 2 were Tier M (monitor). Across all projects taken on this year, the ISF crew surveyed 484.76 acres, managed 106.96 acres, and removed 68,628 individual invasive species.

Nipping them in the Bud: Targeting New Invaders

The Lower Hudson Valley and the greater New York City metropolitan area is a high-risk region for invasive species spread due to a number of factors including the abundance of travel hubs in the region, ports of entry for trade, and the region's population density. Nonnative species are consistently brought to the area either purposefully or accidentally. Occasionally, these non-native species can escape their original confines and may survive in natural settings. Less frequently, these nonnative species will thrive in their new environments and spread at an exponential rate, threatening ecosystem, human, and/or economic health (and thus be deemed invasive). Early detection and rapid response actions to these emerging invasive species threats are the best chance we have at mitigating their damage or completely eradicating them. As an example, imagine how different the forest understories in the Lower Hudson Valley would look if there was an early detection, rapid response team employed when (the now widespread) Japanese barberry first started escaping into natural areas in the early 1900s. The crew worked on the management of the following Tier 2 emerging invasives in 2022: beefsteak plant, castor aralia, Chinese bushclover, chocolate vine, cutleaf blackberry, giant hogweed, hardy kiwi, incised fumewort, Japanese spiraea, kudzu, pale swallow-wort, paper mulberry, sapphire berry, Scotch broom, small carpetgrass, and sticky sage.

A prime example of early detection, rapid response management by the ISF is the removal of sticky sage from the region. There are only two known infestations of sticky sage in the Lower Hudson Valley, plus one in the Finger Lakes region, and then very few other scattered populations elsewhere in the United States.

Sticky sage has sticky seeds that grow on tall stalks, which can easily hitchhike on people and animals that can then establish new populations far from the source. This year, the Terrestrial Invasive Species Project Manager alerted their peers at the Finger Lakes PRISM of the population, which may lead to subsequent survey and management actions in that PRISM. The small infestation in Westchester County was visited with plans for removal in 2022; however, the team was pleasantly surprised that after five years of management, there was not a sticky sage in sight. Although this site will be monitored for years to come, this finding has huge implications for sticky sage management, indicating that the seed bank of this species may be viable for around five years.

The largest infestation of sticky sage spans more than 100 acres in Dutchess County. What's especially nefarious about this infestation site is that the Appalachian Trail cuts through it, which can act as a highway for invasion up and down the east coast. Because of the high regional and national importance of this project, staff spent a significant amount of time engaging in outreach to land managers with parcels adjacent to known infested areas in the hopes of better delineating the entire extent of the infestation boundaries. This year, the infestation was nearly encircled with both surveying and management, which is a huge victory for this long-term project. The ISF crew spent four weeks managing this infestation in 2022, contributing 482 hours to surveying 313.61 acres, treating 71.67 acres, and removing 25,921 sticky sage plants. Providing much assistance (and fun!) to this project was the Trail Conference's Conservation Dogs team **(seen below)**, who helped survey boundaries, find plants in less dense areas, and remove elusive plants where the ISF had already performed management actions (see more on the Conservation Dogs Program's efforts on page 16).

ISF Crew + Trail Steward synergy at Harriman State Park

ISF Crew + Trail Stewards surveying for Scotch broom.

Follow-up is Critical: Monitoring Populations Following Treatment

After invasive plant infestations are removed, additional work is required for years to monitor sites for re-emergence of the target species. This is because invasive species have a unique ability to overcome stress and can recover through cut vegetation rerooting, resprouting from root fragments, and growing from the seed bank. Further, a treated population requires more than one year of monitoring to count the project as a success; for example, environmental conditions may prohibit reestablishment from these sources in one year yet be optimal to grow back the next. Human error can also lead to the target species being missed. It only takes one instance of new seeds entering the seed bank to set the project back years. With these considerations, the LH PRISM does not deem a population locally eradicated until there have been no plants found at a site for a minimum of three consecutive visits over a minimum of three years. The ISF records data on populations prior to (and during) management but also engages in post-treatment monitoring and data recording for all projects they undertake. In 2022, the ISF visited 317 sites for monitoring purposes and there were no plants found at 58 sites previously treated by the ISF (18.3%).

Progress towards the regional eradication of the emerging invasive species, giant hogweed, highlights the importance of our area's post-treatment monitoring work. In partnership with the New York State Department of Environmental Conservation, the ISF has tackled this hazardous invasive species for multiple years. The crew must take extreme precautions, wearing Tyvek suits **(seen below)**, thick non-absorbent gloves, and eye protection since the sap of giant hogweed can cause severe burns when it contacts the skin. Giant hogweed is not only considered an invasive species due to its risk to human health, but it can also form dense thickets that displace native vegetation.

In 2022, 21 giant hogweed populations were visited and 13 had no plants found (61.9%). Overall, out of the 42 known giant hogweed infestations in the Lower Hudson Valley, 32 have had no giant hogweed found for at least one year (76.2%). Additionally, the largest giant hogweed site in the region had a significant reduction of plants managed from 2021 to 2022, from 7,082 to 1,114 plants managed (over a six-fold reduction in abundance). Data from monitoring these sites suggests that giant hogweed eradication is within reach in the Lower Hudson Valley.

Protecting Valuable Assets: Prioritizing Conservation Targets

When working with emerging invasive species, the goal of the project is regional eradication. Many invasive species removal projects, however, have another synergistic goal: protecting and restoring biodiversity. When significant natural areas (such as areas that host rare/endangered species and habitat or relatively uninvaded areas) are threatened by the encroachment of invasive species, the ISF steps in to protect these precious resources.

This year, the ISF worked to protect nodding trillium at Vassar College, prickly pear cactus at Iona Island, cattail sedge and creeping bushclover at Arnika Preserve, and a lady slipper species at Three Arrows Cooperative Society.

Trail Conference staff member, Nancy, assisting with kudzu.

ISF Crew managing an infestation of kudzu

In addition, the crew protected relatively uninvaded habitat, rocky summit grassland habitat, and Torrey's mountain mint at High Tor State Park, golden northern bumblebee at Croton Point Park, New England cottontail at the Great Swamp, and meadow habitat at Harriman State Park. Working to protect conservation targets is an inspirational and exciting way to tackle invasive species populations.

Many Hands Make Light Work: Hosting Volunteer Workdays

Invasive species management can seem like a Sisyphean task; invasive species are everywhere, they can be difficult to identify, and management is extremely labor and cost-intensive once established. Aside from prioritizing the management of emerging invasive species and invasive species that threaten conservation targets, two tactics can be employed to bring hope to the situation of dealing with more common invasive organisms. Outreach about the threats of invasive species and the importance of healthy, native habitats can change perspectives and work towards the prevention of future introductions. Teamwork can also lighten the burden of management through increased people-power. The ISF accomplishes both of these goals by hosting volunteer workdays.

This year, the ISF hosted 17 volunteer workdays in which 62 volunteers contributed 305 hours towards invasive species management. These removal days also serve to showcase that invasive species management can be an attainable goal and inspire volunteers to host their own workdays in their local communities. For more on PRISM partner-led workdays please visit the Partner Metrics section of this report.

Corps Member Experience: Providing Development for Environmental Professionals

As the ISF Crew is part of an AmeriCorps program, personal and professional development of Corps members is a critical component of the crew's season. At the beginning of the season, Corps members express their goals in individual development plans and are given praise and feedback during mid- and end-of-season reviews. Specific to invasive species management, the Terrestrial Invasive Species Project Manager endeavors to train the crew on all aspects of the job, including prioritization, invasive species ecology and management, plant identification, data management, reporting, mapping software, and volunteer engagement. Members embark on various additional trainings such as Wilderness First Aid, Leave No Trace, leadership, recruitment, communications, biweekly rotating webinars, and resume workshops. They are afforded the opportunity to network with environmental professionals by attending PRISM meetings and working with project partners. This year, the TCCC also implemented crew swaps where members worked synergistically and learned about sustainable trail-building and stewarding practices. To improve morale, collaboration, and spirit, TCCC members also engage in fun team-building activities. Members participate in crafting and competitive activities, as well as note their accomplishments at mid- and end-of-season celebration barbeques. Serving with the TCCC is an engaging, diverse experience that acts as a stepping stone to environmental leadership in future positions!


Dia (left) and Fagen (right) sniffing out spotted lanternfly egg masses.

Working with Conservation Dogs: Detection and Management Efforts

The New York-New Jersey Trail Conference Conservation Dogs Program (CDP) deploys highly trained dog and handler teams that help support Lower Hudson PRISM's Terrestrial Invasives Strike Force Program in protecting the ecological integrity of Hudson Valley native habitats through invasive species detection and monitoring. Below are project summaries for the species that the CDP targeted in 2022 as part of our broader Invasives Strike Force Program agenda.

Spotted lanternfly (SLF): The Trail Conference's Conservation Dogs Program performed SLF egg mass surveys and removals with the support of and in coordination with NYS Department of Agriculture and Markets and a USDA Plant Protection Act (PPA) grant. In total, the team surveyed for 91 hours and removed 231 egg masses from the environment in 2022.

Sticky sage: The CDP dedicated the month of August to sticky sage surveying and management in Dover, NY. 2022 was the third year the dogs joined the ISF crew in the fight against sticky sage by scouting new areas to help establish the boundaries of the infestation and double-check the sites that the ISF crew had already surveyed and treated in years prior. In 2022, the team surveyed 167 acres over 46.5 hours and helped remove 364 plants.

Scotch broom: CDP Program Coordinator, Arden Blumenthal, and American Field Labrador, Peat, worked on Scotch broom in 2022, but the scope of the project was narrowed from 43 sites in 2021 to a more manageable 24 sites - all within Harriman and Bear Mountain State Parks. These sites were selected as sites worth managing by the program because they were predicted to have minimal seedling or sapling plants. The team surveyed 14.29 acres over 14.34 hours and removed 131 plants.

Kudzu: 2022 was the third year the dogs have helped NYS DEC and the ISF Crew survey for kudzu. The dogs were strategically assigned sites that were expected to have few, if any, plants based on the results of surveys in previous years. Lead Trainer Josh Beese, American Field Labrador, Dia, and Belgian Malinois, Fagen, surveyed 23 sites, covering 30.88 acres, and removed 2 plants. Only 5 of the 23 sites had infestations.

Crested mint: 2022 was the second year the team visited Inwood Hill Park in Manhattan to survey for and manage late-summer crested mint. Unlike in 2021, the Conservation Dogs Program team was the only team to survey for crested mint and manually removed all plants found. The CDP surveyed nearly the entire park, searching 97 acres for over 15 hours, removing 208 plants.

Dia on the hunt for terrestrial invasive species.

LOWER HUDSON PRISM

SECTION 2:

AQUATIC INVASIVES STRIKE FORCE CREW

A Year on the Water with the Aquatic Invasive Species Program

The Lower Hudson PRISM's Aquatic Invasive Species Program, hosted by Teatown Lake Reservation, protects the region's waterways through early detection and rapid response, control of priority species, spread prevention, and various forms of outreach and education. In 2022, these roles were spearheaded by a new AIS Program Coordinator, Devin DiGiacopo.

Collecting samples for eDNA testing

Collecting samples for eDNA testing at Bashakill

The program's success under new leadership is owed to the impressive foundation built by the support received from the New York-New Jersey Trail Conference, Teatown Lake Reservation, the New York State DEC and Office of Parks, Recreation and Historic Preservation (OPRHP), New York Natural Heritage Program, PRISM partners and staff, and the incredibly dedicated members of 2022's Aquatic Invasive Strike Force (AISF).

The program's survey and management work is carried out each year by the AISF Crew, whose members learn over 80 aquatic taxa in a matter of weeks and adopt the canoe as their primary mode of transportation for over 5 months. In 2022, the AISF made extraordinary contributions to our understanding of the regional distribution of AIS, removed thousands of pounds of invasive water chestnut, and fostered record levels of public engagement in AIS spread prevention at highly trafficked Hudson River boat launches. In addition, the AIS Program Coordinator expanded the reach of the Lower Hudson PRISM through collaborative partnerships, provided critical support to early detection and rapid response efforts, sought new opportunities for education and outreach, and led or participated in numerous working groups. As a result, the Lower Hudson PRISM stands as a model for the proactive, collaborative approach needed to reach New York State's AIS management goals.

Defining the Baseline and Identifying New Threats through Monitoring

From May to September each year, the Aquatic Invasives Strike Force performs submersed aquatic vegetation surveys in waterbodies across the region, using “rake tosses” and point-intercept survey methodology to document both native and invasive plant species. The crew also records invasive animal observations and water quality metrics such as dissolved oxygen, pH, and nutrient levels. These surveys not only serve as crucial early detection measures but provide waterbody managers insight into the biological diversity they harbor - an important baseline by which we gauge invasion impacts and management success. Zooming out, these surveys also provide crucial information to those working to prioritize regional AIS initiatives. This year, the region benefitted greatly from new prioritization efforts, including models developed by the New York Natural Heritage Program (which the AIS Program Coordinator tested, provided feedback on, and gave a presentation on), and the Hudson River AIS Working Group (which the AIS Program Coordinator helped to build).

Through these efforts, the Lower Hudson region has gained an updated understanding of its native diversity and invasive species distributions and is becoming more efficient in allocating its resources toward the early detection of new invaders.

In 2022, the AISF completed 47 surveys at 25 waterbodies. In doing so, they recorded 2,774 observations (that’s 5,548 rake tosses!) and covered 6,197 acres.

Snorkeling for hydrilla in the Croton River.

Surveying Lake Sebago in Harriman State Park.

The AISF identified 14 invasive species in these water bodies, including common invaders like Eurasian watermilfoil (*Myriophyllum spicatum*), water chestnut (*Trapa natans*), and curly-leaf pondweed (*Potamogeton crispus*), as well as emerging species like fanwort (*Cabomba caroliniana*), and water spangles (*Salvinia minima*), the latter of which was identified for the first time in our region in 2022. Of note, the AISF crew discovered a new occurrence of hydrilla in Lake Sebago (Harriman State Park), the 3rd, and only untreated population in the region. The AISF spent an additional 2 full days mapping the infestation at Sebago (with the DEC, OPRHP, and American Canoe Association) and surveyed 3 additional, connected waterbodies to delineate the extent of the infestation. In addition, the AIS Program Coordinator assisted in tuber surveys at Sebago, managed all geospatial survey data, and provided expertise at multiple planning meetings between NYS DEC, OPRHP, and other partners.

Finally, the AISF continued to assist in state, federal, and other monitoring initiatives. The crew assisted the Terrestrial Invasives Strike Force for a total of 6 days, spent 2 days snorkeling for hydrilla in the Croton River with the DEC, joined the DEC and USFWS for 3 days to sample for northern snakehead in the Bashakill Wildlife Management Area, and joined OPRHP for a bioblitz of Iona Island in Bear Mountain State Park. These projects highlight the Lower Hudson PRISM's contributions to increasing regional capacity for early detection and rapid response.

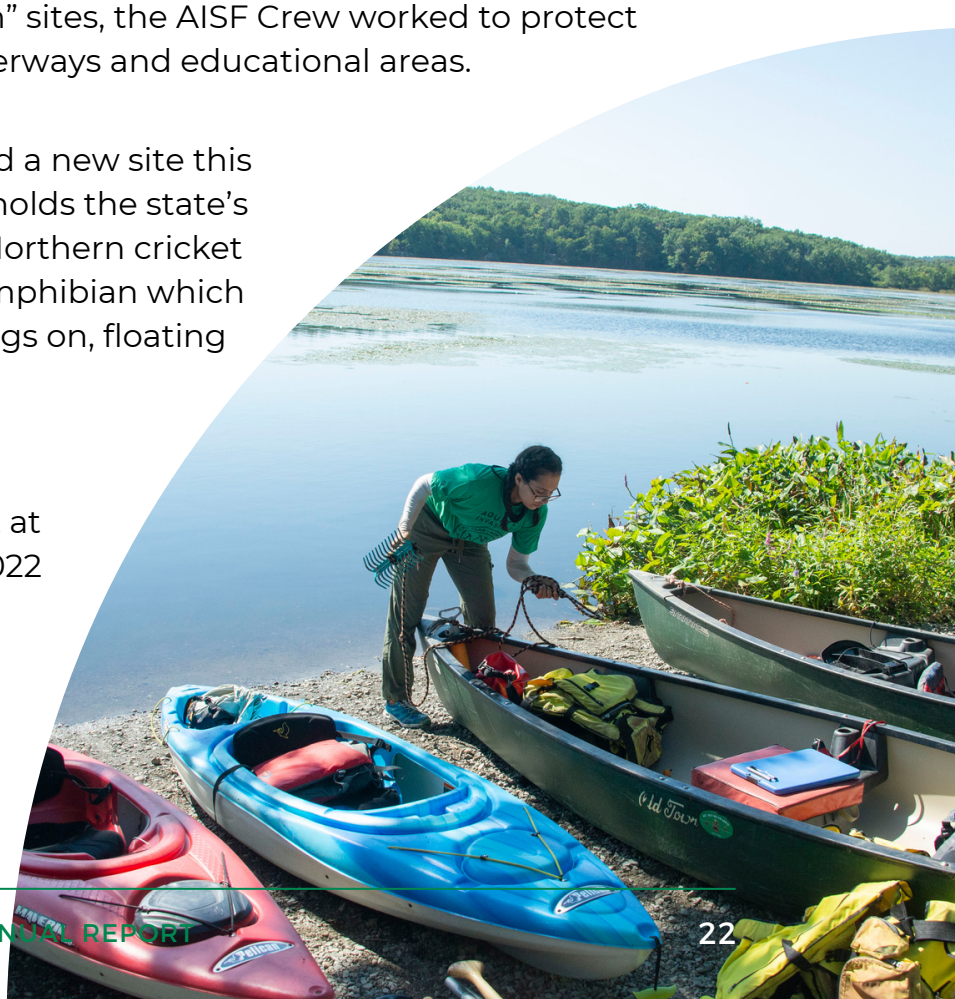
Water Chestnut Management Initiatives

Water chestnut is a prolific aquatic invader that spreads rapidly once introduced. It forms dense surface mats that shade out submersed aquatic plants, reduces dissolved oxygen levels, and impedes aquatic recreation. It was introduced to New York in the 1800s through the ornamental trade, and by the 1950s the species had made significant headway to being well-established in the Hudson Valley, particularly in the Hudson River estuary. While the Aquatic Invasives Strike Force could never eradicate water chestnut from the region completely, strategic management dictated by two goals (i.e., individual population suppression or eradication) can significantly improve the ecosystem function of distinct habitats and provide necessary access for recreational users.

This past year, the AISF conducted water chestnut pulls in 12 waterbodies, removing a total of 9,080 lbs and 57,921 rosettes of water chestnut. Many of these sites have been managed for 3-4 years by the AISF, and at 2 of 6 eradication sites, fewer than 100 plants remained in 2022. At the 6 “suppression” sites, the AISF Crew worked to protect access to recreational waterways and educational areas.

In addition, the crew added a new site this past year. Glenmere Lake holds the state’s largest population of the Northern cricket frog, a NYS endangered amphibian which choruses from, and lays eggs on, floating vegetation.

The 2019 AISF crew discovered water chestnut at Glenmere Lake, and the 2022 AISF crew planned to manage water chestnut there this past year.



Surveying for cricket frogs at Glenmere Lake.

Completing a night call survey at Glenmere Lake.

The AISF program collaborated with DEC biologists and technicians to conduct visual and breeding call surveys to map their distribution and surveyed the lake to delineate the water chestnut infestation. The AISF used this new data to propose modified short and long-term survey and management strategies to state biologists and were able to remove 630 plants (57 lbs) of water chestnut, while avoiding impacts on cricket frog recruitment. The LH PRISM looks forward to continued collaboration with NYS DEC to eradicate water chestnut at this site to protect cricket frog native breeding habitat.

Watercraft Inspections: Addressing a Root Cause of Aquatic Invasions

The LH PRISM Watercraft Inspection Steward Program (WISP) was initiated in 2015 as an effort to prevent the spread of AIS by boaters and anglers in response to NYCRR Part 576 Aquatic Invasive Species Spread Prevention, a law that mandates that recreational users take “reasonable precautions” to clean, drain, and treat any equipment that comes into contact with public waters in New York. On holidays and weekends, AISF members were stationed at five boat launches on the Hudson River and its tributaries: Sleightsburg Park in Esopus, Chodikee Lake and Highland Landing Park in Lloyd, Charles Rider Park in Ulster, and Echo Boat Launch in Croton-on-Hudson.

Additionally, the AIS Program Coordinator trained, supplied, and managed data collected by an American Canoe Association (ACA) intern, who hosted WISP under an LH PRISM subcontract, at the Lake Sebago boat launch. Together, the AISF and ACA intern inspected 2,116 watercraft and educated 3,101 visitors about AIS. These inspections led to the interception of 188 plant fragments attached to visitors' boats, including Eurasian and variable-leafed milfoil, brittle naiad, curly-leaf pondweed, and water chestnut. Overall, 86% of boaters participated in inspections, consistent with participation in 2021. Interestingly, self-reported preventative measures fell in 2022, with only 62% reporting that they adhered to "Clean, Drain, Dry" principles, compared to 90% in 2021. While this year was still a large improvement on the mere 46% of boaters reporting spread prevention measures in 2020, it is clear the need for public education on this topic must continue. Taken together, these results demonstrate that WISP has had a sizeable impact in impeding the spread of AIS through intercepting propagules and public education.

Raising Awareness through Outreach and Education

Engaging the public in the fight against aquatic invasive species is imperative to the region's success. In addition to the AISF's participation in WISP, the AIS Program Coordinator attended two tabling events, presented in one webinar series, and hosted a survey demonstration and stewardship discussion for the American Canoe Association at Lake Sebago, collectively reaching nearly 100 people. Further, the AIS Program Coordinator served as an instructor and provided dozens of plant samples for the Northeast Plant Management Society's 1st Annual Plant Camp. This three-day "sleepaway" camp provided 44 burgeoning aquatic ecologists (and professionals in related fields) the tools to accurately identify native and invasive plant diversity in our region. Collectively, these efforts have brought attention to the issue of AIS and provided both members of the public and professional audiences the capability to recognize and report invasions.

SECTION 3:

CITIZEN SCIENCE, EDUCATION AND OUTREACH

Inspiring Stewardship through Citizen Science, Education, and Outreach

The New York-New Jersey Trail Conference is a volunteer-powered organization that organizes over 3,000 volunteers that dedicate approximately 80,000 hours annually to protecting our region's natural areas and trail systems through maintenance, trail building, and stewardship activities. Invasive species volunteers have grown into an increasingly higher share of the overall volunteer work effort at the Trail Conference through the growth of the Invasives Strike Force (ISF) Volunteer and Citizen Science Program.

Tabling at Sustainability Walk & Showcase in Rockland County.


Ryan educating a volunteer on how to ID invasive groundcover.

In 2022, the Trail Conference's ISF Volunteer and Citizen Science Program engaged a total of 512 volunteers who dedicated 4,336 hours to invasive species-related management and monitoring activities.

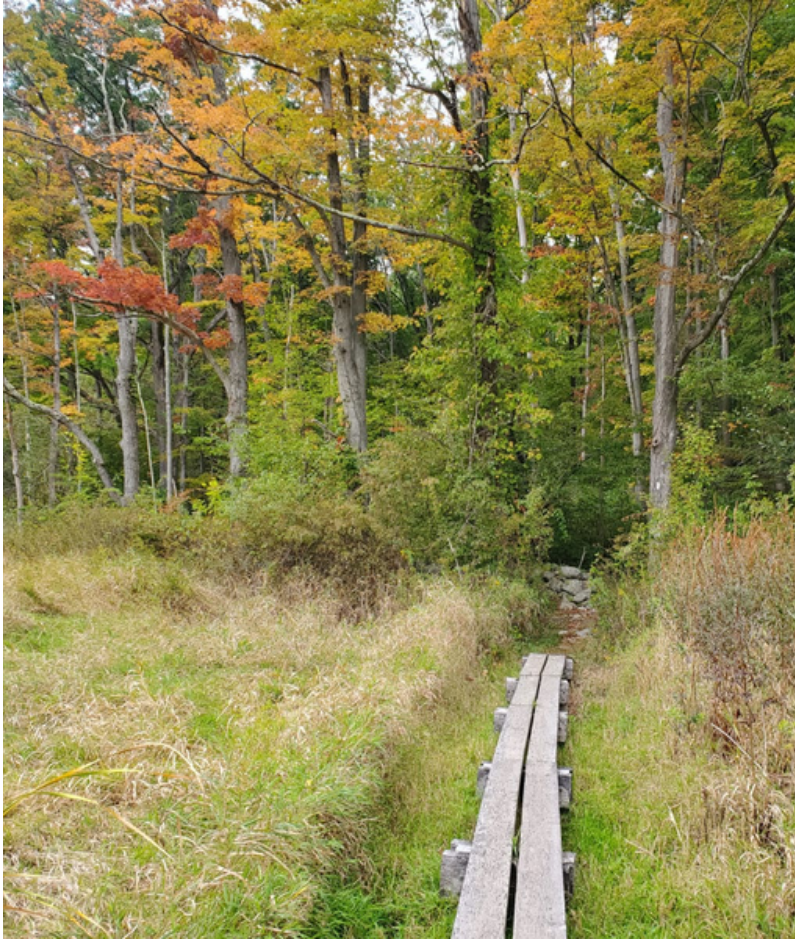
ISF Training Workshops and Educational Events

In 2022, LH PRISM staff coordinated 8 invasive species survey-related training workshops focused on invasive species identification and reporting through the iMapInvasives mobile app. In total, 311 individuals dedicated 583 hours to participating in invasive species trainings alone that directly led to community action and reporting (see more detailed reporting in ISF Trail Survey Program Section).

In addition to these in-person or live-streamed trainings, LH PRISM staff also created on-demand training resources posted to our LH PRISM YouTube Channel that directly supported volunteer efforts. For example, the ISF Surveyor Training Workshops posted to our YouTube Channel received 854 views in 2022. These training videos provided helpful on-demand support for our surveyors while in season, building identification confidence and ensuring more accurate reporting.

In addition to these workshop videos, our staff also created 5 monthly field ID videos that focused on high-priority emerging invasive species that featured distinctive phenology markers for that given month. Volunteers were encouraged to search for these species and report to iNaturalist (a mobile app that works well with beginning surveyors as it has a built-in image recognition/species identification feature) as part of our ISF EcoQuest Challenge Survey Program. These monthly focal invasive species videos (i.e., Japanese spiraea, swallowwort, kudzu, mile-a-minute, callery pear, and incised fumewort) received 769 views on our YouTube Channel in 2022. Our ISF EcoQuest Challenge video distribution list is currently at 312 registered participants.

LH PRISM staff at the Trail Conference also helped lead 27 other invasive species education and outreach-related workshops and events in addition to these survey-focused trainings. This included several invited presentations at regional conferences (e.g., Round Goby Invasion Ecology at the New York State Conservation District Employees' Association Water Quality Symposium), at local schools (e.g., Introduction to Invasive Species to 100 5th graders at Wappingers Central School District) and with various interest groups such as those in the utility and transportation fields (Invasive Species Identification and Reporting at a Category VI Pesticide Training Workshop in Syracuse, NY, **seen below**). These additional events reached 814 participants to arrive at a grand total of 2,852 hours in education and outreach-related trainings and workshops organized and overseen by LH PRISM staff in 2022. The diversity of educational events led by LH PRISM staff reflects our dedication to reaching multiple stakeholder audiences and constituents in the Lower Hudson Valley. Please see LH PRISM Partner Metrics Section for additional educational materials and online learning resources produced by LH PRISM partners in addition to these PRISM staff-led events.



Photos from the field provided by ISF surveyors.

ISF Trail Survey Program

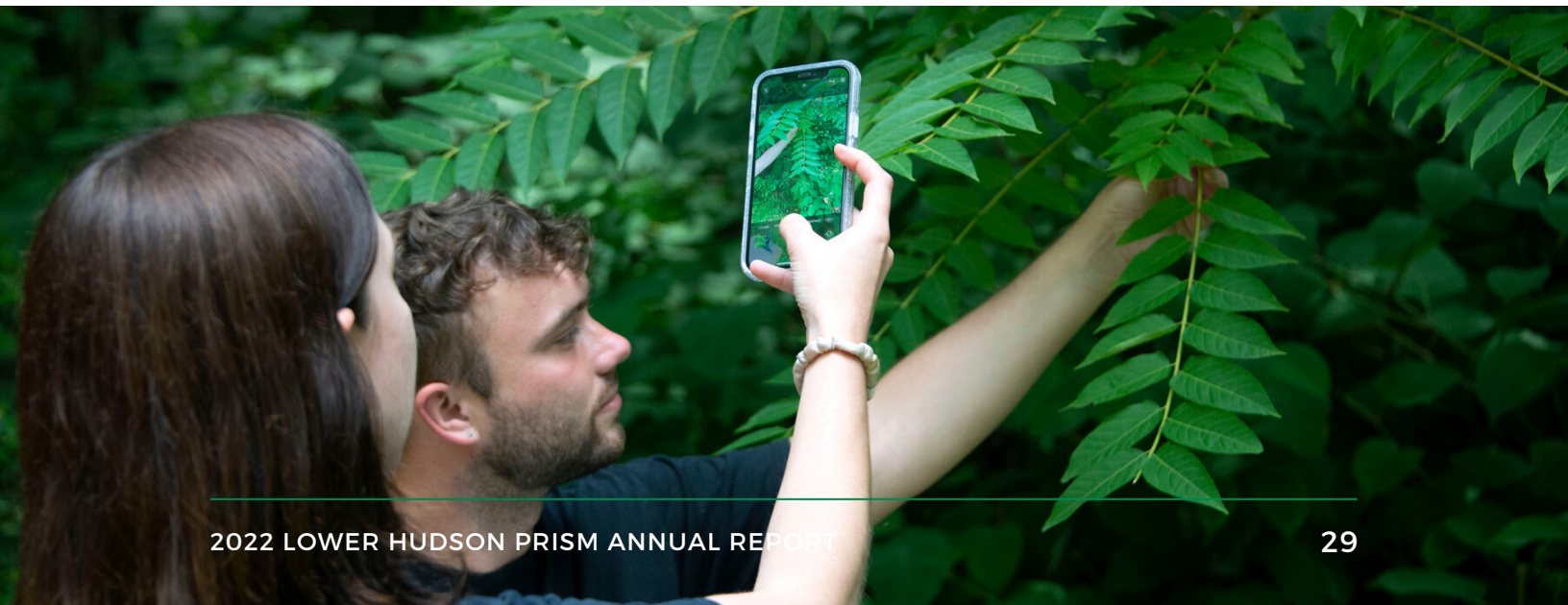
Historically, invasive species trail surveys organized by LH PRISM staff have focused on a set list of the 14 most common (ISF Standard) and 11 emerging species (ISF Intermediate) that inhabit and threaten biodiversity along our region's trail system. These historical records serve as an incredible foundational 10-year dataset and are now stored permanently in the Trail Conference's own GIS and invasive species database as well as in iMapInvasives. These data have allowed LH PRISM to monitor change over time in distribution following removal efforts as well as shape annual management plans on a landscape scale.

In 2022, the ISF Trail Survey Program shifted its focus towards detecting and reporting 4 of New York State's highest priority species (beech leaf disease, spotted lanternfly, tree of heaven, and jumping worms). The program also highlighted a rotating monthly invasive plant species of high priority that showed easily identifiable features for that month and was also featured as part of the ISF EcoQuest Challenge video series. By focusing exclusively on these high-priority species in 2022, our management teams could more quickly adapt and establish strategic plans to target emerging threats to our region.

Reporting on the more common invasive species that used to be a part of the historical ISF survey program will now fall under the responsibility of the Trail Conference's Trail Maintenance community, a group of 1,200+ active volunteers that dedicate 40,000-50,000 hours per year maintaining trails including those in the Lower Hudson Valley of NYS.

Of the 106 volunteers who took on a survey assignment in 2022, 18 were new to the ISF Trail Survey Program. Most survey assignment sections are 1-2 miles in length and surveyors have from the time they are trained until the end of October to submit their data to LH PRISM staff for processing. These surveyors dedicated a total of 1,112 hours to invasive species detection and monitoring in 2022 for a total survey completion rate of 83% (126 out of 151 assignments were completed).

In 2022, each ISF surveyor reported findings directly to the iMapInvasives mobile app in the field, which is another change to our programming from years past. This new direct reporting procedure has helped streamline data processing and communication time with New York Natural Heritage Program which oversees the iMapInvasives database. This increased efficiency led to Lower Hudson PRISM winning all three different terrestrial categories for invasive species reporting (beech leaf disease, jumping worm, and spotted lanternfly) as part of the 7th Annual Invasive Species Mapping Challenge. This inspiring effort was almost entirely driven by volunteer reporting, with two of our volunteers, Irene Sheldon and Judy Dacal, receiving individual awards for most records posted in the jumping worm, tree of heaven, and beech leaf disease categories (in addition to the PRISM-wide prizes).



Trail Steward assisting with invasives removal.

Trail Steward and AISF swap days were a success.

ISF Trail Steward Program Initiatives

The Trail Conference's Trail Steward program engages visitors at popular high-use trailheads and summits in the greater New York metropolitan area to educate them on Leave No Trace principles, responsible outdoor recreation, hiker safety and preparedness, and ecological stewardship. By utilizing the "Authority of the Resource" technique in interactions with visitors, Trail Stewards emphasize the protection of natural resources and the benefits of a healthy ecosystem to encourage positive shifts in behavior. In conversations with visitors, Trail Stewards have the perfect opportunity to inspire action and raise awareness of invasive species and the importance of cleaning boots, gear, and pets – before and after their visit. Trail Stewards receive training and education throughout the season on plant identification, common and emerging invasive species in our region, and the best methods for communicating effectively with a diverse range of visitors.

In 2022, the Trail Conference's Trail Steward Program dedicated 864 hours to invasive species-related messaging and management activities. The Trail Stewards encountered over 46,000 visitors between May and October at trailheads, out on trails, and at popular summits.

Increased signage, such as informational posters at the steward stations and boot brushes at trailheads and kiosks, served as talking points for visitors who may be first-time trail users, unaware of the threat that invasive species pose to the parks in and surrounding our region. Trail Stewards also engaged the public in volunteer opportunities and encouraged visitors to participate in ways that were meaningful to them, (e.g., invasive species-related trail maintenance, outreach and education, or citizen science).

In addition to their weekend education and outreach-focused stewarding activities, the Trail Stewards teamed up with ISF/AISF crews to tackle invasive species surveying and removal projects over 12 days throughout the 2022 season. They also undertook an ongoing restoration project at one of their weekly stewarding locations, removing invasive plants so the native species could flourish. Looking forward, integrating the work of the Trail Conference's Trail Stewards Program into LH PRISM activities will significantly advance the goals of our education and outreach objectives.

Hudson Valley Trail Stewards assist TISF.

Catskill Trail Stewards assist TISF.

Hudson Valley Trail Stewards assist AISF.

Lower Hudson PRISM Partner Reports

SECTION 1

LH PRISM PARTNER METRICS

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SECTION 1:

LH PRISM PARTNER METRICS

LH PRISM Partner Meetings and Working Groups

One of the goals of the LH PRISM's strategic plan is to focus on capacity building. Specifically, we aim to build a strong, stable network of organizations that has the ability to manage invasive species and also becomes known by the general public as the go-to information source on invasive species identification, education, monitoring, and management.

To maintain and grow our organizational structure, we focus on developing and implementing strategies to help ensure our partners remain active and engaged while simultaneously recruiting new partners to grow our membership. Over the past ten years, the LH PRISM has expanded to include 58 partner organizations.

Partner Meetings

In 2022, we held 5 PRISM partner meetings. January and December's partner meetings focused on subcontractor presentations (i.e., presentations from representatives or organizations that received LH PRISM funding to carry out invasive species-related projects). These presentations provided partners with an opportunity to learn and ask questions about ongoing educational, monitoring, and management efforts in order to support partners' own future work plans and how best to integrate their approach with LH PRISM priorities.

March's meeting laid out the scaffold of the year's annual work plan by outlining the upcoming field schedules for the Aquatic and Terrestrial Invasives Strike Forces as well as summarized the outcomes of various LH PRISM working group meetings that took place in the early spring.

July's partner meeting focused on aquatic invasive species with presentations on round goby, northern snakehead and hydrilla from NYS DEC and NYC DEP staff.

The meeting also featured invited "lightning presentations" from seasonal staff hired by our partner organizations. The afternoon agenda was highlighted by a live demonstration of the survey and management techniques employed by the AISF.

Fall LH PRISM meeting held at Pace University.

Conservation Dogs demo during LH PRISM meeting.

October's partner meeting focused on consolidating beech leaf disease data collected by NYS DEC biologists and PRISM partners throughout the LH PRISM region. We also showcased New York Natural Heritage Program's invasive species prioritization tools as well as led focal discussion groups on spotted lanternfly, beech leaf disease, aquatic invasive species, and deer management/invasive species topics. The October meeting closed with a live demonstration of the detection procedures employed by the Trail Conference's Conservation Dogs Program.

The combination of presentations, discussion groups, data reporting, and live demonstrations featured in our partner meetings highlights our efforts to engage partners with diverse experiences, backgrounds, and viewpoints. We continue to have robust attendance at our PRISM partner meetings as exemplified by our July 2022 meeting (our first in-person meeting since the beginning of the COVID-19 pandemic) which had over 70 people in attendance. This speaks to our ability to offer engaging content and provide a welcoming forum to share information relevant to different invasive species stakeholders in the region.

Working Group Updates

Ad hoc working groups, formed from partners and non-partner participants who express interest in working on a proposed topic, perform a significant portion of the PRISM's strategy and planning work (outside of regular partner meetings), as guided by the PRISM Coordinator. This working group structure has worked extremely well towards meeting and, in some cases, exceeding annual action plan goals. In 2022, working groups on Beech Leaf Disease, Invasive Species Categorization/Tier Classification, Aquatic Invasive Species, Priority Conservation Areas, and Volunteer Engagement served as great informational tools that leverage up to statewide/cross-PRISM working groups such as the Education and Outreach, Terrestrial Coordination, and Aquatics Coordination Working Groups.

One important product of these working group meetings was a completely updated species categorization document which classifies many of the invasive species found within the LH PRISM into 5 tiers: Tier 1- threat, Tier 2- emerging, Tier 3 – established and Tier 4 – widespread, and Tier M – monitor. In 2022, the terrestrial species categorization group, which consisted of 12 invited expert contributors met on 4 separate occasions to evaluate whether any changes needed to be made to any species' Tier rankings.

Some of the changes proposed by the Terrestrial Invasive Species working group included moving chocolate vine and Japanese spiraea from Tier 2 to Tier 3. For these species, the distribution throughout the LH PRISM has reached the point where regional eradication is no longer feasible. In the case of Japanese spiraea, there are multiple large sites where chemical management is not permitted, and manual removals have been incomplete. Japanese spiraea is widely planted as an ornamental and is likely underreported. Chinese bushclover also moved from Tier 2 to 3. A large infestation in a gas pipeline right-of-way in Harriman State Park was discovered that will likely not be able to be managed. This species has historically been used for erosion control and is likely underreported. Additional species that moved from tier 2 to 3 include sapphireberry, Japanese snowball, and cutleaf blackberry.

The AIS species categorization group consisted of 12 experts that met on 3 separate occasions in 2022. The group recommended that variable leaf watermilfoil, water spangles, and round goby move from Tier 1 to Tier 2 after several reports in the Lower Hudson Valley in 2022. One other notable change was red-eared slider turtles moving from Tier 2 to 4 since no containment goal has yet to be identified and the species is likely being underreported in the region. We intend to augment turtle survey efforts in 2023. The updated terrestrial and aquatic species categorization document can be found here: lhprism.org/document/species-categorization-priorities

Catskill Trail Stewards assist TISF with Japanese spiraea removal.

Partner Education and Outreach Metrics

In 2022, Lower Hudson PRISM partners found creative and innovative ways to engage volunteers and community members in education and outreach across multiple digital formats and through limited in-person events. In addition to the training sessions led by LH PRISM staff that were reported in the previous sections of this Annual Report, LH PRISM partners hosted 129 training sessions and workshops that were designed to teach volunteers to carry out specific invasive species-related tasks such as surveying, monitoring or removing invasive species. These training sessions and invasive species workshops reached 1,509 participants. Partners held another 152 education and outreach-oriented events in which invasive species were the primary focus (but not necessarily tied to a specific volunteer task or citizen science project). These additional invasive species-focused educational events reached another 3,684 participants.

Online Education and Outreach Metrics

In 2022, our invasive species education and outreach strategy took a deep dive into expanding our reach online via both social media and short-form videos. Our Facebook page reach (the number of people who see our content) was up 717% from last year to 26,483 and our following grew to 673. We expanded our reach further by creating an Instagram account dedicated to LH PRISM. Since its creation in late April, our account has accrued 293 followers and attained a reach of 26,645.

A view of the Gunks entices followers on social media.

Mile-a-minute was a featured EcoQuest Challenge species.

Our Instagram reels have been particularly successful at engaging our followers acquiring over 17,000 views since our account's inception. Using humorous and meme-like content, our expanded following has allowed us to engage with new, younger audiences, particularly individuals between the ages of 18-34. In addition, the NY-NJ Trail Conference Conservation Dogs Instagram account reached 42,745 individuals with 13 invasive species-related posts and reels, gaining a total of 2,305 followers.

The LH PRISM YouTube account also grew by 189 subscribers, amassing over 21,000 views and over 1,800 hours of watch time. This past year also brought about the addition of short-form videos documenting the work of our Invasives Strike Force crews. We produced a piece highlighting our work managing the emerging invasives species, sticky sage, along the Appalachian Trail corridor, which has been viewed more than 1,500 times. Another video focused on the work of our Aquatic Invasives Strike Force who helped maintain and preserve a balanced ecosystem of a New York lake home to the endangered Northern cricket frog.

Our team also participated in two podcasts that featured segments on invasive species work. These podcasts collectively have over 1,200 listeners (though the number continues to grow as time passes).

In addition to our online presence, we also communicated with our volunteers and supporters about upcoming events, LH PRISM highlights, and accomplishments through our monthly newsletters that are sent out in the first week of each month. This invasive species-focused newsletter has 3,453 subscribers which totaled 17,341 opened newsletters in 2022. We also had a very successful New York Invasives Species Awareness (NYISAW) week this year. Stewardship Communications Coordinator, Krysti Sabins, served on the statewide inter-PRISM Education and Outreach Committee as well as the NYISAW Committee. These working groups consisted of education and outreach representatives from each PRISM and NYS DEC, New York Natural Heritage Program, and other state agency and park representatives, among others. LH PRISM NYISAW messaging reached 13,958 on social media channels leading to 432 engaged users.

Overall, we value these types of engagement opportunities as they bring attention to LH PRISM's work, while simultaneously providing fun, educational content to further the public's understanding of invasive species and the impact they have on our region.

Partner Management and Monitoring Metrics

LH PRISM partner organizations made great strides throughout 2022 in their ability to plan and carry out invasive species monitoring and management projects on their own properties. The strategies for achieving this goal include prioritizing the management of Tier 2, emerging invasive species and those that threaten critical habitat and rare or endangered species, following an early detection and rapid response model. The following sections outline some of the key focuses of the LH PRISM's management and monitoring efforts in 2022 as well as some highlighted partner success stories.

BLD Working Group partners and volunteers checking monitoring plots.

Focus on Beech Leaf Disease

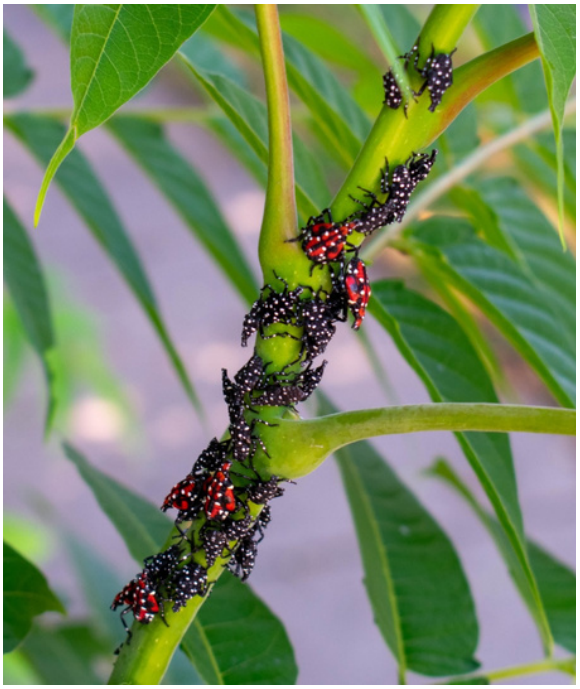
The LH PRISM's Beech Leaf Disease Working Group was particularly active in 2022. Across 6 meetings in early spring of 2022, this working group was able to bring in several speakers from NYS DEC and members from the research community from Ohio (where they have been dealing with BLD since 2012) to consolidate information on the efficacy of current strategies to combat this threat and design a plan of attack in 2022. One action item from these meetings was to help build a BLD monitoring plot structure in collaboration with NYS DEC. Altogether, 15 beech leaf disease monitoring plots were established in the LH PRISM in 2022 by partner organizations, volunteers, and NYS DEC biologists. We found the highest rates of infestation and symptom progression in Westchester County and the Bronx and the lowest rates in Dutchess and Ulster Counties. LH PRISM had the largest number of positive detections of BLD in iMapInvasives of any other PRISM in 2022 (506 positive detections). Multiple LH PRISM partners (e.g., Teatown Lake Reservation, Mianus River Gorge, and Westchester Land Trust, among others) also engaged in experimental BLD management plots focused on revegetation efforts and the relationship between deer exclosures and soil conditions on BLD symptom progression in an attempt to develop strategies to restore areas that experienced significant canopy loss due to BLD. LH PRISM will be joining with other PRISM representatives to form a NYS-wide BLD Working Group in 2023.

Focus on Spotted Lanternfly

In 2021, we ramped up efforts in surveying and rapidly responding to spotted lanternfly reports, including installing traps and performing egg mass surveys and removals at points of origin like interstate truck stops, near airports, and near interstate visitation areas such as the Walkway Over the Hudson. This work continued in earnest in 2022. Altogether, LH PRISM staff installed 62 circle traps in 5 known infestation areas (Orangeburg, Sloatsburg, Montebello, Scarsdale, and Newburgh, NY) and deployed 10 volunteers who dedicated 157 hours to servicing these traps and reporting results to NYS Department of Agriculture and Markets in 2022. These traps helped to remove 6,665 SLF nymphs and adults from the LH PRISM region this past year.

SLF was also a focal species as part of this year's Invasives Strike Force Trail Survey Program (see ISF Trail Survey Section of this Annual Report for more details). Volunteers and iMapInvasives users posted 165 detected and 45 undetected reports to iMapInvasives in 2022. Several SLF education and outreach-focused projects were funded by LH PRISM subcontract funds in 2022. Additional details on these SLF projects can be found in LH PRISM Subcontract portion of this Annual Report.

CCE Rockland intern installing SLF traps



Close-up view of SLF nymphs.

Focus on Volunteer and Youth Engagement

The Volunteer Engagement Working Group, in collaboration with the efforts of LH PRISM staff, help to build capacity for our partners to sustainably establish their own volunteer networks to support future invasive species initiatives. In addition to LH PRISM staff-led projects, our partners connected 3, 664 volunteers with hands-on invasive species projects in 2022. These volunteers dedicated 12,867 hours to protecting our region's parks and natural areas from the threat of invasive species. LH PRISM staff continued to assist in developing priorities and publicizing our partner's volunteer workdays on our website, Facebook page, and monthly volunteer newsletter. Partner organizations such as Westchester Land Trust, Pound Ridge Land Conservancy, New York Restoration Project, Bronx River Parkway Reservation Conservancy, and Westchester Parks Foundation (among others) now conduct multiple volunteer invasive species workdays during the main field season.

In 2022, we also placed a pointed emphasis on forging relationships with partners and non-profits to support environmental programming, professional training, and community-engaged learning in historically underserved areas of our PRISM region to reach underrepresented populations in the environmental field. We found great success in building partnerships with Groundwork Hudson Valley **(seen below)**, for example, in helping Yonkers public school students connect with their local parks, local non-profits and land trusts, providing multi-year career-ladder programming opportunities for these students to advance in the field. LH PRISM partners helped support 254 interns in 2022. To highlight these important projects, we added an internship and seasonal staff mixer to the agenda of our July 2022 partner meeting to connect students and young professionals with each other and our partner organizations.

iMapInvasives Reporting

LH PRISM has also placed and will continue to place, an increased emphasis on training volunteers in invasive species identification and reporting protocols by promoting and advertising iMapInvasives. In the past two years, more than 200 volunteers have been trained in iMapInvasives reporting following trainings run by LH PRISM staff. Since 2010, LH PRISM has provided a staggering 91,306 records to iMapInvasives, more than double that of any other PRISM according to iMapInvasives' annual reports. In 2022, LH PRISM contributed 14,882 of the 50,674 records statewide. Close to half of the not detected records (10,003 out of 20,867 total statewide) and more than half of the total searched areas (12,473 out of 24,750 total statewide) came from LH PRISM partners and volunteers. LH PRISM iMapInvasives users reported 35 species that were new to the county in 2022, with the most reports coming in from Dutchess County (8) and Putnam County (6). These results demonstrate the power of our network to mobilize volunteers and land managers to survey fr invasive species , leading directly to better early detection capabilities for our region.

Photos from the field provided by ISF surveyors.

SECTION 2:

LH PRISM PARTNER SUCCESS STORIES

In addition to the Invasives Strike Force work projects outlined in previous sections of this Annual Report, LH PRISM partners engaged in at least 234 removal projects in 2022, 34 of which targeted Tier 2 species. This work was carried out across 490 acres of land and water. Additionally, LH PRISM partners monitored 382 acres of previously treated sites to evaluate management success. The below examples represent a snapshot of the breadth of invasive species-related management projects our partners engaged in this past year.

North Salem Open Land Foundation

In the spring of 2022, North Salem Open Land Foundation (NSOLF) successfully located, tagged and treated hemlock stands to ensure the trees have some assistance in the fight against the impacts of hemlock woolly adelgid. This is a continuation of a management program already in place although the new tagging will allow NSOLF to gauge the success of the program moving forward in terms of growth and general tree health to determine management efforts in the future. This project also added a significant hemlock stand that had not been treated in the past as part of NSOLF's management efforts. In addition, NSOLF planted 20 more native trees and shrubs in an ongoing restoration area at their Weil Preserve with the help of volunteers. This site now brings NSOLF up to a total of 275 native trees and shrubs planted since 2020 across their preserves. This work could not have been done without the help of many volunteers, land stewards and LHPRISM partners!

T4T's planting event at Weil Preserve in April '22.

Trillium, Inc. crew member treating hemlocks at Halmi Preserve.

Let's Talk Lakes Program.

Lake in Clarence Fahnestock State Park.

Cornell Cooperative Extension Putnam County

Putnam County is home to more than 50 lakes, reservoirs, ponds, and streams, with many residential areas directly adjacent to these water bodies. Putnam County's local Department of Health reported increases in harmful algal blooms (HABs) and a need for an outreach event to focus on landowner practices that affect water quality. Simultaneously, CCE (as a Lower Hudson PRISM Partner) sought to offer hands-on, invasive species education.

Partnering with state and local agencies, CCE Putnam developed the Let's Talk Lakes Program for residents who own land adjacent to surface waters. The topics presented at the conference included nutrient management, harmful algal blooms, and invasive species management. With hands-on invasive species demonstrations and traditional lectures, facilitators covered aquatic weed management, biofiltration, nutrients and pollutants, and harmful algal blooms. Local governments showed attendees how they applied for and won grants to help manage water bodies. The day rounded out with a Citizens Statewide Lake Assessment Program training for qualified participants. Of the 121 attendees, 46 reported that they intended to change management practices because of what they learned at the Let's Talk Lakes conference. All respondents reported that they had learned something new.

New York Restoration Project (NYRP)

NYRP reforested roughly 3 acres of land in an extremely underserved area of northern Manhattan inside of Highbridge Park. This site was ravaged by invasive species (mugwort, porcelainberry, honeysuckle, oriental bittersweet, Japanese knotweed, wineberry, multifloral rose, Norway Maple, and white mulberry), a vast amount of storm damage, and decades of litter. With the assistance of roughly 100 volunteers, NYRP removed roughly 2,000 lbs of invasive plants and 1,000 lbs of trash and planted roughly 450 native trees/shrubs in the Summer/Fall of 2022. NYRP plans on GIS mapping these trees over the winter and monitoring them for the foreseeable future. Aside from the usual ecological benefits of replacing non-native invasive species with native plants, this reforestation effort will eventually close a large gap in the forest canopy. This site also borders a large playground and active street that is visible by many pedestrians and was a complete eyesore with all of the invasive vines and trash intermingled. This project was a great way to converse with the community about the benefits of a healthy forest and the work that NYRP does inside the park every day.

Before and after of 25 volunteers removing around an acres worth of porcelainberry.

Volunteers working to remove invasive species during "I Love My Park Day".

Friends of the Old Croton Aqueduct (FOCA)

In May 2022, volunteers from SavATree worked on a heavily invaded section of the Aqueduct, preparing it for those planning to volunteer at an “I Love My Park Day” volunteer event the following week. 59 volunteers, including families with young children, local politicians, and experienced crew leaders representing present and former PRISM members and local environmental organizations, removed 792 pounds of garlic mustard, 402 pounds of lesser celandine, and over 200 individual invasive plants leaving entire areas of the Aqueduct significantly improved. This restored area included a small section FOCA termed the “secret grotto” where numerous native plants were uncovered and protected. Local photographers documented the efforts, adding to the sense of joy and accomplishment experienced by the volunteers.

A companion “I Love My Park Day” event was hosted by the Invasives Strike Force on May 29th above the northernmost section of the Aqueduct close to the Croton Dam that was designed for adults and teenagers. During that event, some volunteers requested that FOCA organize another event targeted at young children. On June 5th, the families came early in the morning to work on the area that had been cleared of 200 invasive bushes and vines on I Love My Park Day and managed to remove 140 pounds of the garlic mustard that could be safely pulled up without the prickly bushes and vines impairing their work. Inspired by the work of the volunteers and by the involvement of some of the Aqueduct neighbors, FOCA held a celebratory guided walk on the Aqueduct Trail on July 30th, attended by 33 community members.

Mohonk Preserve

Mohonk Preserve volunteers helped to discover the first detection of southern pine beetle (SPB) on the Preserve. They collected SPB from pheromone traps and monitored stands for signs of an outbreak, spending over 100 hours in the field this summer. Having dedicated volunteers to collect data and monitor Mohonk's forests saved valuable staff time that freed up employees to complete pitch pine stand inventories to evaluate Mohonk's current structure and density and to participate in an SPB hazard modeling study with NYSDEC.

NYC Department of Environmental Protection

2022 marked the second year of full-scale treatment of hydrilla in New Croton Reservoir. The dry conditions this summer set up an ideal scenario for targeting this aquatic plant. Post-treatment surveys revealed a tremendous reduction in hydrilla present with only a few plants found. Treatment in 2023 will focus on targeting the hardest-to-reach areas of the infestation and eliminating any remaining plants. NYC DEP looks forward to further reducing the risk of the spread of hydrilla throughout the LH PRISM region.

The Invasives Project - Pound Ridge

The Invasives Project - Pound Ridge offers to walk the properties of residents to identify invasive and native plants. On average, two volunteers spend two hours with the homeowner looking at plants growing on their land, in cultivated areas, and in the woodlands. As a follow-up, homeowners are provided with a written summary of the visit. In 2022, volunteers walked the properties of 13 residents representing 36.5 acres.

Students from the White Plains Youth Bureau pulling invasive plants .

The Native Plant Center

The Native Plant Center hosted three invasive species removals during NYS Invasive Species Awareness Week with 11 volunteers dedicating over 16 hours, focusing mostly on mugwort, bittersweet, porcelainberry, and common buckthorn. High school students from the White Plains Youth Bureau tackled invasive species during three of their six workdays at The Native Plant Center. The beds and pathways of the 2,400-square-foot Community Garden on campus had become a shoulder-high thicket of mugwort. Native Plant Center staff taught the students how to identify and remove the plant, and they tackled the invasion with youthful vigor. The Native Plant Center also participated in invasive plant removal, along with college students and adults, in the meadow in the Lady Bird Johnson Demonstration Garden at The Native Plant Center, which will celebrate its 25th anniversary in 2023. The meadow has its share of invasive Asiatic bittersweet, porcelainberry, and mugwort. One particularly memorable moment was when volunteer leader Bob DelTorto described porcelainberry to the students as the “Spiderman of plants.” The students were delighted with this imagery and helped to remove the vines that threatened to form an impenetrable web throughout the meadow.

Jay Heritage Center

The Jay Heritage Center hosted a Sustainability Summit that was a well-attended in-person event with more than 100 attendees from the general public, including representatives from local organizations and institutions with an interest in gardening and invasive species control. A specific breakout session was organized on spotted lanternfly (with NY State Horticulture Inspector, Frank Buccello, and Jay Director of Horticulture and Garden Education, Lucia Maestro).

Early in the year, Jay volunteers spotted the first specimen of SLF in the Jay gardens and set up a trap for early detection survey purposes. Following that, several workshops and volunteer workdays unfolded to use this setting as a way to educate the general public and visitors in real-time, while actively removing any specimens found in the surrounding areas with trained volunteers (including high school, college students, and local residents).

In addition, Jay will continue working with NYS DEC on establishing management guidelines for *Ailanthus altissima* established in the estate, as well as to continue surveying spotted lanternfly in 2023. Jay Heritage Center is committed to continuing the education of the public on environmental issues and threads to our diverse native community, such as the one presented at the summit, which highlighted the end-of-year efforts led by the organization and volunteer taskforce in the 2022 season.

JHC Horticulture Director, Lucia Maestro, and a garden volunteer prepping SLF trap.

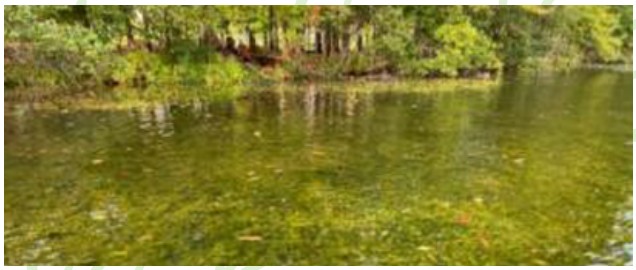
JHC Horticulture Director, Lucia Maestro, and a garden volunteer surveying for SLF.

SECTION 3: LH PRISM SUBCONTRACT PROJECT REPORTS

SOLitude Lake Management: Hydrilla Treatment in Creamery Pond

Hydrilla verticillata is a federally-listed noxious weed that is prohibited in New York (6 NYCRR Part 575). An extremely dense infestation within Creamery Pond has significantly impacted water quality in the pond and threatens downstream habitats including the unnamed outflow stream, which flows into Black Meadow Creek. SOLitude Lake Management began an herbicide treatment in 2022 to control hydrilla biomass and prevent further tuber formation in Creamery Pond. Aquatic plant surveys, water quality monitoring, and a tuber survey provided the baseline data for a long-term eradication plan.

The herbicide applications were executed by mobilizing a ten-foot jon boat and a licensed applicator using a small granular herbicide spreader to disperse the herbicide formulation evenly throughout Creamery Pond. The goal of the herbicide application program was to maintain greater than one part per billion (>1ppb) of fluridone for a minimum of sixty days of exposure time throughout the water column.



NYSDEC hydrilla photo from 2020.

2022 post-treatment vegetation survey photo

The initial fluridone sampling event in late July indicated a concentration of 2.7 ppb in the lake, with <1 ppb results downstream. Due to the lack of downstream herbicide concentration and late season start to the management program, the second herbicide treatment implementing 15 ppb was applied on August 5th. The results of this sampling event indicated a lake concentration of 11.7 ppb, a concentration of <1 ppb at the outlet, and 2.4 ppb downstream. Due to the overall lack of rainfall from the beginning of the hydrilla management program, the concentration was higher than would be expected from a granular application program.

Following the first two herbicide applications, the monitoring of in-lake and downstream concentrations became the more important component to the success of the overall program by maintaining a suitable target dose in the lake, while limiting downstream concentrations. On August 30th, a third round of sampling was performed to continue to document lake concentration as well as downstream concentration. On this date, the in-lake sample result was 9.3 ppb, with <1 ppb concentrations at both downstream sampling locations. The last application was performed on September 13th to ensure, regardless of weather and rainfall events, the program would secure no less than sixty days of greater than one part per billion of fluridone concentration.

On October 20th, a post-treatment vegetation survey was performed by the Aquatic Invasives Strike Force, and their report was submitted on January 12th. The report provides exceptional detail on the results of the vegetation survey and concluded that hydrilla was eradicated from the entirety of Creamery Pond in 2022. This report is available upon request.

While the success of the program is a great achievement toward hydrilla management, it is understood that the goal of long-term eradication will require several years of consecutive herbicide treatment to prevent new tuber formation and ensure that the existing tuber bank is exhausted leaving no viable tubers at what is considered the conclusion of the long-term management program. The full final report for this project can be found here: lhprism.org/contracted-projects

Cornell Cooperative Extension Ulster County: Using Carnival Cutouts as a New Outreach and Education Method

Cornell Cooperative Extension of Ulster County has been working on SLF Awareness in Ulster County since 2020, focusing on working with local farmers and hosting traditional outreach tabling events. For this project, CCE Ulster worked together with local artist, Star Nigro, to create three carnival cutouts in the likeness of spotted lanternfly (SLF) for a fun and engaging type of outreach to raise awareness of the problems posed by SLF. Cutouts serve as a fun way to snap a quick, memorable photo, and learn more about SLF. The cutouts had a QR code for people to scan and receive additional information on how to detect, report and manage this invasive insect. CCE Ulster Staff were present to engage the public and tell them about SLF while members of the community took a photo during the events. The public was asked to post the photos to Instagram using the hashtags #spottedlanternflyawareness and #starnigrophoto. CCE Ulster took the carnival cutout to six events across the county engaging at least 804 members of the public on SLF identification, reporting, and management. CCE Ulster believes that the carnival cutout enabled us to reach individuals who would normally pass by a table with traditional information displayed and gave us access to events where typically we wouldn't have been invited to table at. NYS IPM is still touring with a SLF Carnival Cutout and My Kingston Kids continues to display theirs.

Showcasing SLF messaging poster and SLF carnival cutout.

Example messaging to educate the public about SLF.

Photo example to aid in identifying SLF adults.

Cornell Cooperative Extension Rockland County: Spotted Lanternfly Detection and Outreach Program

Cornell Cooperative Extension Rockland County (CCERC) led a project to help survey and provide educational outreach to the Rockland community regarding spotted lanternfly and its presence in the area, informing the people of Rockland County about SLF's deleterious effect on agriculture and forest industries. CCE Rockland also conveyed to the public the quality-of-life impacts SLF could create if the infestations are to proliferate. More specifically, CCE Rockland committed to educating the public about known infestations in the county, the potential impact on property and natural resources, and engaged them in helping to identify SLF and its primary host plant tree of heaven, *Ailanthus altissima*. CCE Rockland incorporated control and non-chemical mitigation practices into educational messaging. CCE Rockland also continued to train the public and environmental organizations on how to survey for SLF and *Ailanthus altissima* and to report findings to iMapInvasives. Though the SLF population continued to grow in Rockland County in 2022, these efforts helped to inform the public and hopefully help slow the spread of the population. The full final report for this project can be found here: lhprism.org/contracted-projects

American Canoe Association: Watercraft Inspection Steward Program at Lake Sebago

Mia, Invasive Species Intern.

The ACA (American Canoe Association) Camp at Lake Sebago hired Mia Shaw, a student from Ramapo College, as an Invasive Species Intern for the 2022 summer season. Our goal was to take the next step to manage the spread of aquatic invasive species (AIS) through voluntary boat inspections, a lake-wide monitoring effort, and outreach to both the public and the Lake Sebago group camp community.

This internship was made possible with the support of the other group camps on Lake Sebago (Camp Nawakwa and Appalachian Mountain Club) and with the support of the parks department and Lower Hudson PRISM.

Mia served as a Watercraft Inspection Steward, as part of a WISP (Watercraft Inspection Steward Program), on the public launch of Lake Sebago for the 2022 season from mid-June through the beginning of September. With support and training from Lower Hudson PRISM, Mia engaged with the public through voluntary boat inspections, outreach to the public at the public launch on Lake Sebago, and outreach at the ACA group camp at Lake Sebago.

This work increased public awareness and understanding of AIS (and other invasive species), encouraged data collection, promoted best management practices for cleaning boats, and helped prevent the spread of AIS currently in the lake and the introduction of new species to the lake. The internship also gave Mia valuable experience in aquatic ecology, science communication, and data collection. In addition, she had the opportunity to take part in water chestnut pulls with the Aquatic Invasives Strike Force in July, which introduced her to AIS not found in Lake Sebago and gave her hands-on experience removing invasive species.

As part of the lake-wide monitoring effort, Lower Hudson PRISM also did an AIS survey of Lake Sebago. This survey found hydrilla present in a number of areas throughout the lake. While the news is distressing, we are now able to help draft a rapid response plan and are thankful that Mia was there this summer to serve as a Watercraft Inspection Steward and take part in WISP data collection. Managing the spread of AIS feels more important than ever, and the ACA Camp is ready to help in any way we can as we move forward.

Land Management, Monitoring, and Outreach Internships with: Vassar College, Hudson Highlands Land Trust, Fresh Air Fund and Fordham University's Calder Center

During the summer of 2022, the Fresh Air Fund (FAF), Hudson Highlands Land Trust (HHLT), Vassar College (VC), and Fordham University's Louis Calder Center (LCC) hosted six (6) Invasive Species Management Interns at six (6) preserves (3,427 acres). The internships were full-time, paid positions that lasted between 8-10 weeks and provided resume-building experiences. The interns performed monitoring and mapping of invasive species that are a high priority at individual sites and/or regionally. They worked to control invasive species in high-priority conservation areas using both mechanical removal and biological control. The interns monitored for forest pests by surveying lingering ash plots, establishing beech leaf disease monitoring plots, and monitoring for spotted lanternfly. They worked to educate the general public and targeted audiences about invasive species through social media posts, direct engagement, creating printed materials, providing tours, and creating videos. In addition to the work completed at individual sites, the interns were part of a network. They interacted regularly, visited each site, and served as a resource for each other. The full final report for this project can be found here: lhprism.org/contracted-projects

Invasive Species Management Interns.

Cornell Cooperative Extension Dutchess County: Spotted Lanternfly

Cornell Cooperative Extension Dutchess County (CCEDC), working with other CCEs in the region, spread awareness of SLF to residents and visitors, delivered education and training to professionals, and created a group of volunteers to help stop SLF's spread. The goal was to engage more people to slow or stop the spread of SLF in our counties, to encourage more people to scout and report, especially in travel corridors and large events or destinations which draw visitors from outside our region, to increase the likelihood of early detection and to provide a visible and proven source of research-based information on SLF for those with questions.

Dutchess Dirt Newsletters, July through December (6 months) reached over 2000 residents each month, raising public awareness with relevant updates. The information included descriptions of the pest's life cycle, the status of its spread, and the identification of SLF and its favorite host, tree of heaven. A call to action each month included encouragement to scout for and report their presence and absence, and offer reminders on how to report. A five-minute radio spot on WBPM 92.9 fm / 96.5 fm with a potential audience of over 25,000 adults ran twice in mid-September. The interview included all the talking points in a question-and-answer format including identification and harm with the call to action to scout and report it.

Lower Hudson PRISM workshops reached 264 participants (146 Master Gardeners, 118 other attendees including Dutchess County Parks staff). To encourage citizen science activities, workshops were delivered around the region. Content included an hour to 90-minute presentation and discussion including current locations, the status of research, SLF identification, lifecycle, harm, spread, hosts, TOH identification and control, reporting, citizen science, iMapInvasives & Adopt a Grid, and other resources. Educational materials were highlighted from NYS DEC, NYS Ag & Mkts, NYS IPM, and the Lower Hudson PRISM.

Tabling at the Dutchess County Fair for 6 days reached nearly 700 people. CCE staff used the NYS IPM "Have you Spotted Lanternfly" poster with an Aug 8 update and explained the SLF status of NY counties. Using the NYS IPM Checklist, staff pointed out the photos on the back and instructions on how to report it. To date, SLF has been confirmed in the entire Lower Hudson Region, with just a few reported in Dutchess County. The importance of proactive scouting and reporting has been repeated whenever and wherever possible. The full final report for this project can be found here: lhprism.org/contracted-projects

Green Team students build backcountry deer fences at the preserve. Photo credit C. Zeiger.

Brianna (right), a WLT Conservation Apprentice, shows a Green Team member how to install hardware.

Westchester Land Trust: Beating Beech Leaf Disease - Empowering Yonkers Public School Students To Restore Forests Damaged by BLD

Westchester Land Trust partnered with Groundwork Hudson Valley to restore 5 acres of forest impacted by beech leaf disease (BLD) in the Westchester Wilderness Walk/ Zofnass Family Preserve in Pound Ridge, NY. This project had four main goals, all of which were achieved during work in 2022.

1. Restore five acres of forest impacted by BLD. We removed invasive species from 10 acres of beech stands, twice the five-acre goal. We installed 2,000 linear feet of deer fencing to promote natural regeneration. In locations where fencing would not be feasible, 30 tree tubes were installed on suitable trees to protect them. Fifty sycamore live stakes were planted in wetland clearings near beech stands.
2. Create a paid opportunity for Yonkers public school students to learn about ecosystem restoration in the field. The Groundwork Hudson Valley Green Team (30 students) spent 4 days at the preserve, building fences and removing invasives.
3. Supervise a Conservation Apprenticeship, focusing on professional skills development. Two Conservation Apprentices were hired for 10 weeks at 32 hours/week, and one of the apprentices was an alumna of the Green Team. The Apprentices led the Green Team crew in the field, collected data, and assisted with writing final reports.
4. Write an invasive management plan for beech stands at the Zofnass Family Preserve. The invasive management plan will guide WLT's work at beech stands in the preserve moving forward, and it may also be used to apply for a Priority Conservation Area designation.

For full report, visit: lhprism.org/contracted-projects

Westchester Parks Foundation: All-of-Westchester Internship Program

From April to November 2022, Westchester Parks Foundation (WPF) recruited and hired two paid interns to engage in fieldwork and community outreach to fulfill two of LHPRISM's 2022 Action Plan Goals: Goal 1. Obj D: Foster strong academic relationships, and Goal 4 Obj D: Incorporate diversity, equity, and inclusion aspects into our messaging and materials. WPF's Volunteer Program staff participated in outside training workshops and conducted internal development and research to determine (1) what groups were underrepresented among our volunteers and interns, and (2) create inclusive messaging and recruitment strategies. With a focus on recruiting from groups that are underrepresented in the environmental field, two All-of-Westchester Interns were hired in June. By November, each intern completed 130 hours of paid work experience. The interns developed an understanding of invasive species, gained fieldwork experience in 10 area parks, and expanded their leadership, community engagement, and public speaking skills. For the full report, visit: lhprism.org/contracted-projects

Mia Veefkind and Simara Jones, WPF's All-of-Westchester Interns.

Simara demonstrating beech leaf disease monitoring in Sprain Ridge Park, Yonkers.

Mianus River Gorge

Lauren Ahern of Cornell University came to Mianus River Gorge through a grant from the Lower Hudson Partnership for Regional Invasive Species Management. Lauren focused on Beech Leaf Disease, helping to establish monitoring plots within the Gorge and across the region. MRG will revisit these sites every year to assess the decline/mortality rate of the trees.

She worked with multiple land management partners, collected the monitoring data, and submitted the data to NYSDEC.

Lauren attended the BLD training at Granite Mountain with Kelsey McLaughlin of NYSDEC. She subsequently established and monitored two BLD plots in the Mianus River Gorge. Lauren also worked with interns from the Calder Center to develop a survey regarding BLD presence and monitoring efforts that were sent to all Lower Hudson PRISM partners; she communicated with partners as they developed their monitoring strategy.

There are currently no approved treatments for BLD. We expect that the data we collect from both our short-term and long-term monitoring plots, combined with the research from other institutions, will lead to effective management strategies.

LH PRISM-supported intern Lauren Ahearn in the Mianus River Gorge Preserve.

APPENDIX I: TERRESTRIAL INVASIVES STRIKE FORCE MONITORING & MANAGEMENT SITE METRICS

LOWER HUDSON PRISM

Project Site	Acres Surveyed	Acres Treated	Hours	Plants Managed	Treatment sq ft*	Species Managed
Arnika Preserve	5.73	3.62	104	3,339		Japanese spiraea
Bear Mountain	4.2	0.87	35	2,066		Scotch broom
Brinton Brook	5.24	0.36	81	165		Hardy kiwi
Cary Institute	3.2	0.22	15	165		Chocolate vine, Japanese spiraea, wisteria spp.
Croton Point Park	6.03	2.22	56	1,089		Chinese bushclover, paper mulberry, sycamore maple
Dover	313.61	71.67	482	25,921		Sticky sage
Giant hogweed	17.98	2.25	96	1,173		Giant hogweed
Granite Mountain	2.88	1.7	66	3,792		Linden viburnum, yellow archangel
Great Swamp	0.55	0.55	82.5	2,885		Autumn olive, border privet, common buckthorn, glossy buckthorn, honeysuckle shrub spp., Japanese barberry, multiflora rose, oriental bittersweet
Halmi Preserve	0.18	0.08	5	137		Chocolate vine
Harriman	25.13	6.59	241	7,569		Scotch broom
High Tor	2.9	0.02	19.5	7		Black swallowwort, Chinese silvergrass, pale swallowwort
Iona Island	56.64	3.98	172	1,862		Chinese bushclover, cutleaf blackberry, Japanese angelica-tree
Kudzu	7.6	1.6	135		70,639	Kudzu
Lenoir	0.86	0.84	48		14,668.5	Chocolate vine
Mianus River Gorge	8.8	3.2	78	2,025	189,335	Japanese stiltgrass, linden viburnum, oriental photinia, sapphireberry, wineberry, yellow archange
Nature Study Woods	0.33	0.06	20	370		Incised fumewort
Ogden Foundation	2.34	0.69	48	906		Scotch broom

APPENDIX I (CONT'D): TERRESTRIAL INVASIVES STRIKE FORCE MONITORING & MANAGEMENT SITE METRICS

Old Croton Aqueduct	1.99	1.21	175.5	5,241		Black jetbead, burning bush, garlic mustard, mile-a-minute, multiflora rose, oriental bittersweet, Siebold's viburnum, tree-of-heaven, wineberry
Pine Croft	1.66	1.66	48	1,508	129	Bamboo spp., cutleaf blackberry, reed canary grass
Read Wildlife Sanctuary	1.0	0.3	27	65		Castor aralia, cutleaf blackberry
Shrub Oak	0.01	0.01	10		449	Small carpetgrass
Three Arrows	3.99	0.33	221.5	7,223		Japanese spiraea
Vassar College	11.39	2.67	256	1,003	19,107	Beefsteak plant, castor aralia, chocolate vine, hardy kiwi, linden viburnum, sapphireberry, white poplar, yellow archangel
*sq ft managed is recorded in instances when species are too dense to count individuals managed						

APPENDIX II:
AQUATIC INVASIVES STRIKE FORCE MONITORING & MANAGEMENT METRICS

LOWER HUDSON PRISM

Lake Name	County	Park Name	Observations	AIS Found (*found in 2022 survey)
Fourth Lake (Binnewater)	Ulster	N/A	68	MYSP*, POCR*, NAMI*, CACA, TRNA*, CICH*
Glenmere Lake	Orange	N/A	59	MYSP*, POCR*, NAMI*, TRNA*
Lake Askoti	Orange	Harriman	112	MYHE*, CACA*, CICH*
Lake Kanawauke	Orange	Harriman	122	POCR*, MYSP, MYHE*, CACA*, CI--*
Lake Mahopac	Putnam	N/A	117	MYSP*, NAMI*, TRNA*, POCR, DRPO*, VIGE* CI--*
Lake Sebago	Orange	Harriman	216	HYVE* MYSP*, NAMI*, MYHE*, CACA*, CICH, CI--*
Lake Skannatati	Orange	Harriman	100	MYSP, MYHE*, CACA*
Lake Te Ata	Orange	Harriman	98	MYSP*, MYHE*, CICH*
Lake Tiorati	Orange	Harriman	152	MYSP, MYHE*, CACA*, EICR, CICH, CI--*
Lake Welch	Rockland	Harriman	215	MYSP, MYHE, CICH, CI--* VIGE*
Rockland Lake	Rockland	Rockland	217	MYSP*, POCR*, NAMI, TRNA*,
Chodikee Lake	Ulster	N/A	142	POCR*, TRNA*
Island Pond	Orange	Harriman	77	N/A
Shadow Lake	Westchester	N/A	40	POCR*
Vernay Lake	Westchester	N/A	55	POCR*
Teatown Lake	Westchester	N/A	96	MYSP, POCR*, TRNA*, MAQU*
Beaverdam	Orange	N/A	190	MYSP*, NAMI*, POCR*, TRNA*, CICH*
Canopus Lake	Putnam	Clarence Fahnestock State Park	112	MYSP*, MYHE*, NAMI*, CACA*, CRSO(?)*, CI--*, CICH*
Creamery Pond	Orange	N/A	32	TRNA*, HYVE*, CI--*
Little Long Pond	Rockland	Harriman	26	MYHE*, CACA*
Lake Skenonto	Rockland	Harriman	49	N/A
Putnam Lake	Putnam	N/A	152	MYSP*, NAMI*, POCR*, TRNA*, CI--*
Seven Hills Lake	Putnam	N/A	117	MYSP*, POCR*, NAMI*, CACA (2020), CI--*
Lake Shenorock	Westchester	N/A	40	POCR*, TRNA*, CI--*
Sturgeon Pool	Ulster	N/A	111	N/A
Swan Lake	Westchester	Rockefeller State Park Preserve	50	N/A (POCR in past parks survey)

TRNA= Water chestnut, MYSP= Eurasian watermilfoil, MYHE= Variable-leaf watermilfoil, MAQU=European waterclover, POCR= Curly leaf pondweed, CACA = Fanwort, NAMI=Brittle naiad, HYVE = hydrilla, DRPO= Zebra mussel, CICH= Chinese mystery snail, CI-- = Mystery snail sp, VIGE= banded mystery snail, CRSO = freshwater jellyfish

APPENDIX II (CONT'D): AQUATIC INVASIVES STRIKE FORCE MONITORING & MANAGEMENT METRICS

LOWER HUDSON PRISM

Project Site	Area Managed (Acres)	# Removed	Lbs Removed
Rockland Lake	0.53	3858	1158
Chodikee Lake	2.6	1568	362
Junior Lake	2.3	72	9.5
Putnam County Veterans Memorial	1.5	1393	165
Norrie Point	0.1	7418	2774
Blue Mountain	0.5	10435	2382
Barger Pond	2.2	52	22
Silver Mine	7.1	2523	675
Constitution Marsh	0.5	25554	3906
Black Creek	2.6	3570	495
Lake Carmel	1.70	241	22
Glenmere Lake	10.9	630	73

Thank you!

We would like to thank our partners, staff, and volunteers for another productive year! None of this work would have been possible without your enthusiasm and dedication. With your help, we have helped make a positive impact on our region's ecosystems and biodiversity.