



2016 Annual Report

Prepared by:

Brendan Quirion, APIPP Manager

Erin Vennie-Vollrath, Aquatic Invasive Species Project Coordinator

Zachary Simek, Terrestrial Invasive Species Project Coordinator

Adirondack Park Invasive Plant Program
The Adirondack Partnership for Regional Invasive Species Management

Hosted by the Adirondack Chapter of The Nature Conservancy
Keene Valley, New York

The Adirondack Park Invasive Plant Program (APIPP) serves as the Adirondack Partnership for Regional Invasive Species Management (PRISM), one of eight partnerships across New York State (NYS). APIPP is a program founded by the Adirondack Chapter of The Nature Conservancy (TNC), NYS State Department of Environmental Conservation (NYS DEC), NYS State Department of Transportation (NYS DOT), and NYS State Adirondack Park Agency (APA). APIPP operates under contract with NYS DEC with funding provided by NYS's Environmental Protection Fund. More than 30 cooperating organizations and hundreds of volunteers support APIPP in its mission. We thank all of our partners and collaborators who participate in the program and share their ideas, time, and resources.



Program Mission

APIPP serves as the Adirondack PRISM whose mission is to protect the Adirondack region from the negative impacts of invasive species. Initiated in 1998, the program coordinates two regional projects; an AIS Project (Aquatic Project) and a Terrestrial Invasive Species Project (Terrestrial Project). Staff members include Brendan Quirion, Program Manager; Erin Vennie-Vollrath, AIS Project Coordinator; Zachary Simek, Terrestrial Invasive Species Project Coordinator, and Mitchell Jones, 2016's seasonal Educator.

Program Goals

- *Prevent new introductions of invasive species into the PRISM.*
- *Coordinate a region-wide early detection & rapid response program for new infestations.*
- *Manage existing priority infestations to mitigate their impacts.*

Year in Review

The threats posed by invasive species are an issue front and center of concern in the Adirondack region. Action is underway at local, regional, and statewide levels, contributing to a comprehensive approach to stop their spread. The APIPP team works every day – joining forces with great organizations, communities, and volunteers – to put strategic and innovative solutions into place.

2016 Highlights:

- **Prevention Program Packs a Punch!** The second year of the [Adirondack AIS Prevention Program](#) packed a powerful punch as over 1,700 aquatic invasive species (AIS) samples were intercepted on trailered watercraft attempting to launch into or be retrieved from Adirondack waters. Through the Program, APIPP, The Paul Smith's College Adirondack Watershed Institute (AWI), and an advisory committee of partners worked to position 118 stewards at boat launches and decontamination stations throughout the region. These staff greeted and educated 126,011 visitors and inspected 58,848 trailered watercraft for AIS from mid-May through mid-October. At the end of 2016, the NYS DEC announced a request for proposals to continue the program over the next three years. The advisory committee has submitted a proposal under AWI, as lead applicant, and is anxiously awaiting the award announcement.
- **Communications Kick into High Gear!** APIPP contracted with Behan Communications Inc. to develop a [5-year communications and marketing strategy](#) for the program. This strategic plan builds upon initiatives implemented to date and outlines the range of goals and strategies that APIPP and its partners intend to advance with respect to educating residents, visitors and users of the Adirondack region about invasive species over the next five years. The plan recommends implementation of a multi-faceted approach, not only to broaden the public's understanding of the range of invasive species threats and impacts, but to change individual behavior to reduce the likelihood that invasive species will be introduced and spread by people within the PRISM. The plan outlines an array of public outreach, marketing and communications strategies designed to reach a broad group of stakeholders, mobilize constituencies, and attract new audiences who care about the region, its ecology, culture and economy.
- **Billboard Burgeons Awareness!** For the first time APIPP leased a billboard near exit 17 along the I-87 Northway to display AIS prevention messaging. The "Clean. Drain. Dry." message overlaid on a Carl Heilman II photograph of boaters on Lake George was displayed for the entire boating season from May through October. In smaller text messaging on NYS's AIS prevention regulation and a link to www.adkcleanboats.com were also displayed. On average 40,000 vehicles passed this billboard each day over the course of the summer resulting in approximately 6,000,000 drive-by impressions.
- **Summit Stimulates Action!** APIPP hosts a biannual summit with this year's focused on forest pests affecting the Adirondacks. The Adirondack Forest Pest Summit brought in 10 different expert presenters representing the [Tree-SMART Trade](#) initiative, [Don't Move Firewood](#) campaign, [NYS Hemlock Initiative](#), [NYSDEC Forest Health Program](#), among others, to share their knowledge of forest pests and impacts. Over 70 participants representing state agencies, timber companies, municipalities, and environmental groups, just to name a few, were in attendance with many also being trained to survey for the signs and symptoms of forest pests.

- **Documentaries Deepen Understanding!** APIPP contracted with West Field Production Company to produce two short training videos on invasive species and the simple steps that anyone can take to prevent their spread. The first provides a general overview of the invasive species threat and a call to action while the second describes how to survey for and prevent the spread of AIS in your lake. These videos are set to be released by the end of January, 2017. APIPP hopes to create additional documentaries over the coming years to broaden awareness and understanding of the invasive species threat and address other priority vectors of spread.
- **Whiteface Wars Invasive Plants!** [At least 13 new non-native and/or invasive species began to establish along the Whiteface Memorial Highway in Wilmington](#) after contaminated fill was used for the highway's reconstruction project last year. These species pose a risk to 14 rare, threatened, or endangered plant species that inhabit areas along the roadside near the summit. Over three days APIPP's terrestrial response team and partners filled 69 garbage bags full of invasive plant material in an attempt to reduce the impact of these species to the mountain's sensitive alpine habitat. In collaboration with the NYS DOT, APIPP has expanded training opportunities to state and local highway departments to raise awareness of [best management practices](#) to prevent the spread of terrestrial invasive plants through roadway maintenance activities.

Round-up of accomplishments, by the numbers:

- APIPP's Terrestrial Project managed approximately 552 infestations of target invasive plants while documenting the absence of invasive plants from 370 historically managed infestations.
- APIPP's Aquatic Project surveyed 97 waterways for AIS. As of 2016, 103 Adirondack waterways have been documented to be invaded by AIS with 268 having no AIS observed.
- APIPP staff presented to at least 1,808 people at 45 events this year. Partner efforts further increased the reach.

This is just a sampling of the great work underway, thanks to the sustained commitment of APIPP staff and partners. What else have we been up to, and what is to come? Read on to find out!

Sincerely,

The APIPP Team

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AQUATIC & TERRESTRIAL INVASIVE SPECIES PROJECT REPORTS

2016 Regional Invasive Species Distribution

This section describes the known distribution of target invasive species in the PRISM as of 2016.

Aquatic Invasive Species

- In 15 seasons, more than 790 APIPP volunteers and response teams surveyed 371 distinct Adirondack waterways and found 103 to contain one or more target AIS with 268 being free of AIS (Map 1). With your assistance, APIPP has successfully established baseline distribution information for aquatic invasive plants in the Adirondack region and is currently working to establish a similar baseline for small-bodied aquatic invasive animals.

Terrestrial Invasive Species

- A total of 2,853 target terrestrial invasive plant infestations have been mapped spatially as of 2016 (Map 2). The majority of this mapping has occurred in what is known as the “Core Area” of the Adirondack PRISM. This area was delineated by APIPP founders as having the highest likelihood for long-term invasive plant management success based on its predominantly protected status, low levels of fragmentation and disturbance, low levels of human development, and low levels of invasion. Mapping outside the Core in areas such as the Champlain Valley and Northern Franklin and Clinton counties has historically been limited, but in 2015 & 2016 some preliminary mapping was conducted in these areas. Areas outside of the Core are known to contain numerous target invasive plant infestations, which are primarily not represented on the provided map.

State Regulations

This section describes regulations in place to prevent invasions and minimize the spread of existing infestations.

Aquatic Invasive Species

- The [Part 575](#) regulation prohibits or limits the transport and sale of known invasive plants and animals in NYS.
- The [Part 576](#) regulation prohibits the launch of boats and associated equipment and floating docks at any public boat launch without having taken reasonable AIS spread prevention actions.
- The [Part 59.4 and 190.24](#) regulations prohibit watercraft from launching into or leaving NYS DEC owned launch sites without first draining the watercraft and internal water holding compartments and cleaning the boat, trailer and equipment of visible plant and animal material.
- The [Part 377.1](#) regulation prohibits watercraft from launching into or leaving Office of Parks, Recreation and Historic Preservation owned launch sites without first draining the watercraft and internal water holding compartments and cleaning the boat, trailer and equipment of visible plant and animal material

- Pursuant to [Section 35-D](#) of the NYS Navigation law, owners of public boat launches are required to display a [universal AIS spread prevention sign](#) at the boat launch.
- The [Subpart 646-9](#) regulation requires all trailered watercraft being launched into Lake George be inspected at one of the lake's inspection stations. Watercraft must be clean, drained, and dry to pass inspection and enter the lake. If they are not, they receive a decontamination through a high pressure, high temperature wash.

Terrestrial Invasive Species

- The [Part 575](#) regulation prohibits or limits the transport and sale of known invasive plants and animals in NYS.
- The [Part 192.5](#) regulation prohibits the import of firewood into NYS unless it has been heat treated to kill pests and limits the transportation of untreated firewood to less than 50 miles from its source.
- The [Part 192.7](#) regulation establishes restricted zones or quarantines that are updated annually to prevent the spread of emerald ash borer.
- NYS DEC [Commissioner Orders](#) have been issued to establish quarantines to prevent the spread of oak wilt in the towns of Glenville and Islip.

Prevention

This section describes efforts by APIPP staff and partners to prevent new invasions into the PRISM

Aquatic Invasive Species

- In November of 2015, the NYS DEC announced a [\\$2.1 million statewide AIS prevention grant program](#). APIPP coordinated and assisted grant applications from across the region and held a special workshop for applicants in collaboration with AWI. In April of 2016, award recipients were announced with eleven Adirondack projects (6 for boat launch stewards and 5 for boat inspection/decontamination stations) receiving funding. In total, \$987,419.00 in prevention funds was leveraged to the region through this grant opportunity.
- APIPP and AWI chaired and coordinated an advisory committee of partners to advance the second year of the [Adirondack AIS Prevention Program](#) which staffed boat launch stewards at 68 priority launches and operated 15 regionally placed boat inspection and decontamination stations. In total 58,848 courtesy inspections were performed upon launch or retrieval resulting in 1,743 visible AIS being intercepted. 1,065 decontaminations were performed on boats that visited or were referred to decontamination stations (Figure 1). In August of 2016, the NYS DEC announced a [request for proposals to continue to administer the Adirondack AIS Prevention Program](#). APIPP and the program's advisory committee submitted a proposal under AWI, as lead applicant, to continue to administer the program over at least the next three years. The selected contractor is expected to be announced by the NYS DEC in early 2017.

Target Species – Existing Threats

This section describes existing high priority species threats that APIPP staff and partners work to address.

Aquatic Invasive Plants

The Aquatic Project surveys for six target aquatic invasive plants that are known to be present in the PRISM based on their high or very high PRISM invasiveness rankings: Eurasian watermilfoil (*Myriophyllum spicatum*), variable-leaf watermilfoil (*Myriophyllum heterophyllum*), water chestnut (*Trapa natans*), curly-leaf pondweed (*Potamogeton crispus*), fanwort (*Cabomba caroliniana*), and European frog-bit (*Hydrocharis morsus-ranae*). As of 2016, 97 Adirondack lakes are known to be invaded by one or more of these target aquatic invasive plants (Map 1).

- [Eurasian watermilfoil \(PRISM Invasiveness Ranking = Very High\)](#) is a submerged perennial that grows quickly, forming dense mats that can degrade native habitat and impede recreational use. It is known to be present in 58 lakes in the PRISM. There were no new reports of this plant in 2016.
- [Variable-leaf watermilfoil \(PRISM Invasiveness Ranking = Very High\)](#) is a submerged perennial that grows quickly, forming dense mats that can degrade native habitat and impede recreational use. It is known to be present in 45 lakes in the PRISM. It was newly reported in 2 lakes in 2016, Little Forked Lake and the Oswegatchie River Impoundment.
- [European frog-bit \(PRISM Invasiveness Ranking = Very High\)](#) is a free-floating annual that forms dense mats that can limit light penetration and impede recreational use. It is known to be present in 6 water bodies in the PRISM. There were no new reports of this plant in 2016.
- [Water chestnut \(PRISM Invasiveness Ranking = Very High\)](#) is a floating annual which forms dense mats that cover large expanses of water and can impact water quality, native species and impede recreational use. It is only known to be present in 2 lakes in the region: Lake Champlain and Hadlock Pond. Historic pioneer infestations have also been eradicated from both Loon Lake and Lake George. A small infestation was discovered and hand harvested in Lake Alice in 2016.
- [Curly-leaf pondweed \(PRISM Invasiveness Ranking = High\)](#) is a submerged perennial that begins growing early in the year and can outcompete native species. It is known to be present in 16 lakes in the PRISM. There was one new, but unconfirmed, report of this plant in Cranberry Lake in 2016.
- [Fanwort \(PRISM Invasiveness Ranking = High\)](#) is a submerged aquatic plant that forms dense beds and can crowd out native plant species. It is known to be present in 4 private lakes in the PRISM: Efner Lake, Horseshoe Pond, Jenny Lake, and Mill Pond. There were no new reports of this plant in 2016.

Small-bodied Aquatic Invasive Animals

The Aquatic Project surveys for four target small-bodied aquatic invasive animals that are known to be present in the PRISM based on their high or very high NYS invasiveness rankings: spiny waterflea (*Bythotrephes longimanus*), Asian clam (*Corbicula fluminea*), Zebra mussels (*Dreissena polymorpha*), and Chinese mystery snail (*Cipangopaludina chinensis*). As of 2016, 20 Adirondack lakes are known to be invaded by one or more of these target small-bodied aquatic invasive animals (Map 1).

- [Zebra mussel \(NYS Threat Ranking Assessment Score = Very High\)](#) is a filter-feeding freshwater mollusk that displaces native species, attaches to and covers many surfaces, and has sharp shells that are a nuisance to lake users. The majority of waterbodies in the region currently

do not have sufficient calcium levels to support large populations of zebra mussels. They are only known to be present in 2 lakes in the PRISM, Lake Champlain and Lake George. There were no new reports of this species in 2016.

- [Chinese mystery snail \(NYS Threat Ranking Assessment Score = Very High\)](#) is a large snail that quickly reproduces and has the potential to decrease native snail populations and change water chemistry. They are known to be present in 12 lakes in the PRISM. There were no new reports of this species in 2016.
- [Spiny waterflea \(NYS Threat Ranking Assessment Score = Very High\)](#) is a macro-zooplankton that can reproduce rapidly through asexual reproduction and compete directly with juvenile fish and native zooplankton for food. Its long spines also easily attach to fishing lines creating a nuisance for anglers. They are known to be present in 9 lakes in the PRISM. There was one new report of this species in Indian Lake (Hamilton County) in 2016.
- [Asian clam \(NYS Threat Ranking Assessment Score = High\)](#) is a filter-feeding freshwater mollusk that displaces native species, alters the food chain, and may cause algae blooms. It is also a bio-fouler, clogging industrial and commercial water systems. They are known to be present in one lake in the PRISM; Lake George. There were no new reports of this species in 2016.

Terrestrial Invasive Plants

The Terrestrial Project surveys for eighteen target terrestrial invasive plants that are known to be present in the PRISM based on their high or very high PRISM invasiveness rankings: knotweed species (*Reynoutria spp.*), autumn olive (*Elaeagnus umbellata*), common reed grass (*Phragmites australis*), purple loosestrife (*Lythrum salicaria*), Japanese barberry (*Berberis thunbergii*), black swallow-wort (*Cynanchum louiseae*), multiflora rose (*Rosa multiflora*), pale swallow-wort (*Cynanchum rossicum*), oriental bittersweet (*Celastrus orbiculatus*), bush honeysuckles (*Lonicera spp.*), garlic mustard (*Alliaria petiolata*), Norway maple (*Acer platanoides*), winged burning bush (*Euonymus alatus*), buckthorn spp. (*Rhamnus spp.*), scotch broom (*Cytisus scoparius*), cup plant (*Silphium perfoliatum*), yellow iris (*Iris pseudacorus*) and giant hogweed (*Heracleum mantegazzianum*). As of 2016, there are 2,853 mapped infestations of these plants in the PRISM (Map 2).

- [Knotweed species \(PRISM Invasiveness Ranking = Very High\)](#) are large perennials that grow vigorously and quickly out-compete native species for space and resources. These plants readily invade riparian areas, cultivated lands, yards, and roadsides. There are currently 785 documented and mapped infestations of these plants within the PRISM. Approximately 61 new infestations of these plants were documented in 2016.
- [Autumn olive \(PRISM Invasiveness Ranking = Very High\)](#) is a large, spiny, deciduous shrub that can reach 20 feet in height and produces bright red berries that are readily consumed by birds and other animals, allowing it to spread long distances. It can form a dense layer of understory vegetation that crowds out native plants and impedes tree seedling recruitment. It readily invades areas of disturbance such as roadsides, grasslands, fields, and forest edges/openings. Autumn olive was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Common reed grass \(PRISM Invasiveness Ranking = Very High\)](#) is a large perennial that aggressively invades wetlands, outcompetes native vegetation and forms dense thickets that have

little value to wildlife. It readily invades wetlands, cultivated areas, and drainage ditches. There are currently 912 documented and mapped infestations of this plant within the PRISM. Approximately 238 new infestations of this plant were documented in 2016.

- [Purple loosestrife \(PRISM Invasiveness Ranking = Very High\)](#) is an herbaceous perennial that invades wetlands, produces millions of seeds each year, and outcompetes surrounding native plants. It readily invades wetlands, cultivated areas, and drainage ditches. There are currently 415 documented and mapped infestations of this plant within the PRISM. Twenty-seven new infestations of this plant were documented in 2016.
- [Japanese barberry \(PRISM Invasiveness Ranking = Very High\)](#) is a spiny herbaceous shrub that is commonly planted as an ornamental and escapes into natural areas via bird dispersed seeds. It can dominate the forest understory, especially in areas with high deer densities, outcompetes native plants, and improves tick habitat. It readily invades forest understories, riparian corridors, roadsides, and grasslands. Japanese barberry was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Black swallow-wort \(PRISM Invasiveness Ranking = Very High\)](#) is a perennial herbaceous vine that forms dense mats which smother native vegetation. It readily invades riparian areas, grasslands and fields, forest edges and understories, and roadsides. There are currently 28 documented and mapped infestations of this plant within the PRISM. Sixteen new infestations of this plant were documented in 2016.
- [Multiflora rose \(PRISM Invasiveness Ranking = High\)](#) is a spiny, perennial shrub that can reach 15 feet in height. Infestations can become dense and shade out native plants. It readily invades roadsides, riparian corridors, grasslands, forest edges and canopy openings. Multiflora rose was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Pale swallow-wort \(PRISM Invasiveness Ranking = High\)](#) is a perennial herbaceous vine that forms dense mats which smother native vegetation. It readily invades forested wetlands and riparian areas, cultivated lands, grasslands and fields, forest edges and understories, and roadsides. There is currently only one documented and mapped infestation of this plant within the PRISM. There were no new reports of this plant in 2016.
- [Oriental bittersweet \(PRISM Invasiveness Ranking = Very High\)](#) is a perennial woody vine that can form dense mats which shade out low growing vegetation and climb into the forest canopy, girdling trees and blocking sunlight. It readily invades forested wetlands and riparian areas, cultivated lands, grasslands and fields, forests, and roadsides. There are currently 23 mapped and documented infestations of this plant within the PRISM. One new infestations of this plant was documented in 2016.
- [Bush honeysuckle species \(PRISM Invasiveness Ranking = Very High\)](#) are deciduous shrubs that can reach 20 feet in height and invade forest edges and openings. Infestations can become dense, shading out native plants and promoting tick habitat. These plants readily invade roadsides, grasslands, forest edges, and canopy openings. Bush honeysuckles were added as Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map the distribution of these plants in natural areas will commence in 2017.
- [Garlic mustard \(PRISM Invasiveness Ranking = Very High\)](#) is an herbaceous biennial that outcompetes native understory plants through allelopathy. It readily invades areas of disturbance

such as campgrounds, trailheads, and roadsides and slowly expands into the surrounding forest understory. There are currently 174 documented and mapped infestations of this plant within the PRISM. Ten new infestations of this plant were documented in 2016.

- [Norway maple \(PRISM Invasiveness Ranking = Very High\)](#) is a deciduous tree that averages 50 feet in height and establishes in forests via wind dispersed seed. Infestations can become dense and shade out native plants. It readily invades forests, riparian corridors, roadsides, and forested wetlands. Norway maple was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Winged burning bush \(PRISM Invasiveness Ranking = Very High\)](#) is a deciduous shrub that can reach 20 feet in height and escapes into natural areas via bird dispersed seeds. Infestations can become dense and outcompete native plants. It readily invades roadsides, riparian corridors, and forest understories. Winged burning bush was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Buckthorn species \(PRISM Invasiveness Ranking = Very High\)](#) are deciduous shrubs or small trees that can exceed 20 feet and produce small glossy, black berries that are dispersed long distances by birds. Infestations can become dense and shade out native plants. It readily invades areas of disturbance such as roadsides, grasslands, forest edges and canopy openings. Buckthorn spp. were added as Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map the distribution of these plants in natural areas will commence in 2017.
- [Scotch broom \(PRISM Invasiveness Ranking = High\)](#) is a perennial shrub that invades fields, forest edges, roadsides, and canopy openings. It can form dense stands that crowd out native species and degrade wildlife habitat. There is currently only one documented and mapped infestation of this plant within the PRISM. There were no new reports of this plant in 2016.
- [Cup plant \(PRISM Invasiveness Ranking = High\)](#) is an herbaceous perennial in the sunflower family that produces copious amounts of seed allowing it to form dense monocultures and outcompete native plants. It readily invades riparian corridors, wet meadows, open forested wetlands, and drainage ditches. Cup plant was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this plant's distribution in natural areas will commence in 2017.
- [Yellow iris \(PRISM Invasiveness Ranking = High\)](#) is an invasive ornamental perennial that invades wetlands and forms dense monocultures that crowd out native plants. It readily invades riparian corridors, the shores of lakes and ponds, wetlands, and drainage ditches. There are currently 124 documented and mapped infestations of this plant within the PRISM. Forty-eight new infestations of this plant were documented in 2016.
- [Giant hogweed \(PRISM Invasiveness Ranking = High\)](#) is a large herbaceous biennial that can reach 15 feet in height and contains phytotoxic sap that can cause severe burns upon contact. It readily invades drainage ditches, grasslands/fields, and yards. There are currently 6 documented and mapped infestations of this plant within the PRISM. There were no new reports of this plant in 2016.

Terrestrial Invasive Animals

The Terrestrial Project surveys for one target terrestrial invasive animal that is known to be present in the PRISM, based on its high NYS invasiveness ranking: sirex woodwasp (*Sirex noctilio*). The Terrestrial Project also surveys for balsam woolly adelgid (*Adelges picea*) which is known to be present in the PRISM, is damaging balsam trees, but has not yet had its relative NYS invasiveness assessed.

- [Sirex wood wasp \(NYS Threat Ranking Assessment Score = High\)](#) is a pest of a wide variety of pine species and causes damage by laying its eggs underneath the bark of the host tree. Upon oviposition, the insect may also deposit a fungus that serves as a food source for its larvae, but is toxic to the host tree. Sirex wood wasp was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this insect's distribution in natural areas will commence in 2017.
- [Balsam woolly adelgid \(NYS Threat Ranking Assessment Score = not assessed\)](#) is a small insect that feeds on the sap in branches, twigs, and the main stem of fir trees causing abnormal tree growth and compartmentalization that kills the tree. Mortality of individual trees has been observed, but widespread die offs have not yet occurred. Balsam woolly adelgid was added as a Target Species in 2016 under APIPP's updated priority setting process. Efforts to more comprehensively map this insect's distribution in natural areas will commence in 2017.

Watched Species – Potential Threats

This section describes approaching species threats that APIPP staff and partners remain vigilant for.

Aquatic Invasive Plants

The Aquatic Project remains watchful for one invasive plant that is present in NYS but is not yet known to be in the PRISM and has a very high PRISM invasiveness ranking: hydrilla (*Hydrilla verticillata*).

- [Hydrilla \(PRISM Invasiveness Ranking = Very High\)](#) is a submerged aquatic plant that can quickly form an impenetrable mat that completely clogs waterways and restricts water flow, posing significant threats to aquatic ecosystems and recreational resources. Hydrilla was first discovered in 2008 in a small pond in Orange County and has since been discovered in Broome, Erie, Kings, Monroe, Nassau, Niagara, Suffolk, Tompkins and Westchester Counties.

Small-bodied Aquatic Invasive Animals

The Aquatic Project remains watchful for three small-bodied aquatic invasive animals that are present in NYS but are not yet known to be in the PRISM and have high or very high NYS invasiveness rankings: rusty crayfish (*Orconectes rusticus*), fishhook waterflea (*Cercopagis bengoi*), and quagga mussel (*Dreissena rostriformis bugensis*).

- [Quagga mussel \(NYS Threat Ranking Assessment Score = Very High\)](#) is an invasive freshwater mussel that is an extremely efficient filter feeder, outcompeting native species for food. It also clogs water intake pipes and underwater screens. Quagga mussels were first reported in the Great Lakes in 1989 and have since been documented in the Erie Canal, the St. Lawrence River, the Hudson River, Oneida Lake and six of the Finger Lakes.

- [Fishhook waterflea \(NYS Threat Ranking Assessment Score = Very High\)](#) is an invasive zooplankton that can alter the composition, structure, and function of the ecosystem by eating smaller zooplankton and by outcompeting native zooplankton and juvenile fish. It was introduced into Lake Ontario in 1998 and has since been spread throughout the Great Lakes and into the Finger Lakes region (Cross Lake, Otisco Lake, Oswasco Lake, Cayuga Lake, Finger Lakes, Keuka Lake, and Canandaigua Lake).
- [Rusty crayfish \(NYS Threat Ranking Assessment Score = High\)](#) is an invasive crayfish that displaces native crayfish and reduces native aquatic plant abundance and diversity. It is widespread just south of the PRISM in the Mohawk River.

Terrestrial Invasive Plants

The Terrestrial Project remains watchful for eight terrestrial invasive plants that are present in NYS but are not yet known to be in the PRISM and have high or very high PRISM invasiveness rankings: mile-a-minute vine (*Persicaria perfoliatum*), slender falsebrome (*Brachypodium sylvaticum*), lesser celandine (*Ficaria verna*), wineberry (*Rubus phoenicolasius*), Japanese stiltgrass (*Microstegium vimineum*), Japanese angelica tree (*Aralia elata*), tree of heaven (*Ailanthus altissima*) and porcelain berry (*Ampelopsis brevipedunculata*).

- [Mile-a-minute \(PRISM Invasiveness Ranking = Very High\)](#) is an herbaceous vine that, as its name suggests, grows at astonishing rates - 6 inches per day under ideal conditions. It forms dense mats that cover and shade out lower growing vegetation. Mile-a-minute is widespread in southern NYS, with reports of isolated infestations in Cattaraugus and Broome Counties.
- [Slender false brome \(PRISM Invasiveness Ranking = Very High\)](#) is a perennial bunchgrass that grows up to 2.5 feet tall and in dense clumps that outcompete native vegetation. Plants produce an ample quantity of seed that can be spread long distances by animals and humans. It is currently known to occur in central and southern NYS.
- [Lesser celandine \(PRISM Invasiveness Ranking = High\)](#) is a low growing flowering perennial that forms dense monocultures that crowd out native vegetation. It is currently widespread in southern NYS with additional infestations confirmed in Saratoga, Tompkins, Cayuga, Oswego, Monroe, Erie, and St. Lawrence Counties. Isolated infestations have been reported near the PRISM border in Saratoga Springs, but their presence on the ground has not been confirmed.
- [Wineberry \(PRISM Invasiveness Ranking = Very High\)](#) is a spiny shrub in the raspberry family that quickly grows into dense thickets that exclude native vegetation. It is widespread in southern NYS and is known to occur outside the PRISM along the St. Lawrence River.
- [Japanese stiltgrass \(PRISM Invasiveness Ranking = Very High\)](#) is a low growing annual grass that readily invades areas of disturbance such as trailheads, recreation areas, and roadsides. The invasiveness of Japanese stiltgrass is exacerbated in areas with high deer densities where it grows in very dense mats that crowd and shade out native vegetation. Japanese stiltgrass is currently widespread in southern and central NYS. Isolated infestations have also been detected in Jefferson and Otsego Counties.
- [Japanese angelica tree \(PRISM Invasiveness Ranking = Very High\)](#) is a fast growing deciduous tree that can exceed 40-feet in height. It spreads easily from ornamental plantings via animal dispersed seed, forming dense monocultures that exclude native vegetation. Japanese angelica tree is widely distributed in southern NYS, with a single known infestation near Syracuse.

- [Tree of heaven \(PRISM Invasiveness Ranking = High\)](#) is a deciduous tree that can reach 80 feet in height, forming thick stands that crowd out native plant species. It is widely distributed in central and southern NYS. There is a reported historic occurrence within the PRISM near Lake George, but this infestation has not been confirmed in the field and is suspected to be eliminated.
- [Porcelain-berry \(PRISM Invasiveness Ranking = High\)](#) is a climbing woody vine that forms dense mats that climb into the forest canopy, shading out native vegetation. It is widespread in southern NYS, with isolated infestations near Ithaca, and is commonly found along roadsides

Terrestrial Invasive Animals

The Terrestrial Project remains watchful for four terrestrial invasive animals that are present in NYS but are not yet known to be in the PRISM and have high or very high NYS invasiveness rankings: emerald ash borer (*Agrilus planipennis*), Eurasian Boar (*Sus scrofa*), hemlock woolly adelgid (*Adelges tsugae*), and Asian longhorned beetle (*Anoplophora glabripennis*).

- [Emerald ash borer \(NYS Threat Ranking Assessment Score = Very High\)](#) is a small emerald green beetle that is extremely destructive to ash trees in the *Fraxinus* genus. Extensive larval feeding activity cuts off nutrient and water flow throughout the tree, causing rapid mortality. Emerald ash borer has been reported in 21 counties in central, western and southern NYS.
- [Eurasian boar \(NYS Threat ranking Assessment Score = Very High\)](#) is an aggressive wild pig species that can be extremely destructive to fields and agricultural areas. Eurasian boar also compete with native wildlife for food and habitat, and are known to carry numerous diseases. They were previously known to occur in six counties across New York State, including an infestation within the PRISM in Clinton County. All historic populations have been deemed eliminated, but a new, isolated infestation was detected outside the PRISM in St. Lawrence County in 2016.
- [Hemlock woolly adelgid \(NYS Threat Ranking Assessment Score = High\)](#) is a small insect that inserts its piercing-sucking mouthpiece into the twig tissue near the base of a hemlock needle to feed on sap. The hemlock tree responds by walling off the wound. When this compartmentalization action is repeated on a large scale in response to heavy adelgid infestation, nutrient and water flow is cut off within the tree, resulting in rapid mortality. Hemlock woolly adelgid has caused mortality of eastern hemlocks in the Catskills and is now established in central and western NYS. Infestations have advanced as far north as Troy.
- [Asian long-horned beetle \(NYS Threat Ranking Assessment Score = High\)](#) is a large beetle that attacks a wide suite of hardwood trees. Adult beetles lay their eggs underneath the bark of hardwood trees. When the larvae hatch, they feed on the cambium and heartwood, girdling the tree and killing it from the inside out. Asian long-horned beetle has been reported in NYS in Kings, Queens, Suffolk, and Nassau Counties.

Surveillance

This section describes efforts by APIPP staff and partners to detect new invasions.

Aquatic Invasive Plants

2016 marked the 15th season in which the Aquatic Project coordinated regional aquatic invasive plant surveillance activities. One hundred fifty-six volunteers, four response team members, and three APIPP/Partner Agency staff surveyed 97 Adirondack waterways for aquatic invasive plants (Figure 2). Since 2002, the program has retained an average of 93 core volunteers and recruited an average of 53 new volunteers annually (Figure 3). Those water bodies confirmed as having new AIS infestations in 2016 through these surveillance efforts are listed below.

Lakes historically invaded with new AIS confirmed in 2016:

- Cranberry Lake (St. Lawrence Co.) – Curly-leaf pondweed was reported on a watercraft exiting Cranberry Lake by a boat launch steward in August. The Aquatic Project will confirm presence in the lake in the spring of 2017. Cranberry Lake is also known to be invaded by variable-leaf milfoil.

Lakes newly invaded upon survey in 2016:

- Lake Alice (Clinton Co.) – Water chestnut was reported in Lake Alice in August and confirmed by the Aquatic Project on August 4, 2016.
- Little Forked Lake (Hamilton Co.) – An established infestation of variable-leaf milfoil was confirmed in Little Forked Lake by APIPP's AIS Response Team in July. A connected waterbody, Forked Lake, has been invaded by variable-leaf milfoil since 2013.
- Oswegatchie River Impoundment (St. Lawrence Co.) – An established infestation of variable-leaf milfoil was confirmed in an impoundment of the Oswegatchie River by APIPP's AIS Response Team in August. Variable-leaf milfoil infestations have been present upstream of this impoundment since the early 2000s.

Small-bodied Aquatic Invasive Animals

2016 marked the 4th season in which the Aquatic Project coordinated regional small-bodied aquatic invasive animal surveillance activities. APIPP's AIS response team, staff and partners conducted zooplankton tows on 53 prioritized lakes with one new infestation of spiny waterflea being confirmed in Indian Lake. Up until this finding Indian Lake was considered to be the PRISM's largest uninvaded lake. 2016 also marked the fifth season of the lake-wide Asian clam survey on Lake George. Three new infestations were confirmed in the lake this summer as described in the survey project's [final report](#).

Terrestrial Invasive Plants

2016 marked the 7th season in which the Terrestrial Project coordinated regional terrestrial invasive plant surveillance activities. APIPP's terrestrial response team, invasive species campground manager, staff and partners surveyed 38 NYS DEC land-based campgrounds, 12 NYS DEC trailheads and intensive use areas, and part or all of 23 state and county road corridors within the PRISM. The total number of new target terrestrial invasive plant infestations, confirmed through these surveillance activities, are listed below (Map 3). No new infestations of APIPP's watched invasive plants were confirmed in 2016.

New infestations of target terrestrial invasive plants confirmed in 2016:

- Common reed grass – 236 infestations
- Knotweed spp. – 61 infestations
- Garlic mustard – 10 infestations
- Yellow iris – 48 infestations
- Oriental bittersweet – 1 infestation
- Black swallow-wort – 16 infestations
- Purple loosestrife – 27 infestations
- Bush honeysuckle – 1 infestation

Terrestrial Invasive Animals

2016 marked the 2nd season in which the Terrestrial Project and the Adirondack Mountain Club coordinated regional terrestrial invasive animal surveillance activities under the Backcountry Forest Pest Monitoring Program. Sixteen volunteers, APIPP staff and partners surveyed 67 forest areas for APIPP's target and watched invasive animals with 19 new infestations of balsam woolly adelgid being detected (Map 4). The Terrestrial Project also responded to two false reports of hemlock woolly adelgid on Forest Preserve in the town of Santa Clara near Deer Pond and Little Long Pond. No new infestations of APIPP's watched invasive animals were confirmed in 2016.

Early Detection & Rapid Response

This section describes efforts by APIPP staff and partners to quickly respond to new and/or isolated infestations.

Aquatic Invasive Species

- Lake Alice (Clinton Co.) – 109 water chestnut rosettes were found and removed from Lake Alice by Mike Winslow, member of the Lake Champlain Basin Program's water chestnut workgroup, on August 4, 2016. The Aquatic Project will continue to monitor the lake in future years to address any reoccurring water chestnut plants.
- Loon Lake (Warren Co.) – On June 4, 2015 Aquatic Invasive Management, LLC. (AIM) discovered 10 water chestnut plants in the northern bay of the lake while harvesting Eurasian watermilfoil. AIM hand harvested the water chestnut plants and conducted a survey of the area looking for any other satellite infestations. No other water chestnut plants were found. A follow-up survey in 2016 found no water chestnut plants. The Aquatic Project will continue to monitor the lake until there has been a documented absence of plants for at least three consecutive years.

Terrestrial Invasive Species

- The Terrestrial Project detected 317 new infestations of target terrestrial invasive plants that were each under 0.1 acres in size. The Terrestrial Project was able to perform rapid response management on 150 of these infestations totaling 5.14 acres having acquired the proper permissions and/or permits.
- The Terrestrial Project performed follow-up management actions on 319 infestations of target terrestrial invasive plants that were under 0.1 acres in size upon initial discovery and had invasive plants persisting after past management actions, totaling 5.9 acres.

- In collaboration with the NYS Natural Heritage Program, NYS DEC, APA, NYS DOT and the Olympic Regional Development Authority (ORDA), the Terrestrial Project performed rapid response management of white and yellow sweetclover (*Melilotus spp.*), spotted knapweed (*Centaurea maculosa*), and common mullein (*Verbascum Thapsus*), which are usually considered lower priority species for management, along the Whiteface Memorial Highway to protect populations of ten rare, threatened, or endangered species. These species had been introduced through contaminated fill used for the highway's reconstruction project in 2015. The team removed 69 contractor bags of invasive plant material. In addition, several new, small patches of Japanese knotweed were identified and will be treated in 2017 once the appropriate permits have been obtained.

Ongoing Management

This section describes efforts by APIPP staff and partners to control established and/or widespread infestations.

Aquatic Invasive Species

- The Aquatic Project implemented year 10 of a European frog-bit management project on the Grasse River near Lampson Falls. No frog-bit plants were observed at this infestation for the first time in 2016 (Figure 4).
- Ongoing mechanical management efforts for target aquatic invasive plant infestations are underway throughout the region through lake association and municipal partners. A list of water bodies receiving ongoing management by species is provided below.
 - Eurasian watermilfoil – Brant Lake, Caroga Lake, Chateaugay Lake, Fish Creek Ponds, Follensby Clear Pond, Hadlock Pond, Lake George, Lake Luzerne, Loon Lake, Meacham Lake, Minerva Lake, Mountain View, Paradox Lake, Schroon Lake, Seventh Lake (Fulton Chain), Sixth Lake (Fulton Chain), and Upper Saranac Lake.
 - Variable-leaf watermilfoil – Fish Creek Ponds, Lake Placid, Paradox Lake, Raquette Lake, and Upper Saranac Lake.
 - Water chestnut – Lake Champlain and Hadlock Pond.
- In 2010, the Aquatic Project and partners established the Asian Clam Rapid Response Task Force upon discovery of Asian clam in lake George. Management of Asian clam continued from 2012 through 2015 with success in reducing clam densities but failure to prevent establishment of new infestations. With the confirmation of three new infestations in 2016, the total infested area now exceeds 100 acres. As a result, over future years the focus of the Lake George Asian Clam Task Force will be to continue lake-wide surveys and to conduct targeted research.

Terrestrial Invasive Species

- The Terrestrial Project performed follow-up management actions on 93 established infestations of target terrestrial invasive plants, totaling approximately 23.29 acres. These infestations were over 0.1 acres in size upon initial discovery and had invasive plants persisting in 2016 after past management actions. A list of infestations managed by species is provided below.
 - Common reed grass - A total of 49 infestations received follow-up management. 48 infestations received follow-up treatment with herbicide, while one was managed mechanically via hand-pulling, totaling 7.1 acres.

- Knotweed spp. - A total of 27 infestations received follow-up management. All were treated with herbicide, totaling 2.5 acres.
- Garlic mustard - Two infestations received follow-up management. All were managed via hand pulling, totaling 0.26 acres.
- Yellow iris - A total of five infestations received follow-up management. Four were treated mechanically via digging or hand pulling and one was treated using herbicide, totaling approximately 8.5 acres.
- Oriental Bittersweet – One infestation received follow-up management totaling 0.7 acres.
- Purple loosestrife – One infestation received follow-up management via hand-pulling totaling 0.2 acres.
- Black swallow-wort - Eight black swallow-wort infestations received follow-up management. All were treated with herbicide, totaling 4.03 acres.

Species Distribution & Management Trends

This section describes efforts by APIPP staff and partners to assess trends and success.

Aquatic Invasive Species Distribution Trend Analysis

- Over 70% of lakes and ponds surveyed by the Aquatic Project to date are free of aquatic invasive species (Figure 5).
- On average 4.3 Adirondack lakes are newly documented as being invaded by AIS each year (Figure 5).

Aquatic Invasive Species Management Trend Analysis

- The Aquatic Project implemented year 10 of a European frog-bit management project on the Grasse River near Lampson Falls. The initial infestation was less than one quarter acre in size with thirty-six buckets of plant material harvested the first year of control in 2007. Reductions in plants removed have been experienced each year with 2016 being first year with no European frog-bit plants observed. APIPP will continue to survey the area until no European frog-bit plants are observed for at least three consecutive years (Figure 4).

Terrestrial Invasive Species Distribution Trend Analysis

- Twenty-nine of 38 land-based NYS DEC campgrounds in the Adirondacks have target terrestrial invasive plants present: 24 have garlic mustard, 12 have purple loosestrife, 10 have Japanese barberry, seven have bush honeysuckle, five have knotweed species, three have winged burning bush and two have common reed. Mapping and management efforts indicate that target terrestrial invasive plant distribution is increasing at nine campgrounds, decreasing at 15 and stable at five. Nine campgrounds are currently uninvaded (Figure 6).
- According to the Terrestrial Project's invasive plant distribution database, approximately 50% of mapped target terrestrial invasive plant infestations fall within the jurisdictional right-of-ways (ROW) of NYS DOT and local highway departments (Map 2).

- According to the Terrestrial Project's invasive plant distribution database, approximately 12% of mapped target terrestrial invasive plant infestations have been documented on the forest preserve or other NYS DEC administered lands within the PRISM (Map 5).
- Although not all infestations of target terrestrial invasive plants have been mapped, the majority of confirmed infestations are approximately 0.06 acres in size upon initial discovery (Figure 7). According to research conducted by Rejmanek and Pitcairn in 2002, eradication of infestations <1 ha (2.47 acres) in gross area (area over which the plant is distributed) have been shown to have the highest likelihood of success.

Terrestrial Invasive Species Management Trend Analysis

- Common reed grass - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 1,165 common reed infestations have been identified within the PRISM, with 558 prioritized for management. As of 2016, 128 of those previously managed infestations have been deemed eliminated after having no common reed plants observed for at least three consecutive years. An additional 45 infestations have had no common reed plants observed for two consecutive years while 80 infestations had no plants observed for the first time in 2016. To date, 42% of infestations managed have no common reed observed (Figure 8).
- Knotweed species - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 833 infestations of knotweed species have been identified within the PRISM, with 234 prioritized for management. As of 2016, 18 of those previously managed infestations have been deemed eliminated after having no knotweed plants observed for at least three consecutive years. An additional five infestations have had no knotweed plants observed for two consecutive years while 25 infestations had no plants observed for the first time in 2016. To date, 21% of infestations managed have no knotweed plants observed (Figure 9).
- Garlic Mustard - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 186 garlic mustard infestations have been identified within the PRISM, with 66 prioritized for management. As of 2016, four of those previously managed infestations have been deemed eliminated after having no garlic mustard plants observed for at least three consecutive years. An additional four infestations had no garlic mustard plants observed for two consecutive years while four had no plants observed for the first time in 2016. To date, 24% of infestations managed have no garlic mustard plants observed (Figure 10).
- Purple Loosestrife - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 415 purple loosestrife infestations have been identified within the PRISM with approximately 15 prioritized for biocontrol releases. Since purple loosestrife is regionally widespread, the Terrestrial project relies heavily on bio-control releases of *Galerucella* beetles to suppress infestations. These releases significantly reduce the cover and density of purple loosestrife but never completely eliminate infestations. As of 2016, the Terrestrial Project has conducted bio-control releases on eight priority infestations.
- Giant Hogweed - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 16 giant hogweed infestations have been identified within the PRISM, with all locations prioritized for management. As of 2016, five of those previously managed infestations have been deemed eliminated after having no giant hogweed plants observed for at least three consecutive years. An additional two infestations had no giant hogweed plants observed for two consecutive years while three had no plants observed for the first time in 2016. All remaining infestations

that were actively managed in 2016 only contained basal rosettes with no new seeds being added to the seed bank. To date, 63% of infestations managed have no giant hogweed plants observed (Figure 11).

- Yellow Iris - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 150 yellow iris infestations have been identified within the PRISM, with 100 prioritized for management. As of 2016, three of those previously managed infestations have been deemed eliminated after having no yellow iris plants observed for at least three consecutive years. An additional 12 infestations had no yellow iris plants observed for two consecutive years while 10 had no plants observed for the first time in 2016. To date, 25% of the infestations managed by the Terrestrial Project have no yellow iris plants observed (Figure 12).
- Oriental Bittersweet - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 23 oriental bittersweet infestations have been identified within the PRISM, with three prioritized for management. As of 2016, while reduced in cover and density, all managed infestations still contain oriental bittersweet.
- Swallow-wort Species - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 30 swallow-wort species infestations have been identified within the PRISM, with 28 prioritized for management. As of 2016, while reduced in cover and density, all managed infestations still contain swallow-wort.

Post-Management Monitoring

This section describes efforts by APIPP staff and partners to assess native species recovery & restoration needs.

Aquatic Project

- The Aquatic Project's response team conducted post-management monitoring on multiple lakes historically managed for aquatic invasive plants: Second, Fourth, Sixth and Seventh Lake of the Fulton Chain and Raquette Lake. Second and Fourth were managed for Eurasian watermilfoil from 2012 through 2014 and had no milfoil present upon follow-up monitoring in 2016. The team delineated aquatic plant beds and documented species found for these lakes in their [final report](#).

Terrestrial Project

- The Terrestrial Project did not perform post-management monitoring on terrestrial invasive plant infestations in 2016. Extensive monitoring is performed on a 3-year rotation and was last conducted in 2015. Monitoring results can be accessed in the triennial [monitoring reports](#).

PROGRAM REPORT

Seasonal Employment

This section describes efforts by APIPP staff and partners to create and support seasonal job opportunities.

- APIPP supported one invasive species educator position. Mitchell Jones was hired into this position and assisted with the education, outreach and training activities described throughout this report.
- APIPP collaborated with NYS DEC and the State University of NYS College of Environmental Science and Forestry (SUNY ESF) to support one invasive species specialist position. Stephen Slonosky was hired into this position and conducted mapping and management of terrestrial invasive plants at state campgrounds and trailheads throughout the Adirondack Park. The results of this work can be accessed in the project's [final report](#).
- APIPP contracted with Invasive Plant Control Inc. and the AWI to staff two seasonal response teams, one for Aquatic Project and the one for the Terrestrial Project, of 4 members each. These teams assisted with the surveillance, early detection and rapid response, and ongoing management efforts described throughout this report. The results of both response teams can be accessed in their final [aquatic](#) and [terrestrial](#) response team reports.
- APIPP collaborated with the AWI under the Adirondack AIS Prevention Program to staff 118 boat launch stewards and boat wash technicians throughout the region. These staff performed voluntary trailered watercraft inspections and, when necessary, decontaminations to prevent the spread of AIS. The results of this work can be accessed in the program's [final report](#).

Education, Training, & Communications

This section describes efforts by APIPP staff and partners to foster invasive species awareness & citizen action.

- APIPP staff gave formal presentations to 45 audiences, reaching approximately 1,808 people in 2016. On average, the Program presents to approximately 46 audiences and 1,669 people annually. Since 2009, the Program has given formal presentations to 366 audiences representing approximately 13,350 people (Figure 13). These totals do not include others reached through informal tabling or public display events.
- APIPP staff hosted or co-hosted 13 training sessions on invasive species identification, surveillance, and best management practices in 2016: one on iMapInvasives, five on aquatic invasive plant identification and surveillance techniques, one on small-bodied aquatic invasive animal identification and surveillance, five on terrestrial invasive plant identification and best management practices, and one on forest pest identification and surveillance. Approximately 234 people participated in these trainings. Cohosting organizations included the Adirondack Mountain Club, NYS DOT, the Lake George Land Conservancy, iMapInvasives, AWI, Darrin Freshwater Institute, and Lake Champlain Sea Grant. APIPP staff were also invited to present and participated in six other trainings or workshops hosted by partner organizations, training a total of 564 people in 2016. On average, the Program hosts or presents during 14 training events each year, training approximately 405 people annually. Since 2009, the Program has hosted or

presented during 114 training events in which approximately 3240 people participated (Figure 14).

- APIPP staff presented during the following professional conferences in 2016: The Stewardship Network Conference, The Nature Conservancy's Science, Stewardship and Conservation Conference, The Northeast Transportation and Wildlife Conference, and The Cornell Invasive Species In-service. The presentations provided at these high profile conferences are a small subset of 45 presentations provided by APIPP staff in 2016 (Figure 15).
- In collaboration with the Adirondack Mountain Club, APIPP hosted its biannual summit, this year's focused on [Adirondack Forest Pests](#), during NYS Invasive Species Awareness Week. Forest pest experts from across the state and country shared their knowledge with over 70 participants during the summit.
- APIPP contracted with Behan Communications Inc. to develop a [5-year communications and marketing strategy](#). This strategic plan builds upon initiatives implemented to date and outlines the range of goals and strategies that APIPP and its partners intend to advance with respect to educating residents, visitors and users of the Adirondack region about invasives over the next five years. The plan recommends implementation of a multi-faceted approach, not only to broaden the public's understanding of the range of invasive species threats and impacts, but to change individual behavior to reduce the likelihood that invasive species will be introduced and spread by people within the Adirondack PRISM. The plan outlines an array of public outreach, marketing and communications strategies designed to reach a broad audience of stakeholders, mobilize constituencies, and attract new audiences who care about the Adirondack region, its ecology, culture and economy.
- APIPP contracted with West Field Production Company to produce two short films on invasive species impacts and the simple steps anyone can take to prevent the spread. These videos are to set to be released by the end of January, 2017.
- APIPP leased a billboard along the I-87 Northway during the boating season to display the "Clean. Drain. Dry." messaging and information on the Adirondack AIS Prevention Program. On average 40,000 vehicles passed this billboard daily over the summer.
- APIPP continued to disseminate educational resources on invasive species such as [brochures, rack cards, fliers, etc.](#) and utilize the PRISM email listserv, hosted by Cornell at cce-apipp-1@cornell.edu, to provide updates to partners. The Program also utilized a [seasonal blog](#) and responded to numerous "contact us" inquiries from APIPP's website.

Regional Planning and Coordination

This section describes APIPP's efforts to organize and lead regional action.

- Collaborated with AWI to organize and lead an advisory committee of partners to implement the second year of the [Adirondack AIS Prevention Program](#).
- Collaborated with and provided guidance to the [Regional Inlet Invasive Plant Program](#) and Bolton Terrestrial Invasive Plant Program.
- Held two full APIPP partner meetings and provided [meeting minutes](#).

- Participated in quarterly meetings with NYS Invasive Species Program Partners and participated in monthly [PRISM webinars](#).
- Contributed research priorities to the [NYS Invasive Species Research Institute](#).
- Submitted all invasive species related data collected by APIPP to the statewide [iMapInvasives](#) database.
- Attended and presented at one [NYS invasive species advisory committee](#) meeting.

Research

This section describes efforts by APIPP staff and partners to advance relevant studies on invasive species.

- [Restoration Ecology: “Assessing feasibility in invasive plant management: a retrospective analysis of garlic mustard control.”](#) Authored by Dr. Jeffrey Corbin, Matthew Wolford, Chris Zimmerman, & Brendan Quirion.
- Ecosphere: “Predicting aquatic invasion in Adirondack lakes: A spatial analysis of lake and landscape characteristics.” Authored by Dr. Richard Shaker, Artur Yakubov, Stephanie Nick, Erin Vennie-Vollrath, Timothy Ehlinger & K. Wayne Forsythe (Submitted and being reviewed for publication).

Awards & Recognition

This section describes efforts by APIPP staff and partners to recognize exemplary projects and individual actions

- APIPP gave its annual volunteer achievement award to Anne Green, coordinator of the Bolton Terrestrial Invasive Plant Program (BTIPP). Starting in 2013, Anne lead efforts to combat severe infestations of knotweed species in the town of Bolton. Her efforts lead to town funded control projects and increased awareness of knotweed and its impacts in Bolton and surrounding towns. Since forming BTIPP, numerous infestations of knotweed have been successfully managed in the area and are on the decline.
- APIPP supported the Adirondack Landowners Association in awarding their [2016 Stewardship Award](#) to the Adirondack Lakes Alliance for their continued efforts to protect Adirondack lakes from AIS.
- APIPP received the [James D. Corbett Award](#) from the Fund for Lake George for the program’s vital leadership in establishing the Adirondack AIS Prevention Program.
- APIPP received the [Mirror Lake Watershed Association Award](#) for the Program’s efforts to protect Mirror Lake from invasive species.

STATE PARTNER UPDATES

This section describes efforts by state partners to address invasive species threats

NYS DEC

- AIS coordinator, Cathy McGlynn, represented NYS on the Great Lakes & Northeast AIS Panels as well as by participating in the North American Lake Management Society and Northeast Aquatic Plant Management Society
- Rapid Response Coordinator, Willow Eyres, updated the state's Invasive Species Rapid Response Framework
- Education/ Outreach Coordinator, Megan Phillips, developed a draft 5-year education and outreach plan
- Finalized the Part 576 regulation prohibiting the launch of boats and associated equipment and floating docks at any public boat launch without having taken AIS spread prevention actions.
- Began implementing the 2015 NYS AIS Management Plan which was approved by the federal Aquatic Nuisance Species Task Force in May 2016.
- Advanced contracts to fund all eight PRISMs and hire coordinators. Some PRISMs are approaching the end of their contract terms with NYS and administration of these PRISMs will be under a competitive bidding process to continue delivery of services for the next five years.
- In cooperation with Cornell University and PRISM leaders, facilitated monthly statewide invasive species conference calls.
- Funded interns in partnership with SUNY ESF, to implement prevention programs as well as detect and control invasive species and assist with the iMapInvasives database.
- Funded the first stage of a statewide invasive species prioritization project
- Funded research on what techniques are effective in decontaminating boats of AIS
- Funded research and eradication of Eurasian boar
- Funded research testing a biological control agent for water chestnut
- Funded research testing a biological control for hemlock woolly adelgid
- Funded research testing a biological control agent for Phragmites
- Funded a full-time forest invasive insect outreach and education position
- Continued to fund and staff the statewide giant hogweed eradication project
- Funded a kudzu control project
- Funded benthic barrier treatment of Hydrilla in Henrietta, Monroe County
- Continued to fund hydrilla control in Cayuga Lake (Tompkins County)
- Coordinated southern pine beetle suppression efforts on Long Island and funded community grants
- Funded a study to inform control options for the hydrilla infestation in the Croton River.
- Funded water chestnut control in Lake Champlain
- Funded statewide AIS Spread Prevention Grants

- Released a request for proposals to continue the Adirondack AIS Spread Prevention Program
- Co-hosted a NYS Federation of Lake Association's workshop for local boat steward programs
- Produced high quality outreach materials for a range of invasive species audiences
- Surveyed over 10 million acres of land to map forest health conditions and damage causing agents
- Provided forest insect & disease diagnostic help to agency staff, cooperators and the general public through the forest health diagnostic laboratory.
- Detected and mapped six new oak wilt disease occurrences in NYS, and is presently working to eradicate these occurrences.
- Conducted research on the distribution, spread, and temperature-related mortality of southern pine beetle in NYS.
- Conducted surveys and trapping to document the spread of emerald ash borer across NYS, and partnered with NYS Department of Agriculture and Markets (NYS DAM) to update the quarantine regulations.
- Deployed 100 traps in targeted areas for early detection of Asian long-horned beetle.
- Deployed 30 traps in targeted areas for early detection of thousand cankers disease.
- Deployed 12 traps in targeted areas for early detection of any exotic wood boring insects.
- Delivered general and technical presentations on invasive species risk and impacts to numerous audiences in 2016

NYS DAM

- Continued outreach and education activities regarding the Part 575 regulation to the horticultural industry. Identified out-of-state nurseries that routinely ship nursery stock into NYS and contacted these businesses directly to make them aware of the regulation.
- In cooperation with the Animal and Plant Health Inspection Service maintained the Asian long-horned beetle eradication program in New York City and central Long Island. Over 59,000 properties were inspected for the beetle in 2016.
- Coordinated six farm bill commodity surveys and the Cooperative Agricultural Pest Survey to detect invasive insects and diseases that could have negative impacts on NYS's agricultural industry. 454 traps were established across the state, yielding over 7,500 samples. All of these samples were negative. In addition, over 9 million plants were inspected visually for target insects and diseases.
- Maintained the Plum Pox Virus Eradication program in western NYS and the Hudson valley. Approximately 132,000 leaf samples were collected over a 12 week sampling period with no detections of the virus in 2016.

NYS DOT

- Funded research testing a biological control agent for Phragmites
- Tailgate trainings on invasive species best management practices were given to eight staff at the Alder Creek and Long Lake residencies
- Presentations on invasive species best management practices were provided to approximately 100 staff during the Hamilton County and Fulton-Montgomery fall safety meetings.
- Offered invasive plant awareness and [best management practices](#) trainings to over 70 participants at the Indian Lake and Cranberry Lake residencies.
- Offered field office trainings on invasive species at three project locations in region 7
- Hosted and incorporated invasive species presentation and field trip content into the Northeast Transportation and Wildlife Conference in Lake Placid
- Assisted with treatments of target invasive plants along I -87, route 29A, and route 30
- Treated target invasive plants at the Long Lake and Old Forge residencies
- Assisted with early detection and rapid response of invasive plants recently introduced to the Whiteface Mountain Memorial Highway
- Assisted with placement of signage and provided guidance on design specifications to promote traffic safety for the roadside boat wash stations established under the Adirondack AIS Prevention Program

NYS APA

- Issued a new general permit to replace general permit GP2008G-1B for the management of AIS using benthic barriers and hand harvesting techniques.
- Reviewed the operational aspects of a Diver-Assisted Suction Harvesting (DASH) system and issued a conditional letter of non-jurisdiction for its use as an aquatic invasive plant conveyance device
- Assisted the LGPC in their annual lake-wide Asian clam survey
- Assisted APIPP in the monitoring of two large waterbodies for spiny water flea and seven backcountry waterbodies for the presence of AIS
- Updated the Agency's triploid grass carp permit application for the control of aquatic vegetation
- Updated and expanded the Agency's list of water resource consultants
- Began using APIPP's 2015 and 2016 aquatic plant bed survey data as a wetland presence and community composition screening tool
- Assisted with APIPP's invasive plant priority setting process
- Hosted APIPP partner meetings and the hemlock woolly adelgid prioritization meeting
- Staff served on the NYS Invasive Species Council, the Adirondack AIS Prevention Program's Advisory Committee, the NYS Benthic Barrier workgroup, and the Lake George Asian clam task force.

NYS LGPC

- Maintained the third year of a mandatory inspection program for all trailered boats entering the lake, in an effort to prevent any new introductions of AIS. The program operated seven inspection stations around the lake, and had more than 31,000 boater contacts at those stations in 2016. Approximately 18 percent of boats arriving at the inspection sites required some level of decontamination prior to launch.

- Coordinated efforts to harvest Eurasian watermilfoil in Lake George which reached its highest funding levels in 2016. Three dive teams worked on Lake George from May through October, harvesting milfoil in long-term established beds throughout the lake.

2017 OBJECTIVES

This section provides an overview of objectives to be advanced by APIPP in the year ahead

- APIPP's 2017 Staff Work Plan will be uploaded to its website in the spring of 2017 and will include a complete list of objectives and tasks. Priorities will include:
 - Recruit a seasonal invasive species educator
 - Coordinate aquatic and terrestrial response teams
 - Advance the Adirondack AIS Prevention Program
 - Implement the first year of APIPP's 5-year communications and marketing plan
 - Coordinate a project with NASA to map hemlock resources throughout the North Country to set hemlock woolly adelgid survey and management priorities
 - Implement survey methods for aquatic and terrestrial invasive species using unmanned vehicles
 - Finalize a 3-tier priority setting process to re-evaluate and assess APIPP's priority species, management areas and projects
 - Finalize submission of a research paper in the journal Biological Invasions that documents APIPP's phragmites management successes
 - And much more!

COOPERATING PARTNERS

Thank you for your help in protecting the Adirondack region from invasive species.

Adirondack Association of Towns and Villages
Adirondack Council
Adirondack Lakes Alliance
Adirondack Landowners' Association
Adirondack Local Governmental Review Board
Adirondack Mountain Club
Adirondack North Country Association
Adirondack Park Agency
Au Sable River Association
Bass Angler Sportsmen Association
Boquet River Association
CAP-21
Clinton and Essex County Master Gardeners
Cornell Cooperative Extension County Offices (Clinton, Essex, Hamilton, St. Lawrence and Warren)
Cornell University
Darrin Fresh Water Institute
NYS Department of Agriculture and Markets
NYS Department of Environmental Conservation
NYS Department of State
NYS Department of Transportation
Essex County Adirondack Garden Club, Garden Club of America
Hamilton College
Hamilton County Soil and Water Conservation District
Hudson River Black River Regulation District
Lake Champlain Basin Program
Lake Champlain Sea Grant
Lake George Land Conservancy
Lake George Park Commission
Lake George Association
Massawepie Scout Camps
National Grid
North Country School and Camp Treetops
Paul Smith's College Adirondack Watershed Institute
Protect the Adirondacks
Regional Inlet Invasive Plant Program
Student Conservation Association
SUNY ESF Wanakena, Newcomb
SUNY Plattsburgh
The Fund for Lake George
The Nature Conservancy

United State Department of Agriculture, APHIS/PPQ
Warren County Soil and Water Conservation District
Wildlife Conservation Society

Shoreowner groups including, but not limited to

6th and 7th Lake Association
Beaver Lake Association
Bellmont Mountain View Indian Lakes Foundation
Big Moose Property Owners' Association
Big Wolf Lake Association
Blue Mountain Lake Association
Brandreth Lake Association
Brant Lake Association
Brantingham Lake Association
Canada Lake Protective Association
Chateaugay Lakes Association
Chazy Lake
Cranberry Lake Boat Club
East Caroga Lake Protective Association
East Shore Schroon Lake Association
Friends Lake Association
Fulton Chain of Lakes Association
Great Sacandaga Lake Association
Gull Pond Association
Hadlock Lake Association
Horseshoe Pond/Deer River Flow Association
Indian Lake Association
Jones Pond Association
Lake Colby Association
Lake George Association
Lake Placid Shore Owners' Association
Lake Pleasant Sacandaga Association
Lake Luzerne
Lewis Creek Association
Little Long Lake Association
Livingston Lake Association
Long Lake Association
Long Pond Association
Loon Lake Association
Lower Saranac Lake Association
Minerva Lake

Mirror Lake Association
Mt Arab Eagle Crag Association
Mt View and Indian Lakes Association
Osgood Pond Association
Paradox Lake Association
Piseco Lake Association
Rainbow Lake Association
Raquette Lake Property Owners' Association
Schroon Lake Association
Silver Lake Association

St. Regis Chain of Lakes Association
Star Lake Protective Association
Spy Lake Association
Upper Saranac Lake Foundation
Upper Saranac Lake Association
West Caroga Lake Association
And More!

ASSOCIATED REPORTS AND REFERENCE MATERIALS

- [2016 Terrestrial Invasive Species Regional Response Team Report](#)
- [2016 Aquatic Invasive Species Regional Response Team Report](#)
- [2016 Adirondack Park State Campground Invasive Species Specialist Report](#)
- [Best Management Practices for Roadside Invasive Plants in the Adirondack Park](#)
- [Boat Inspection and Decontamination for AIS Prevention: Recommendations for the Adirondack Park](#)
- [The Actual and Potential Economic Impact of Invasive Species in the Adirondacks: A Preliminary Assessment](#)
- [2015 Post-treatment Monitoring Report](#)
- [Target & Watched Species Profiles](#)
- [Recorded Presentations](#)
- [Invasive Species Training Videos and Documentaries](#)
- [Brochures and Handouts](#)
- [AIS Training Materials](#)
- [Terrestrial Invasive Species Training Materials](#)
- [Summit Proceedings](#)
- [Interviews and Articles](#)
- [Press Releases](#)
- [Interactive Species Maps](#)
- [Seasonal Blog](#)
- [Strategic Plan](#)
- [Past Annual Work Plans](#)
- [Past Annual Reports](#)
- [Past Full Partner Meeting Minutes](#)
- [Past Awards & Recognition](#)
- [Past Research Collaborations](#)

MAPS, FIGURES, & PHOTO DOCUMENTATION