

## ***2017 Annual Report***

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*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 to protect the Adirondack region from invasive species impacts. 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 Aquatic Invasive Species (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 Emily Pomeroy, 2017'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 scales, 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.

### 2017 Highlights:

- **No Newly Invaded Lakes!** For the first time in a decade, no new Adirondack lakes were reported to be infested by AIS. APIPP attributes this success to increased investments in lake monitoring and AIS prevention in the region. Since 2002, APIPP has deployed a [lake monitoring program](#) that utilizes hundreds of volunteers to track the distribution of AIS. Over the past three summers, thanks to increased state funding, APIPP also deployed [rapid response teams](#) to bolster lake monitoring efforts. Past survey results indicated that approximately four Adirondack lakes were becoming newly invaded each year, making this year's findings, or lack thereof, a reason to celebrate.
- **APIPP Winning Phragmites Fight!** APIPP and researchers from Cornell University published results of managing invasive *Phragmites australis* in the interior Adirondacks over the past seven years in the journal *Biological Invasions*. [Management of invasive Phragmites australis in the Adirondacks: a cautionary tale about prospects of eradication](#), documents broad success in advancing early detection and rapid response efforts for the species and suggests that over 70% of priority infestations will be successfully eradicated by APIPP over the next few years.
- **Awareness Campaign Commences!** APIPP contracted with [Behan Communications Inc.](#) to develop the foundational components of a new invasive species awareness campaign for the Adirondacks. The *Protect Your Adirondacks – Keep Invasive Species Out* campaign theme and logo along with a [facebook page](#) and visually appealing and easy to navigate micro-website were created. APIPP will formally launch the campaign in the early spring of 2018 to excite Adirondack residents and visitors about their summer recreation plans and educate them on what simple steps they can take to *Keep Invasive Species Out*.
- **New Decontamination Station Announced for Northway!** APIPP and an advisory committee of partners working under the [Adirondack AIS Prevention Program](#) collaborated with NYS DOT to develop and finalize design plans for a premier boat decontamination station to be constructed along the I-87 Northway. The new station will be built as part of a soon to be reconstructed rest area near exit 18 and will service boaters traveling north into the Adirondacks from more highly invaded southern waters. Construction is anticipated to start in the fall of 2018 and be completed by the 2019 boating season. A [predictive analysis](#) conducted by Dr. Richard Shaker of Ryerson University in collaboration with APIPP in 2017 identified the Northway as the primary vector for the introduction and spread of AIS into the Adirondacks making this new station a critical safeguard for the region.
- **Woolly Adelgid Won't Win!** The first infestation of a pernicious forest pest, the hemlock woolly adelgid (*Adelges tsugae*), was discovered on three hemlock trees growing on Prospect Mountain near Lake George. APIPP and the NYS DEC partnered to rapidly respond to and treat the infestation in October. During the spring, APIPP also partnered with the [National Aeronautics and Space Administration's \(NASA\) DEVELOP](#) program to pilot the use of AVIRIS hyperspectral data to map the distribution of hemlock resources across a section of the central

Adirondacks. High resolution hemlock distribution maps are critical for APIPP and partners to prioritize early detection and rapid response efforts for forest pests. APIPP intends to build upon this pilot project to map hemlocks across the southeastern portion of the PRISM, where additional hemlock woolly adelgid infestations are most likely to be identified.

- **Videos Viewed Widely!** APIPP contracted with [West Field Production Company](#) to produce four short invasive species awareness and training videos that were released over the course of 2017. [Preventing the Introduction and Spread of Invasive Species in New York](#), [How to Protect Adirondack Waters from AIS](#), [Protect Your Adirondacks - Keep Knotweed Out](#), and [Protect Your Adirondacks - Keep Phragmites Out](#) have been well received and widely shared by partners and stakeholders, reaching over 10,000 people to date.
- **Hitchhiking Hydrilla Halted!** This summer boat launch stewards working under the [Adirondack AIS Prevention Program](#) intercepted a strand of hydrilla (*Hydrilla verticillata*) on a vessel attempting to launch into Upper Saranac Lake. It was the first interception of the highly invasive aquatic plant in the history of region's prevention efforts. APIPP, The Paul Smith's College Adirondack Watershed Institute, and an advisory committee of partners continue to advance and expand the prevention program which deployed 144 boat launch stewards and 20 decontamination stations throughout the region. In total, stewards inspected 97,412 watercraft and intercepted 3,849 AIS on boats attempting to launch into or from Adirondack waters.

#### **Round-up of accomplishments, by the numbers:**

- APIPP's Terrestrial Project managed approximately 529 infestations of target invasive plants while documenting the absence of invasive plants from 388 historically managed infestations.
- APIPP's Aquatic Project surveyed 112 Adirondack waterways for AIS with 103 documented to be invaded and 292 having no AIS observed.
- APIPP staff presented to at least 2,268 people at 61 different events this year. Partner efforts extended this 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

### 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.

## 2017 Regional Invasive Species Distribution

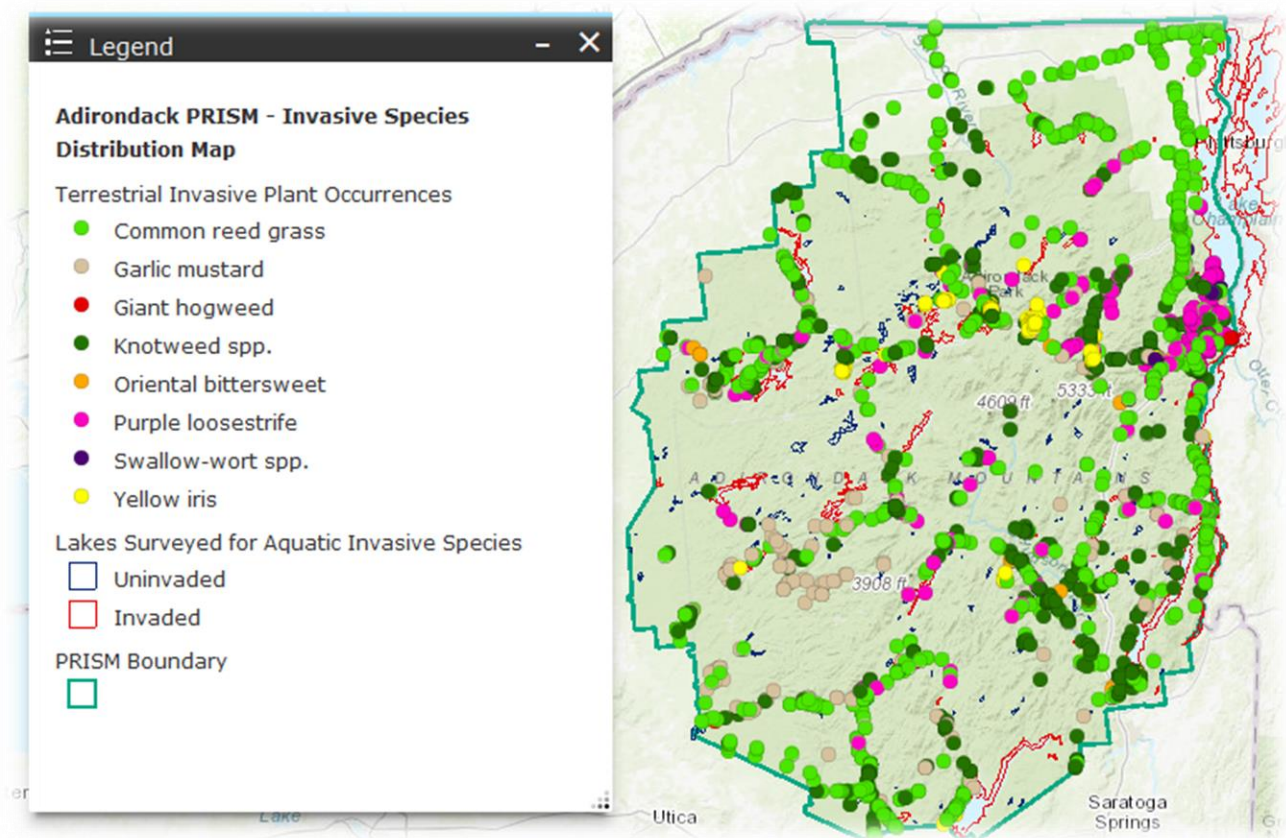
This section describes the known distribution of target invasive species in the PRISM.

### Aquatic Invasive Species

- In 16 seasons, more than 810 APIPP volunteers and response team members surveyed 395 distinct Adirondack waterways, finding 103 to contain one or more target AIS with 292 free of AIS (Map 1). With your assistance, APIPP has successfully established baseline distribution information for aquatic invasive plants and animals in the PRISM.

### Terrestrial Invasive Species

- A total of 3,439 target terrestrial invasive plant infestations have been mapped spatially as of 2017 (Maps 2 & 3). The majority of this mapping has occurred within the interior of the Adirondacks. Mapping outside the interior, in areas such as the Champlain Valley and Northern Franklin and Clinton counties, has historically been limited, but from 2015 - 2017 preliminary mapping in these areas was conducted.



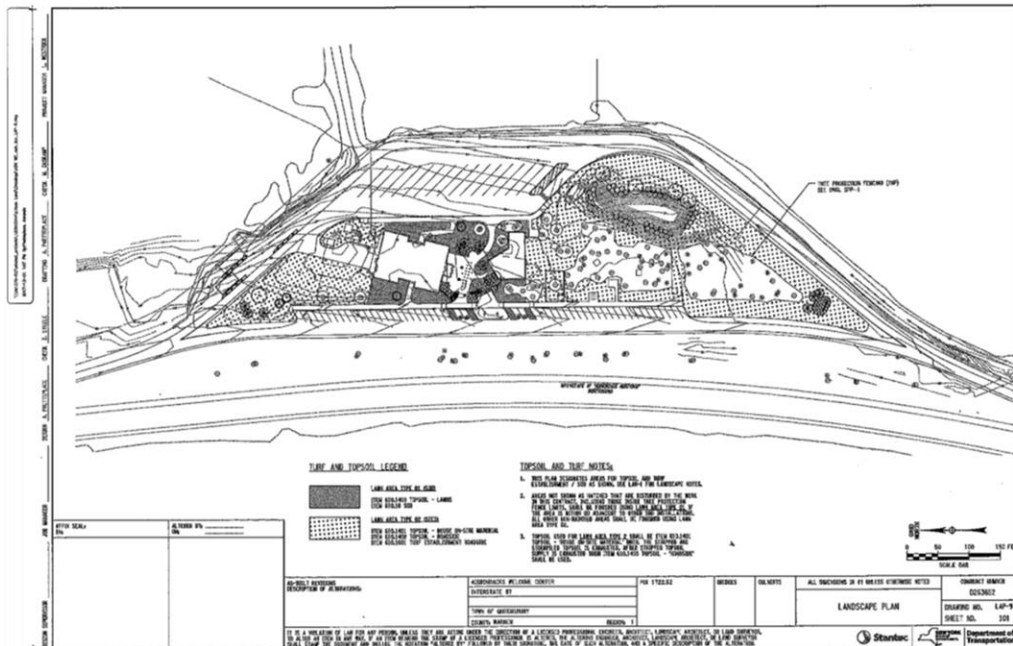
APIPP's interactive invasive species distribution map

# Prevention

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

## Aquatic Invasive Species

- APIPP and the Paul Smith’s College Adirondack Watershed Institute (AWI), under the direction of an advisory committee of partners, advanced the third year of the [Adirondack AIS Prevention Program](#) which staffed boat launch stewards at 67 priority launches and operated 20 regionally placed boat inspection and decontamination stations. In total 97,412 courtesy inspections were performed upon launch or retrieval resulting in 3,849 visible AIS being intercepted. 2,792 decontaminations were performed on boats that visited or were referred to decontamination stations. In November, the NYS DEC announced an invitation for bids to administer the program over the next five years. APIPP is currently assisting the NYS DEC as part of the procurement process.
- APIPP and partners working under the [Adirondack AIS Prevention Program](#) collaborated with NYS DOT to develop and finalize design plans for a premier boat decontamination station to be constructed along the I-87 Northway. The new station will be built as part of a soon to be reconstructed rest area near exit 18 and will service boaters traveling north into the Adirondacks from more highly invaded southern waters. Construction is anticipated to start in the fall of 2018 and be completed by the 2019 boating season. A [predictive analysis](#) conducted by Dr. Richard Shaker of Ryerson University in collaboration with APIPP in 2017 identified the Northway as the primary vector for the introduction and spread of AIS into the Adirondacks making this new station a critical safeguard for the region.



Construction designs/plans for the new I-87 Glens Falls rest area and boat decontamination station



## Target Species – Existing Threats

This section describes existing, high priority species threats that APIPP staff and partners 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 2017, 98 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 59 lakes in the PRISM. It was newly reported in one lake in 2017, Lake Alice.
- [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 47 lakes in the PRISM. It was newly reported in one lake in 2017, Lake Alice.
- [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 six water bodies in the PRISM. There were no new reports of this plant in 2017.
- [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 established in two lakes in the region: Lake Champlain and Hadlock Pond. Historic pioneer infestations have also been eradicated from Lake George. Small pioneer infestations were hand harvested in Lake Alice and Loon Lake in 2017.
- [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 18 lakes in the PRISM. It was newly reported in two lakes in 2017, Union Falls Flow and Loon Lake.
- [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 four private lakes in the PRISM: Efner Lake, Horseshoe Pond, Jenny Lake, and Mill Pond. There were no new reports of this plant in 2017.

### 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 2017, 21 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 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 two lakes in the PRISM, Lake Champlain and Lake George. There were no new reports of this species in 2017.

- [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 13 lakes in the PRISM. There were no new reports of this species in 2017.
- [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 nine lakes in the PRISM. There were no new reports of this species in 2017.
- [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 2017.

### Terrestrial Invasive Plants

The Terrestrial Project surveys for twenty-one 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*), common buckthorn (*Rhamnus cathartica*), scotch broom (*Cytisus scoparius*), cup plant (*Silphium perfoliatum*), reed canary grass (*Phalaris arundinacea*), tree-of-heaven (*Ailanthus altissima*), yellow iris (*Iris pseudacorus*), glossy buckthorn (*Frangula alnus*) and giant hogweed (*Heracleum mantegazzianum*). As of 2017, there are 3,437 mapped infestations of these plants in the PRISM (Maps 2 & 3).

- [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 919 documented infestations of these plants within the PRISM. In total, 86 new infestations of these plants were documented in 2017.
- [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. There are currently 10 documented infestations of this plant within the PRISM. All infestations were documented for the first time 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 1,439 documented infestations of this plant within the PRISM. In total, 275 new infestations of this plant were documented in 2017.
- [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 489 documented infestations of this plant within the PRISM. In total, 75 new infestations of this plant were documented in 2017.
- [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. There are currently 39 documented infestations of this plant within the PRISM. In total, 20 new infestations of this plant were documented 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 32 documented infestations of this plant within the PRISM. Five new infestations of this plant were documented in 2017.
- [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. There are currently five documented infestations of this plant within the PRISM. Four new infestations of this plant were documented 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 infestation of this plant within the PRISM. There were no new infestations of this plant documented in 2017.
- [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 43 documented infestations of this plant within the PRISM. In total, 21 new infestations of this plant were documented in 2017.
- [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. There are currently 57 documented infestations of these plants within the PRISM. In total, 44 new infestations of these plants were documented 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 189 documented infestations of this plant within the PRISM. In total, 15 new infestations of this plant were documented in 2017.
- [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. There are currently six documented infestations of this plant within the PRISM. All infestations were documented for the first time 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. There are currently five documented infestations of this plant within the PRISM. All infestations were documented for the first time in 2017.
- [Common buckthorn \(PRISM Invasiveness Ranking = Very High\)](#) is a deciduous shrub or small tree that can exceed 20 feet. It produces 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. There are currently two documented infestations of this plant within the PRISM. Efforts to more comprehensively document this plant's distribution in natural areas will commence in 2018.
- [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 infestation of this plant within the PRISM. There were no new infestations of this plant documented in 2017.
- [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. Efforts to more comprehensively document this plant's distribution in natural areas will commence in 2018.
- [Reed canary grass \(PRISM Invasiveness Ranking = High\)](#) is a coarse perennial grass that grows up to 10 feet tall. It spreads through abundant seed production and vegetative expansion via rhizomes. It readily invades moist sites where it crowds out native vegetation. Reed canary grass was added as a Target Species in 2017 under APIPP's updated priority setting process. Efforts to more comprehensively document this plant's distribution in natural areas will commence in 2018.
- [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. The first two infestations of Tree-of-heaven were documented in the PRISM in 2017.
- [Yellow iris \(PRISM Invasiveness Ranking = High\)](#) is an invasive ornamental perennial that can form dense monocultures which crowd out native plants. It readily invades riparian corridors, the shores of lakes and ponds, wetlands, and drainage ditches. There are currently 182 documented infestations of this plant within the PRISM. In total, 30 new infestations of this plant were documented in 2017.

- [Glossy buckthorn \(PRISM Invasiveness Ranking = High\)](#) is a deciduous shrub or small tree that can exceed 20 feet. Much like common buckthorn, it produces small glossy, black berries that are dispersed long distances by birds. Dense infestations shade out native plants and can impact forest regeneration. It readily invades areas of disturbance such as roadsides, grasslands, forest edges and canopy openings. Glossy buckthorn was added as a Target Species in 2017 under APIPP's updated priority setting process. Efforts to more comprehensively document this plant's distribution in natural areas will commence in 2018.
- [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 16 documented infestations of this plant within the PRISM. There were no new infestations of this plant documented in 2017.

### **Terrestrial Invasive Animals**

The Terrestrial Project surveys for three target terrestrial invasive animals that are known to be present in the PRISM, based on their high or very high NYS invasiveness rankings: emerald ash borer (*Agilus planipennis*), hemlock woolly adelgid (*Adelges tsugae*) and sirex woodwasp (*Sirex noctilio*). As of 2017, there are 2 mapped infestations of these animals in the PRISM (Maps 2 & 3)

- [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 mortality. Emerald ash borer was confirmed in the PRISM for the first time in 2017 in northern Franklin County.
- [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 hemlock needles. 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 significant mortality of eastern hemlocks in the southeastern US and the Catskill Park. The first infestation of hemlock woolly adelgid in the Adirondack PRISM was confirmed on Prospect Mountain near Lake George in 2017.
- [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. Comprehensive surveys for sirex woodwasp have not been completed, but the insect is presumed to be widespread in the PRISM.



*Hemlock woolly adelgid discovered on Prospect Mountain near Lake George*

## Watched Species – Potential Threats

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

### Aquatic Invasive Plants

The Aquatic Project remains watchful for one invasive plant that is present in NYS but 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, Cayuga, Erie, Kings, Monroe, Nassau, Niagara, Suffolk, Tioga, 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 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 spread throughout the Great Lakes and Finger Lakes region (Cross Lake, Otisco Lake, Oswasco Lake, Cayuga Lake, Finger Lakes, Keuka Lake, Seneca 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. In 2017, rusty crayfish were discovered in two lakes southwest of the PRISM: Oneida Lake and the Delta Lake Reservoir. It is widespread just south of the PRISM in the Mohawk River.

### Terrestrial Invasive Plants

The Terrestrial Project remains watchful for seven terrestrial invasive plants that are present in NYS but 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*), 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, Livingston, and Broome Counties.

- [Slender false brome \(PRISM Invasiveness Ranking = Very High\)](#) is a perennial bunchgrass that grows up to 2.5 feet tall 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 scattered infestations across central and western NYS. 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 widespread in southern NYS, with a single known infestation documented near Syracuse.
- [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.

### **Terrestrial Invasive Animals**

The Terrestrial Project remains watchful for two terrestrial invasive animals that are present in NYS but not yet known to be in the PRISM, and have high or very high NYS invasiveness rankings: Eurasian Boar (*Sus scrofa*) and Asian long-horned beetle (*Anoplophora glabripennis*).

- [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 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 NYS, including an infestation within the PRISM in Clinton County. All historic infestations have been deemed eliminated.
- [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 and when the larvae hatch, they feed on the cambium and heartwood, girdling and killing the tree. 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**

2017 marked the 16<sup>th</sup> season in which the Aquatic Project coordinated regional aquatic invasive plant surveillance activities. One hundred twenty-nine volunteers, four response team members, and three APIPP/Partner Agency staff surveyed 112 Adirondack waterways for aquatic invasive plants (Figure 1). Since 2002, the program has retained on average 94 core volunteers and recruited 50 new volunteers each year (Figure 2). Those water bodies confirmed as having new AIS infestations in 2017 through these surveillance efforts are listed below.

Lakes historically invaded with new AIS confirmed in 2017:

- Lake Alice (Clinton Co.) – Established infestations of Eurasian watermilfoil and variable-leaf watermilfoil were confirmed by APIPP’s AIS response team in June. Lake Alice is also known to be invaded by water chestnut.
- Loon Lake (Warren Co.) – An established infestation of curly-leaf pondweed was confirmed in Loon Lake by APIPP’s AIS Response team in June. Loon Lake is also known to be invaded by Eurasian watermilfoil and water chestnut.

Lakes newly invaded upon survey in 2017:

- For the first time in a decade, no newly invaded lakes were reported in the PRISM.



*Joanne Cwikla served as a backcountry water monitoring volunteer under APIPP’s Lake Monitoring Program*



### ***Small-bodied Aquatic Invasive Animals***

2017 marked the fifth 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 58 prioritized lakes and sediment sieves in 48 lakes containing sandy areas with no new infestations of small-bodied aquatic invasive animals discovered. 2017 also marked the sixth season of the lake-wide Asian clam survey conducted by the Lake George Park Commission (LGPC) on Lake George. Four new locations were confirmed in the lake this summer as described in the survey project's [final report](#). The total number of Asian clam sites in Lake George is now 23.

### ***Terrestrial Invasive Plants***

2017 marked the 7<sup>th</sup> 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, eight NYS DEC trailheads and intensive use areas, sections of 44 Forest Preserve units, and part or all of 39 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 4). Two new infestations of a watched invasive plant species (tree-of-heaven) were confirmed in 2017.

New infestations of target terrestrial invasive plants confirmed in 2017:

- Common reed grass – 275 infestations
- Knotweed spp. – 86 infestations
- Purple loosestrife – 75 infestations
- Bush honeysuckle – 44 infestations
- Yellow iris – 30 infestations
- Oriental bittersweet – 21 infestations
- Japanese barberry – 20 infestations
- Garlic mustard – 15 infestations
- Autumn olive – 10 infestations
- Norway maple – 6 infestations
- Black swallow-wort – 5 infestations
- Winged burning bush – 5 infestations
- Multiflora rose – 4 infestations
- Tree of-heaven – 2 infestations

### ***Terrestrial Invasive Animals***

2017 marked the 3<sup>rd</sup> season in which the Terrestrial Project coordinated with partners from the Adirondack Mountain Club and New York State Hemlock Initiative to train volunteers on forest pest identification, survey techniques and reporting. Volunteers, APIPP staff and partners surveyed approximately 40 forest areas for APIPP's target and watched invasive animals. One new infestation of hemlock woolly adelgid (Warren Co.) and one new infestation of emerald ash borer (Franklin Co.) were confirmed in 2017.

## 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 the Lake Champlain Basin Program’s advisory committee, in 2016. APIPP’s aquatic response team continued management in 2017, removing 30 additional water chestnut plants from the area. 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 and hand harvested 10 water chestnut plants while harvesting Eurasian watermilfoil in the lake’s northern bay. A follow-up survey in 2016 found no water chestnut plants. In 2017, APIPP’s aquatic response team surveyed the historic location, finding and removing 12 water chestnut plants. The Aquatic Project will continue to monitor the lake in future years to address any reoccurring water chestnut plants.

### Terrestrial Invasive Species

- The Terrestrial Project detected 284 new infestations of target terrestrial invasive plants in 2017 that were each under 0.1 acres in size. The Terrestrial Project was able to perform rapid response management on 83 of these infestations totaling 0.81 acres having acquired the proper permissions and/or permits.
- The Terrestrial Project performed follow-up management actions on 360 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 5.4 acres.
- In collaboration with the NYS DEC, the Terrestrial Project performed rapid response management on the first confirmed infestation of hemlock woolly adelgid in the PRISM, located on Prospect Mountain near Lake George. In total, the team performed basal bark insecticide applications on three infested trees to reduce existing adelgid populations and on an additional 202 surrounding trees to provide long-term protection from future invasion. A total of 224 individual hemlock trees were marked and measured to accurately track treatment results over time. The treatment area covered approximately seven acres.



*Terrestrial Response Team leader, Vance Brown, maps invasive plants along State Route 22*

## 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 11 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. However, in 2017 ten frog-bit plants were found and removed. The Aquatic Project will continue to monitor the lake in future years to address any reoccurring frog-bit plants.
- Ongoing mechanical management efforts for target aquatic invasive plant infestations are underway throughout the region through various 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, Hadlock Pond, Lake George, Lake Luzerne, Loon Lake, Meacham Lake, Minerva Lake, Mountain View Lake, 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.



*A water chestnut “Paddle and Pull” event was held on Lake Champlain during Invasive Species Awareness Week*

## Terrestrial Invasive Species

- The Terrestrial Project performed follow-up management actions on 85 established infestations of target terrestrial invasive plants, totaling approximately 29.6 acres. These infestations were over 0.1 acres in size upon initial discovery and had invasive plants persisting in 2017 after past management actions. A list of infestations managed by species is provided below.
  - Common reed grass - A total of 29 infestations received follow-up management. Twenty-seven infestations received follow-up treatment with herbicide, while two were managed mechanically via hand-pulling, totaling 4.6 acres.
  - Knotweed spp. - A total of 30 infestations received follow-up management. All were treated with herbicide, totaling 3.5 acres.
  - Garlic mustard - Two infestations received follow-up management. All were managed via hand pulling, totaling 1.4 acres.
  - Yellow iris - A total of five infestations received follow-up management. Three were treated mechanically via digging or hand pulling and two were treated using herbicide, totaling approximately 9.9 acres.
  - Purple loosestrife – A total of ten infestations received follow-up management. Seven were treated with herbicide, while three were managed mechanically via hand-pulling, totaling 4.5 acres.
  - Black swallow-wort - Nine black swallow-wort infestations received follow-up management. Eight were treated with herbicide, while one was treated mechanically via digging, totaling 5.7 acres.
- The Terrestrial Project completed year-two of mechanical management for white and yellow sweetclover (*Melilotus spp.*), spotted knapweed (*Centaurea maculosa*), and common mullein (*Verbascum Thapsus*) along the Whiteface Mountain Veterans Memorial Highway. These species are usually considered low priority for management, but are controlled at this site to protect populations of over ten rare, threatened, or endangered alpine plants. The team removed 35 contractor bags of invasive plant material; a 50% reduction in volume from management conducted in 2016.



Terrestrial Response Team member, Nicholas McElhaney, stands within a large common reed infestation being managed

## Species Distribution & Management Trends

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

### **Aquatic Invasive Species Distribution Trend Analysis**

- Approximately 74% of lakes and ponds surveyed by the Aquatic Project to date are free of AIS (Figure 3).
- On average four Adirondack lakes are newly documented as being invaded by AIS each year (Figure 3).

### **Aquatic Invasive Species Management Trend Analysis**

- Water chestnut – Since the beginning of the Aquatic Project’s invasive plant mapping efforts, four water chestnut infestations have been identified within the PRISM, with two prioritized for management (Lake Alice and Loon Lake). In 2017, both infestations received follow-up management (Figure 4). Decreases in the number of water chestnut plants present and removed have been observed (Figure 5).

### **Terrestrial Invasive Species Distribution Trend Analysis**

- Twenty-seven of 38 land-based NYS DEC campgrounds in the Adirondacks have target terrestrial invasive plants present: 21 have bush honeysuckle, 18 have garlic mustard, 11 have purple loosestrife, while the remaining target species are present at five or fewer campgrounds. As of 2017, six campgrounds had no invasive plants present.
- According to the Terrestrial Project’s invasive plant distribution database, approximately 43% of mapped target terrestrial invasive plant infestations fall within the jurisdictional right-of-ways of NYS DOT and local highway departments (Maps 2 & 3).
- Although not all infestations of target terrestrial invasive plants have been mapped, confirmed infestations are on average 0.08 acres in size upon initial discovery (Figure 6).

### **Terrestrial Invasive Species Management Trend Analysis**

- Common reed grass - Since the beginning of the Terrestrial Project’s invasive plant mapping efforts, 1,439 common reed infestations have been identified within the PRISM, with 512 prioritized for management. As of 2017, 148 of those previously managed infestations have been deemed eliminated after having no common reed plants observed for at least three consecutive years. An additional 59 infestations have had no common reed plants observed for two consecutive years while 60 infestations had no plants observed for the first time in 2017 (Figure 7). To date, approximately 53% of infestations actively managed in the PRISM have no common reed observed (Figure 8).
- Knotweed species - Since the beginning of the Terrestrial Project’s invasive plant mapping efforts, 919 infestations of knotweed species have been identified within the PRISM, with 260 prioritized for management. As of 2017, 14 of those previously managed infestations have been deemed eliminated after having no knotweed plants observed for at least three consecutive years. An additional 21 infestations have had no knotweed plants observed for two consecutive years while 24 infestations had no plants observed for the first time in 2017

(Figure 9). To date, approximately 23% of infestations actively managed in the PRISM have no knotweed observed (Figure 10).

- Garlic Mustard - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 189 garlic mustard infestations have been identified within the PRISM, with 68 prioritized for control at NYS DEC campgrounds and trailheads. As of 2017, eight of those previously managed infestations have been deemed eliminated after having no garlic mustard plants observed for at least three consecutive years. An additional six infestations had no garlic mustard plants observed for the first time in 2017.
- Purple Loosestrife - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 489 purple loosestrife infestations have been identified within the PRISM. Purple loosestrife is primarily prioritized for control at NYS DEC campgrounds and trailheads, where 11 locations are currently being managed mechanically. An additional 15 infestations have been identified as potential locations 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 2017, 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 2017, seven 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 one site had no plants observed for the first time in 2017. All remaining infestations were managed (Figure 11). To date, approximately 63% of infestations actively managed in the PRISM have no giant hogweed observed (Figure 12).
- Yellow Iris - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 182 yellow iris infestations have been identified within the PRISM, with 154 prioritized for management. As of 2017, 12 of those previously managed infestations have been deemed eliminated after having no yellow iris plants observed for at least three consecutive years. An additional 8 infestations had no yellow iris plants observed for two consecutive years while 20 had no plants observed for the first time in 2017 (Figure 13). To date, approximately 26% of infestations actively managed in the PRISM have no yellow iris observed (Figure 14).
- Swallow-wort Species - Since the beginning of the Terrestrial Project's invasive plant mapping efforts, 33 swallow-wort species infestations have been identified within the PRISM, with 31 prioritized for management. As of 2017, nine previously managed infestations had no invasive plants observed for one year (Figures 15). To date, 32% of infestations managed have no swallow-wort plants present (Figure 16).

## Native Species Reestablishment 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 native species reestablishment monitoring on three lakes historically managed for aquatic invasive plants: Follensby Clear Pond, Lake Placid, and Meacham Lake. The team delineated aquatic plant beds and documented species found for these lakes in their [final report](#).



*APIPP's 2017 Aquatic Invasive Species Response Team*

### Terrestrial Project

- The Terrestrial Project did not perform native species reestablishment monitoring on terrestrial invasive plant infestations in 2017. Extensive monitoring is performed on a 3-year rotation and was last conducted in 2015. The most recent monitoring results can be accessed in the [2015 monitoring report](#).



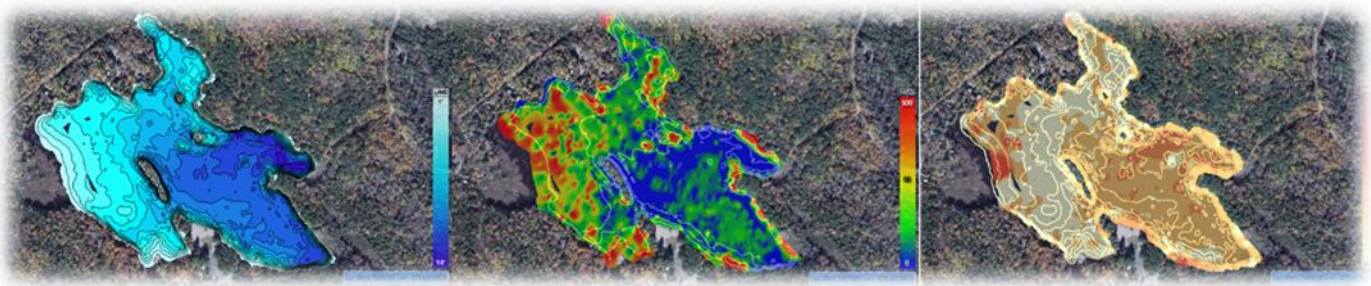
*This common reed infestation was treated by APIPP for the first time in 2016. No plants were detected in 2017.*

## Innovation

*This section describes efforts by APIPP staff and partners to pilot innovative approaches and technologies to improve program effectiveness.*

### Aquatic Project

- The Aquatic Project, in collaboration with the APA, piloted the sonar powered [ciBioBase](#) lake mapping system to collect high resolution lake depth, bottom substrate hardness, and vegetation biovolume information on two lakes; Minerva and Lake Flower. The technology is being evaluated for its utility to inform AIS early detection and management efforts as well as lake vulnerability assessments. If the evaluation indicates significant benefits, the Aquatic Project may consider initiating a citizen scientist based mapping program in the PRISM.
- The Aquatic Project partnered with the APA to assess the effectiveness of different survey protocols for invasive zooplankton. A variety of different variables (net mesh size, net mouth diameter, and tow type) were tested and compared. The results were used to improve the invasive zooplankton monitoring protocol used by the Aquatic Response Team and APIPP staff. Results indicated that a net with 500-micron mesh and mouth diameter of 0.5 meters pulled in an oblique tow(s) through the deepest area of the lake was most effective in capturing invasive zooplankton.



*Minerva Lake's depth, biovolume, and bottom hardness mapped using ciBioBase*

### Terrestrial Project

- During the spring, the Terrestrial Project partnered with [NASA's DEVELOP](#) Program to pilot the use of AVIRIS hyperspectral data to map the distribution of hemlock resources across a section of the central Adirondacks. High resolution hemlock distribution maps are critical for APIPP and partners to prioritize early detection and rapid response efforts for hemlock woolly adelgid. The NASA team generated a map of hemlock resources that identified nearly 6,000 hemlock stands ranging in size from 4.6 to 760 acres. APIPP intends to build upon this pilot project to map hemlocks across the southeastern portion of the PRISM, where additional hemlock woolly adelgid infestations are most likely to be identified. A [short video](#) was created to summarize the project and has received over 700 views to date.



# PROGRAM REPORT

## Seasonal Employment

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

- APIPP supported one invasive species educator position. Emily Pomeroy 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. Otto Neiler was hired into this position and conducted mapping and management of terrestrial invasive species at state campgrounds and trailheads throughout the Adirondack Park. The results of this work can be accessed in the project's [final report](#).
- APIPP collaborated with the AWI and an advisory committee of partners to advance the [Adirondack AIS Prevention Program](#) which staffed 144 seasonal 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](#).
- 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 four 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's 2017 Terrestrial Invasive Species Response Team*

## 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 61 audiences, reaching approximately 2,268 people in 2017 (Figure 17). On average, the Program presents to approximately 47 audiences and 1,735 people annually. Since 2009, the Program has given formal presentations to 427 audiences reaching approximately 15,619 people (Figure 18). These totals do not include others reached through informal tabling or public display events.
- APIPP staff hosted or were asked to provide supplemental content during 16 training sessions in 2017: nine covering AIS identification and surveillance techniques and seven covering terrestrial invasive species identification, surveillance, and management. Approximately 474 people participated in these trainings. Cohosting organizations included the Adirondack Mountain Club, NYS DOT, NYS DEC, iMapInvasives, AWI, Darrin Freshwater Institute, Lake Champlain Sea Grant, Essex and Clinton County Master Gardeners, Higley Lake Association, and Lake Placid Landowners Association. On average, the Program hosts or provides supplemental content during 14 training events each year, training approximately 412 people annually. Since 2009, the Program has hosted or presented during 130 training events in which approximately 3,714 people participated (Figure 19).
- APIPP staff presented during the following professional conferences in 2017: The Nature Conservancy's Northeast Stewardship Conference, Ashokan Watershed Conference, NYS Association of Transportation Engineers Annual Conference, Black River Watershed Conference, International Conference on AIS, Cornell Invasive Species In-service, and Innovations in Invasive Species Management Conference.



*APIPP provided an invasive plant identification & management training to NYS DOT staff at the Elizabethtown residency*

- APIPP contracted with West Field Production Company to produce four short films focused on priority invasive species issues affecting the Adirondacks and released the following videos in 2017:

- [Preventing the Introduction and Spread of Invasive Species in New York](#)
- [How to Protect Adirondack Waters from AIS](#)
- [Protect Your Adirondacks, Keep Knotweed Out](#)
- [Protect Your Adirondacks, Keep Phragmites Out](#)

To date these videos have reached nearly 10,000 viewers.

- 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](mailto:cce-apipp-1@cornell.edu), to provide updates to partners. The Program also responded to numerous [“contact us”](#) inquiries from APIPP’s website.
- APIPP contracted with Behan Communications Inc. to advance the year one objectives of APIPP’s 5-year communications and marketing strategy. These included the development of an [APIPP facebook page](#), the “Keep Invasive Species Out” awareness campaign logo/theme, and a campaign micro website. Nearly 260 people currently follow APIPP’s facebook page, but additional campaign effectiveness metrics will be included in future reports.



*APIPP's new invasive species awareness campaign logo*

## Regional Planning and Coordination

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

- Organized and led an advisory committee of partners to advance the third year of the [Adirondack AIS Prevention Program](#) through the AWI.
- In collaboration with the NYS DEC and APA, updated the [Inter-Agency Guidelines for Implementing Best Management Practices \(BMP\) to Control Invasive Species on DEC Administered Lands of the Adirondack Park](#) to include BMPs for AIS and hemlock woolly adelgid.
- Collaborated with and provided guidance to the [Regional Inlet Invasive Plant Program](#).
- Held one Adirondack AIS expert working group meeting focused on novel approaches to detection of small-bodied aquatic invasive animals and lake mapping.
- 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 one [NYS invasive species advisory committee](#) meeting.

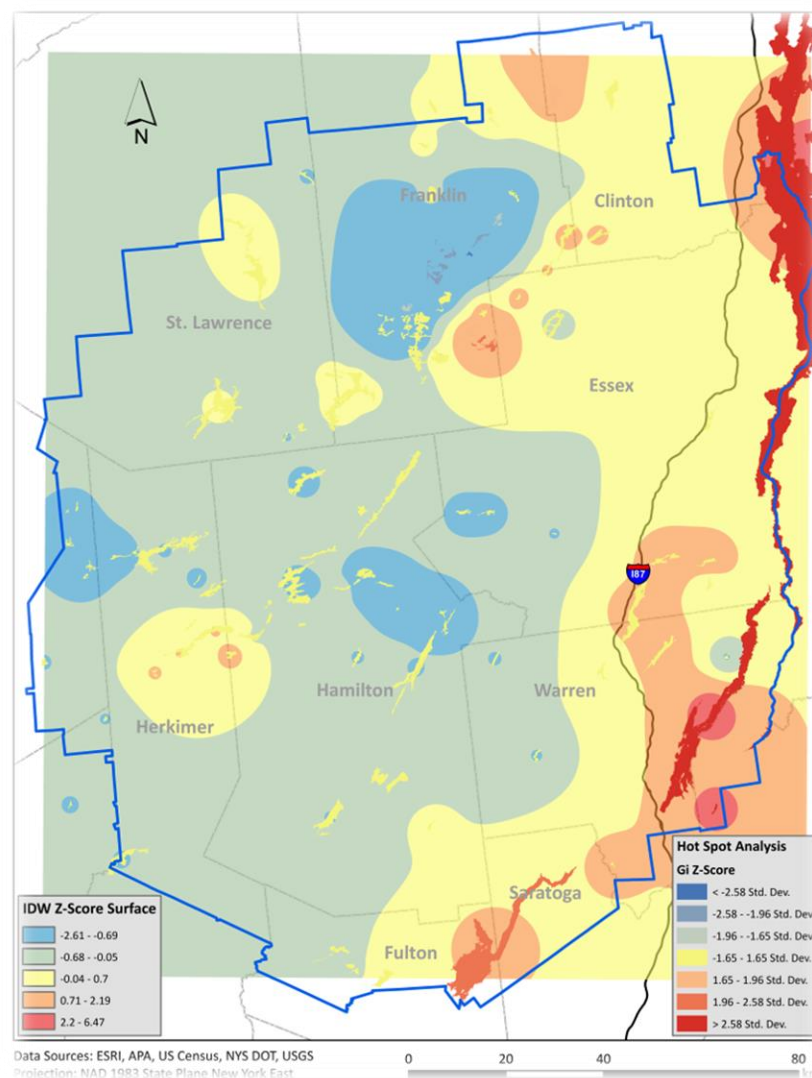


*Attendees during APIPP's 2017 fall partner meeting*

## Research

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

- In collaboration with Dr. Bernd Blossey (Cornell University) and Dr. Andrea Davalos (State University of New York at Cortland) APIPP published its results managing invasive *Phragmites australis* in the Adirondacks over the past seven years in the scientific journal Biological Invasions - [Quirion, B. R., Simek, Z., Davalos, A. and Blossey, B. \(2017\), Management of invasive phragmites in the Adirondacks: a cautionary tale about prospects of eradication. Biological Invasions. doi: 10.1007](#)
- In collaboration with Dr. Richard Shaker (Ryerson University) APIPP published a predictive analysis of Adirondack lake vulnerability to aquatic invasion in the scientific journal Ecosphere - [Shaker, R.R., Yakubov, A.D., Nick, S.M., Vennie-Vollrath, E., Ehlinger, T.J., and Forsythe, K.W. \(2017\), Predicting aquatic invasion in Adirondack lakes: a spatial analysis of lake and landscape characteristics. Ecosphere 8\(3\). doi: 10.1002/ecs2.1723](#)



Lake vulnerability map from APIPP and Ryerson University's predictive analysis

## Awards & Recognition

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

- APIPP gave its annual partner leadership award to the AWI. Since 2000 the institute has advanced a regional boat launch steward program that has expanded significantly in recent years to include boat decontamination infrastructure under the [Adirondack AIS Prevention Program](#). APIPP and partners recognize and value the increased effort and leadership by AWI to advance this critical AIS prevention program.
- APIPP received the 2017 Distinguished Stewardship Award from the Adirondack Lakes Alliance for appreciation and recognition of meritorious service and support to lake and river associations committed and dedicated to protecting and preserving Adirondack waters.



*APIPP received the 2017 Distinguished Stewardship Award from the Adirondack Lakes Alliance*

## STATE PARTNER UPDATES

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

### NYS Department of Agriculture & Markets

- 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 (APHIS) maintained the Asian long-horned beetle eradication program in New York City and central Long Island. The quarantine restricting the movement of Asian long-horned beetle regulated materials was lifted for Eastern Queens in 2017 with Western Queens slotted for deregulation in 2018.
- Coordinated 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. All samples returned 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 120,000 leaf samples were collected over a 12-week sampling period with no detections of the virus documented in 2017.
- Investigated one incidence of spotted lanternfly (*Lycorma delicatula*) incursion in Delaware County. Conducted a thorough survey of the facility and surrounding environment, finding no evidence of infestation. Currently working with APHIS to develop an aggressive survey and outreach program for this pest.
- Cooperating with APHIS to develop an eradication program for the European cherry fruity fly (*Rhagoletis cerasi*) which was confirmed in Niagara County in the fall of 2017.

### NYS DOT

- Funded research testing biological control agents for common reed grass.
- Funded research testing biological control agents for swallow-wort species.
- Assisted with the survey, early detection and rapid response of invasive plants on the newly reconstructed Blue Mountain access road.
- Included pay items for the disposal of material containing invasive plant species and cleaning of equipment for 100% of capital program projects.
- Provided a visual guide to priority invasive plants and look-alikes to all new temporary construction inspectors during their orientation.
- Participated in the production of two of APIPP's educational videos.
- Offered an invasive plant awareness and [best management practices](#) training to over 40 participants at the Elizabethtown residency.
- Assisted with treatments of target invasive plants along I -87 and route 30.
- Assisted with placement of signage and provided guidance on design specifications for the roadside boat wash stations established under the [Adirondack AIS Prevention Program](#).
- Coordinated with the [Adirondack AIS Prevention Program](#) to incorporate a boat inspection and decontamination station into planned renovations for the I-87 Northbound Glens Falls rest area scheduled for construction in 2018.

## **NYS APA**

- Collaborated with the NYS DEC and APIPP to revise the [Inter-Agency Guidelines for Implementing Best Management Practices to Control Invasive Species on DEC Administered Lands of the Adirondack Park](#).
- Assisted APIPP in the evaluation of spiny waterflea early detection survey protocols.
- Worked with APIPP to evaluate the [ciBioBase](#) lake mapping system.
- Surveyed three backcountry waterbodies for the presence of AIS.
- Served on the NYS Invasive Species Council, the Adirondack AIS Prevention Program's Advisory Committee, and the NYS Benthic Barrier workgroup.

## **NYS LGPC**

- Maintained the fourth year of a mandatory inspection program for all trailered boats entering Lake George, in an effort to prevent any new introductions of AIS. The program operated seven inspection stations around the lake which discovered visible AIS on more than 100 boats prior to launch. The program decontaminated an additional 1,700 boats that did not meet the required 'clean, drained, and dry' standard. No new introductions of AIS have occurred since the program's inception. The results of this work can be accessed in the program's [final report](#).
- Coordinated with the Lake George Association and the Fund for Lake George to continue long-term harvesting efforts of Eurasian watermilfoil in Lake George. Several bays in Lake George which have historically been heavily infested with this nuisance plant are now almost milfoil free. The partnership has set an achievable goal of no dense beds left in Lake George by year 2020.
- Maintained the sixth season of the lake-wide Asian clam survey conducted on Lake George. Four new locations were confirmed in the lake this summer as described in the survey project's [final report](#). The total number of Asian clam sites in Lake George is now 23.

## **NYSDEC**

(Not available by reporting deadline)



## 2018 OBJECTIVES

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

- APIPP's 2018 Work Plan will be uploaded to its website in the spring of 2018 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
  - Announce the *Keep Invasive Species Out* awareness campaign and implement the second year objectives of APIPP's 5-year communications and marketing plan
  - Finalize a 3-tier priority setting process to re-evaluate and assess APIPP's priority plant species, management areas and projects
  - Implement a terrestrial invasive plant monitoring project using unmanned aerial vehicles
  - Expand the [ciBioBase](#) lake mapping project
  - Implement a regional hemlock woolly adelgid early detection and rapid response framework
  - And much more!



*APIPP volunteers survey for aquatic invasive plants in Wickham Marsh*

## COOPERATING PARTNERS

**Thank you for helping protect 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 Park Agency  
Au Sable River Association  
Boquet River Association  
CAP-21  
Clinton and Essex County Master Gardeners  
Cornell Cooperative Extension County Offices  
(Clinton, Essex, Hamilton, St. Lawrence and Warren)  
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  
NYS Hemlock Initiative  
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**  
6<sup>th</sup> and 7<sup>th</sup> 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!**

## REFERENCE MATERIALS

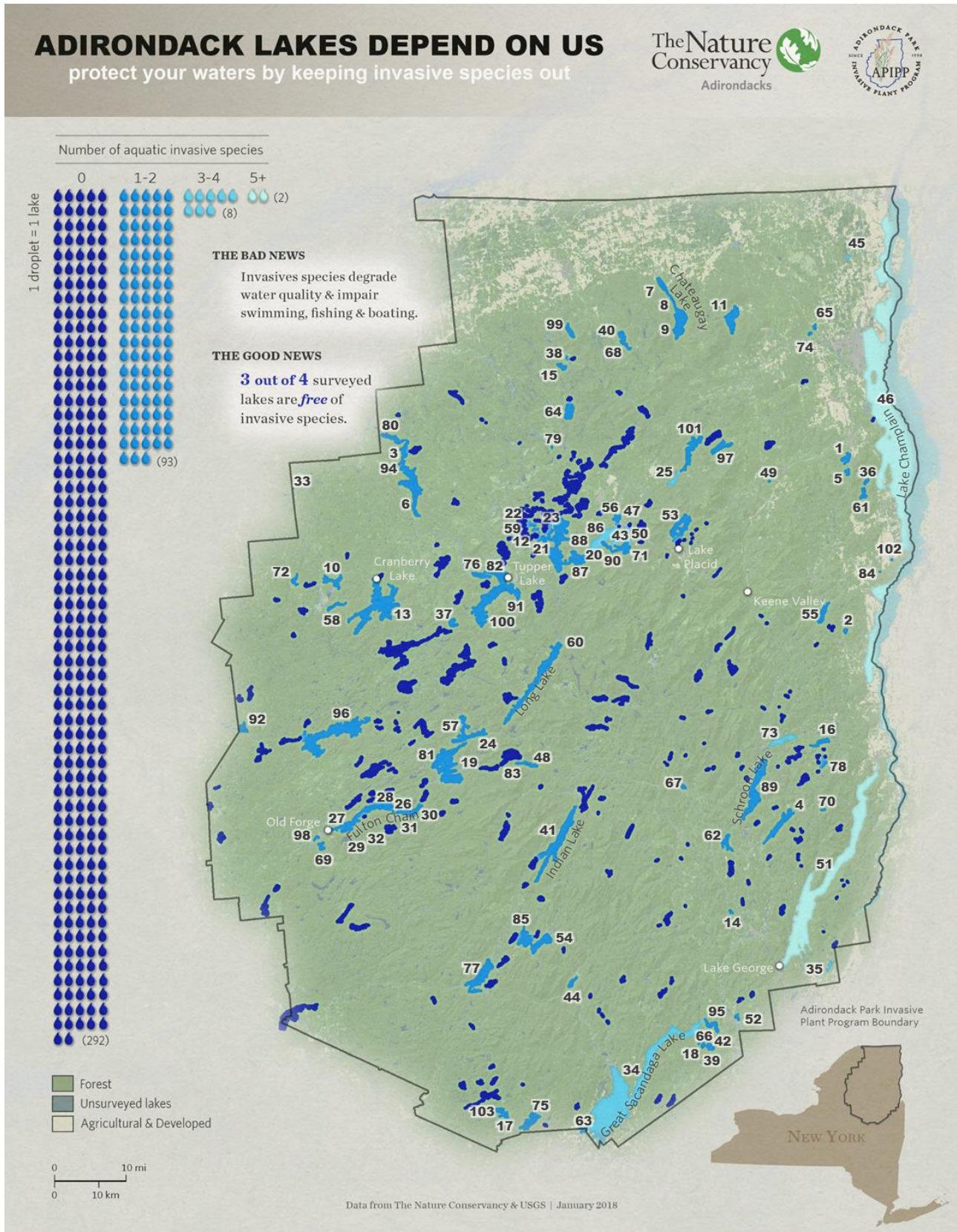
- [2017 Terrestrial Invasive Species Regional Response Team Report](#)
- [2017 AIS Regional Response Team Report](#)
- [2017 Adirondack Park State Campground Invasive Species Specialist Report](#)
- [Best Management Practices for Roadside Invasive Plants in the Adirondack Park](#)
- [Boat Inspection 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 & Documentaries](#)
- [Brochures & Handouts](#)
- [Training & Workshop Materials](#)
- [Interviews & Articles](#)
- [Press Releases](#)
- [Interactive Species Distribution Map](#)
- [Facebook Page](#)
- [Strategic Plan](#)
- [Priority Setting Framework](#)
- [Past Annual Work Plans](#)
- [Past Annual Reports](#)
- [Past Full Partner Meeting Minutes](#)
- [Past Awards & Recognition](#)
- [Past Research Collaborations](#)

## **MAPS & FIGURES**

# Invasive Species Distribution Maps

## Map 1: 2017 Distribution of Target AIS

\*Please refer to the table below the map to access additional information for each numbered lake



Lake Name (Alphabetized)	#	EWM	VLM	CLP	WC	ZM	EF	FW	SWF	BN	AC	YFH
Augur Lake	1	X										
Bartlett Pond	2	X										
Blake Reservoir	3		X									
Brant Lake	4	X		X								
Butternut Pond	5	X										
Carry Falls Reservoir	6		X									
Chateaugay Lake (Lower)	7	X		X								
Chateaugay Lake (Narrows)	8	X		X								
Chateaugay Lake (Upper)	9	X		X								
Chaumont Pond	10		X									
Chazy Lake	11	X										
Copperas Pond	12	X										
Cranberry Lake	13		X									
Daggett Pond	14	X										
Deer River Flow	15	X										
Eagle Lake (Essex County)	16	X		X								
East Caroga Lake	17	X								X		
Efner Lake	18							X				
Eldon Lake	19		X									
First Pond, Saranac Chain	20	X	X									
Fish Creek Ponds	21	X	X									
Floodwood Pond	22	X										
Follensby Clear Pond	23	X										
Forked Lake	24		X									
Franklin Falls Flow	25	X	X	X								
Fulton Chain, Fifth Lake	26	X	X									
Fulton Chain, First Lake	27		X									
Fulton Chain, Fourth Lake	28	X*	X									
Fulton Chain, Second Lake	29	X*	X									
Fulton Chain, Seventh Lake	30	X	X									
Fulton Chain, Sixth Lake	31	X	X									
Fulton Chain, Third Lake	32		X									
Grasse River at Lampson Falls	33						X					
Great Sacandaga Lake	34	X							X	X		
Hadlock Pond	35	X		X	X					X		
Highlands Forge Lake	36	X										
Horseshoe Lake	37		X									
Horseshoe Pond (Franklin County)	38	X										
Hunt Lake	39							X				
Indian Lake (Franklin County)	40	X										

Lake Name (Alphabetized)	#	EWM	VLM	CLP	WC	ZM	EF	FW	SWF	BN	AC	YFH
Indian Lake (Hamilton County)	41								X			
Jenny Lake	42							X				
Kiawassa Lake	43	X	X	X								
Lake Algonquin	44	X										
Lake Alice	45	X	X		X							
Lake Champlain	46	X	X	X	X	X	X		X	X		X
Lake Colby	47	X										
Lake Durant	48		X									
Lake Eaton (Essex County)	49						X					
Lake Flower	50	X	X	X								
Lake George	51	X		X		X			X		X	
Lake Luzerne	52	X		X								
Lake Placid	53		X									
Lake Pleasant	54								X			
Lincoln Pond	55	X										
Little Colby Pond	56	X										
Little Forked Lake	57		X									
Little River Flow	58		X									
Little Square Pond	59	X										
Long Lake (Hamilton County)	60		X									
Long Pond (Essex County)	61	X										
Loon Lake (Warren County)	62	X		X	X							
Mayfield Lake	63	X		X								
Meacham Lake	64	X										
Mead Reservoir	65	X										
Mill Pond (Saratoga County)	66							X				
Minerva Lake	67	X										
Mountain View Lake	68	X										
Nicks Lake	69		X									
North Pond	70	X										
Oseetah Lake	71	X	X									
Oswegatchie River Impoundment	72		X									
Paradox Lake	73	X	X	X								
Patterson Reservoir	74	X										
Peck Lake	75		X						X			
Piercefield Flow	76		X									
Piseco Lake	77								X			
Putnam Pond	78	X										
Quebec Brook, Southeast Tributary	79						X					
Rainbow Falls Reservoir	80		X									

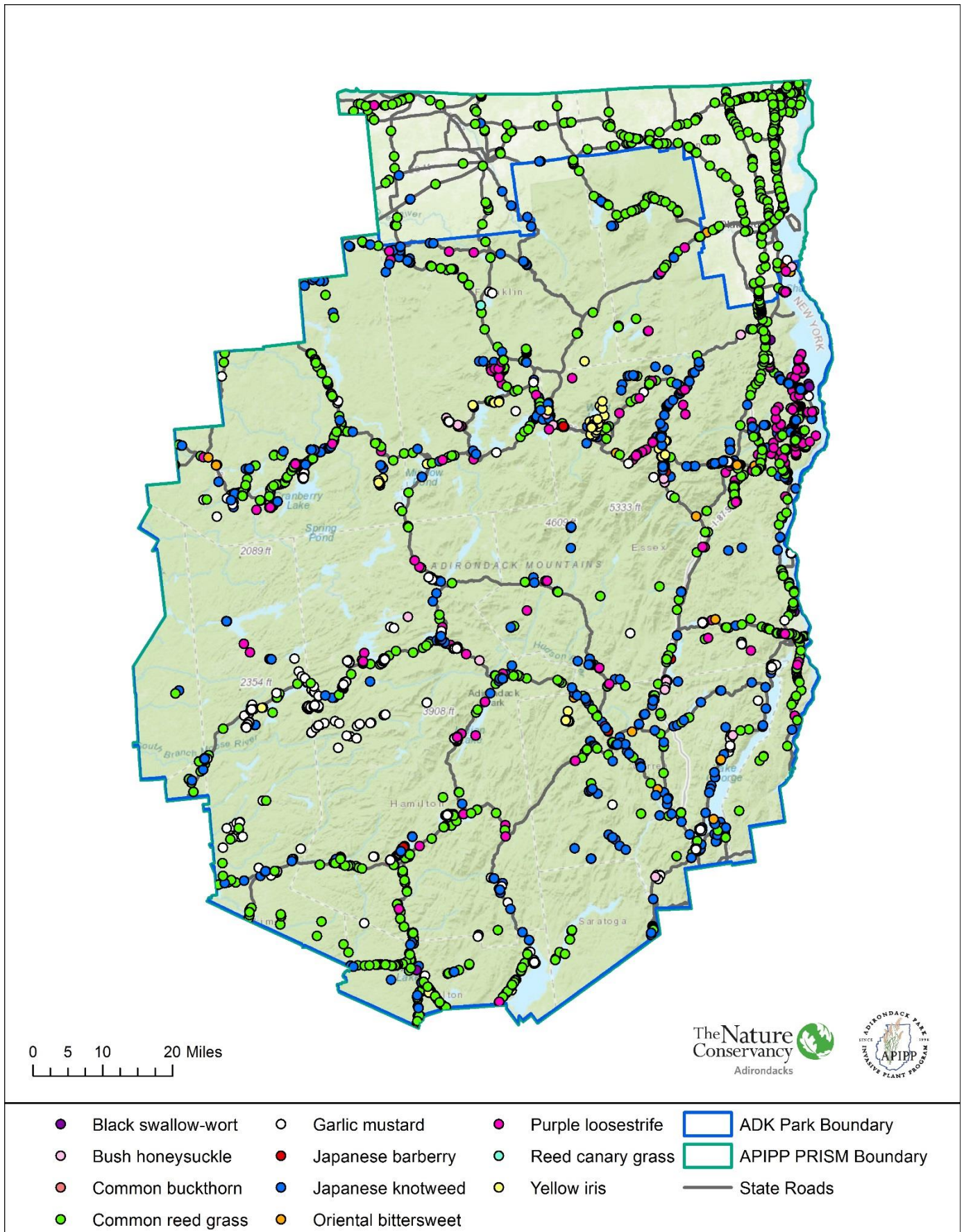


Lake Name (Alphabetized)	#	EWM	VLM	CLP	WC	ZM	EF	FW	SWF	BN	AC	YFH
Raquette Lake	81		X									
Raquette Pond	82		X									
Rock Pond (Hamilton)	83		X									
Rogers Pond	84						X					
Sacandaga Lake	85								X			
Saranac Lake, Lower	86	X	X	X								
Saranac Lake, Middle	87	X										
Saranac Lake, Upper	88	X	X									
Schroon Lake	89	X		X								
Second Pond, Saranac Chain	90	X	X									
Simon Pond	91		X									
Soft Maple Reservoir	92		X									
Square Pond	93	X	X									
Stark Falls Reservoir	94		X									
Stewarts Bridge Reservoir	95								X			
Stillwater Reservoir	96		X									
Taylor Pond	97	X										
Thendara Lake	98		X									
Titus Lake	99	X										
Tupper Lake	100		X									
Union Falls Flow	101	X	X									
Webb Royce Swamp	102						X					
West Caroga Lake	103	X										

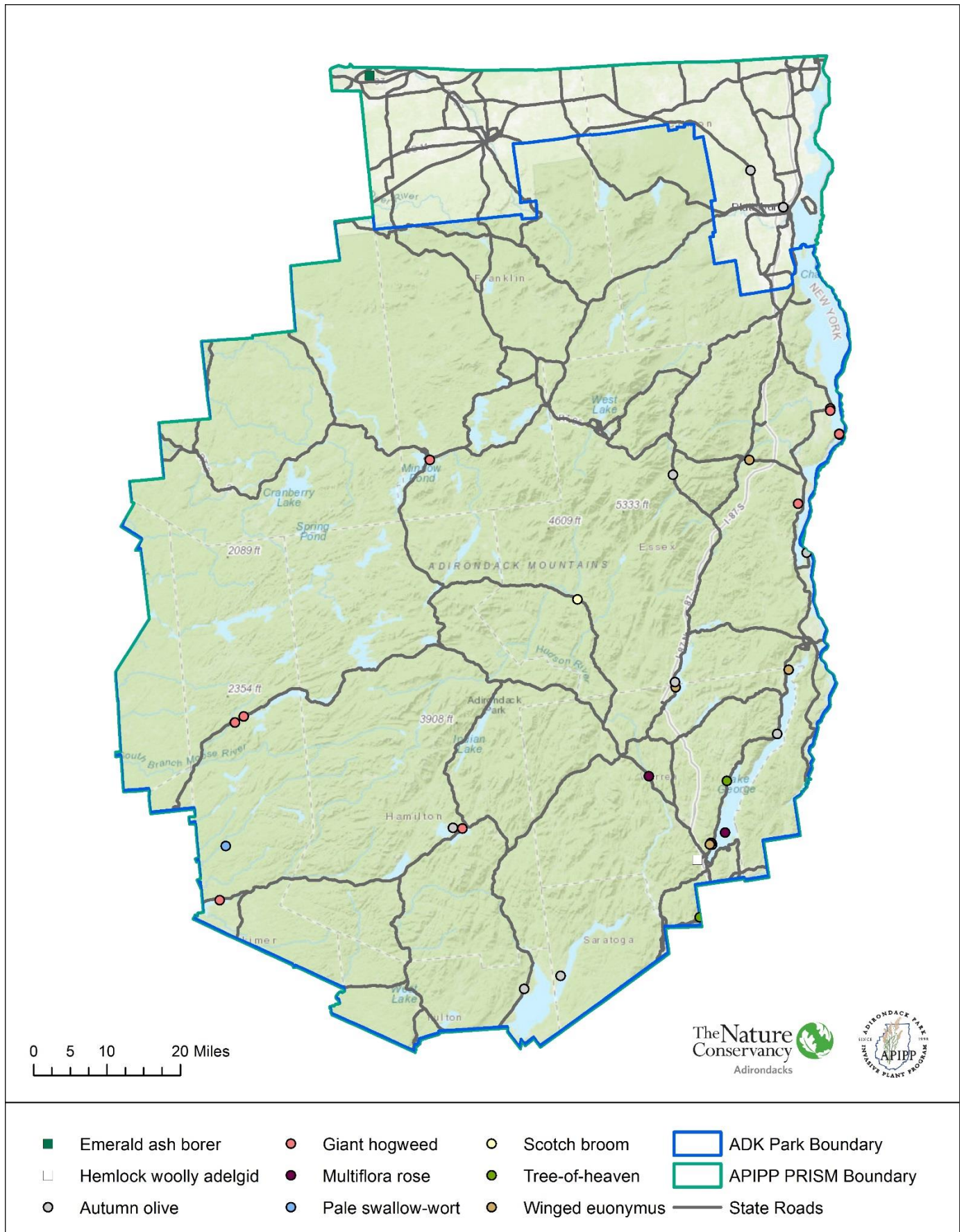
\*This infestation has been eliminated. An infestation is considered eliminated if no plants are observed for three consecutive years. Monitoring will continue.

Key		
EWM = Eurasian watermilfoil	VLM = Variable-leaf milfoil	CLP = Curly-leaf pondweed
WC = Water chestnut	ZM = Zebra mussels	EF = European frog-bit
FW = Fanwort	SWF = Spiny waterflea	BN = Brittle naiad
AC = Asian clam	YFH = Yellow floating heart	

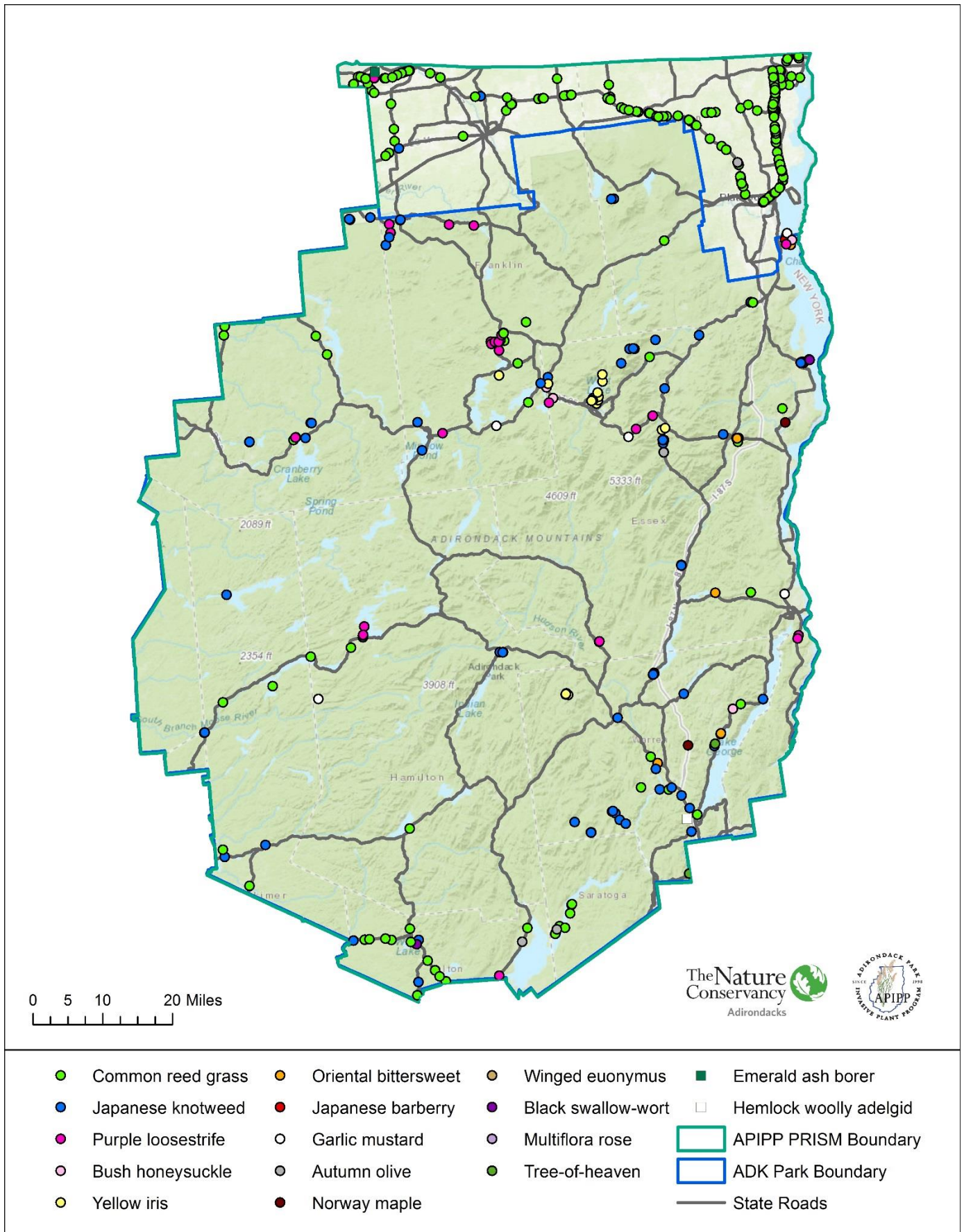
Map 2: 2017 Distribution of Widespread Target Terrestrial Invasive Plants



**Map 3: Distribution of Isolated Target Terrestrial Invasive Species**



Map 4: New Infestations of Target Terrestrial Invasive Species Identified in 2017



## Program Figures

Figure 1: Number of Lakes Monitored and Volunteers Engaged Since 2002

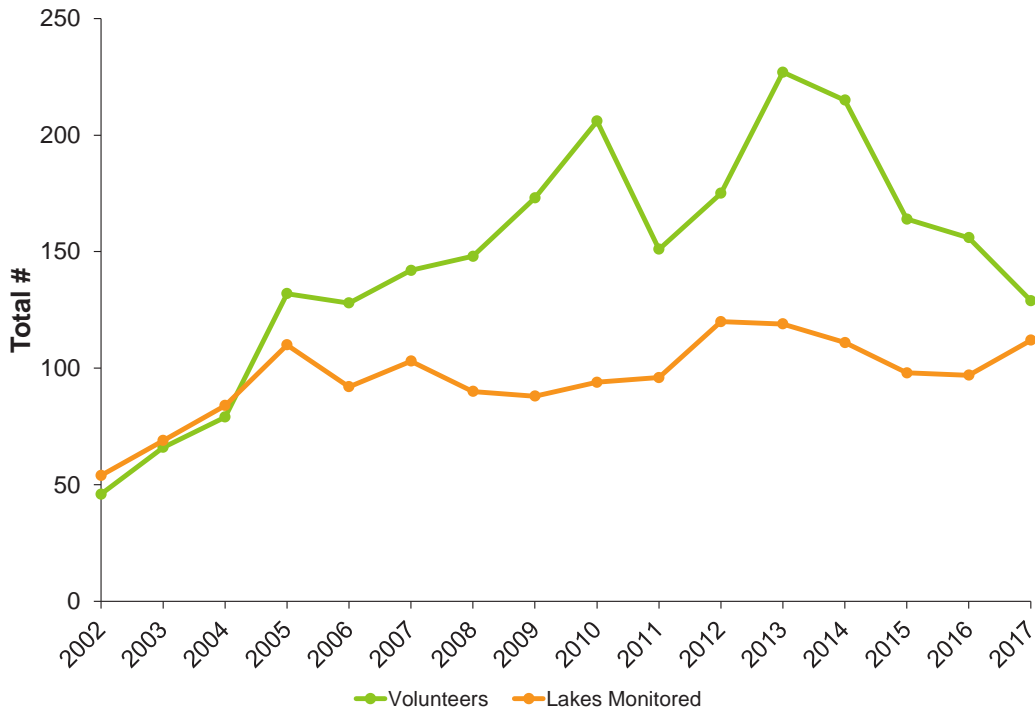
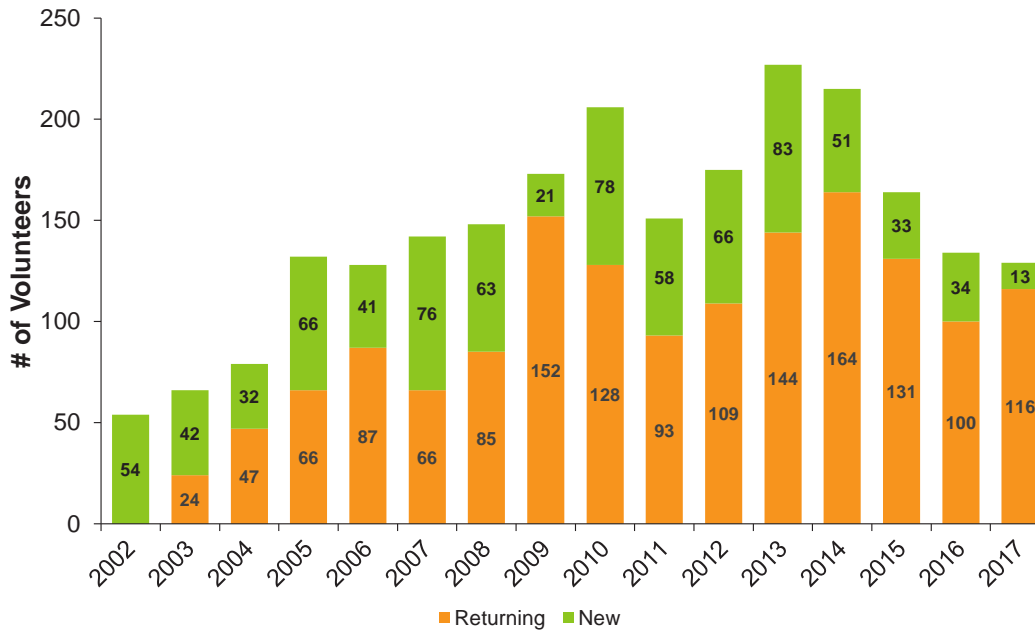
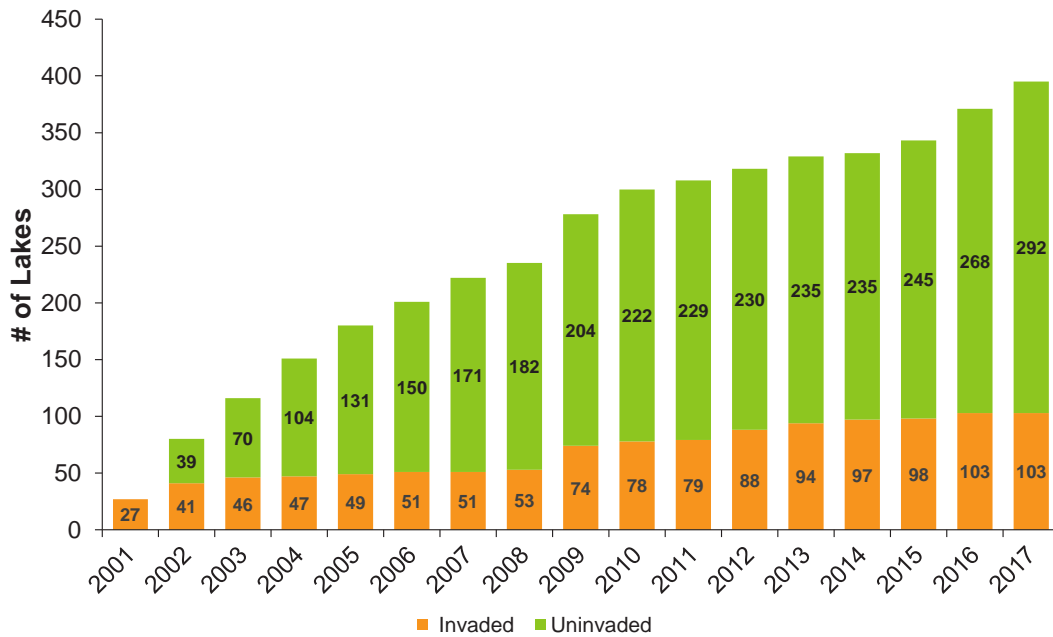


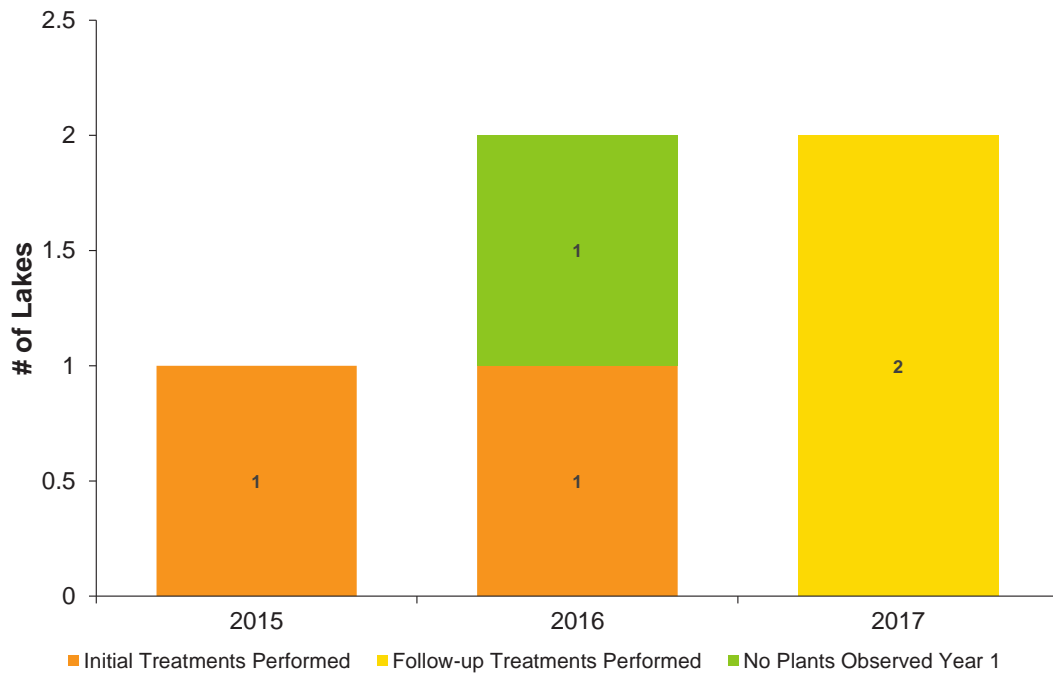
Figure 2: Number of New and Returning Volunteers Since 2002



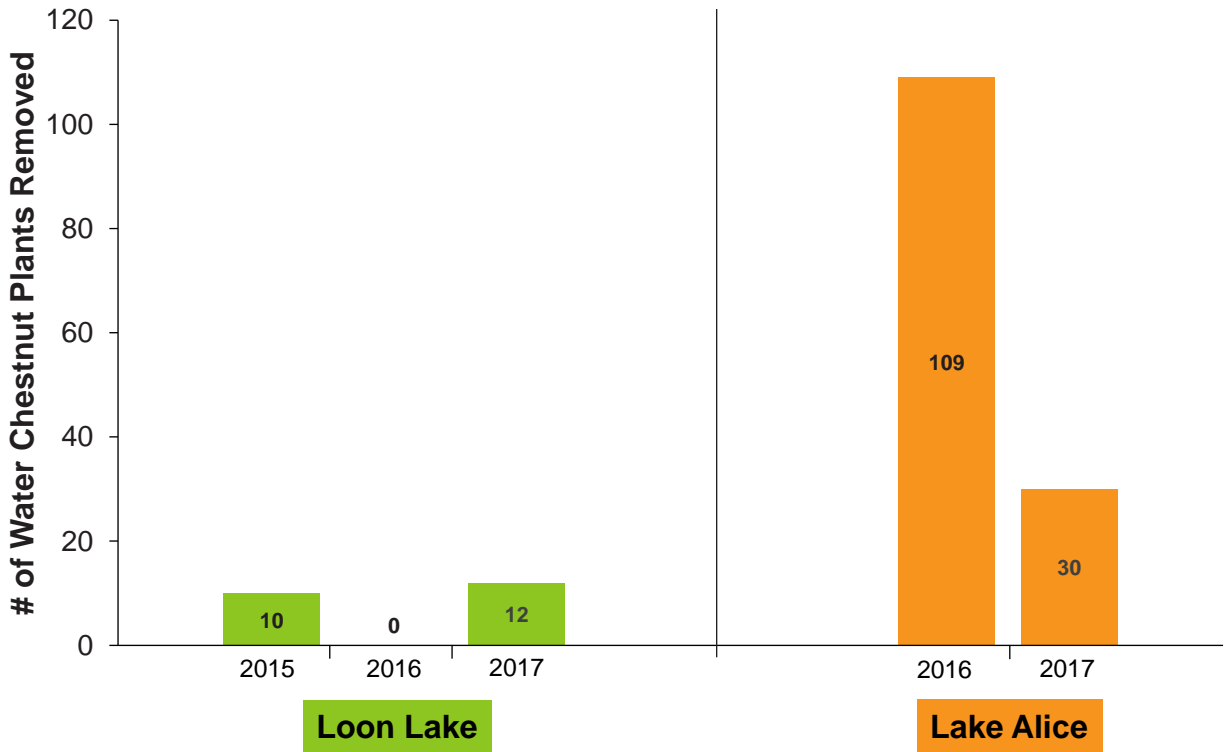
**Figure 3: Lakes Surveyed and Confirmed to be Invaded/Uninvaded by AIS Since 2001**



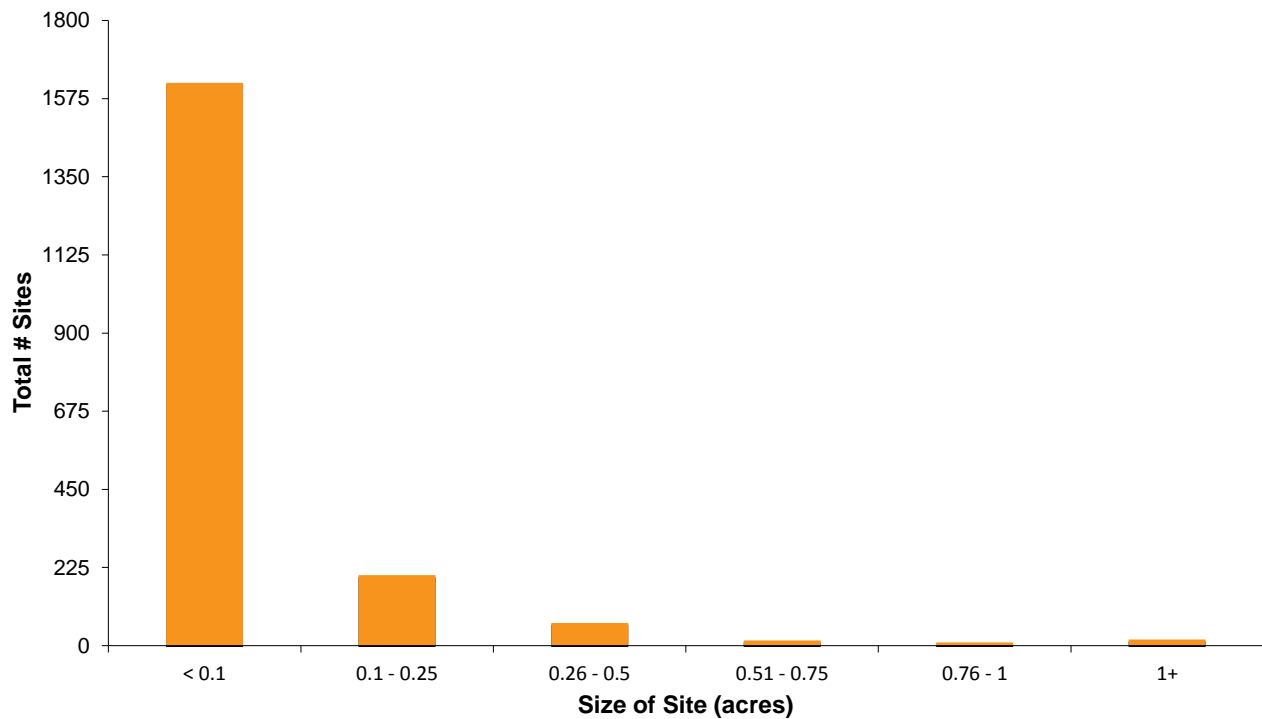
**Figure 4: Progression of Water Chestnut Management Since 2015**



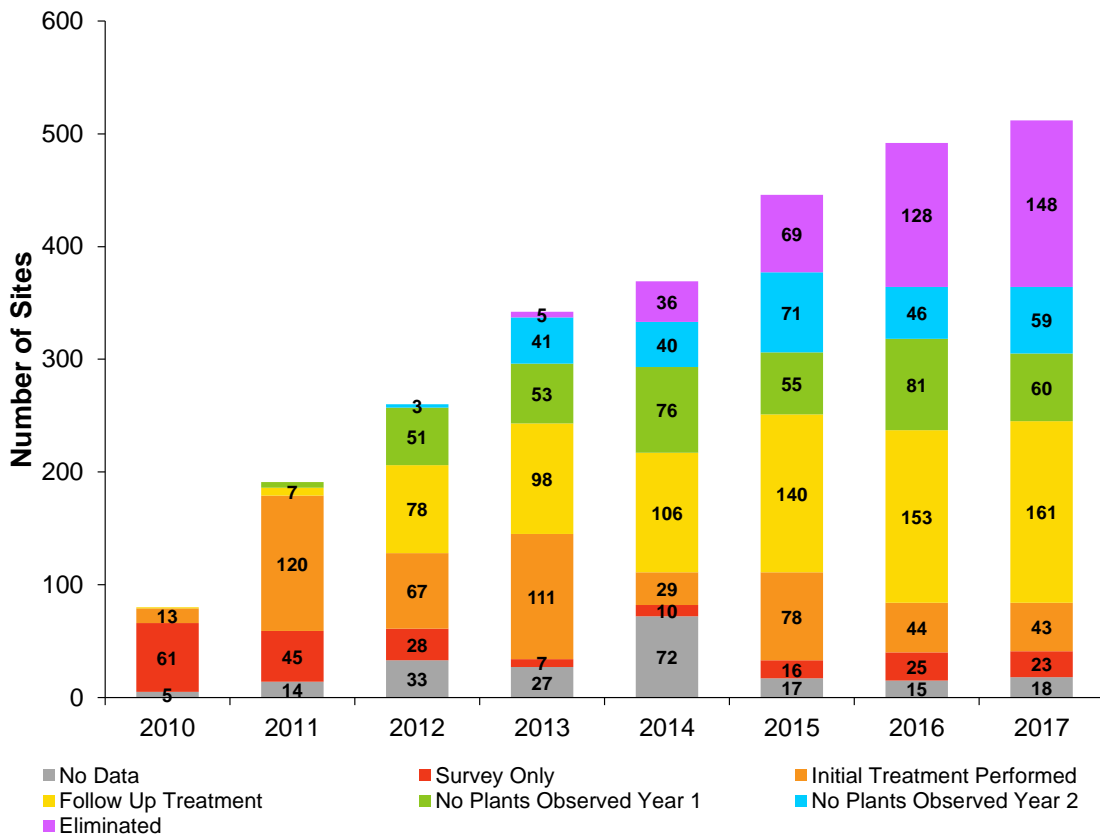
**Figure 5: Water Chestnut Plants Removed from Loon Lake and Lake Alice Since 2015**



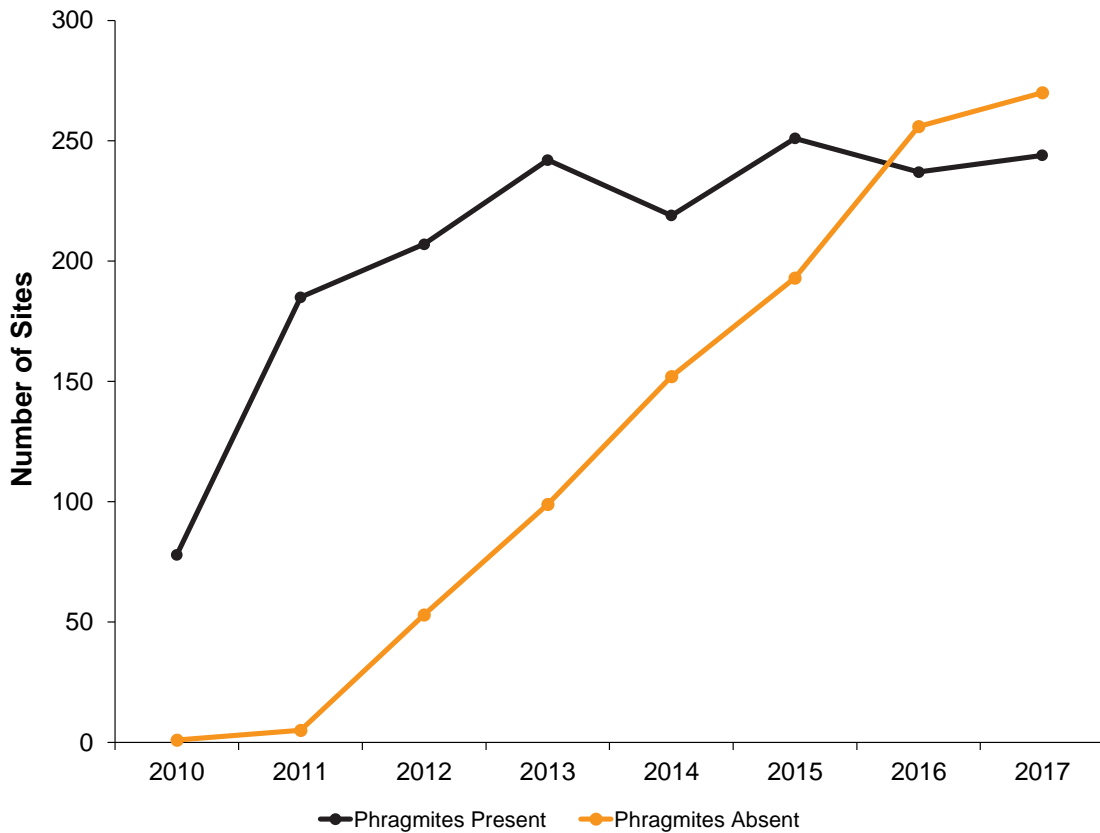
**Figure 6: Acreage of Target Terrestrial Invasive Plant Infestations Upon Detection Since 2000**



**Figure 7: Progression of Common Reed Management Since 2010**

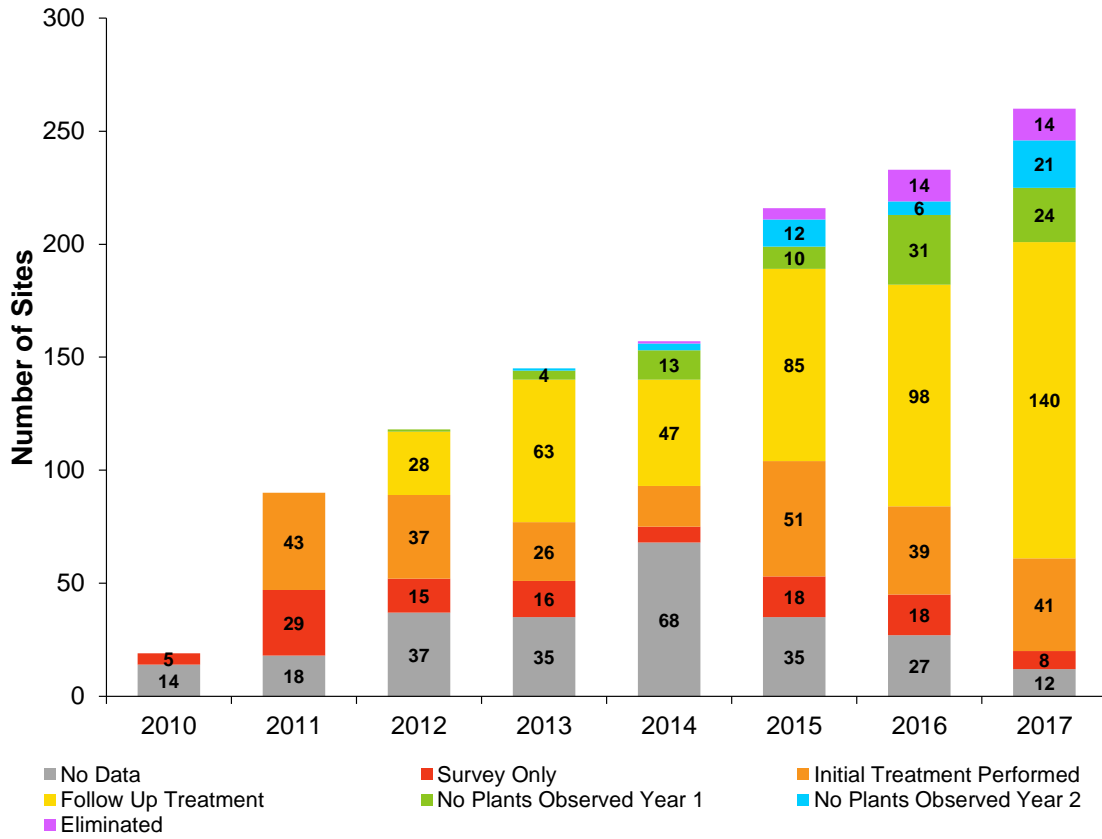


**Figure 8: Management Sites with Common Reed Present or Absent Since 2010**

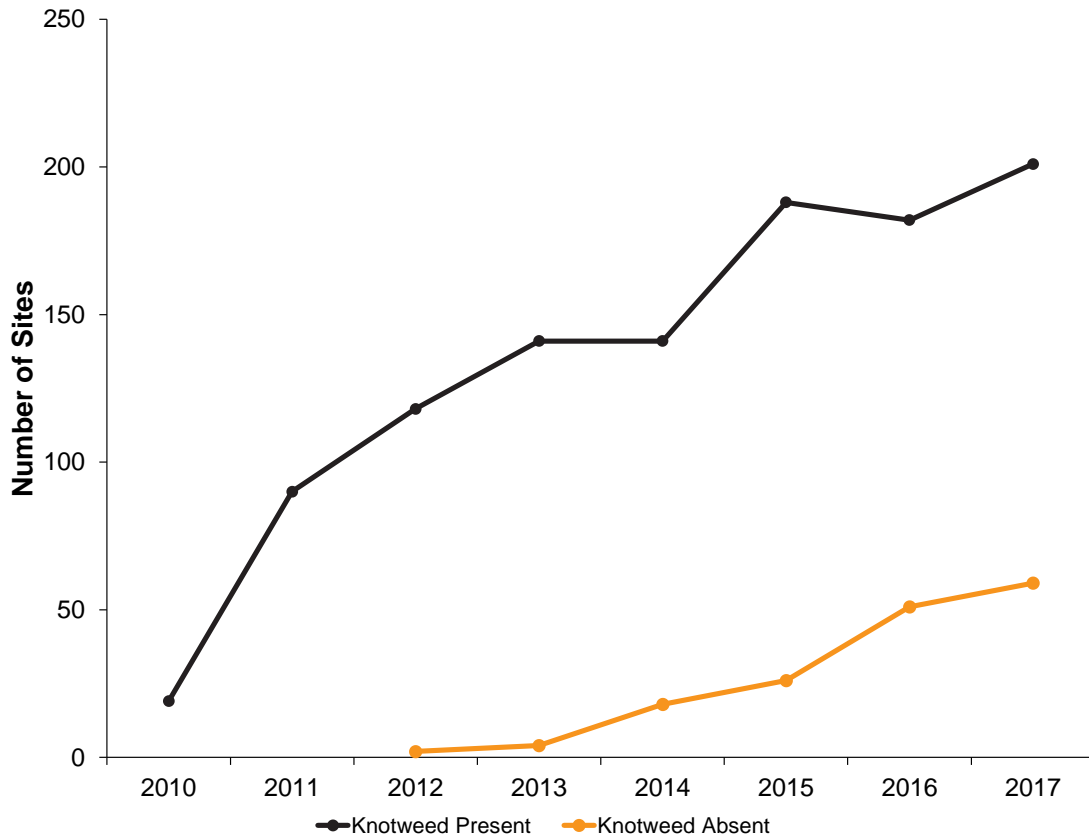




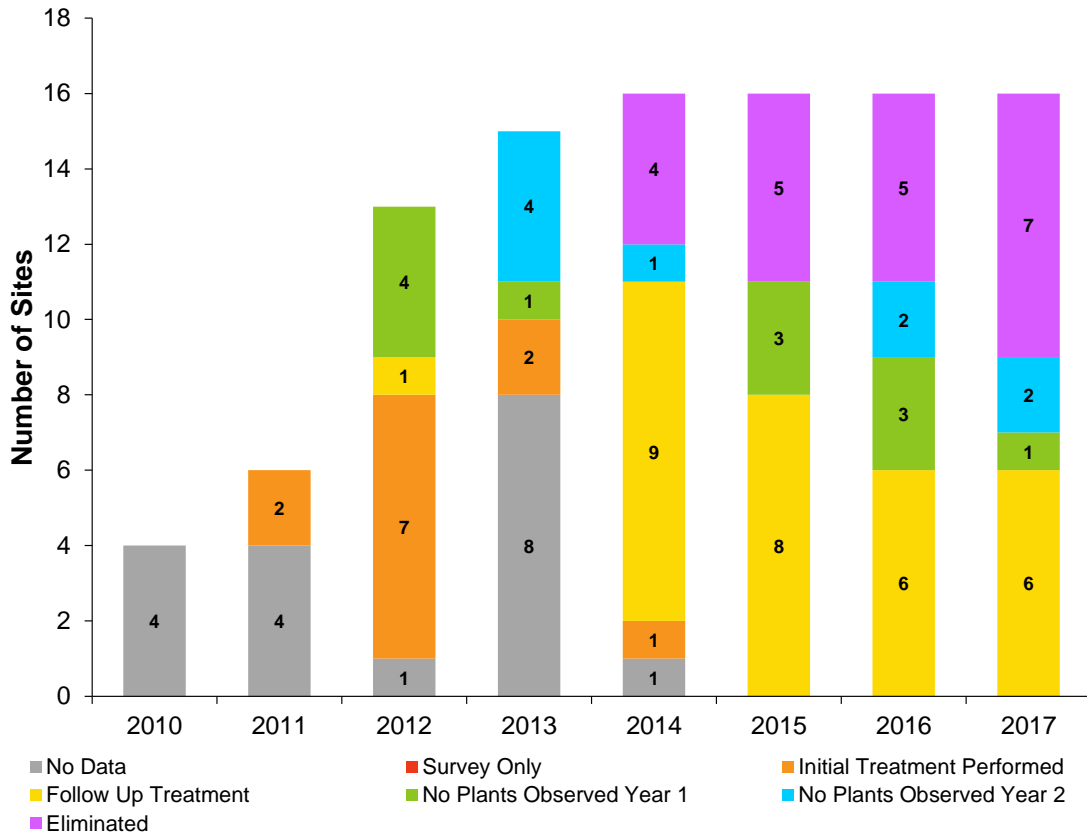
**Figure 9: Progression of Knotweed Species Management Since 2010**



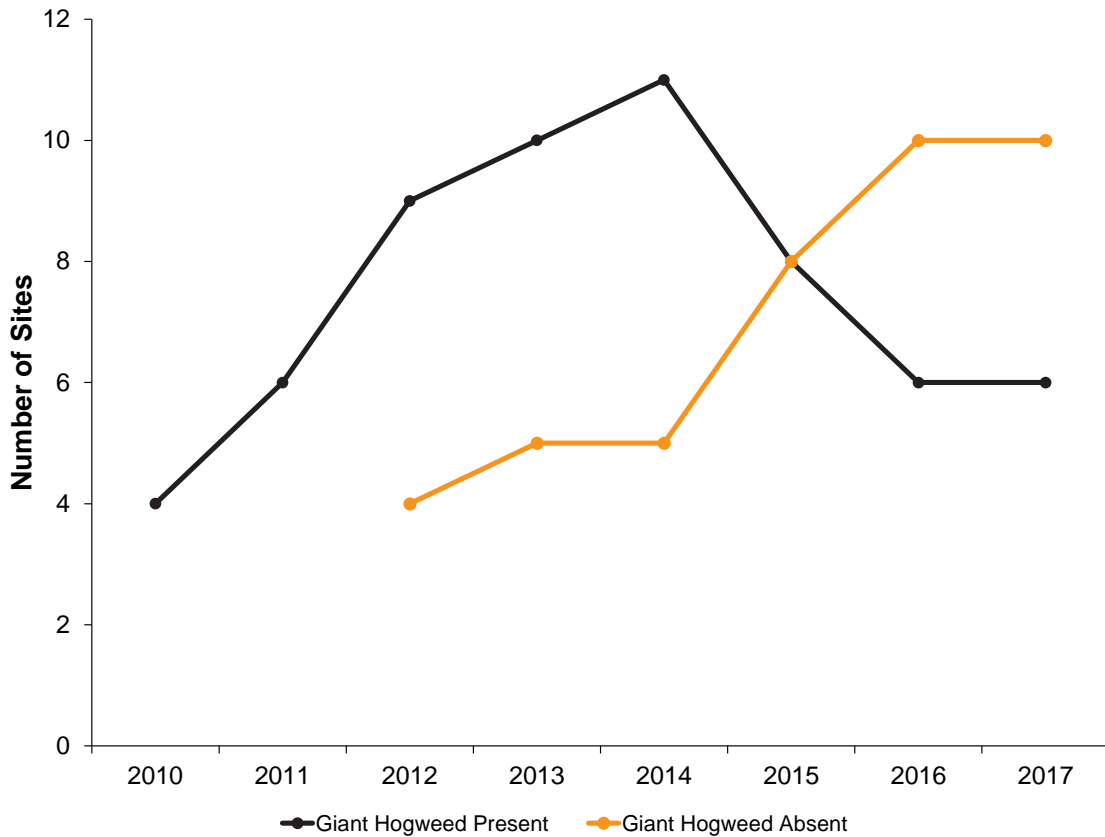
**Figure 10: Management Sites with Knotweed Species Present or Absent Since 2010**



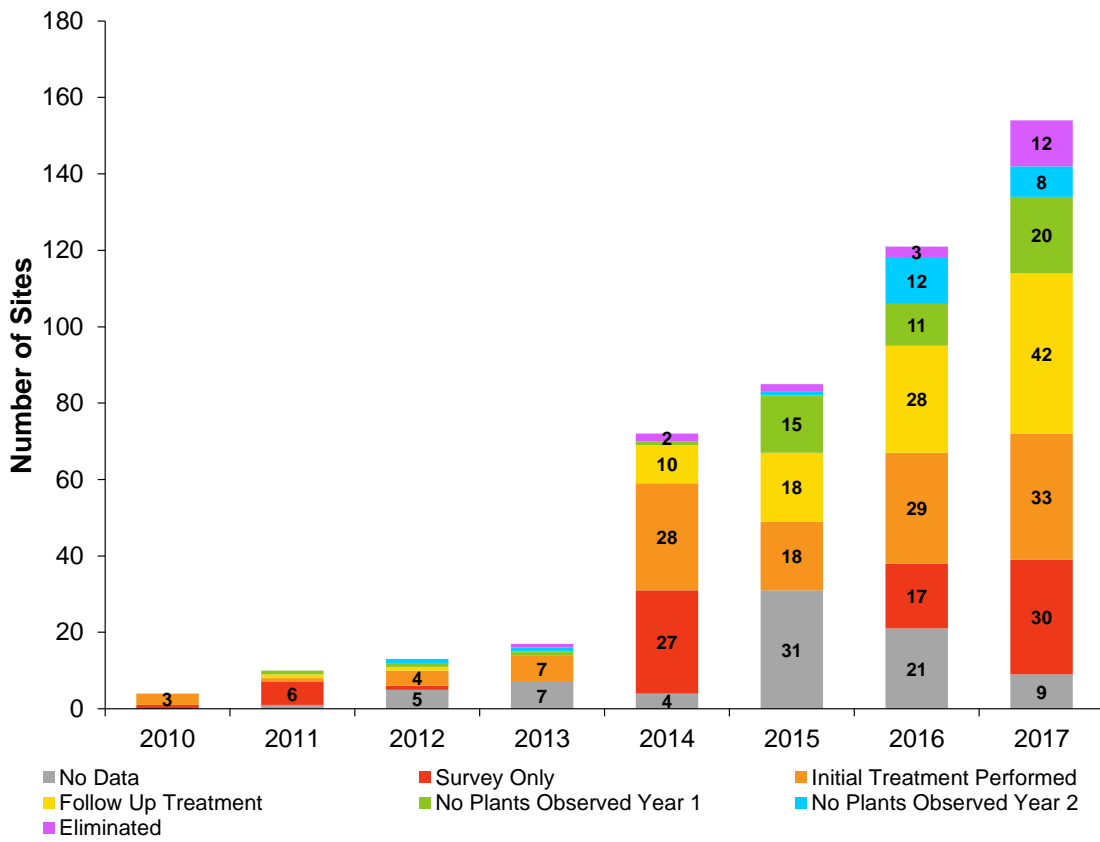
**Figure 11: Progression of Giant Hogweed Management Since 2010**



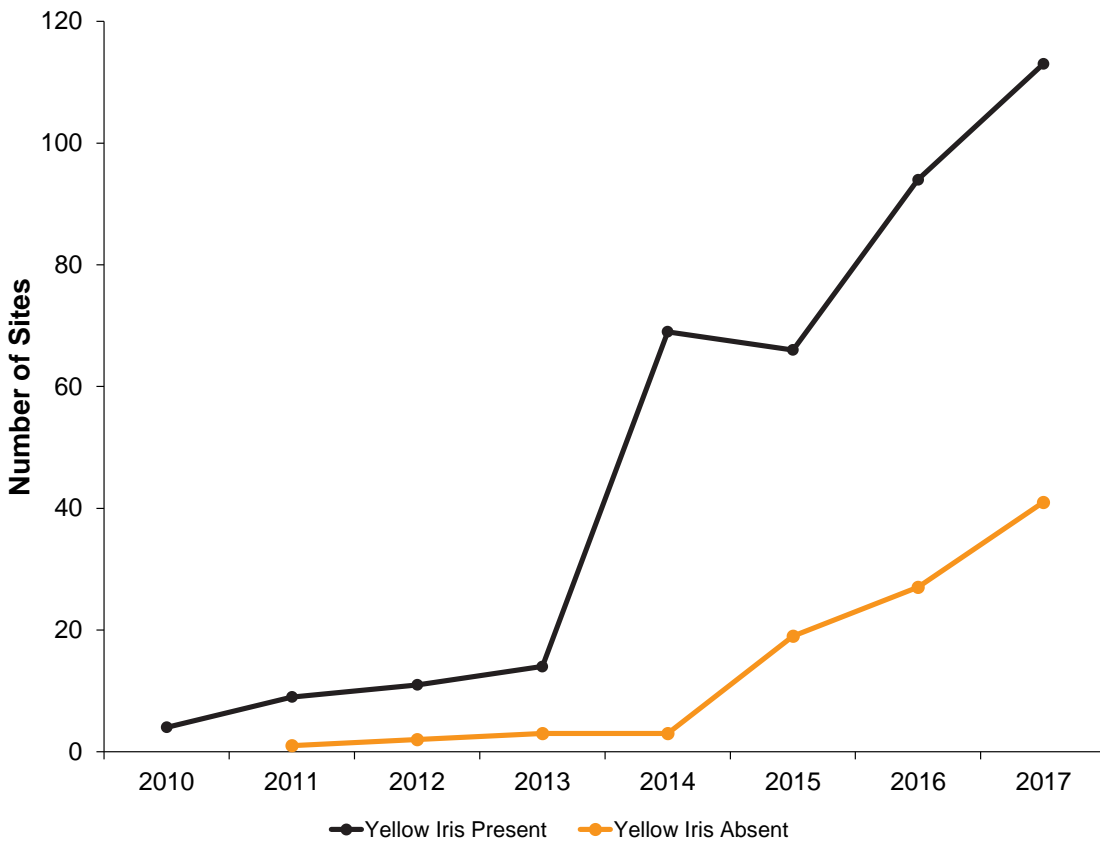
**Figure 12: Management Sites with Giant Hogweed Present or Absent Since 2010**



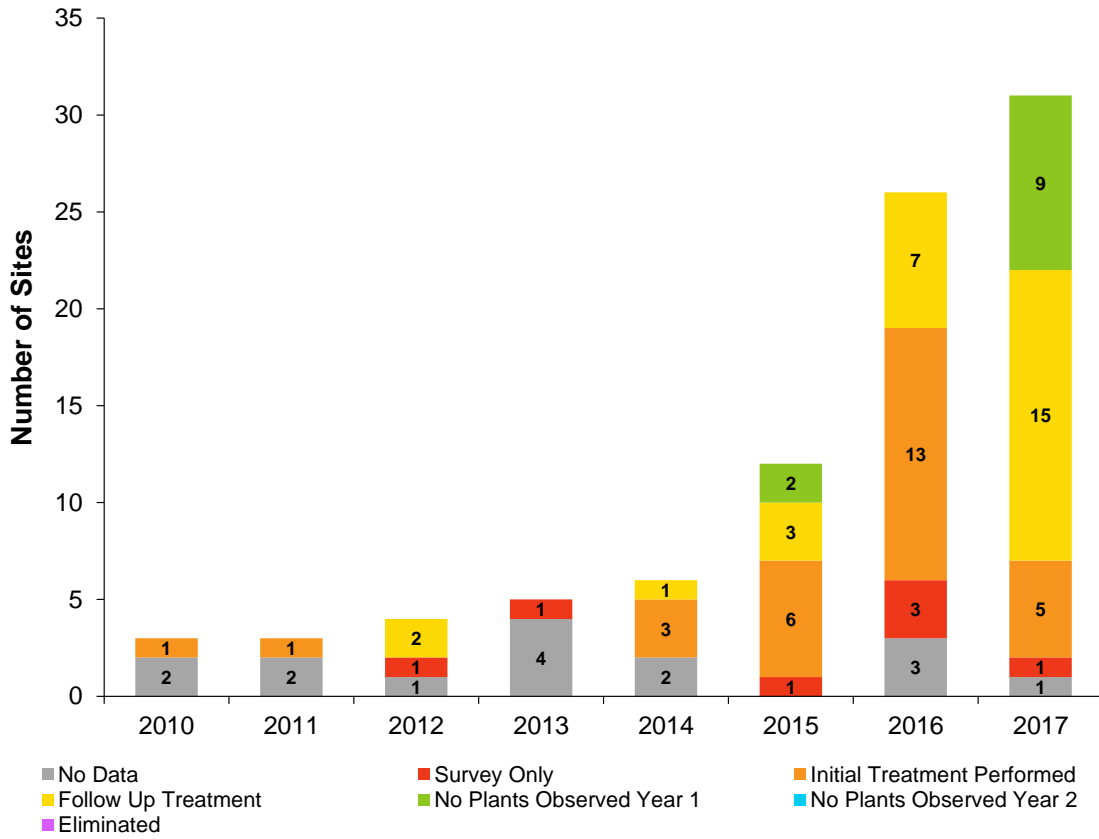
**Figure 13: Progression of Yellow Iris Management Since 2010**



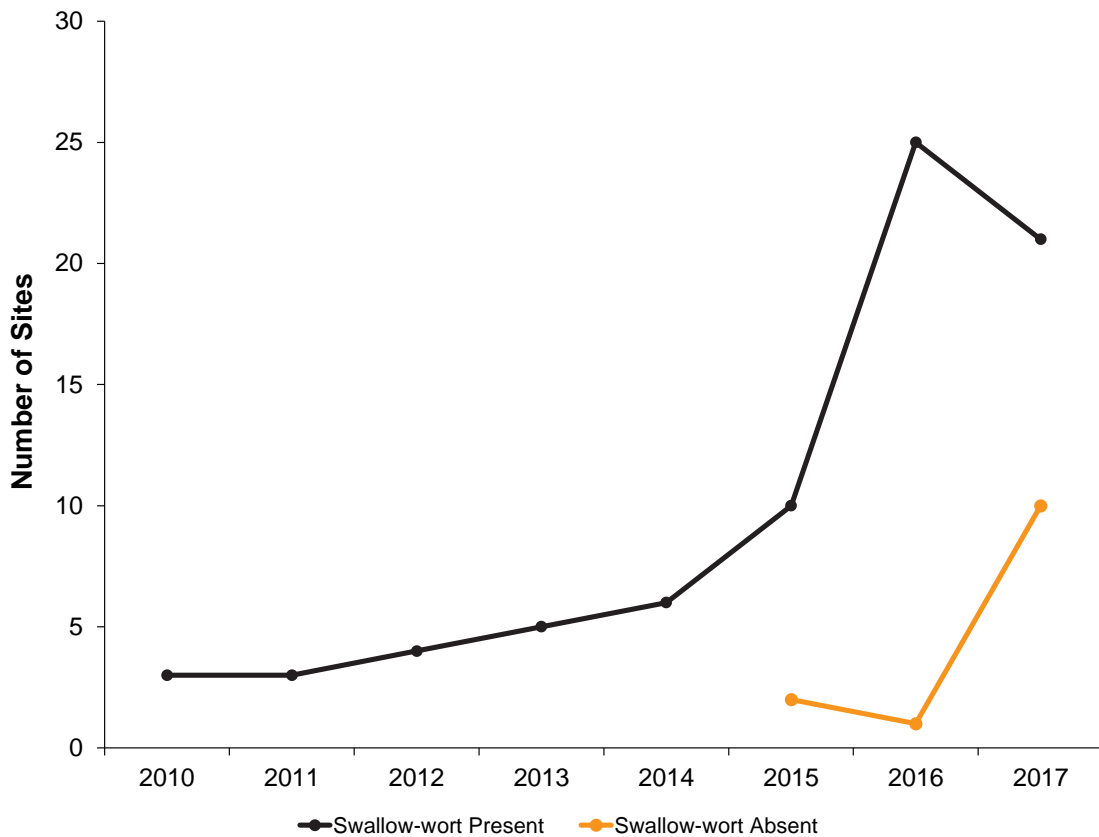
**Figure 14: Management Sites with Yellow Iris Present or Absent Since 2010**



**Figure 15: Progression of Swallowwort Species Management Since 2010**



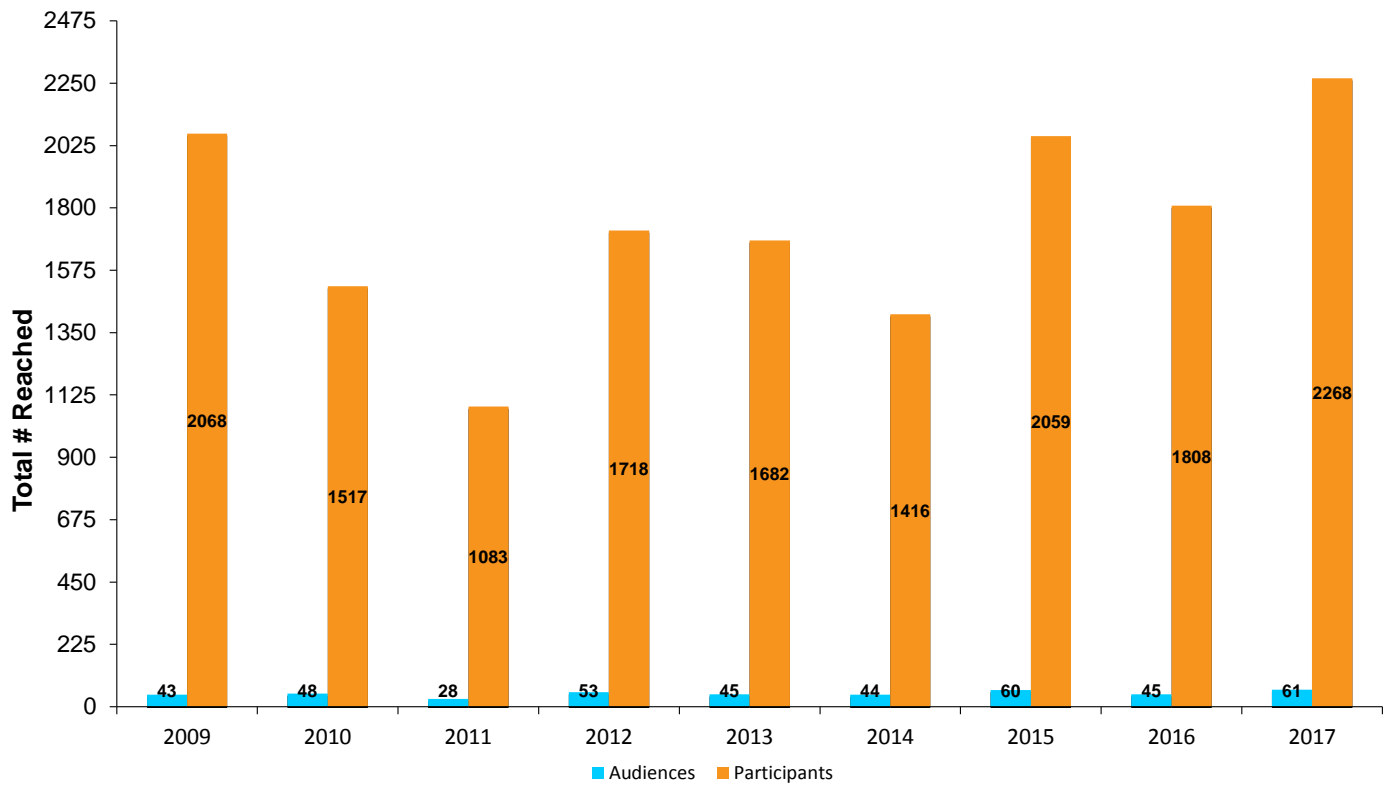
**Figure 16: Management Sites with Swallowwort Species Present or Absent Since 2010**



**Figure 17: Specific Audiences & Participants Reached Through Formal Presentations in 2017**

2017 Audiences Reached		
Audience/Event	Date	Number in Attendance
APA Board	1/12/2017	40
Plattsburgh High School - AP Environmental Science Class	2/17/2017	10
Clarkson University - Adirondack Semester Class	2/27/2017	10
Paul Smith's College - Environmental Communications Class	3/7/2017	15
TNC Northeast Stewardship Conference	3/27/2017	45
Mass. College of Liberal Arts - Green Living Seminar	3/30/2017	40
Adirondack Garden Club	4/4/2017	11
Adirondack Local Government Day	4/5/2017	50
North Country Community College - Environmental Studies Class	4/7/2017	15
Essex County Highway Superintendents' Association	4/25/2017	28
Danemora Town Board	4/26/2017	10
Ashokan Watershed Conference	4/29/2017	20
Warrensburg Beautification	5/4/2017	18
Plattsburgh Middle School	5/9/2017	175
Gouverneur Public School - 8 <sup>th</sup> Grade Class	5/17/2017	120
NYS DOT Region 1 Spring Herbicide Training	5/18/2017	40
NYS DEC Assistant Forest Ranger & Backcountry Steward Training	5/23/2017	40
Adirondack Watershed Institute - Boat Steward Training	5/24/2017	150
Darrow School - Adirondack Service Class	5/26/2017	30
Raquette River Advisory Committee	5/30/2017	20
NYS Association of Transportation Engineers Annual Conference	6/1/2017	15
Adirondack Lakes Alliance Regional Meeting	6/9/2017	50
Black River Watershed Conference	6/14/2017	70
Warren County Master Gardeners Meeting	6/15/2017	20
APIPP Aquatic Plant ID & Survey Techniques Training	6/19/2017	33
APIPP Aquatic Plant ID & Survey Techniques Training	6/22/2017	18
Caroga/Canada Lake Association	6/24/2017	15
APIPP Aquatic Plant ID & Survey Techniques Training	6/27/2017	21
Lake Placid Landowners Association Training	7/6/2017	20
Friends Lake Property Owners Annual Meeting	7/8/2017	100
ADK Backcountry Waters Monitor Training	7/10/2017	5
APIPP Terrestrial Invasive Plant ID & Survey Techniques Training	7/11/2017	5
Adirondack Common Ground Alliance	7/12/2017	176
NYS DOT Best Management Practices for Invasive Species Training	7/12/2017	40
Adirondack Interpretive Center	7/12/2017	18
Blue Mountain Lake Water Watch	7/12/2017	18
Adirondack Invaders Day at the Wild Center	7/15/2017	10
Saranac River Trail Invasives Trek	7/15/2017	2
APIPP Terrestrial Invasive Plant ID & Management Training	7/17/2017	15
Evening Lecture Series at Adirondack Experience	7/17/2017	22
APIPP Terrestrial Invasive Plant ID & Management Training	7/18/2017	4
Congresswoman Elise Stefanik Round Table	8/2/2017	20
ADK Backcountry Waters Monitor Training	8/4/2017	5
Indian Lake Association	8/5/2017	45
Chazy Lake Association	8/6/2017	55
APIPP Aquatic Invasive Animal ID & Survey Techniques Training	8/8/2017	10
Fulton Chain of Lakes Association	8/17/2017	25
Hamilton College - Adirondack Orientation Program	8/17/2017	12
St. Regis Mohawk Tribe IPM & Pollinator Protection Forum	8/22/2017	12
Fulton County Lakes Meeting	8/26/2017	45
APIPP Aquatic Invasive Plant ID Training	8/29/2017	50
HCSWCD Conservation Field Days	9/21/2017	80
Essex and Clinton County Master Gardener Training	10/10/2017	18
Hamilton College - Adirondack Semester Class	10/18/2017	12
International Conference on Aquatic Invasive Species	10/24/2017	40
Great Lakes Phragmites Collaborative - Research Webinar Series	10/25/2017	75
Adirondack Landowners Association Annual Meeting	10/28/2017	50
Warren County Board of Supervisors	10/30/2017	20
Cornell Invasive Species In-service	11/13-15/2017	60
LCBP ANS Committee Meeting	11/28/2017	10
Innovations in Invasive Species Management Conference	12/14/2017	60
<b>Total = 61</b>		<b>Total = 2268</b>

**Figure 18: Audiences & Participants Reached Through Formal Presentations Since 2009**



**Figure 19: Trainings Offered & Participants Instructed Since 2009**

