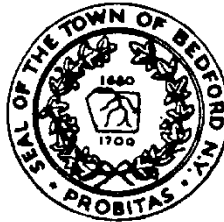


2016  
Final Report  
Bedford, NY Hardy Kiwi Control Project

Prepared for  
The Lower Hudson Partnership for Regional Invasive Species Management

Prepared by  
Trillium Invasive Species Management, INC

This document summarizes the deliverables completed towards the 2016 Bedford hardy kiwi control project. Conception and execution of the project was made possible through a partnership between; The Town of Bedford Conservation Board, Bedford Audubon, Bedford 2020 and Trillium ISM, INC



Northern Westchester Universalist  
Unitarian Church



This project was contracted by the Lower Hudson Partnership for Regional Invasive Species Management (PRISM) using funds from the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation



## **Project Introduction:**

An infestation of hardy kiwi (*Actinidia arguta*) patches was first identified in 2013 along the route 172 corridor in the Town of Bedford, NY. Subsequent surveys over the following year<sup>1</sup> identified nine distinct patches. This patch assemblage occurs on multiple properties of varied use types; public school land, town owned property, fellowship land, and several residential properties. This infestation is the final of three known hardy kiwi infestations in the LHPRISM to have a project formed to eradicate it. Outreach and education conducted by the Town of Bedford, Bedford Audubon and Bedford 2020 aided in outreach out to their members and neighboring property owners of the project, resulting in the identification of one new infestation location.

Hardy kiwi, *Actinidia arguta*, was initially identified in the Town of Bedford in 2013 by a volunteer observer (Carolyn Sears of The Invasives Project Pound Ridge). In 2014 Steve Young of the Natural Heritage program conducted road surveys and identified several more patches within the infestation. The infestation is comprised of several distinct patches.

In 2014, as part of the hardy kiwi control project in Pound Ridge, Thomas Lewis (Trillium ISM, INC) and Carrie Sears (The Invasives Project – Pound Ridge) presented to the Town of Bedford Conservation Board on the kiwi infestation and its significance to the area.

In 2015, The Town of Bedford Conservation Board (TOBCB) initiated this project to eradicate hardy kiwi infestations and requested aid from Trillium ISM and LHPRISM to help develop the project and provide funding for control activities.

In early 2016, The TOBCB Chair, Simon Skolnik assembled a wide array of stakeholders and project participants to bring the project into fruition. His work enlisted the aid of Bedford 2020, Bedford Audubon, The Town of Bedford and its Conservation Board, and gained permission from several landowners to implement control actives. A proposal was submitted to the LHPRISM for funding to conduct control activities and funding was approved.

## **Project Narrative:**

### **A. Justification of project and its importance**

Hardy Kiwi (*Actinidia arguta*) is ranked by the LHPRISM as an Emerging invasive species (based on 2015 list while 2016 list may rank the vine as a Threat) and its occurrences are considered classic early detection/rapid response scenarios (see attached commentary by Steve Young). It is a perennial vine native to Japan, Korea, Northern China, and Russian Siberia that reproduces by rooting at nodes in contact with soil and by fruiting. Hardy Kiwi is most commonly distributed by planting for landscaping and agriculture. Up until recently it has not been common to find fruiting populations escaping into the natural environment, but several populations have been discovered producing fruit and spreading in Westchester County NY and on Long Island.

Kiwi is dioecious and individuals may have different numbers of chromosomes. As a result, Hardy Kiwi patches do not always produce fruit. Fruit production is occurring at several

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<sup>1</sup> Surveys reported on IMAP: Carrie Sears - The Invasives Project, Pound Ridge; Steve Young – Chief Botanist NYS Natural Heritage Program

locations in this infestation along Route 172. If no control is exercised, it is reasonable to expect this infestation to continue expanding.

According to personal correspondence from NYS DEC regarding draft invasiveness assessment, hardy kiwi has been ranked as High.

## **B. Breadth of application**

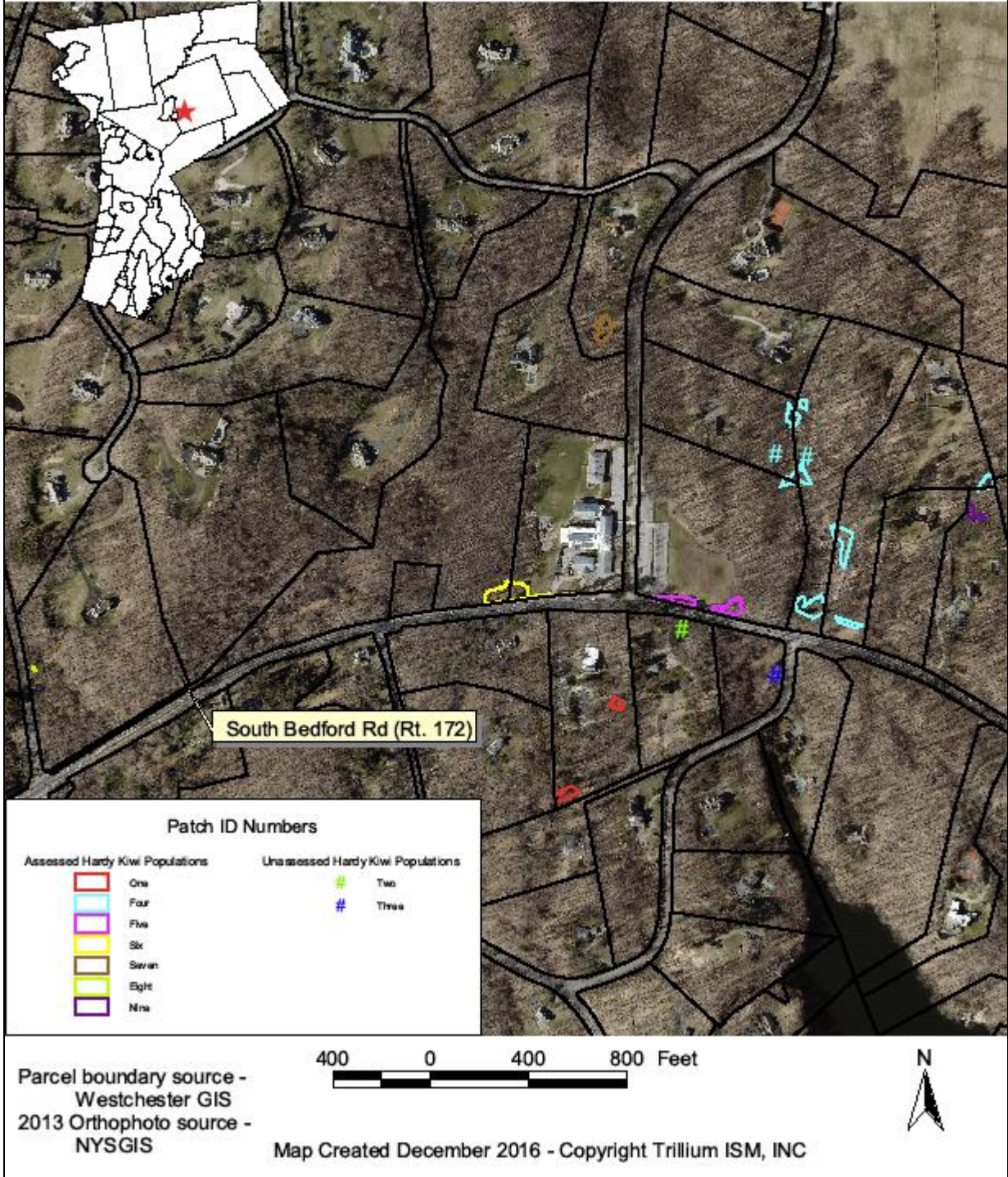
Hardy kiwi is an early detection species with three recorded infestations in the Lower Hudson PRISM. This project advances efforts to eradicate the last of the three known infestations.

In 2016 the Bedford Conservation Board initiated an effort to begin controlling hardy kiwi in the Town. This effort began by reaching out to owners of property where hardy kiwi has been reported to occur, as reported in iMap. Out of the nine separate landowners, the Conservation Board has secured permission to have Trillium ISM come onto seven properties for the control of hardy kiwi. Efforts continue to contact the remaining two owners.

This project coordinated control of patches occurring on privately held land as well as land owned by the Town of Bedford and the Rippowam Cisca School. On lands owned by the UUFNW and The Town of Bedford, volunteer groups were assembled to conduct manual control and LHPRISM funding enabled herbicide applications where appropriate.

**Project Map:**

### Town of Bedford 2016 Hardy Kiwi Infestations



Patch Details					
Patch	Landowner	Patch Size # - combined sqft	Permission to Proceed	Patch Manager	Wetland Permit
One	UUFNW	2- 4500**	Yes	UUFNW – Manual TrilliumISM -Chemical	N/A
Two	Salem Properties	1 – 1100*	Not yet	None	N/A
Three	Schachter	1 – 14,000*	Not yet	None	Required
Four	Spencer	9 – 24000**	Yes, no herbicide.	TrilliumISM	Required if herbicide.
Five	Rippowam Cisqua School	2 – 7900**	Yes	TrilliumISM	Required
Six	Town of Bedford/Rippowam Cisqua School	1 - 10,600**	Yes	TrilliumISM	Required
Seven	Cox	1- 4100**	Yes	TrilliumISM	N/A
Eight	Bird	1 – 900**	Yes	TrilliumISM	Required
Nine	Battle	2 – 4000**	Yes	TrilliumISM	N/A

Table1 –\*Estimate by Steve Young, \*\*Measured by Trillium ISM, INC

## Scope of work and Deliverables:<sup>2</sup>

### Town of Bedford

#### a. Conservation Board

- (1) Provided point contact and coordination between Trillium Invasive Species Management, Inc. and the town board, town departments and commissions, private partners and private land owners.

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<sup>2</sup> Each partner has provided a summary of their involvement in the project.



- (2) Organized cut on town-owned property, coordinating treatment with TISM.



- (3) Publicized activity in local newspaper. – See appendix.
- (4) Publicized activity in New York State Association of Conservation Commissions Newsletter which tied in the activities of both Bedford and Pound Ridge in their efforts to remove hardy kiwi populations. – Publication may be found appended to this report.
- (b) Planning Department: In conjunction with the Bedford Conservation Board, intern Signe Forsingdal of the Bedford Planning Department prepared a brochure describing the current problem with the hardy kiwi. This brochure describes this invasive species and shows area in the Northeast and in the Town where the plants have been cited. In addition, procedures for eradicating the hardy kiwi are recommended. The brochure is planned on being sent to area residents in the vicinity of the outbreak this spring. Brochures may be found appended to this report.
- (c) Wetlands Control Commission: In conjunction with the Bedford Conservation Board, the Wetlands Control Commission, a regulatory board for the town, met with Trillium and made the determination that the work to be done in wetland controlled areas would be handled by an administrative review, rather than a commission review. This shortened and simplified the application process. In addition, all application fees were waived.

#### Bedford 2020

- a. Provided the Town of Bedford with approximately \$1,000 in tools and equipment for use in the hardy kiwi cut, and for use in any future invasive species removal project.
- b. Publicized in their newsletter the town's efforts to eradicate hardy kiwi. The publication may be found appended to this report.

#### Bedford Audubon Society

- a. Publicized within its membership the town's efforts to remove hardy kiwi from the infected areas.

- b. The Society's executive director met with the Bedford Conservation Board and discussed collaborative efforts to remove hardy kiwi and other invasives from the town. Included in the discussion, was an offer to train Conservation Board members in monitoring property to ensure that hardy kiwi does not re-appear in the future.

### Trillium Invasive Species Management, INC

Trillium ISM provided photo documentation, control plan development, control implementation and development of this final report. Deliverables included; acquisition of a wetland permit from the Town of Bedford, working with volunteers at two locations, and implementing control at seven patches where permission to work was received.

Control plan for all patches may be summarized as follows; Cut all stems growing into trees and shrubs at ground level and ~5' high from ground and apply herbicide to cut-stump. This cutting should release all trees from the vine mass, leaving the ground layering vine mass for foliar application of herbicide. An initial application of herbicide applied to the layering mass is to be followed up by a second application approximately 4 weeks or more after the initial. The intention being that the follow-up application will contact leaves that were previously obscured by the top layer of the vine mass and will deliver more herbicide to the large root system. All herbicide applications were made using the product Rodeo (EPA Reg. No. 62719-324).

- May 14<sup>th</sup> – Worked with volunteers at the Unitarian Universalist Fellowship of Northern Westchester. Three volunteers cut mature kiwi stems and Thomas Lewis (Trillium ISM, INC) applied 4oz of Rodeo to cut stumps.
- June 11<sup>th</sup> – Worked with volunteers organized by the Town of Bedford Conservation Board to control kiwi growing on Town owned land known as the Tucker Preserve. Volunteers cut mature kiwi stems and Thomas Lewis (Trillium ISM, INC) applied 6oz of Rodeo to cut stumps.
- May 12<sup>th</sup> – Met with Beth Evans and Bedford Director of Planning Jeff Osterman to review management plan for wetland application permit. Toured application sites with Beth Evans. Permit received 6/8/2016.
- June 15<sup>th</sup> – Thomas Lewis and apprentice cut mature stems and applied Rodeo to cut stumps at Patches Seven (2oz Rodeo) and Eight (0.5oz Rodeo).
- June 16<sup>th</sup> – Thomas Lewis and apprentice cut mature stems and applied 2oz. Rodeo to cut stumps at Patch Five.
- June 28<sup>th</sup> – Thomas Lewis and apprentice cut mature stems at Patch Four and newly discovered patches at Patch Nine
- August 3<sup>rd</sup> – Thomas Lewis performed a foliar application of Rodeo (2% v/v) at Patches One (4oz Rodeo), Seven (1.4oz Rodeo) and Eight (no re-growth observed, no herbicide applied).
- August 13<sup>th</sup> - Thomas Lewis performed a foliar application of Rodeo (2% v/v) at Patches Five (6oz Rodeo) and Six (10oz Rodeo).
- October 5<sup>th</sup> – Thomas performed a follow-up foliar application of Rodeo (2% v/v) at Patches One (0.67oz Rodeo), Five (2oz Rodeo), Six (2oz Rodeo), Seven (0.67oz Rodeo) and Eight (no re-growth observed, no herbicide applied).

## **Project Summary and Outlook for 2017**

In 2016 all partners met their goals for the project. Outreach was conducted to neighbors immediately adjacent to the infestation and in the surrounding community and a press release was issued in a local paper highlighting the efforts. Administrative wetland permits were issued by the Town of Bedford for control of hardy kiwi at all relevant locations. Control was exercised at all locations where permission was given to proceed with work.

Throughout the summer two landowners were added to the project scope, Battle and Spencer. During the Town volunteer vine cutting day, one participant, Battle, who lives nearby, realized that hardy kiwi is growing on her property. The Spencer's allowed Trillium to survey their property and seven new hardy kiwi locations were identified. Trillium had sufficient time in the allotted funding to cut mature stems at both properties, but not to apply herbicide. Battle will allow herbicide application in future years. The Spencer's will not likely allow herbicide application on their land in future years. If herbicide is not allowed, the vines will need to be removed by hand, access to majority of the site is steep and rocky, or through a wetland, so heavy equipment will likely not be a viable tool for much of the project.

Two landowners have remained very hard to connect with, Patches Two and Three. Efforts should continue to contact the owners. It is possible that the landowners specifically do not want to speak with Town officials. Therefore, efforts might be most effective if led by other project partners such as Bedford Audubon, Bedford 2020 or Trillium ISM. Furthermore, there is a need to contact property owners around Patch Four and gain permission for survey and treatment.

It is recommended that further survey efforts be conducted around Patch Four, downstream, heading south towards Howland's Lake and North towards the Guard Hill Preserve. Multiple plants in this Patch and the eastern side of Patch Five were producing fruit. This will require outreach to the property owners to the South in-between Linden Land and Old Wagon Road and to the North in-between West Patent Road and Darlington Road.



**Appendix –**

- 1. Town of Bedford Hardy Kiwi Brochure A – Draft, to be completed over 2017 winter and mailed in Spring 2017**
- 2. Town of Bedford Hardy Kiwi Brochure B - Draft, to be completed over 2017 winter and mailed in Spring 2017**
- 3. Record Review Hardy Kiwi Article 6-2-16**
- 4. New York State Association of Conservation Commissions Newsletter Article**
- 5. Bedford 2020 Publication**

# 1. Town of Bedford Hardy Kiwi Brochure A



**HARDY KIWIFruit**



Hirb, 2011

**A plan to eliminate Bedford's new invasive species**

The Town of Bedford, NY & Bedford Hardy Kiwi Control, 2016



**WHICH GROUPS/INDIVIDUALS SHOULD WE CITE?**

**Brochure by Signe Forsingdal**

**Procedure**

- Contact local residents who have hardy kiwi on their private properties and ask them to remove them
- Cut the stems of single-rooted hardy kiwi vines
- Add a small amount of pesticide to the leaves of vines that have established roots in multiple locations in the soil

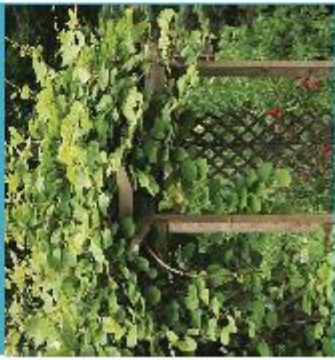




Hunda, 2016

**Hardy kiwi flowers**

- Both of the above procedures would kill the targeted vine

## 2. Town of Bedford Hardy Kiwi Brochure B

	<p><b>Not your average kiwi</b></p> <p>The hardy kiwi (<i>Actinidia arguta</i>) is native to northeastern Asia. The hardy kiwifruit is the size of a large grape, is not covered in fuzz like a kiwifruit is, and has small seeds. Many people find the fruit delicious and plant its vine in their yards. Hardy kiwi has spread beyond yards and has become invasive in the northeastern United States. Invasive species are plants, animals, or pathogens that are alien to an ecosystem and whose introduction causes or is likely to cause harm.</p>	 <p><small>Turner, 2016</small></p> <p>Hardy kiwi and California poppies</p>
<p><b>The Problem</b></p>	<p>The hardy kiwi infests certain areas of the Northeast. The hardy kiwi vines wrap around native trees and smother them. The vines also kill other forest species.</p>  <p><small>Giffin, 2015</small></p> <p>Hardy kiwi vines on forest trees</p> <p>The vine has potential to infest and harm woodlands within Bedford. The NY natural Heritage Program has found numerous hardy kiwi vines on properties along Route 172 near Bedford's western border with Mount Kisco.</p>	
	 <p><small>The James et al., 2016</small></p> <p>Map of states with hardy kiwi plants</p> <p><b>Solutions</b></p>	<p>To prevent hardy kiwi from becoming a serious problem like Asian bittersweet vine, the Town of Bedford has applied to the Lower Hudson PRISM to control hardy kiwi in Bedford. The Town will remove the hardy kiwi from Bedford to prevent the vine from harming Bedford's woodlands and to assist the NYS PRISM in eliminating hardy kiwi from the entire state.</p>

# Ord



## Town

the crown of the Bedford... had recently on the... Executive Director... and the entire committee... overheard: "brilliant,"... Fair Lady" feeling. "One... Centennial celebration... duction scavenger hunt... with the details will... my Wednesday, June 8... people there to answer... Thanks to the generous... King Club, the Hunt for...

er's reading guide at the... narch party at Historical... pace will be limited. The... tence, with all required... it gives participants 30... leg, except for the creative... using cycle files to direct... such as Madonna, Star... younger family members... starts at Historical Hall... seasonal list of book... Here's a sample of her... ble by Carita Skolnick... edgers, all we can say is...

**LOOSE CHANGE** With the start of summer storm season, NYSBG urges on repairs from homeowners and neighbors to assess the extent of damage. Call the 800-572-1131 or file online at nysbg.com/boulogne to report down lines, utility poles or damaged equipment.

# Invasive plant target of new effort

By JESS EASANO

The Bedford Conservation Board is calling on residents to help fight an invasive species known as hardy kiwi.

The board is asking volunteers to come out Saturday, June 11, in the town's Tucker Preserve, located next to the Algonquin Ciscqua campus on Route 172, to cut some of the "viney" plants in order to control the species on the property. The event will take place from 9 a.m. to noon.

Simon Skolnik, chair of the conservation board, said on Tuesday that hardy kiwi has been around since the end of the 19th century and was imported to the United States from Northeast Asia. Nurseries began selling the plant, which has red stems and grows edible fruit, for ornamental use. According to Mr. Skolnik, while the plant used to be manageable, sometime in the past 10 to 15 years it started growing wild in nature. "Somewhere along the line it became an invasive," he said.

The described hardy kiwi as a sprawling vine that grows upward around tree trunks to get sunlight. Left alone, the plant will eventually cover the tree, depriving it of sunlight and possibly killing it.

He explained that colonies of wild hardy kiwi in Westchester County have been identified in their early stages, which is a good thing for Bedford.

"We see this as an opportunity to eradicate an invasive completely from the environment," Mr. Skolnik

*"We see this as an opportunity to eradicate an invasive completely from the environment."*

—SIMON SKOLNIK, CHAIR OF THE BEDFORD CONSERVATION BOARD

said. In total, the town estimates it to have 100,000 square feet of hardy kiwi, which will require a multi-year effort to eradicate.

Efforts to control the species began earlier this month, when volunteers from the Catiarian University Fellowship of Northern Westchester started cutting the hardy kiwi vines on the church property.

Funding for the eradication program has been provided by the Lower Hudson Partnerships for Regional Invasive Species Management, which is part of the New York State Department of Environmental Conservation, according to Mr. Skolnik.

Mr. Skolnik explained that a similar anti-invasive program was funded in Pound Ridge in 2014. Pound Ridge had approximately 2,000 square feet of hardy kiwi.

For its current effort to control the hardy kiwi, the Conservation Board is partnering with Bedford 2020, the Bedford Audubon Society and Johnson Invasive Species Management.

According to Mr. Skolnik, Bedford 2020 has separately funded the purchase of a complete set of vine-

cutting tools and safety equipment for a 10-person crew. The tools are being housed at the John Jay Historic and Learning Center.

Volunteers in removing not only the hardy kiwi but also the Asian bittersweet vine, another more common invasive species.

For its part, the Bedford Audubon Society is recruiting volunteers for vine-cutting from its large membership base and is working to monitor and control areas of hardy kiwi, as well as return native plants into the town's environment.

Johnson Invasive Species Management, Inc., a firm that specializes in managing and removing non-native, invasive species from environments, will provide the service of cleaning the cut hardy kiwi vines topically with an herbicide in an attempt to stop them from growing back.

Mr. Skolnik said it would be ideal to begin cutting the vines before mid-July, which is when the plant starts to produce fruit. He explained that once the plant produces fruit, primaris could eat the fruit and further disperse the plant to other areas of town.

The areas of hardy kiwi in Bedford will be treated for three years and monitored for an additional five years, according to Mr. Skolnik. After three years, we're fairly certain from the research that we have done that we will eliminate the plant," he said.

Mr. Skolnik also said there will be distributed to landowners surrounding the areas of hardy kiwi infestation, asking them to be on the lookout for the plant and to notify the board if they find it on their property. He described vigilance as being one way to combat the spread of the invasive species, saying, "If we keep our eyes open, we can keep it out."

According to Mr. Skolnik, the hope of the Conservation Board through the hardy kiwi eradication efforts is to establish a permanent group of residents who will continue to remove other invasive species throughout town.

Those interested in helping to cut vines June 11 can park at the Kipposon Ciscqua parking lot adjacent to Route 172 and West Parent Road. No experience is necessary, as instruction and identification of the hardy kiwi will be available. While cutting tools will be provided, Mr. Skolnik said it is appreciated if volunteers can bring their own shovels to augment the town's set of tools.

The rain date for the event is Saturday, June 16.

For more information, call Mr. Skolnik at 332-9457, or at simonskolnik@gmail.com.



## **Actinidia arguta – the next *Celastrus orbiculatus*?**



It's great to hear a story about one town doing something significant in controlling invasives. But when two neighboring towns help stop an infestation, each in their own town, at two of only five known sites of this invasive in New York State (three in Westchester County and two on Long Island), now that's something pretty incredible. And when both towns do it through the work of their conservation boards, then we may be in uncharted waters of superlatives!

Oh, and about the title of this piece...*Actinidia arguta* is commonly known as hardy kiwi, a newly emergent invasive. And *Celastrus orbiculatus* is Latin for our old adversary, oriental bittersweet. Both species come from northeast Asia, and while there are some differences in their growing pattern and appearance, both kill our native trees.

This story is about how the Pound Ridge Conservation Board identified hardy kiwi first in Bedford, and then in their own town. A member of the Pound Ridge board happened to notice on her church's property in Bedford a plant that was twinning up a number of trees. She had recently read a bulletin put out by the NYS DEC alerting NYS residents to be on the look-out for a newly identified "possible" invasive. The Massachusetts Audubon Society had documented emerging areas in the

western part of their state where mats of hardy kiwi had taken over native landscaping, smothering all plants, including large trees, that lay beneath. Hardy kiwi had been imported into the United States since the late 19<sup>th</sup> century as an ornamental. In fact, if you “google” it, you’ll come across scores of nurseries selling it to the general public! It is a woody vine that can grow more than 20 feet per year. Its fruits are green, smooth, grape-shaped and edible, and its mature bark is grey and flaky. Its leaves have red petioles (stalks). But what makes it most attractive to growers is that it thrives in areas with hard winters, thus its name “hardy”.



Pound Ridge got in touch with the Lower Hudson Partnership for Regional Invasive Species Management (PRISM) who in 2014 had started a funding program for projects involving invasive species control. Through a 3<sup>rd</sup> party private company, Trillium Invasive Species Management (located in Esopus, New York), Pound Ridge received funding to have Trillium come into their town and through manual cutting and minimal herbicide use, start to control their approximate 2000 square feet of infestation. As part of the funding, Lower Hudson PRISM requested Pound Ridge to give a presentation to the Bedford Conservation Board on identifying hardy kiwi and how to control it.

In early 2016, Trillium, working with the Bedford Conservation Board, applied for funding to the Lower Hudson PRISM for monies to control the hardy kiwi population in Bedford, on land that included a town park, a church, a school and five private landowners covering over 100,000 square feet of invasive growth. As part of the funding, the Conservation Board solicited partnership agreements with Bedford Audubon, the town, the church and a local not-for-profit, who donated over \$1,000 in cutting tools. The Conservation Board organized a volunteer day, using the donated tools, to cut vines at the town park, which freed up funds to allow Trillium to expand its control area. To date all but two private landowners have had hardy kiwi placed under control. The Bedford Conservation Board is working on these two hold-outs and hopes to get them on board by this fall.

Steven Young, the Chief Botanist for the NY Natural Heritage Program, a partnership between the Nature Conservancy and the NYS DEC, stated in a letter to the Bedford Conservation Board in support of their application for funding: “Because there are so few known infestations in New York and we know that it can wreak havoc in forest communities, it is a classic early detection and rapid response situation where we have the opportunity to eradicate it while the known populations are small. We should be working diligently now to survey for and control these wild infestations before they become a major problem like Asian Bittersweet.”



This is a multi-year project requiring annual treatment and follow-up. Both the Pound Ridge and Bedford Conservation Boards are entrusted with the organization and survey work needed to eliminate this invasive from our towns. The three other areas in NYS are also being treated. This story may have the unexpected happy ending of actually eliminating an entire species of invasives from our State. But be on the look-out in your town. Hardy kiwi may pop up there. So be prepared!

By Simon Skolnik, Chair, Bedford Conservation Board

## 5. Bedford 2020 Publication

### INVASIVE SPECIES

#### Kiwi Eradication Update

The Town of Bedford's project to remove invasive Hardy Kiwi vine from our community kicked-off on June 11th when local volunteers, including B2020 Executive Director Midge Iorio, assembled to cut kiwi vines on Town land at Tucker Preserve. An expert from Trillium Invasive Species Management, the professional group hired to lead the kiwi eradication effort, instructed volunteers on how to properly remove the vines using tools and equipment donated by Bedford 2020.



The Hardy Kiwi removal has taken place at other properties along Route 172, including at Rippowam Cisqua School and the Unitarian Universalist Fellowship of Northern Westchester, and has been effective. The Town Conservation Board will assess the progress in the fall to see if there has been grow back and plan for next season's efforts.

Thanks to all the volunteers who have helped work on this project!

Want to help? See below for an opportunity to clear invasives at John Jay Homestead's Sedge Meadow and stay tuned for more opportunities this fall. The Town Conservation Board plans to gather volunteers again for a late Fall Oriental Bittersweet cutting event using the vine cutting tools donated by Bedford 2020.

###