

2016
Final Report
Croton-on-Hudson, 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 Croton-on Hudson Hardy Kiwi control project. Conception and execution of the project was made possible through a partnership between; Con Edison, Hudson National Golf Club, Saw Mill River Audubon and Trillium Invasive Species Management, INC.



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**EVERYTHING
MATTERS**



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

Hardy kiwi, *Actinidia arguta*, was identified in the Brinton Brook Sanctuary in Croton-on-Hudson, NY in the fall of 2014. The infestation is comprised of several distinct patches located throughout the sanctuary's 156 acres. Once brought to the attention of the LHPRISM, Trillium ISM and Karalyn Lamb (Board member of the SMRA) began a partnership to investigate and build a project tasked with eradication of the patch assemblage.

Subsequent surveys identified additional occurrences of the species on surrounding parcels. The owners of these parcels, Con Edison and Hudson National Golf Course, were contacted and asked to participate in a coordinated control effort with the ultimate goal of eradication. All landowners recognized the importance of this endeavor and committed to controlling all occurrences of hardy kiwi on their lands.

In 2015 the partnership engaged in community outreach, coordinated with researchers from SUNY ESF, established a management plan for the patch assemblage and implemented control measures using chemical and manual techniques.

Funding for the project was provided by the LHPRISM to continue Trillium's role in the project for 2016. In 2016, all project partners continued control efforts as best as practical.

Project Narrative

A. Justification of project and its importance

Hardy Kiwi (*Actinidia arguta*) is an emerging invasive species in New York. Occurrences of this species warrant classic early detection/rapid response action. A perennial vine native to Japan, Korea, Northern China, and Russian Siberia hardy kiwi reproduces by rooting at nodes in contact with soil and via fruit production. The species is commonly distributed by planting for landscaping and agriculture. Up until recently it has been unusual to find escaped fruiting populations in the natural environment, but several populations have been discovered producing fruit and spreading in Westchester County NY and on Long Island.

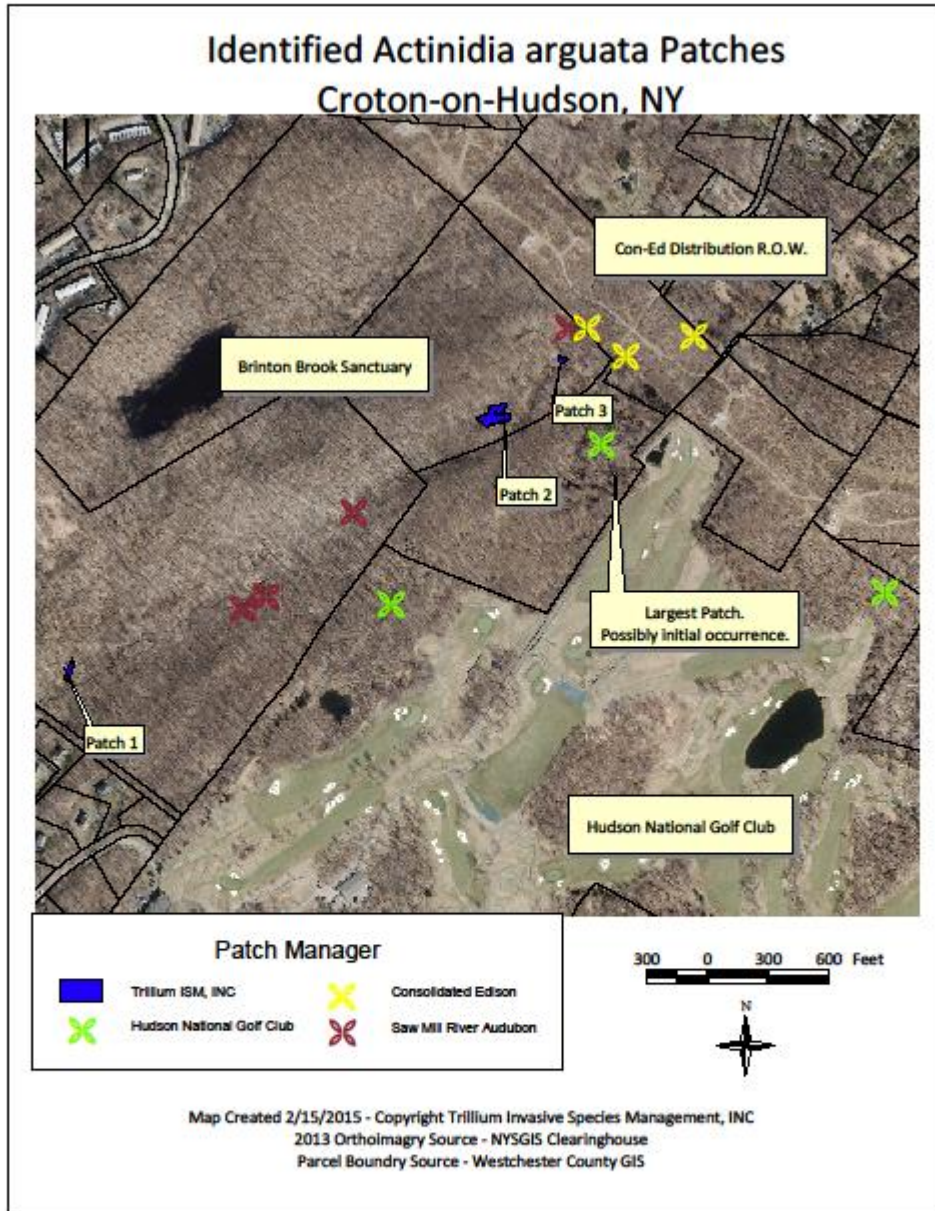
Kiwi is dioecious and individuals may have different numbers of chromosomes. As a result, Hardy Kiwi patches do not always produce fruit. However, several plants throughout the patch assemblage were observed producing fruit in 2015. With the exception of the patch adjacent to the Arboretum, all patches are downhill from the largest patch on Hudson National Golf Club property and in locations not likely to be remnant landscaping plantings. This suggests flood events and/or avian/mammalian dispersal has carried propagules from the largest patch.

B. Breadth of application/ Regional implications:

Upon identification of the species and the surveying of much of its extent, Karalyn Lamb reached out to the surrounding landowners in an effort to coordinate control of the entire patch complex. This has resulted in commitments from the Hudson National Golf Club and Con Edison to eliminate the patches on their lands. Furthermore, a volunteer effort in the Brinton Sanctuary has been cutting mature Hardy Kiwi vines that are growing up trees in instances where self-layering of the vine has not yet occurred.

This project was proposed to fill a gap in management by controlling patches of hardy kiwi on Brinton Sanctuary lands that have developed to a size beyond the volunteer's capacity, ie patches that are self-layering and/or growing within dense thickets of brush and felled trees.

Project Map



Scope of work and Deliverables

Saw Mill River Audubon

See appended document for a summary of SMRA's activities.

Hudson National Golf Club

Hudson National Golf Club participated in the Hardy Kiwi Vine eradication efforts during the 2016. The golf club completely cut their western and eastern patches. These patches will be treated with herbicide in 2017. The main, center patch, is slated to be eliminated as part of the creation of a new driving range.

Consolidated Edison

Con Edison previously committed to control hardy kiwi patches on their right-of-way in 2015 with follow up efforts in 2016. However, follow up efforts for 2016 were not conducted due to program constrictions and crew sizing. Con Edison supported continued survey efforts throughout the year on their properties. Invasive grow back in 2016 was determined to be minimal. Visual inspections of the impacted area or transmission Right-of-Way (ROW) with representatives from the collaborating parties (Trillium, Audubon, Con Edison) will continue in 2017 with treatment of kiwi-infested areas conducted as necessary.

Trillium Invasive Species Management, INC

Trillium ISM provided photo documentation, control plan development, control implementation and development of this final report. Deliverables included controlling three patches on the Brinton Brook Sanctuary.

- Late May – Monitoring visit to observe for regrowth
- Wetland Permit acquisition from Town of Cortlandt.
- September 7th – Initial herbicide application –
 - o Patch 1 – Leaf wiping with Rodeo (EPA Reg. No. 62719-324) mixed at 10% with 10% surfactant, 1.5oz product used. Leaf wiping was chosen as an application method given the small amount of leaves present.
 - o Patch 2 and 3 – Foliar application of Rodeo mixed at 2% Rodeo with 1/2oz surfactant/gallon, 2oz product used
- September 12th – Trillium met with Laura Ruggeri and Stephen Hagar of Consolidated Edison to monitor ROW infestation and explore options for continued control actions.
- September 13th – Trillium met with Ryan Oliver of Hudson National Golf Course to review cutting plan at their western and eastern infestations.
- October 12th – Follow-up herbicide application
 - o No growing leaves were observed at all patches! No herbicide was 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, control was implemented in the Brinton Brook Sanctuary and on the Hudson National Golf Club.

Although the Town of Cortlandt indicated that a permit would not be required for the 2016 season, a permit was required. A permit was applied for by Trillium and issued by the Town on August 24, 2017 (although it is dated July 24th 2016). Trillium will submit a report to the Town, but not close the permit. The permit may remain open for one year of issuance so that control actions may be implemented in 2017 if required.

Site visits at the Brinton Brook Sanctuary and Con Edison right-of-way in September and October found significant browse of new stem growth. Given the high level of leaf browsing in the previous year, prior to herbicide application, a low level of control was expected, however the infestations in the Brinton Brook had significant reduction in growth. Infestations on the Consolidated Edison ROW experienced moderate reduction in re-growth.

Hudson National Golf Club cut its smaller patches and will treat regrowth with herbicide in 2017. The larger, central infestation is slated to be eliminated for the creation of a driving range.

The Brinton Brook patches should be again left uncut in 2017, as should all the other patches that have been previously cut. Without a spring cutting it is hoped that the kiwi will not be browsed on preferentially allowing for enough growth for sufficient herbicide uptake. Visits for herbicide application should be scheduled for summer, prior to Town of Cortlandt Wetland permit expiration.

Croton Hardy Kiwi Project: 2016 Post-Treatment Monitoring

Three hardy kiwi patches in the Brinton Brook Audubon Sanctuary treated by Trillium ISM were surveyed on November 5, 2016. Photos unless noted were taken from established Trillium ISM reference poles.



Patch 1 (above): No signs of re-sprouting vines. A "second wave" of invasive ground layer plants (stiltgrass, garlic mustard) already beginning to establish. Manual removal of these new invasives, while at the same time preserving some of the emerging native vegetation (spicebush, native tree seedlings), will be the focus of Spring - Summer 2017 SMRA volunteer efforts, with a view to replanting the patch in autumn 2017.



Patch 2: No signs of re-sprouting in vicinity of photo reference pole



However, on the southwest edge of Patch 2, there are some re-sprouts (~5), from a mature vine growing out of this stone wall, presumably because these re-sprouts were out of reach of deer browse. It was determined that this location had eluded detection until this point.



Patch 3: No signs of re-sprouting in this patch



There was no sign of re-sprouting from vines which have been cut by our SMRA volunteer, who continues to monitor the sanctuary for any signs of kiwi growth.

Karalyn Lamb
Saw Mill River Audubon