

# Black River Trail Feasibility Study

for Invasive Species Suppression and Ecological Restoration

**2020-2021**



**INVASIVE SPECIES  
MANAGEMENT**

SAINT LAWRENCE  
EASTERN LAKE ONTARIO



## ACKNOWLEDGEMENTS

This report was prepared by:

Robert Smith  
Terrestrial Restoration and Resiliency Coordinator

Brittney Rogers  
Aquatic Restoration and Resiliency Coordinator

Zack Simek  
Conservation and GIS Analyst

Contributions by  
Megan Pistolese, Outreach Coordinator

Contributions, Final Review and Approval by:  
Rob Williams, Invasive Species Program Manager

A Special Thanks To:  
The New York State Legislature  
For supporting this program within the New York State Environmental Protection Fund

-  
The Nature Conservancy as Host Organization



The New York State Department of Environmental Conservation,  
Bureau of Invasive Species and Ecosystem Health



New York State Office of Parks Recreation and Historic Preservation



The numerous volunteers, partner organizations and their representatives who contribute their expertise, time and resources to the development and success of the SLELO PRISM initiatives.

COVER PHOTO: Black River, Fall 2020 © The Nature Conservancy, Brittney Rogers

# Table of Contents

|  |    |
|--|----|
| Executive Summary .....  | 5  |
| Introduction .....   | 6  |
| SLELO PRISM Overview .....   | 6  |
| Invasive Species .....   | 8  |
| Invasive Species Tier Ranking System.....  | 8  |
| Defining the Study Area .....  | 10 |
| Black River .....  | 10 |
| Riparian Corridors.....  | 11 |
| Black River Trail.....   | 12 |
| Methods/Inventory and Analysis .....   | 13 |
| Compartmentalization.....  | 13 |
| Field Data Collection.....   | 13 |
| Native Species Score .....   | 14 |
| Invasive Species Score.....  | 17 |
| Summary Ranking Development.....   | 17 |
| Results.....   | 20 |
| Native and Non-Invasive Species Distribution and Abundance .....                         | 20 |
| Overview .....   | 20 |
| Trees .....  | 20 |
| Herbaceous Species .....   | 21 |
| Invasive Species Distribution and Abundance .....  | 22 |
| Prioritization.....  | 22 |
| Logistics.....   | 23 |
| Discussion.....  | 24 |
| Invasive Species Management .....  | 24 |
| Recommendations for Target Species Found.....  | 25 |
| Cost Analysis for Invasive Species Management .....                                      | 25 |
| Ecological Restoration.....  | 27 |
| Overview of Ecological Restoration and Importance of Native Species Found at Sites ..... | 27 |
| General Restoration Strategy Recommendations .....                                       | 27 |
| Cost Analysis for Ecological Restoration.....  | 29 |
| Project Evaluation.....  | 30 |
| Overview of Project Evaluation.....  | 30 |
| Cost Analysis for Project Evaluation .....   | 31 |
| Estimated Project Cost.....  | 32 |
| Conclusion.....  | 32 |

|  |    |
|--|----|
| References.....                                      | 33 |
| APPENDIX.....  | 36 |
| Appendix A: Compartment Summary Table.....           | 36 |
| Appendix B: Compartment Specific Data Summaries..... | 37 |
| Appendix C: Species Specific Data Summaries.....     | 96 |

# **Black River Trail Feasibility Study for Invasive Species Suppression and Ecological Restoration 2020-2021**

## **EXECUTIVE SUMMARY**

The Black River Trail is a 3.5-mile nature trail located between Watertown and Fort Drum. It is a very busy trail with around 104,000 visits in 2019. There are many invasive species present along this trail including common buckthorn, honeysuckles, oriental bittersweet, and pale swallowwort. To determine where the biggest invasive species problems were located along the trail, the trail was divided into 29 compartments, each 1/8 of a mile in length with a width ranging from 100 feet on the southside of the trail to the river on the northside of the trail. Data was collected regarding types and quantities of native, non-natives, and invasive species, and the location of natural and man-made features such as herd paths, tributaries and culverts, all recorded using Survey 123.

Of the 74.8 acres of land located within this Study Area, 58% (43.5 acres) is publicly owned. There were 274 native or non-invasive species and 34 invasive species found within the 29 compartments. Of the 34 invasive species, 14 are on the SLELO PRISM's Nominated Tier Species List. Two full time staff spent 16 days collecting data in the field, totaling 293 person hours. Analysis of the data included creating a system for prioritizing each compartment for management. This priority system involved use of the Floristic Quality Index (FQI) and a summary score that compared native community quality with the types and quantities of invasive species present. The spatial distribution of each compartment was also considered to maximize continuity of control efforts.

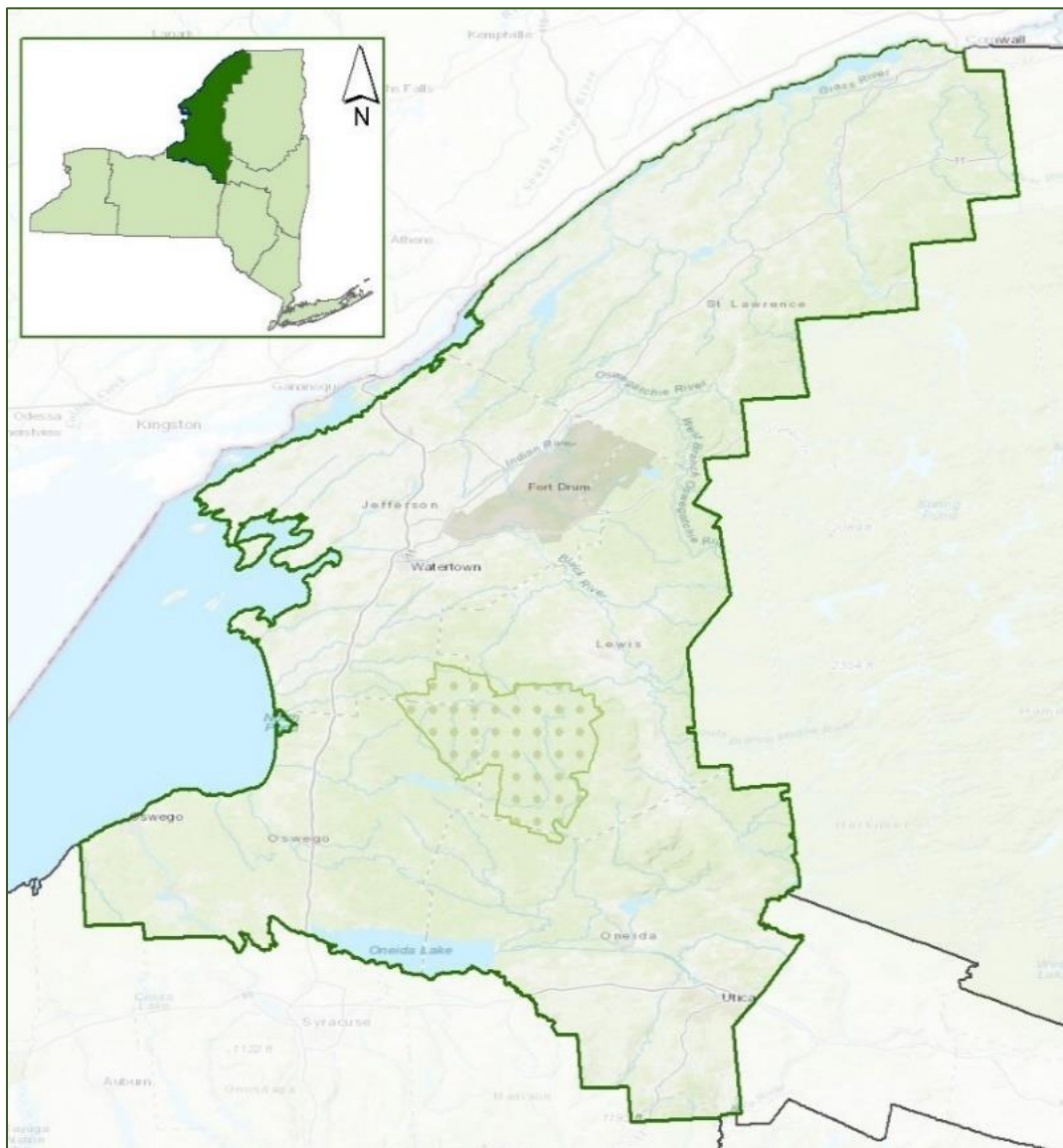
This report concludes that invasive species management and restoration along the Black River Trail is feasible if this system is used. The prioritization system used in this study allows work to be conducted on the highest priority sections, given a limited budget often hampers management and restoration abilities. To avoid herbicide exposure to people and pets using the trail, it is recommended that herbicide application along or in close proximity to the Black River Trail be substantially minimized and/or considered as a last resort. It is also recommended that treatment areas disturbed to the point of bare ground, or areas that lend themselves to an ecological opportunity, be targeted for restoration measures using native plant species found during the survey. The use of native plant species will increase the population of native plants found along the trail, provide more habitat suitable for native fauna, and will reduce the potential for erosion.

# INTRODUCTION

## SLELO PRISM Overview

In 2005 the NYS Invasive Species Task Force developed a comprehensive report on invasive species issues in NY and provided 12 recommendations to the Governor and State Legislature. Among these recommendations was the development of Partnerships for Regional Invasive Species Management (PRISM). Funded by the Environmental Protection Fund and administered by the Department of Environmental Conservation (NYSDEC), NY's eight PRISMs form a network whose cooperation and activities are vital components of an integrated, state-wide approach to invasive species management.

The St. Lawrence Eastern Lake Ontario (SLELO) PRISM was established in 2011 and serves Jefferson, Lewis, Oneida, Oswego, and St. Lawrence counties (Figure 1). The SLELO PRISM, hosted by The Nature Conservancy, strives to protect native biodiversity and freshwater resources through a collaborative approach to invasive species management with an emphasis on core programming and multiple special initiatives (Figure 2).



**Figure 1.** Regional Map of SLELO PRISM in NYS

|   |  |
|---|--|
| <p><b>Core Programming:</b></p> <p>Prevention<br/>Early Detection<br/>Rapid Response<br/>Management and Control<br/>Ecological Restoration<br/>Education and Outreach</p> | <p><b>Special Initiatives:</b></p> <p>AIS Macrophyte Nutrient Analysis<br/>Aquatic Restoration Initiative<br/>Environmental DNA Sampling<br/>Pollinator Pathway Project<br/>Spotted Lanternfly Spotters Program<br/>Tug Hill Forest Restoration<br/>Urban Forest Sustainability Initiative<br/>Watercraft Inspection Steward Program</p> |
|---|--|

**Figure 2.** SLELO PRISM Core Programming and Special Initiatives

To guide SLELO's strategic invasive species prevention and management efforts, the PRISM worked with partner organizations to develop an [Invasive Species Tiers List](#), which categorizes species by abundance and management feasibility within the SLELO region.

SLELO PRISM is a collaborative effort between numerous principal, at-large, and cooperating affiliate partners throughout the region. Contributions and expertise provided by our partners is the key to our success. Current (2021) partners include:

- [Algonquin to Adirondacks Collaborative](#)
- [Central NY Regional Planning and Development Board](#)
- [Cornell Cooperative Extension](#)
- [County Soil and Water Conservation Districts](#)
- [Ducks Unlimited](#)
- [Fort Drum Military Installation](#)
- [Indian River Lakes Conservancy](#)
- [New York Power Authority](#)
- [New York Sea Grant](#)
- [NYS Department of Transportation](#)
- [NYS Office of Parks, Recreation and Historic Preservation](#)
- [Onondaga Audubon](#)
- [Save the River](#)
- [St. Regis Mohawk Tribe](#)
- [NYS Department of Environmental Conservation](#)
- [The Nature Conservancy](#)
- [Thousand Islands Land Trust](#)
- [Tug Hill Commission](#)
- [Tug Hill Tomorrow Land Trust](#)
- [U.S. Coast Guard Auxiliary](#)

The SLELO PRISM, encompassing over four million acres of land, is continually threatened by the introduction and spread of new or existing invasive species. Since its founding in 2011, the PRISM has made tremendous progress to prevent the establishment of new species and manage existing infestations to mitigate their impacts within the PRISM.

## **Invasive Species**

An invasive species is a non-native plant, animal, or other organism (e.g., microbe) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species will often dominate an ecosystem to the detriment, and sometimes the exclusion, of native species. Invasive species are able to do this because the natural conditions, predators, parasites and other organisms that keep them under control in their native range do not exist in the new environment where they have been introduced.

At a global scale, invasive species are second only to habitat destruction as the greatest threat to native plants, animals, and natural communities, such as forests, wetlands, streams, and ponds (Singh, 2005). In fact, experts estimate that invasive species have contributed to the population decline of 42% of threatened and endangered species in the U.S. (USFS, 2021).

Invasive plants, animals, insects and microorganisms are among the most serious threats to native species, habitats, ecosystems and public health within the five-county area that defines the SLELO region. Invasive species are opportunistic and almost always out-compete, damage, or displace native species resulting in serious disruptions of ecosystem processes. Interdependency on food and habitat, hydrology, nutrient cycling, natural succession, soil erosion and water quality are among the processes impacted.

Invasive species affect almost all aspects of our culture. They interfere with many types of outdoor recreation. They reduce crop yields and interfere with harvest operations on local farms. Along public roads and highways, invasive plants restrict visibility and create roadside hazards. Invasive insects and diseases kill trees in forested areas and along community streets. Some invasive species have a direct negative impact on public health. Combined, these attributes can disrupt the biological diversity and ecological function of the various terrestrial and aquatic ecosystems they invade, thereby reducing the level of resiliency to future disruptions including carbon sequestration and climate.

The economic impact of invasive species in the United States has been estimated at \$120 billion annually, (Pimentel, et. al. 2004). Local communities have been challenged with controlling invasive species or remediating their impacts at costs ranging from several thousand to millions of dollars. The economic, cultural, and ecosystem impacts resulting from invasive species invasions signify the need for New York's PRISM's and thus the SLELO PRISM. Invasive species can cause significant ecological and economic damage. Estimates of economic impacts of invasive species are staggering with some estimating damages exceeding \$14.5 billion in China and \$137 billion per year in the United States (Pimental et al., 2005; Xu et al., 2006). The NYS Environmental Protection Fund allocated \$13 million yearly to prevent the spread of invasive species in 2017 and 2018 in New York.

By addressing the threat of invasive species through a combined sharing of resources, PRISM's and other community partnerships can have tangible and lasting effects on the mitigation of the negative impacts caused by invasive species.

## **Invasive Species Tier Ranking System**

In New York State, PRISM's and partners have worked together to create a standardized method of categorization for invasive species based on the species invasiveness (according to NYS ranking evaluation) and distribution (according to iMapInvasives, other online databases and regional expert knowledge) (Figure 3). The Invasive Species Tier Ranking System attempts to



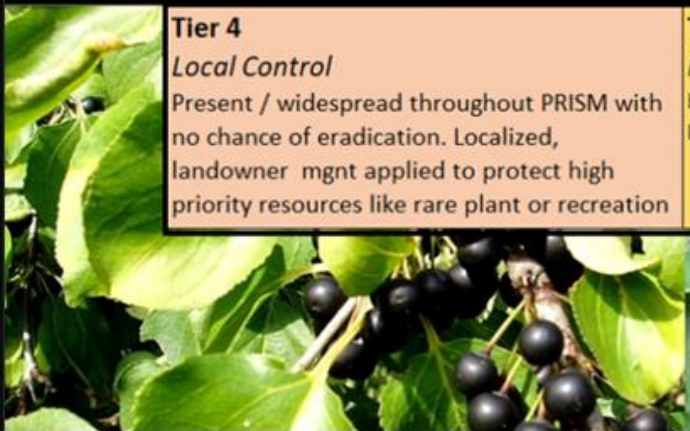



guide and prioritize invasive species decisions based on the ability of programs to perform prevention, early detection, and control efforts for specific invasive species.

**'Tier 1'** - These are species not known to be present within a PRISM, 'Tier 1a' have known populations or confirmed reports within a 100-mile buffer of the PRISM that are not already present within the PRISM. These species fall under the prevention, early detection and are of the highest priority.

**'Tiers 2-4'** - These categories range from eradication, where abundance is low enough that eradication may be feasible; containment, where strategic management practices are utilized to prevent further spread; local Control where localized management efforts may offer to protect high-priority resources like rare species or recreation assets.

SLELO PRISM further prioritizes certain invasive species on the tier list for management, rather than trying to focus on over 400 invasive species which have been ranked through the NYS system. These species are selected through nomination and agreement with our partners. Species included in this list are found in Figure 3.

|  |   |  |
|--|---|--|
|    |    |  |
| <b>Tier 1</b><br><i>Prevention/Early Detection Spp.</i><br>Not in PRISM, but within 100 mile buffer or introduction pathway exists. Highest level of early detection survey efforts.   | <b>Tier 2</b><br><i>Eradication</i><br>Present in PRISM, but at low abundance making eradication feasible within Priority Conservation Areas (PCA's). | <b>Tier 3</b><br><i>Suppression</i><br>Too widespread for eradication from PRISM. Targeted management to suppress the population within Priority Conservation Areas (PCA's). |
|  <b>Tier 4</b><br><i>Local Control</i><br>Present / widespread throughout PRISM with no chance of eradication. Localized, landowner mgnt applied to protect high priority resources like rare plant or recreation | <b>Tier 5</b><br><i>Monitor</i> - Species that may or may not be in PRISM but are difficult to respond to or that require more knowledge of.          |    |

| Tier 1  | Tier 2                 | Tier 3                    |
|---|------------------------|---------------------------|
| Asian Long Horned Beetle                        | Asian Clam             | Black & Pale Swallow-wort |
| Silver, Big Head, Black, and Grass Carp Species | Fanwort                | Japanese Knotweed         |
| Hydrilla  | Giant Hogweed          | Japanese Stiltgrass       |
| Kudzu   | Hemimysis              | Oriental Bittersweet      |
| Mile-A-Minute Vine                              | Hemlock Woolly Adelgid | Phragmites/Common Reed    |
| Slender False Brome                             | Porcelainberry         | Rusty Crayfish            |
| Spotted lanternfly                              | Spiny Water Flea       | Starry Stonewort          |
| Water Lettuce                                   | Tench                  | Tree-of-Heaven            |
| Water Hyacinth                                  |                        | Water Chestnut            |
| Water Soldier                                   |                        | Wild Chervil              |
|   |                        | Yellow Iris               |
|   |                        |                           |
| Tier 4  | Tier 5                 | LEGEND                    |
| Common Buckthorn                                | Asian Jumping Worm     | Insects                   |
| Curly Leaf Pondweed                             |                        | Aquatic Species           |
| Emerald Ash Borer                               |                        | Mammals                   |
| Eurasian Water Milfoil                          |                        | Woody Plants              |
| European Frogbit                                |                        | Graminoids                |
| Feral Swine                                     |                        | Forbs                     |
| Glossy Buckthorn                                |                        | Vines                     |
| Honeysuckle Spp.                                |                        | Subterranean              |
| Leafy Spurge                                    |                        |                           |
| Purple Loosestrife                              |                        |                           |
| Round Goby                                      |                        |                           |
| Spotted Knapweed                                |                        |                           |
| Wild Parsnip                                    |                        |                           |
| Zebra/Quagga Mussel                             |                        |                           |

**Figure 3.** Invasive Species Tier Ranking System with SLELO PRISM Nominated Invasive Species List

## Defining the Study Area

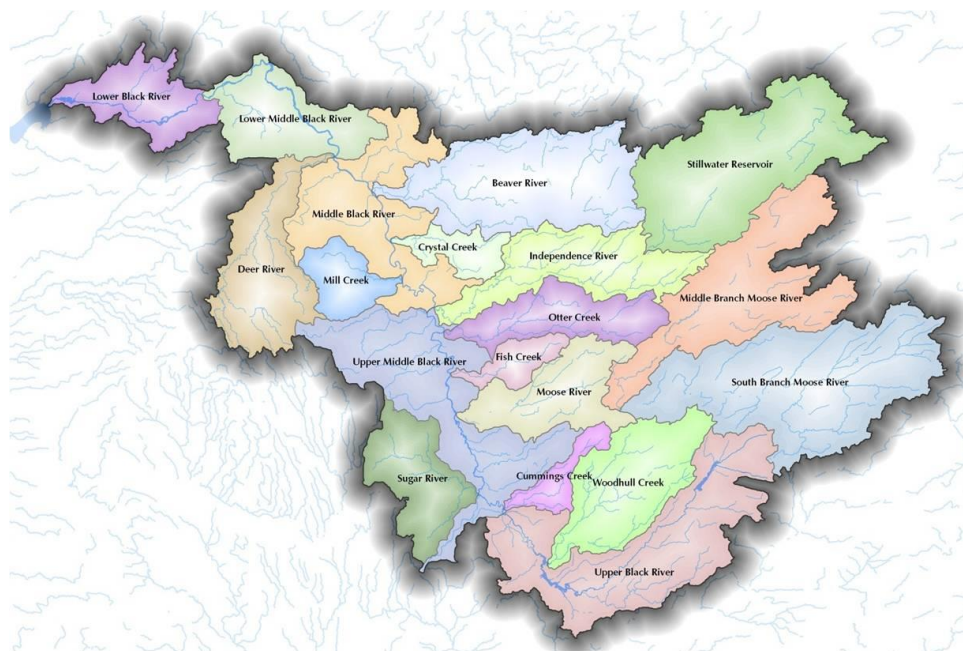
### *Black River*

The Black River is a river system that begins in the foothills of the western Adirondack mountains flowing approximately 125 miles west before terminating into Eastern Lake Ontario (Figure 4). It is an important cultural resource that provides abundant fishing and recreational opportunities.

According to NYSDEC (2021), the upper segment extends from North Lake to Lyons Falls (42.6 miles) and ranges from mountain lakes to a mountain stream to a sandy river. Canoeing is good for the reach from Forestport to Hawkinsville and from Norton Road to Lyons Falls. There are two lakes, North and South lakes; two reservoirs, Kayuta and Forestport; two smaller dam-pools at Hawkinsville and Denley; and a tier of three dams at Port Leyden. Fishing catches include brook trout, brown trout, rainbow trout, smallmouth bass and chain pickerel.

The middle segment extends from Lyons Falls to Carthage (40 miles) and is particularly low gradient (less than 10 feet in 40 miles) with no dams. Spring flood waters make this area like a lake, and this habitat has historically provided exceptional catches of bullhead. The three larger tributaries, Otter Creek, Independence River and Deer River, are often canoed and fished near their mouths. Rocky areas are more common upstream of Greig, and meanders are extensive near Lowville. Fish species include northern pike, smallmouth bass, rock bass and chain pickerel.

The lower segment continues downstream to Lake Ontario (31 miles). The last mile completes the transition to Lake Ontario. In the middle of Watertown is Great Falls, at Mill Street, and this is the historic barrier to fish from Lake Ontario. Fish ladders built in the 1980's at Dexter and Glen Park allow steelhead and Chinook salmon to swim as far as Water Street in Watertown. Trout are stocked at two areas in Watertown, and smallmouth bass are also caught here. Walleye and pickerel are caught further upstream and downstream of Watertown. Canoeing and boating through this gorge section are limited to only a few small areas. Whitewater rafting and kayaking are more popular.



**Figure 4.** Black River Watershed

### *Riparian Corridors*

Riparian areas are land segments immediately adjacent to streams, rivers, lakes, and other water resources. These riparian areas, or corridors, are typically composed of plant species that are adapted to a wetter environment likely with hydric soils.

Riparian areas are an extremely important component of healthy watersheds and ecological function. Riparian areas provide important and somewhat unique habitat for wildlife. By acting as buffers between upland areas and open water, they help filter nutrients and sediment from upland sources, therefore protecting water quality. Healthy riparian vegetation helps to reduce streambank erosion and to maintain biological diversity. Riparian vegetation also provides shade that helps moderate streamside water temperatures, which in turn supports higher dissolved oxygen levels that are important to maintaining fisheries. Higher dissolved oxygen levels combined with lower temperatures also help to reduce harmful algae blooms.

Many land-uses have the potential to negatively affect riparian areas. Urban development, improper agricultural practices, timber harvesting practices, and over-use from recreational activities are just a few examples. These disturbances may also assist in creating areas within the riparian corridor that invite invasive species to become established.

Riparian zone plant communities are extremely important to the ecology of headwater streams. Riparian vegetation influences water temperature (Clinton et al. 2010; Roth et al. 2010), light availability (Baxter et al. 2005), and nutrient fluxes into the stream (Harner et al. 2009; Polis and Strong 1996). Stream ecosystem metabolism (Tank et al. 2010), aquatic biota (Cummins et al. 1973; Cummins et al. 1989; Merritt and Cummins 2006), and overall stream health (Fellow et al. 2006; Young et al. 2008) have also been linked to the ecological integrity of riparian zones.

Invasive Species can have a significant negative effect on this ecology. According to McNeish 2011, the invasive honeysuckle species, *Lonicera maackii*, may have cumulated effects on aquatic biota and ecosystem process at the local, regional, and large watershed scale. This invasive *Lonicera* can also have direct and significant impacts on aquatic ecosystems by influencing organic matter availability and macroinvertebrate community dynamics. The leaves of this species have been shown to rapidly breakdown when compared to native leaf species and this can lead to reduced leaf litter availability and lower leaf pack habitat heterogeneity, impacting aquatic food-web dynamics. (McNeish et al., 2011).

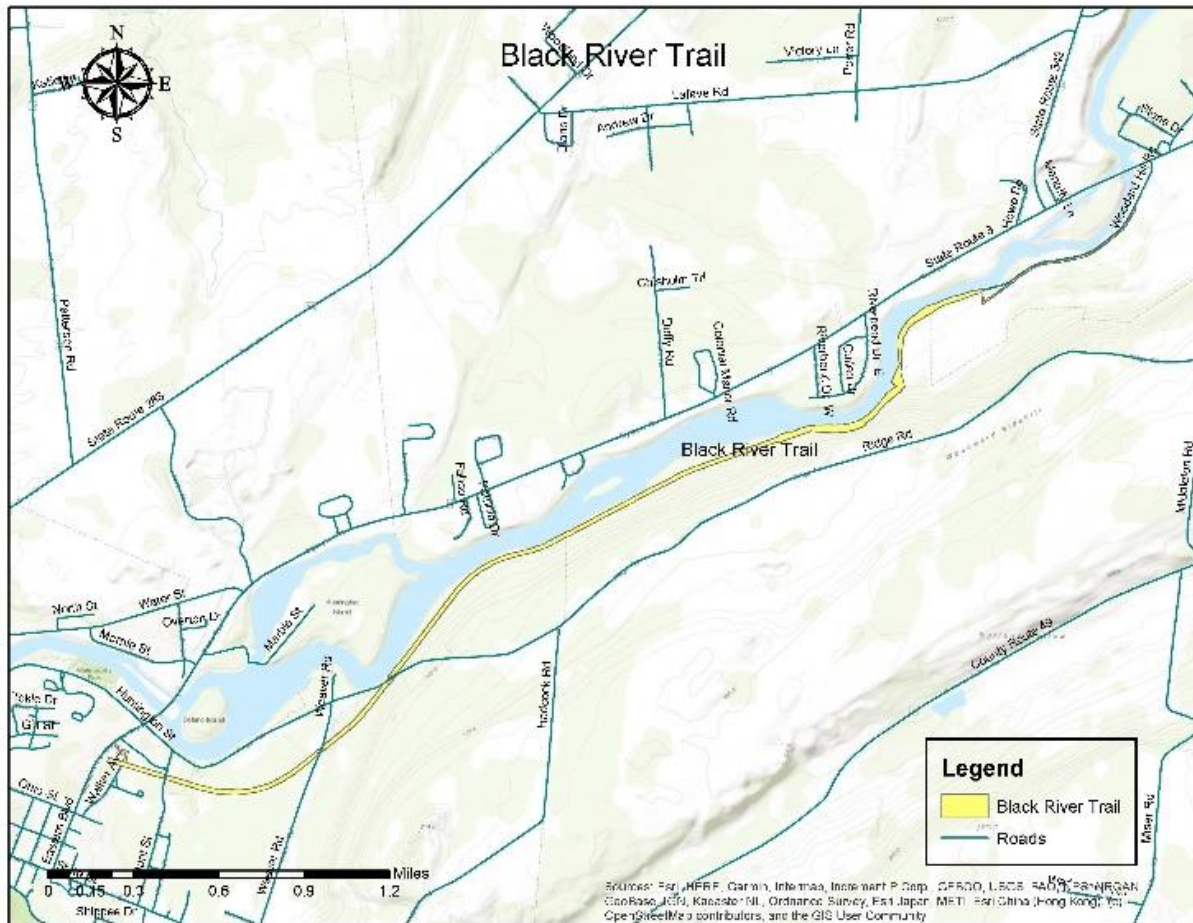
Invasive Oriental bittersweet (*Celastrus orbiculatus*) can overtop mature trees, causing increased risk of ice and wind damage, shading, and tree fall. Twining by this invasive vine can inhibit the downward transport of carbohydrates (girdling), causing decline and death of trees. Oriental bittersweet poses a substantial threat to mature forests and can suppress regeneration of the canopy (Beringen et al., 2017), further destabilizing riparian and streambank areas.

### *Black River Trail*

The Black River Trail is a 4.5 mile stretch of paved trail, which has been converted from an old railroad bed. The terrain is woodland and follows the Black River for 3.5 miles (Figure 5). This trail presents recreational opportunities for hiking, jogging, biking, snow shoeing and cross-country skiing. NYSOPRHP estimates 104,000 people entered the trail in 2019, 10,000-12,000 people walk it each month in the summer.

Top actions identified through the Great Lakes Action Agenda for the Black River included streambank stabilization projects, culvert enhancements, removal of hazardous structures from the old canal operations that impact navigation and habitat, and aquatic/riparian habitat restoration. The Black River Trail has also been identified as an area in dire need of invasive species management. It has been established that a feasibility study would need to occur to inventory the current species populations and distributions along this 3.5-mile stretch of the Black River.





**Figure 5.** Black River Trail Located Along River

## METHODS/INVENTORY AND ANALYSIS

## Compartmentalization

The Black River Trail was broken down into 29 compartments. Each of these compartments was 1/8 mile in length along the trail. The total width of each compartment varied and spread from 100 feet south of the trail and all the way to the river to the north of the trail. Parking areas are located at compartment 0 and 28.

## Field Data Collection

All data and information collected during the study was recorded into a Samsung tablet using a form developed in Esri's Survey123. By utilizing the Survey123 mobile app, data captured was made available for analysis in ArcGIS Online. Location information was enhanced through the use of a Garmin Glo and Esri's Collector application. As part of the study, we inventoried the number and location of tributaries, culverts, and human features within each compartment. The human features category included parking areas, benches, herd paths, etc. (Figure 6). This information

was important for assessing the logistics of work to occur in each compartment. We calculated staff effort as the sum of total hours spent surveying per staff person at the trail.

For each compartment, information was collected on the composition and abundance of tree, herbaceous, and invasive species (Figure 6). If any tree or herbaceous species were found, the species name was listed, images were collected, and the total abundance and cover was estimated, when possible. Due to time constraints, not all native/non-invasive species observed were identified for this report. Invasive species observed in each compartment were reported utilizing a complete list developed by the New York Natural Heritage Program and NY iMapInvasives that is currently used in other field data collections tools. The information collected closely followed other tools developed by the program to easily transfer the data into iMapInvasives following the completion of this study.

All information was reviewed via desktop and updated to follow the New York Flora Atlas (NYFA) nomenclature. The NYFA is an online database that includes information on all vascular plants that occur in New York State, including distribution, habitat type, taxonomy, native/non-native status, synonymy, and more. It is important to note that nomenclature from the preliminary atlas was originally based on the USDA Plants Database. Since then, the nomenclature and taxonomy has been revised to reflect the outcome of research available in the literature as well as independent field and herbarium investigations. The current list is considered preliminary and in a draft stage at the time of writing this report (NYFA, 2021).

Figure 6. Data Collection Screens in Survey123

## Native Species Score

To evaluate the native and non-invasive vegetative community of each compartment, we considered two variables: floristic quality assessment (FQA) and exploitatively vulnerable species richness.

FQA (Spyreas, 2019) is a standardized assessment method that calculates a quantitative value indicating the quality of plant communities in a region. A coefficient of conservatism (C value) is assigned to all species based on the plants propensity to tolerate degraded sites or disturbance. Species that occupy a narrow range of growing conditions and are typically found in natural areas are assigned a high C value, while non-native and/or generalists are assigned a low C value (Table 1). We used the NY Flora Atlas (Weldy et al. 2021) to assign NY specific C values to all species identified during field surveys. Uncatalogued non-native species were assigned a C value of zero.

**Table 1. Guiding definitions for coefficients of conservatism (CoC) assigned to the vascular flora of New York and New England.**

| CoC     | Criteria   |
|---------|--|
| 0       | Non-native with wide range of ecological tolerances. Often these are opportunistic of intact undisturbed habitats.   |
| 1 to 2  | Native invasive or widespread native that is not typical of (or only marginally typical of) a particular plant community; tolerant of anthropogenic disturbance. |
| 3 to 5  | Native with an intermediate range of ecological tolerances and may typify a stable native community, but may also persist under some anthropogenic disturbance.  |
| 6 to 8  | Native with a narrow range of ecological tolerances and typically associated with a stable community.  |
| 9 to 10 | Native with a narrow range of ecological tolerances, high fidelity to particular habitat conditions, and sensitive to anthropogenic disturbance.                 |

We calculated mean C and floristic quality index (FQI) score for each compartment using:

$$FQI = \overline{C} * \sqrt{N}$$

The FQI score indicated overall vegetative quality of each compartment as described in Table 2. Using FQI, we assigned a quantile to each compartment. All “natural area” compartments were assigned the highest rank of one. All “low quality” compartments were assigned an exclusionary rank of 999. The remaining “high quality” compartments were assigned an increasing quantile with decreasing FQI score (Table 3).

**Table 2.** Floristic Quality Index (FQI) Categories

| Floristic Quality Index (FQI) | Description of Quality     |
|-------------------------------|----------------------------|
| 1-19                          | Low                        |
| 20-35                         | High                       |
| Over 35                       | Natural Area (Exceptional) |

**Table 3.** Floristic Quality Index (FQI) Score, Category, and Quantile for Black River Trail Compartments

| Compartment | FQI Score | FQI Category | FQI Quantile (Assigned) | Compartment | FQI Score | FQI Category | FQI Quantile (Assigned) |
|-------------|-----------|--------------|-------------------------|-------------|-----------|--------------|-------------------------|
| 13          | 41        | Natural      | 1                       | 10          | 28        | High         | 7                       |
| 14          | 38        | Natural      | 1                       | 21          | 28        | High         | 7                       |
| 15          | 36        | Natural      | 1                       | 22          | 26        | High         | 8                       |
| 18          | 35        | High         | 2                       | 24          | 25        | High         | 9                       |
| 9           | 32        | High         | 3                       | 4           | 25        | High         | 9                       |
| 17          | 31        | High         | 4                       | 23          | 25        | High         | 9                       |
| 16          | 31        | High         | 4                       | 0           | 23        | High         | 10                      |
| 19          | 31        | High         | 4                       | 5           | 23        | High         | 10                      |
| 12          | 30        | High         | 5                       | 3           | 23        | High         | 10                      |
| 2           | 30        | High         | 5                       | 1           | 22        | High         | 11                      |
| 20          | 30        | High         | 5                       | 25          | 22        | High         | 11                      |
| 11          | 29        | High         | 6                       | 26          | 22        | High         | 11                      |
| 8           | 29        | High         | 6                       | 28          | 18        | Low          | 999                     |
| 6           | 29        | High         | 6                       | 27          | 17        | Low          | 999                     |
| 7           | 28        | High         | 7                       |             |           |              |                         |

Additionally, we identified all exploitatively vulnerable (EV) plants, as defined by 6 CRR-NY 193.3, and calculated EV richness ( $N_{EV}$ ) for all compartments. We used  $N_{EV}$  to assign a protected plant quantile ranking to each compartment. The compartment with the highest EV richness was assigned the top quantile rank (1). Quantile ranks increased as  $N_{EV}$  decreased.

Finally, we combined the FQI quantile and EV quantile to produce a single native species score for each compartment (Table 4). Compartments with the lowest native species score were considered the highest priority from a native species perspective.

$$\text{Native Species Score} = \text{FQI Quantile} + \text{EV Quantile}$$

**Table 4.** Native Species Score

| Compartment | EV Quantile | FQI Quantile | Native Species Score | Compartment | EV Quantile | FQI Quantile | Native Species Score |
|-------------|-------------|--------------|----------------------|-------------|-------------|--------------|----------------------|
| 0           | 5           | 10           | 15                   | 15          | 3           | 1            | 4                    |
| 1           | 7           | 11           | 18                   | 16          | 5           | 4            | 9                    |
| 2           | 3           | 5            | 8                    | 17          | 4           | 4            | 8                    |
| 3           | 5           | 10           | 15                   | 18          | 5           | 2            | 7                    |
| 4           | 3           | 9            | 12                   | 19          | 4           | 4            | 8                    |
| 5           | 6           | 10           | 16                   | 20          | 5           | 5            | 10                   |
| 6           | 3           | 6            | 9                    | 21          | 5           | 7            | 12                   |
| 7           | 3           | 7            | 10                   | 22          | 7           | 8            | 15                   |
| 8           | 6           | 6            | 12                   | 23          | 7           | 9            | 16                   |
| 9           | 6           | 3            | 9                    | 24          | 4           | 9            | 13                   |
| 10          | 5           | 7            | 12                   | 25          | 7           | 11           | 18                   |
| 11          | 4           | 6            | 10                   | 26          | 6           | 11           | 17                   |
| 12          | 2           | 5            | 7                    | 27          | 999         | 999          | 999                  |
| 13          | 1           | 1            | 2                    | 28          | 999         | 999          | 999                  |
| 14          | 2           | 1            | 3                    |             |             |              |                      |



## Invasive Species Score

To evaluate invasive species severity in each compartment, we considered two variables: estimated extent (acres) and NYS/SLELO PRISM tier ranking. We multiplied estimated cover of each species by total compartment acreage to derive the estimate extent of each species within its respective trail segment. We calculate total abundance of tier and non-tier species within each compartment. We assigned a quantile rank to both tier and non-tier species with the most heavily invaded compartments receiving the lowest (top priority) quantile ranking. We generated a final invasive summary score for each compartment by weighting tier and non-tier quantiles (Table 5). We assigned an 80% rank to nominated tier species and a 20% weight to non-nominated tiers plants. Non-nominated tier species were assigned a lower weight due to logistic or administrative constraints that preclude them as management candidates. Non-nominated tier species are often too widespread for effective control or have comparably low negative impacts vs. nominated tier species.

$$\text{Invasive Species Score} = (\text{Tier Quantile})(0.8) + (\text{NonTier Quantile})(0.2)$$

The lowest scoring compartments were considered the highest priority from an invasive species perspective.

**Table 5.** Invasive Species Score

| Compartment | Abundance Tier Quantile | Abundance Non-Tier Quantile | Invasive Species Score | Compartment | Abundance Tier Quantile | Abundance Non-Tier Quantile | Invasive Species Score |
|-------------|-------------------------|-----------------------------|------------------------|-------------|-------------------------|-----------------------------|------------------------|
| 0           | 29                      | 26                          | 28                     | 15          | 25                      | 21                          | 24                     |
| 1           | 9                       | 13                          | 10                     | 16          | 24                      | 15                          | 22                     |
| 2           | 3                       | 5                           | 3                      | 17          | 16                      | 10                          | 15                     |
| 3           | 4                       | 20                          | 7                      | 18          | 8                       | 27                          | 12                     |
| 4           | 2                       | 12                          | 4                      | 19          | 21                      | 17                          | 20                     |
| 5           | 12                      | 8                           | 11                     | 20          | 26                      | 16                          | 24                     |
| 6           | 7                       | 23                          | 10                     | 21          | 22                      | 24                          | 22                     |
| 7           | 23                      | 29                          | 24                     | 22          | 11                      | 14                          | 12                     |
| 8           | 13                      | 18                          | 14                     | 23          | 14                      | 1                           | 11                     |
| 9           | 15                      | 22                          | 16                     | 24          | 5                       | 2                           | 4                      |
| 10          | 10                      | 6                           | 9                      | 25          | 18                      | 28                          | 20                     |
| 11          | 1                       | 4                           | 2                      | 26          | 20                      | 11                          | 18                     |
| 12          | 17                      | 7                           | 15                     | 27          | 19                      | 19                          | 19                     |
| 13          | 27                      | 9                           | 23                     | 28          | 6                       | 3                           | 5                      |
| 14          | 28                      | 25                          | 27                     |             |                         |                             |                        |

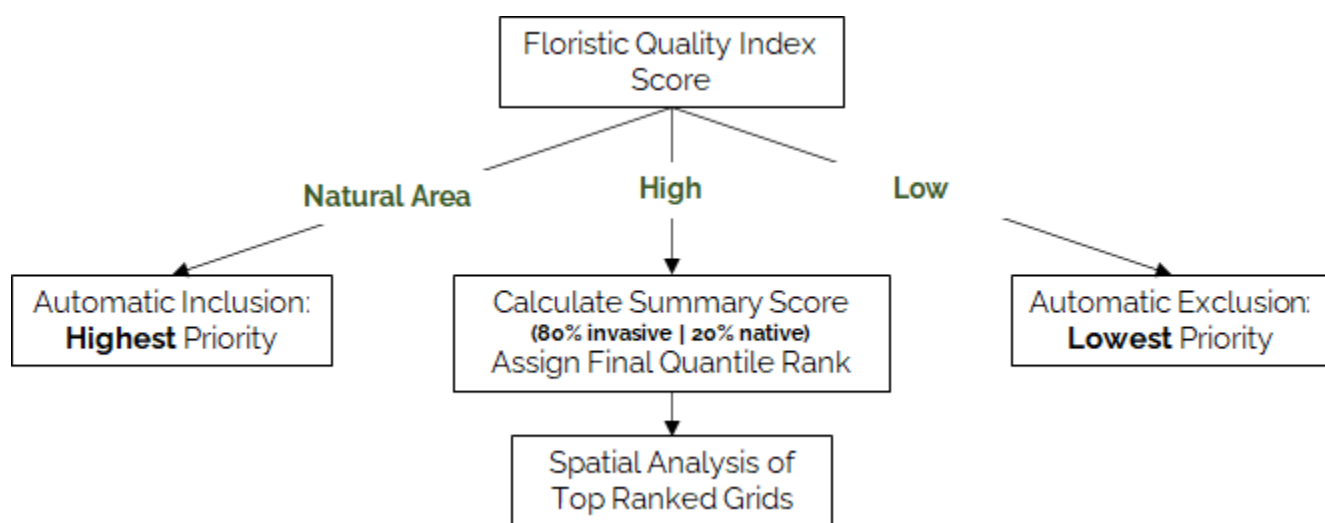
## Summary Ranking Development

A summary score for each compartment was compiled to guide the final prioritization of trail segments for invasive species management efforts. To support the project goal of maintaining and/or restoring a desirable/native plant assemblage, we first considered the native community ranking for each compartment (Figure 7). All compartments with a "natural area" FQI score (>35) were automatically included as top priorities for management and restoration. These compartments contain the highest quality vegetation and/or exploitatively vulnerable species that warrant protection through invasive species control. Similarly, we identified and excluded all

compartments with a “low vegetative quality” FQI score (1-19) from consideration. While these compartments could likely be improved with management intervention, with limited resources available, compartments with a low FQI offer minimal return on investment relative to natural or high-quality areas.

For the remaining compartments with a “high” FQI (20-35), we calculated a weighted score using the native community score (20% weight) and invasive species score (80% weight). The weighted summary score identified compartments with high vegetative quality that are also being significantly impacted with a high abundance or extent of invasive species. Management within these compartments will protect, maintain and/or enhance the existing high-quality native plant communities.

The summary score was then used to apply a quantile ranking to each compartment, where the lowest summary score was assigned the highest priority quantile ranking and the highest summary score received the lowest priority quantile ranking (Table 6).



**Figure 7.** Black River Trail Compartment Prioritization Flow Chart

**Table 6.** Black River Trail Prioritization Summary Scores

| Compartment | FQI Category | Summary Score | Final Ranking Quantile | Compartment | FQI Category | Summary Score | Final Ranking Quantile |
|-------------|--------------|---------------|------------------------|-------------|--------------|---------------|------------------------|
| 13          | Natural      | 1             | 1                      | 12          | High         | 13            | 9                      |
| 14          | Natural      | 1             | 1                      | 17          | High         | 13            | 9                      |
| 15          | Natural      | 1             | 1                      | 8           | High         | 14            | 10                     |
| 11          | High         | 3             | 2                      | 9           | High         | 15            | 11                     |
| 2           | High         | 4             | 3                      | 19          | High         | 18            | 12                     |
| 4           | High         | 6             | 4                      | 26          | High         | 18            | 12                     |
| 24          | High         | 6             | 4                      | 16          | High         | 20            | 13                     |
| 3           | High         | 9             | 5                      | 21          | High         | 20            | 13                     |
| 6           | High         | 10            | 6                      | 25          | High         | 20            | 13                     |
| 10          | High         | 10            | 6                      | 7           | High         | 21            | 14                     |
| 1           | High         | 11            | 7                      | 20          | High         | 21            | 14                     |
| 18          | High         | 11            | 7                      | 0           | High         | 26            | 15                     |
| 5           | High         | 12            | 8                      | 27          | Low          | 999           | 999                    |
| 22          | High         | 12            | 8                      | 28          | Low          | 999           | 999                    |
| 23          | High         | 12            | 8                      |             |              |               |                        |

Finally, we evaluated the spatial distribution of the top ranked segments and identified opportunities to enhance the connectivity of restoration efforts through inclusion of additional compartments (Figure 8). For example, if our prioritization process identified compartments 11, 13, 14 and 15, we chose to include segment 12 to increase continuity of control. Single, outlying segments identified by the prioritization process were dropped from consideration.



**Figure 8.** Example of compartment prioritization before and after spatial analysis for connectivity

# RESULTS

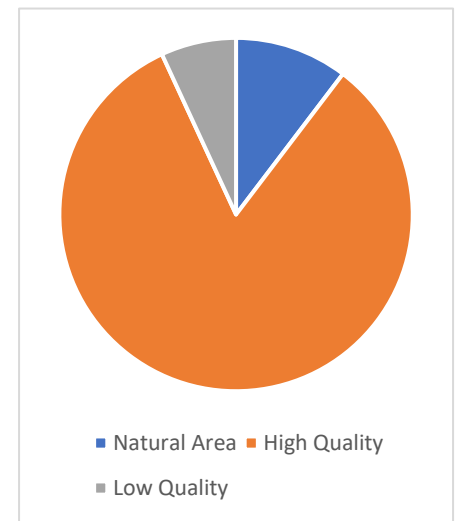
## Native and Non-Invasive Species Distribution and Abundance

### Overview

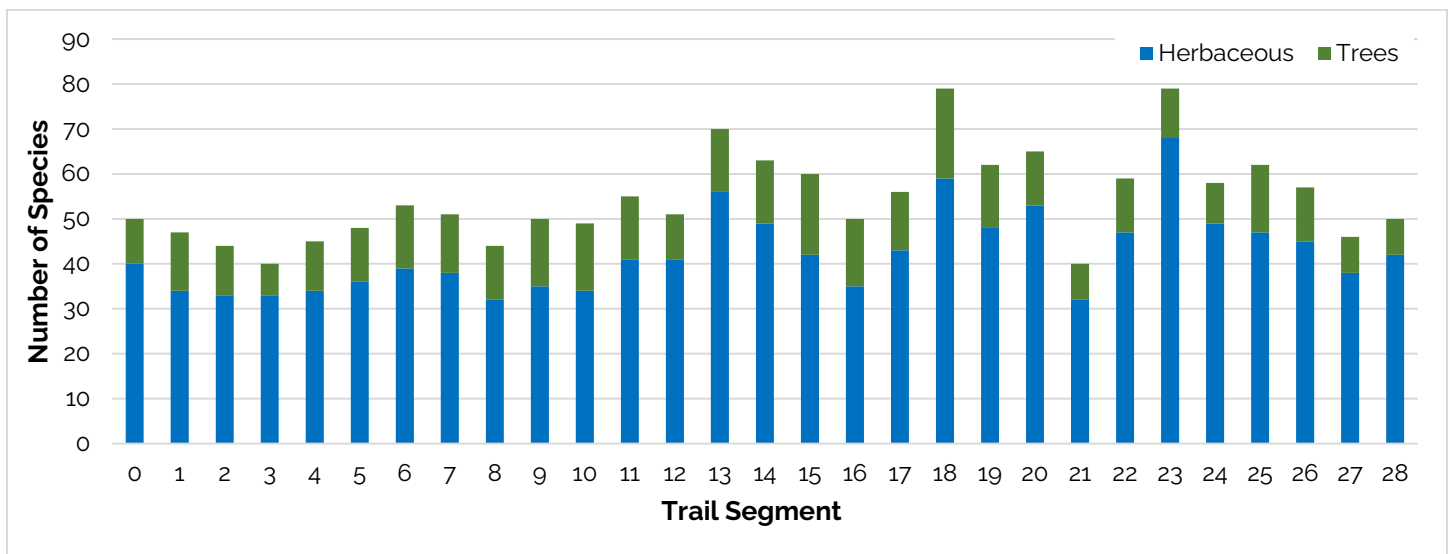
A total of 274 native or non-invasive species were identified, including 243 herbaceous and 31 tree species. Of all species documented, 77% (n=211) were native and 22% (n=59) were non-native, non-invasive species. Four plants could not be identified to species level or had an unknown native status. Notably, 18 exploitatively vulnerable species were identified within the project area.

The average C value was 3.6 for all species and 4.6 for native species. FQI scores by compartment ranged from 17 to 41 (average 28). The majority (83%) of compartments ranked as high quality with only three natural area and two low quality compartments present (Figure 9).

An average of 55 native or non-invasive species were identified in each compartment. Trail segments 23 and 18 had the greatest diversity with 79 species reported. Segments 21 and 3 were the least diverse with 40 species reported (Figure 10).



**Figure 9.** Distribution of compartments by FQI Category



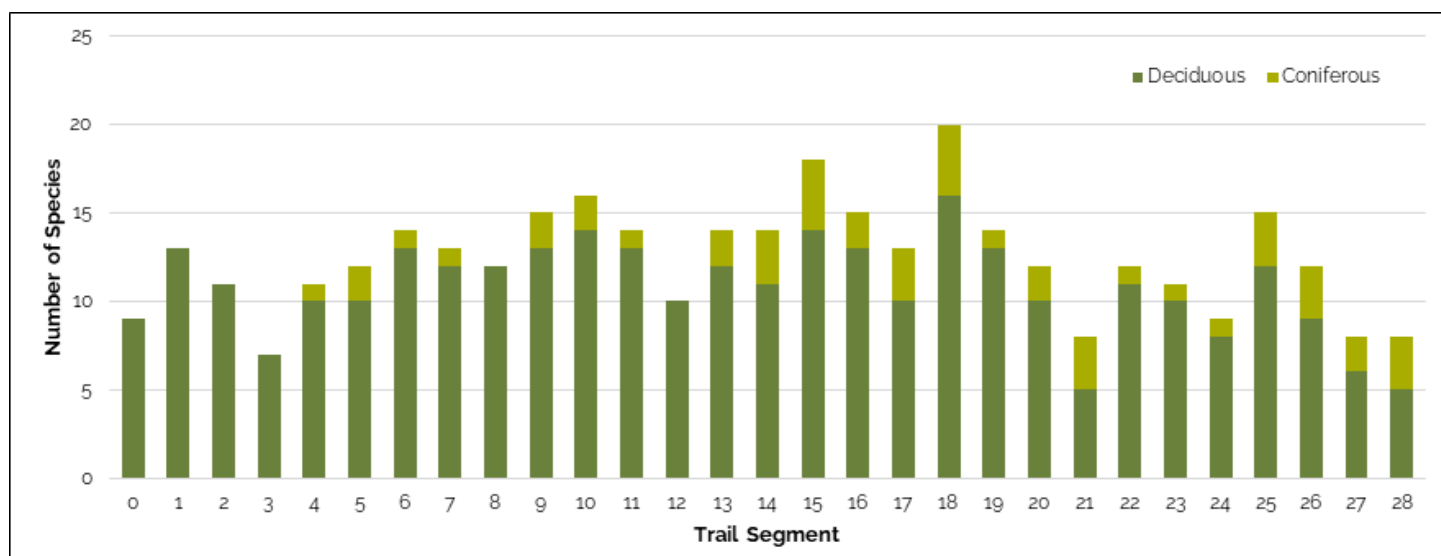
**Figure 10.** Total Herbaceous and Tree Species in each Trail Segment

### Trees

A total of 31 native or non-invasive trees were documented. Most species (n=30) were native to NY, with only one non-native tree documented. American basswood was the most common species, present at 27 (93%) of surveyed trail segments. Sugar maple and white ash were also prevalent, found at 26 and 25 segments, respectively. Approximately 84% (n=26) of documented tree species were deciduous, while only 16% (n=6) were coniferous.



An average of 13 tree species were identified in each compartment. Trail segment 18 had the greatest diversity of trees with 20 species detected. Segment three was the least diverse with only seven species (Figure 11).

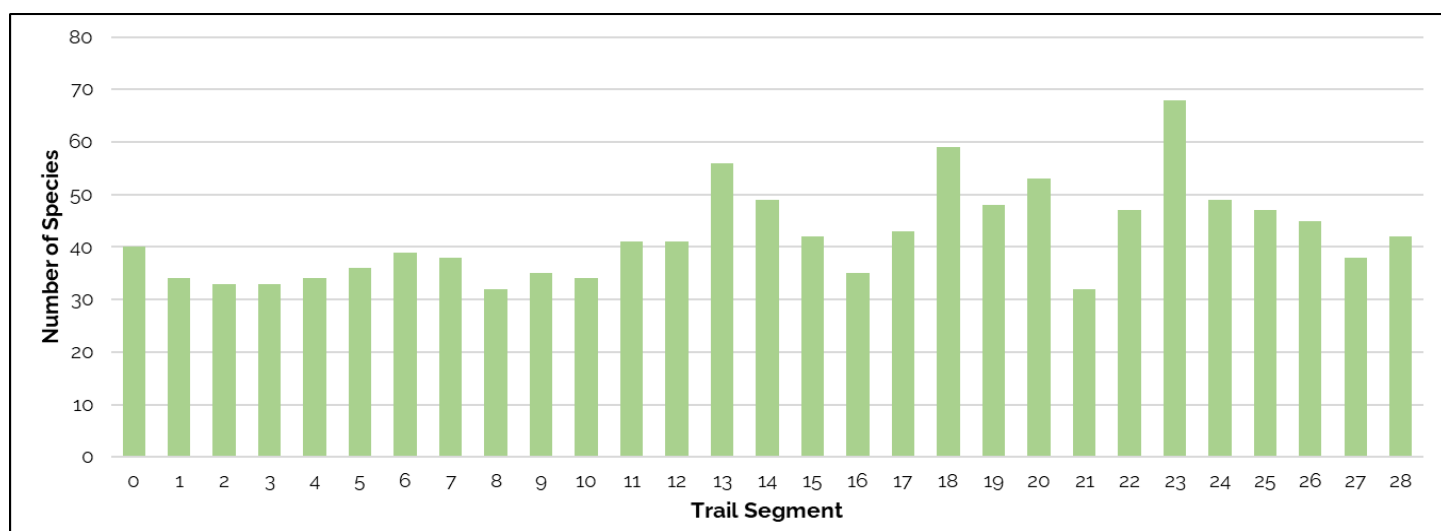


**Figure 11.** Total Deciduous and Coniferous Tree Species in each Trail Segment

### Herbaceous Species

A total of 243 native or non-invasive herbaceous species were documented. River grape (*Vitis riparia*) was the most common species, present at 26 (90%) of the surveyed trail segments. Staghorn sumac (*Rhus typhina*) and Virginia creeper (*Parthenocissus quinquefolia*) were also prevalent, found at 25 and 24 segments, respectively.

An average of 42 herbaceous species were identified in each compartment. Trail segment 23 had the greatest diversity of herbaceous species with 68 species detected. Segments 21 and 8 were the least diverse, with 32 species present (Figure 12).

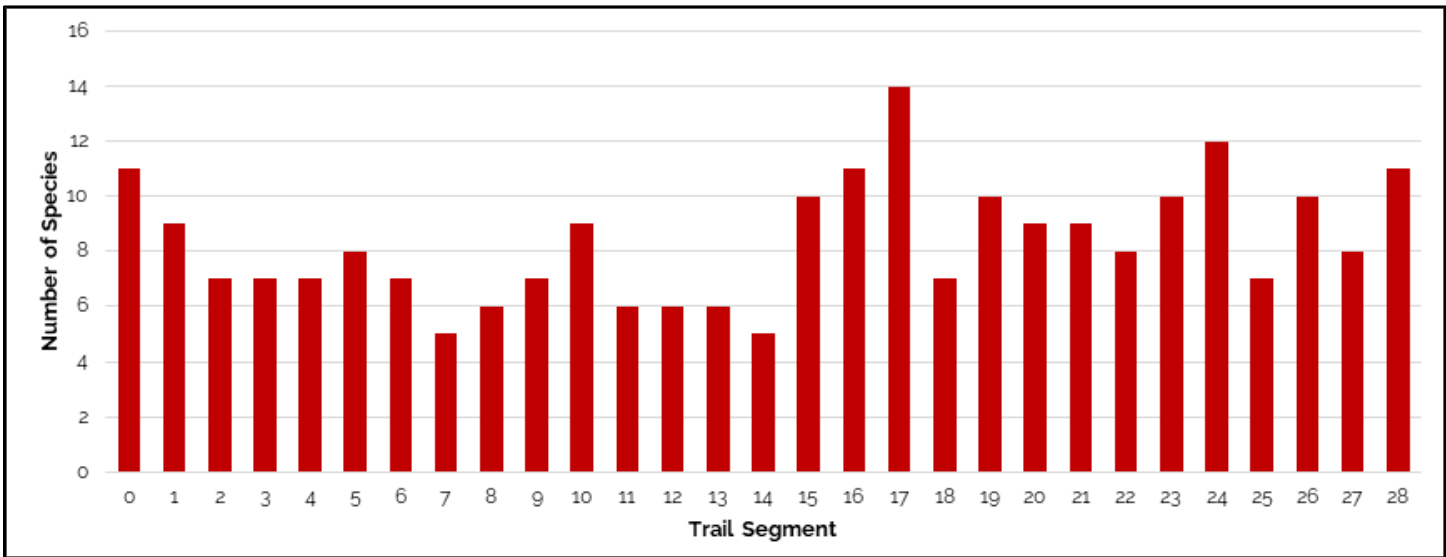


**Figure 12.** Total Number of Herbaceous Species in each Trail Segment

# Invasive Species Distribution and Abundance

A total of 34 invasive species were detected, including 14 SLELO nominated tier species (Figure 3). Overall, common buckthorn (*Rhamnus cathartica*) was the most common species, present at 28 (97%) of surveyed trail segments. Oriental bittersweet (*Celastrus orbiculatus*) and honeysuckle species (*Lonicera spp.*) were also prevalent, found at a total of 23 and 21 segments, respectively. Of the 14 nominated tier species detected, the majority (n=10) were classified as tier 4. Only four tier 3 species were documented.

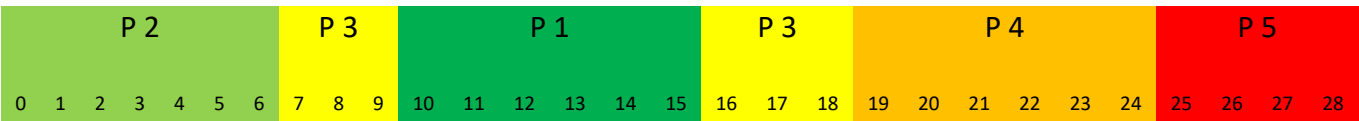
An average of eight invasive species were identified in each compartment. Trail segment 17 had the greatest diversity of invasive species with 14 species observed. Segments 14 and 7 were the least invaded with only five species recorded (Figure 13).



**Figure 13.** Total Number of Invasive Species in each Trail Segment

## Prioritization

Floristic Quality Index (FQI) and Summary Scores were calculated for each compartment as described in the methods sections and can be seen in Table 3-6. The trail was divided into five priority groups according to these scores (Figure 14). Those compartments categorized as a “Natural Area” were the highest category, Priority 1 (P1), while those compartments categorized as “Low” were placed at the bottom of the priority list, Priority 5 (P5). Those sections in the “high” category were split into three middle priority groups according to summary scores and spatial proximity analysis of the compartments.



**Figure 14.** Prioritization results for compartments along the Black River Trail

## Logistics

The areas of each compartment ranged from 0.7 acres to 5.6 acres with an average size of 2.5 acres. Of the 74.8 acres of land located within this study area, 58% (43.5 acres) is publicly owned. The other 42% percent (31.3 acres) is owned by 13 private landowners.

A total of 293 person hours were spent collecting data from the field, which was based on two full time staff at the site for 16 field days and three days that additional staff support was provided by the NYS OPRHP program seasonal technicians. This averages to be ~10 person hours spent surveying each compartment, though time varied depending on the total area, species composition and terrain of each compartment.

A total of 61 culverts were found in the study area, with an average of 2 per compartment. The total number of culverts ranged from six in compartment 15 to zero in compartments 8, 13, 19, 21, 27, and 28 (Table 7).

**Table 7.** Black River Trail Management and Restoration Feasibility Logistics

| Compartment Number | Distance from Nearest Trailhead (miles) | Area (acres) | Culverts (#) | Human Features (#) | % of Compartment with Steep Slope (10+ deg.) | # Private Landowners | # Landowners |
|--------------------|---|--------------|--------------|--------------------|--|----------------------|--------------|
| 0                  | 0                                       | 0.7          | 2            | 1                  | 21%  | 3                    | 4            |
| 1                  | 0.14                                    | 2.4          | 1            | 3                  | 53%  | 3                    | 6            |
| 2                  | 0.27                                    | 4.1          | 2            | 0                  | 33%  | 2                    | 5            |
| 3                  | 0.4                                     | 3.4          | 2            | 1                  | 19%  | 1                    | 4            |
| 4                  | 0.51                                    | 2.6          | 2            | 0                  | 23%  | 1                    | 4            |
| 5                  | 0.63                                    | 2.5          | 4            | 1                  | 36%  | 5                    | 8            |
| 6                  | 0.77                                    | 1.6          | 2            | 2                  | 44%  | 4                    | 5            |
| 7                  | 0.88                                    | 1.9          | 1            | 1                  | 46%  | 7                    | 9            |
| 8                  | 1.02                                    | 2.4          | 0            | 3                  | 26%  | 3                    | 4            |
| 9                  | 1.15                                    | 2            | 2            | 2                  | 31%  | 3                    | 4            |
| 10                 | 1.28                                    | 4.1          | 2            | 6                  | 15%  | 2                    | 3            |
| 11                 | 1.4                                     | 5.6          | 2            | 3                  | 16%  | 2                    | 3            |
| 12                 | 1.52                                    | 4.4          | 4            | 4                  | 21%  | 2                    | 3            |
| 13                 | 1.65                                    | 3            | 0            | 6                  | 43%  | 2                    | 3            |
| 14                 | 1.75                                    | 1.9          | 2            | 4                  | 57%  | 4                    | 5            |
| 15                 | 1.63                                    | 1.3          | 6            | 1                  | 73%  | 1                    | 2            |
| 16                 | 1.5                                     | 1.5          | 4            | 0                  | 86%  | 1                    | 2            |
| 17                 | 1.38                                    | 1.9          | 4            | 6                  | 61%  | 2                    | 4            |
| 18                 | 1.25                                    | 2.2          | 2            | 6                  | 24%  | 3                    | 5            |
| 19                 | 1.12                                    | 1.8          | 0            | 2                  | 28%  | 1                    | 3            |
| 20                 | 1                                       | 1.6          | 2            | 2                  | 36%  | 1                    | 2            |
| 21                 | 0.87                                    | 1.3          | 0            | 3                  | 50%  | 1                    | 2            |
| 22                 | 0.75                                    | 2.3          | 2            | 4                  | 38%  | 4                    | 5            |
| 23                 | 0.64                                    | 4            | 4            | 2                  | 22%  | 3                    | 4            |
| 24                 | 0.5                                     | 3.7          | 2            | 4                  | 23%  | 3                    | 4            |
| 25                 | 0.38                                    | 2            | 2            | 4                  | 37%  | 3                    | 4            |
| 26                 | 0.26                                    | 2.2          | 5            | 2                  | 40%  | 3                    | 4            |
| 27                 | 0.14                                    | 2.3          | 0            | 3                  | 32%  | 1                    | 2            |
| 28                 | 0                                       | 3.2          | 0            | 3                  | 14%  | 2                    | 2            |

# DISCUSSION

Determining the best course of action in invasive plant management can be difficult. For many land managers, whether to apply herbicides is an ethical decision that is not taken lightly. Herbicides are often used as a last resort, when other attempts have failed or have been deemed to be less effective, and action is imperative.

Although herbicide use has been considered as a management practice in this feasibility study, it is the author(s) recommendation that herbicide application along or in close proximity to the Black River Trail be substantially minimized and/or considered as a last resort. If used, they should be applied in such a way as to reduce the potential exposure to trail users.

For each nominated tier species, manual and mechanical control methods have been scrutinized and introduced as a best management practice and should be considered as such for implementation of suppression that may occur as a continuance of this study.

## Invasive Species Management

Invasive species management is divided into four main methods: manual control, mechanical control, chemical control, and biological control. Use of manual, mechanical, or chemical control or a combination of these methods may be used for suppression or eradication efforts. Biological control is only effective for suppression efforts.

Manual Control includes digging/hand-pulling and smothering. These techniques are best used for small populations and areas that can't be chemically treated or where motorized equipment can't be used. Several treatments will likely be required with this method to reduce or eradicate the populations.

Mechanical Control includes hoeing, cutting, girdling, tilling, mowing, chopping, and constructing barriers. These techniques are best used for large populations and in areas with no safety or motorized equipment issues. As with manual control, several treatments will be required to reduce or eradicate the populations. This method is best when combined with chemical treatments.

Chemical Control involves the application of pesticides using techniques such as basal bark, cut-stump, foliar spray, and stem injection. Use and type of chemical control will depend on population size, invasive species, presence of rare or desirable plant species, environmental conditions, and proximity to water. This method is often combined with mechanical control and most likely to result in eradication.

Biological: involves the use of animals, fungi, or diseases to control invasive species populations. This method does not eradicate the population, but instead lowers the population to a size that allows native plant species to coexist. This method does require invasive species populations large enough to establish the biological control but has the benefit of minimizing human effort.



## Recommendations for Target Species Found

Shrub Removal (buckthorn/honeysuckle): Stems under 3/8" should be removed using a combination of digging and hand pulling. Stems 3/8" – 1 1/2" should be removed by hand tools such as an "Uprooter" or "Root Talon". Stems larger than 1 1/2" (buckthorn only) should be cut approximately 3" above the soil. A thick plastic bag will then be placed over the stump with a zip tie applied to the middle of the stump.

Oriental Bittersweet: Seedlings should be hand pulled. All others should be cut approximately 6" above the soil. A concentrated herbicide should then be applied to the cut stem. In addition, a thick plastic bag should be placed over the stump and secured to the base of the stump with nails, screws, or heavy-duty staples to protect any non-target species from chemical exposure.

Pale Swallowwort: Small patches should be removed using a combination of digging and hand pulling. The large patch located away from trail is recommended to be treated with herbicide, followed by erecting a snow fence around the area with caution or educational signs to alert trail users of the use of herbicide.

Phragmites: Patches should be cut using the spading method, plants removed, and then the area should be covered with a thick black plastic tarp to smother regrowth. This method of management should be considered as a long-term effort with several years of spading/tarpping.

Yellow Iris: Should be removed by using a combination of digging and hand pulling, ensuring that entire rhizome is removed. Gloves must be used during removal since yellow iris may cause skin irritation.

## Cost Analysis for Invasive Species Management

It is recommended that any invasive species management activities along the Black River Trail be based off the previously described final ranking quantile which considers each compartment's Floristic Quality Index, Exploitation Vulnerable Richness, and Abundance of Tier and Non-Nominated Tier Invasive Species. Following the spatial distribution analysis reviewing top ranked segments and enhanced connectivity opportunities the Trail was divided into five main sections for management and restoration. Work on the trail will be dependent on funding, so one or more of the priority areas may be managed in the same year or all may be managed in separate years. If the full plan is not feasible to execute, it is essential to still focus management and restoration to protect the highest natural communities identified, compartments 10-15. Cost estimates for each section provided by SLELO PRISM's current contractor. These estimates are higher than average control due to the concentration of manual removal of plants over use of chemical application.

Black River Trail Compartments by Priority Groups & Invasive Species Management Requirements (please note: all management of seedlings will be performed by volunteers – ½ day (5 hrs.) 10 volunteers per compartment - \$28.54/hour = value of volunteer effort (per conversation with Volunteer Coordinator for New York Chapter of The Nature Conservancy))

Priority 1: Compartments 10-15 (Total Acres – 20.3, Invasive Acres Estimate – 3.2)

- Mechanical Removal of Buckthorn – 1.3 Acres
- Mechanical Removal of Honeysuckle – 0.5 Acres
- Mechanical Removal (cut)/Smothering (placing tarp over) of Phragmites – 0.1 Acres
- Chemical Treatment (cut-stem) of Oriental Bittersweet – 1.3 Acres

Cost Estimate (Contractor): **\$36,540**

Cost Estimate (Volunteers): **\$8,562**

Priority 2: Compartments 0-6 (Total Acres – 17.3, Invasive Acres Estimate – 5.82)

- Mechanical Removal of Buckthorn – 1.7 Acres
- Mechanical Removal of Honeysuckle – 0.7 Acres
- Manual Removal of Yellow Iris – 0.1 Acres
- Mechanical Removal (cut)/Smothering (placing tarp over) of Phragmites – 0.02 Acres
- Chemical Treatment (cut-stem) of Oriental Bittersweet – 3.3 Acres

Cost Estimate (Contractor): **\$31,140**

Cost Estimate (Volunteers): **\$9,989**

Priority 3: Compartments 7-9, 16-18 (Total Acres – 11.9, Invasive Acres Estimate - 2.1)

- Mechanical Removal of Buckthorn – 0.9 Acres
- Mechanical Removal of Honeysuckle – 0.4 Acres
- Mechanical Removal (cut)/Smothering (placing tarp over) of Phragmites – 0.1 Acres
- Chemical Treatment (cut-stem) of Oriental Bittersweet – 0.7 Acres

Cost Estimate (Contractor): **\$21,420**

Cost Estimate (Volunteer): **\$8,562**

Priority 4: Compartments 19-24 (Total Acres – 14.7, Invasive Acres Estimate - 1.5)

- Mechanical Removal of Buckthorn – 0.9 Acres
- Mechanical Removal of Honeysuckle – 0.4 Acres
- Chemical Treatment (cut-stem) of Oriental Bittersweet – 0.2 Acres

Cost Estimate (Contractor): **\$26,460**

Cost Estimate (Volunteer): **\$8,562**

Priority 5: Compartments 25-28 (Total Acre – 9.7, Invasive Acre Estimate - 1.1)

- Mechanical Removal of Buckthorn – 0.7 Acres
- Mechanical Removal of Honeysuckle – 0.2 Acres
- Mechanical Removal (cut)/Smothering (placing tarp over) of Phragmites – 0.1 Acres
- Chemical Treatment (cut-stem) of Oriental Bittersweet – 0.1 Acres

Cost Estimate (Contractors): **\$17,460**

Match Estimate (Volunteers): **\$5,708**

## **Notes:**

- Buckthorn that can't be removed using hand tools such as an "Uprooter" or "Root Talon" (over 1 ½" diameter) may be cut with a bag secured to the stump to prevent sprouting
- Oriental bittersweet stumps could be covered with a bag that can't be easily removed to prevent the public from chemical exposure (nail, screw, staple). However, the risk of exposure is very low for cut stump applications, as the product will usually be dry in less than 1-hour on a sunny day.
- There is a possibility of trail closure during control work. eg, machinery, chain saw work, etc.

***Estimated Cost of Invasive Species Control Work – All Compartments = \$133,020.00***

## **Ecological Restoration**

### **Overview of Ecological Restoration and Importance of Native Species Found at Sites**

Ecological restoration is meant to recreate, initiate, or accelerate the recovery of an ecosystem that has been disturbed. These disturbances may be natural, or human caused and include such events as logging, floods, fires, and invasive species. The restored condition of these sites is normally based on what is referred to as a reference site. These reference sites are close to the restoration site and have conditions considered similar to the desired outcome of the restoration. Conditions to consider in the restoration include existing plants, sunlight levels, soil type, and water availability. In some circumstances, like heavy erosion, soil compaction, soil contamination, and presence of invasive species, site preparation will be needed prior to planting. Plantings will involve seeds and/or grown plants of native species found in or around the restoration site. Seeds have an advantage of being less expensive and less labor intensive, and are used for many grasses and forbs, while grown plants have a higher survival rate and establish faster and are normally used for shrubs and trees. Whether seed or grown plant, locally sourced plant materials will be more likely to succeed at the restoration site (Dorner, 2002). Native plants will also provide food and shelter for the native wildlife. Monitoring and maintenance of the restoration site will be required weekly for the 1<sup>st</sup> year and every 2-3 weeks for the 2<sup>nd</sup> year. Maintenance may consist of watering plants, weeding, and adjusting stakes, tubing, and/or fencing. Monitoring should be maintained for at least 5 years after planting.

### **General Restoration Strategy Recommendations**

Ecological restoration is a process of augmenting the recovery of an ecosystem that has been degraded. Areas such as the Black River Trail riparian corridor, are dynamic communities of plants, animals, and microorganisms interacting with their physical environment. These communities can be damaged or degraded or can result in a reduction of biological diversity and ecosystem function by natural and or human activity (Vaughn et al., 2010).

The removal or suppression of invasive plants from a given area often results in a disturbance of the land therefore creating an opportunity for the reintroduction and/or establishment of another invasive plant. These disturbed areas must be restored to their natural ecological character and function to maintain resilience and guard against re-infestations. Restoration efforts may

incorporate natural succession or intentional restoration measures. Intentional planting of native species can help to expedite the native regrowth and reduce the opportunity for invasives to re-enter the system (Miller and Schelhas, 2008).

For the Black River Trail, only those areas within compartments that have been disturbed to the point of bare ground, or areas that lend themselves to an ecological opportunity, are targeted for restoration measures. It is recommended that these sites be restored by planting & promoting riparian native plants. This effort will help stimulate regrowth of native plants along the river corridor as well as reducing the potential for erosion. It is recommended to purchase native plants known to currently or previously exist within the area under consideration. Measures to be considered include:

### 1. *Overseed disturbed areas with native grass species*

Grass seed should be dispersed on bare patches found in the compartments to prevent soil erosion. A list of grass species that were found along the Black River Trail with varied moisture and shade tolerances can be seen in Table 8. The average compartment size for this project is 2.63 acres. Assuming a nominal disturbance area of 0.5 acres per compartment, the total area estimated for overseeding would be 14.5 acres. The rate of application would be 23 pounds per acre. The use of the species listed below will be in accordance with site conditions.

**Table 8.** Select Native Grass Species on the Black River Trail

| Common Name                | Scientific Name                                 | Native to this Area | Wetland Indicator | Shade Tolerance        |
|----------------------------|---|---------------------|-------------------|------------------------|
| big bluestem               | <i>Andropogon gerardi</i>                       | Y                   | FACU              | Full Sun               |
| Canada wild rye            | <i>Elymus canadensis</i> var. <i>canadensis</i> | Y                   | FACU              | Partial Shade          |
| common witch grass         | <i>Panicum capillare</i> ssp. <i>capillare</i>  | Y                   | FAC               | Full Sun/Partial Shade |
| deer-tongue rosette grass  | <i>Dichanthelium clandestinum</i>               | Y                   | FACW              | Full Sun               |
| eastern riverbank wild rye | <i>Elymus riparius</i>                          | Y                   | FACW              | Partial Shade          |

### 2. *Replant native tree and/or shrubs within open areas or as deemed appropriate*

Planting the right tree in the right place at the right time can be extremely useful not only for ecological restoration but also to enhance climate mitigation and future resiliency (Smith, 2020). In the case of the Black River corridor, trees may not be mandatory, but they may, however, be desirable for these reasons. Determining if, when and where trees and/or shrubs should be planted as part of the BRT recovery, could best be determined at the time ground cover is being planted, ideally after invasive species suppression and should be based on two criteria:

- Native species currently found within the compartment being restored.
- Species diversity as demonstrated by resident species along the Black River Trail.

Examples of appropriate species for varied environmental conditions can be seen in Table 9.

**Table 9.** Select Native Tree Species on the Black River Trail

| Common Name          | Scientific Name           | Native to this Area | Wetland Indicator | Shade Tolerance                   |
|----------------------|---------------------------|---------------------|-------------------|-----------------------------------|
| American basswood    | <i>Tilia americana</i>    | Y                   | FACU              | Full Sun/Partial Shade            |
| sugar maple          | <i>Acer saccharum</i>     | Y                   | FACU              | Full Sun/Partial Shade/Full Shade |
| bitternut hickory    | <i>Carya cordiformis</i>  | Y                   | FAC               | Full Sun/Partial Shade            |
| eastern cottonwood   | <i>Populus deltoides</i>  | Y                   | FAC               | Full Sun/Partial Shade            |
| northern white cedar | <i>Thuja occidentalis</i> | Y                   | FACW              | Full Sun/Partial Shade            |
| black willow         | <i>Salix nigra</i>        | Y                   | OBL               | Full Sun                          |

### 3. Seed areas with herbs/forbs to restore species diversity where appropriate

Native plant species diversity enhances ecosystem functioning (Wan, 2020). This includes providing food and shelter for native wildlife, sustaining wildlife populations (Taylor, 2021), and nutrient cycling (Hooper and Vitousek, 1998). Dispersing herb/forb seeds along the Black River Trail is not mandatory, but should be considered in areas where the following conditions exist:

- Invasive species may have a measurable impact on species diversity
- Natural dispersal of additional native species would be unlikely or limited.

Only species that exist along the Black River Trail should be used for restoration and choice of species should be in accordance with site conditions. Examples of appropriate species for varied environmental conditions can be seen in Table 10.

**Table 10.** Select Native Herb/Forb Species on the Black River Trail

| Common Name                    | Scientific Name                     | Native to this Area | Wetland Indicator | Shade Tolerance          |
|--------------------------------|-------------------------------------|---------------------|-------------------|--------------------------|
| northern bugleweed             | <i>Lycopus uniflorus</i>            | Y                   | OBL               | Full Sun/Partial Shade   |
| white turtlehead               | <i>Chelone glabra</i>               | Y                   | OBL               | Full Sun/Partial Shade   |
| tall meadow rue                | <i>Thalictrum pubescens</i>         | Y                   | FACW              | Partial Shade/Full Shade |
| Indian hemp                    | <i>Apocynum cannabinum</i>          | Y                   | FAC               | Full Sun/Partial Shade   |
| calico aster                   | <i>Symphytotrichum lateriflorum</i> | Y                   | FAC               | Full Sun/Partial Shade   |
| eastern enchanter's nightshade | <i>Circaea canadensis</i>           | Y                   | FACU              | Full Shade               |
| tall goldenrod                 | <i>Solidago altissima</i>           | Y                   | FACU              | Full Sun                 |
| common milkweed                | <i>Asclepias syriaca</i>            | Y                   | UPL               | Full Sun/Partial Shade   |

## Cost Analysis for Ecological Restoration

### Grass over-seeding:

The average compartment size for this project is 2.63 acres. Assuming a nominal disturbance area of 0.5 acres per compartment, the total area estimated for overseeding would be 14.5 acres. The rate of application would be 23 pounds per acre of native grass seed suitable to the conditions at the site. Average seed cost would be \$18.95/lb.

14.5 acres x 23 lbs./acre at \$18.95/lb. = **Total seed cost = \$6,320.00\***

\* Average Restoration Cost Estimate by Compartment = \$218.00



### *Tree Planting:*

Restoration of open canopy control sites could be augmented by planting & promoting riparian native plants and trees. This effort may help stimulate regrowth of native plants along the river corridor. Purchasing certified native plants and planting via citizen science/community volunteers, would provide not only for native plant restoration but also provide for community awareness and appreciation for this resource. To reduce costs within this component, a donation from DEC Saratoga Nursery may be a possibility, and/or utilizing the Trees For Tribes® program. If these programs are available, the cost would be nominal.

### *Forb/Herb Seeding:*

Seed may be purchased through nurseries or may be acquired through collection by MARS-B, an organization whose mission is to collect locally sourced seeds for use in restoration projects. Seeds acquired through MARS-B and dispersed using citizen science/community volunteers would make cost nominal 0.00.

## **Project Evaluation**

### **Overview of Project Evaluation**

Specific and clearly defined management and restoration objectives would need to be created when pursuing next steps in this overall project to improve the Black River Trail. Goals and objectives must be tangible and should be used to compare initial and evaluation data. Quantifiable data may also be helpful to evaluate performance of a contractors and can even be used to draft performance-based deliverables in the contract itself. For example, if suppression is the overall goal of this project, specific targets should be identified. These should be as detailed as possible. For example, *“Reduce the extent of oriental bittersweet in compartment 20 by 70% by 2023.”* Similar goals could be crafted to evaluate the success of native species recovery.

### *Short-Term Monitoring:*

To determine the rate of invasive species reduction a modified version of the Multiple Species Inventory and Monitoring (MSIM) method of site monitoring will be incorporated into the project. The highest priority compartments will be evaluated for at least two years post implementation. Invasive plant species composition surveys are conducted at each monitoring point at least three times per year to include, early, mid, and late season samples.

To determine the return of native flora as the result of intentionally restoring treated sites, the Multiple Species Inventory and Monitoring (MSIM) method of site monitoring will be incorporated into the project. Three sites were chosen based on soil characteristics and proximity to the stream. Plant species composition surveys are conducted at each monitoring point at least three times per year to include, early, mid, and late season samples.

#### *Long-Term Monitoring:*

It is recommended that a local stakeholder group such as "Friends of the Black River Trail" (FBRT) be created. This FBRT group can follow acceptable practices to monitor for both the return of invasive plants and the establishment of native plants. Volunteers not only reduce the overall costs of management and restoration, but they also serve as a platform to engage the public and enhance stewardship in the community. If such a group is created, SLELO PRISM can assist with the promotion, recruitment, training and coordination of volunteers in collaboration with the landowners and managers.

#### *Long-Term Management:*

It is suggested that the New York State Department of Parks Recreation and Historic Preservation assume long term management of invasive plants along the implementation areas (compartments) and that the Parks Department also work with seasonal employees, volunteers, and the aforementioned stakeholder group (Friends of Black River Trail) to maintain the trails integrity and resilience.

### **Cost Analysis for Project Evaluation**

Evaluation of project success would begin after first season of management based on cost estimate of two staff per day and hours reflective of staff time spent conducting initial feasibility study in 2020, 10 hour average per person per compartment (20 hours total for two people) and seasonal staff at \$17.75 per hour and 3% cost of living increase each year then multiplying total number of compartments = **\$1,400.00.**

#### *Cost of Establishing Long-Term Monitoring:*

The cost of establishing a long-term monitoring group such as "*the Friends of The Black River Trail*" will be absorbed in-house by both the SLELO PRISM and NYS Parks Department.

#### *Cost of Long-Term management:*

Assuming the initial control work will be the most expensive component of this effort, it is recommended that long term control costs be absorbed by the main land-owner/manager, NYS Dept. of Parks.

#### **Signage:**

It is recommended that multiple interpretive panels be placed at trail, including one large sign at each parking area with multiple notable native species plaques along the trail or up to four larger interpretive panels strategically placed along Black River Trail in the parking areas. The cost of artwork and manufacturing is estimated at \$1,500 each panel for a total of \$6,000.

## Estimated Project Cost

Based on the objectives as outlined within this study, primarily suppression, restoration, monitoring and evaluation, the estimated 'minimum' cost to implement recommended measures is **\$146,740.00**.

Other cost considerations for implementation of the recommendations outlined would be project staffing estimated at one full time employee (FTE) on temporary (2-year term) basis and appropriate transportation. These are difficult to measure, however, for perspective the combined cost for these is estimated at \$203,549.00. Final cost 'range' is therefore estimated at **\$146,740.00 to \$344,289.00** respectively.

As this study concludes, it is not the intention for the SLELO PRISM to pursue funding for implementation of this project but will continue to evaluate the Black River Trail as a priority conservation area. Given that 58.2% of the land area recognized in this study is publicly owned, it is recommended that the primary landowner or manager take a lead role in securing funding for and implementing the recommendations as outlined in this study. Current data would suggest that this is the New York State Department of Parks, Recreation and Historic Preservation.

## CONCLUSION

The 3.5 miles of the Black River Trail that is adjacent to the river was surveyed to determine plant diversity, invasive species presence, and feasibility of conducting invasive species management and implementing ecological restoration strategies. There were 274 native or non-invasive species found, and 34 invasive species found along this trail. Of the 34 invasive species, 14 were on the SLELO PRISM Nominated Tier Species List. The management of these invasive species will be required to sustain the current high plant species diversity along this trail. Feasibility of conducting invasive species management and restoration will depend on resource availability. Due to the exorbitant cost of managing the invasive species on this trail, a prioritization system was created to allow the trail to be worked on in sections as resources become available. Based on the use of this system, it has been determined that management and restoration of the Black River Trail is feasible and recommended. Additionally, cost saving measures such as use of volunteers, seed sourcing from the trail, and sourcing trees from the Saratoga Tree Nursery, will allow more compartments to be completed with funds available.

## REFERENCES

- Baxter, C. V., Fausch, K. D., & Carl Saunders, W. (2005). Tangled webs: reciprocal flows of invertebrate prey link streams and riparian zones. *Freshwater biology*, 50(2), 201-220. [https://www.researchgate.net/profile/W-Saunders/publication/227642618\\_Tangled\\_Webs\\_Reciprocal\\_Flows\\_of\\_Invertebrate\\_Prey\\_Link\\_Streams\\_and\\_Riparian\\_Zones/links/5a4bd4120f7e9b8284c2e505/Tangled-Webs-Reciprocal-Flows-of-Invertebrate-Prey-Link-Streams-and-Riparian-Zones.pdf](https://www.researchgate.net/profile/W-Saunders/publication/227642618_Tangled_Webs_Reciprocal_Flows_of_Invertebrate_Prey_Link_Streams_and_Riparian_Zones/links/5a4bd4120f7e9b8284c2e505/Tangled-Webs-Reciprocal-Flows-of-Invertebrate-Prey-Link-Streams-and-Riparian-Zones.pdf)
- Beringen, R., van Duinen, G. A., Hoop, L. D., De Hullu, P. C., Matthews, J., Odé, B., ... & Leuven, R. S. E. W. (2017). Risk assessment of the alien Staff-vine (*Celastrus orbiculatus*). <https://repository.ubn.ru.nl/bitstream/handle/2066/169027/169027.pdf>
- Clinton, B. D., Vose, J. M., & Fowler, D. L. (2010). Flat Branch monitoring project: stream water temperature and sediment responses to forest cutting in the riparian zone. *Res. Pap. SRS-51. Asheville, NC: US Department of Agriculture Forest Service, Southern Research Station. 8 p., 51, 1-8.* [https://www.srs.fs.usda.gov/pubs/rp/rp\\_srs051.pdf](https://www.srs.fs.usda.gov/pubs/rp/rp_srs051.pdf)
- Cummins, K. W., Petersen, R. C., Howard, F. O., Wuycheck, J. C., & Holt, V. I. (1973). The utilization of leaf litter by stream detritivores. *Ecology*, 54(2), 336-345. [http://www.efemeroptera-galactica.com/pubs/pub\\_c/pubcumminsk1973p336.pdf](http://www.efemeroptera-galactica.com/pubs/pub_c/pubcumminsk1973p336.pdf)
- Cummins, K. W., Wilzbach, M. A., Gates, D. M., Perry, J. B., & Taliaferro, W. B. (1989). Shredders and riparian vegetation. *BioScience*, 39(1), 24-30. [https://www.researchgate.net/profile/Margaret-Wilzbach/publication/247843438\\_Shredders\\_and\\_Riparian\\_Vegetation/links/53fb75d70cf2dca8fffe722a/Shredders-and-Riparian-Vegetation.pdf](https://www.researchgate.net/profile/Margaret-Wilzbach/publication/247843438_Shredders_and_Riparian_Vegetation/links/53fb75d70cf2dca8fffe722a/Shredders-and-Riparian-Vegetation.pdf)
- Dorner, J. 2002. An introduction to using native plants in restoration projects. Prepared for the Plant Conservation Alliance, Bureau of Land Management, US Department of Interior, ES Environmental Protection Agency. [https://www.fs.fed.us/wildflowers/Native\\_Plant\\_Materials/documents/intronatplant.pdf](https://www.fs.fed.us/wildflowers/Native_Plant_Materials/documents/intronatplant.pdf)
- Fellows, C. S., Clapcott, J. E., Udy, J. W., Bunn, S. E., Harch, B. D., Smith, M. J., & Davies, P. M. (2006). Benthic metabolism as an indicator of stream ecosystem health. *Hydrobiologia*, 572(1), 71-87. <https://eprints.qut.edu.au/72825/1/72825a.pdf>
- Harner, M. J., Crenshaw, C. L., Abelho, M., Stursova, M., Shah, J. J. F., & Sinsabaugh, R. L. (2009). Decomposition of leaf litter from a native tree and an actinorhizal invasive across riparian habitats. *Ecological Applications*, 19(5), 1135-1146. [https://www.researchgate.net/profile/Manuela-Abelho/publication/26749770\\_Decomposition\\_of\\_leaf\\_litter\\_from\\_a\\_native\\_tree\\_and\\_an\\_actinorhizal\\_invasive\\_across\\_riparian\\_habitats/links/5b4f7928a6fdcc8dae2b37bc/Decomposition-of-leaf-litter-from-a-native-tree-and-an-actinorhizal-invasive-across-riparian-habitats.pdf?](https://www.researchgate.net/profile/Manuela-Abelho/publication/26749770_Decomposition_of_leaf_litter_from_a_native_tree_and_an_actinorhizal_invasive_across_riparian_habitats/links/5b4f7928a6fdcc8dae2b37bc/Decomposition-of-leaf-litter-from-a-native-tree-and-an-actinorhizal-invasive-across-riparian-habitats.pdf?)
- Hooper, D. U., & Vitousek, P. M. (1997). The effects of plant composition and diversity on ecosystem processes. *Science*, 277(5330), 1302-1305. <https://pdodds.w3.uvm.edu/teaching/courses/2009-08UVM-300/docs/others/everything/hooper1997a.pdf>

- McNeish, R. E., Benbow, M. E., & McEwan, R. W. (2012). Riparian forest invasion by a terrestrial shrub (*Lonicera maackii*) impacts aquatic biota and organic matter processing in headwater streams. *Biological Invasions*, 14(9), 1881-1893. [https://www.researchgate.net/profile/Rachel\\_Mcneish/publication/257537209\\_Riparian\\_forest\\_invasion\\_by\\_a\\_terrestrial\\_shrub\\_Lonicera\\_maackii\\_impacts\\_aquatic\\_biota\\_and\\_organic\\_matter\\_processing\\_in\\_headwater\\_streams/links/5679b92d08ae40c0e27dd672.pdf](https://www.researchgate.net/profile/Rachel_Mcneish/publication/257537209_Riparian_forest_invasion_by_a_terrestrial_shrub_Lonicera_maackii_impacts_aquatic_biota_and_organic_matter_processing_in_headwater_streams/links/5679b92d08ae40c0e27dd672.pdf)
- Merritt, R. W., & Cummins, K. W. (2006). Trophic relationships of macroinvertebrates. In *Methods in stream ecology* (pp. 585-601). Academic Press.. [https://www.researchgate.net/publication/312663370\\_Trophic\\_Relationships\\_of\\_Macroinvertebrates](https://www.researchgate.net/publication/312663370_Trophic_Relationships_of_Macroinvertebrates)
- Miller, J. H., & Schelhas, J. (2008). 15 Adaptive Collaborative Restoration: A Key Concept in Invasive Plant Management. *Invasive plants and forest ecosystems*, 251. [https://www.srs.fs.usda.gov/pubs/ja/ja\\_miller119.pdf](https://www.srs.fs.usda.gov/pubs/ja/ja_miller119.pdf)
- New York Flora Atlas (2021). New York Flora Atlas - User's Guide. <https://newyork.plantatlas.usf.edu/UserGuide.aspx#acceptedexcludedtaxa>
- NYS DEC (2021). Fishing and Canoeing the Black River in Jefferson, Lewis and Oneida Counties <https://www.dec.ny.gov/outdoor/40570.html>
- Pimentel, D., Zuniga, R., & Morrison, D. (2005). Update on the environmental and economic costs associated with alien-invasive species in the United States. *Ecological economics*, 52(3), 273-288. [https://www.forest-trends.org/wp-content/uploads/imported/Pimentel%20et%20al\\_2005%20Update%20on%20Envir%20%26%20Econ%20costs%20of%20invasives.pdf](https://www.forest-trends.org/wp-content/uploads/imported/Pimentel%20et%20al_2005%20Update%20on%20Envir%20%26%20Econ%20costs%20of%20invasives.pdf)
- Polis, G. A., & Strong, D. R. (1996). Food web complexity and community dynamics. *The American Naturalist*, 147(5), 813-846. <http://max2.es.e.u-psud.fr/epc/conservation/PDFs/HIPE/Polis1996.pdf>
- Roth, T. R., Westhoff, M. C., Huwald, H., Huff, J. A., Rubin, J. F., Barrenetxea, G., ... & Parlange, M. B. (2010). Stream temperature response to three riparian vegetation scenarios by use of a distributed temperature validated model. *Environmental science & technology*, 44(6), 2072-2078. [https://infoscience.epfl.ch/record/148623/files/Roth\\_et\\_al%2C%202010.pdf](https://infoscience.epfl.ch/record/148623/files/Roth_et_al%2C%202010.pdf)
- Singh, K. P. (2005). Invasive alien species and biodiversity in India. *Current Science*, 88(4), 539. [https://scholar.google.com/scholar?hl=en&as\\_sdt=0%2C33&q=Invasive+alien+species+and+biodiversity+in+India.+Current+Science&btnG=](https://scholar.google.com/scholar?hl=en&as_sdt=0%2C33&q=Invasive+alien+species+and+biodiversity+in+India.+Current+Science&btnG=)
- Smith, R. (2020). Urban Forest Sustainability Guide. SLELO PRISM Website. <https://www.sleloinvasives.org/wp-content/uploads/2020/12/Urban-Forest-Sustainability-Guide.pdf>
- Spyreas, G. (2019). Floristic Quality Assessment: a critique, a defense, and a primer. *Ecosphere*, 10(8), e02825. <https://esajournals.onlinelibrary.wiley.com/doi/epdf/10.1002/ecs2.2825>



Tank, J. L., Rosi-Marshall, E. J., Griffiths, N. A., Entekin, S. A., & Stephen, M. L. (2010). A review of allochthonous organic matter dynamics and metabolism in streams. *Journal of the North American Benthological Society*, 29(1), 118-146. <https://bioone.org/journals/journal-of-the-north-american-benthological-society/volume-29/issue-1/08-170.1/A-review-of-allochthonous-organic-matter-dynamics-and-metabolism-in/10.1899/08-170.1.pdf>

United State Department of Agriculture, U.S. Forest Service (2021). Invasive Plants. <https://www.fs.fed.us/wildflowers/invasives/>

Vaughn, K. J., Porensky, L. M., Wilkerson, M. L., Balachowski, J., Pepper, E., Riginos, C. & Young, T. P. (2010) Restoration Ecology. *Nature Education Knowledge* 3(10):66. <https://www.nature.com/scitable/knowledge/library/restoration-ecology-13339059/>

Wan, N. F., Zheng, X. R., Fu, L. W., Kiær, L. P., Zhang, Z., Chaplin-Kramer, R., ... & Li, B. (2020). Global synthesis of effects of plant species diversity on trophic groups and interactions. *Nature plants*, 6(5), 503-510. [https://www.researchgate.net/profile/Nian-Feng-Wan/publication/351098707\\_Global\\_synthesis\\_of\\_effects\\_of\\_plant\\_species\\_diversity\\_on\\_trophic\\_groups\\_and\\_interactions/links/6086afc32fb9097c0c0d32d2/Global-synthesis-of-effects-of-plant-species-diversity-on-trophic-groups-and-interactions.pdf](https://www.researchgate.net/profile/Nian-Feng-Wan/publication/351098707_Global_synthesis_of_effects_of_plant_species_diversity_on_trophic_groups_and_interactions/links/6086afc32fb9097c0c0d32d2/Global-synthesis-of-effects-of-plant-species-diversity-on-trophic-groups-and-interactions.pdf)

Weldy, Troy, David Werier, and Andrew Nelson. 2021 New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York. <https://newyork.plantatlas.usf.edu/>

Xu, H., Ding, H., Li, M., Qiang, S., Guo, J., Han, Z., ... & Wan, F. (2006). The distribution and economic losses of alien species invasion to China. *Biological Invasions*, 8(7), 1495-1500. [https://www.researchgate.net/profile/Shunping-He/publication/225332920\\_The\\_distribution\\_and\\_economic\\_losses\\_of\\_alien\\_species\\_invasion\\_to\\_China/links/00b7d52791f960a199000000/The-distribution-and-economic-losses-of-alien-species-invasion-to-China.pdf](https://www.researchgate.net/profile/Shunping-He/publication/225332920_The_distribution_and_economic_losses_of_alien_species_invasion_to_China/links/00b7d52791f960a199000000/The-distribution-and-economic-losses-of-alien-species-invasion-to-China.pdf)

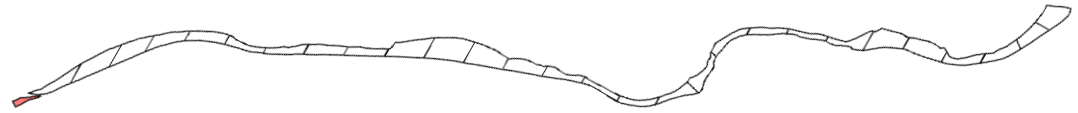
Young, R. G., Matthaei, C. D., & Townsend, C. R. (2008). Organic matter breakdown and ecosystem metabolism: functional indicators for assessing river ecosystem health. *Journal of the North American Benthological Society*, 27(3), 605-625. <https://icm.landcareresearch.co.nz/knowledgebase/publications/public/Youngetal2008.pdf>

# APPENDIX

## Appendix A: Compartment Summary Table

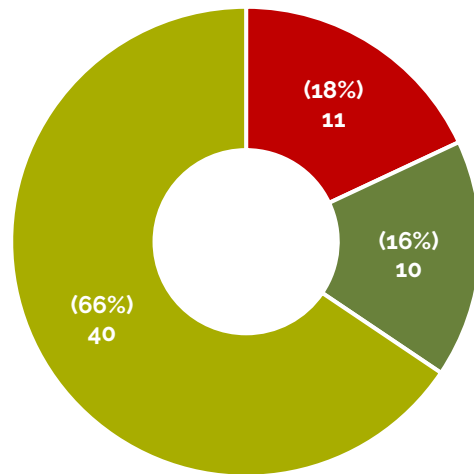
| Compartment | FQI Value | FQI Category | FQI Quantile | EV Richness | EV Quantile | Native Species Score<br>(FQI Quantile + EV Quantile) | Tier Abundance<br>(acres) | Tier Quantile | Non-Nominated Tier Species Abundance (acres) | Non-Nominated Tier Species Quantile | Invasive Species Score<br>(80% Tier + 20% Non-Tier) | Summary Score<br>(80% Invasive Score + 20% Native Score) | Final Ranking Quantile |
|-------------|-----------|--------------|--------------|-------------|-------------|--|---------------------------|---------------|--|-------------------------------------|---|--|------------------------|
| 13          | 41        | Natural      | 1            | 8           | 1           | 1  | 0.18                      | 27            | 0.36   | 9                                   | 23  | 1  | 1                      |
| 14          | 38        | Natural      | 1            | 7           | 2           | 1  | 0.171                     | 28            | 0.11   | 25                                  | 27  | 1  | 1                      |
| 15          | 36        | Natural      | 1            | 4           | 3           | 1  | 0.195                     | 25            | 0.20   | 21                                  | 24  | 1  | 1                      |
| 11          | 29        | High         | 6            | 3           | 4           | 10   | 1.848                     | 1             | 0.50   | 4                                   | 2   | 3  | 2                      |
| 2           | 30        | High         | 5            | 4           | 3           | 8  | 1.353                     | 3             | 0.49   | 5                                   | 3   | 4  | 3                      |
| 4           | 25        | High         | 9            | 4           | 3           | 12   | 1.794                     | 2             | 0.31   | 12                                  | 4   | 6  | 4                      |
| 24          | 25        | High         | 9            | 3           | 4           | 13   | 1.11                      | 5             | 0.67   | 2                                   | 4   | 6  | 4                      |
| 3           | 23        | High         | 10           | 2           | 5           | 15   | 1.326                     | 4             | 0.20   | 20                                  | 7   | 9  | 5                      |
| 6           | 29        | High         | 6            | 4           | 3           | 9  | 0.768                     | 7             | 0.14   | 23                                  | 10  | 10   | 6                      |
| 10          | 28        | High         | 7            | 2           | 5           | 12   | 0.615                     | 10            | 0.49   | 6                                   | 9   | 10   | 6                      |
| 1           | 22        | High         | 11           | 0           | 7           | 18   | 0.648                     | 9             | 0.29   | 13                                  | 10  | 11   | 7                      |
| 18          | 35        | High         | 2            | 2           | 5           | 7  | 0.66                      | 8             | 0.07   | 27                                  | 12  | 11   | 7                      |
| 5           | 23        | High         | 10           | 1           | 6           | 16   | 0.525                     | 12            | 0.38   | 8                                   | 11  | 12   | 8                      |
| 22          | 26        | High         | 8            | 0           | 7           | 15   | 0.552                     | 11            | 0.28   | 14                                  | 12  | 12   | 8                      |
| 23          | 25        | High         | 9            | 0           | 7           | 16   | 0.48                      | 14            | 0.72   | 1                                   | 11  | 12   | 8                      |
| 12          | 30        | High         | 5            | 7           | 2           | 7  | 0.396                     | 17            | 0.40   | 7                                   | 15  | 13   | 9                      |
| 17          | 31        | High         | 4            | 3           | 4           | 8  | 0.456                     | 16            | 0.34   | 10                                  | 15  | 13   | 9                      |
| 8           | 29        | High         | 6            | 1           | 6           | 12   | 0.504                     | 13            | 0.22   | 18                                  | 14  | 14   | 10                     |
| 9           | 32        | High         | 3            | 1           | 6           | 9  | 0.48                      | 15            | 0.18   | 22                                  | 16  | 15   | 11                     |
| 19          | 31        | High         | 4            | 3           | 4           | 8  | 0.324                     | 21            | 0.22   | 17                                  | 20  | 18   | 12                     |
| 26          | 22        | High         | 11           | 1           | 6           | 17   | 0.33                      | 20            | 0.33   | 11                                  | 18  | 18   | 12                     |
| 16          | 31        | High         | 4            | 2           | 5           | 9  | 0.225                     | 24            | 0.27   | 15                                  | 22  | 20   | 13                     |
| 21          | 28        | High         | 7            | 2           | 5           | 12   | 0.234                     | 22            | 0.12   | 24                                  | 22  | 20   | 13                     |
| 25          | 22        | High         | 11           | 0           | 7           | 18   | 0.36                      | 18            | 0.06   | 28                                  | 20  | 20   | 13                     |
| 7           | 28        | High         | 7            | 4           | 3           | 10   | 0.228                     | 23            | 0.06   | 29                                  | 24  | 21   | 14                     |
| 20          | 30        | High         | 5            | 2           | 5           | 10   | 0.192                     | 26            | 0.24   | 16                                  | 24  | 21   | 14                     |
| 0           | 23        | High         | 10           | 2           | 5           | 15   | 0.147                     | 29            | 0.08   | 26                                  | 28  | 26   | 15                     |
| 27          | 17        | Low          | 999          | 0           | 7           | 999  | 0.345                     | 19            | 0.21   | 19                                  | 19  | 999  | 999                    |
| 28          | 18        | Low          | 999          | 0           | 7           | 999  | 0.864                     | 6             | 0.58   | 3                                   | 5   | 999  | 999                    |

## **Appendix B: Compartment Specific Data Summaries**



## Compartment o

Segment o is approximately 0.7 acres and includes the southern parking area/access for the BRT. A total of 61 species were documented. Eleven (18%) were invasive, including seven nominated tiered species. The native species assemblage included 10 tree and 40 herbaceous species. Compartment o had an FQI score of 23 (high) and mean C value of 3.29. Two exploitatively vulnerable species were present.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**50**

**Invasive  
Species**

**11**

### Nominated Tier Invasive Species:

#### Tier 3

- Common reed grass
- Oriental Bittersweet

#### Tier 4

- Common Buckthorn
- Curly Pondweed; Curly-leaved Pondweed
- Fly Honeysuckle, Showy pink honeysuckle, Bell's honeysuckle
- Leafy Spurge, Wolf's Milk
- Morrow Honeysuckle; Morrows honeysuckle

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 1

Figure. Classification of species documented in segment 0.

| Invasive Species  | Abundance                        | Cover (%) |
|---|----------------------------------|-----------|
| Colt's Foot, Coltsfoot                                      | Trace (Single plant/clump)       | <5        |
| Common Buckthorn  | Dense plants/clumps              | <5        |
| Common Reed, phragmites, Common reed grass                  | Trace (Single plant/clump)       | <5        |
| Curly Pondweed; Curly-leaved Pondweed                       | Trace (Single plant/clump)       | <5        |
| Fly Honeysuckle, Showy pink honeysuckle, Bell's honeysuckle | Sparse (Scattered plants/clumps) | <5        |
| Garlic Mustard  | Trace (Single plant/clump)       | <5        |
| Great Mullein, Common mullein                               | Trace (Single plant/clump)       | <5        |
| Leafy Spurge, Wolf's Milk                                   | Sparse (Scattered plants/clumps) | <5        |
| Morrow Honeysuckle; Morrows honeysuckle                     | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet  | Trace (Single plant/clump)       | <5        |
| Tufted Vetch  | Trace (Single plant/clump)       | <5        |

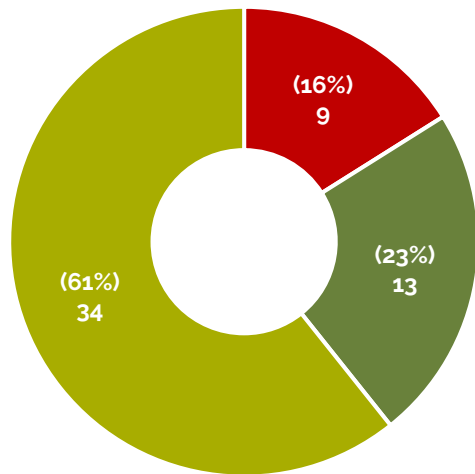
| Tree Species       |
|--------------------|
| American basswood  |
| Box elder          |
| Eastern cottonwood |
| Hop hornbeam       |
| Northern red oak   |
| Shagbark hickory   |
| Slippery elm       |
| Sugar maple        |
| Trembling aspen    |
| White ash          |

| Herbaceous Species       |                            |                          |
|--------------------------|----------------------------|--------------------------|
| Alternate leaved dogwood | Heart-leaved aster         | River grape              |
| Black medic              | Hedge bedstraw             | Sensitive fern           |
| Black raspberry          | Herb Robert                | Silky dogwood            |
| Bladder campion          | Indian hemp                | Silky willow             |
| Bulblet fern             | Kentucky blue grass        | Staghorn sumac           |
| Common milkweed          | Marginal woodfern          | Sulfur cinquefoil        |
| Common ragweed           | Meadow buttercup           | Tall goldenrod           |
| Common soapwort          | Orchard grass              | Violet spp.              |
| Common white snakeroot   | Oxeye daisy                | Virginia creeper         |
| Common/field horsetail   | Poison ivy spp.            | White clover             |
| Early meadow rue         | Prickly gooseberry         | Wild carrot              |
| English plantain         | Purple-flowering raspberry | Wrinkle-leaved goldenrod |
| Grass-leaved stitchwort  | Red clover                 |                          |
| Greater burdock          | Red osier dogwood          |                          |



## Compartment 1

Segment 1 is approximately 2.4 acres and is the first trail section after leaving the southern parking area/access. A total of 56 species were documented. Nine (16%) were invasive, including five nominated tiered species. The native species assemblage included 13 tree and 34 herbaceous species. Compartment 1 had an FQI score of 22 (high) and mean C value of 3.24. No exploitatively vulnerable were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**47**

**Invasive  
Species**

**9**

### Nominated Tier Invasive Species:

#### Tier 3

- Yellow Iris
- Oriental Bittersweet

#### Tier 4

- Morrow Honeysuckle; Morrows honeysuckle
- Leafy Spurge, Wolf's Milk
- Common Buckthorn

### Mapped Features:

- Culverts – 1
- Tributaries – 1
- Other Human Features – 3

Figure 1. Classification of species documented in segment 0.

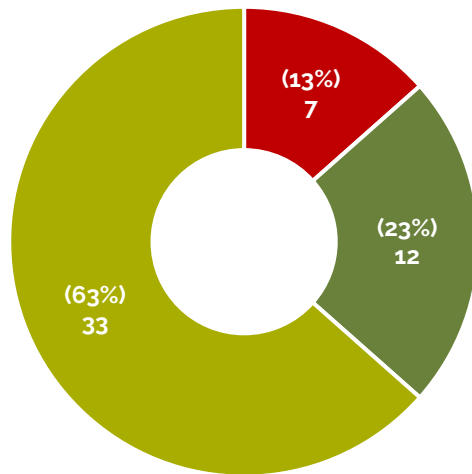
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing/Bittersweet Nightshade, Trailing nightshade               | Sparse (Scattered plants/clumps) | <5        |
| Colt's Foot, Coltsfoot   | Dense plants/clumps              | <5        |
| Common Buckthorn   | Linearly scattered               | <5        |
| Leafy Spurge, Wolf's Milk  | Trace (Single plant/clump)       | <5        |
| Morrow Honeysuckle; Morrows honeysuckle                            | Linearly scattered               | <5        |
| Oriental Bittersweet   | Linearly scattered               | <5        |
| Reed Canary Grass  | Sparse (Scattered plants/clumps) | <5        |
| White Sweet-clover   | No Data                          | <5        |
| Yellow Iris, Water-flag, Yellow flag iris, Water flag, Yellow flag | Trace (Single plant/clump)       | <5        |

| Tree Species       |
|--------------------|
| American basswood  |
| bitternut hickory  |
| black willow       |
| box elder          |
| eastern cottonwood |
| gray birch         |
| northern red oak   |
| Red maple, common  |
| shagbark hickory   |
| slippery elm       |
| sugar maple        |
| white ash          |
| wild black cherry  |

| Herbaceous Species     |                    |                          |
|------------------------|--------------------|--------------------------|
| Black medic            | Herb robert        | Silky willow             |
| Black raspberry        | Indian Hemp        | Spotted Joe pye weed     |
| Bladder campion        | Large-leaved aster | Staghorn sumac           |
| Blueberry spp          | Lesser burdock     | Strawberry spp.          |
| Canada anemone         | Meadow buttercup   | Sweet-scented bedstraw   |
| Common milkweed        | Meadow salsify     | Tall goldenrod           |
| Common plantain        | Orange hawkweed    | Virginia creeper         |
| Common/Field horsetail | Orchard grass      | White sweet clover       |
| Field mint             | Poison ivy spp.    | Wild carrot              |
| Fringed loosestrife    | Red clover         | Wrinkle-leaved goldenrod |
| Guelder rose           | River grape        |                          |
| Heart-leaved aster     | Sensitive fern     |                          |

## Compartment 2

Segment 2 is approximately 4.1 acres and is the second trail section after leaving the southern parking area/access. A total of 52 species were documented. Seven (13%) were invasive, including three nominated tiered species. The native species assemblage included 12 tree and 33 herbaceous species. Compartment 2 had an FQI score of 30 (high) and mean C value of 4.48. Four exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**45**

**Invasive  
Species**

**7**

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Honeysuckle (species unknown)
- Common Buckthorn

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – None

Figure. Classification of species documented in segment 0.

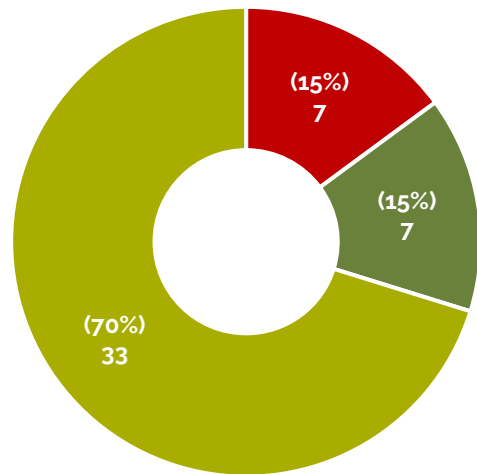
| Invasive Species                                     | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing/Bittersweet Nightshade, Trailing nightshade | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn                                     | Linearly scattered               | 15        |
| Creeping Jenny; Moneywort                            | Linearly scattered               | <5        |
| Garlic Mustard                                       | Trace (Single plant/clump)       | <5        |
| Honeysuckle (species unknown)                        | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet                                 | Linearly scattered               | 15        |
| Reed Canary Grass                                    | Trace (Single plant/clump)       | <5        |

| Tree Species       |
|--------------------|
| American basswood  |
| bitternut hickory  |
| black willow       |
| box elder          |
| eastern cottonwood |
| northern red oak   |
| Red maple, common  |
| shagbark hickory   |
| slippery elm       |
| sugar maple        |
| white ash          |
| wild black cherry  |

| Herbaceous Species             |                           |                     |
|--------------------------------|---------------------------|---------------------|
| alternate-leaved dogwood       | Guelder rose              | sensitive fern      |
| bladder sedge                  | heart-leaved aster        | skunk cabbage       |
| bloodroot                      | herb Robert               | staghorn sumac      |
| blue flag                      | hog peanut                | tall goldenrod      |
| Canada anemone                 | Jack-in-the-pulpit        | tall meadow rue     |
| common golden Alexanders       | moonseed                  | virgin's bower      |
| Common/field horsetail         | northern bugleweed        | Virginia creeper    |
| eastern enchanter's nightshade | northern lady fern        | water forget-me-not |
| false nettle                   | ostrich fern              | white turtlehead    |
| false Solomon's seal           | Pennsylvania bitter cress | wild black currant  |
| Gray's sedge                   | Philadelphia fleabane     | wood nettle         |

### Compartment 3

Segment 2 is approximately 3.4 acres and is the third trail section after leaving the southern parking area/access. A total of 47 species were documented. Seven (15%) were invasive, including five nominated tiered species. The native species assemblage included 7 tree and 33 herbaceous species. Compartment 3 had an FQI score of 23 (high) and mean C value of 3.62. Two exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

#### Mapped Features:

- Culverts – X
- Tributaries – X
- Other Human Features – XX

**Non-Invasive  
Species**

**40**

**Invasive  
Species**

**7**

#### Nominated Tier Invasive Species:

##### Tier 3

- Oriental Bittersweet

##### Tier 4

- Morrow Honeysuckle; Morrows honeysuckle
- Honeysuckle (species unknown)
- Fly/Showy pink/Bell's honeysuckle
- Common Buckthorn



| Invasive Species  | Abundance                  | Cover (%) |
|---|----------------------------|-----------|
| Common Barberry, European Barberry                          | Trace (Single plant/clump) | <5        |
| Common Buckthorn  | Linearly scattered         | 15        |
| Fly Honeysuckle, Showy pink honeysuckle, Bell's honeysuckle | Trace (Single plant/clump) | <5        |
| Garlic Mustard  | Dense plants/clumps        | <5        |
| Honeysuckle (species unknown)                               | Trace (Single plant/clump) | <5        |
| Morrow Honeysuckle; Morrows honeysuckle                     | Trace (Single plant/clump) | <5        |
| Oriental Bittersweet  | Linearly scattered         | 15        |

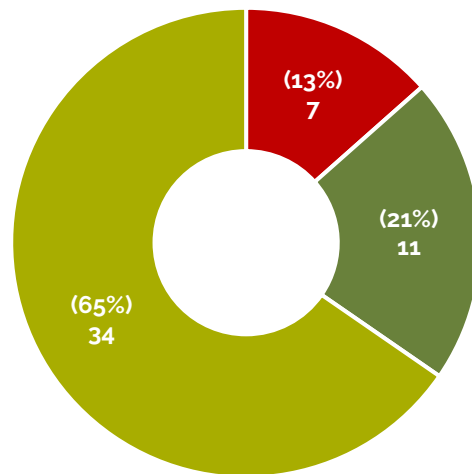
| Tree Species      |
|-------------------|
| bitternut hickory |
| box elder         |
| Red maple, common |
| slippery elm      |
| sugar maple       |
| white ash         |
| wild black cherry |

| Herbaceous Species             |                     |                       |
|--------------------------------|---------------------|-----------------------|
| alternate-leaved dogwood       | graceful sedge      | northern lady fern    |
| annual daisy fleabane          | greater burdock     | Philadelphia fleabane |
| black medic                    | green dragon        | poison ivy spp.       |
| black raspberry                | Guelder rose        | sensitive fern        |
| bladder sedge                  | herb Robert         | staghorn sumac        |
| Canada anemone                 | Jack-in-the-pulpit  | strawberry spp.       |
| Canada onion                   | Jumpseed            | tall goldenrod        |
| Common/field horsetail         | Kentucky blue grass | tall meadow rue       |
| common white snakeroot         | lance-leaved aster  | Virginia creeper      |
| eastern enchanter's nightshade | mad dog skullcap    | white avens           |
| fringed loosestrife            | mouse ear chickweed | wild black currant    |



## Compartment 4

Segment 4 is approximately 2.6 acres and is the fourth trail section after leaving the southern parking area/access. A total of 45 species were documented. Seven (13%) were invasive, including three nominated tiered species. The native species assemblage included 11 tree and 34 herbaceous species. Compartment 4 had an FQI score of 25 (high) and mean C value of 3.70. Four exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**45**

**Invasive  
Species**

**7**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – X
- Tributaries – X
- Other Human Features – XX

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Morrow Honeysuckle; Morrows honeysuckle
- Common Buckthorn

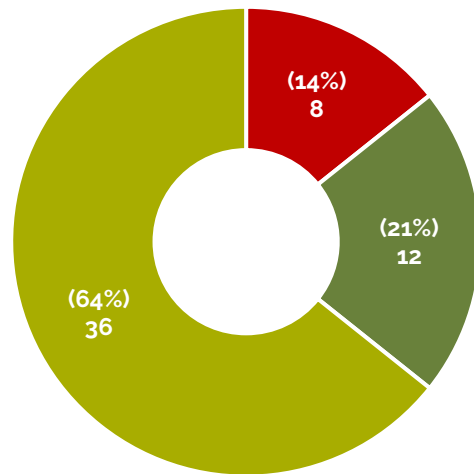
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Trace (Single plant/clump)       | <5        |
| Common Buckthorn   | Linearly scattered               | <5        |
| Creeping Jenny; Moneywort  | Trace (Single plant/clump)       | <5        |
| Garlic Mustard   | Trace (Single plant/clump)       | <5        |
| Morrow Honeysuckle; Morrows honeysuckle                          | Sparse (Scattered plants/clumps) | <5        |
| Multiflora Rose; Rambler Rose                                    | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet   | Monoculture                      | 63        |

| Tree Species         | Herbaceous Species             |                     |                        |
|----------------------|--------------------------------|---------------------|------------------------|
| American basswood    | black medic                    | Guelder rose        | sensitive fern         |
| big-toothed aspen    | black raspberry                | herb Robert         | staghorn sumac         |
| bitternut hickory    | bloodroot                      | hog peanut          | sweet-scented bedstraw |
| box elder            | Canada anemone                 | Jack-in-the-pulpit  | tall goldenrod         |
| eastern cottonwood   | Canada onion                   | lance-leaved aster  | tall meadow rue        |
| northern red oak     | common carrion flower          | large-leaved aster  | violet spp.            |
| northern white cedar | common milkweed                | northern lady fern  | Virginia creeper       |
| slippery elm         | common white snakeroot         | oldfield cinquefoil | wild black currant     |
| sugar maple          | common yellow wood sorrel      | ostrich fern        | wild carrot            |
| white ash            | eastern enchanter's nightshade | poison ivy spp.     | yellow hawkweed        |
| wild black cherry    | false Solomon's seal           | red baneberry       |                        |
|                      | fringed loosestrife            | river grape         |                        |



## Compartment 5

Segment 5 is approximately 2.5 acres and is the fifth trail section after leaving the southern parking area/access. A total of 56 species were documented. Eight (14%) were invasive, including three nominated tiered species. The native species assemblage included 12 tree and 36 herbaceous species. Compartment 5 had an FQI score of 23 (high) and mean C value of 3.33. One exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

**Non-Invasive  
Species**

**48**

**Invasive  
Species**

**8**

### Mapped Features:

- Culverts – X
- Tributaries – X
- Other Human Features – XX

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Morrow Honeysuckle; Morrows honeysuckle
- Common Buckthorn

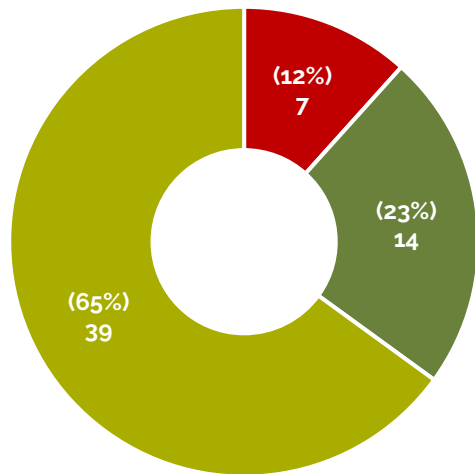
| Invasive Species                        | Abundance                        | Cover (%) |
|---|----------------------------------|-----------|
| Colt's Foot, Coltsfoot                  | Trace (Single plant/clump)       | <5        |
| Common Buckthorn                        | Monoculture                      | 15        |
| Creeping Jenny; Moneywort               | Sparse (Scattered plants/clumps) | <5        |
| Eastern Helleborine                     | Trace (Single plant/clump)       | <5        |
| Garlic Mustard                          | Trace (Single plant/clump)       | <5        |
| Morrow Honeysuckle; Morrows honeysuckle | Sparse (Scattered plants/clumps) | <5        |
| Multiflora Rose; Rambler Rose           | Trace (Single plant/clump)       | <5        |
| Oriental Bittersweet                    | Trace (Single plant/clump)       | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| bitternut hickory    |
| box elder            |
| eastern cottonwood   |
| northern red oak     |
| northern white cedar |
| slippery elm         |
| sugar maple          |
| trembling aspen      |
| white ash            |
| white pine           |
| wild black cherry    |

| Herbaceous Species             |                          |                          |
|--------------------------------|--------------------------|--------------------------|
| alternate-leaved dogwood       | European mountain ash    | sensitive fern           |
| annual blue grass              | fringed loosestrife      | spreading dogbane        |
| black medic                    | graceful sedge           | staghorn sumac           |
| Canada anemone                 | heart-leaved aster       | strawberry spp.          |
| common blackberry              | helleborine, weed orchid | sweet-scented bedstraw   |
| Common/field horsetail         | hog peanut               | tall anemone/thimbleweed |
| common milkweed                | large-leaved aster       | tall lettuce             |
| common soapwort, bouncing bet  | northern bugleweed       | tall meadow rue          |
| common speedwell               | oxeye daisy              | violet spp.              |
| common yellow wood sorrel      | poison ivy spp.          | Virginia creeper         |
| deer-tongue rosette grass      | river grape              | wild black currant       |
| eastern enchanter's nightshade | royal fern               | yellow hawkweed          |

## Compartment 6

Segment 6 is approximately 2.5 acres and is the sixth trail section after leaving the southern parking area/access. A total of 60 species were documented. Seven (12%) were invasive, including four nominated tiered species. The native species assemblage included 14 tree and 39 herbaceous species. Compartment 6 had an FQI score of 29 (high) and mean C value of 3.92. Four exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 2
- Tributaries – 3
- Other Human Features – 2

**Non-Invasive  
Species**

**53**

**Invasive  
Species**

**7**

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental bittersweet

#### Tier 4

- Purple Loosestrife
- Morrow Honeysuckle; Morrows honeysuckle
- Common Buckthorn



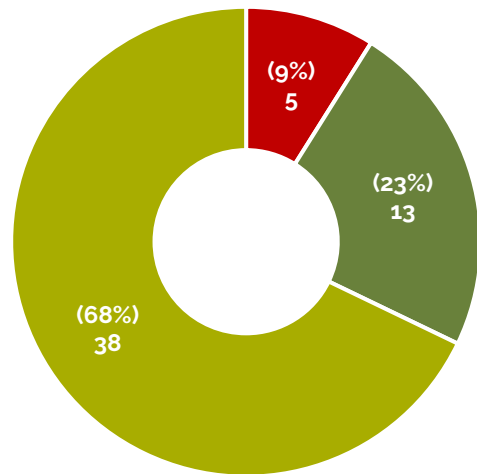
| Invasive Species                        | Abundance | Cover (%) |
|---|-----------|-----------|
| Colt's Foot, Coltsfoot                  | No Data   | <5        |
| Common Buckthorn                        | No Data   | 15        |
| Creeping Jenny; Moneywort               | No Data   | <5        |
| Garlic Mustard                          | No Data   | <5        |
| Morrow Honeysuckle; Morrows honeysuckle | No Data   | 15        |
| Oriental Bittersweet                    | No Data   | 15        |
| Purple Loosestrife                      | No Data   | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| bitternut hickory    |
| black willow         |
| box elder            |
| eastern cottonwood   |
| northern red oak     |
| northern white cedar |
| paper birch          |
| slippery elm         |
| sugar maple          |
| trembling aspen      |
| white ash            |
| wild black cherry    |

| Herbaceous Species               |                    |                          |
|----------------------------------|--------------------|--------------------------|
| American bugleweed/<br>horehound | Guelder rose       | royal fern               |
| bladdernut                       | heart-leaved aster | sensitive fern           |
| blue flag                        | hog peanut         | skunk cabbage            |
| Canada anemone                   | Indian hemp        | smooth arrowwood         |
| Canada onion                     | marsh fern         | spotted jewelweed        |
| coastal shadbush                 | meadow buttercup   | spotted Joe Pye<br>weed  |
| common golden Alexanders         | meadow salsify     | tall goldenrod           |
| common/field horsetail           | northern bugleweed | tall meadow rue          |
| common milkweed                  | orchard grass      | thyme-leaved<br>sandwort |
| eastern enchanter's nightshade   | oxeye daisy        | virgin's bower           |
| field cress                      | poison ivy spp.    | Virginia creeper         |
| field mint                       | red baneberry      | white turtlehead         |
| green arrow arum/tuckahoe        | river grape        | wood nettle              |

## Compartment 7

Segment 7 is approximately 1.9 acres and is the seventh trail section after leaving the southern parking area/access. A total of 56 species were documented. Five (9%) were invasive, including four nominated tiered species. The native species assemblage included 13 tree and 38 herbaceous species. Compartment 7 had an FQI score of 28 (high) and mean C value of 3.9. Four exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 1
- Tributaries – 1
- Other Human Features – 1

**Non-Invasive  
Species**

**51**

**Invasive  
Species**

**5**

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental bittersweet

#### Tier 4

- Spotted Starthistle, Spotted Knapweed
- Honeysuckle (species unknown)
- Glossy/European Buckthorn

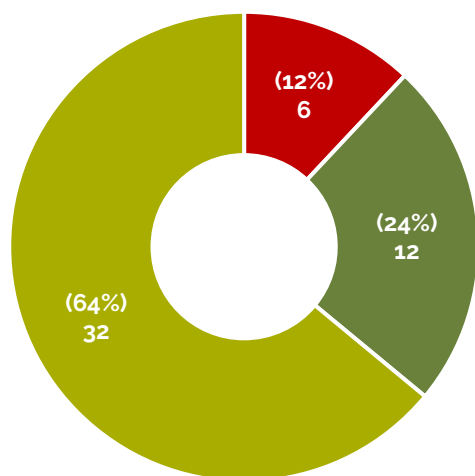
| Invasive Species                                       | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Colt's Foot, Coltsfoot                                 | Dense plants/clumps              | <5        |
| Glossy Buckthorn, European Buckthorn, Smooth buckthorn | Linearly scattered               | <5        |
| Honeysuckle (species unknown)                          | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet                                   | Sparse (Scattered plants/clumps) | <5        |
| Spotted Starthistle, Spotted Knapweed                  | Sparse (Scattered plants/clumps) | <5        |

| Tree Species         | Herbaceous Species                |                               |                                 |
|----------------------|-----------------------------------|-------------------------------|---------------------------------|
| American basswood    | annual daisy fleabane             | evergreen wood fern           | river grape                     |
| big-toothed aspen    | big bluestem                      | fringed loosestrife           | sensitive fern                  |
| bitternut hickory    | black medic                       | groundnut                     | spotted Joe Pye weed            |
| black willow         | boneset                           | Guelder rose                  | sweet-scented bedstraw          |
| eastern cottonwood   | bulblet fern                      | heart-leaved aster            | tall<br>anemone/thimbleweed     |
| northern red oak     | Canada anemone                    | hog peanut                    | tall flat-topped white<br>aster |
| northern white cedar | Christmas fern                    | Indian hemp                   | tall goldenrod                  |
| paper birch          | coastal shadbush                  | Jack-in-the-pulpit            | tall meadow rue                 |
| slippery elm         | common dandelion                  | lance-leaved aster            | Virginia creeper                |
| sugar maple          | Common/field horsetail            | marginal wood fern            | white wood aster                |
| trembling aspen      | creeping bellflower               | marsh hedge nettle            | wild basil                      |
| white ash            | eastern bracken fern              | northern bugleweed            | wild carrot                     |
| wild black cherry    | eastern enchanter's<br>nightshade | purple-flowering<br>raspberry |                                 |



## Compartment 8

Segment 8 is approximately 2.4 acres and is the eighth trail section after leaving the southern parking area/access. A total of 50 species were documented. Six (12%) were invasive, including three nominated tiered species. The native species assemblage included 12 tree and 32 herbaceous species. Compartment 8 had an FQI score of 29 (high) and mean C value of 4.39. One exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**44**

**Invasive  
Species**

**6**

Figure. Classification of species documented in segment 8.

### Mapped Features:

- Culverts – 0
- Tributaries – 2
- Other Human Features – 3

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Honeysuckle (species unknown)
- Common Buckthorn

| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Linearly scattered               | <5        |
| Colt's Foot, Coltsfoot   | Dense plants/clumps              | <5        |
| Common Barberry, European Barberry                               | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn   | Dense plants/clumps              | 15        |
| Honeysuckle (species unknown)                                    | Dense plants/clumps              | <5        |
| Oriental Bittersweet   | Linearly scattered               | <5        |

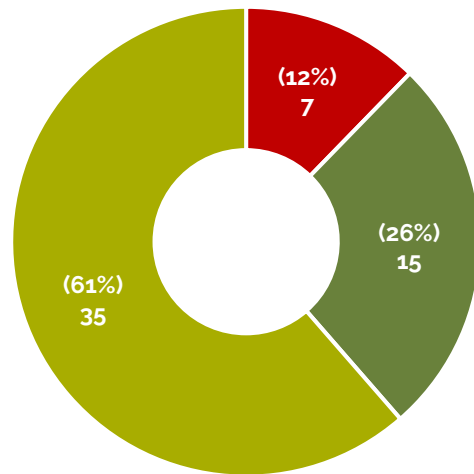
| Tree Species      |
|-------------------|
| American basswood |
| American beech    |
| bitternut hickory |
| black willow      |
| box elder         |
| hop hornbeam      |
| northern red oak  |
| slippery elm      |
| sugar maple       |
| trembling aspen   |
| white ash         |
| wild black cherry |

| Herbaceous Species             |                            |                   |
|--------------------------------|----------------------------|-------------------|
| American common/ground juniper | false nettle               | river grape       |
| American mountain ash          | false Solomon's seal       | silky dogwood     |
| American red raspberry         | fringed loosestrife        | skunk cabbage     |
| bladder campion                | hay-scented fern           | spreading dogbane |
| bladdernut                     | heart-leaved aster         | staghorn sumac    |
| Canada anemone                 | herb Robert                | tall meadow rue   |
| common blackberry              | Jack-in-the-pulpit         | Virginia creeper  |
| common dandelion               | maple-leaved viburnum      | white turtlehead  |
| common elderberry              | poison ivy spp.            | wild basil        |
| common/field horsetail         | prickly gooseberry         | yellow foxtail    |
| common yellow wood sorrel      | purple-flowering raspberry |                   |



## Compartment 9

Segment 9 is approximately 2.0 acres and is the ninth trail section after leaving the southern parking area/access. A total of 57 species were documented. Seven (12%) were invasive, including four nominated tiered species. The native species assemblage included 15 tree and 35 herbaceous species. Compartment 9 had an FQI score of 32 (high) and mean C value of 4.52. One exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**50**

**Invasive  
Species**

**7**

Figure. Classification of species documented in segment 9.

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 2

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Purple Loosestrife
- Honeysuckle (species unknown)
- Common Buckthorn



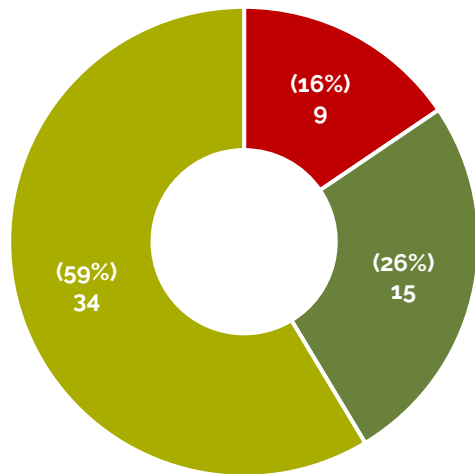
| Invasive Species   | Abundance                  | Cover (%) |
|--|----------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Trace (Single plant/clump) | <5        |
| Common Buckthorn   | Dense plants/clumps        | 15        |
| Garlic Mustard   | Dense plants/clumps        | <5        |
| Great Mullein, Common mullein                                    | Trace (Single plant/clump) | <5        |
| Honeysuckle (species unknown)                                    | Dense plants/clumps        | <5        |
| Oriental Bittersweet   | Dense plants/clumps        | <5        |
| Purple Loosestrife   | Trace (Single plant/clump) | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| big-toothed aspen    |
| box elder            |
| eastern cottonwood   |
| eastern hemlock      |
| hop hornbeam         |
| northern red oak     |
| northern white cedar |
| Red maple, common    |
| slippery elm         |
| sugar maple          |
| white ash            |
| wild black cherry    |
| yellow birch         |

| Herbaceous Species             |                              |                      |
|--------------------------------|------------------------------|----------------------|
| American mountain ash          | false Solomon's seal         | river grape          |
| black medic                    | gray dogwood                 | sensitive fern       |
| blue-stemmed/wreath goldenrod  | heart-leaved aster           | silver rod           |
| boneset                        | herb Robert                  | skunk cabbage        |
| Canada mayflower               | hog peanut                   | spotted jewelweed    |
| coastal shadbush               | Jack-in-the-pulpit           | spotted Joe Pye weed |
| Common/field horsetail         | maple-leaved viburnum        | spreading dogbane    |
| common scouring rush           | moonseed                     | staghorn sumac       |
| common white snakeroot         | northern lady fern           | tall goldenrod       |
| dotted hawthorn                | orange-fruited horse gentian | tall meadow rue      |
| eastern enchanter's nightshade | prickly gooseberry           | Virginia creeper     |
| false nettle                   | purple-flowering raspberry   |                      |

## Compartment 10

Segment 10 is approximately 4.1 acres and is the tenth trail section after leaving the southern parking area/access. A total of 58 species were documented. Nine (16%) were invasive, including five nominated tiered species. The native species assemblage included 15 tree and 34 herbaceous species. Compartment 10 had an FQI score of 28 (high) and mean C value of 3.98. Two exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**49**

**Invasive  
Species**

**9**

Figure. Classification of species documented in segment 10.

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 6

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Common reed grass

#### Tier 4

- Spotted Starthistle, Spotted Knapweed
- Honeysuckle (species unknown)
- Common Buckthorn

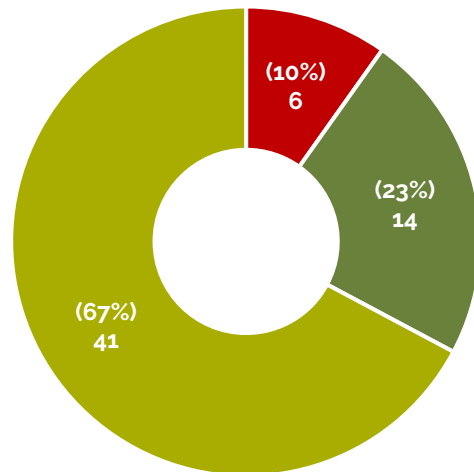
| Invasive Species                           | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Colt's Foot, Coltsfoot                     | Dense plants/clumps              | <5        |
| Common Buckthorn                           | Dense plants/clumps              | <5        |
| Common Reed, phragmites, Common reed grass | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein              | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)              | Sparse (Scattered plants/clumps) | <5        |
| Norway Maple                               | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet                       | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass                           | Linearly scattered               | <5        |
| Spotted Starthistle, Spotted Knapweed      | Trace (Single plant/clump)       | <5        |

| Tree Species         | Herbaceous Species             |                            |                          |
|----------------------|--------------------------------|----------------------------|--------------------------|
| American basswood    | American common/ground juniper | northern lady fern         | strawberry spp.          |
| American beech       | blue-stemmed/wreath goldenrod  | ostrich fern               | sweet-scented bedstraw   |
| big-toothed aspen    | common evening primrose        | poison ivy spp.            | tall anemone/thimbleweed |
| bitternut hickory    | common milkweed                | prickly gooseberry         | tall goldenrod           |
| black willow         | common plantain                | purple-flowering raspberry | tall meadow rue          |
| box elder            | common scouring rush           | red clover                 | virgin's bower           |
| eastern cottonwood   | common white snakeroot         | river grape                | Virginia creeper         |
| eastern hemlock      | common yellow wood sorrel      | sensitive fern             | wide-leaved cattail      |
| northern red oak     | false Solomon's seal           | spotted jewelweed          | wild carrot              |
| northern white cedar | heart-leaved aster             | spotted Joe Pye weed       | wild sarsaparilla        |
| Red maple, common    | meadow willow                  | spreading dogbane          |                          |
| slippery elm         | moonseed                       | staghorn sumac             |                          |
| sugar maple          |                                |                            |                          |
| white ash            |                                |                            |                          |
| wild black cherry    |                                |                            |                          |



## Compartment 11

Segment 11 is approximately 5.6 acres and is the eleventh trail section after leaving the southern parking area/access. A total of 61 species were documented. Six (10%) were invasive, including three nominated tiered species. The native species assemblage included 14 tree and 41 herbaceous species. Compartment 10 had an FQI score of 29 (high) and mean C value of 3.94. Three exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

- Other Human Features – 3

## Non-Invasive Species

# 55

## Invasive Species

# 6

### Nominated Tier Invasive Species:

#### Tier 3

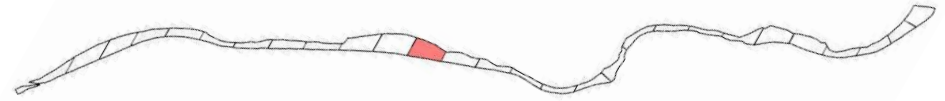
- Oriental Bittersweet

#### Tier 4

- Honeysuckle (species unknown)
- Common Buckthorn

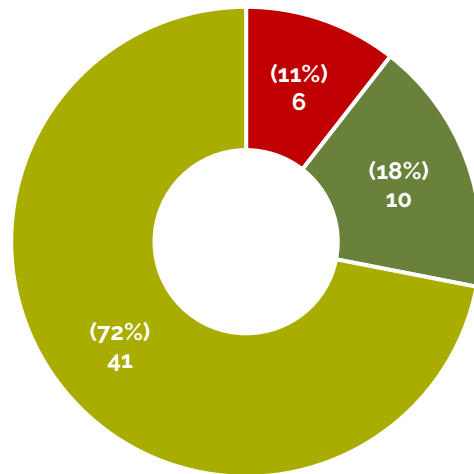
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | No Data                          | <5        |
| Colt's Foot, Coltsfoot   | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn   | Dense plants/clumps              | 15        |
| Creeping Jenny; Moneywort  | No Data                          | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet   | Linearly scattered               | 15        |

| Tree Species       | Herbaceous Species              |                            |                          |
|--------------------|---------------------------------|----------------------------|--------------------------|
| American basswood  | alternate-leaved dogwood        | green-fruited clearweed    | sensitive fern           |
| American beech     | black medic                     | Guelder rose               | skunk cabbage            |
| bitternut hickory  | black raspberry                 | heart-leaved aster         | spotted jewelweed        |
| black willow       | blue-stemmed/wreath goldenrod   | herb Robert                | spotted Joe Pye weed     |
| box elder          | Canada cocklebur                | Jack-in-the-pulpit         | staghorn sumac           |
| eastern cottonwood | common dandelion                | lance-leaved aster         | strawberry spp.          |
| eastern hemlock    | Common/field horsetail          | marginal wood fern         | sweet-scented bedstraw   |
| hop hornbeam       | common white snakeroot          | moonseed                   | tall anemone/thimbleweed |
| northern red oak   | common wrinkle-leaved goldenrod | northern lady fern         | tall goldenrod           |
| slippery elm       | common yellow wood sorrel       | ostrich fern               | tall meadow rue          |
| sugar maple        | devil's beggar ticks            | poison ivy spp.            | virgin's bower           |
| trembling aspen    | eastern enchanter's nightshade  | prickly gooseberry         | Virginia creeper         |
| white ash          | false nettle                    | purple-flowering raspberry | wild basil               |
| wild black cherry  | false Solomon's seal            | river grape                |                          |



## Compartment 12

Segment 12 is approximately 4.4 acres and is the twelfth trail section after leaving the southern parking area/access. A total of 57 species were documented. Six (11%) were invasive, including three nominated tiered species. The native species assemblage included 10 tree and 41 herbaceous species. Compartment 12 had an FQI score of 30 (high) and mean C value of 4.22. Seven exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**51**

**Invasive  
Species**

**6**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 4
- Tributaries – 5
- Other Human Features – 4

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Honeysuckle (species unknown)
- Common Buckthorn



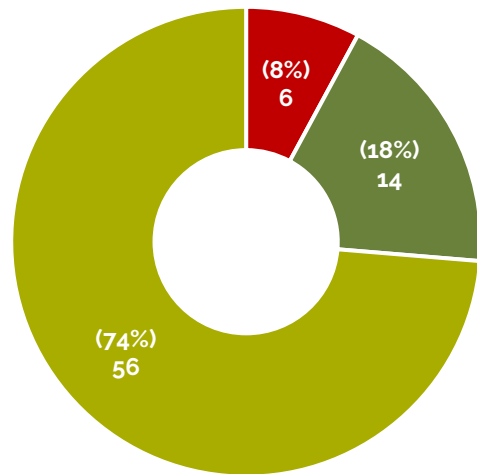
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Sparse (Scattered plants/clumps) | <5        |
| Colt's Foot, Coltsfoot   | Dense plants/clumps              | <5        |
| Common Buckthorn   | Dense plants/clumps              | <5        |
| Great Mullein, Common mullein                                    | No Data                          | <5        |
| Honeysuckle (species unknown)                                    | Dense plants/clumps              | <5        |
| Oriental Bittersweet   | Dense plants/clumps              | <5        |

| Tree Species       |
|--------------------|
| American basswood  |
| American beech     |
| bitternut hickory  |
| box elder          |
| eastern cottonwood |
| hop hornbeam       |
| slippery elm       |
| sugar maple        |
| white ash          |
| wild black cherry  |

| Herbaceous Species            |                                |                              |
|-------------------------------|--------------------------------|------------------------------|
| American red raspberry        | early meadow rue               | rice cut grass               |
| black medic                   | eastern enchanter's nightshade | river grape                  |
| black raspberry               | false nettle                   | sensitive fern               |
| bloodroot                     | false Solomon's seal           | spotted Joe Pye weed         |
| blue-stemmed/wreath goldenrod | gray/red-panicled dogwood      | spreading dogbane            |
| bulblet fern                  | green-fruited clearweed        | staghorn sumac               |
| Christmas fern                | herb Robert                    | sweet-scented bedstraw       |
| common dandelion              | honewort                       | violet spp.                  |
| common elderberry             | Jack-in-the-pulpit             | Virginia creeper             |
| Common/field horsetail        | northern lady fern             | white baneberry, doll's eyes |
| common milkweed               | ostrich fern                   | wild carrot                  |
| common plantain               | prickly gooseberry             | wood nettle                  |
| common white snakeroot        | purple trillium                | zigzag goldenrod             |
| common yellow wood sorrel     | purple-flowering raspberry     |                              |

## Compartment 13

Segment 13 is approximately 3.0 acres and is the thirteenth trail section after leaving the southern parking area/access. A total of 76 species were documented. Six (8%) were invasive, including two nominated tiered species. The native species assemblage included 14 tree and 56 herbaceous species. Compartment 13 had an FQI score of 41 (natural) and mean C value of 4.93. Eight exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 13.

**Non-Invasive  
Species**

**70**

**Invasive  
Species**

**6**

### Mapped Features:

- Culverts – 0
- Tributaries – 1
- Other Human Features – 6

### Nominated Tier Invasive Species:

#### Tier 3

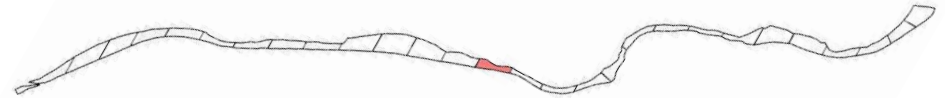
- Oriental Bittersweet

#### Tier 4

- Common Buckthorn

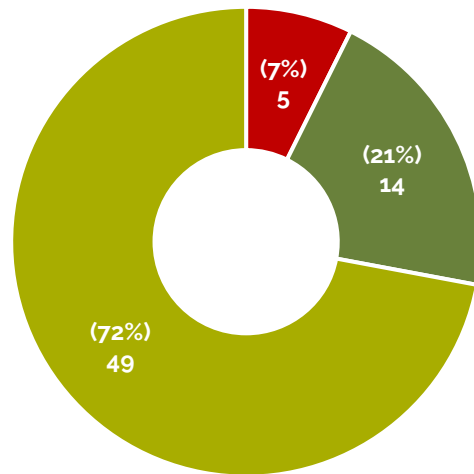
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Sparse (Scattered plants/clumps) | <5        |
| Colt's Foot, Coltsfoot   | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn   | Sparse (Scattered plants/clumps) | <5        |
| Creeping Jenny; Moneywort  | No Data                          | <5        |
| Oriental Bittersweet   | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass   | No Data                          | <5        |

| Tree Species      | Herbaceous Species             |                           |                              |
|-------------------|--------------------------------|---------------------------|------------------------------|
| American basswood | alternate-leaved dogwood       | foamflower                | purple-flowering raspberry   |
| American beech    | bladdernut                     | Gray/red-panicled dogwood | rice cut grass               |
| bitternut hickory | bloodroot                      | green-fruited clearweed   | sensitive fern               |
| black willow      | Blue/late blue cohosh          | groundnut                 | sharp-lobed hepatica         |
| butternut         | blue-stemmed/wreath goldenrod  | hog peanut                | small-flowered willowherb    |
| eastern hemlock   | boneset                        | iris spp.                 | spikenard                    |
| eastern red cedar | bulblet fern                   | Jack-in-the-pulpit        | spotted jewelweed            |
| hop hornbeam      | Canada anemone                 | lance-leaved aster        | spotted Joe Pye weed         |
| northern red oak  | Canada waterleaf               | mad dog skullcap          | strawberry spp.              |
| slippery elm      | Common/field horsetail         | maidenhair fern           | tall meadow rue              |
| sugar maple       | common sneezeweed              | maple-leaved viburnum     | Virginia creeper             |
| white ash         | common white snakeroot         | marginal wood fern        | water forget-me-not          |
| wild black cherry | devil's beggar ticks           | marsh hedge nettle        | water pepper                 |
| yellow birch      | ditch stonecrop                | nodding beggar ticks      | white baneberry, doll's eyes |
|                   | eastern enchanter's nightshade | northern bugleweed        | white trillium               |
|                   | European bugleweed             | ostrich fern              | white turtlehead             |
|                   | false nettle                   | Pennsylvania smartweed    | wild ginger                  |
|                   | false Solomon's seal           | plantain-leaved sedge     | zigzag goldenrod             |
|                   | field mint                     | prickly gooseberry        |                              |



## Compartment 14

Segment 14 is approximately 1.9 acres and is the central trail segment. A total of 68 species were documented. Five (7%) were invasive, including three nominated tiered species. The native species assemblage included 14 tree and 49 herbaceous species. Compartment 14 had an FQI score of 38 (natural area) and mean C value of 4.83. Seven exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

**Non-Invasive  
Species**

**63**

**Invasive  
Species**

**5**

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 4

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet

#### Tier 4

- Purple Loosestrife
- Common Buckthorn

| Invasive Species                   | Abundance                        | Cover (%) |
|------------------------------------|----------------------------------|-----------|
| Common Barberry, European Barberry | Trace (Single plant/clump)       | <5        |
| Common Buckthorn                   | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet               | Trace (Single plant/clump)       | <5        |
| Purple Loosestrife                 | Trace (Single plant/clump)       | <5        |
| Reed Canarygrass                   | Trace (Single plant/clump)       | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| big-toothed aspen    |
| bitternut hickory    |
| eastern hemlock      |
| hop hornbeam         |
| northern red oak     |
| northern white cedar |
| silver maple         |
| slippery elm         |
| sugar maple          |
| trembling aspen      |
| white pine           |
| yellow birch         |

| Herbaceous Species             |                                   |                              |
|--------------------------------|-----------------------------------|------------------------------|
| American bugleweed             | false Solomon's seal              | showy tick trefoil           |
| American/ground juniper        | fringed loosestrife               | spotted Joe Pye weed         |
| baneberry spp.                 | groundnut                         | spotted water hemlock        |
| bladdernut                     | heart-leaved aster                | sweet-scented bedstraw       |
| blue-stemmed/wreath goldenrod  | herb Robert                       | tall anemone/thimbleweed     |
| boneset                        | hog peanut                        | tall flat-topped white aster |
| bulblet fern                   | Indian hemp                       | tall meadow rue              |
| calico aster                   | lopseed                           | Virginia creeper             |
| Canada anemone                 | maidenhair fern                   | Virginia wild rye            |
| Christmas fern                 | marginal wood fern                | white rattlesnake root       |
| common dandelion               | New England aster                 | white turtlehead             |
| common milkweed                | nodding beggar ticks              | wild carrot                  |
| common plantain                | northern lady fern                | wild ginger                  |
| common sneezeweed              | poison ivy spp.                   | wild sarsaparilla            |
| common white snakeroot         | ragged robin                      | zigzag goldenrod             |
| eastern bracken fern           | river grape                       |                              |
| eastern enchanter's nightshade | sessile-leaved bellwort/wild oats |                              |

## Compartment 15

Segment 15 is approximately 1.3 acres and is the thirteenth trail section after leaving the northern parking area/access. A total of 71 species were documented. Ten (14%) were invasive, including five nominated tiered species. The native species assemblage included 19 tree and 42 herbaceous species. Compartment 15 had an FQI score of 36 (natural) and mean C value of 4.59. Four exploitatively vulnerable species were found.

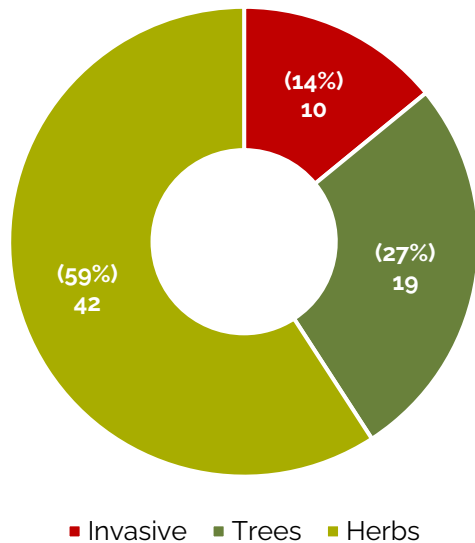


Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 6
- Tributaries – 6
- Other Human Features – 1

**Non-Invasive  
Species**

**61**

**Invasive  
Species**

**10**

### Nominated Tier Invasive Species:

#### Tier 3

- Swallowwort (species unknown)
- Oriental Bittersweet

#### Tier 4

- Spotted Starthistle, Spotted Knapweed
- Honeysuckle (species unknown)
- Common Buckthorn



| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Trace (Single plant/clump)       | <5        |
| Colt's Foot, Coltsfoot   | Dense plants/clumps              | <5        |
| Common Barberry, European Barberry                               | Trace (Single plant/clump)       | <5        |
| Common Buckthorn   | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein                                    | Trace (Single plant/clump)       | <5        |
| Gypsy Moth   | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet   | Trace (Single plant/clump)       | <5        |
| Spotted Starthistle, Spotted Knapweed                            | Trace (Single plant/clump)       | <5        |
| Swallowwort (species unknown)                                    | Trace (Single plant/clump)       | <5        |

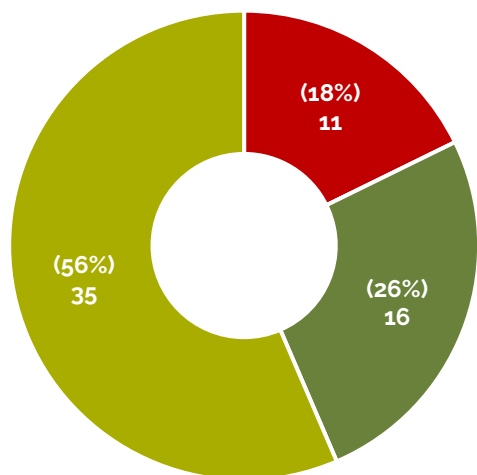
| Tree Species         | Herbaceous Species                 |                            |                          |
|----------------------|------------------------------------|----------------------------|--------------------------|
| American basswood    | alternate-leaved dogwood           | gray/red-panicked dogwood  | sharp-lobed hepatica     |
| American beech       | American red raspberry             | heart-leaved aster         | spikenard                |
| big-toothed aspen    | big bluestem                       | herb Robert                | spotted jewelweed        |
| bitternut hickory    | black medic                        | Indian hemp                | staghorn sumac           |
| butternut            | bladder campion                    | Jack-in-the-pulpit         | sweet-scented bedstraw   |
| eastern cottonwood   | blue-stemmed/wreath goldenrod      | maidenhair fern            | tall anemone/thimbleweed |
| eastern hemlock      | bulblet fern                       | maple-leaved viburnum      | tall lettuce             |
| hop hornbeam         | calico aster                       | marginal wood fern         | tall meadow rue          |
| mountain maple       | common dandelion                   | moonseed                   | violet spp.              |
| northern red oak     | common horsetail / field horsetail | ostrich fern               | Virginia creeper         |
| northern white cedar | common milkweed                    | purple-flowering raspberry | white rattlesnake root   |
| Red maple, common    | common yellow wood sorrel          | river grape                | wild carrot              |
| slippery elm         | eastern willowherb                 | round-leaved dogwood       | wild ginger              |
| sugar maple          | false Solomon's seal               | sensitive fern             | wild sarsaparilla        |
| trembling aspen      |                                    |                            |                          |
| white ash            |                                    |                            |                          |
| white pine           |                                    |                            |                          |

|              |
|--------------|
| white spruce |
| yellow birch |



## Compartment 16

Segment 16 is approximately 1.5 acres and is the twelfth trail section after leaving the northern parking area/access. A total of 62 species were documented. Eleven (18%) were invasive, including five nominated tiered species. The native species assemblage included 16 tree and 35 herbaceous species. Compartment 16 had an FQI score of 31 (high) and mean C value of 4.33. Two exploitatively vulnerable species were found.



- Invasive
- Trees
- Herbs
- Other Human Features – 0

**Non-Invasive  
Species**

**51**

**Invasive  
Species**

**11**

## Nominated Tier Invasive Species:

### Tier 3

- Common reed grass
- Oriental Bittersweet
- Swallowwort (species unknown)

### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)

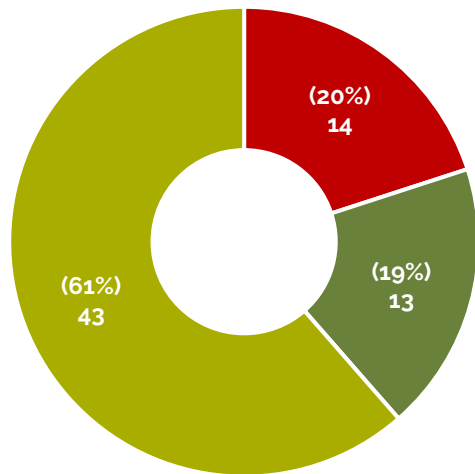
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Black Locust   | Trace (Single plant/clump)       | <5        |
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Sparse (Scattered plants/clumps) | <5        |
| Colt's Foot, Coltsfoot   | Dense plants/clumps              | <5        |
| Common Barberry, European Barberry                               | Trace (Single plant/clump)       | <5        |
| Common Buckthorn   | Sparse (Scattered plants/clumps) | <5        |
| Common Reed, phragmites, Common reed grass                       | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Norway Maple   | Trace (Single plant/clump)       | <5        |
| Oriental Bittersweet   | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| White Sweet-clover   | No Data                          | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| big-toothed aspen    |
| bitternut hickory    |
| box elder            |
| butternut            |
| eastern cottonwood   |
| hop hornbeam         |
| mountain maple       |
| northern red oak     |
| northern white cedar |
| slippery elm         |
| sugar maple          |
| white ash            |
| white pine           |
| yellow birch         |

| Herbaceous Species                      |                                |                        |
|---|--------------------------------|------------------------|
| alternate-leaved dogwood                | eastern enchanter's nightshade | spotted Joe Pye weed   |
| American common/ground juniper          | heart-leaved aster             | staghorn sumac         |
| American red raspberry                  | herb Robert                    | strawberry spp.        |
| bladdernut                              | poison ivy spp.                | tall goldenrod         |
| blue-stemmed goldenrod/wreath goldenrod | prickly gooseberry             | tall lettuce           |
| boneset                                 | purple-flowering raspberry     | virgin's bower         |
| bulblet fern                            | purple-stemmed aster           | white rattlesnake root |
| common dandelion                        | river grape                    | white turtlehead       |
| common horsetail / field horsetail      | round-leaved dogwood           | wild basil             |
| common milkweed                         | sensitive fern                 | wild carrot            |
| common white snakeroot                  | spikenard                      | zigzag goldenrod       |
| dark-green bulrush                      | spotted jewelweed              |                        |

## Compartment 17

Segment 17 is approximately 1.9 acres and is the eleventh trail section after leaving the northern parking area/access. A total of 70 species were documented. Fourteen (20%) were invasive, including eight nominated tiered species. The native species assemblage included 13 tree and 43 herbaceous species. Compartment 17 had an FQI score of 31 (high) and mean C value of 4.16. Three exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**56**

**Invasive  
Species**

**14**

### Nominated Tier Invasive Species:

#### Tier 3

- Common reed grass
- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Leafy Spurge, Wolf's Milk
- Purple Loosestrife
- Spotted Starthistle, Spotted Knapweed

### Mapped Features:

- Culverts – 4
- Tributaries – 5
- Other Human Features – 6

Figure. Classification of species documented in segment 0.

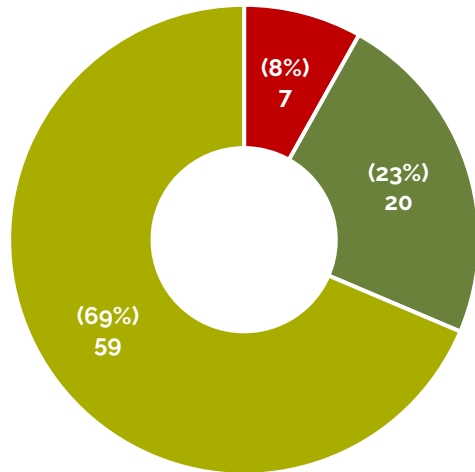
| Invasive Species                           | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Colt's Foot, Coltsfoot                     | Trace (Single plant/clump)       | <5        |
| Common Barberry, European Barberry         | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn                           | Sparse (Scattered plants/clumps) | <5        |
| Common Reed, phragmites, Common reed grass | Trace (Single plant/clump)       | <5        |
| Crabapple (species unknown)                | No Data                          | <5        |
| Honeysuckle (species unknown)              | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk                  | Sparse (Scattered plants/clumps) | <5        |
| Norway Maple                               | Trace (Single plant/clump)       | <5        |
| Oriental Bittersweet                       | Sparse (Scattered plants/clumps) | <5        |
| Purple Loosestrife                         | Trace (Single plant/clump)       | <5        |
| Reed Canarygrass                           | Trace (Single plant/clump)       | <5        |
| Spotted Starthistle, Spotted Knapweed      | Trace (Single plant/clump)       | <5        |
| Swallowwort (species unknown)              | Trace (Single plant/clump)       | <5        |
| White Poplar                               | Trace (Single plant/clump)       | <5        |

| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| bitternut hickory    |
| black willow         |
| box elder            |
| eastern cottonwood   |
| eastern hemlock      |
| hop hornbeam         |
| northern red oak     |
| northern white cedar |
| sugar maple          |
| trembling aspen      |
| white pine           |

| Herbaceous Species                 |                            |                              |
|------------------------------------|----------------------------|------------------------------|
| alternate-leaved dogwood           | heart-leaved aster         | slender agalinis             |
| American common/ground juniper     | hog peanut                 | spotted Joe Pye weed         |
| big bluestem                       | Indian hemp                | staghorn sumac               |
| black medic                        | maple-leaved viburnum      | sweet-scented bedstraw       |
| bladder campion                    | marsh hedge nettle         | tall anemone/thimbleweed     |
| blue-stemmed/wreath goldenrod      | New England aster          | tall flat-topped white aster |
| boneset                            | nodding beggar ticks       | tall goldenrod               |
| bulblet fern                       | poison ivy spp.            | tall meadow rue              |
| calico aster                       | purple-flowering raspberry | Virginia creeper             |
| common flat-topped goldenrod       | red baneberry              | white turtlehead             |
| common horsetail / field horsetail | river grape                | wild basil                   |
| common sneezeweed                  | round-leaved dogwood       | wild carrot                  |
| common white snakeroot             | sensitive fern             | wild sarsaparilla            |
| fringed loosestrife                | showy tick trefoil         |                              |
| groundnut                          | silky willow               |                              |

## Compartment 18

Segment 18 is approximately 2.2 acres and is the tenth trail section after leaving the northern parking area/access. A total of 86 species were documented. Seven (8%) were invasive, including six nominated tiered species. The native species assemblage included 20 tree and 59 herbaceous species. Compartment 18 had an FQI score of 35 (high) and mean C value of 3.95. Two exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 6

**Non-Invasive  
Species**

**79**

**Invasive  
Species**

**7**

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Leafy Spurge, Wolf's Milk
- Spotted Starthistle, Spotted Knapweed

| Invasive Species                      | Abundance                        | Cover (%) |
|---------------------------------------|----------------------------------|-----------|
| Common Buckthorn                      | Dense plants/clumps              | <5        |
| Crabapple (species unknown)           | No Data                          | <5        |
| Honeysuckle (species unknown)         | Dense plants/clumps              | <5        |
| Leafy Spurge, Wolf's Milk             | No Data                          | <5        |
| Oriental Bittersweet                  | Linearly scattered               | 15        |
| Spotted Starthistle, Spotted Knapweed | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)         | Sparse (Scattered plants/clumps) | <5        |

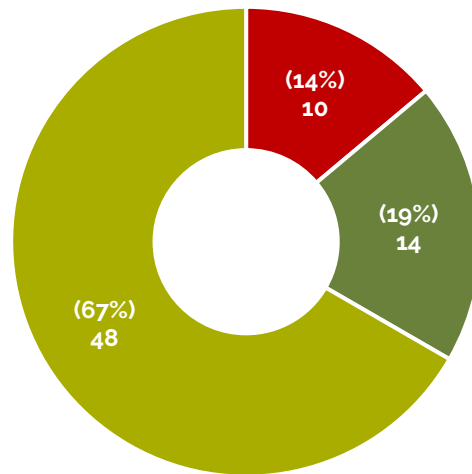
| Tree Species         | Herbaceous Species             |                                    |                                   |
|----------------------|--------------------------------|------------------------------------|-----------------------------------|
| American basswood    | alternate-leaved dogwood       | common horsetail / field horsetail | orchard grass                     |
| American beech       | American common/ground juniper | common milkweed                    | ostrich fern                      |
| big-toothed aspen    | American red raspberry         | common ragweed                     | poison ivy spp.                   |
| bitternut hickory    | big bluestem                   | common Timothy                     | prickly gooseberry                |
| box elder            | black medic                    | common yellow wood sorrel          | red clover                        |
| butternut            | black raspberry                | deer-tongue rosette grass          | river grape                       |
| eastern hemlock      | bladder campion                | eastern enchanter's nightshade     | sessile-leaved bellwort/wild oats |
| gray birch           | bladdernut                     | Eurasian live forever              | staghorn sumac                    |
| hop hornbeam         | blue cohosh, late blue cohosh  | false Solomon's seal               | strawberry spp.                   |
| northern red oak     | blue-stemmed/wreath goldenrod  | fowl blue grass                    | sweet-scented bedstraw            |
| northern white cedar | boneset                        | fringed loosestrife                | tall anemone/thimbleweed          |
| Red maple, common    | bulblet fern                   | green foxtail                      | tall goldenrod                    |
| red pine             | bush honeysuckle               | groundnut                          | tall meadow rue                   |
| Scotch pine          | calico aster                   | heart-leaved aster                 | virgin's bower                    |
| sugar maple          | Canada goldenrod               | herb Robert                        | Virginia creeper                  |
| trembling aspen      | Canada wild rye                | hog peanut                         | white rattlesnake root            |
| white ash            | chicory                        | maple-leaved viburnum              | wild basil                        |
| White Oak            | common black-eyed Susan        | New England aster                  | wild carrot                       |
| white pine           | common carrion flower          | northern tickle grass              | yellow foxtail                    |
| wild black cherry    | common dandelion               | orange-fruited horse gentian       |                                   |





## Compartment 19

Segment 19 is approximately 1.8 acres and is the ninth trail section after leaving the northern parking area/access. A total of 72 species were documented. Ten (14%) were invasive, including six nominated tiered species. The native species assemblage included 14 tree and 48 herbaceous species. Compartment 19 had an FQI score of 31 (high) and mean C value of 3.92. Three exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 0
- Tributaries – 0
- Other Human Features – 2

**Non-Invasive  
Species**

**62**

**Invasive  
Species**

**10**

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

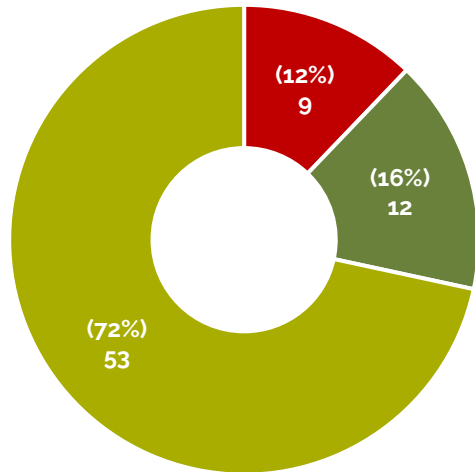
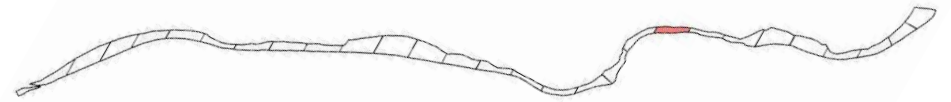
- Common Buckthorn
- Honeysuckle (species unknown)
- Leafy Spurge, Wolf's Milk
- Spotted Starthistle, Spotted Knapweed

| Invasive Species                      | Abundance                        | Cover (%) |
|---------------------------------------|----------------------------------|-----------|
| Bishop s Goutweed; Goutweed           | Trace (Single plant/clump)       | <5        |
| Common Buckthorn                      | Dense plants/clumps              | <5        |
| Creeping Jenny; Moneywort             | Sparse (Scattered plants/clumps) | <5        |
| Garlic Mustard                        | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein         | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)         | Dense plants/clumps              | <5        |
| Leafy Spurge, Wolf's Milk             | Sparse (Scattered plants/clumps) | <5        |
| Oriental Bittersweet                  | Dense plants/clumps              | <5        |
| Spotted Starthistle, Spotted Knapweed | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)         | Sparse (Scattered plants/clumps) | <5        |

| Tree Species       | Herbaceous Species             |                            |                                   |
|--------------------|--------------------------------|----------------------------|-----------------------------------|
| American basswood  | alternate-leaved dogwood       | common yellow wood sorrel  | poison ivy spp.                   |
| big-toothed aspen  | American bugleweed/ horehound  | devil's beggar ticks       | red-osier dogwood                 |
| bitternut hickory  | asparagus                      | ditch stonecrop            | river grape                       |
| black willow       | baneberry spp.                 | dotted hawthorn            | sessile-leaved bellwort/wild oats |
| box elder          | black medic                    | Eurasian barnyard grass    | spotted Joe Pye weed              |
| eastern cottonwood | black raspberry                | Eurasian selfheal heal all | staghorn sumac                    |
| northern red oak   | bladder campion                | false nettle               | strawberry spp.                   |
| silver maple       | blue-stemmed /wreath goldenrod | false Solomon's seal       | sweet-scented bedstraw            |
| slippery elm       | boneset                        | fringed loosestrife        | tall anemone/thimbleweed          |
| sugar maple        | calico aster                   | green foxtail              | tall meadow rue                   |
| white ash          | Canada mayflower               | green-fruited clearweed    | thin-leaved sunflower             |
| White Oak          | clammy ground cherry           | groundnut                  | Virginia creeper                  |
| white pine         | coastal shadbush               | heart-leaved aster         | water purslane                    |
| wild black cherry  | common carrion flower          | Indian hemp                | white rattlesnake root            |
|                    | common dandelion               | lady's thumb               | white turtlehead                  |
|                    | common flat-topped goldenrod   | maple-leaved viburnum      | white vervain                     |
|                    | common ragweed                 | nodding beggar ticks       | wild carrot                       |
|                    | common sneezeweed              | partridge berry            |                                   |

## Compartment 20

Segment 20 is approximately 1.6 acres and is the eighth trail section after leaving the northern parking area/access. A total of 74 species were documented. Nine (12%) were invasive, including four nominated tiered species. The native species assemblage included 12 tree and 53 herbaceous species. Compartment 20 had an FQI score of 30 (high) and mean C value of 3.67. Two exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

65

**Invasive  
Species**

9

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 2

### Nominated Tier Invasive Species:

#### Tier 3

- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Spotted Starthistle, Spotted Knapweed

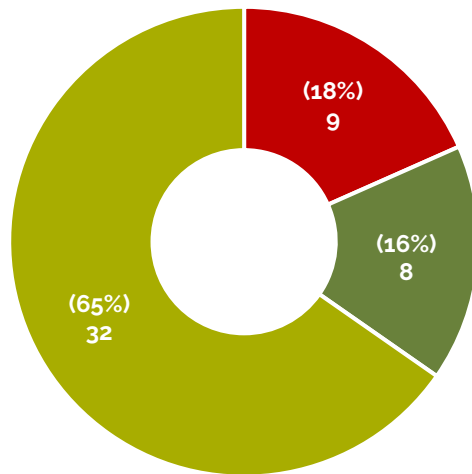
| Invasive Species                      | Abundance                        | Cover (%) |
|---------------------------------------|----------------------------------|-----------|
| Common Buckthorn                      | Dense plants/clumps              | <5        |
| Eastern Helleborine                   | No Data                          | <5        |
| Garlic Mustard                        | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)         | Dense plants/clumps              | <5        |
| Norway Maple                          | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass                      | Sparse (Scattered plants/clumps) | <5        |
| Spotted Starthistle, Spotted Knapweed | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)         | Linearly scattered               | <5        |
| White Sweet-clover                    | No Data                          | <5        |

| Tree Species         | Herbaceous Species                    |                            |                                   |
|----------------------|---------------------------------------|----------------------------|-----------------------------------|
| American basswood    | alternate-leaved dogwood              | common yellow wood sorrel  | poison ivy spp.                   |
| American beech       | American bugleweed/American horehound | devil's beggar ticks       | red-osier dogwood                 |
| bitternut hickory    | asparagus                             | ditch stonecrop            | river grape                       |
| box elder            | baneberry spp.                        | dotted hawthorn            | sessile-leaved bellwort/wild oats |
| northern red oak     | black medic                           | Eurasian barnyard grass    | spotted Joe Pye weed              |
| northern white cedar | black raspberry                       | Eurasian selfheal/heal all | staghorn sumac                    |
| slippery elm         | bladder campion                       | false nettle               | strawberry spp.                   |
| sugar maple          | blue-stemmed/wreath goldenrod         | false Solomon's seal       | sweet-scented bedstraw            |
| trembling aspen      | boneset                               | fringed loosestrife        | tall anemone/thimbleweed          |
| white ash            | calico aster                          | green foxtail              | tall meadow rue                   |
| white pine           | Canada mayflower                      | green-fruited clearweed    | thin-leaved sunflower             |
| wild black cherry    | clammy ground cherry                  | groundnut                  | Virginia creeper                  |
|                      | coastal shadbush                      | heart-leaved aster         | water purslane                    |
|                      | common carrion flower                 | Indian hemp                | white rattlesnake root            |
|                      | common dandelion                      | lady's thumb               | white turtlehead                  |
|                      | common flat-topped goldenrod          | maple-leaved viburnum      | white vervain                     |
|                      | common ragweed                        | nodding beggar ticks       | wild carrot                       |
|                      | common sneezeweed                     | partridge berry            |                                   |



## Compartment 21

Segment 21 is approximately 1.3 acres and is the seventh trail section after leaving the northern parking area/access. A total of 49 species were documented. Nine (18%) were invasive, including six nominated tiered species. The native species assemblage included 8 tree and 32 herbaceous species. Compartment 21 had an FQI score of 28 (high) and mean C value of 4.38. Two exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**40**

**Invasive  
Species**

**9**

### Mapped Features:

- Culverts – 0
- Tributaries – 0
- Other Human Features – 3

### Nominated Tier Invasive Species:

#### Tier 3

- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Glossy/European Buckthorn, Smooth buckthorn
- Honeysuckle (species unknown)
- Purple Loosestrife
- Spotted Starthistle, Spotted Knapweed

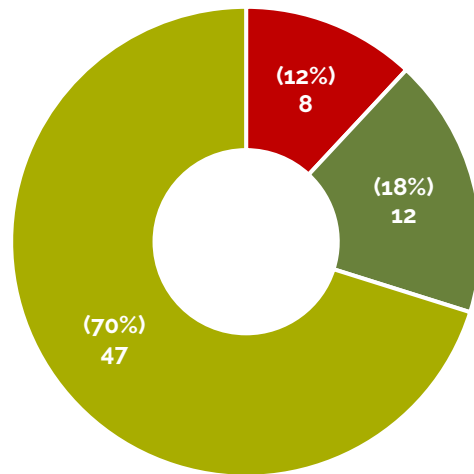
| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Sparse (Scattered plants/clumps) | <5        |
| Common Buckthorn   | Dense plants/clumps              | <5        |
| Glossy Buckthorn, European Buckthorn, Smooth buckthorn           | Trace (Single plant/clump)       | <5        |
| Great Mullein, Common mullein                                    | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Purple Loosestrife   | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass   | Sparse (Scattered plants/clumps) | <5        |
| Spotted Starthistle, Spotted Knapweed                            | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |

| Tree Species         | Herbaceous Species            |                              |                              |
|----------------------|-------------------------------|------------------------------|------------------------------|
| American basswood    | American bugleweed/horehound  | false Solomon's seal         | river grape                  |
| bitternut hickory    | big bluestem                  | green-fruited clearweed      | smooth arrowwood             |
| eastern hemlock      | blue-stemmed/wreath goldenrod | harebell                     | spotted jewelweed            |
| northern red oak     | boneset                       | heart-leaved/Missouri willow | staghorn sumac               |
| northern white cedar | calico aster                  | herb Robert                  | sweet-scented bedstraw       |
| sugar maple          | coastal shadbush              | Indian hemp                  | tall flat-topped white aster |
| white pine           | columbine spp.                | marginal wood fern           | tall goldenrod               |
| wild black cherry    | common dandelion              | meadow rue spp.              | Virginia creeper             |
|                      | devil's beggar ticks          | New England aster            | wild sarsaparilla            |
|                      | dotted hawthorn               | poison ivy spp.              | yellow foxtail               |
|                      | eastern riverbank wild rye    | prickly gooseberry           |                              |
|                      |                               |                              |                              |



## Compartment 22

Segment 22 is approximately 2.3 acres and is the sixth trail section after leaving the northern parking area/access. A total of 67 species were documented. Eight (12%) were invasive, including four nominated tiered species. The native species assemblage included 12 tree and 47 herbaceous species. Compartment 22 had an FQI score of 26 (high) and mean C value of 3.42. No exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**59**

**Invasive  
Species**

**8**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 2
- Tributaries – 0
- Other Human Features – 4

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)



| Invasive Species                   | Abundance                        | Cover (%) |
|------------------------------------|----------------------------------|-----------|
| Common Barberry, European Barberry | No Data                          | <5        |
| Common Buckthorn                   | Linearly scattered               | <5        |
| Crown Vetch                        | Sparse (Scattered plants/clumps) | <5        |
| Garlic Mustard                     | Linearly scattered               | <5        |
| Honeysuckle (species unknown)      | No Data                          | 15        |
| Oriental Bittersweet               | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)      | Sparse (Scattered plants/clumps) | <5        |
| Tufted Vetch                       | No Data                          | <5        |

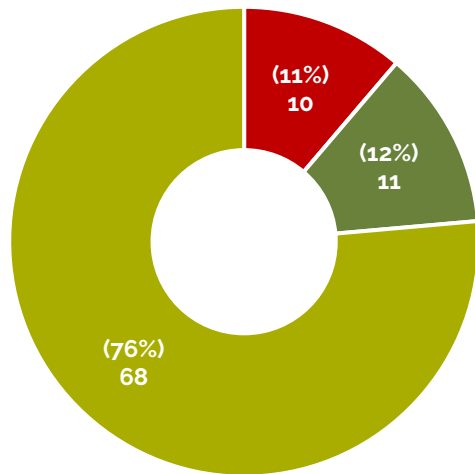
| Tree Species         |
|----------------------|
| American basswood    |
| American beech       |
| bitternut hickory    |
| box elder            |
| eastern cottonwood   |
| hop hornbeam         |
| northern red oak     |
| northern white cedar |
| slippery elm         |
| sugar maple          |
| trembling aspen      |
| wild black cherry    |

| Herbaceous Species              |                                |                              |
|---------------------------------|--------------------------------|------------------------------|
| American stinging nettle        | common yellow wood sorrel      | red-osier dogwood            |
| big bluestem                    | Deptford pink                  | river grape                  |
| black medic                     | eastern enchanter's nightshade | sensitive fern               |
| black raspberry                 | false Solomon's seal           | showy tick trefoil           |
| blue-stemmed/wreath goldenrod   | hog peanut                     | smooth brome                 |
| bottlebrush grass               | Indian hemp                    | spotted Joe Pye weed         |
| calico aster                    | jumpseed                       | spreading dogbane            |
| Canada anemone                  | lady's thumb                   | staghorn sumac               |
| chicory                         | lance-leaved aster             | sweet-scented bedstraw       |
| common dandelion                | lesser burdock                 | tall flat-topped white aster |
| common/field horsetail          | meadow salsify                 | tall goldenrod               |
| common milkweed                 | New England aster              | Virginia creeper             |
| common plantain                 | nodding beggar ticks           | white avens                  |
| common sneezeweed               | oldfield cinquefoil            | wild carrot                  |
| common white snakeroot          | orange-fruited horse gentian   | wild sarsaparilla            |
| common wrinkle-leaved goldenrod | poison ivy spp.                |                              |

## Compartment 23



Segment 23 is approximately 4.0 acres and is the fifth trail section after leaving the northern parking area/access. A total of 89 species were documented. Ten (11%) were invasive, including four nominated tiered species. The native species assemblage included 11 tree and 68 herbaceous species. Compartment 23 had an FQI score of 25 (high) and mean C value of 2.77. No exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**79**

**Invasive  
Species**

**10**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 4
- Tributaries – 4
- Other Human Features – 2

### Nominated Tier Invasive Species:

#### Tier 3

- Swallowwort (species unknown)

#### Tier 4

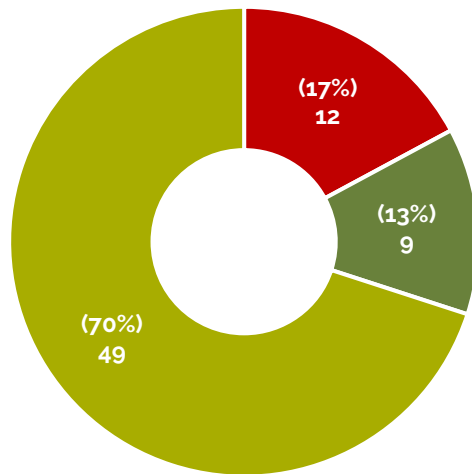
- Common Buckthorn
- Honeysuckle (species unknown)
- Knapweed (species unknown)

| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | No Data                          | <5        |
| Colt's Foot, Coltsfoot   | No Data                          | <5        |
| Common Buckthorn   | Linearly scattered               | <5        |
| Garlic Mustard   | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein                                    | No Data                          | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Knapweed (species unknown), Centaurea (species unknown)          | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass   | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| White Sweet-clover   | No Data                          | <5        |

| Tree Species       | Herbaceous Species             |                           |                                 |                          |
|--------------------|--------------------------------|---------------------------|---------------------------------|--------------------------|
| American basswood  | American common/ground juniper | common yellow wood sorrel | lady's thumb                    | sensitive fern           |
| bitternut hickory  | American stinging nettle       | curly dock                | lesser burdock                  | smooth brome             |
| box elder          | asparagus                      | deer-tongue rosette grass | marsh hedge nettle              | spotted jewelweed        |
| butternut          | big bluestem                   | devil's beggar ticks      | meadow rue spp.                 | spotted Joe Pye weed     |
| eastern cottonwood | black raspberry                | ditch stonecrop           | meadow salsify                  | staghorn sumac           |
| hop hornbeam       | bladder campion                | dotted hawthorn           | New England aster               | sweet-scented bedstraw   |
| northern red oak   | blue vervain                   | eastern willowherb        | nodding beggar ticks            | tall anemone/thimbleweed |
| Scotch pine        | blue-stemmed /wreath goldenrod | Eurasian barnyard grass   | northern bugleweed              | tall goldenrod           |
| shagbark hickory   | boneset                        | false yellow nut sedge    | northern three-petaled bedstraw | velvetleaf               |
| white ash          | calico aster                   | field mint                | orchard grass                   | Virginia creeper         |
| White Oak          | Canada cocklebur               | green-fruited clearweed   | Pennsylvania smartweed          | Virginia stickseed       |
|                    | common flat-topped goldenrod   | groundnut                 | poison ivy spp.                 | water forget-me-not      |
|                    | common/ field horsetail        | hedge bindweed            | pokeweed                        | water purslane           |
|                    | common milkweed                | hemlock water parsnip     | prickly gooseberry              | water speedwell          |
|                    | common plantain                | herb Robert               | purple-stemmed beggar ticks     | white avens              |
|                    | common ragweed                 | Indian hemp               | red clover                      | wormseed mustard         |
|                    | common witch grass             | jumpseed                  | river grape                     | yellow foxtail           |

## Compartment 24

Segment 24 is approximately 3.7 acres and is the fourth trail section after leaving the norther parking area/access. A total of 70 species were documented. Twelve (17%) were invasive, including six nominated tiered species. The native species assemblage included 9 tree and 49 herbaceous species. Compartment 24 had an FQI score of 25 (high) and mean C value of 3.29. Three exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

Figure. Classification of species documented in segment 0.

**Non-Invasive  
Species**

**58**

**Invasive  
Species**

**12**

### Mapped Features:

- Culverts – 2
- Tributaries – 2
- Other Human Features – 4

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Leafy Spurge, Wolf's Milk
- Spotted Starthistle, Spotted Knapweed

| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | No Data                          | <5        |
| Common Buckthorn   | Linearly scattered               | 15        |
| Garlic Mustard   | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein                                    | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein                                    | Trace (Single plant/clump)       | <5        |
| Honeysuckle (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk  | No Data                          | <5        |
| Oriental Bittersweet   | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass   | Sparse (Scattered plants/clumps) | <5        |
| Spotted Starthistle, Spotted Knapweed                            | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)                                    | Sparse (Scattered plants/clumps) | <5        |
| Tufted Vetch   | No Data                          | <5        |

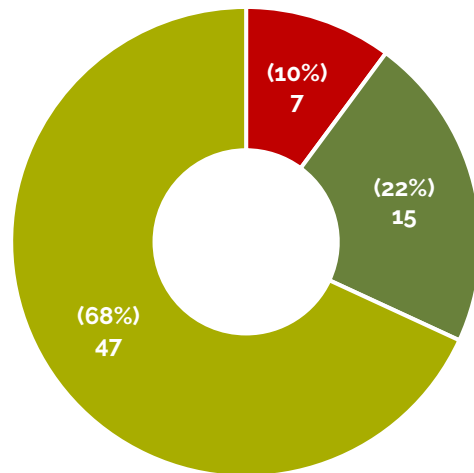
| Tree Species         | Herbaceous Species             |                              |                        |
|----------------------|--------------------------------|------------------------------|------------------------|
| American basswood    | American common/ground juniper | cultivated onion             | oldfield cinquefoil    |
| black willow         | big bluestem                   | devil's beggar ticks         | orchard grass          |
| box elder            | black raspberry                | eastern riverbank wild rye   | Philadelphia fleabane  |
| butternut            | bladder campion                | fringed loosestrife          | poison ivy spp.        |
| eastern cottonwood   | blue vervain                   | gray goldenrod               | prickly gooseberry     |
| northern white cedar | boneset                        | green foxtail                | red clover             |
| slippery elm         | calico aster                   | harebell                     | river grape            |
| sugar maple          | Canada anemone                 | heart-leaved/Missouri willow | smooth brome           |
| white ash            | chicory                        | herb Robert                  | spotted Joe Pye weed   |
|                      | columbine spp.                 | hog peanut                   | staghorn sumac         |
|                      | common dandelion               | Indian grass                 | sweet-scented bedstraw |
|                      | common flat-topped goldenrod   | jumpseed                     | tall goldenrod         |
|                      | common lilac                   | lance-leaved aster           | white turtlehead       |
|                      | common milkweed                | marginal wood fern           | wild carrot            |
|                      | common ragweed                 | New England aster            | yellow foxtail         |
|                      | common sneezeweed              | nodding beggar ticks         |                        |
|                      | common witch grass             | northern bugleweed           |                        |



## Compartment 25

Segment 25 is approximately 2.0 acres and is the third trail section after leaving the northern parking area/access. A total of 69 species were documented. Seven (10%) were invasive, including six nominated tiered species. The native species assemblage included 12 tree and 47 herbaceous species.

Compartment 25 had an FQI score of 22 (high) and mean C value of 2.81. No exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

- Tributaries – 2
- Other Human Features – 4

## Non-Invasive Species

# 62

## Invasive Species

# 7

### Nominated Tier Invasive Species:

#### Tier 3

- Oriental Bittersweet
- Swallowwort (species unknown)

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Leafy Spurge, Wolf's Milk
- Spotted Starthistle, Spotted Knapweed

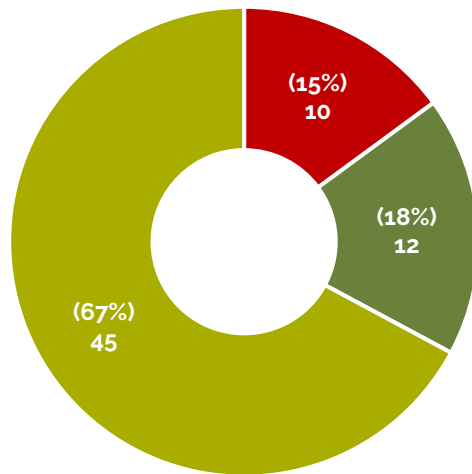
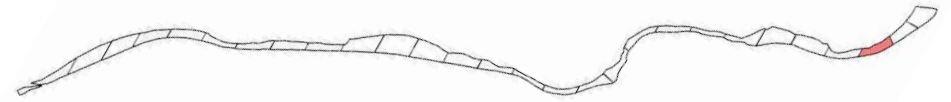
| Invasive Species                      | Abundance                        | Cover (%) |
|---------------------------------------|----------------------------------|-----------|
| Common Buckthorn                      | Linearly scattered               | <5        |
| Honeysuckle (species unknown)         | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk             | No Data                          | <5        |
| Oriental Bittersweet                  | Sparse (Scattered plants/clumps) | <5        |
| Spotted Starthistle, Spotted Knapweed | Sparse (Scattered plants/clumps) | <5        |
| Swallowwort (species unknown)         | Sparse (Scattered plants/clumps) | <5        |
| White Sweet-clover                    | No Data                          | <5        |

| Tree Species         | Herbaceous Species             |                                 |                        |
|----------------------|--------------------------------|---------------------------------|------------------------|
| American basswood    | American common/ground juniper | common ragweed                  | poison ivy spp.        |
| bitternut hickory    | annual daisy fleabane          | common soapwort, bouncing bet   | pokeweed               |
| box elder            | asparagus                      | common white snakeroot          | prickly gooseberry     |
| butternut            | big bluestem                   | common wrinkle-leaved goldenrod | red clover             |
| eastern cottonwood   | black medic                    | common yellow wood sorrel       | river grape            |
| eastern red cedar    | black raspberry                | curly dock                      | round-leaved dogwood   |
| hop hornbeam         | bladder campion                | fragrant sumac                  | smooth brome           |
| northern red oak     | blue-stemmed/wreath goldenrod  | green foxtail                   | spotted Joe Pye weed   |
| northern white cedar | calico aster                   | heart-leaved aster              | staghorn sumac         |
| slippery elm         | chicory                        | hoary alyssum                   | sweet-scented bedstraw |
| sugar maple          | clammy ground cherry           | Indian grass                    | tall goldenrod         |
| trembling aspen      | common bird's foot trefoil     | lamb's quarters, pigweed        | tall lettuce           |
| white ash            | common evening primrose        | lance-leaved aster              | Virginia creeper       |
| white pine           | common/field horsetail         | lesser burdock                  | wild carrot            |
| wild black cherry    | common horseweed               | New England aster               | yellow foxtail         |
|                      | common milkweed                | oldfield cinquefoil             |                        |



## Compartment 26

Segment 26 is approximately 2.2 acres and is the second trail section after leaving the northern parking area/access. A total of 67 species were documented. Ten (15%) were invasive, including five nominated tiered species. The native species assemblage included 12 tree and 45 herbaceous species. Compartment 26 had an FQI score of 22 (high) and mean C value of 2.88. One exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**57**

**Invasive  
Species**

**10**

### Mapped Features:

- Culverts – 5
- Tributaries – 5
- Other Human Features – 2

### Nominated Tier Invasive Species:

#### Tier 3

- Common reed grass

#### Tier 4

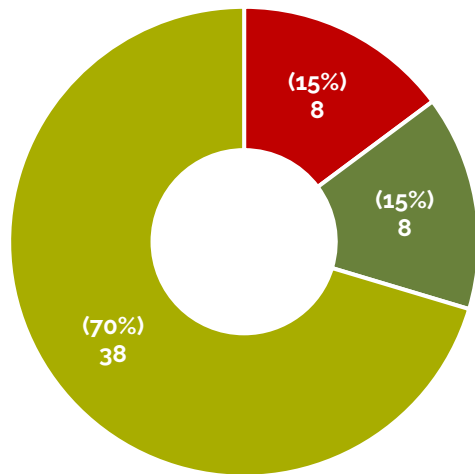
- Common Buckthorn
- Leafy Spurge, Wolf's Milk
- Purple Loosestrife
- Spotted Starthistle, Spotted Knapweed

| Invasive Species   | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Climbing Nightshade, Bittersweet Nightshade, Trailing nightshade | Trace (Single plant/clump)       | <5        |
| Common Buckthorn   | Linearly scattered               | <5        |
| Common Reed, phragmites, Common reed grass                       | Sparse (Scattered plants/clumps) | <5        |
| Crabapple (species unknown)                                      | Sparse (Scattered plants/clumps) | <5        |
| Great Mullein, Common mullein                                    | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk  | No Data                          | <5        |
| Purple Loosestrife   | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass   | Linearly scattered               | <5        |
| Spotted Starthistle, Spotted Knapweed                            | Sparse (Scattered plants/clumps) | <5        |
| Tufted Vetch   | No Data                          | <5        |

| Tree Species       | Herbaceous Species             |                              |                        |
|--------------------|--------------------------------|------------------------------|------------------------|
| American basswood  | American common/ground juniper | devil's beggar ticks         | red-osier dogwood      |
| American beech     | big bluestem                   | green foxtail                | river grape            |
| black willow       | black raspberry                | harebell                     | silky dogwood          |
| box elder          | bladder campion                | heart-leaved/Missouri willow | smooth brome           |
| eastern cottonwood | boneset                        | Indian grass                 | spotted jewelweed      |
| eastern red cedar  | calico aster                   | lady's thumb                 | spotted Joe Pye weed   |
| hop hornbeam       | chicory                        | lance-leaved aster           | spreading dogbane      |
| Scotch pine        | common dandelion               | maple-leaved viburnum        | staghorn sumac         |
| slippery elm       | common evening primrose        | meadow rue spp.              | strawberry spp.        |
| sugar maple        | common milkweed                | New England aster            | sweet-scented bedstraw |
| white ash          | common plantain                | northern bugleweed           | tall goldenrod         |
| white pine         | common ragweed                 | oldfield cinquefoil          | viper's bugloss        |
|                    | common scouring rush           | orchard grass                | wide-leaved cattail    |
|                    | common witch grass             | oxeye daisy                  | wild carrot            |
|                    | curly dock                     | poison ivy spp.              | yellow foxtail         |

## Compartment 27

Segment 27 is approximately 2.3 acres and is the first trail section after leaving the northern parking area/access. A total of 54 species were documented. Eight (15%) were invasive, including five nominated tiered species. The native species assemblage included 8 tree and 38 herbaceous species. Compartment 27 had an FQI score of 17 (low) and mean C value of 2.57. No exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**46**

**Invasive  
Species**

**8**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 0
- Tributaries – 0
- Other Human Features – 3

### Nominated Tier Invasive Species:

#### Tier 3

- Common reed grass

#### Tier 4

- Purple Loosestrife
- Leafy Spurge, Wolf's Milk
- Honeysuckle (species unknown)
- Common Buckthorn

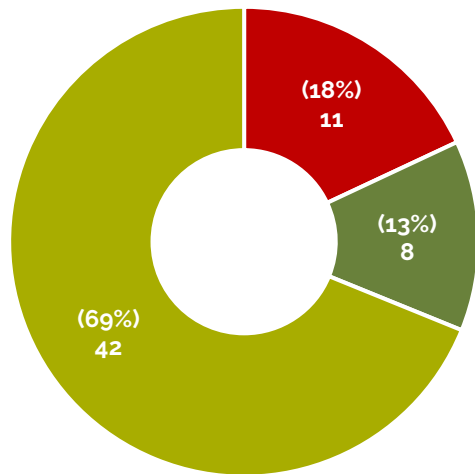
| Invasive Species                           | Abundance                        | Cover (%) |
|--|----------------------------------|-----------|
| Common Buckthorn                           | Linearly scattered               | <5        |
| Common Reed, phragmites, Common reed grass | Linearly scattered               | <5        |
| Honeysuckle (species unknown)              | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk                  | Sparse (Scattered plants/clumps) | <5        |
| Purple Loosestrife                         | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass                           | Linearly scattered               | <5        |
| Tufted Vetch                               | No Data                          | <5        |
| White Sweet-clover                         | No Data                          | <5        |

| Tree Species           |
|------------------------|
| black willow           |
| box elder              |
| eastern cottonwood     |
| fire cherry pin cherry |
| Scotch pine            |
| slippery elm           |
| white ash              |
| white pine             |

| Herbaceous Species                 |                      |                        |
|------------------------------------|----------------------|------------------------|
| American common /ground juniper    | common milkweed      | red clover             |
| Bebb's willow                      | curly dock           | river grape            |
| big bluestem                       | devil's beggar ticks | spotted jewelweed      |
| black raspberry                    | green foxtail        | spotted Joe Pye weed   |
| bladder campion                    | hedge bindweed       | staghorn sumac         |
| boneset                            | herb Robert          | sweet-scented bedstraw |
| calico aster                       | Indian grass         | tall goldenrod         |
| Carolina crane's bill              | lance-leaved aster   | viper's bugloss        |
| common agrimony                    | meadow willow        | wide-leaved cattail    |
| common dandelion                   | New England aster    | wild carrot            |
| common flat-topped goldenrod       | northern bugleweed   | yellow foxtail         |
| common horsetail / field horsetail | orchard grass        | yellow rocket          |
| common mallow                      | poison ivy spp.      |                        |

## Compartment 28

Segment 28 is approximately 3.2 acres and is the northern access/parking areas for the trail. A total of 61 species were documented. Eleven (18%) were invasive, including five nominated tiered species. The native species assemblage included eight tree and 42 herbaceous species. Compartment 28 had an FQI score of 18 (low) and mean C value of 2.57. No exploitatively vulnerable species were found.



■ Invasive ■ Trees ■ Herbs

**Non-Invasive  
Species**

**50**

**Invasive  
Species**

**11**

Figure. Classification of species documented in segment 0.

### Mapped Features:

- Culverts – 0
- Tributaries – 0
- Other Human Features – 3

### Nominated Tier Invasive Species:

#### Tier 4

- Common Buckthorn
- Honeysuckle (species unknown)
- Knapweed (species unknown)
- Leafy Spurge, Wolf's Milk
- Purple Loosestrife

| Invasive Species  | Abundance                        | Cover (%) |
|---|----------------------------------|-----------|
| Common Buckthorn  | Dense plants/clumps              | 15        |
| Common St. Johnswort; St. John s wort                   | No Data                          | <5        |
| Great Mullein, Common mullein                           | Sparse (Scattered plants/clumps) | <5        |
| Honeysuckle (species unknown)                           | Sparse (Scattered plants/clumps) | <5        |
| Knapweed (species unknown), Centaurea (species unknown) | Sparse (Scattered plants/clumps) | <5        |
| Leafy Spurge, Wolf's Milk                               | No Data                          | <5        |
| Orange Daylily, Tawny Daylily, Day lily, Day-lily       | No Data                          | <5        |
| Purple Loosestrife                                      | Sparse (Scattered plants/clumps) | <5        |
| Reed Canarygrass  | Dense plants/clumps              | <5        |
| Tufted Vetch  | No Data                          | <5        |
| White Sweet-clover                                      | No Data                          | <5        |

| Tree Species       |
|--------------------|
| American basswood  |
| bitternut hickory  |
| eastern cottonwood |
| eastern red cedar  |
| Scotch pine        |
| shagbark hickory   |
| white ash          |
| white pine         |

| Herbaceous Species             |                               |                        |
|--------------------------------|-------------------------------|------------------------|
| American common/ground juniper | common soapwort, bouncing bet | oldfield cinquefoil    |
| Bebb's willow                  | common Timothy                | orchard grass          |
| big bluestem                   | Deptford pink                 | poison ivy spp.        |
| black raspberry                | devil's beggar ticks          | red-osier dogwood      |
| boneset                        | gray goldenrod                | river grape            |
| calico aster                   | Guelder rose                  | sensitive fern         |
| choke cherry                   | heart-leaved/Missouri willow  | smooth brome           |
| common dandelion               | iris spp.                     | spotted jewelweed      |
| common evening primrose        | jointed rush                  | spotted Joe Pye weed   |
| Common/field horsetail         | lance-leaved aster            | staghorn sumac         |
| common lilac                   | maple-leaved viburnum         | sweet-scented bedstraw |
| common milkweed                | meadow willow                 | tall goldenrod         |
| common plantain                | New England aster             | Virginia creeper       |
| common ragweed                 | northern bugleweed            | wild carrot            |

## **Appendix C: Species Specific Data Summaries**



| Invasive Species Common Name               | Scientific Name  | NYFA Site   |
|--|--|---|
| bitter-sweet nightshade                    | <i>Solanum dulcamara</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6880">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6880</a> |
| black locust                               | <i>Robinia pseudoacacia</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1391">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1391</a> |
| coltsfoot                                  | <i>Tussilago farfara</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=460">http://newyork.plantatlas.usf.edu/Plant.aspx?id=460</a>   |
| common barberry                            | <i>Berberis vulgaris</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=526">http://newyork.plantatlas.usf.edu/Plant.aspx?id=526</a>   |
| common mullein                             | <i>Verbascum thapsus</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2921">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2921</a> |
| common St. John's wort                     | <i>Hypericum perforatum</i> L. ssp. <i>perforatum</i>                          | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=868">http://newyork.plantatlas.usf.edu/Plant.aspx?id=868</a>   |
| crabapple (species unknown)                | Malus spp. (species unknown)   | <a href="http://newyork.plantatlas.usf.edu/Results.aspx">http://newyork.plantatlas.usf.edu/Results.aspx</a>             |
| crown vetch                                | <i>Securigera varia</i> (L.) Lassen  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1412">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1412</a> |
| curly pondweed                             | <i>Potamogeton crispus</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2490">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2490</a> |
| European buckthorn                         | <i>Rhamnus cathartica</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2617">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2617</a> |
| garlic mustard                             | <i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande                           | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6421">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6421</a> |
| glossy buckthorn                           | <i>Frangula alnus</i> Mill.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2616">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2616</a> |
| goutweed                                   | <i>Aegopodium podagraria</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=100">http://newyork.plantatlas.usf.edu/Plant.aspx?id=100</a>   |
| greater burdock                            | <i>Arctium lappa</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=219">http://newyork.plantatlas.usf.edu/Plant.aspx?id=219</a>   |
| helleborine, weed orchid                   | <i>Epipactis helleborine</i> (L.) Crantz                                       | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1999">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1999</a> |
| honeysuckle (species unknown)              | <i>Lonicera</i> spp (species unknown)  | <a href="http://newyork.plantatlas.usf.edu/Results.aspx">http://newyork.plantatlas.usf.edu/Results.aspx</a>             |
| knapweed (species unknown)                 | <i>Centaurea</i> spp (species unknown)   | <a href="http://newyork.plantatlas.usf.edu/Results.aspx">http://newyork.plantatlas.usf.edu/Results.aspx</a>             |
| moneywort, creeping Jenny                  | <i>Lysimachia nummularia</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2535">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2535</a> |
| Morrow's honeysuckle                       | <i>Lonicera morrowii</i> A. Gray   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=693">http://newyork.plantatlas.usf.edu/Plant.aspx?id=693</a>   |
| multiflora rose                            | <i>Rosa multiflora</i> Thunb.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2734">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2734</a> |
| Norway maple                               | <i>Acer platanoides</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=28">http://newyork.plantatlas.usf.edu/Plant.aspx?id=28</a>     |
| old world reed grass, old world phragmites | <i>Phragmites australis</i> (Cav.) Trin. ex Steud.                             | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2388">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2388</a> |
| orange day lily                            | <i>Hemerocallis fulva</i> (L.) L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1831">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1831</a> |
| oriental bittersweet                       | <i>Celastrus orbiculatus</i> Thunb.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=793">http://newyork.plantatlas.usf.edu/Plant.aspx?id=793</a>   |
| pretty honeysuckle                         | <i>Lonicera morrowii</i> × <i>L. tatarica</i> = <i>L. ×bella</i> Zabel         | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=712">http://newyork.plantatlas.usf.edu/Plant.aspx?id=712</a>   |
| purple loosestrife                         | <i>Lythrum salicaria</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6576">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6576</a> |
| reed canary grass                          | <i>Phalaris arundinacea</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2411">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2411</a> |
| slender spurge                             | <i>Euphorbia virgata</i> Waldst. & Kit.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1362">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1362</a> |
| spotted knapweed                           | <i>Centaurea stoebe</i> L. ssp. <i>micranthos</i> (S.G. Gmel. ex Gugler) Hayek | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=503">http://newyork.plantatlas.usf.edu/Plant.aspx?id=503</a>   |
| swallowwort (species unknown)              | <i>Vincetoxicum</i> spp. (species unknown)                                     | <a href="http://newyork.plantatlas.usf.edu/Results.aspx">http://newyork.plantatlas.usf.edu/Results.aspx</a>             |
| tufted vetch                               | <i>Vicia cracca</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1459">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1459</a> |
| Eurasian white poplar                      | <i>Populus alba</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2856">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2856</a> |
| white sweet clover                         | <i>Melilotus albus</i> Medik.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1445">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1445</a> |
| yellow iris                                | <i>Iris pseudacorus</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1613">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1613</a> |

| Herbaceous Species Common Name          | Scientific Name   | NYFA Site   |
|---|---|---|
| alternate-leaved dogwood                | <i>Cornus alternifolia</i> L. f.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=888">http://newyork.plantatlas.usf.edu/Plant.asp?id=888</a>     |
| American bugleweed/American horehound   | <i>Lycopus americanus</i> Muhl. ex W.P.C. Barton                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1686">http://newyork.plantatlas.usf.edu/Plant.asp?id=1686</a>   |
| American common juniper/ground juniper  | <i>Juniperus communis</i> L. var. <i>depressa</i> Pursh                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=922">http://newyork.plantatlas.usf.edu/Plant.asp?id=922</a>     |
| American mountain ash                   | <i>Sorbus americana</i> Marshall  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2748">http://newyork.plantatlas.usf.edu/Plant.asp?id=2748</a>   |
| American red raspberry                  | <i>Rubus idaeus</i> L. ssp. <i>strigosus</i> (Michx.) Focke                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2755">http://newyork.plantatlas.usf.edu/Plant.asp?id=2755</a>   |
| American stinging nettle                | <i>Urtica gracilis</i> Aiton ssp. <i>gracilis</i>                           | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=3053">http://newyork.plantatlas.usf.edu/Plant.asp?id=3053</a>   |
| annual daisy fleabane                   | <i>Erigeron annuus</i> (L.) Pers.   | <a href="http://newyork.plantatlas.usf.edu/plant.asp?id=353">http://newyork.plantatlas.usf.edu/plant.asp?id=353</a>     |
| annual blue grass                       | <i>Poa annua</i>  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6705">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6705</a> |
| asparagus                               | <i>Asparagus officinalis</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6684">http://newyork.plantatlas.usf.edu/Plant.asp?id=6684</a>   |
| baneberry spp.                          | <i>Actaea</i> spp.  | <a href="http://newyork.plantatlas.usf.edu/Genus.aspx?id=880">http://newyork.plantatlas.usf.edu/Genus.aspx?id=880</a>   |
| Bebb's willow                           | <i>Salix bebbiana</i> Sarg.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2887">http://newyork.plantatlas.usf.edu/Plant.asp?id=2887</a>   |
| big bluestem                            | <i>Andropogon gerardi</i> Vitman  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2321">http://newyork.plantatlas.usf.edu/Plant.asp?id=2321</a>   |
| black medic                             | <i>Medicago lupulina</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6553">http://newyork.plantatlas.usf.edu/Plant.asp?id=6553</a>   |
| black raspberry                         | <i>Rubus occidentalis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2751">http://newyork.plantatlas.usf.edu/Plant.asp?id=2751</a>   |
| bladder campion                         | <i>Silene vulgaris</i> (Moench) Garcke                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=738">http://newyork.plantatlas.usf.edu/Plant.asp?id=738</a>     |
| bladder sedge                           | <i>Carex intumescens</i> Rudge  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1174">http://newyork.plantatlas.usf.edu/Plant.asp?id=1174</a>   |
| bladdernut                              | <i>Staphylea trifolia</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=3019">http://newyork.plantatlas.usf.edu/Plant.asp?id=3019</a>   |
| bloodroot                               | <i>Sanguinaria canadensis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2063">http://newyork.plantatlas.usf.edu/Plant.asp?id=2063</a>   |
| blueberry spp.                          | <i>Vaccinium</i> spp.   | <a href="http://newyork.plantatlas.usf.edu/Genus.aspx?id=832">http://newyork.plantatlas.usf.edu/Genus.aspx?id=832</a>   |
| blue cohosh, late blue cohosh           | <i>Caulophyllum thalictroides</i> (L.) Michx.                               | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=524">http://newyork.plantatlas.usf.edu/Plant.asp?id=524</a>     |
| blue flag                               | <i>Iris versicolor</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1610">http://newyork.plantatlas.usf.edu/Plant.asp?id=1610</a>   |
| blue vervain                            | <i>Verbena hastata</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6910">http://newyork.plantatlas.usf.edu/Plant.asp?id=6910</a>   |
| blue-stemmed goldenrod/wreath goldenrod | <i>Solidago caesia</i> L. var. <i>caesia</i>                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=284">http://newyork.plantatlas.usf.edu/Plant.asp?id=284</a>     |
| boneset                                 | <i>Eupatorium perfoliatum</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=378">http://newyork.plantatlas.usf.edu/Plant.asp?id=378</a>     |
| bottlebrush grass                       | <i>Elymus hystrix</i> L. var. <i>unknown</i>                                | <a href="http://newyork.plantatlas.usf.edu/plant.asp?id=7668">http://newyork.plantatlas.usf.edu/plant.asp?id=7668</a>   |
| bulblet fern                            | <i>Cystopteris bulbifera</i> (L.) Bernh.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1261">http://newyork.plantatlas.usf.edu/Plant.asp?id=1261</a>   |
| bush honeysuckle                        | <i>Diervilla lonicera</i> Mill.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=697">http://newyork.plantatlas.usf.edu/Plant.asp?id=697</a>     |
| calico aster                            | <i>Symphyotrichum lateriflorum</i> (L.) Á. Löve & D. Löve                   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=425">http://newyork.plantatlas.usf.edu/Plant.asp?id=425</a>     |
| Canada anemone                          | <i>Anemone canadensis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2577">http://newyork.plantatlas.usf.edu/Plant.asp?id=2577</a>   |
| Canada cocklebur                        | <i>Xanthium strumarium</i> L. var. <i>canadense</i> (Mill.) Torr. & A. Gray | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=176">http://newyork.plantatlas.usf.edu/Plant.asp?id=176</a>     |

|   |   |   |
|---|---|---|
| Canada goldenrod                              | <i>Solidago canadensis</i> L. var. <i>canadensis</i>                            | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=285">http://newyork.plantatlas.usf.edu/Plant.aspx?id=285</a>   |
| Canada mayflower                              | <i>Maianthemum canadense</i> Desf.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1859">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1859</a> |
| Canada onion                                  | <i>Allium canadense</i> var. <i>canadense</i>                                   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6688">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6688</a> |
| Canada waterleaf                              | <i>Hydrophyllum canadense</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1607">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1607</a> |
| Canada wild rye                               | <i>Elymus canadensis</i> L. var. <i>canadensis</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2314">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2314</a> |
| Carolina crane's bill                         | <i>Geranium carolinianum</i> L.   | <a href="http://newyork.plantatlas.usf.edu/plant.asp1?id=6625">http://newyork.plantatlas.usf.edu/plant.asp1?id=6625</a> |
| chicory                                       | <i>Cichorium intybus</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6975">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6975</a> |
| choke cherry                                  | <i>Prunus virginiana</i> L. var. <i>virginiana</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2704">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2704</a> |
| Christmas fern                                | <i>Polystichum acrostichoides</i> (Michx.) Schott                               | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1280">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1280</a> |
| clammy ground cherry                          | <i>Physalis heterophylla</i> Nees   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2998">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2998</a> |
| coastal shadbush                              | <i>Amelanchier canadensis</i> (L.) Medik. var. <i>canadensis</i>                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2797">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2797</a> |
| columbine spp.                                | <i>Aquilegia</i> spp.   | <a href="http://newyork.plantatlas.usf.edu/Genus.asp1?id=726">http://newyork.plantatlas.usf.edu/Genus.asp1?id=726</a>   |
| common agrimony                               | <i>Agrimonia gryposepala</i> Wallr.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6492">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6492</a> |
| common bird's foot trefoil                    | <i>Lotus corniculatus</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1438">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1438</a> |
| common blackberry                             | <i>Rubus allegheniensis</i> Porter  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2747">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2747</a> |
| common black-eyed Susan                       | <i>Rudbeckia hirta</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=7023">http://newyork.plantatlas.usf.edu/Plant.asp1?id=7023</a> |
| common Canada sanicle/common Canada snakeroot | <i>Sanicula canadensis</i> L. var. <i>canadensis</i>                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=94">http://newyork.plantatlas.usf.edu/Plant.asp1?id=94</a>     |
| common carrion flower                         | <i>Smilax herbacea</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2987">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2987</a> |
| common dandelion                              | <i>Taraxacum officinale</i> F.H. Wigg.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=359">http://newyork.plantatlas.usf.edu/Plant.asp1?id=359</a>   |
| common elderberry                             | <i>Sambucus nigra</i> L. ssp. <i>canadensis</i> (L.) Bolli                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=730">http://newyork.plantatlas.usf.edu/Plant.asp1?id=730</a>   |
| common evening primrose                       | <i>Oenothera biennis</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6585">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6585</a> |
| common flat-topped goldenrod                  | <i>Euthamia graminifolia</i> (L.) Nutt.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=306">http://newyork.plantatlas.usf.edu/Plant.asp1?id=306</a>   |
| common golden Alexanders                      | <i>Zizia aurea</i> (L.) W.D.J. Koch   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=117">http://newyork.plantatlas.usf.edu/Plant.asp1?id=117</a>   |
| common horsetail / field horsetail            | <i>Equisetum arvense</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Genus.asp1?id=496">http://newyork.plantatlas.usf.edu/Genus.asp1?id=496</a>   |
| common horseweed                              | <i>Erigeron canadensis</i> L. var. <i>canadensis</i>                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6978">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6978</a> |
| common lilac                                  | <i>Syringa vulgaris</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1944">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1944</a> |
| common mallow                                 | <i>Malva neglecta</i> Wallr.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6374">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6374</a> |
| common milkweed                               | <i>Asclepias syriaca</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=153">http://newyork.plantatlas.usf.edu/Plant.asp1?id=153</a>   |
| common plantain                               | <i>Plantago major</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2097">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2097</a> |
| common ragweed                                | <i>Ambrosia artemisiifolia</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=184">http://newyork.plantatlas.usf.edu/Plant.asp1?id=184</a>   |
| common scouring rush                          | <i>Equisetum hyemale</i> L. ssp. <i>affine</i> (Engelm.) Calder & Roy L. Taylor | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1301">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1301</a> |

|  |   |   |
|--|---|---|
| common sneezeweed                            | <i>Helenium autumnale</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=314">http://newyork.plantatlas.usf.edu/Plant.asp?id=314</a>   |
| common soapwort, bouncing bet                | <i>Saponaria officinalis</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=753">http://newyork.plantatlas.usf.edu/Plant.asp?id=753</a>   |
| common speedwell                             | <i>Veronica officinalis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2917">http://newyork.plantatlas.usf.edu/Plant.asp?id=2917</a>   |
| common Timothy                               | <i>Phleum pratense</i> L. ssp. <i>pratense</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2185">http://newyork.plantatlas.usf.edu/Plant.asp?id=2185</a>   |
| common white snakeroot                       | <i>Ageratina altissima</i> (L.) R.M. King & H. Rob.                         | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=516">http://newyork.plantatlas.usf.edu/Plant.asp?id=516</a>   |
| common witch grass                           | <i>Panicum capillare</i> L. ssp. <i>capillare</i>                           | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2398">http://newyork.plantatlas.usf.edu/Plant.asp?id=2398</a>   |
| common wool grass                            | <i>Scirpus cyperinus</i> (L.) Kunth   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1124">http://newyork.plantatlas.usf.edu/Plant.asp?id=1124</a>   |
| common wrinkle-leaved goldenrod              | <i>Solidago rugosa</i> Mill. var. <i>rugosa</i>                             | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=406">http://newyork.plantatlas.usf.edu/Plant.asp?id=406</a>   |
| common yellow wood sorrel                    | <i>Oxalis stricta</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2056">http://newyork.plantatlas.usf.edu/Plant.asp?id=2056</a>   |
| corn   | <i>Zea mays</i> L. ssp. <i>mays</i>   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2167">http://newyork.plantatlas.usf.edu/Plant.asp?id=2167</a>   |
| creeping bellflower                          | <i>Campanula rapunculoides</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=668">http://newyork.plantatlas.usf.edu/Plant.asp?id=668</a>   |
| crooked-stemmed aster                        | <i>Symphyotrichum prenanthoides</i> (Muhl. ex Willd.) G.L. Nesom            | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=441">http://newyork.plantatlas.usf.edu/Plant.aspx?id=441</a>   |
| cultivated onion                             | <i>Allium cepa</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1806">http://newyork.plantatlas.usf.edu/Plant.asp?id=1806</a>   |
| curly dock                                   | <i>Rumex crispus</i> L. ssp. <i>crispus</i>                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2458">http://newyork.plantatlas.usf.edu/Plant.asp?id=2458</a>   |
| dark-green bulrush                           | <i>Scirpus atrovirens</i> Willd.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1123">http://newyork.plantatlas.usf.edu/Plant.asp?id=1123</a>   |
| deer-tongue rosette grass                    | <i>Dichanthelium clandestinum</i> (L.) Gould                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2249">http://newyork.plantatlas.usf.edu/Plant.asp?id=2249</a>   |
| Deptford pink                                | <i>Dianthus armeria</i> L. ssp. <i>armeria</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6343">http://newyork.plantatlas.usf.edu/Plant.asp?id=6343</a>   |
| devil's beggar ticks                         | <i>Bidens frondosa</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6965">http://newyork.plantatlas.usf.edu/Plant.asp?id=6965</a>   |
| ditch stonecrop                              | <i>Penthorum sedoides</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=907">http://newyork.plantatlas.usf.edu/Plant.asp?id=907</a>   |
| dotted hawthorn                              | <i>Crataegus punctata</i> Jacq.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2771">http://newyork.plantatlas.usf.edu/Plant.asp?id=2771</a>   |
| early meadow rue                             | <i>Thalictrum dioicum</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6284">http://newyork.plantatlas.usf.edu/Plant.asp?id=6284</a>   |
| eastern bracken fern                         | <i>Pteridium aquilinum</i> (L.) Kuhn ssp. <i>latiusculum</i> (Desv.) Hultén | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1231">http://newyork.plantatlas.usf.edu/Plant.asp?id=1231</a>   |
| eastern enchanter's nightshade               | <i>Circaea canadensis</i> (L.) Hill   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1962&amp;syn_name=Circaea+lutetiana+var.+canadensis">http://newyork.plantatlas.usf.edu/Plant.asp?id=1962&amp;syn_name=Circaea+lutetiana+var.+canadensis</a> |
| eastern riverbank wild rye                   | <i>Elymus riparius</i> Wiegand  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2410">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2410</a>   |
| eastern willowherb                           | <i>Epilobium coloratum</i> Biehler  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1970">http://newyork.plantatlas.usf.edu/Plant.asp?id=1970</a>   |
| English plantain                             | <i>Plantago lanceolata</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6937">http://newyork.plantatlas.usf.edu/Plant.asp?id=6937</a>   |
| Eurasian barnyard grass                      | <i>Echinochloa crus-galli</i> (L.) P. Beauv.                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2163">http://newyork.plantatlas.usf.edu/Plant.asp?id=2163</a>   |
| Eurasian live forever                        | <i>Hylotelephium telephium</i> (L.) H. Ohba                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=912">http://newyork.plantatlas.usf.edu/Plant.asp?id=912</a>   |
| Eurasian selfheal/Eurasian heal all          | <i>Prunella vulgaris</i> L. ssp. <i>vulgaris</i>                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1695">http://newyork.plantatlas.usf.edu/Plant.asp?id=1695</a>   |
| European bugleweed, European water horehound | <i>Lycopus europaeus</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1743">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1743</a>   |
| European mountain ash                        | <i>Sorbus aucuparia</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2626">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2626</a>   |

|  |  |   |
|--|--|---|
| evergreen wood fern, fancy wood fern, common wood fern | <i>Dryopteris intermedia</i> (Muhl. ex Willd.) A. Gray       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1284">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1284</a> |
| false nettle   | <i>Boehmeria cylindrica</i> (L.) Sw.                         | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3051">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3051</a> |
| false Solomon's seal                                   | <i>Maianthemum racemosum</i> (L.) Link ssp. <i>racemosum</i> | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1849">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1849</a> |
| false yellow nut sedge                                 | <i>Cyperus strigosus</i> L.                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1071">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1071</a> |
| field cress  | <i>Lepidium campestre</i> (L.) W.T. Aiton                    | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6451">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6451</a> |
| field mint   | <i>Mentha arvensis</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1749">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1749</a> |
| fire cherry/pin cherry                                 | <i>Prunus pensylvanica</i> L. f.                             | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6519">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6519</a> |
| foamflower   | <i>Tiarella cordifolia</i> L.                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2904">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2904</a> |
| fowl blue grass  | <i>Poa palustris</i> L.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6704">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6704</a> |
| fragrant sumac   | <i>Rhus aromatica</i> Aiton var. <i>aromatica</i>            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=63">http://newyork.plantatlas.usf.edu/Plant.asp1?id=63</a>     |
| fringed loosestrife                                    | <i>Lysimachia ciliata</i> L.                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6483">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6483</a> |
| graceful sedge   | <i>Carex gracillima</i> Schwein.                             | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1166">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1166</a> |
| grass-leaved stitchwort                                | <i>Stellaria graminea</i>                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=751">http://newyork.plantatlas.usf.edu/Plant.asp1?id=751</a>   |
| gray dogwood/red-panicked dogwood                      | <i>Cornus racemosa</i> Lam.                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=895">http://newyork.plantatlas.usf.edu/Plant.asp1?id=895</a>   |
| gray goldenrod   | <i>Solidago nemoralis</i> Aiton ssp. <i>nemoralis</i>        | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=229">http://newyork.plantatlas.usf.edu/Plant.asp1?id=229</a>   |
| Gray's sedge   | <i>Carex grayi</i> J. Carey                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6800">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6800</a> |
| greater burdock  | <i>Arctium lappa</i> L.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=219">http://newyork.plantatlas.usf.edu/Plant.asp1?id=219</a>   |
| green arrow arum/tuckahoe                              | <i>Peltandra virginica</i> (L.) Raf. e1 Schott               | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=132">http://newyork.plantatlas.usf.edu/Plant.asp1?id=132</a>   |
| green dragon   | <i>Arisaema dracontium</i> (L.) Schott                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=137">http://newyork.plantatlas.usf.edu/Plant.asp1?id=137</a>   |
| green foxtail  | <i>Setaria viridis</i> (L.) P. Beauv. var. <i>viridis</i>    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2223">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2223</a> |
| green-fruited clearweed                                | <i>Pilea pumila</i> (L.) A. Gray var. <i>pumila</i>          | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3052">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3052</a> |
| groundnut  | <i>Apios americana</i> Medik.                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1398">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1398</a> |
| Guelder rose   | <i>Viburnum opulus</i> L. var. <i>opulus</i>                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=715">http://newyork.plantatlas.usf.edu/Plant.asp1?id=715</a>   |
| harebell   | <i>Campanula rotundifolia</i> L.                             | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=674">http://newyork.plantatlas.usf.edu/Plant.asp1?id=674</a>   |
| hay-scented fern                                       | <i>Dennstaedtia punctilobula</i> (Michx.) T. Moore           | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1229">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1229</a> |
| heart-leaved aster                                     | <i>Symphotrichum cordifolium</i> (L.) G.L. Nesom             | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=508">http://newyork.plantatlas.usf.edu/Plant.asp1?id=508</a>   |
| heart-leaved willow/Missouri willow                    | <i>Salix eriocephala</i> Michx.                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2862">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2862</a> |
| hedge bedstraw   | <i>Galium album</i> Mill.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2822">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2822</a> |
| hedge bindweed   | <i>Calystegia sepium</i> (L.) R. Br.                         | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=877">http://newyork.plantatlas.usf.edu/Plant.aspx?id=877</a>   |
| helleborine, weed orchid                               | <i>Epipactis helleborine</i> (L.) Crantz                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1999">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1999</a> |
| hemlock water parsnip                                  | <i>Sium suave</i> Walter                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=72">http://newyork.plantatlas.usf.edu/Plant.asp1?id=72</a>     |

|                          |  |   |
|--------------------------|--|---|
| herb Robert              | <i>Geranium robertianum</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6620">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6620</a>           |
| hoary alyssum            | <i>Berteroa incana</i> (L.) DC.  | <a href="https://dev.newyork.plantatlas.usf.edu/plant.asp1?id=6429">https://dev.newyork.plantatlas.usf.edu/plant.asp1?id=6429</a> |
| hog peanut               | <i>Amphicarpaea bracteata</i> (L.) Fernald                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6541">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6541</a>           |
| honewort                 | <i>Cryptotaenia canadensis</i> (L.) DC.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=78">http://newyork.plantatlas.usf.edu/Plant.asp1?id=78</a>               |
| Indian grass             | <i>Sorghastrum nutans</i> (L.) Nash  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2225">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2225</a>           |
| Indian hemp              | <i>Apocynum cannabinum</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=122">http://newyork.plantatlas.usf.edu/Plant.asp1?id=122</a>             |
| iris spp.                | <i>Iris</i> spp.   |   |
| Jack-in-the-pulpit       | <i>Arisaema triphyllum</i> (L.) Schott ssp. triphyllum                         | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=135">http://newyork.plantatlas.usf.edu/Plant.aspx?id=135</a>             |
| jointed rush             | <i>Juncus articulatus</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1666">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1666</a>           |
| jumpseed                 | <i>Persicaria virginiana</i> (L.) Gaertn.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6361">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6361</a>           |
| Kentucky blue grass      | <i>Poa pratensis</i> L. spp.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=7755">http://newyork.plantatlas.usf.edu/Plant.asp1?id=7755</a>           |
| lady's thumb             | <i>Persicaria maculosa</i> Gray  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6363">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6363</a>           |
| lamb's quarters, pigweed | <i>Chenopodium album</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=808">http://newyork.plantatlas.usf.edu/Plant.aspx?id=808</a>             |
| lance-leaved aster       | <i>Symphyotrichum lanceolatum</i> (Willd.) G.L. Nesom var. <i>lanceolatum</i>  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=452">http://newyork.plantatlas.usf.edu/Plant.asp1?id=452</a>             |
| large-leaved aster       | <i>Eurybia macrophylla</i> (L.) Cass.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=466">http://newyork.plantatlas.usf.edu/Plant.asp1?id=466</a>             |
| lesser burdock           | <i>Arctium minus</i> (Hill) Bernh.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=220">http://newyork.plantatlas.usf.edu/Plant.asp1?id=220</a>             |
| lopseed                  | <i>Phryma leptostachya</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3069">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3069</a>           |
| mad dog skullcap         | <i>Scutellaria lateriflora</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1718">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1718</a>           |
| maidenhair fern          | <i>Adiantum pedatum</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2546">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2546</a>           |
| maple-leaved viburnum    | <i>Viburnum acerifolium</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=699">http://newyork.plantatlas.usf.edu/Plant.asp1?id=699</a>             |
| marginal wood fern       | <i>Dryopteris marginalis</i> (L.) A. Gray                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6270">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6270</a>           |
| marsh fern               | <i>Thelypteris palustris</i> Schott var. <i>pubescens</i> (G. Lawson) Fernald  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3031">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3031</a>           |
| marsh hedge nettle       | <i>Stachys palustris</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1726">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1726</a>           |
| meadow buttercup         | <i>Ranunculus acris</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2607">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2607</a>           |
| meadow rue spp.          | <i>Thalictrum</i> spp.   | <a href="http://newyork.plantatlas.usf.edu/Genus.asp1?id=393">http://newyork.plantatlas.usf.edu/Genus.asp1?id=393</a>             |
| meadow salsify           | <i>Tragopogon pratensis</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=471">http://newyork.plantatlas.usf.edu/Plant.asp1?id=471</a>             |
| meadow willow            | <i>Salix petiolaris</i> Sm.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2888">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2888</a>           |
| moonseed                 | <i>Menispermum canadense</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1912">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1912</a>           |
| mouse ear chickweed      | <i>Cerastium fontanum</i> Baumg. ssp. <i>vulgare</i> (Hartm.) Greuter & Burdet | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6345">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6345</a>           |
| New England aster        | <i>Symphyotrichum novae-angliae</i> (L.) G.L. Nesom                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6960">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6960</a>           |
| nodding beggar ticks     | <i>Bidens cernua</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=383">http://newyork.plantatlas.usf.edu/Plant.asp1?id=383</a>             |

|                                    |   |   |
|------------------------------------|---|---|
| northern bugleweed                 | <i>Lycopus uniflorus</i> Michx.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1735">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1735</a> |
| northern lady fern                 | <i>Athyrium angustum</i> (Willd.) C. Presl  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1269">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1269</a> |
| northern tickle grass              | <i>Agrostis scabra</i> Willd.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2301">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2301</a> |
| northern three-petaled bedstraw    | <i>Galium trifidum</i> L. ssp. trifidum   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2833">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2833</a> |
| oldfield cinquefoil                | <i>Potentilla simplex</i> Michx.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2643">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2643</a> |
| orange hawkweed                    | <i>Pilosella aurantiaca</i> (L.) F.W. Schultz & Sch. Bip.                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=300">http://newyork.plantatlas.usf.edu/Plant.asp1?id=300</a>   |
| orange-fruited horse gentian       | <i>Triosteum aurantiacum</i> E.P. Bicknell  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=701">http://newyork.plantatlas.usf.edu/Plant.asp1?id=701</a>   |
| orchard grass                      | <i>Dactylis glomerata</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2292">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2292</a> |
| ostrich fern                       | <i>Matteuccia struthiopteris</i> (L.) Tod. var. <i>pennsylvanica</i> (Willd.) C.V. Morton | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1282">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1282</a> |
| oxeye daisy                        | <i>Leucanthemum vulgare</i> Lam.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=376">http://newyork.plantatlas.usf.edu/Plant.asp1?id=376</a>   |
| partridge berry                    | <i>Mitchella repens</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6854">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6854</a> |
| Pennsylvania bitter cress          | <i>Cardamine pennsylvanica</i> Muhl. ex Willd.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6437">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6437</a> |
| Pennsylvania smartweed             | <i>Persicaria pennsylvanica</i> (L.) M. Gómez   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2438">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2438</a> |
| Philadelphia fleabane              | <i>Erigeron philadelphicus</i> L. var. <i>philadelphicus</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6986">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6986</a> |
| plantain-leaved sedge              | <i>Carex plantaginea</i> Lam.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1151">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1151</a> |
| poison ivy spp.                    | <i>Toxicodendron</i> spp.   | <a href="http://newyork.plantatlas.usf.edu/Genus.asp1?id=950">http://newyork.plantatlas.usf.edu/Genus.asp1?id=950</a>   |
| pokeweed                           | <i>Phytolacca americana</i> L. var. <i>americana</i>                                      | <a href="http://newyork.plantatlas.usf.edu/plant.asp1?id=2072">http://newyork.plantatlas.usf.edu/plant.asp1?id=2072</a> |
| prickly gooseberry                 | <i>Ribes cynosbati</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1564">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1564</a> |
| purple trillium, stinking Benjamin | <i>Trillium erectum</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1812">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1812</a> |
| purple-flowering raspberry         | <i>Rubus odoratus</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2759">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2759</a> |
| purple-stemmed aster               | <i>Symphotrichum puniceum</i> (L.) Á. Löve & D. Löve var. <i>puniceum</i>                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=428">http://newyork.plantatlas.usf.edu/Plant.asp1?id=428</a>   |
| purple-stemmed beggar ticks        | <i>Bidens connata</i> Muhl. ex Willd.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=358">http://newyork.plantatlas.usf.edu/Plant.aspx?id=358</a>   |
| ragged robin                       | <i>Lychnis flos-cuculi</i> L. ssp. <i>flos-cuculi</i>                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=757">http://newyork.plantatlas.usf.edu/Plant.asp1?id=757</a>   |
| red baneberry                      | <i>Actaea rubra</i> (Aiton) Willd.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2563">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2563</a> |
| red clover                         | <i>Trifolium pratense</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6569">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6569</a> |
| red-osier dogwood                  | <i>Cornus sericea</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=891">http://newyork.plantatlas.usf.edu/Plant.asp1?id=891</a>   |
| rice cut grass                     | <i>Leersia oryzoides</i> (L.) Sw.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2250">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2250</a> |
| river grape                        | <i>Vitis riparia</i> Michx.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3123">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3123</a> |
| round-leaved dogwood               | <i>Cornus rugosa</i> Lam.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=890">http://newyork.plantatlas.usf.edu/Plant.asp1?id=890</a>   |
| royal fern                         | <i>Osmunda regalis</i> L. var. <i>spectabilis</i> (Willd.) A. Gray                        | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2053">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2053</a> |
| sensitive fern                     | <i>Onoclea sensibilis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1281">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1281</a> |

|  |   |   |
|--|---|---|
| sessile-leaved bellwort/wild oats      | <i>Uvularia sessilifolia</i> L.                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6677">http://newyork.plantatlas.usf.edu/Plant.asp?id=6677</a>   |
| sharp-lobed hepatica                   | <i>Hepatica acutiloba</i> DC.                                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2598">http://newyork.plantatlas.usf.edu/Plant.asp?id=2598</a>   |
| showy tick trefoil                     | <i>Desmodium canadense</i> (L.) DC.                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=1486">http://newyork.plantatlas.usf.edu/Plant.asp?id=1486</a>   |
| silky dogwood                          | <i>Cornus amomum</i> Mill. ssp. <i>amomum</i>                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=893">http://newyork.plantatlas.usf.edu/Plant.asp?id=893</a>     |
| silky willow                           | <i>Salix sericea</i> Marshall                                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2874">http://newyork.plantatlas.usf.edu/Plant.asp?id=2874</a>   |
| silver rod                             | <i>Solidago bicolor</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=283">http://newyork.plantatlas.usf.edu/Plant.asp?id=283</a>     |
| skunk cabbage                          | <i>Symplocarpus foetidus</i> (L.) Salisb. et W.P.C. Barton          | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=131">http://newyork.plantatlas.usf.edu/Plant.asp?id=131</a>     |
| slender agalinis                       | <i>Agalinis tenuifolia</i> (Vahl) Raf.                              | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2953">http://newyork.plantatlas.usf.edu/Plant.asp?id=2953</a>   |
| small-flowered willowherb              | <i>Epilobium parviflorum</i> Schreb.                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6581">http://newyork.plantatlas.usf.edu/Plant.asp?id=6581</a>   |
| smooth arrowwood                       | <i>Viburnum dentatum</i> L. var. <i>lucidum</i> Aiton               | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=714">http://newyork.plantatlas.usf.edu/Plant.aspx?id=714</a>   |
| smooth brome                           | <i>Bromus inermis</i> Leyss.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2169">http://newyork.plantatlas.usf.edu/Plant.asp?id=2169</a>   |
| spikenard                              | <i>Aralia racemosa</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6615">http://newyork.plantatlas.usf.edu/Plant.asp?id=6615</a>   |
| spotted jewelweed/spotted touch-me-not | <i>Impatiens capensis</i> Meerb.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6618">http://newyork.plantatlas.usf.edu/Plant.asp?id=6618</a>   |
| spotted Joe Pye weed                   | <i>Eutrochium maculatum</i> (L.) E.E. Lamont                        | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6992">http://newyork.plantatlas.usf.edu/Plant.asp?id=6992</a>   |
| spotted water hemlock                  | <i>Cicuta maculata</i> L. var. <i>maculata</i>                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6640">http://newyork.plantatlas.usf.edu/Plant.asp?id=6640</a>   |
| spreading dogbane                      | <i>Apocynum androsaemifolium</i> L.                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=123">http://newyork.plantatlas.usf.edu/Plant.asp?id=123</a>     |
| staghorn sumac                         | <i>Rhus typhina</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=67">http://newyork.plantatlas.usf.edu/Plant.asp?id=67</a>       |
| starry Solmon's seal                   | <i>Maianthemum stellatum</i>  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1842">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1842</a> |
| strawberry spp.                        | <i>Fragaria</i> spp.  | <a href="http://newyork.plantatlas.usf.edu/Genus.asp?id=123">http://newyork.plantatlas.usf.edu/Genus.asp?id=123</a>     |
| sulphur cinquefoil                     | <i>Potentilla recta</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2774">http://newyork.plantatlas.usf.edu/Plant.asp?id=2774</a>   |
| sweet-scented bedstraw                 | <i>Galium triflorum</i> Michx.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=6875">http://newyork.plantatlas.usf.edu/Plant.asp?id=6875</a>   |
| tall anemone/thimbleweed               | <i>Anemone virginiana</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=2582">http://newyork.plantatlas.usf.edu/Plant.asp?id=2582</a>   |
| tall flat-topped white aster           | <i>Doellingeria umbellata</i> (Mill.) Nees var. <i>umbellata</i>    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=424">http://newyork.plantatlas.usf.edu/Plant.asp?id=424</a>     |
| tall goldenrod                         | <i>Solidago altissima</i> L. ssp. <i>altissima</i>                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=408">http://newyork.plantatlas.usf.edu/Plant.asp?id=408</a>     |
| tall lettuce                           | <i>Lactuca canadensis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=400">http://newyork.plantatlas.usf.edu/Plant.aspx?id=400</a>   |
| tall meadow rue                        | <i>Thalictrum pubescens</i> Pursh                                   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2552">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2552</a> |
| thin-leaved sunflower                  | <i>Helianthus decapetalus</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=309">http://newyork.plantatlas.usf.edu/Plant.aspx?id=309</a>   |
| three-way sedge                        | <i>Dulichium arundinaceum</i> (L.) Britton var. <i>arundinaceum</i> | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1072">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1072</a> |
| thyme-leaved sandwort                  | <i>Arenaria serpyllifolia</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp?id=739">http://newyork.plantatlas.usf.edu/Plant.asp?id=739</a>     |
| velvetleaf                             | <i>Abutilon theophrasti</i> Medik.                                  | <a href="http://newyork.plantatlas.usf.edu/plant.asp?id=1905">http://newyork.plantatlas.usf.edu/plant.asp?id=1905</a>   |
| violet spp.                            | <i>Viola</i> spp.   | <a href="http://newyork.plantatlas.usf.edu/Genus.asp?id=71">http://newyork.plantatlas.usf.edu/Genus.asp?id=71</a>       |



|                              |  |   |
|------------------------------|--|---|
| viper's bugloss              | <i>Echium vulgare</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6899">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6899</a> |
| virgin's bower               | <i>Clematis virginiana</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2559">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2559</a> |
| Virginia creeper             | <i>Parthenocissus quinquefolia</i> (L.) Planch.                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3120">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3120</a> |
| Virginia stickseed           | <i>Hackelia virginiana</i> (L.) I.M. Johnst.                     | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6901">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6901</a> |
| Virginia wild rye            | <i>Elymus virginicus</i> L. var. <i>virginicus</i>               | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2395">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2395</a> |
| water forget-me-not          | <i>Myosotis scorpioides</i> L.                                   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=572">http://newyork.plantatlas.usf.edu/Plant.asp1?id=572</a>   |
| water pepper                 | <i>Persicaria hydropiper</i> (L.) Delarbre                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2441">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2441</a> |
| water purslane               | <i>Ludwigia palustris</i> (L.) Elliott                           | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1965">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1965</a> |
| water speedwell              | <i>Veronica anagallis-aquatica</i> L.                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6838">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6838</a> |
| white avens                  | <i>Geum canadense</i> Jacq.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2684">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2684</a> |
| white baneberry, doll's eyes | <i>Actaea pachypoda</i> Elliott                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2575">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2575</a> |
| white rattlesnake root       | <i>Nabalus albus</i> (L.) Hook.                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=7021">http://newyork.plantatlas.usf.edu/Plant.asp1?id=7021</a> |
| white trillium               | <i>Trillium grandiflorum</i> (Michx.) Salisb.                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1829">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1829</a> |
| white turtlehead             | <i>Chelone glabra</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2933">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2933</a> |
| white vervain                | <i>Verbena urticifolia</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3071">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3071</a> |
| white wood aster             | <i>Eurybia divaricata</i> (L.) G.L. Nesom                        | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=507">http://newyork.plantatlas.usf.edu/Plant.asp1?id=507</a>   |
| wide-leaved cattail          | <i>Typha latifolia</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=3043">http://newyork.plantatlas.usf.edu/Plant.aspx?id=3043</a> |
| wild basil                   | <i>Clinopodium vulgare</i> L.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1693">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1693</a> |
| wild black currant           | <i>Ribes americanum</i> Mill.                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=1561">http://newyork.plantatlas.usf.edu/Plant.asp1?id=1561</a> |
| wild carrot                  | <i>Daucus carota</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=101">http://newyork.plantatlas.usf.edu/Plant.asp1?id=101</a>   |
| wild ginger                  | <i>Asarum canadense</i> L.                                       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=147">http://newyork.plantatlas.usf.edu/Plant.asp1?id=147</a>   |
| wild sarsaparilla            | <i>Aralia nudicaulis</i> L.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6616">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6616</a> |
| wood nettle                  | <i>Laportea canadensis</i> (L.) Wedd.                            | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=3055">http://newyork.plantatlas.usf.edu/Plant.asp1?id=3055</a> |
| wormseed mustard             | <i>Erysimum cheiranthoides</i> L.                                | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=6453">http://newyork.plantatlas.usf.edu/Plant.asp1?id=6453</a> |
| yellow foxtail               | <i>Setaria pumila</i> (Poir.) Roem. & Schult. ssp. <i>pumila</i> | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=2260">http://newyork.plantatlas.usf.edu/Plant.asp1?id=2260</a> |
| yellow hawkweed              | <i>Pilosella caespitosa</i> (Dumort.) P.D. Sell. & C. West       | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=301">http://newyork.plantatlas.usf.edu/Plant.asp1?id=301</a>   |
| yellow rocket                | <i>Barbarea vulgaris</i> W.T. Aiton                              | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=611">http://newyork.plantatlas.usf.edu/Plant.aspx?id=611</a>   |
| zigzag goldenrod             | <i>Solidago flexicaulis</i> L.                                   | <a href="http://newyork.plantatlas.usf.edu/Plant.asp1?id=278">http://newyork.plantatlas.usf.edu/Plant.asp1?id=278</a>   |

| Tree Species Common Name | Scientific Name   | NYFA Site   |
|--------------------------|---|---|
| fire cherry pin cherry   | <i>Prunus pensylvanica</i> L. f.                                      | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6519">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6519</a>         |
| red pine                 | <i>Pinus resinosa</i> Aiton   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2086">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2086</a>         |
| white spruce             | <i>Picea glauca</i> (Moench) Voss                                     | <a href="http://newyork.plantatlas.usf.edu/plant.aspx?id=2082">http://newyork.plantatlas.usf.edu/plant.aspx?id=2082</a>         |
| gray birch               | <i>Betula populifolia</i> Marshall                                    | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=551">http://newyork.plantatlas.usf.edu/Plant.aspx?id=551</a>           |
| mountain maple           | <i>Acer spicatum</i> Lam.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6605">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6605</a>         |
| paper birch              | <i>Betula papyrifera</i> Marshall                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6304">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6304</a>         |
| silver maple             | <i>Acer saccharinum</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=29">http://newyork.plantatlas.usf.edu/Plant.aspx?id=29</a>             |
| White Oak                | <i>Quercus alba</i> L.  | <a href="http://newyork.plantatlas.usf.edu/plant.aspx?id=6301">http://newyork.plantatlas.usf.edu/plant.aspx?id=6301</a>         |
| eastern red cedar        | <i>Juniperus virginiana</i> L. var. <i>virginiana</i>                 | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=926">http://newyork.plantatlas.usf.edu/Plant.aspx?id=926</a>           |
| Scotch pine              | <i>Pinus sylvestris</i> L.  | <a href="http://newyork.plantatlas.usf.edu/plant.aspx?id=2078">http://newyork.plantatlas.usf.edu/plant.aspx?id=2078</a>         |
| shagbark hickory         | <i>Carya ovata</i> (Mill.) K. Koch var. <i>ovata</i>                  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6296">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6296</a>         |
| yellow birch             | <i>Betula alleghaniensis</i> Britton                                  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=531">http://newyork.plantatlas.usf.edu/Plant.aspx?id=531</a>           |
| butternut                | <i>Juglans cinerea</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6297">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6297</a>         |
| Red maple, common        | <i>Acer rubrum</i> L. var. <i>rubrum</i>                              | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=31">http://newyork.plantatlas.usf.edu/Plant.aspx?id=31</a>             |
| big-toothed aspen        | <i>Populus grandidentata</i> Michx.                                   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6408">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6408</a>         |
| eastern hemlock          | <i>Tsuga canadensis</i> (L.) Carrière                                 | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2085">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2085</a>         |
| black willow             | <i>Salix nigra</i> Marshall   | <a href="http://newyork.plantatlas.usf.edu/plant.aspx?id=2886">http://newyork.plantatlas.usf.edu/plant.aspx?id=2886</a>         |
| trembling aspen          | <i>Populus tremuloides</i> Michx.                                     | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2851">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2851</a>         |
| white pine               | <i>Pinus strobus</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2087">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2087</a>         |
| American beech           | <i>Fagus grandifolia</i> Ehrh.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1517">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1517</a>         |
| hop hornbeam             | <i>Ostrya virginiana</i> (Mill.) K. Koch                              | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6305">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6305</a>         |
| northern white cedar     | <i>Thuja occidentalis</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=924">http://newyork.plantatlas.usf.edu/Plant.aspx?id=924</a>           |
| wild black cherry        | <i>Prunus serotina</i> Ehrh. var. <i>serotina</i>                     | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2652">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2652</a>         |
| eastern cottonwood       | <i>Populus deltoides</i> W. Bartram ex Marshall ssp. <i>deltoides</i> | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=2855">http://newyork.plantatlas.usf.edu/Plant.aspx?id=2855</a>         |
| box elder                | <i>Acer negundo</i> L. var. <i>negundo</i>                            | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=26">http://newyork.plantatlas.usf.edu/Plant.aspx?id=26</a>             |
| northern red oak         | <i>Quercus rubra</i> L.   | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=6303">http://newyork.plantatlas.usf.edu/Plant.aspx?id=6303</a>         |
| bitternut hickory        | <i>Carya cordiformis</i> (Wangenh.) K. Koch                           | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1636">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1636</a>         |
| slippery elm             | <i>Ulmus rubra</i> Muhl.  | <a href="http://www.newyork.plantatlas.usf.edu/plant.aspx?id=3049">http://www.newyork.plantatlas.usf.edu/plant.aspx?id=3049</a> |
| white ash                | <i>Fraxinus americana</i> L.  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=1950">http://newyork.plantatlas.usf.edu/Plant.aspx?id=1950</a>         |
| sugar maple              | <i>Acer saccharum</i> Marshall  | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=25">http://newyork.plantatlas.usf.edu/Plant.aspx?id=25</a>             |
| American basswood        | <i>Tilia americana</i> L. var. <i>americana</i>                       | <a href="http://newyork.plantatlas.usf.edu/Plant.aspx?id=3036">http://newyork.plantatlas.usf.edu/Plant.aspx?id=3036</a>         |