



**MAPPING THE HISTORICAL ECOLOGY AND RECONSTRUCTING  
HISTORICAL FLORA OF THE LOWER BRONX RIVER: A GUIDE  
ECOSYSTEM RESTORATION AND OUTREACH**

## **Mapping the historical ecology and reconstructing the historical flora of the lower Bronx River: a guide for ecosystem restoration and outreach**

Eric W. Sanderson and Danielle LaBruna, of the Wildlife Conservation Society.

With contributions from Barbara Thiers and Melissa Tulig of the New York Botanical Garden and Linda Cox, Teresa Crimmens and Anne-Marie Runfola of the Bronx River Alliance.

A technical report of the Wildlife Conservation Society.

This report is based on a collaborative project of the Wildlife Conservation Society, the New York Botanical Garden and the Bronx River Alliance, funded by a WCS-NOAA Regional Partnership Grant for Community-Led Restoration of the lower Bronx River.

This work forms part of the Mannahatta Project, a project to scientifically understand, describe and visualize the wild landscape that would come to be New York City at the moment before Henry Hudson's arrival on September 12, 1609.

December 2005

© Wildlife Conservation Society, 2005.

All photos and maps credits to Eric W. Sanderson or Danielle T. LaBruna, except where noted.

Copies of this report and the derived GIS layers can be obtained on the web at [wcs.org/mannahatta](http://wcs.org/mannahatta)

### Contact Information:

Eric W. Sanderson

Associate Director, Living Landscapes Program

Wildlife Conservation Society

2300 Southern Blvd.

Bronx NY 10460 USA

Phone: 1-718-

Email: [esander@wcs.org](mailto:esander@wcs.org)

## ACKNOWLEDGEMENTS

This study was directly supported by the WCS-NOAA Lower Bronx River Partnership: Community-Led Restoration of the lower Bronx River to Eric W. Sanderson, Living Landscapes Program, Wildlife Conservation Society. The Wildlife Conservation Society, the Prospect Hill Foundation and the ESRI Conservation Program provided further support through general assistance to the Living Landscapes Program. The study was conducted in collaboration with Barbara Thiers and Melissa Tulig from the New York Botanical Garden, for the plant list reconstruction, and Linda Cox, Anne-Marie Runfola and Teresa Crimmins at the Bronx River Alliance, for the Walk the Watershed event. Marit Larsen of the New York City Parks – Natural Resources Group provided valuable input. Lori Cohen, a student at the Center for Environmental Research and Conservation at Columbia University, completed a class project on historical archive material related to the Bronx River that contributed to this study. Thomas Veltre of the Wildlife Conservation Society and Stephen McDevitt of the US Army Corps of Engineers kindly provided maps for this study. The expert map librarians at the British Library, The National Archives, the Library of Congress, the Clements Library, and the New York Public Library were uniformly helpful and professional. Key geographic information system data layers were obtained through the New York State GIS Clearinghouse under arrangement with the Wildlife Conservation Society. Gillian Woolmer and Gosia Bryja provided advice on the geographic information system (GIS) analysis. Daneille LaBruna performed most of the GIS analysis herein; Tim Bean and Michelle Brown also assisted the analysis. Amy Vedder provided institutional support and guidance. Yemi Tessema, Nick Raitelu and Kristine Barrett provided administrative and logistical support. Marla Krauss administered the grant. Approximately 50 community members turned out to “Walk the Watershed” with us in 2004 and 2005 and share their stories about the Bronx River. We thank all for their help and support.

## INSTITUTIONAL MISSION STATEMENTS

### WILDLIFE CONSERVATION SOCIETY

The Wildlife Conservation Society saves wildlife and wild lands. We do so through careful science, international conservation, education, and the management of the world's largest system of urban wildlife parks, led by the flagship Bronx Zoo. Together, these activities change individual attitudes toward nature and help people imagine wildlife and humans living in sustainable interaction on both a local and a global scale. WCS is committed to this work because we believe it essential to the integrity of life on Earth.

### THE NEW YORK BOTANICAL GARDEN

The New York Botanical Garden is an advocate for the plant kingdom. The Garden pursues its mission through its role as a museum of living plant collections arranged in gardens and landscapes across its National Historic Landmark site; through its comprehensive education programs in horticulture and plant science; and through the wide-ranging research programs of The International Plant Science Center.

### THE BRONX RIVER ALLIANCE

The mission of the Bronx River Alliance is to serve as a coordinated voice for the river and work in harmonious partnership to protect, improve and restore the Bronx River corridor and greenway so that they can be healthy ecological, recreational, educational and economic resources for the communities through which the river flows.



# THE MANNAHATTA PROJECT

On a hot, fair day, the 12<sup>th</sup> of September 1609, Henry Hudson and a small crew of Dutch and English sailors rode the flood tide up a great estuarine river past a long, wooded island at 40° 48' latitude on the North American continent. At the time, Hudson noted the land was "as pleasant as one need tread upon" and his first mate, Robert Juet, wrote that the land was "as pleasant with Grasse and Flowers, and goodly Trees, as ever they had seene, and very sweet smells came from them." Subsequent European visitors over the next decade found the island "a convenient place abounding with grass" and "a land excellent and agreeable, full of noble forest trees and grape vines." This island was called Mannahatta by the Lenni Lenape people who lived there, or 'land of many hills.' It would later become known as Manhattan Island and would become as densely filled with people and avenues as it was once with trees and streams.

The aim of the Mannahatta Project is to reconstruct the ecology of New York City when Henry Hudson first sailed by in 1609 and compare it to what we know today. The Mannahatta Project will help us to understand, down to the level of one city block, where in Manhattan streams once flowed, where American Chestnuts may have grown, where black bears once marked territories, and where the Lenape fished and hunted. Most history books dispense of the pre-European history of New York in only a few pages. However with new methods in geographic analysis and the help of a remarkable 18<sup>th</sup> century map (right), we will discover a new aspect of New York culture, the amazing environmental foundation of the city.

## Expected Results

- A baseline geographic reconstruction of New York City ecology to guide restoration efforts in and around the city.
- Education activities for children and adults about the history, ecology and geography of Manhattan Island, its past, present and future, including
- A coffee table book with transparent overlays that compares the landscape of Manhattan Island in 1609 to the modern cityscape;
- Exhibits at Wildlife Conservation Society wildlife parks and other NYC institutions;
- Multimedia educational outreach including a CD-ROM and web site accessible to all New Yorkers
- Joint research and education activities between New York cultural and natural history institutions led by the Wildlife Conservation Society.

**For more information**, contact Dr. Eric W. Sanderson, Wildlife Conservation Society, 2300 Southern Blvd., Bronx NY 10460. Phone 718-220-6825. Fax 718-364-4275. Email: [esanderson@wcs.org](mailto:esanderson@wcs.org)



Figure 1. The British Headquarters Map of 1782, courtesy The National Archives, London.

## TABLE OF CONTENTS

Acknowledgments	i
Institutional Missions	ii
The Mannahatta Project	iii
Table of Contents	iv
Executive Summary	1
Chapter 1. Mapping the historical ecology of the lower Bronx River watershed	2
Chapter 2. Reconstructing the historical plant composition of the lower Bronx River watershed	24
Chapter 3: Walking the watershed: environmental outreach based on historical ecology in an urban setting	33
Appendix 1. Notes on selected 18 <sup>th</sup> , 19 <sup>th</sup> and early 20 <sup>th</sup> century maps of the Bronx, examined for their relevance to the historical ecology of the Bronx River	46
Appendix 2. Putative list of plants historically found in the lower Bronx River watershed and other parts of New York City	72
Appendix 3: Sample flyer for the Walk the Watershed event	126
Appendix 4: Geographic Information System (GIS) layers of the historical distribution of ecosystems in the lower Bronx River watershed (CDROM)	Back pocket

## **EXECUTIVE SUMMARY**

Imagining ecosystem restoration of the lower Bronx River requires not only knowing what exists, but what is possible. One way to appreciate the possibilities is to refer to the past, when the Bronx River knitted together a remarkable, biologically diverse and highly productive mosaic of salt marshes, intertidal flats, riverine floodplains and upland communities. Although the past can never be known in detail, techniques of historical ecology and examination of old maps, surveys and other documents can shed some light on the past distribution and composition of ecosystems along the river, in contrast to today. These results provide reference conditions for restoration and a vehicle for reaching out to the community to build support for river restoration.

### **Chapter 1: Mapping the historical ecology of the lower Bronx River watershed**

The spatial distribution of past ecosystems in the lower Bronx River watershed is revealed partially in historical maps from the American Revolution through to the rapid, late 19<sup>th</sup> century development of the Bronx. Six maps were georeferenced to a common coordinate system and interpreted to develop a synthesized map of the ecosystem distribution of the lower Bronx River prior to modern development. These maps indicate that the lower Bronx River watershed covered approximately 16 km<sup>2</sup> area, of which approximately 70% was covered by upland vegetation, mainly forest, 27% wetlands, including extensive salt marshes, and 3% open water. Over 80 historical maps are reviewed for their relevance to Bronx River restoration (Appendix 1.) A CDROM with geographic information system data layers describing the historical distribution of ecosystems is provided with this report (Appendix 4).

### **Chapter 2: Reconstructing the historical plant composition of the lower Bronx River watershed**

A corresponding historical plant list was developed through compilation and synthesis of 35 botanical surveys and compilations from the New York City region. Plant names were compiled to a common synonymy then filtered to remove species introduced from outside of the United States and other regions within the US. Rare species were checked against voucher samples from the New York Botanical Garden Steele Herbarium. A preliminary checklist of 1906 plant names, at the species and subspecies level, representing over 150 plant families, was found for the New York City region, including the lower Bronx River (Appendix 2).

### **Chapter 3: Walking the watershed: environmental outreach based on historical ecology in an urban setting**

Historical ecology provides a powerful basis for environment-based education, involving the public in the tapestry of geography, ecology and community choices that has transformed, and continues to transform, the lower Bronx River. Walk the Watershed is a walking tour of the south Bronx designed to engage the public in the past, present and future ecology of the river. The route of the walk and discussion points at eight stops are presented with selected photos.

This project is part of the Mannahatta Project to better understand the environmental history of New York City. For more information, access <http://wcs.org/mannahatta> on the web.

# Chapter 1. Mapping the historical ecology of the lower Bronx River watershed

## INTRODUCTION

This study provides spatially explicit historical information on the past distribution of salt marshes, intertidal flats, riverine floodplain and riverbanks, and upland communities, and the flora of these ecosystems in the watershed of the lower Bronx River. The first goal of this study is to inform ecological restoration goal setting and long term monitoring through establishment of reference conditions for restoration. The second goal is to use historical information to build awareness of the past, and in contrast, the current, condition of the river through publications and events, thus contributing to efforts to create a constituency of citizens interested in the ecological health of the river.

Establishing reference ecosystems is an important part of any ecological restoration project. Reference ecosystems may be based on existing similar ecosystems that are functioning with greater integrity than the site to be restored, or they may be based on historical analysis of the restoration site. In the past, some restoration ecologists favored establishing clear, but static, historical baselines for restoration efforts, but current thinking has rejected this view in light of a more dynamic view of ecosystems, that recognizes not only are ecosystems always changing, but that current landscape conditions may so constrain a particular restoration site that achieving a precise historical condition may be simply unattainable.

However historical information on ecosystems is still relevant, for establishing those dynamic ranges for ecosystems. As Don Falk wrote in 1990:

Restoration uses the past not as a goal, but as a reference point for the future. If we seek to recreate the temperate forests, tallgrass savannas, or desert communities of centuries past, it is not to turn back the evolutionary clock but to set it ticking again.

In other words, ecological history tells us what is possible in a restoration effort, not to take the system backwards, but rather to inform, and perhaps inspire, a healthier and ecologically viable future. Historical ecology, based on past records and maps of a site, establishes the outer-bounds of possibility in terms of restoration of a damaged ecosystem (Egan and Howell 2001).

These outer bounds are more extraordinary than most Americans are aware. As Jeremy Jackson has cogently argued for marine systems (e.g. Jackson 2001), we need to be cognizant of shifting baselines, that is, we need to know when we look at nature today what nature in the past was like, because nature of the past is almost always more productive, more amazing, and more complex than we realize. Otherwise we run the risk of shortchanging ourselves.

New York City is a case in point. Though known today for its tall buildings and grid of streets, this same place was once home to millions of birds, gargantuan fish runs, vast forests and enormously productive wetlands, herds of deer and elk, with black bear, mountain lions and wolves prowling around them, and a human culture that valued and respected the natural



abundance on which people and all other living things relied. Reaching back to historical conditions and comparing them to the modern state helps people, scientists and citizens alike, understand how this landscape was transformed by human agency and the consequences of those changes. It also begins to suggest what needs to be changed, both in the short run and the long run, to restore a river with ecological integrity.

### Historical maps of the Bronx landscape

Historical maps created from the late 18<sup>th</sup> through the late 19<sup>th</sup> century provide the foundational resource for this project, however people have been living in the Bronx for at least 5000 years, likely longer, and for the great majority of this time, the Bronx River was the central feature of the landscape. Native Americans called the river “Aquehung” or “Aquacanounck” (Grumet 1981) and it is thought to have divided the Siwanoy people, connected with Algonquin peoples in southern Connecticut, from the Mannhattans, associated with the Lenape people of New Jersey (Utan 1993.) A turtle carving preserved in the New York Botanical Garden is one piece of archaeological evidence connecting Native Americans to the river. Unfortunately written records from these peoples do not exist to document what the landscape was like.

Europeans made the first maps of the area, but it had to wait until a war for concerted map-making to begin. During the American Revolution, New York City was chiefly a British-occupied loyalist city, and the Bronx (then known as Westchester) was a no-man’s land of warring partisans on both sides. Throughout the Revolution, New York City was pivotal to the strategies of both sides (Schechter 2002). From the time of his hurried departure in 1776 until the summer of 1781, George Washington’s plans for winning the war focused on getting the British out of New York. As fervently, the British were dedicated to holding the city, and part of their defensive strategy was to create maps, since maps in the 18<sup>th</sup> century were seen as essential to military strategy (as they are today.) The British military cartographers were some of the best trained scientific map-makers of their day, and in New York they had the luxury of years to develop highly detailed maps of the New York City landscape. At the time, the landscape was still much of what it had been since the last glaciation, a rolling landscape of hills, forests, wetlands, grasslands and rocky heights, with a small colonial towns scattered throughout. The importance of maps to British strategy is testified to by one of Lord Howe’s orders to the British Navy, to navigate up the Bronx River and cut-off Washington as he retreated to White Plains. Even in 1776, the river was not that big!

One legacy of this period are the large number of maps drawn by British, French and American military cartographers of the New York City region, which are now housed in several major collections in the US and Europe. One of these maps, “the British Headquarters Map” showing Manhattan in detail, has subsequently been georeferenced to +/- 40 m accuracy against the modern street grid of the city (Sanderson and Brown, unpublished ms). Several similar maps exist for the area that encompasses the lower Bronx River (listed in Table 1 – see supplemental documentation.)

After the Revolution, the Bronx reverted to a rural landscape of small farms and communities, with small industry gradually developing through the 19<sup>th</sup> century, especially along its numerous streams and rivers. Many of these changes were documented in maps of Westchester, as the

Bronx was then known. Maps in the 19<sup>th</sup> century were made for many reasons, including general information, route-finding, real estate speculation and park planning. In almost every map of the Bronx, the Bronx River is shown as prominent feature. The river divided the Bronx nearly in half – the most prominent of several river valleys that swept down to the shore of the East River. The river provided mill power, a property line, sometimes a political boundary, and a barrier that had to be bridged.

Intensive urbanization of the Bronx did not begin in earnest until after the incorporation of the Bronx into the Greater City of New York in 1898. The river was treated as a sewer and largely became forgotten, criss-crossed by numerous roads and bridges carrying fast-moving traffic. This is the river documented in orthorectified aerial photography and satellite images from the late 20<sup>th</sup> century. We have ways of seeing the landscape unknown before, but the landscape of the river has changed so much as to be unrecognizable to what the Native Americans and early European settlers knew 400 years ago.

At the beginning of the 21<sup>st</sup> century efforts are underway to restore the Bronx River from the ravages of industrialization, urbanization and general neglect. Maps have their part to play reminding people that once again the Bronx River is being seen as a vital connector of lives in the Bronx.

## MATERIALS AND METHODS

### Map Materials

To find materials for this project, we canvassed map archives in the US and in Great Britain for relevant maps and records about the historical ecology of the Bronx, including the Library of Congress (Washington D.C), the Clements Library (University of Michigan, Ann Arbor, MI), the University of New Hampshire Library (Durham, NH), the New York Public Library (New York, NY), the Bronx Historical Society (Bronx NY), the Westchester County Public Library (White Plains, NY), the Bronx Zoo Library (Bronx NY), the British Library (London, England) and The National Archives (Kew, England.) We also consulted with colleagues in the New York City region. In total, over 80 maps were examined from the 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> centuries. Appendix 1 provides a summary and notes on selected maps about their relevance to ecosystem geography of the Bronx and Bronx River in the past.

From this survey, six maps of the Bronx (formerly West Chester) area were selected to create a synthetic view of the historical ecology of the lower Bronx River watershed (Table 1). Maps were provided in digital form (on CD or downloaded via the Internet) or on transparencies acquired from archives were scanned using a flatbed scanner at 300 dots-per-inch resolution.

Table 1.1: Six historical maps used to create a synthetic view of the ecosystem geography of the lower Bronx River watershed

<b>Map Title</b>	<b>Author(s)</b>	<b>Year</b>	<b>Scale</b>	<b>Format/Source</b>
A Map of the Country Adjacent to Kingsbridge	Skinner & Taylor	1781	1 inch: 1 mile	Scanned from transparency / Clements Library, University of Michigan
Harlem River and Throg's Neck, New York	U.S. Coast Survey	1837	1:10,000	Digital / Stephen McDevitt, U.S. Army Corp of Engineers, New York District
Map of West Chester, County New York, From actual Surveys by Sidney & Neff, Civil Engineers & Surveyors.	Sidney & Neff	1851	1: 52,000	Digital / U.S. Library of Congress
Plans of Westchester, West Farms, Morrisania, Westchester Co. and Part of New York County	Beers, Ellis & Soule	1867	1.5 inches: 1 mile	Digital / Private collection of Thomas Veltre, Wildlife Conservation Society
Topographical Map made from surveys by the Commissioners of the Department of Public Parks of the City of New York, of that part of Westchester County adjacent to the City and County of New York embraced in Chapter 534 of the Laws of 1871 as amended by Chapter 878 of Laws of 1872	Dept. of Public Parks, City of New York	1873	1 inch: 1000 ft	Digital / U.S. Library of Congress
New Jersey – New York Harlem Sheet, USGS Topographical Survey	U.S. Geological Survey	1891	1: 62,500	Digital / University of New Hampshire Library Government Documents Department



Figure 1.1. A Map of the Country Adjacent to Kingsbridge by Andrew Skinner and George Taylor, 1781. Courtesy the Clements Library, University of Michigan.

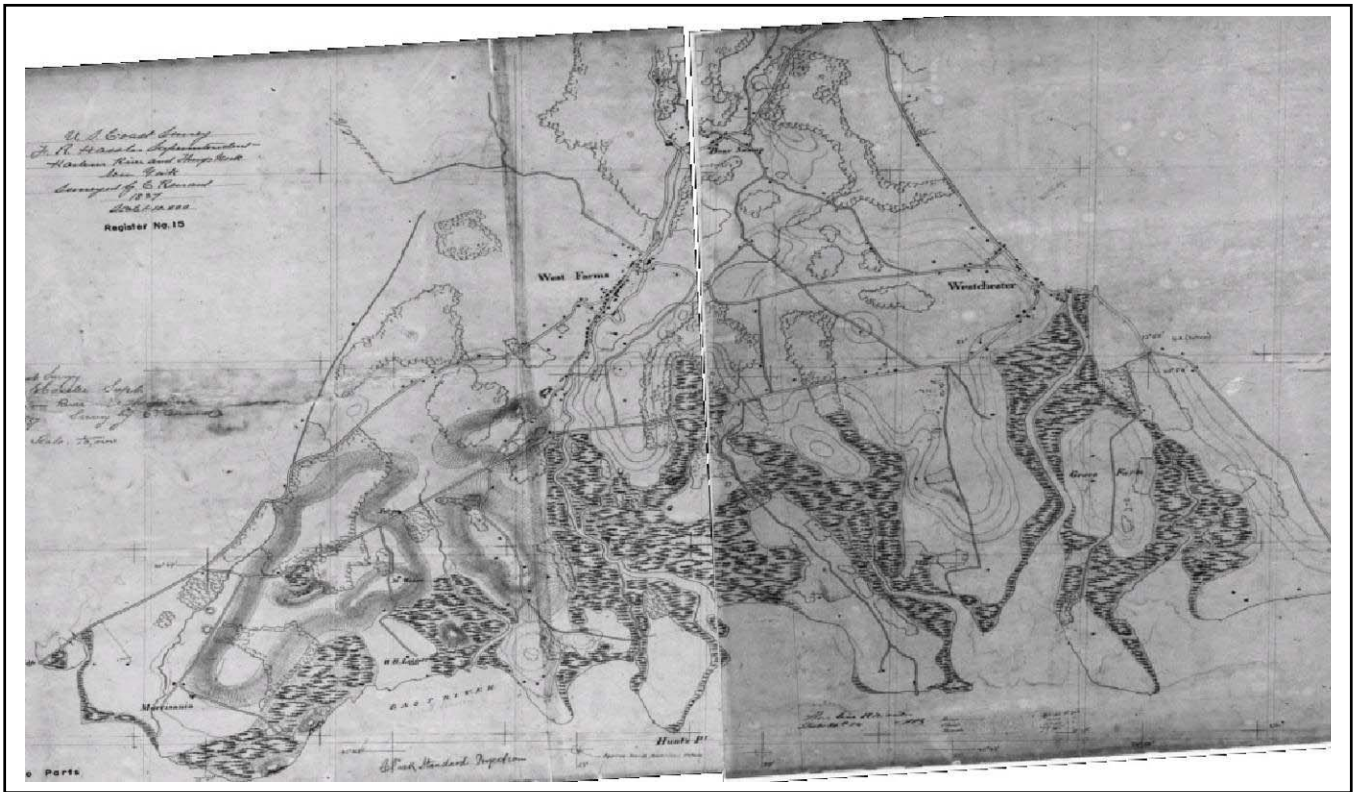


Figure 1.2. Harlem River and Throg's Neck, New York, U.S. Coast Survey, 1837. Courtesy of Steven McDevitt, U.S. Army Corp of Engineers, New York District

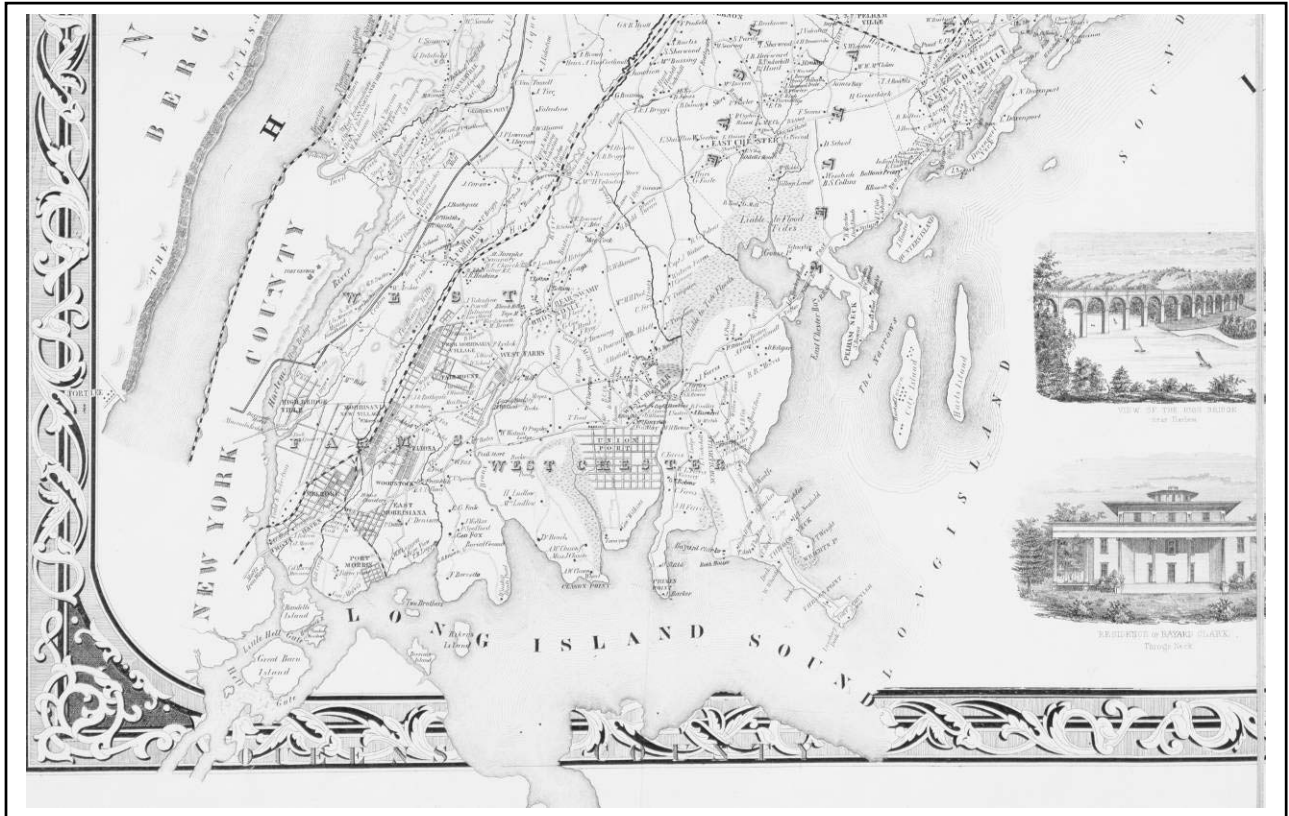


Figure 1.3. Map of West Chester, County New York, from actual Surveys by Sidney & Neff, Civil Engineers & Surveyors. 1851. Courtesy the Library of Congress, Washington D.C.



Figure 1.4. Plans of Westchester, West Farms, Morrisania, Westchester Co. and Part of New York County by Beers, Ellis and Soule. 1873. Courtesy Thomas Veltre, Wildlife Conservation Society.

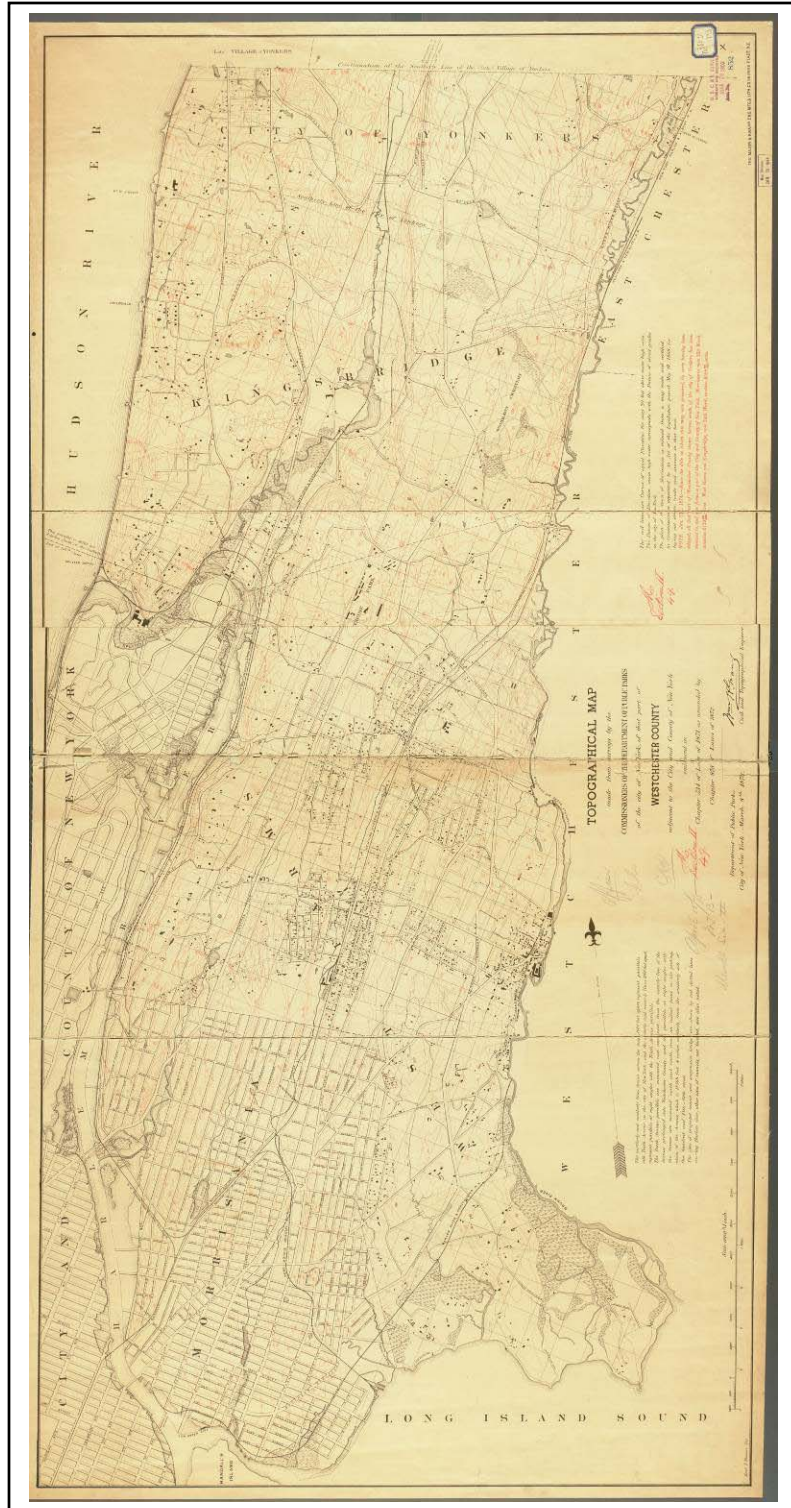


Figure 1.5. Topographical Map made from surveys by the Commissioners of the Department of Public Parks of the City of New York,.... Department of Public Parks, City of New York. Courtesy the Library of Congress, Washington D.C.



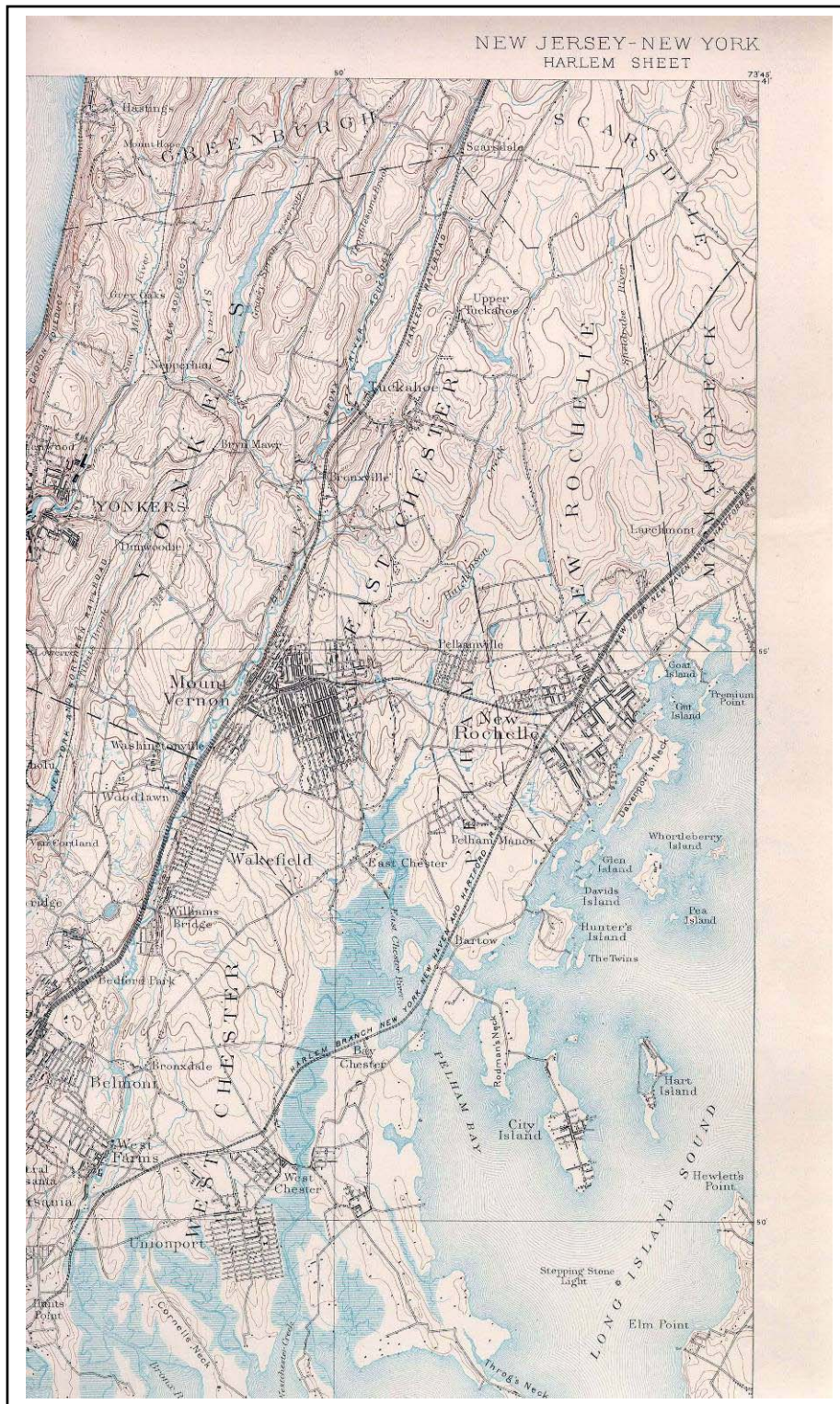


Figure 1.6 USGS Topographical Survey, New Jersey – New York, Harlem Sheet. United States Geological Survey. 1893. Courtesy of the University of New Hampshire Library, Durham, NH

## Methods

The steps involved in creating one new map from several historical maps included georeferencing the maps, digitizing polygon and polyline layers of features from the maps, then finally synthesizing these layers together to create one comprehensive, unified map. The software used for processing was ArcMap 8.3 (Environmental Systems Research Institute, Redlands, CA)

### Georeferencing

All six historical maps required georeferencing to place them in the same coordinate system and to assign them real-world coordinates (in this case, based on the Universal Transverse Mercator system, zone 18). Maps were georeferenced using ArcMap 8.3 georeferencing tool, using nearest neighbor resampling and third order polynomial equations. Maps were georeferenced in approximately reverse chronological order with reference to modern geographic data layers (Table 1.2) and to each other. Reference points with known coordinates like road intersections, bridges, and buildings were identified on the historical maps. Our georeferencing protocol called for a minimum of 50 reference points for each map. Average root mean square errors based on the fit between the rectified map and the reference points were calculated.

Table 1.2: Reference layers used to locate ground control reference points for georeferencing of historical maps of the Bronx River watershed.

<b>Layer Name</b>	<b>Data type</b>	<b>Source</b>	<b>Year data gathered/published</b>
LION (Single Line Street Base Map) Edition O3D	New York City road network	New York City Department of City Planning. <a href="http://www.nyc.gov/html/dcp/html/byt/es/applbyte.html">http://www.nyc.gov/html/dcp/html/byt/es/applbyte.html</a>	2003/2004
New York State 2000 Digitally Enhanced OrthoImagery  (Tiles from Yonkers, Flushing, Central Park and Mount Vernon Quadrangles)	Aerial photos corrected for displacement errors	New York State Department of State, via New York State GIS Clearinghouse. <a href="http://www1.nysgis.state.ny.us/downloadable/I9/">http://www1.nysgis.state.ny.us/downloadable/I9/</a> ; received additional files on CD by special request from NY State Office of Cyber Security & Critical Infrastructure Coordination	1994-98/1999
British Headquarters Map	Scanned and georeferenced historical map	The Mannahatta Project. Map courtesy The National Archives, Kew, London.	1782-1783/2002

Topographical Contours	Contour lines at 10 foot intervals of select NY City sites.	City of New York Department of Information Technology and Telecommunications via New York State Data Sharing Cooperative and New York State GIS Clearinghouse. <a href="http://www.nysgis.state.ny.us/inventories/nycdoitt.htm">http://www.nysgis.state.ny.us/inventories/nycdoitt.htm</a>	2001/2001-2
USGS Digital Raster Graphics  (Central Park and Yonkers Quadrangles)	Topographic features	U.S. Geological Survey via NY State GIS Clearinghouse. <a href="http://www.nysgis.state.ny.us/quads/quadpage/hh47.htm">http://www.nysgis.state.ny.us/quads/quadpage/hh47.htm</a> and <a href="http://www.nysgis.state.ny.us/quads/quadpage/gg47.htm">http://www.nysgis.state.ny.us/quads/quadpage/gg47.htm</a>	1966,1979/1996

### Digitizing & Synthesis

The historical watershed boundary for the lower Bronx River was mapped with reference to Skinner and Taylor (1781) for the western boundary as well as the southern portion of the eastern boundary. The USGS (1891) map was incorporated into this project for the sole purpose of providing the remaining section of the eastern watershed boundary, as the remaining other maps insufficiently illustrated this area. The northern boundary of the study area was defined as the northern edge of the current New York Botanical Garden.

Nine different layers representing nine different ecosystem types were digitized within the area designated as the watershed: river, streams, ponds, saltwater marsh, freshwater marsh, deciduous forest, mixed forest, riparian forest and upland (upland was designated as any area that did not fall into one of the preceding categories, and includes areas that may have been field, sparsely wooded, or agricultural). Ecosystem were digitized from each historical map separately at the scale of original map or greater resolution.

To synthesize these ecosystem boundaries we worked forward in chronological order, reasoning that human modifications of the landscape generally increased over the time period studied, without major reductions. However because different cartographers created maps for different reasons and with different levels of access to the watershed and at different scales, not all ecosystem features are shown on all maps. When two or more maps showed the same feature, the older depiction was given precedent. Areas that were not explicitly mapped as any other feature were assumed to originally be covered with upland vegetation (likely some kind of forest.)

Once the ecosystem layers for each map were digitized, we used the “Merge” function to merge the layers into one shapefile layer, then converted it to coverage format, and then used the “Eliminate” function in ArcToolbox to remove the small sliver polygons resulting from digitizing. This resulted in one continuous layer containing all recognized community types and one watershed boundary

The synthesized GIS files resulting for our analysis are included on a CDROM attached to this report. Federal Geographic Data Committee (FGDC) metadata are also included.

## RESULTS

### Georeferencing results

The historical maps were georeferenced using a combination of modern GIS data (roads from the New York City LIONS dataset and New York State orthoimagery), historical records, and sequentially georeferenced historical maps. For each map, we identified at least fifty reference points; in some cases we used well over 100 (Table 1.3) Root mean square (RMS) errors varied from 26 – 118 m, with an average georeferencing error of 75 m. Conservatively speaking, the historical layers can be located to within approximately 100 m of their original positions. Not surprisingly lower RMS errors were achieved with the maps georeferenced later in the sequence as more information was available to georeference them.

Table 1.3: Georeferencing results for six historical maps of the Bronx.

<b>Order Geo-referenced</b>	<b>Historical Map</b>	<b>Layers used to locate reference points</b>	<b>Number of Reference Points</b>	<b>RMS Error (meters)</b>
1	Beers, Ellis & Soule 1867	Orthoimagery	158	84
		LION roads		
2	Sidney & Neff 1851	Orthoimagery	108	118
		British HQ		
		Beers 1867		
		LION roads		
3	Skinner & Taylor 1781	Orthoimagery	93	127
		LION roads		
		Contour		
		British HQ		
		Beers 1867		
		DRG		
		Sidney & Neff		
4	Coast Survey 1837	Orthoimagery	73	72
		LION roads		
		1867 map		
		1851 map		
5	Public Parks 1873	Orthoimagery	85	27
		LION roads		
6	USGS 1891	Orthoimagery	53	26
		LION roads		
				<b>76 m</b>

## Distribution of ecosystems in the historical lower Bronx River watershed

The historical lower Bronx River watershed covered approximately 15.7 km<sup>2</sup> in what is now Bronx County, New York (Figure 1.7, Tables 1.4a and 1.4b). The historical ecosystem distribution consisted of approximately 70% upland ecosystems, 27% wetland ecosystems, and 3% open water systems. Upland ecosystems included both deciduous and mixed deciduous / evergreen forest types, as well as open areas, created by natural (e.g. windthrows) or anthropogenic (e.g. forest burning and clearing) disturbance. Wetland ecosystems included extensive salt marshes at the mouth of the river and freshwater marshes and swamps (notably Bear Swamp, near the modern Bronx Zoo). Open water ecosystems included the Bronx River itself and several small ponds and streams. Within this part of the watershed, the Bronx River changed from a tidal estuary dominated by the East River to a freshwater river dominated by upland hydrological processes.

Urban built-up areas dominate the lower Bronx River watershed today with the exception of parks, notably the Bronx Zoo and New York Botanical Garden in Bronx Park and Soundview Park, at the mouth of the watershed. The historical watershed boundaries are plotted against the Bronx landscape in the mid-1990s in Figure 1.8.

The different historical maps studied provided different kinds and amounts of information about the ecosystem geography of the study area (Tables 1.4a and 1.4b), however all maps showed the Bronx River. Figures 1.9a and 1.9b show how the river was depicted by different cartographers through time.

## DISCUSSION

Historical ecology provides a unique way to think about cities. Because cityscapes appear to be so different from the natural landscapes that preceded them, and because so many people that live in cities have come from other places, it is easy to forget that cities like the Bronx have a history (the Bronx we know today hasn't always been the same) and have an ecology (organisms of all kinds, not just people, work to make a living in the city.) Thinking of the Bronx as a city of trees, seeing the Bronx River as a highway for fish, imagining salt marshes growing again in what was an open sewer, is not easy. It is an improbable way of thinking. It requires optimism and the long view. It helps therefore to remember that all places do have a history and all places do have an ecology, and that ecologies can change over time and can change again.

The maps presented in this chapter should be taken in this spirit of transformative thinking. The goal is not to know exactly where every tree once stood, or to know the river as the fish once knew it – the goal is to open the mind to new possibilities for the river and to set an outer boundary of what might be possible. What constrains the river as much as its physical environment is the way we imagine it. Maps like Figure 1.7 help us re-think the river, re-imagine it has a healthy, beautiful, valuable part of our lives and the lives of all the birds and beasts that once and still do enjoy the river.

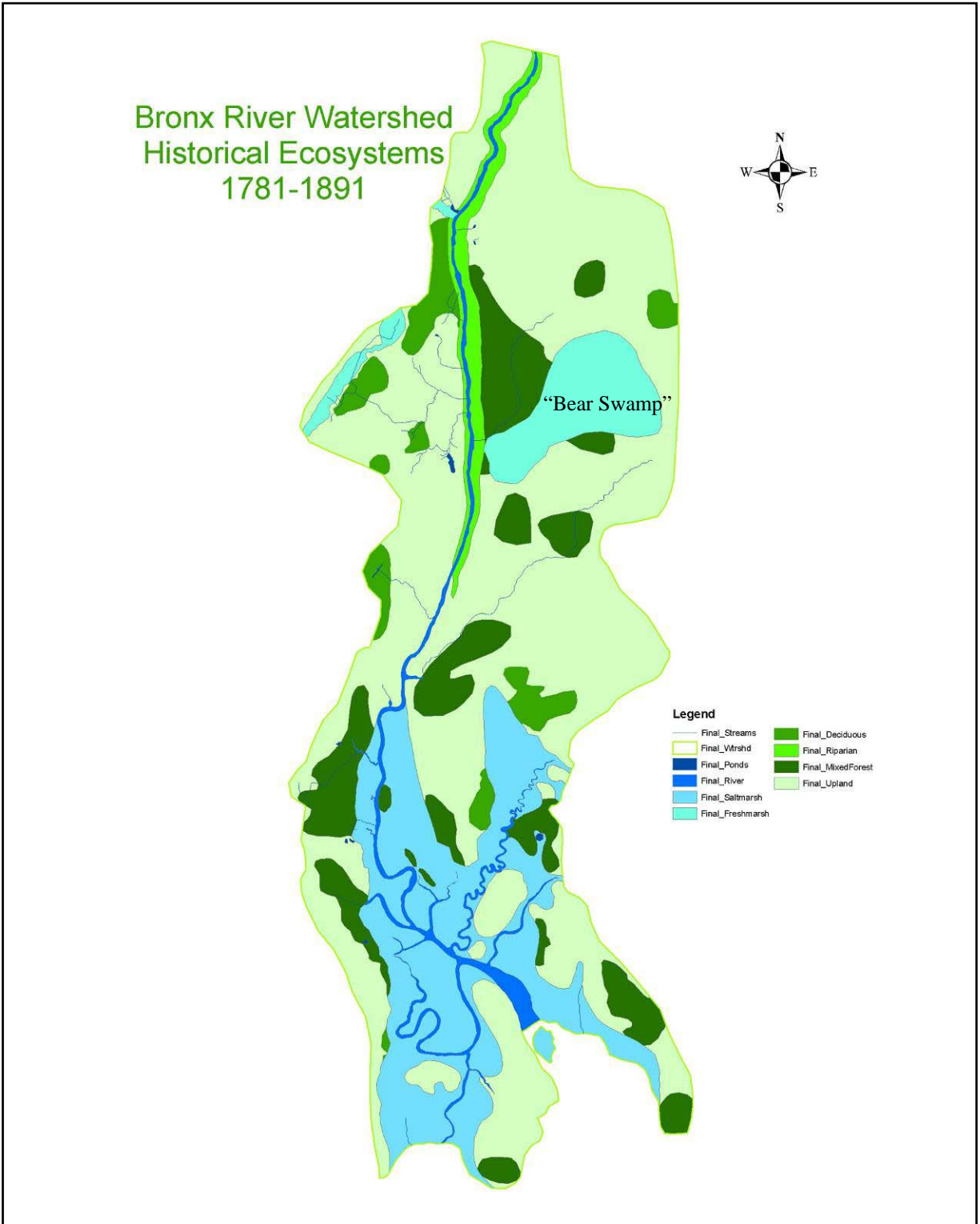


Figure 1.7. Synthesized historical ecosystem distribution in the Lower Bronx River watershed.

Table 1.4a. Areas of ecosystem types (and lengths of streams) shown on historical maps of the lower Bronx River watershed. Areas are expressed in square meters (m<sup>2</sup>) and lengths in meters. The historical synthesis map of ecosystems is shown on Figure 1.7 and corresponding GIS layers (ESRI shapefile format) are found on the CDROM (Appendix 4) accompanying this report.

	<b>1781</b>	<b>1837</b>	<b>1851</b>	<b>1867</b>	<b>1873</b>	<b>1891</b>	<b>Historical</b>
	<b>Skinner &amp; Taylor</b>	<b>Coast Survey†</b>	<b>Sidney &amp; Neff</b>	<b>Beers</b>	<b>Public Parks‡</b>	<b>USGS</b>	<b>Synthesis</b>
<i>Watershed (area)</i>	18,070,570	14,856,013	15,066,969	15,102,828	1,043,303	14,371,315	<b>15,769,691</b>
Bronx River (area)	295,135	141,234	330,523	647,281	320,671	402,802	463,942
Salt marsh (area)	4,536,914	4,826,576			712,446		2,899,483
Ponds (area)			2,730		10,186		12,768
Freshwater Marsh (area)	125,033		755,595				880,706
Deciduous Forest (area)	833,855						653,912
Mixed Forest (area)	2,000,027						1,893,187
Riparian (area)	544,794						437,132
Upland – no forest (area)	9,734,812						8,530,677
Total Upland (area)	13,113,488	9,888,203	13,978,121	14,455,547	15,251,042	13,968,513	11,077,776
Total Wetland (area)	4,661,947	4,826,576	755,595		712,446		4,217,321
Total Open Water (area)	295,135	141,234	333,253	647,281	330,857	402,802	476,710
Streams (length)	840	3,615	5,027		12,720		12,719

‡The 1873 Public Parks map shows only the western half of the watershed.

Table 1.4b. Percentage of ecosystem type areas shown on historical maps of the lower Bronx River watershed.

	<b>1781</b>	<b>1837</b>	<b>1851</b>	<b>1867</b>	<b>1873</b>	<b>1891</b>	<b>Historical</b>
	<b>Skinner &amp; Taylor</b>	<b>Coast Survey</b>	<b>Sidney &amp; Neff</b>	<b>Beers</b>	<b>Public Parks</b>	<b>USGS</b>	<b>Synthesis</b>
River (area)	1.63%	0.95%	2.19%	4.29%	1.97%	2.80%	2.94%
Salt marsh (area)	25.11%	32.49%			4.37%		18.39%
Ponds (area)			0.02%		0.06%		0.08%
Freshwater Marsh (area)	0.69%		5.01%				5.58%
Deciduous Forest (area)	4.61%						4.15%
Mixed Forest (area)	11.07%						12.01%
Riparian (area)	3.01%						2.77%
Upland – no forest (area)	53.87%						54.10%
Total Upland (area)	72.57%	66.56%	92.77%	95.71%	93.60%	97.20%	70.25%
Total Wetland (area)	25.80%	32.49%	5.01%		4.37%		26.74%
Total Open Water (area)	1.63%	0.95%	2.21%	4.29%	2.03%	2.80%	3.02%





Figure 1.8. Historical watershed boundaries for the lower Bronx River watershed shown against aerial photography of the modern cityscape. The green areas of the Bronx Zoo, New York Botanical Garden and Soundview Park are clearly visible. Orthoimagery courtesy the New York State Department of State and the New York State GIS Clearinghouse.

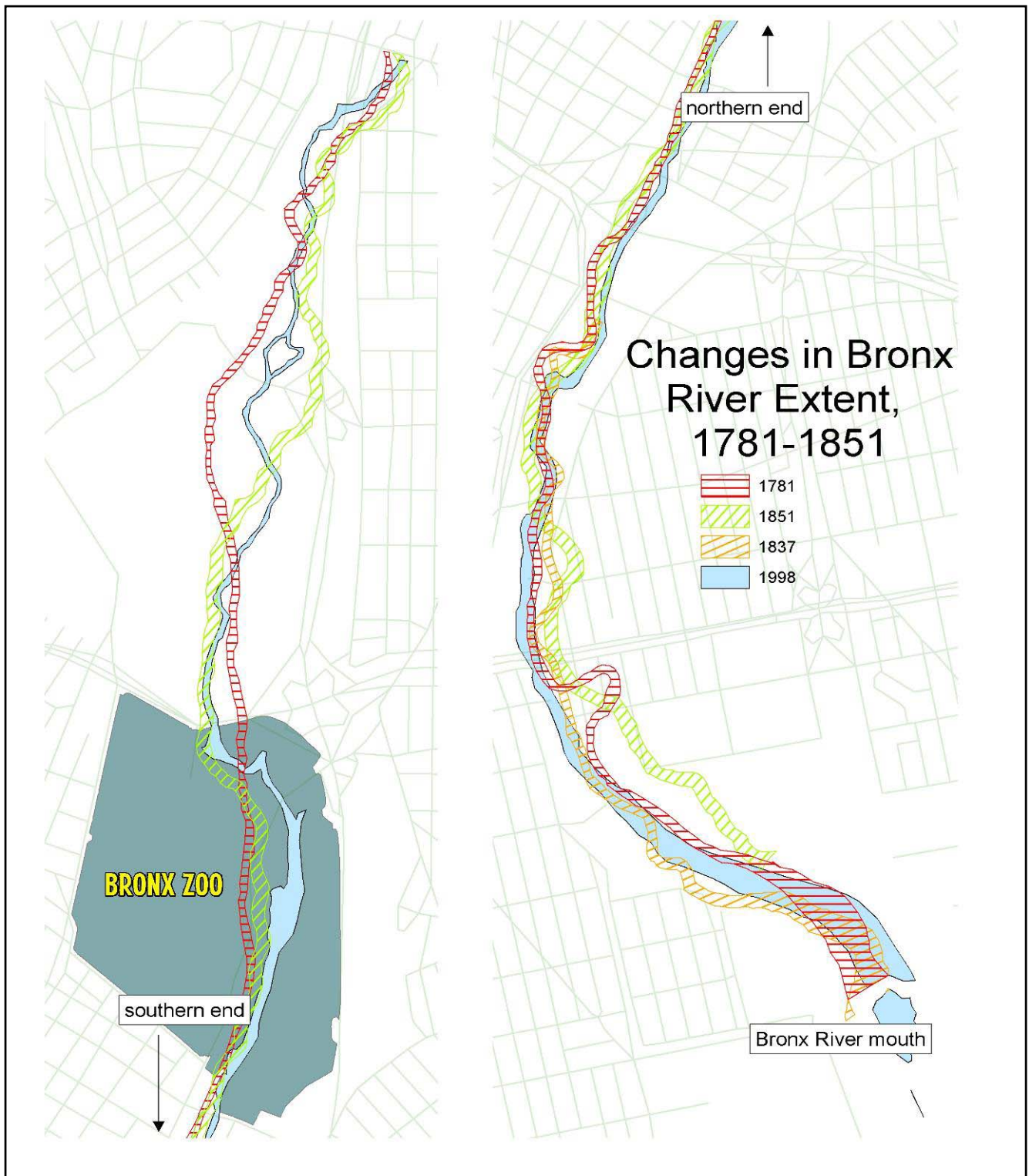


Figure 1.9a. Course of the Bronx River as shown on historical maps from 1781, 1837 and 1851 in comparison to the modern river (1998). Roads data are from the LIONS dataset, courtesy the New York City Department of City Planning. The Bronx Zoo is shown for reference. Differences in the river course result from different cartographic techniques and intentions, georeferencing errors, and actual changes in the river. See the text for discussion.

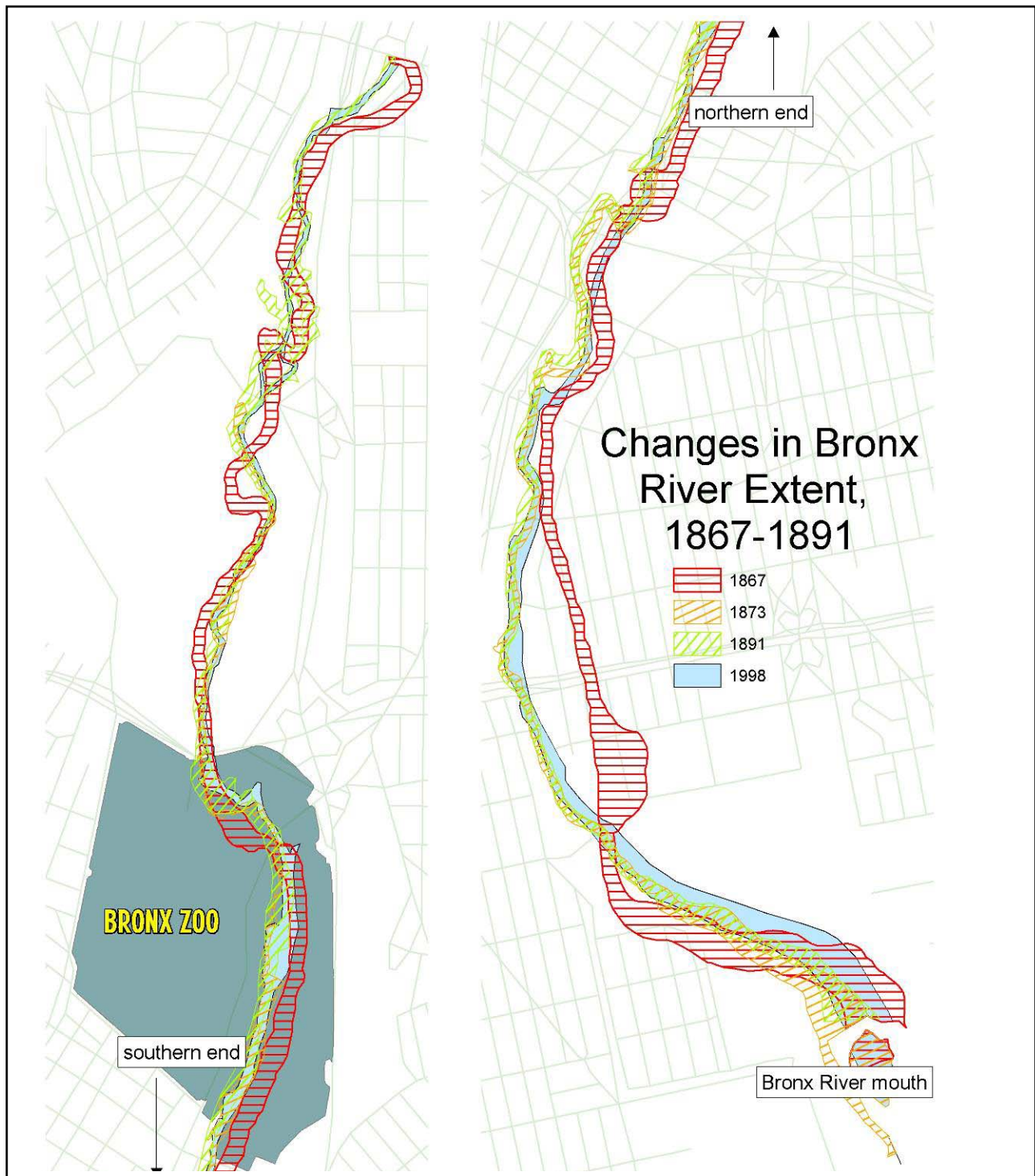


Figure 1.9b. Course of the Bronx River as shown on historical maps from 1867, 1873 and 1891 in comparison to the modern river (1998). Roads data are from the LIONS dataset, courtesy the New York City Department of City Planning. The Bronx Zoo is shown for reference. Differences in the river course result from different cartographic techniques and intentions, georeferencing errors, and actual changes in the river. See the text for discussion.

It is indeed impossible to know exactly how ecosystems were distributed in the past, but it is possible to make some informed estimates based on maps from the past. It is important to remember that each of these maps were made for a particular purpose, and none of those purposes included future reconstructions of the ecosystem distribution. Moreover maps and cartographers that draw them are constrained, as we are, by the thinking and technology of their times. We are additionally constrained by our ability to reconcile these maps together across time and space, to bring them into focus as one synthetic picture. Our results are limited by our georeferencing and limited by our interpretation of the material they present us. As a result, the map of the lower Bronx River ecosystems (Figure 1.7) represents as much our limitations in understanding the past as it does reveal the past to us.

Our study relies heavily on the oldest map in the set: Skinner & Taylor (1781) from the American Revolution. This map, produced by British military cartographers, focused on features that could help or hinder a military operation: forests of different kinds for cover, areas of open cover, the distribution and sizes of streams and rivers, including notes of where the Bronx River could be crossed and at what tide. We added to Skinner & Taylor's effort the US Coast Survey (1837) with its maritime perspective on shallow waters and extensive marshlands, especially at the mouth of the river. Sidney & Neff (1851) is primarily valuable for its depiction of Bear Swamp, a large freshwater swamp that drained into the river from what is now the Pelham Parkway neighborhood. Beers, Ellis & Soule's (1867) plan underlies much of our georeferencing. It links the nascent road network of the 1860s to our modern landscape, and the geolocated GIS data that represents it. The Parks Department map (1873) is probably the most detailed and accurate maps that we have, but its date is late and unfortunately it covers only the western part of the watershed, the Bronx River demarcating the interest of the city in the Bronx at the time. To draw the eastern boundary of the watershed, we brought in the USGS quadrangle from 1891, again not of great use for the ecosystems (though note the extensive salt marshes that even at the date dominated the eastern Bronx!), but helpful for showing the sloping topography of the eastern half of the watershed.

Taken together, these maps provide a view of the ecosystem geography in the past. The position of any given feature is accurate more or less within 100 meters of modern landscape features. For comparison the TIGER line datasets developed for the US Census Bureau have reported accuracies of approximately 50 m. For comparison, 100 meters is about two-thirds of a long block in the Cortona Park East neighborhood or about the width of the Bronxdale parking lot at the Bronx Zoo. In a similar vein, the areas reported in Table 1.4a should not be considered exact, but accurate to the nearest 10,000 m<sup>2</sup>. The percentages in Table 1.4b give perhaps a more representative view.

The upland vegetation is a composite, mainly based on what Skinner & Taylor left us. In fact in pre-Hudsonian times, these upland areas would have been mainly forest. The patches of mixed and deciduous forest should be taken as indicative of what would have been a much more continuous forest cover.

What is more certain is the extensive salt marshes, long since filled in and resting in uneasy graves beneath much of the central south Bronx. Salt marshes were of concern to Skinner &

Taylor and their distribution is seconded by the Coast Survey and other maps. Several maps show upland “islands” within the salt marsh. Such slightly higher areas can still be found among the salt marshes on the backside of Hunter Island in Pelham Bay Park.

What point in time the map represents is also somewhat vague. It is derived from map features from 1781 – 1893, but with all human evidence, which dominates – indeed which motivates – the source maps, removed. Thus it represents some hypothetical time before people were the dominant force in shaping the landscape. Such a time is indeed hypothetical because before European people were here, Native Americans surely shaped the landscape, though not with asphalt and brick and backhoes, but with fire and small clearings to live in and grow food. What we can say is that the map informs historical conditions, which provide some kind of reference condition for future ecological restoration of the river. The point of any restoration should never be to take us backward – that is both impossible and unwise – but to take us forward to the future we wish to pass down to those who live in the Bronx after us.

## REFERENCES

Egan, D. and E. A. Howell (2001). The Historical Ecology Handbook: A Restorationist's Guide to Reference Ecosystems. Washington D.C., Island Press.

Falk, D. (1990). "Discovering the future, creating the past: some reflections on restoration." Restoration & Management Notes 8(2): 71-72.

Grumet, R. S. (1981). Native American Place Names in New York City. New York, Museum of the City of New York.

Guthorn, P. J. (1972). British Maps of the American Revolution. Monmouth Beach, NJ, Phillip Freneau Press.

Jackson, J. B. C. (2001). "What was natural in the coastal oceans?" Proceedings of the National Academy of Sciences 98(10): 5411-5418.

Leggett, T. A. (1913). Early Settlers of West Farms: Westchester County, NY. New York, Tobias A. Wright Press.

Schechter, B. (2002). The battle for New York City: the city at the heart of the American Revolution. New York, Walker and Co.

Ultan, L. H., Gary (2000). The Birth of the Bronx, 1609-1900. New York City, The Bronx County Historical Society.

Weston, W. (1799). On the Practicability of Introducing the Water of the River Bronx into the City of New York. New York, City of New York.

## Chapter 2. Reconstructing the historical plant composition of the lower Bronx River watershed

### INTRODUCTION

As part of the Mannahatta Project, we have been cataloguing and synthesizing biological literature on the flora and fauna of the New York City region, with the goal of developing a pre-modern checklist of the city's biodiversity. Prior to and as part of this project we cross-indexed 35 references on the plant life of the region in collaboration with botanists at the New York Botanical Garden, Brooklyn Botanical Garden, Columbia University, and other institutions. References were identified through library searches and consultation with colleagues. The reference list is by no means exhaustive, but it does aim to find representative floras for all the different ecosystems that once occurred in New York City, even if those floras are found in modern times only in New Jersey, Long Island or in upstate New York.

An underlying presumption is that if a plant species is found in modern times within the region, and is not known to have been introduced from somewhere else, it could plausibly have formed part of the flora in pre-European times. Making conclusive statements about historical distributions of any species is problematic, given changes over the last 400 years in the Bronx. In particular the human influence on the landscape has changed dramatically from the time of Native Americans through European settlement and again during the rapid development of the Bronx in the 20<sup>th</sup> century, as the landscape transformed from a agricultural to urban locale. Knowing how species responded in pre-European times, when human activities were not the main driver of their distributions, is probably not possible with any detail. What may be possible is a somewhat liberal, consensus view of the historical flora, as is presented here.

### MATERIALS AND METHODS

#### Sources

Thirty-five references for the plant flora of New York City were reviewed for this study (Table 2.1). References include both field studies and compilations of other studies that in total span the history of botanical surveys in New York City, from the early 19<sup>th</sup> century into the present. The references are not exhaustive however, either for the city as a whole or the Bronx, and are meant only to be representative.

References are rated regarding their relevance to the lower Bronx River watershed: one star (\*) indicates the reference covers ecosystems which may have occurred in the Bronx River watershed but no data comes from the Bronx, two stars (\*\*) indicates covers ecosystems which occurred in the Bronx River watershed and includes data from the Bronx, and three stars (\*\*\*) indicates the reference includes plant information specifically from the Bronx River watershed. Ecosystem foci are listed if the study focused on a particular ecosystem type within its study area. Decades of study applicability are only approximate. The number of plant names observed is based on the naming system used in the particular reference. Changes in nomenclature and taxonomy subsequently mean that the number of names contributed to the synthesized database based on the PLANTS (2000) nomenclature may be different.

Table 2.1. Field studies and/or compilations of plants of New York City used to develop the historical plant list in Appendix 2. Relevance to the lower Bronx River is marked in the Rel. column: see text for explanation. Field studies (F) and compilations (C) are marked in the F/C column. # Names refers to the number of plant names listed in a particular reference. If study focused on a particular ecosystem type rather than the study area in general, the ecosystem is noted. The time to which the study applies is noted in decades and is approximate.

<b>Rel.</b>	<b>Reference</b>	<b>Study Area</b>	<b>Specific Ecosystem Focus, if any</b>	<b>Study time (decades)</b>	<b>F/C</b>	<b># Names</b>
*	Art (1976)	Fire Island National Seashore, Long Island	Coastal ecosystems	1970s	F	124
**	Bicknell (1925)	Northern New York City (Bronx)	None	1910s - 1920s	F	941
*	Buegler & Pariso (1981)	Staten Island	None	1980s	F/C	863
*	Buell et al (1966)	Northern New Jersey	Uplands	1960s	F	40
*	Cain & Penfound (1938)	Cold Spring Harbor, Long Island	Red Maple Swamp	1930s	F	94
*(?)	Cain et al (1937)	Hempstead Plains, Long Island	Grasslands	1930s	F	71
*	Cain (1936)	Cold Spring Harbor, Long Island	Oak woods	1930s	F	92
**	Clemants & Moore (2003)	New York City	None	1800s – 2000s	C	2526
*	Conrad (1935)	Cold Spring Harbor, Long Island	None	1930s	F	300
**	DeCandido & Muir (2002)	New York City	None	1930s - 1990s	F/C	2261
*	Dowhan et al (1997)	New York Bight	Coastal ecosystems	1990s	C	116
***	Frankel (1978); Frankel (1979)	Bronx River Park, Westchester	None	1970s	F	732
**	Gleason (1935)	Vicinity of New York City	None	1930s	F/C	1551
*	Gratacap (1880)	Manhattan Square, Manhattan	None	1880s	F	115
*	Greller (1979); Greller (1985); Greller (1991)	Cunningham Park, Queens	None	1970s – 1990s	F	423
*	Greller (1975)	Northern Queens	None	1700s - present	F	56

*	Hollick & Britton (1879)	Staten Island	None	1870s	F/C	1133
*	Hollick & Britton (1930)	Staten Island	None	1930s	F/C	1303
***	Honkala & McAninch (1980)	New York Botanical Garden Forest, Bronx	None	1970s	F	71
**	Kieran (1959)	New York City	None	1930s – 1950s	F/C	405
*	LeConte (1812)	Manhattan	None	1810s	F	451
**	Loeb (1982)	Seton Falls Park, Bronx	None	1980s	F	29
**	Luttenberg et al (1993)	New York City	None	Native species	C	215
*	Lynn & Karlin (1985)	Northern New Jersey and adjacent New York	Bogs	1980s	F	57
*	McIntosh (1972)	Catskill Mountains, New York	Forests	1960s – 1970s	F	33
**	NYBG (2004)	In or near New York City	None	1890s – 2000s	C	228
**	Poggenberg et al (1888)	100 miles around New York City	None	1810s – 1880s	F/C	2207
*	Rawolle & Pilat (1857)	Central Park	None	1850s	F	258
*	Robinson et al (1991)	Staten Island	None	1990s	F	961
**	Small (1935)	New York City	None – only ferns	1920s-1930s	F/C	75
*(?)	Stalter & Lamont (1987)	Mitchell Field, Long Island	Grasslands	1980s	F	168
*	Stalter (1981)	Alley Park, Queens	None	1980s	F	23
**	Taylor (1915)	100 miles around New York City	None	1910s	F/C	2598
**	Torrey et al (1817)	30 miles around New York City	None	1810s	F/C	1116
**	Weiss et al (1995)	shores of Long Island Sound	Coastal ecosystems	1960s - 1990s	C	224

## Methods

Species names were compiled from the original references into a Microsoft Access database using the cited names along with notes about habitat, introduction and location as available. Subsequently species names were synonymized with the USDA PLANTS (2002) database, supplemented by the International Plant Names Index (ipni.org) and Mitchell & Tucker (1997). The PLANTS database is taken as the authoritative source of names.



To systematically trim down the list to a conservative, consensus view of the flora of the region in pre-modern times, we eliminated known introduced species based on PLANTS (2000) or agreement of two or more of the input references. We also reviewed all non-introduced species for range limits according to Gleason and Cronquist (1991). Species for which the New York City region was outside of these range limits were eliminated.

Questionable species were reviewed against voucher samples in the New York Botanical Garden Steele Herbarium. Species for which labeled New York City vouchers could be found were included unless known to have been introduced.

## RESULTS

3,481 plants with distinct names at the species, subspecies or variety level in the PLANTS 2000 database were identified in one or more of the references above. 1,077 of these plants were introduced. 498 additional plants were identified as native to the US, but New York City was outside their original distribution, according to Gleason & Cronquist (1991), so they were removed.

The putative plant list for New York City and therefore, for the lower Bronx River, includes 1,906 plant names (Appendix 2.) Of these names, 419 were observed in the “three-star” (\*\*\*) references from the Bronx River watershed, the great majority (1,468) were catalogued in the “two-star” references. The remaining plant names, marked with a single star (\*) should be considered speculative.

159 different plant families are represented on the list. The top 10 most speciose families are listed in Table 2.2.

This flora should be considered preliminary. Additional checking beyond the means of this grant are required to more fully vet and test this flora. Users are advised to treat the list not as an exact transcript of all the plants that occurred in the past, but a general guide to what have might have once grown in New York City and the lower Bronx River watershed.

Table 2.2 Most speciose plant families in the historical Bronx River plant name list

<b>Plant Family</b>	<b>Number of names</b>
Cyperaceae	269
Asteraceae	200
Poaceae	165
Rosaceae	91
Fabaceae	54
Orchidaceae	50
Lamiaceae	44
Ranunculaceae	41
Liliaceae	39
Scrophulariaceae	38

## DISCUSSION

The putative plant list of the historical lower Bronx River is likely liberal in several respects. First it is better described as a New York City-wide list, than one limited to the lower Bronx River, though with the exception perhaps of grassland ecosystems, there is no reason to think that the vegetation of the lower Bronx River was qualitatively different from the vegetation of Manhattan, Queens and Brooklyn. (Staten Island might have been somewhat different, given its far southern location in the city and proximity to New Jersey, whereas the Bronx has its continental connection to the rest of New England. However excluding all Staten Island references by placing them with the other “one-star” references pulls only 19 plant names off the list.)

Second this list includes both species and subspecies names. Though we haven’t completed the analysis, collapsing subspecies into their species level cousins would remove probably 10% of the names from the list. Keeping subspecies on the list lays us open to both the virtues and vices of taxonomists, but also maintains the real possibility that some of these names represent ecologically distinctive entities.

Third the list is still quite democratic – if any one of the references cites a name, and that name can not be documented as being introduced to New York City, then the name appears on the list. A more rigorous test would require that two or more references independently observe a species, but such a method is problematic both in knowing which references are truly independent (especially for the compilations) and in dealing with rare species, which may be overlooked by many observers to be seen only by the lucky and the careful.

Fourth this list is based on observations cited in scientific studies, books and manuscript form. A more conservative standard would require that verified voucher samples only should be considered. The problem with the method used here is that it assumes (1) that the cited reference identified each plant correctly, and (2) that the names used by references can be worked through to the correct synonym in the PLANTS database. To err is human, so neither of the assumptions would be consistently met across such a large number of studies and span of time studied. Verifying voucher samples itself is also problematic however, for not only is it time-consuming and requires expertise beyond what the authors possess, it also depends on the idiosyncratic nature of collection and voucher placement. For a restricted area like the lower Bronx River watershed, there are unlikely to be sufficient vouchers to warrant the effort.

That said, our preliminary, liberal list of the historical flora compares favorably with other New York City floras. Various floras of Westchester, not used in this study, typically list the floral diversity of the past around 1200 species. Frankel (1978b) cites Scharf (1886) with an estimate of “in round numbers about 1200 flowering plants and 50 varieties of ferns.” Willis (1880) published a “Flora of Westchester” listing 1142 species of vascular plants. Griffin (1900) comments that “well over a thousand species” can be found in Westchester County. Recall that up until 1898, the Bronx was in Westchester County. Frankel’s own studies in 1978(a) and 1979 in Bronx River Park find only 446 species, some of which were introduced, however these studies were not meant to be exhaustive.

The irony of 21<sup>st</sup> century Bronx botany is that the watershed may be more biodiverse now than at any time at the past, if biodiversity is measured solely in terms of species richness. The overwhelming number of introductions of plants, intentionally or naturalized from domestic gardens, may nearly double the potential species diversity. What has declined without doubt is the abundance of our natural flora, both as vegetation types and as individual species. The overall space left for natural vegetation is highly constrained by the urban landscape and those green havens that are left are inundated with aggressive introduced species. It's not easy being a green native plant in the Bronx River watershed these days.

In this context, the value of the attached list is to give restorationists a broad palette to choose from when considering replanting efforts and in evaluating the success of active or passive restoration. Although our search of the literature is by no means exhaustive of studies either of New York City flora or of relevant floras elsewhere, it is likely that across these 35 references we have captured most of the species that might have been here. Bronx River restorationists, and similar workers in other parts of the city, can use the list to literally seed their plans with the species right for the site and system where they are working.

To make this list more applicable to the lower Bronx River, particular species must be fit with particular landscape features, whether historical or contemporary, that occur in the watershed. This effort will require working through habitat descriptions for each of the 1900-odd species and building up the web of relationships that characterize their landscape position. With these relationships described, modern spatial habitat modeling can be brought to bear on where these species might once have occurred.

Finally we hope that this list have values to students of Bronx nature, who might revel in a very diverse flora, a diversity paralleling the human diversity of the city in some ways. If there is something in New York City for everyone, then there is a plant for every person too. From the largest tulip trees to the tiniest *Wolffia* floating in the river, Bronx nature holds something for us all.

## REFERENCES

Art, Henry Warren (1976) Ecological Studies of the Sunken Forest, Fire Island National Seashore, New York. National Park Service, Scientific Monograph Series, No. 7. New York.

Bicknell, Eugene Pintard (1925) Flora of northern New York City. Manuscript in collections of NYBG library.

Buegler, R. and S. Pariso. 1981. A comparative flora of Staten Island 1879-1981. Staten Island Institute of Arts and Sciences, Staten Island, New York. Data compiled and reported in Robinson et al. (1994). Data used with permission.

Buell, Murray F., Langford, Arthur N., Davidson, Donald W. and Ohmann, Lewis F. (1966) The Upland Forest Continuum in Northern New Jersey. Ecology (47) 3: 416-432.

- Cain, Stanley, A. and Penfound, William T. (1938) *Aceretum rubri*: the Red Maple Swamp Forest of Central Long Island. *American Midland Naturalist* 19(2): 390-416.
- Cain, Stanley A. (1936) The Composition and Structure of an Oak Woods, Cold Spring Harbor, Long Island, with Special Attention to Sampling Methods. *The American Midland Naturalist* 17(4): 725-740
- Cain, Stanley A., Nelson, Mary, and McLean, Walter (1937) *Andropogonetum Hempsteadi*: a Long Island Grassland Vegetation Type. *American Midland Naturalist* 18(3): 334-350
- Clemants, Steven and Moore, Gerry (2003) Patterns of species richness in eight northeastern United States cities. *Urban Habitats* 1(1): 3-89. Published on-line June 24, 2003.  
<http://www.urbanhabitats.org>
- Conrad, Henry S. (1935) The Plant Associations of Central Long Island: A Study in Descriptive Plant Sociology. *The American Midland Naturalist* 16(4): 433-514
- Davidson, Donald W. and Buell, Murray F. (1967) Shrub and herb continua of upland forests of northern New Jersey. *American Midland Naturalist* 77(2): 371-389.
- DeCandido, Robert and Muir, Adrianna (unpublished) Historical and Extant Vascular Flora of New York City.
- Dowhan, J., T. Halavik, et al. (1997). Significant Habitats and Habitat Complexes of the New York Bight Watershed. Charlestown, Rhode Island, U.S. Fish and Wildlife Service, Southern New England - New York Bight Coastal Ecosystems Program.
- Frankel, Edward (1979) A floristic survey of the vascular plants of the Bronx River Park in Westchester County, New York. Supplement, 1977-1978. *Bulletin of the Torrey Botanical Club* 106(1): 46-47
- Frankel, Edward (1978a) A floristic survey of the vascular plants of the Bronx River Park in Westchester County, New York. *Bulletin of the Torrey Botanical Club* 105(2): 147-155
- Frankel, E. (1978b) Natural History of the Bronx River Valley. New York Botanical Garden.
- Gleason, H.A. (1935) *Plants of the Vicinity of New York*. New York Botanical Garden, New York, NY.
- Gleason, HA and Cronquist, A. (1991) *Manual of vascular plants of northeastern United States and adjacent Canada*. Bronx, NY: New York Botanical Garden.
- Gratacap, L.P. (1880) The Botany of a City Square. *American Naturalist* [need full ref]
- Greller, Andrew M. (1975) Persisting natural vegetation in Northern Queens County, New York, with proposals for its conservation. *Environmental Conservation* 2(1): 61-71

Greller, Andrew (1991) A vascular flora of the forested portion of Cunningham Park, Queens County, New York: Corrections and additions-III. *Bulletin of the Torrey Botanical Club* 118(3): 330-332.;

Greller, Andrew (1985) A vascular flora of the forested portion of Cunningham Park, Queens County, New York: Corrections and additions-II. *Bulletin of the Torrey Botanical Club* 112(3): 312.;

Greller, Andrew (1979) A vascular flora of the forested portion of Cunningham Park, Queens County, New York: Corrections and additions. *Bulletin of the Torrey Botanical Club* 106(1): 45.;

Greller, Andrew (1977) A vascular flora of the forested portion of Cunningham Park, Queens County, New York, with notes on the vegetation. *Bulletin of the Torrey Botanical Club* 104(2): 170-176.

Griffin, E. F. (1946) *Westchester County and its people*. Reprint. Lewis Historic Pub. Co., New York.

Hollick, C. A. and N. L. Britton (1879). *The Flora of Richmond County*. Staten Island, NY, Self-published. From Robinson et al 1994, used with permission.

Hollick, C. A. and N. L. Britton (1930). Unpublished survey of the flora of Richmond County, New York. Staten Island, NY. From Robinson et al 1994, used with permission.

Honkala, Dee Anne, and McAninch, Jay B. (1980) *The New York Botanical Garden Forest Project*. Report. New York Botanical Garden, Bronx, NY.

Kieran, John (1959) *A Natural History of New York City* Houghton Mifflin Company, Boston.

Le Conte, John (1812) *Catalogus Plantarum quas Sponte Crescentes in Insula Noveboraco, observavit*. Excerpted from *Amer. Med. & Phil. Regist.* 2: 134-142.

Loeb, Robert E. (1982) Reliability of New York City Department of Parks and Recreation forest records. *Torrey* 100(4): 537-541

Luttenberg, D., Lev, D., and Feller, M. (1993) *Native Species Planting Guide for New York City*. City of New York, Natural Resources Group, Park & Recreation.

Lynn, Les M. and Karlin, Eric F. (1985) The vegetation of the low-shrub bogs of northern New Jersey and adjacent New York: ecosystems at their southern limit. *Torrey* 112(4): 436-444.

McIntosh, Robert P. (1972) *Forests of the Catskill Mountains, New York*. *Ecological Monographs* 42(2): 143-162.

Poggenburg, Justus F., Britton, N.L., Sterns, E.E., Brown, Addison, Porter, Thos. C., Hollick, Arthur (1888) Preliminary Catalogue of Anthophyta and Pteridophyta reported growing spontaneously within one hundred miles of New York City. Torrey Botanical Club. New York.

Rawolle, Charles and Pilat, Ig. A. (1857) Catalogue of Plants Gathered in August and September 1857 in the ground of the Central Park. Part First. New York. M.W. Siebert, Steam Job Printer.

Robinson, George R., Yurlina, Mary E., and Handel Steven N., 1994, A century of change in the Staten Island flora: ecological correlates of species losses and invasions. Bulletin of the Torrey Botanical Club 121(2): 119-129.

Small, John Kunkel (1935) Ferns of the Vicinity of New York. Dover Publications, New York.

Stalter, Richard and Lamont, Eric F. (1987) Vegetation of Hempstead Plains, Mitchell Field, Long Island New York. Bulletin of the Torrey Botanical Club 114(3): 330-335.

Stalter, Richard (1981) A thirty-nine history of the aborescent vegetation of Alley Park, Queens County, New York. Bulletin of the Torrey Botanical Club 108(4): 485-487.

Taylor, Norman (1915) Flora of the vicinity of New York; a contribution to plant geography. Memoirs of the New York Botanical Garden, volume 5. New York.

Torrey, John, Eddy, Caspar W. and Knevels, D'Jurco V. (1817) Catalogue of Plants, Growing Spontaneously within Thirty Miles of the City of New York. Published by the Lyceum of Natural History of New York.

USDA, NRCS. (2002) The PLANTS Database, Version 3.5 (<http://plants.usda.gov>). Data compiled from various sources by Mark W. Skinner. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Weiss, Howard M., Glemboski, Diane, Philips, Kimberly, Roper, Peter, Rosso, Abbey, Sweeney, Thomas, Vitarelli, Anthony, Wahle, Lisa, and Weiss, Jennifer. 1995. Plants and Animals of Long Island Sound: A documented checklist, bibliography, and computer data base. Project Oceanology, Groton, CT.

### **Chapter 3: Walking the watershed: environmental outreach based on historical ecology in an urban setting**

#### INTRODUCTION

Historical ecology is fascinating in itself for informing the complicated ways that human beings relate to and interact with the environment. But historical ecology also provides a powerful basis for environment-based education, involving children and the public in the tapestry of geography, ecology and history that transformed, for example, “Wanaqua” into the Bronx as we know it today. Specifying the past landscape in the known geography of streets and parks provides roots to the real world, integrates the past and the present, and suggests ways of making decisions about the future that respect the connections between human and natural systems. After all, the Bronx that we live in today was shaped by the decisions of generations of people who came before us. The Bronx that the future inherits will be based on decisions we make today

Today nearly 8 million people live in New York City, over a million people in the Bronx. New Yorkers are exemplars of an urban way of life that is predicted in the next 30 years to become the dominant human lifestyle globally. Urban life is characterized by concentrated requirements for food and resources, dependence on a global network of economic relationships, and high mobility of culturally diverse populations, creating dynamic living, but also the conditions by which people typically do not know where their food comes from, who their neighbors are, or the history of the place where they are living. These trends disconnect human decisions and their environmental consequences.

Many urbanites also suffer from historical amnesia, at least when it comes to nature. The term, “shifting baselines” has been coined to describe the process by which generations of people lose the facts, the memory, and eventually the imagination to understand the natural world as it once was, so much so that descriptions of the past come to seem fantastic and unbelievable. This modern tendency to lose touch with our natural history can be found everywhere, but leads to amazing contrasts in urban settings. Foot and a half long oysters in New York harbor? Black bears in the south Bronx? Shad migrating up the Bronx River? Such facts seem unreal, but they are not irrelevant. The dynamic contrast between the environment as we perceive it today, and the environment as maps and documents can help us to understand as it once once, creates a space for creativity and new thinking. The suggestion that environmental historians and archaeologists make through their work is that exposure to information about the past, especially human relationships to nature in the past, can change people’s conceptual models of their relationship to the environment today.

All people have conceptual models of what the environment is and what it could be (also called mental or cultural models, and those models can be changed through education and public outreach about the environment (Kalof, 1997, Meyers, 2002). Indeed one of the greatest challenges to restoration of the Bronx River may be changing people’s ideas about the what Bronx River might be. With new vision comes new possibilities.

Challenging New Yorkers, and especially Bronxites, to re-imagine the Bronx river as it once was and how it might be again, was the goal of the Walk the Watershed event based, on the historical ecology study reported here. In the October of 2004 and again in 2005, the Wildlife Conservation Society and the Bronx River Alliance co-hosted a walk in the south Bronx as part of the Golden Ball Festival, an annual event. The walk began at the Concrete Park Plant, one of New York City's newest parks, and ended at the Bronx Zoo, in Bronx Park, one of the oldest and a center of global conservation. Along the way, we stopped at key locations within the watershed to discuss how the river and the watershed worked in the past, how they work today, and how they are being restored to work for all in the future.

## WALK THE WATERSHED ROUTE AND TALKING POINTS

The route of the walk is shown on Figure 3.1 and is about 3 miles long. With eight stops along the way, it takes about 2.5 hours to complete. We prepared a poster-sized version of Figure 3.1 to carry along the route, with the historical ecosystems plotted on transparent overlays that can be laid over the aerial photography of the area. We also brought along photographs of ecosystems like the ones that were once found in the Bronx River watershed (e.g. forests, grasslands, salt marshes, swamps) and can still be found in places. We passed around photographs of plants, and animals, and modern reconstructions of Lenape encampments to provide some idea of what the area might have looked like in historical times.

The following summarizes the main discussion points at each stop. The stops are marked in red on Figure 3.1.

1. Concrete Plant Park: The walk starts at the Concrete Plant Park at Westchester Ave, near the Whitlock Avenue subway station. The park provides a safe, and slightly quieter locale, to begin the trip, and access to the river. The Bronx River Alliance, New York City Parks Natural Resource Group, and Rocking the Boat, a local educational organization, having been restoring salt marsh at the new park site. At the start of the trip, we discuss the different organizations working to restore the river, introduce the walk, then talk about salt marshes that once dominated the area. Key points about salt marshes:

\* Salt marshes are found where the land meets the sea. Salt marshes occur in tidal zones without strong wave action. The protected areas along the Bronx River and adjacent rivers in the Bronx (Tibbett's Brook, Mill Creek, Westchester Creek, the Hutchinson River) once hosted extensive salt marshes.

\* Salt marshes are tough. It's hard enough to be a wetland plant, with your roots regularly inundated with water, making it hard to breathe, but salt marsh plants also have to put up with salt. Soil salinities in the higher parts of salt marshes can reach twice sea water salinities, because the higher areas are only flooded on the highest tides. After the water retreats, evaporation leaves the marshes very salty indeed.

\* Salt marshes are remarkably productive, one of the most productive natural ecosystems on Earth. In terms of biomass, salt marshes compare favorably to heavily managed agricultural systems like those found in the Midwest.



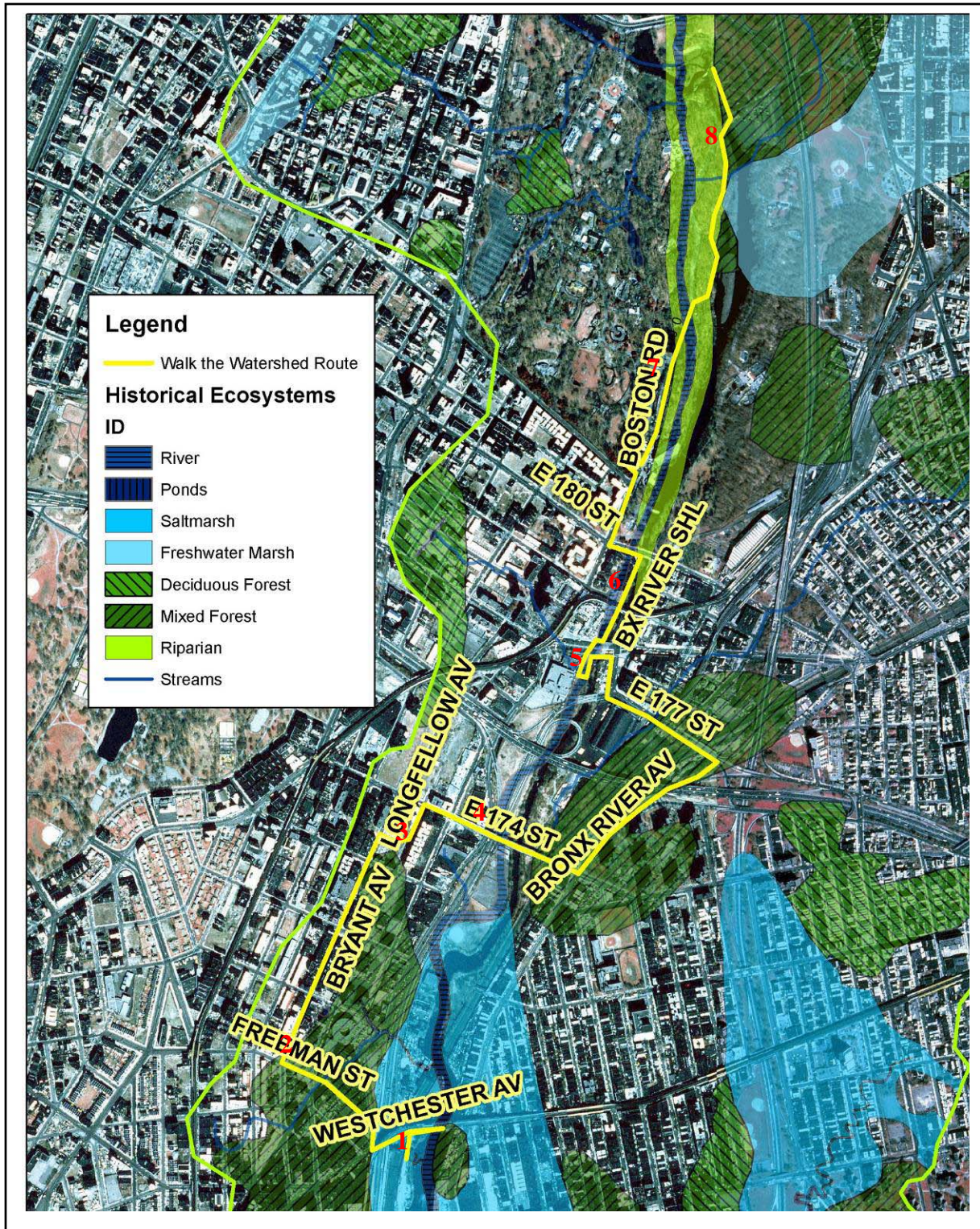


Figure 3.1 Route of the Walk the Watershed outreach event in the south Bronx. Colored areas overlaid the aerial photography show the historical distribution of ecosystems from the mapping work described in Chapter 1. The red numerals indicate the discussion stops described in the text.

\* Salt marsh productivity is key to coastal estuaries. Much of the biomass of salt marshes is exported to the adjacent estuaries by the tides. This biomass makes an important contribution to marine foodwebs, green stuff ground up from salt marshes feeding the plankton, the plankton feeding the small fish, the small fish feeding the bigger fish, the bigger fish feeding the bigger still fish, etc.

\* Salt marshes are also important for wildlife. A large percentage of commercially caught fish spend some portion of their life span in salt marshes. Baby fish in particular use salt marshes as nurseries, enjoying the protective cover that salt marshes provide from all those bigger fish out there! Salt marshes are used by many kinds of waterbirds, and in the Northeast, by the salt marsh terrapin, a turtle specially adapted to the marsh.

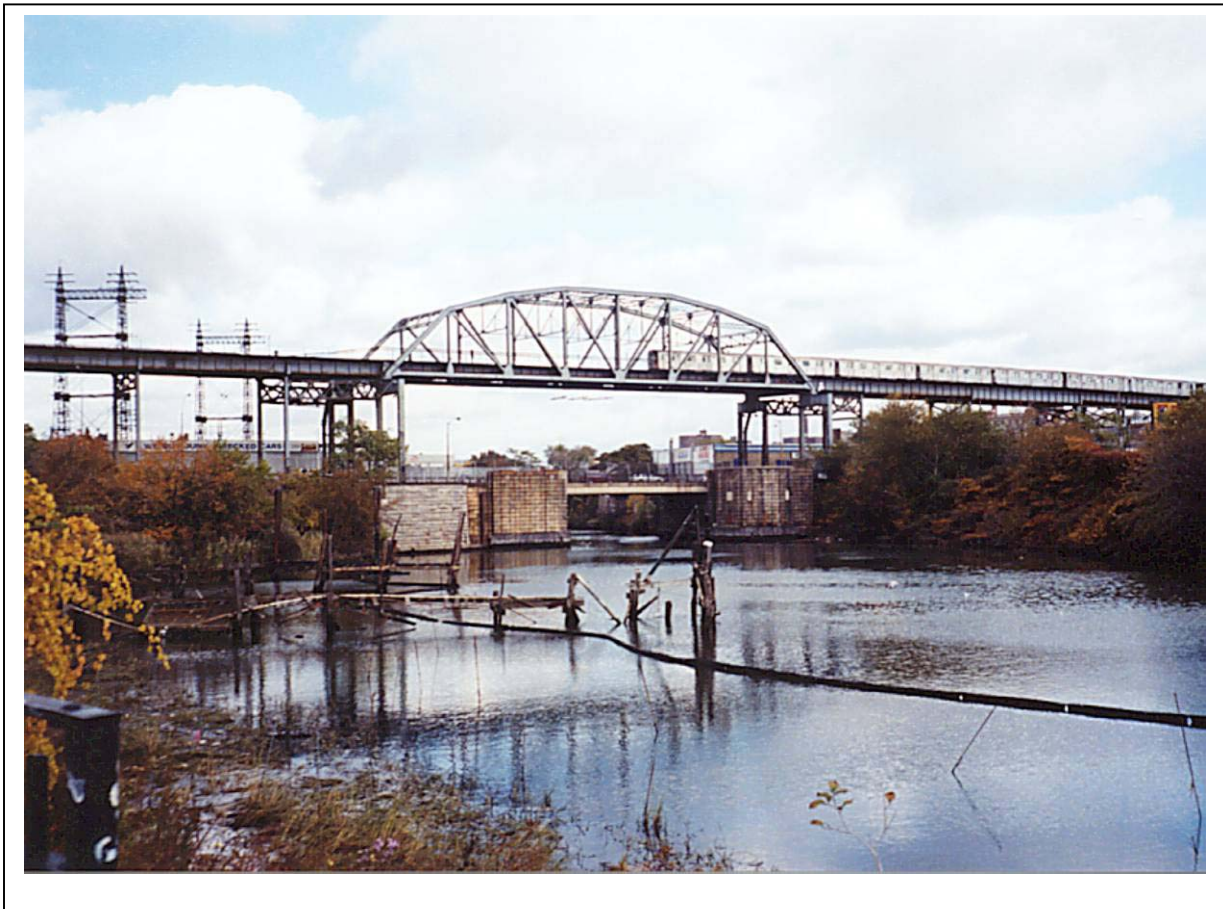


Figure 3.2 View from Concrete Plant Park showing the salt marsh restoration in the foreground.

2. Corner of Freeman Street and Bryant Ave.: From the Concrete Park Plant, we carefully cross Westchester Ave., walk briefly up Boone St. along side the Sheridan Expressway, and then turn left up Freeman St, walk a couple of blocks up the hill to the top of the watershed on the western side along Bryant Avenue. A storm drain at the corner conveniently launches a discussion of what a watershed is.

\* A watershed is the land that waters a river. A watershed boundary defines the area where every drop of rain or snow water drains into a particular stream or river.

\* In the past, rain fell, and over most of the Bronx River watershed, it fell into forest. Forests catch water, on the leaves and branches and stems. The water flows down trees and into the ground, and once the ground is full, over the top of the ground. The water that goes into the ground is called (cleverly) ground water. The water that stays above ground eventually collects into streams, and those streams into the Bronx River.

\* Today the rain falls, but rather than falling into a forest, it falls on buildings and pavement. The water flows along the streets, catching whatever is there (oil, litter, etc.) takes it to the storm drains. In New York City, the storm drains lead to something called the combined sewer. Unfortunately what is combined is the stormwater and the actual sewage from all the houses, with all the nasty things that sewage entails. Fortunately, because of the Clean Water Act and other legislation, New York has sewage treatment plants that clean the sewage water before it is dumped into the sea. Unfortunately these treatment plants only have enough capacity to handle the “dry weather flow,” that is, the amount of material, not including the rain. When it rains, or snows, the excess – a combination of stormwater and brown water (shall we say?) – leaves the system for the ocean. As a result beaches close and our coastal waters are no longer as clean as they might be.

\* Another result of these “impervious surfaces” (as buildings and pavements are known) is that more water actually reaches the river, and gets there faster, than if the landscape were covered with forest. The reason is for this is that trees actually hold up some of the water – a leafed-out deciduous forest can hold up to a ¼” of rain before anything actually gets to the ground. Moreover some of that water is evaporated by the sun directly from the trees.

\*Of the water that does reach the ground, a proportion of goes into the ground, as we said before. Some of the groundwater gets sucked up by trees (“transpired”), some of it goes deep and feeds underlying aquifers, and in general it is slowed down by having to move through the soil. Even the surface flow is slower in a forest because of the uneven surface and all the small plants, fallen leaves and other things that keep the water from moving.

\*In our modern city, nothing is there to hold back the water, so hydrologists talk about landscapes with lots of impervious surfaces as being “flashier” which means that the water literally flashes down and out of the watershed. Lots of water leaving fast has another name. It’s called a flood! The flooding waters the develop quickly on some Bronx streets are in large part due to the armored surfaces we have built over our watershed.

\*The good news is that restoring forests and wetlands and opening up the pavement so the ground can breathe again will help restore the way the watershed works.

3. Rock Garden Park: From the corner of Freeman and Bryant, we walk down Bryant Avenue a couple of blocks to Rock Garden Park, between Bryant and Longfellow Avenues and 173<sup>rd</sup> and 174<sup>th</sup> Streets. Rock Garden Park. This area is dominated by large rock formations that made it difficult to develop – as a result in developed into an eyesore and a rat-infested health hazard.

Fortunately a community group, the Mid-Bronx Desperados and the Crotona Park East community, decided enough was enough and started a “Green Thumb” garden on the site in 1992. In 1999 the City of New York invested \$1.5 million to create “Rock Garden Park” including an award-winning natural features, “Hiawatha Falls” which literally pours water from the rocks. Standing above the waterfall we discuss the springs of New York City.

\* New York City once was known for its many springs. Springs are places where underground streams of ground water (as we discussed at the last stop) reach the surface.

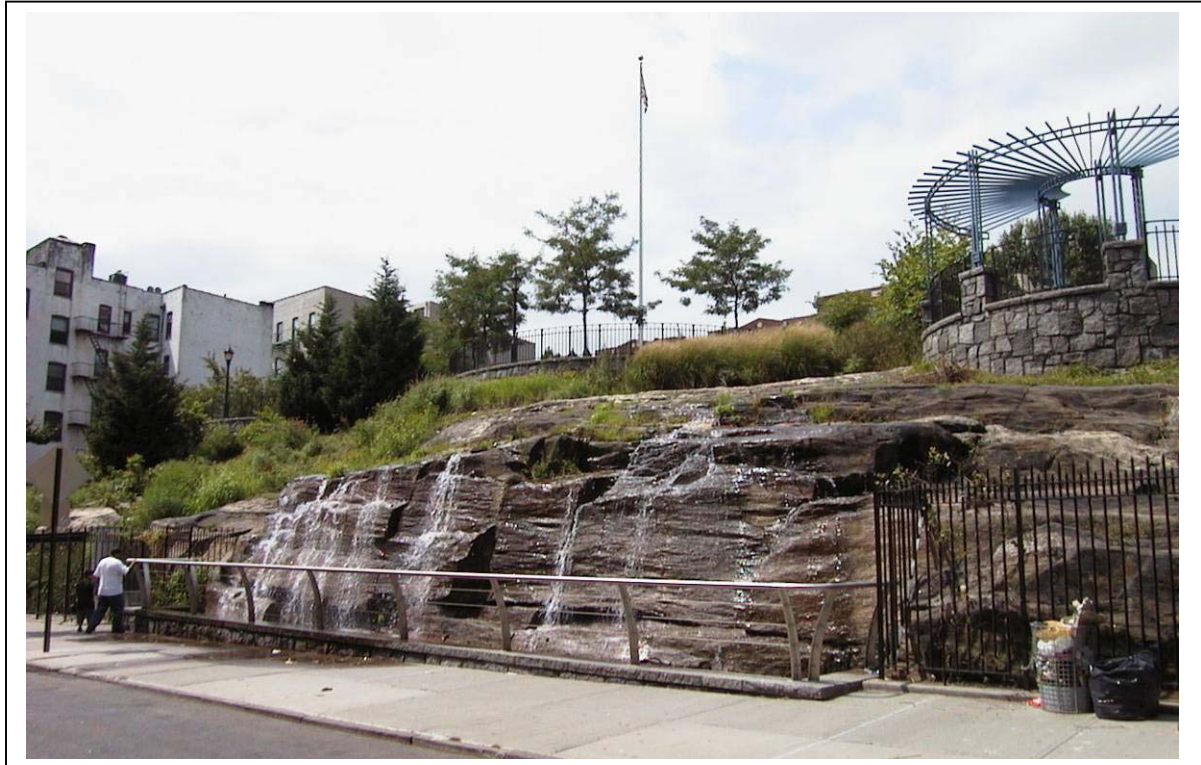


Figure 3.3 Haiwatha Falls in Rock Garden Park.

\* 14,000 years ago the area that would someday become New York was covered with thick ice – glaciers. As the climate warmed and the glaciers retreated, the ice melted, and from the ice came large rivers that deposited sand and rubble in layers. These layers, later buried under the soil that took thousands of years to form, would be underground channels for water.

\* Springs are beautiful! Imagine crystal clear, cold water appearing as if by magic straight from the ground! Of course, the water does not appear magically, but in fact springs are fed by the rain and snow that falls around and above where the spring occurs.

\* For the same reason, as the city built up and impervious roads and buildings were laid down, the springs dried up. So where does the water that feed Hiawatha Falls come from? That’s right, the Catskills Mountains! New York City’s water supply comes from collecting runoff in the Catskills, the Delaware watershed, and the Croton watershed of northern Westchester County.

The water comes down in enormous pipes to water the city, some of which eventually reaches Rock Garden Park.

\* It is in fact amazing that we can so change the watershed that the water that falls here does not feed the springs, but can also bring water from over 200 miles away to remind us what a spring once looked like!

4. Bridge at 174<sup>th</sup> Street: We leave Rock Garden Park down the steps to Longfellow Avenue, walk down to the corner of 174<sup>th</sup> Street and turn right, descending back down the watershed, crossing over the Sheridan Expressway, to overlook the river. A major restoration effort is underway on the west bank of the river. The long view up and down the river at this point provides an opportunity to talk about how rivers change as it flows down (and up) the watershed.

\* The Bronx is partly a tidal river, that flows two directions, and partly a upland river, that only flows oneway!

\* The lower part of the lower Bronx River, below the tide line is dominated by the tides in the East River. With the tides, the water comes in (upriver) twice per day and then out (downriver) twice per day. (Actually the East River tides can be even more complicated than that considering they have to balance ocean water coming up through New York Bay and around Manhattan with other waters that come from Long Island Sound – all the way around Long Island.)

\* Above the tide line, the upland flows dominate the river, though the tidal surge (up and down) can still be felt. Whereas the tidal flows change every few hours, the upland flows are tied more to the weather and the amount of run-off in different seasons. Moreover the lower part of the river is tied to the upper part of the river, which means that a storm even a long way off (up in Westchester, for example) can affect how high the waters are in the lower part of the river. Rivers are connectors – connecting the land, even far inland with the sea, and connecting the seas, even far away, with the land.

\*The ups and downs of the water level means that plants that grow along the river are periodically flooded. Together these plants are called “riparian” or river vegetation. Willows, silver maples and American sycamores are all classic riparian trees. These trees have the blessing of being watered all year round, but have the curse of damaging floods.

\* If rivers are connectors for the landscape, the connectors of modern cityscapes are streets and freeways (like the Sheridan Expressway, just below.) Like the river, freeways have tides every day, flow one way or two, and have seasonal patterns too. Freeways flood with cars, but instead of flowing faster, freeways flow slower and slower until they stop. Unlike rivers, building more freeways does not seem to relieve the flows, but tends to generate more traffic. And freeways take up room in the cityscape, room which if used for other purposes could allow more parks,

living space, and more room for nature. Cities, like rivers, need to be connected; finding ways to connect them efficiently is a major challenge for ecological restoration in the city.



Figure 3.4 Restoration efforts underway near the Bronx River at 174<sup>th</sup> Street.

5. Drew Gardens: Crossing the 174<sup>th</sup> Street bridge, we walk on the eastern side of the river for the first time. The watershed was historically much more extensive on the eastern side. A distinct ridge provided the western watershed boundary, fairly close to the river, but the east there were gentle slopes leading to a small rise, approximately on the line of Williamsbridge Road, that divided the lower Bronx River watershed from the watershed of Westchester Creek.

We reach Drew Gardens by turning left off of 174<sup>th</sup> Street and walking up Bronx River Avenue, under the Cross-Bronx Expressway, cutting across a small park to 177<sup>th</sup> Street, past the bus yard, across the awkward corner at Devoe Ave, to cross the river again at East Tremont, and finally reach the Gardens. In 1781 this part of the walk would have been through a large forest of American chestnut, oaks, hickories, maples and pines. But watch out for the British!

Drew Gardens is a 2-acre community garden developed by the Phipps Community Development Corporation alongside the Bronx River. Community members and local school kids grow vegetables, tend an urban forest, and try to attract butterflies with a butterfly garden. Drew Gardens, which draws modern people to the river, provides a great chance to talk about the former community members of the watershed, the Lenape people.

\* The Lenape were Native Americans who lived in the western Bronx, Manhattan, and most of New Jersey for hundreds of years before Europeans arrived in the 17<sup>th</sup> century. The Siwanoy, a related people, lived in the eastern Bronx and southern Connecticut. Both of these peoples spoke Algonquin-related languages. To the peoples around them, the Lenape were recognized as “the Ancient Ones,” one of the original groups of Algonquin people. The Lenape around what would become New York City are also sometimes called Weckquasgeek, but that’s harder to say.

\*The Lenape lived in small groups, moving around the landscape in different seasons to gather food from the rich environment around them. In spring they would have moved down to the river to catch the spring runs of shad and herring, and in summer would have moved to gathering places, like near the Bronx River, to trade and meet other groups. In fall they would have gathered acorns and nuts from the forests that covered the landscape, and throughout the year they would have hunted the abundant game: deer, elk, bear, turkey, geese and other animals. Winters were cold and sometimes hungry, but the salt marshes and shores always provided shellfish – clams, oysters and even lobster – to help them through.

\*The Lenape also practiced agriculture, the traditional “three sisters” garden of North America: maize (corn), beans and squash. All of these plants originated in Mesoamerica and passed through trading networks to the Northeast. Corn was planted in late April in large mounds. A couple weeks later, climbing beans were planted into the sides of the mounds, and squash planted between. As the corn grew upward, it provided a ladder for the beans to climb. The beans, which are nitrogen-fixing, adding nutrition to the soil, helping the corn to grow. The squash stretched out large leaves to cover the soil, helping the garden hold water and reducing the work of weeding. Multi-crop systems also have advantages in terms of attracting beneficial insects and keeping down numbers of pests.



Figure 3.5 A Bronx boy enjoys the “three sisters” garden at the New York Botanical Garden’s Ruth Rea Howell Family Garden.

\* Interestingly it’s unclear to what extent the Lenape in coastal New York depended on agriculture. There are suggestions that the natural environment may have been so rich and

abundant with wildlife, fish, shellfish, and plant foods, that the “three sisters” provided a only a supplement to the diet and were not the mainstay of their food supply.

\* In any case, the Lenape obtained almost everything they needed from their local environment. That’s not the case for modern Bronxites who obtain almost none of their food or basic resources from the Bronx itself. Except for community gardens, all of our food comes through grocery stores, which are connected to national and international trading networks. Think of your breakfast this morning and where did the food come from? Probably all over the world. The resource-shed for the Lenape they know all around them; for us, it is the whole world. That difference may account for much of the difference in how we and the Lenape perceive and value the natural world.

6. Bronx River Park: From Drew Gardens, we cross Tremont Ave. and continue walking north along river to Bronx River Park at 180<sup>th</sup> Street. At Bronx River Park, there is an excellent view of the first of three small dams in the lower Bronx River watershed, two within the Bronx Zoo and one within the New York Botanical Garden. These dams lead to an interesting conversation about dams, development of the river and the Bronx through time.

\*The dam before us was built in the early-mid 19<sup>th</sup> century, but this wasn’t the first dam on the river. The first dams on the river and the adjacent tributaries were built by a different kind of landscape architect: the beaver. Beavers are prodigious dam builders. They build dams to create ponds to surround and protect their lodges. Ponds also flood the adjacent lands, drowning trees, some of which die and become the snags that wood ducks love so much. Beavers were one of the reasons the Dutch took an interest in New York (New Amsterdam to them), and the beaver still features on the city seal.

\* The beavers however did not outlast the Europeans who came to trap them and other fur bearers. European people built dams to capture the power of river to saw wood, grind seeds, and eventually for industry. Jonas Bronck, for whom the river and the borough are named, may have built a dam on the river as early as 1639. By the mid 18<sup>th</sup> century, there were a number of dams along the river.

\*The dam before us was built by the Bolton family in the early 1840s to power the Bronx Bleach Works and Cloth Tape Factory. Bolton also built the other dam in the Bronx Zoo, near the Bronxdale entrance. The Lorillards built the Snuff Mill dam in the New York Botanical Garden about this time. That dam powered a works to grind tobacco for snuff so that the Americans could begin competing with the snuff mills in Europe. These dams anchored small communities of workers near the river, including the village of Bronxdale, near where Pelham Parkway and the Bronx River Parkway meet. Today these three dams are important aesthetic features in the Zoo and Garden.

\*These dams were good for industry and development of the Bronx, but not so good for the river itself. Dams, whether from beavers or people, can block upstream migration of fish, though leaky beaver dams and built structures, like fish ladders, can help fish get around the dams. Dams also create impoundments that slow the flow of water, catching sediments behind them. For these reasons there is a growing trend toward dam removal in the Northeast, particularly for



dams that are no longer needed. Studies are underway to decide what should be done with these dams on the lower Bronx River, to find ways to make them usable again to migratory fish, and to generally weigh on all sides, through many, many discussions, what is best for the river and the people the live and work nearby.



Figure 3.6 The upper Bolton dam in the Bronx Zoo, near the Mitsubishi Riverwalk.

7. Old Boston Post Road (within the Bronx Zoo): From Bronx River Park, it is a short walk to the Bronx Zoo. During the Walk the Watershed events, the Wildlife Conservation Society kindly provided permission for the tours to walk through the zoo. We entered at the Asia gate, skirted through the area known as “Wild Asia” and up the JungleWorld road, which follows the old Boston Post Road through the Zoo. A little used asphalt walkway leads off the road to the right and along a high bank above the river, with lovely views of the river, excellent birdwatching, and the wildest piece of forest on the walk.

\*Most of the Bronx River watershed was once covered with forests. These forests varied from place to place in their tree and herb composition and contained both deciduous trees and evergreen ones. A large white pine, the Delancy Pine, once stood on the Zoo grounds, and in part the location of Bronx Park was determined by a large and renowned hemlock grove that once occurred in the New York Botanical Garden forest. Unfortunately many of those hemlocks have died after being attacked by an introduced pest, the woolly adelgid.

\*Forest composition is affected by many factors, but an important one is soil moisture. Drier sandier soils favor some trees, wetter, heavier soils favor others. Where the soil is flooded for extended periods, swamps are found – swamps are just wooded wetlands. A large swamp, the Bear Swamp, used to sit approximately on top of the Bronxdale Parking Lot at the Bronx Zoo, receiving waters from several streams that once flowed out of the Pelham Parkway neighborhood.

\*Disturbance plays an important role in forests. Disturbances are natural events that knock trees down, killing larger trees, allowing smaller trees and plants a chance to grow up. A big storm that kills a 400 year old tree is just what long suffering smaller trees have been waiting for. Within a year, they will stretch up to fill the light gap. What is a disaster for one tree is the big break that other trees have been waiting for.

\* One of the challenges our modern forests face is invasion. The invading armies come in many forms. There are invasive plants like the porcelain berry, which smothers trees with its vines, English ivy, which smothers the smaller plants on the ground, and the Princess tree, that grows so fast and so well. There are armies of smaller pests, insects and the like, including the Asian long-horned beetle the wooly adelgid and the gypsy moth. And then there are the armies too small to see, but deadly nonetheless, like the chestnut blight which took down the most common tree of forests past (the American chestnut) in the early 20<sup>th</sup> century. Coupled with pollution from the air, water and dumping on the ground, and over-love, trampling the roots and compacting the soil, these invading armies are making things tough on our forests.

8. Mitsubishi River Walk (Bronx Zoo): Walking up the pathway eventually leads to the bridge over the Bronx River just outside the Bronxdale entrance gates to the zoo. From this bridge is a lovely view of the second of Bolton's dams and of the expansive parking lot which was once Bear Swamp. Walk over to the totem pole and strolling up the Mitsubishi Riverwalk, we end our tour discussing the river's wildlife and future life.

The Mitsubishi Riverwalk is located just inside the Zoo's Bronx Parkway entrance, providing free public access during regular Bronx Zoo operating hours, plus educational and recreational opportunities for local residents and other users of the River resources. The trail begins at the iconic site of the Healing Totem and proceeds along a section of the stream bank that has been restored as a demonstration of the scientific techniques used in habitat restoration. Viewing stations on the bank convey information about the River's ecology and wildlife. Interpretive exhibits and materials and trained volunteer guides will help visitors to identify the birds, mammals, and reptiles that live here at different seasons, to understand how they migrate, and to visualize where they have been and where they are going.

\*The forests, plus the wetlands, plus the river, may have hosted over 1900 different plant species, as described in this report. (Over 1500 additional plant species have been introduced over time.) In addition these forests, wetlands and waters were home to over 350 different bird species over the course of the year, 40-50 reptiles and amphibians, and probably over 40 mammals, including wolves, black bear, eastern mountain lion, elk and deer.

\*Most of the plants and birds can still be seen, if you know what to look for and where to look. Of the birds only the Passenger Pigeon and the Eskimo Curlew (a shorebird) have gone totally extinct (some also include the Labrador Duck and the Carolina Parakeet in the list of extinct New York City birds, but it is questionable how much time they spent in the city formerly.) None of the mammals are globally extinct, but most of the larger wildlife species have been lost from the Northeast, except in zoos.

\*Amazingly wildlife can and is coming back. The waters around New York City, including the Bronx River waters are improving each year, and with them, more and different kinds of fish are returning. At one time, white-tailed deer and the turkey were extinct in New York State, but now both are back strong. It's unclear what might be possible in the future. What is clear is that the wildlife, the forests, the river and wetlands will try to get back. What's left to decide is how much we will help them.

In 2004 and 2005 the walk ended at the Golden Ball Festival, hosted by the Bronx River Alliance and the Wildlife Conservation Society, at the Bronx Zoo.



Figure 3.7 The Bronx River in the New York Botanical Garden forest. A river for us all.

**Appendix 1. Notes on selected 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> century maps of the Bronx, examined for their relevance to the historical ecology of the Bronx River**

Major archives in the United States and the United Kingdom were searched for maps relevant to the historical ecology of the Bronx River as part of this project. The search was not exhaustive, but most maps identified through the relevant finding aids (cited below) with listings for Westchester, Bronx, and New York City (and common spelling variants of these) were examined. When possible the map title, scale, and publication and physical details from the finding aids or the maps themselves were recorded. In the entries below “My notes” refer to notes made by Eric W. Sanderson (EWS) or Danielle T. LaBruna (DTL) on examination of the maps for their relevance to the historical ecology of the river. Notes of “no good” indicate the map not relevant to the study purpose, not a general indication of the value of the map!

The following appendix refers to maps in the holdings of the British Library, London; UK National Archives (formerly Public Record Office), Kew; the Clements Library, Ann Arbor, MI; the Library of Congress, Washington, D.C.; the New York Public Library, New York City; the New York Historical Society, New York City; and Westchester County Archives and Historical Society, White Plains, NY.

Relevant finding aids:

British Library: British Library electronic map catalog

Clements Library: Brun, Christian (1959) Guide to the Manuscript Maps in the William L. Clements Library. The University of Michigan: Ann Arbor MI. [an annotated copy with new shelfmarks in pencil by map librarian was kindly loaned by Brian Dunnigan, who is currently cataloging the collection for inclusion on the electronic catalog]

Library of Congress: John R. Sellers and Patricia Molen Van Ee (1981) Maps and Charts of North America and the West Indies, 1750-1789: A Guide to the Collections in the Library of Congress. Library of Congress: Washington, D.C.

New York Public Library: The New York Public Library (1971) Dictionary Catalog of The Map Division. G.K. Hall & Co.: Boston, MA

The National Archives (formerly Public Records Office): Penfold, PA (1974) Maps and Plans in the Public Records Office. Her Majesty’s Stationary Office: London.

For more information about these notes, contact Eric W. Sanderson at the Wildlife Conservation Society, phone: 718-220-6825, email: esanderson@wcs.org

Archive	British Library
Place/subject	New York (Environs). Military art and science – Maps and charts
Title	A Plan of the operations of the Kings Army under the Command of General Sir W. Howe ... in New York and East New Jersey against the American forces commanded by General Washington, from the 12 <sup>th</sup> of October to the 28 <sup>th</sup> of November, 1776; wherein is particularly distinguished the Engagement on the White Plains, 28 <sup>th</sup> of October. By C. J. Sauthier
Publication Details	[London]: W. Faden, 1777
Scale	
Physical Details	
Notes	
Former Shelfmark	73956.(5.)
Shelfmark	*Maps 73956.(5.)
My notes	Examined 3/17/04 ew. Engraved map very similar to (probably identical to) map in Library of Congress (G3804.W7S3 1776 .S2 Faden 58). Again shows the length of the river and gives a rough idea of the topography of Westchester and the Bronx, but if the

	LOC version is available digitally, we can work from that. This version shows very nicely the progression of troops during the latter half of the 1776 campaign, culminating in the Battle at White Plains. A note along the hills just west of the Bronx River reads "Position of the American Army in detached Camps every where entrenched from Valentine's Hill to the White Plains from the 12 <sup>th</sup> to the 27 <sup>th</sup> of October." Southernmost American Army indication is on second hill, up and west from DeLancey's Mill.
--	---

Archive	British Library
Place/subject	New York (City)
Title	A colored "map of New York and Staten Islands, and part of Long Island; surveyed by order of H.E. General Sir Henry Clinton, K.B., commander-in-chief of His Majesty's Forces, 1781' drawn by George Taylor and Andrew Skinner, on a scale of one mile to an inch
Publication Details	1781
Scale	1: 63680; 1 mile to an inch
Physical Details	Ms. 3 f. 2. in. x 2 f. 2 in. – 97 cm x 66 cm
Notes	
Former Shelfmark	[CR] CXXI.34.
Shelfmark	Maps K.Top.121.34.
My notes	Examined on 3/17/04 ew. Finished map very similar to PRO's MR 1/954, but in nicer condition, and if I'm not mistaken, some additional information. Most interesting is the notations in several places of depths of water and/or elevations, which may be useful for topographic/bathymetric modeling as well as understanding the tidal range at that time. Once MR 1/954 is scanned, it would profit comparison and digitization of these locations/values to add to that map. Unfortunately the map doesn't add much additional information to the Bronx picture – best for Long Island. Note that it is hard to reconcile Blaskowitz's map of extreme NW Long Island (TNA/PRO MR 1/1193) with this map, as this map does not show extensive wetlands in that area. Note that some features on this map appear to be mislabeled, at least as I understand them; in particular "Spike & Devil Hill" is marked on the high areas of Riverdale; and "Horn Hook" appears to be one point two far north. Taylor and Skinner should have known better!

Archive	British Library
Place/subject	New York (City). Plans and views.
Title	Map showing portions of the City of New York and Westchester County under the Jurisdiction of the Department of Public Parks.
Publication Details	[New York], 1872
Scale	
Physical Details	
Notes	William Grant, Chief Engineer, in "Bureau of Civil and Topographical Engineering", Department of Public Parks.
Former Shelfmark	
Shelfmark	Maps 73954.(11.)
My notes	Examined 3/19/04. Shows Manhattan gridded out, including most of Inwood, and western Bronx. Shows a portion of the Bronx River from approximately "Williams Bridge Station" to the boundary with Yonkers. The Bronx portion is highlighted as under the administration of the Parks Department with a pink boundary. Shows course of Tibbet's Brook, including large lake/reservoir. Shows portion of Woodland Cemetery and number of small streams and ponds, two ponds which appear to be formed by the rail line which keeps them from draining all the way to the Bronx River. Several other streams appear to be in a similar predicament.

Archive	British Library
---------	-----------------

Place/subject	[New York]
Title	A military plan of New York, Brooklyn, and part of Staten Island; drawn about 1781...
Publication Details	
Scale	
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Additional MS. 16,367l
My notes	Examined 3/19/04. in a scroll, a pencil and ink sketch of Manhattan north of the wall, northern Queens and in part the Bronx. The Bronx part includes a rough sketch of the Bronx River, showing its wiggly lower course and most interestingly a small bit of wetland between the river and the western road from the Bridge south to a large bend of the river to the west. I made a sketch on pencil. Shows an interesting detail, but probably not enough to warrant the expense of have a copy made.

Archive	British Library
Place/subject	[New York]
Title	A military sketch, imperfect, of the disposition of some of English and American troops, and of General Howe's headquarters after the affair of White Plains, 25 October 1776...
Publication Details	
Scale	
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Add. MSS. 16,367e
My notes	Examined 3/19/04. a sketch map of the Battle of White Plains, shows some troops and a small piece of the Bronx River, but not in enough detail to be useful or even to georeference.

Archive	British Library
Place/subject	
Title	Map of the Country 30 miles round the City of New York.
Publication Details	Designed and drawn by J.H. Eddy. Engraved by P. Maverick from Newark NJ. Published in New York in 1812.
Scale	Scale of 3 miles to the inch.
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Maps 75956.(6.)
My notes	Examined 3/17/04. Too coarse of a scale to be much use to us, does show the Bronx River up north of White Plains and down to the mouth nicely. Shows marshes at mouth of river. Also nicely indicates features in New Jersey, including the Great Swamp and features like "Spanish paint found here."

Archive	British Library
Place/subject	
Title	New York City and County, with Vicinity Entire. published by C. Magnus, 1862
Publication Details	
Scale	
Physical Details	

Notes	
Former Shelfmark	
Shelfmark	Maps 73953.(25.)
My notes	Examined 3/20/04. sadly, “vicinity entire” does not include the Bronx, only the roaded parts of the city. includes references to some of the old forts on Manhattan and Jones Wood on the east side and remaining marshes of Harlem.

Archive	British Library
Place/subject	
Title	Map of Westchester Co., from actual surveys by F.C. Merry
Publication Details	
Scale	
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Maps 74190.(.49)
My notes	Examined 3/17/04. This map was published by M. Dripps in 1858 from surveys by F.C. Merry for all of Westchester, including what later became the Bronx. Entire extent of the Bronx River is shown, though not in great detail. Probably of greatest value for identifying pond or enlargements along the length of the river and for identifying various property owners and mid 19 <sup>th</sup> century streets.

Archive	British Library
Place/subject	
Title	Map of Westchester Co. ... from actual surveys by Sidney and Neff. Published by Newell S. Brown, with offices in White Plains and Philadelphia. 1851.
Publication Details	
Scale	
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Maps 74180.(1.)
My notes	Similar map to the Dripps/Merry map (above) but with slightly more ecosystem detail. Most interestingly maps the extent of “Bear Swamp” in Bronxdale neighborhood near the present day zoo/gardens, clearly within the watershed of the Bronx River. Within the swamp are indications of both deciduous and coniferous trees. In other parts of the Bronx, areas are labeled “Liable to Flood Tides” which are probably areas of salt marsh, or recently filled salt marsh. Although mostly a map of houses, roads, does provide indications of other point features of interest, e.g. including ponds, rocks and swamps. Along the course of the Bronx River further north a “Beaver Pond” is drawn in around Bronxville. Many mills are shown along the Bronx River and other streams are labeled. These could be identified and located with respect to modern features. All in all, a very useful map. (Note: a microfiche of this map is in the NYPL collection; apparently another copy is held by the LOC)

Archive	British Library
Place/subject	
Title	Map of southern Westchester... surveyed by R.F.O. Conner (1853) and published by M. Dripps
Publication Details	
Scale	
Physical Details	
Notes	

Former Shelfmark	
Shelfmark	Map 74180.(2.)
My notes	Much like the other two maps (Dripps/Merry, and Sidney & Neff/Brown) this case is focused on the area of interest, roughly from Williamsbridge south, showing extent of tree cover, marshes, width of river, etc. Shows plan for the new "Fordham Road" along line of today's Pelham Parkway. Shows and names several small tributaries into the Bronx River; labels "Bear Swamp" but does not show the extent. The topography is less elaborate than on the Sidney & Neff map and there appear to be some small discrepancies for various features (though couldn't examine both at the same time so difficult to know.) This map also gives indications of various property owners and clearly shows the Lydig estate where the BZ is today and where the Lolliard estate of NYBG.

Archive	British Library
Place/subject	
Title	Sidney's Map of Twelve Miles around New York, with names of property holders. Published in Philadelphia, 1849.
Publication Details	
Scale	
Physical Details	
Notes	
Former Shelfmark	
Shelfmark	Maps 73956.(7.)
My notes	Examined 3/17/04. Nice map with some interesting detail. Shows almost all of Manhattan, most of Queens and Brooklyn, and portions of Staten Island and the Bronx. In the Bronx, shows mainly West Farms and the east side of Westchester to the Harlem River, but including features for various wetlands and ponds, with a swamp with trees on the east side of the Bronx River, near the current zoo grounds. Shows bathymetry for most of the harbor labeled in feet. Manhattan is gridded up to 14 <sup>th</sup> street and Central Park is laid out. Areas with trees appear to indicate wooded swamps, as they are also shown in wet parts of Central Park. Hills shown with use of hachures. Less detailed than Sidney & Neff's map, about equivalent to Conner survey.

Archive	Clements Library
Brun number	325
Shelfmark	Small C
Other ref	Clinton Papers. Clinton Map 191
Title	[Admiral George Clinton's lands in the "Oblong"]
Scale	1 inch to approx. 1920 feet.
Size	14.75 x 9 inches
Description	A finished, colored, topographical map of the section on [Brun] map no. 395 indicated as Admiral Clinton's holdings.
My notes	Examined 4/5/04. Lovely colored map, but too far north for study of the Bronx River.

Archive	Clements Library
Brun number	337
Shelfmark	Small C
Other ref	Clinton Papers. Clinton Map 180
Title	[Description of the roads about White Plains]
Scale	[Drawing too inaccurate to determine scale]
Size	12 1/2 x 14 3/8 inches
Description	A pen and ink sketch of the area between the Hudson River, the Croton River and the Connecticut border. Roads are identified by name as are some topographical features.



My notes	<p>Examined 4/5/04. Really just a sketch, though a well-labelled one. Although main features shown are roads, does shown line of the Bronx River and Mamaroneck River.</p> <p>Around "White Plains" shows several labeled hills. East of town along the road to Purchase is "Brown Point Haight". Between the road to "Chapps" and the Bronx River (north and a little west of Brown Point Height) is "Miller's Height." Opposite Miller's Height on the other side of the Bronx River is "Mount Misery." South of that on the west side of the river and immediately opposite White Plains is "Chasterton Height", followed by "Lungs Salue" (spelling is difficult), followed by "Hunts Ridge"</p> <p>North along the Bronx River from White Plains, toward the headwaters, a "Bare Ridge" is indicated on the west side of the river. On the east side of the river there is a "Scotch Branches." (spelling unclear). The headwaters appear to rise just south of "Ogden Ridge" which also gives rise to a tributary which drains north to the Croton River. At similar latitude, but moving west from the Bronx River is "Fowler's Ridge", "Davenport Ridge" (which is where the Sawmill River appears to originate), "Underhill Ridge" and "Boor hill."</p> <p>Over by the Sawmill River, the "Sawmill River Road" runs along "Pugsley Ridge" on east side of the river. The opposite ridge (on west side of Sawmill River) is the originally named "Sawmill River Ridge."</p> <p>From Hammons Crossing (of the Sawmill River) the road to Tarrytown crosses "Davis Ridge."</p> <p>A "Hog Pen Ridge" is shown inland from Rye.</p>
----------	---

Archive	Clements Library
Brun number	347
Shelfmark	4-K-13
Other ref	Clinton Papers. Clinton Map 184
Title	[From Spikendevil to Dobs Ferry along the Hudson]
Scale	1 inch to approximately 1 miles
Size	18 ½ x 11 inches
Description	A finished colored topographical map of the east bank of the Hudson from "Spikendevil" to "Dobs Ferry", showing also the lower part of Westchester county along the Sound. It indicates roads and waterways, and also (by name) about one hundred land owners
My notes	<p>Examined 4/5/04. Small map though with some detail – seems somewhat unfinished... Shows extensive marshes around Westchester Creek and the course of the Bronx River (though the river is shown at larger scale on other maps.) This map is of interest primarily for showing extent of forest cover along the Hudson River and associated with the Saw Mill River and Tibbet's Brook. Shows farmland and orchards in places. Also gives a good sense of the parallel ridgelines in western Westchester. The "Heights of Tuckahoe" are labeled. Gives 30-40 names of properties with their locations (Brun says 100?). These could be used to find more specific descriptions. Labeled properties near the Bronx River, from Williams Bridge north to Valentine's Bridge on east side of river are: John Williams, Gilbert Williams, Fowler's, Archer's, Fowler, Shoots, Hunt's, Rich, Farrington, Valentine's Bridge. On the west side of the river, from south to north, Fort Independence, Valentine's, Devaus, Solomon Forester, Crawford, Oakly, Brown, Archer, Widow Odel. Valentine's Hill and Sarden-Hill are marked, but most hills are unnamed.</p> <p>Map is potentially of some use, especially for west Bronx, Yonkers, etc. up to Dobbs Ferry, but of secondary value compared to some other maps.</p>

Archive	Clements Library
Brun number	348
Shelfmark	4-K-12

Other ref	Clinton Papers. Clinton Map 183
Title	[From the Croton River to the Long Island Sound Shore. By Sir B[anastre] Tarleton.]
Scale	1 inch to approximately 1 ¼ miles
Size	20 ¾ x 11 5/8 inches
Description	A pen and ink, topographical sketch map of the area between the Croton River and the Long Island Sound shore, including Bedford and White Plains. Roads, bridges and some buildings are noted.
My notes	Examined 4/5/04. A very rough sketch of coastline and watercourses, not to scale and not very detailed. Not useful for this purpose.

Archive	Clements Library
Brun number	359
Shelfmark	4-M-23
Other ref	
Title	Isle de Newyork. Reconnaissance des overages du norde ljsle de Newyork faite en presence des Generaux Washington et Rochambeau foutene par un corps de 5000 homes ... le 22 et 23 juillet 1781. [By Edouard Colbert, comte de Maulevrier]
Scale	1 inch to 160 toises
Size	16 ¾ x 17 3/8 inches
Description	A finished, colored, topographical map with detailed "Legende" describing major British fortifications of Upper Manhattan and immediately surrounding area
My notes	Examined 4/6/04. A reconnaissance map, showing detailed topography including use of hachures as early contour lines, so may be useful for working on the topography and a good bit of the associated wetlands in the adjacent parts of Fordham in the Bronx. Appears to be less accurate on the Manhattan side (probably because Colbert didn't have access)  Long set of notes in French, though appear to be mainly text descriptions of features on Manhattan side.  This map is mainly useful for its depiction of topography and wetlands on Bronx side and in Spuyten Duyvil. Worth thinking about obtaining a copy for the Bronx reconstructions, though not of immediate interest with respect to the Bronx River itself (though some of these wetlands may have eventually drained to the Bronx River)

Archive	Clements Library
Brun number	360
Shelfmark	4-O-2
Other ref	Clinton Papers. Clinton Map 154
Title	[Kings Bridge]
Scale	1 inch to 600 feet
Size	25 x 29 inches
Description	A finished, colored, topographical map of the north end of Manhattan Island and the Manor of Fordham. The various British and American forts and redoubts of the area are shown as well as a number of British troop encampments.
My notes	Examined 4/5/04. shows just a little bit of Bronx, without much detail except for wetlands around Spuyten Duyvil which are show better elsewhere.

Archive	Clements Library
Brun number	374
Shelfmark	3-M-8
Other ref	Clinton Papers. Clinton Map 152
Title	A map of the country adjacent to Kings-bridge surveyed by order of His Excellency General Sir Henry Clinton ... 1781. Surveyd & drawn by And[re]w Skinner and George Taylor
Scale	1 inch to 80 chains

Size	44 5/8 x 32 1/4 inches
Description	A finished, colored, topographical map of the area approximately the same as the modern Bronx. A short explanation describes from a military standpoint the fording advantages of the following streams: the "Bronks River", "Morrisina Creek" and "Tippets Brook."
My notes	<p>Examined 4/5/04 – this is the map the library made a transparency of during my last visit, and that we later scanned and have labeled as country adjacent to Kingsbridge, 1781. Some of the notes on the scan are somewhat unreadable, so further notes are made here. Specifically the long notes in three paragraphs on the middle right side of the map read as follows:</p> <p>"Broncks River is fordable from West Farms to Delancey's Mill at low water. From Delancey's Mill to William's Bridge two fords are found for Calvary or Infantry, but no pass for carriages. From William's Bridge to Milesquare or Hunt's Bridge, Calvary or Infantry may pass, at almost any places but there is no pass for carriages. The mouth of the river is navigable for small craft up to West Farms, drawing six feet water. The banks on both sides above Delancey's Mills are much obstructed with Bushes &amp; Briars as well as the Channel of the River, with fallen Branches of Trees, &amp;c."</p> <p>"Morrisina Creek is passable for carriages or Cavalry only by the roads which are all marked on the Map. Infantry may pass at any place."</p> <p>"Tippets Brook is passable for Infantry above Courtlandt's Mill Dam, for Cavalry at two places between the Mill Dam &amp; Post's House, but not for carriages, except where the Road from Phillipsburgh crosses it to Milesquare."</p> <p>Note that there are specific one word labels in many of the wetlands and along the rivers "Passable" "Impassable" etc.</p> <p>The depiction of forest varies from clear orchards (in rows and rectilinear blocks) to single trees (mainly round-shaped, but some few triangular conifer symbols) to massed forests or shrubs. See areas along Westchester Creek, upper courses of Bronx River, and even a largish patch next to marsh between West Farms and Delancey's Mills. Salt marsh is indicated in a light green, every even wash, with the upland edge delimited with a thin gray line. Note how marshes along Tippet's Brook extend broadly almost to Cortlandt's Mill.</p> <p>Many individual properties are identified by name as well as various features including Montresor's Island, Barren Island, North Brother, South Brother, Hulett's Island in Long Island Sound; Castle Hill, Old Ferry Point, Frog's Neck, etc. Some roads are marked as having stone walls along them or perpendicular to them.</p> <p>Topography is indicated with gray slopes. Horizontal extent of Fordham Heights is probably exaggerated to indicate depth of vertical decline. Also note elevation transects, with lettered beginning and ending points. Provide some little information for topographical modeling.</p> <p>This map contributes significantly to our understanding of the historical ecology of the Bronx River.</p>

Archive	Clements Library
Brun number	389
Shelfmark	4-K-11
Other ref	Clinton Papers. Clinton Map 181
Title	[Part of modern Westchester County]
Scale	1 inch to approximately 1/2 mile
Size	46 1/4 x 24 3/4 miles
Description	Ews 4/5/04. A finished, outline map indicating the principal landholders in the county, among whom are Stephen DeLancey, John Schuyler, John Milen, Samuel Bayard, Henry Beekman,

	Andrew Johnston, William Skinner, Philip ver Plank, Phillip Courtlandt, and John. Krankheite
--	--

Archive	Clements Library
Brun number	392
Shelfmark	4-K-6
Other ref	Clinton Papers. Clinton Map 144
Title	[Part of the modern counties of Manhattan, Westchester and Queens]
Scale	1 inch to approximately 2640 feet
Size	24 x 19 ½ inches
Description	A finished, colored, topographical map showing East River from Blackwell's Island to Hart Island and including Flushing Bay. Several roads on Manhattan Island are shown as well as the location of a number of householders.
My notes	Examined 4/5/04 ews. Shows only the outline of the shore, and not very accurately at that. Not of use.

Archive	Clements Library
Brun number	393
Shelfmark	4-K-10
Other ref	Clinton Papers. Clinton Map 186
Title	[Part of the modern counties of Westchester and Bronx]
Scale	1 inch to approximately 1/5 mile
Size	64 x 32 ¾ inches
Description	An unfinished, partly colored, topographical map indicating the fortifications and disposition of troops between Fort Washington and White Plains. It was evidently intended as a highly detailed study, but the engineer was apparently working it out by sections and was able only to complete about two thirds of it. Unit designations are colored. ... Few legends of any kind.
My notes	Examined 4/5/04 ews– briefly. Just shows Fort Clinton -- a spy map? The description above does not seem to match the map.

Archive	Clements Library
Brun number	397
Shelfmark	Small C
Other ref	Clinton Papers. Clinton Map 202
Title	[The Phillipse Manor]
Scale	[No scale indicated]
Size	8 3/8 x 7 1/8 inches
Description	A finished, colored topographical map showing the Manor, its formal gardens and immediate surroundings. St John's Church is shown as is the nearby tavern.
My notes	Examined 4/5/04 ews. A map very small in extent, showing basically the Sawmill River as it drains south and then turn west to enter the Hudson at Phillipse Manor. What this map shows nicely is the relatively thick forest, indicated with deciduous trees of various shapes – some rounder, small taller and more oblong than others – The forest is thickest within a short distance of the river, then thins considerably. Up on the top of "Sawmill River Ridge" hardly any trees are shown. Similarly moving south and east from the river, the forest thins so that on the map there are may be 4-5 tree symbols per square inch, rather than the 12-15 symbols per square inch along the river.  Also shows trees on a smallish rounded knob sticking out into the Hudson near the church. On the river shore, there is a slight cliff down to maybe a beach.  Map also shows fields with 1-2 trees each between the river road and the Hudson River shore, with formal gardens and manor house on the north side of Sawmill Creek.

Archive	Clements Library
---------	------------------

Brun number	414
Shelfmark	3-M-4
Other ref	Clinton Papers. Clinton Map 146
Title	A plan of New York Island with the circumjacent country as far as Dobb's Ferry to the north, and White-Plains to the east; including the rivers, islands & roads in that extent. To His Excellency Sir Henry Clinton.... September 1778. [Signed] John Montresor, Chief engineer
Scale	1 inch to 4000 feet
Size	44 ½ x 22 inches
Description	A finished, colored, topographical map showing the New York City area at the time of the British occupation
My notes	<p>Examined 4/5/04 ew. In addition to the Bronx River, which is shown from mouth to White Plains, shows western Long Island, all of Manhattan and a piece of Staten Island. In general though this map is early and does not give the indication of careful surveying. More a record of place names. Much of the central part of Bronx and Westchester is unsketched. Similar large blanks are found on Long Island. For this reason, this map probably is less important than others in terms of specific geography.</p> <p>Shows wetlands of Westchester Creek connected to the wetlands associated with the Hutchinson River, similarly to Charles Blaskowitz's map at the Library of Congress. West of the Bronx River, shows substantial fields of agriculture, especially around Valentine's Hill, and west of the road that runs parallel to the Bronx River on the west side. Also lots of fields around New Rochelle and lining road from New Rochelle to White Plains, and then again around Dobbs Ferry.</p> <p>Some sparse bathymetry in the harbour. Has opposing arrows in the Hudson River indicating tidal flows.</p> <p>In general this map does not give the sense of the same precision and care in map-making as the maps of other British military cartographers.</p>

Archive	Clements Library
Brun number	425
Shelfmark	Small C
Other ref	Clinton Papers. Clinton Map 156
Title	[Positions of the British troops between the Hudson River and the Bronx River at Valentine's Hill]
Scale	1 inch to approximately 2600 feet
Size	9 ¾ x 15 ½ inches
Description	A pen and ink, topographical sketch map of the German and English detachments, with the Hessian regiments designated by name, and the British by number.
My notes	Examined 4/5/04 ew. Really just a sketch and not really a very spatially accurate one. However interestingly shows in a line three hills from east to west – "Valentine's hill", "Post's hill" and "Bedrock hill" each with troop encampments.

Archive	Clements Library
Brun number	426
Shelfmark	Small C
Other ref	Clinton Papers. Clinton Map 182
Title	[Region between Westchester Creek and the Bronx River]
Scale	1 inch to approximately ½ mile
Size	6 1/8 x 7 3/8 inches
Description	A pen and ink, topographical, sketch
My notes	Examined 4/5/04 ew. A sketch map of Willet's Point at the mouth of the Bronx River, the eastern side opposite Hunt's Point. Not worth digitizing, but gives some interesting clues about the vegetation of this area.

	Immediately beside the river is a label on the upland “hard fields not much wooded” though 7 small trees are sketched in. See digitized notes in shapefile.
--	---

Archive	Clements Library
Brun number	439
Shelfmark	4-M-13 Another in folder – Clinton?
Other ref	Clinton Papers. Clinton Map 153
Title	Sketch of the roads from Kings Bridge to White Plain’s and parts adjacent shewing the encampment of His Majestys Forces under the command of Major General Mathew 1779. by I[ohn] Hills.
Scale	1 inch to 1 1/3 miles
Size	24 x 15 ¾ inches
Description	A finished, topographical map of the region from the Hudson River on the west to the town of Rye on the east, and from “Spiken Devil” Creek on the south to Teller’s Point on the north. A reference entitled “Passing places in case the Bridges are Destroy’d 1779” lists the bridges on the Sawmill and the “Brunx” Rivers respectively. Another table of references identifies the units indicated on the map by lettered symbols.
My notes	<p>Examined 4/5/04. Shows the entire course of the Bronx River to the headwaters in New Castle, though the course north of the battle of White Plains site is looks less genuine (does show a big eastward trending bend).</p> <p>Shows topography along course of river up to the site of the Battle of White Plains. Some of the topography is labeled by name “Heights of Turkey Hoe”, “Sneading Hill”, “Spiken Devil Hill”, “Post’s Hill.” Etc. Also labels a tributary to the Bronx River as “Turkey Hoe Creek” – the tributary enters Bronx River just above Valentine’s Bridge.</p> <p>Hills also examines each of the bridges along the Bronx River and Saw Mill Rivers and indicates whether the rivers would be passable at those places if the bridges were destroyed. He notes the following bridges on the Bronx River, from south to north: Delancey’s Bridge, Williams, Hunt’s Bridge, Valentine’s, Wards, Chattertons, Fields – all of these are passable for Foot and Horse. On the Saw Mill River, from south to north, the bridges are Phillips Bridge (passable for Foot &amp; Horse), Babcocks (Ditto), Odells (Ditto), Winsons (Unpassable for Foot, Passable for Horse in Dry Weather), Honeywell (Passable for Foot, Horse and Small Carriages), Van Tassell’s (Passable for Foot and Horse), Tutchers (Passable for Foot), Storms (Passable for Foot, Horse, etc.), Hammons (Unknown.) All of these bridges are shown on the map.</p> <p>Shows numerous small tributaries to the Bronx River down the steeply sided slopes, especially on the west side. Tributary enters river at Delancey’s Bridge as well. Just south of Delancey’s Mill, a large bend in the river is shown – is this the oxbow around the bison paddock in the zoo? A tributary enters the river from the east shortly down river of the big bend (formerly draining the “Bear Swamp” from 19<sup>th</sup> centry maps? Note Bear Swamp is NOT shown on this map). Unfortunately West Farms is not shown here, so it is somewhat difficult to locate zoo site.</p>

Archive	Clements Library
Brun number	440
Shelfmark	4-K-7
Other ref	Clinton Papers. Clinton Map 157
Title	Sketch of the roads on the east side of the North River.
Scale	1 inch to 2 miles
Size	20 ¼ x 14 1/8 inches
Description	A finished, colored topographical map of Westchester County from Teller’s Point to the Harlem River and as far east as Bryam’s Point. A table of distances is given.

My notes	Examined 4/5/04 ew. Not detailed enough – shows good extent, but other maps provide more info
----------	---

Archive	Library of Congress
Title	1088 [Map of the roads from New Rochelle to Kingstreet, Westchester County. 177-?] map on sheet 38 x 30 cm. Scale ca. 1:63,000
Reference	G3803.W5P2 177- .M3 Vault
Format	Manuscript, pen-and-ink
Description	Shows towns and roads along Long Island Sound from the Horseneck River in Connecticut to New Rochelle, NY, a few bridges, a snuff mill, “Sherard’s Mill”, a church, and the names of a few residents. Title from Phillips, <u>A List of the Maps of America</u> (1901)
Sellers and Van Ee	p. 238
My Notes	{examined in ms. by ew -- shows only roads and an outline of the coast, from New Rochelle to the nubbin of Connecticut – not useful for us

Archive	Library of Congress
Title	1091 [New York Island and East Jersey. Unfinished. 177-?] col. map. 92 x 113 cm. Scale ca. 1:17,000
Reference	G3804.N4C1 177- .N4 Vault (Force 160)
Format	Manuscript, pen-and-ink and watercolor.
Description	Covers the area from White Plains to Hell Gate and west to the Hackensack River in New Jersey. Shows detailed topography of the area, roads, rivers and streams, and relief. Lacks names and military information. Note on verso: “No. 6. Unfinished Drawings. 50 Sheets. (2) same as ten other with work on Jersey side and in Westchester County.” Title from manuscript catalog of the Peter Force map collection. Title in Phillips, <u>A list of Maps of America</u> (1901), “Topography of upper part of Manhattan island from about 85 <sup>th</sup> St. to about van Cortlandt Manor house, above King’s Bridge. 1777-1780.”
Sellers and Van Ee	p. 239
My Notes	{examined in ms. by ew February 2004 -- mainly a map of northern Manhattan, from 125 <sup>th</sup> St gap north, but also shows topography along road to the crossing of the Bronx River and shows the Bronx River from approximately Williams Bridge south, though doesn’t provide extensive information about the River. Fairly fine scale so shows a few small inlet streams into the Bronx River – could be of some use... clearly an unfinished sketch... would be interesting to find the others mentioned

Archive	Library of Congress
Title	1095 [Country between North River and Croton River. 1776?] map on sheet 12 x 14 cm. Scale not given.
Reference	G3803.W5 1776 .C6 Vault (Force 18)
Format	Manuscript, pen-and-ink.
Description	French map of the area between the Croton River and the North or Hudson River. Shows roads in the area, Croton Bridge, a magazine and relief. Includes notes on the military qualities of the terrain. Title from manuscript catalog of Peter Force map collection. Oriented with north to the right.
Sellers and Van Ee	p. 239
My Notes	{examined in ms.; also on-line; too small to be useful – basically only notes from near Croton River

Archive	Library of Congress
Title	1096 The Country twenty five miles round New York, drawn by gentleman from the city. J. Barber, sculp. [London, W. Hawkes, 1776] col. map 38 x 39 cm. Scale ca 1:220,000
Reference	G3804.N4A1 1776 .C6 Vault
Format	
Description	Shows radical distances from concentric circles drawn five miles apart. Also shows towns, roads, military encampments, and routes of march, fortifications, and relief. Includes historical notes. In the lower margin are a chronological list of select battles and events since the commencement of hostilities, an alphabetical list of the principal American towns with the distance of each town from New York City, and figures on population and troop strength. Note: 1097 is a colored copy of 1096.
Sellers and Van Ee	p. 239-240
My Notes	{examined on-line; not detailed enough to be of use

Archive	Library of Congress
Title	1146 Holland, Samuel. The seat of action, between British and American forces; or, An authentic plan of the western part of Long Island, with the engagement to the 27 <sup>th</sup> August 1776 between the King's forces and the Americans: containing also Staten Island, and the environs of Amboy and New York, with the course of Hudsons River, from Courtland, the great magazine of the American Army, to Sandy Hook, from the surveys of Major Holland. London, Printed for Robt. Sayer and Jno. Bennett, 1776. col. map 45 x 39 cm, scale ca. 1:215,000
Reference	G3802.L6S3 1776 .H6 Vault.
Format	
Description	Covers southeastern New York, western Connecticut and part of New Jersey. Shows troop positions and the lines of march in the battle of Long Island, British warships in the harbor, and towns, roads, rivers, ferries, churches, houses, some vegetation, and relief. Inset: "Road from Amboy to Philadelphia."
Sellers and Van Ee	p. 248
My Notes	{examined on-line; not detailed enough to be of use

Archive	Library of Congress
Title	1152 Blaskowitz, Charles. A survey of Frog's Neck and the rout[e] of the British Army to the 24 <sup>th</sup> of October 1776, under the command of His Excellency the Honorable William Howe, General and Commander in Chief of His Majesty's Forces, &ca &ca &ca. [1776] col. map 74 x 43 cm. Scale 1:24,000; 2000 ft to 1 inch
Reference	G3802.T57S3 1776 .B3 Faden 57
Format	Manuscript, pen-and-ink and watercolor.
Description	Maps of Throgs Neck and vicinity. Shows successive positions of British Army on the eve of the battle of Long Island, fortifications, warships in Long Island Sound, roads, some towns and industries, vegetation and relief. Troop units identified. Includes references.
Sellers and Van Ee	p. 249
My notes	{examined in ms.; also available on-line; shows a lot of color detail of water, vegetation, marshlands from the eastern Bronx, from Throgs Neck to City Island and north along the Hutchinson River out of the Bronx. Lots of cute details of troop movements, ships etc. amazing how much of that part of Bronx was wetland! Very useful, though perhaps not topologically correct for that side of the Bronx. Beautiful map. Some indication of topography, but more importantly shows difference btwn upland/wetland

Archive	Library of Congress
Title	1054 [Sauthier, Claude Joseph] A plan of the operations of the King's army under the command



	of General Sir William Howe, K.B. in New York and east Jersey, against the American forces commanded by General Washington from the 12 <sup>th</sup> of October to the 28 <sup>th</sup> of November 1776, wherein is particularly distinguished the engagement on the White Plains the 28 <sup>th</sup> of October. By [C.J. Sauthier, 1776?] col. map 74 x 51 cm. Scale ca. 1:85,000.
Reference	G3804.W7S3 1776 .S2 Faden 58
Format	Manuscript, pen-and-ink and watercolor.
Description	Shows skirmishes and battles during 1776 campaign...also towns, roads, some industries, and relief [and length of Bronx River]
Sellers and Van Ee	p. 230
My notes	{examined in ms and on-line - shows length of Bronx River to his headwaters in North Castle right around the battleground for the Battle of White Plains –shows sketched in topography, but very generalized – shows where river could be forded and labels where “deep”. No indication of ecosystem type – potentially usable for showing length of river but at very large scale – Mr. Sid image available on-line. Note: 1055 is printed version of same – see G3804.W7S3 1777 .S2 Vault (Force 123)

Archive	Library of Congress
Title	Sketch of the White Plains, by Charles Blaskowitz [1776?]
Reference	G3804.W7S3 1776 .B5 Vault
Scale	Scale 1:6,000, 500 ft to 1 in.
Format	Manuscript, pen and ink, water color
Description	Relief shown by hachures and shading. col. map, on sheet 47 x 57 cm
My Notes	{examined on-line; shows upper reaches of the Bronx River on the battlefield of White Plains. Shows topography and river, with bridge and ford – MrSid image available on-line

Archive	Library of Congress
Title	Sketch [sic] of the road from Kings Bridge to White Plains [1778?]
Reference	G3803.W5P2 1778 .S5 Vault
Scale	Scale ca 1:32,000
Format	Manuscript, pen-and-ink, watercolor
Description	Shows roads in Westchester and Bronx counties, New York, and Hessian units in Westchester County, some in more than one location; Relief shown by hachures
My Notes	{examined on-line; confusing as it doesn't show Bronx River all the way to mouth on Sound, however does show length of the river and some of the topography – potentially interesting, though will require more study

Archive	Library of Congress
Title	Position du camp de l'armee combinee' a Philipsburg du 6 juillet au 19 aoust [1781]
Reference	G3802.W5R4 1781 .P6 Roch 21
Description	col. map, 39 x 94 cm; scale 1:80,000; 2,000 toises = 40 mm; manuscript, pen-and-ink, and watercolor; has watermarks; relief shown by hachures; shows area from Staten Island to Tarrytown NY
My Notes	{examined on-line; shows some topographic details north of the Bronx along the Bronx River that might be of interest

Archive	Library of Congress
Title	A sketch of the operations of His Majesty's fleet and army under the command of Vice Admiral the Rt. Hble. Lord Viscount Howe and Genl. Sr. Wm. Howe, K.B., in 1776
Reference	G3801.S3 1777 .D4 Vault
Description	[London] J.F.W. D[es Barres, 1777] Scale ca. 1:130,000; hand colored; relief shown on hachures and shading; depths shown by soundings. Centered on Hudson River and New York Bay from Sandy Hook to Haverstraw. Annotations show additional shoals in red ink and colored buildings

	and troop symbols
My Notes	{ examined on-line; shows fair amount of topography, roughly sketched in across the entire Bronx; shows length of Bronx river well into Westchester, though not much detail on ecosystem types; may be of greater interest

Archive	Library of Congress
Title	Oyster Bay and Huntington. Huntington Bay.
Reference	G3802.O9 1778 .D4 Vault
Description	[London, 1778] Des Barres, Joseph F.W. Scale ca 1:25,250. Relief shown by hachures and shading; depths shown by soundings. Includes text and inset "Hell Gate" ca 1:25,250.
My notes	{ examined on-line; shows inset map of Hell Gate, some simple details of Bronx shoreline and some soundings in the Sound. Shows more information about coast of Long Island.

Archive	Library of Congress
Title	1224 [Des Barres, Joseph Frederick Wallet. A chart of New York Island & North River; East River, passage through Hell Gate [i.e. Gate], Flushing Bay, Hamstead Bay, Oyster Bay, Huntington Bay, Cow Harbour, East Chester Inlet, Rochelle, Rye, Patrick Islands, etc. London 177-] in his <i>Atlantic Neptune</i> , copy 1, map 76 x 117 cm. Scale ca. 1:52,000.
Reference	Neptune Collection, Vault. [Pencil note: Atlantic Neptune #154]
Description	Several different states, some re-scaled and area lost along borders.
Sellers and Van Ee	p. 262
My Notes	{ examined in ms. – Black and white. Appears in two States. State #2 shows waterways from upper Bay out past City Island through to Cold Spring, on north shore of Long Island. Provides more detail than Tiddeman "English Pilot" maps, though again coastline seems fairly approximate. Doesn't provide much additional information past shoreline. Shows City Island and "Heart" well. Of some use for us, though the 19 <sup>th</sup> c sources provide more useful detail for us. Shows only the mouth of the Bronx River, but interestingly does show the extent of the mudflat along the Bronx shore. State 4 has land darkened, so less sense of topography, but provides additional details in the Hudson River and shows inland extent of Bronx river. { requested to be scanned, State 4, copy 3 = \$45

Archive	New York Public Library
Title / reference	Westchester County, N.Y. 1851
Description	Sidney & Neff. Map of Westchester County, N.Y., from actual Surveys by Sidney & Neff... White Plains: Newell S. Brown, 1851. 8 views and statistical table on border
Scale	1 inch = ¾ mile approx.
Size	46 x 35 inches
Format	Lithogr. Colored. 2 sheets. Glazed, remounted on linen, joined.
My notes	Examined 4/16/04 by ews on microfiche. Also examined this map on paper in the British Library (see reference). Made photo copies of lower Bronx river on microfiche copier. Valuable for showing numerous settlement localities and some streets, as well as occasional notes on about ponds, rocks and other features. Also shows extent of "Bear Swamp" draining into the Bronx River from approximately the Bronxdale neighborhood and down through the zoo into the river. NYPL's microfiche is taken from a copy in the Library of Congress.

Archive	New York Public Library
Title / reference	Westchester Co., N.Y., part of. 1771
Description	A map of certain tract of land situate in West Chester County (commonly called East Patent...) New York Secretary's Office, 2 March 1771
Scale	1 inch = 20 chains
Size	15 x 19.5 inches

Format	Photostat positive, 1 sheet, mounted on muslim
My notes	Examined 4/16/04 ews. Shows land situated near the Connecticut border in northern Westchester, not relevant to this study.

Archive	New York Public Library
Title / reference	WESTCHESTER COUNTY, NEW YORK. 1609
Description	Westchester under the Mohegan Indians, 1609. Extracted from Bolton, Robert. History of ... the county of Westchester. New York. 1881.
Scale	1:575,000
Size	6.5 x 4 inches
Format	Litho., uncolored
My notes	Examined 4/16/04. antiquarian map, giving many putative Native American names, but unlikely to be entirely trustworthy. Map itself is at too coarse of scale to be useful.

Archive	New York Public Library
Title / reference	WESTCHESTER COUNTY, NEW YORK [18 <sup>th</sup> century]
Description	Map of the manors erected within the county of Westchester. Compiled from manor grants and ancient maps of Edward F. de Lancey, 1886. Extracted from: Scharf, J. Thomas. History of Westchester County, New York. Philadelphia: Preston, 1886, v.1.
Scale	Not given
Size	11 x 10 inches
Format	
My notes	Examined 4/16/04 ews. Not of use, just shows general outlines of various manors without much detail.

Archive	New York Public Library
Title / reference	Westchester Co., part of. 1789
Description	Colles Christopher. New York to New Rochelle; from Christopher Colles' survey of U.S. roads, 1789
Scale	Not given
Size	10.5 x 8.5 inches
Format	Lith. Uncolored. 1 sheet, mounted on muslim
My notes	Examined 4/16/04 ews. too general, without much detail. Not of use for us.

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	MR 1/590
Former catalog	WO 78/1394
Title	[New York c. 1782?]
Penfold number	2700
Guthorn number	130.38
Penfold description	
My notes	Examined 3/16/04 ews. Fragmentary map, on several pieces, maybe related to British Headquarters Map – very similar extent and scale (scale of this map is 800 feet = 1 inch; the scale of the BHQ map is 6.5 inches = 1 mile or approximately the same). This map shows extensive wetlands in Bronx near Spuyten Duyvil, behind Fordham Hts. These same wetlands may also be seen on the BHQ map. In general this map is of slightly greater extent in the Bronx and on Long Island than the BHQ map (most true in Brooklyn, an additional swath of countryside with numerous additional ponds and hills are shown), though it's not enough to

	warrant a separate treatment for the small gain. One potentially useful difference, however, is that several features – buildings, hills, areas – in the center of Manhattan are labeled on this map. These could probably be captured by digitizing against the BHQ map. It also shows the placement of some troops. The map shows numerous sighting lines that were probably used to develop both lines, especially associated with the city. In general an interesting map, that probably would be of much greater importance, if we didn't have the BHQ map.
--	--

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	MR 1/1137
Former catalog	
Title	"A Map of New York & Staten Islds and Part of Long Island...."
Penfold number	2631
Guthorn number	11.9
Penfold description	
My notes	Examined 3/16/04 ews. This is the map we have a black and white reproduction of in the lab at the Bronx Zoo, though many of the colored areas don't carry through. For example, south of the moraine on Long Island are shown fields lightly in red pencil and green surroundings the areas of trees (extent of forest?). In the Bronx shows course of Bronx River all the way to White Plains, with topography and tributaries and some indication of green and trees (forest?) Most detailed in lower part of the Bronx and around the White Plains battlefield. Inland wetlands near label for Independence Fort colored blue (not green like salt marshes). In light pencil shows farmland south of Williams Bridge road on upland and east to Harlem River. Also shows extent of Hutchinson River and other Bronx watercourses. City Island is shown in accurately, but eastern Bronx can probably be fixed up with reference to Blaskowitz's Frog's Neck map in the Library of Congress. Shows Valentine's Hill well north of William's Bridge (is that correct) – toward edges may show some distortion. However for purposes of the Bronx River project, we should attempt to georeference and digitize this map. I should arrange to have a color photograph made of this map.

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	CO 700/NEW YORK5
Former catalog	
Title	
Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews. a lovely old map, but to inprecise to be of use to us. shows major waterways in the Bronx, including Bronx River but without any accuracy. small trees are drawn everywhere indicating forest but without any precision. shows Pell's point as an island. shows city island. shows rough bathymetry. typical values: (reading south from Blackwell's Island in the East River to the wharves at the city: 4,6,3,9,7,7,10,7,5. Between Nuttin Island and the city, it's marked as 10, 7 fathoms. and between the city and ellis island, 12, 14. The narrows between Staten Island and Brooklyn are labelled as 20, 14, 19, 13. On the island of Manhattan, "New York City", "Blon[m]judal" (Bloomingdale) and "Harlam" are all indicated. Westchester (the Bronx) as Kingsbridge, Morisania, West Chester, East Chester, Rochelle

Archive	The National Archives (formerly Public Record Office)
---------	---

TNA/PRO catalog	CO 700/New York38
Former catalog	
Title	
Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews. topographical map of the Hudson River -- a lovely map engraved by William Faden though not detailed enough regarding the land or smaller rivers to be of much use. Bronx River is referred to as "Broonks Riv.r" Depths in the Hudson River off Manhattan are given as 6 fathoms near shore near the city, otherwise 7 or 7 1/2 in the channel. Calls bridge to the east from northern Manhattan to the Bronx "Dightmanns Bridge" Other features on Manhattan are Stuyvescent Cove, Kepps Bay, Turtle Bay, Inclenberg, Horens Hook, Bloomingdale, Harlem, McGowans Pass, Morris's Heights, Fort Washington. Kingsbridge is immediately north of Manhattan in the Bronx, just south of Tetard's Hill (where Riverdale is today)

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	CO 700/New York20
Former catalog	
Title	
Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews . another large area map, too rough to be of quantitative use, but nicely drawn. shows Bronx River to headwaters (actually connects headwaters with Kings Creek, which then flows north into Croton River) -- labelled as "Brunxs River". Features labelled on Manhattan include towns, houses, and geographical features, reading from the city north: Corlears Hook, DeLancey (attached to house in inland and north of Corlears Hook), Greenwich, Glass House (on a bay at the north end of Greenwich on Hudson shore), Turtle Bay, Harlem, Spitting Devil. Kingsbridge and "Muscota Creek" are labelled in usual places, in Bronx just north of Sputyen Duyvil Creek.

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	CO 700/NEW ENGLAND3
Former catalog	
Title	
Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews . broad scale early map (more so than previous), not precise enough to provide quantitative information. does show locations of various towns, beaches, some bathymetry, salt marshes... not of any real use though

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	FO 925/1640
Former catalog	
Title	

Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews. A compilation of US Coastal Surveys. Plan No. 30 covers Long Island Sound, with an inset map of New York which shows the south Bronx. These maps will be of great use. Surveyed between 1835 - 1844/1849 they show near coastal topography and land cover type, as well as the bathymetry and under water substrate type. I believe these are the same charts that the Army Corps has been digitizing. Shows the Bronx River up to West Farms and Westchester Creek up to the town of Westchester. Will be most useful for mapping extent of farmland, forest, and wetland in the 1830s-1840s. Also shows extent of mudflat at mouth of Bronx River ("black mud") which can be compared to representation on Des Barres Atlantic Neptune chart (viewed at LOC) Also gives detailed bathymetry all around New York, with especial attention paid to Hellgate. Should be able to obtain these, if not from Steve at Army Corps, then from map archives in the US

Archive	The National Archives (formerly Public Record Office)
TNA/PRO catalog	WO 78/5761
Former catalog	
Title	
Penfold number	
Guthorn number	
Penfold description	
My notes	Examined 3/16/04 ews. a truly remarkable map of the Hudson Valley through to Canada; not of sufficient detail for the Bronx River

Archive	New York Public Library
Title / reference	"Photostat Reproductions of Early Maps of NY State" USLC Revolutionary War-Westchester County v.7 H-3 [1778?]
Description	Photostat reproductions of several early maps/sections of maps of Westchester from Library of Congress. Fragile.
Scale	Not indicated
Size	Multiple maps, multiple sizes
Format	Photostat negatives in atlas-style book
My notes	Examined 4/20/04 by DTL. Many of the book's maps are very simple and general, but the last map entitled "Sketch of the road from Kingsbridge to White Plains" shows relief, homes, roads, town names. Not useful for lower Bronx River since map shows only mid-Bronx and northward to White Plains, but may be useful for upper Bronx River.

Archive	New York Public Library
Title / reference	New York City. Commissioner of Street Improvements. 1895.
Description	Map of 23 & 24 wards.
Scale	
Size	
Format	
My notes	Examined 4/20/04 by DTL. Map of 23 & 24 wards, showing new street system. Extends from Manhattan and northern Queens to Yonkers. Bronx River from mouth to Bronx/Yonkers border. Shows streets, parks, neighborhood names. No ecosystem info, but does show width/narrowness of Bx River and the course of the river in detail. Also shows 3 large tributaries near mouth of river.

Archive	New York Public Library
Title / reference	New York City Department of Public Parks. New York and Westchester County. 1871.
Description	Map showing portions of the city of New York and Westchester Co.
Scale	
Size	
Format	
My notes	Examined 4/20/04 by DTL. Shows roads, rivers, tributaries in western Bronx. Shows Bx River only from Williamsbridge Stations northward to Yonkers. No other ecosystem info. =Not useful

Archive	New York Public Library
Title / reference	New York City. New York to New Rochelle. From Christopher Colles's Survery of US Roads. 1789.
Description	New York to New Rochelle. From Christopher Colles's Survery of US Roads.
Scale	
Size	
Format	
My notes	Examined 4/20/04 by DTL. Shows roads in Bronx, homesteads, churches, taverns, but no natural features – only where roads cross rivers are rivers indicated. = not useful

Archive	New York Public Library
Title / reference	New York City. Parks Department. Topographical Map. 1873. "Maps and Plans of the 23 and 24 Wards"
Description	Topographical map made from surveys by the Commissioners of Dept. of Public Parks.
Scale	1000 ft: 1 inch (index map) and better (plates)
Size	~3x3 foot atlas book
Format	Atlas
My notes	Examined 4/20/04 by DTL. Index map shows Bx River from mouth to Yonkers; shows river's width & course in great detail; shows large area of marsh at river's mouth and also some up by Woodlawn Cemetery and other places. Only shows west of Bronx River. Also shows RR tracks, buildings, streets (including Morrisania grid). Shows topography in 20 ft increments. Plates: Individual plates show greater detail though scale is not indicated. Shows planned street layout with streets extending over marsh and beyond coastline (indicating filling required). Topography is not at intervals but given in exact numbers to one decimal place. 6 plates cover western edge of Bx River. Eastern edge is not shown b/c it was not surveyed. Surveyed by Parks Dept for Board of Street Opening and Improvement. = Useful

Archive	New York Public Library
Title / reference	Bronx, Westchester County. 1873. "Topographical map made from surveys by the Commissioners of the Department of Public Parks." Major and Knapp Co.
Description	Topographical map, NYC Parks Department
Scale	1000 ft: 1 inch
Size	~ 2 ft x 3 ft
Format	1 sheet
My notes	Examined 4/20/04 by DTL. Appears to be same as index map for above reference, just without plate grid and numbers. = Useful

Archive	New York Public Library
---------	-------------------------

Title / reference	NYC and Vicinity, 1781. Westchester Co., NY. NYS – Revolutionary War. Survey by Robert Erskine.
Description	
Scale	
Size	6x7 inches
Format	
My notes	Examined 4/20/04 by DTL. Requested but they could not find this map in the archives; they'll continue to look and call when they do find it. Since it is so small, it is probably not an original.

Archive	New York Public Library
Title / reference	Contour Map Borough of the Bronx 1954
Description	Dept of City Planning New York
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL/EWS. Contour map of the Bronx, 20 feet interval, shows some marshes/wetlands. Shows Bx River to Westchester line. Also shows bulkhead lines.

Archive	New York Public Library
Title / reference	Lydig estate map 1878
Description	Plan of proposed streets on Lydig Estate
Scale	1 inch=150 ft
Size	
Format	
My notes	Examined 4/16/04 by DTL. Shows tape factory, tributaries of the Bx River on what is now the zoo.

Archive	New York Public Library
Title / reference	Topographical survey sheets of Borough of Bx 1905
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. 43 sheets, we viewed #41 (Throgs Neck) which showed high and low salt marsh and detailed elevation. This map is probably too detailed for our purposes, but may be useful for smaller areas around river where we have a deficit of ecosystem info.

Archive	New York Public Library
Title / reference	Sidney & Neff 1857
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by EWS. A general map, showing the entire length of the Bx River, and some coastal wetlands, but otherwise not sufficiently detailed to be of use.

Archive	New York Public Library
Title / reference	Burr 1939
Description	
Scale	



Size	
Format	
My notes	Examined 4/16/04 by EWS. Also too general to be of use.

Archive	New York Public Library
Title / reference	Map of 23 <sup>rd</sup> ward, NYC. 188-
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. 4 Sheets. Shows section of Bx River along Edgewater Road, shows a few tributaries, but it is mainly a street and property map = no good.

Archive	New York Public Library
Title / reference	Map of steam, cable & horse roads, 1890.
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by EWS & DTL. Street grid map, no ecological info = no good.

Archive	New York Public Library
Title / reference	Map of Township of Westchester, 1867
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. Extent is east shore of Bronx River west to Pelham Bay and from Wakefield in north to LI Sound in south. Shows <u>rivers, streams, marshes</u> , roads, no relief though. Extracted from Jenkins, Stephen. Story of the Bronx. GP Putnam's Sons, 1912. Reproduction of plate in: Beers FW Atlas of NY 1867.

Archive	New York Public Library
Title / reference	West Farms and Morrisania, 1867.
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. Similar description as above (from Beers FW Atlas also). Extends from Harlem River east to western shore of Bx River, and from northern Bx to south to LI Sound.

Archive	New York Public Library
Title / reference	Westchester County, 1788.
Description	
Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. Shows Townships Act of March 7, 1788. Very general and simple map – no relief, few natural features, just main rivers.

Archive	New York Public Library
Title / reference	Bronx Borough 1890-1913
Description	

Scale	
Size	
Format	
My notes	Examined 4/16/04 by DTL. Series of 4 “maps” (really illustrations) showing development of Bronx from 1890-1913. We can use this for presentation purposes.

Archive	New York Historical Society
Title/reference	Historical sketch map of Kings Bridge 1645-1783. NS9M29.5.84
Description	By Edsall, Thomas Henry. Black ink on paper.
Scale	1 inch=2000 ft
Size	29x39cm
Format	
My notes	Compiled by Edsall. Extent = Bx River to Hudson, Yonkers/NY border to Northern Manhattan (so mid & upper Bx are shown, lower Bx not shown). Shows roads, rivers, streams, Croton Aqueduct, parks, Woodlawn Cemetery, RR, houses/owner names. Shows part of “Road to Delancey’s Mill” and streams running from Woodlawn Cem. To Bx River, and marsh/pond at Woodlawn. Other streams running to other rivers also shown. No topo, no marshland along Bx River, no indication of woody vs. grassy areas. Lower Bx River not shown = no good.

Archive	New York Historical Society
Title/reference	Simcoe Maps 1778. NS9M25.1.23. “Retreat from Generals Clinton and Morgan” “from a sketch taken on the spot by Lt. Coll Simcoe”
Description	Black and color ink and color wash on paper.
Scale	30x25cm
Size	
Format	
My notes	6 small maps (each 25x30 cm or so). Only 1 is of Bx. States “from a sketch taken on the spot by Lt. Coll. Simcoe”. Really beautiful pen and ink drawing w/ water color. Shows relief, trees, marsh, fields, rivers, streams. Shows “Brunx River”, rebel camp, Queens Rangers camp, roads, bridge. Difficult to know exactly where in Bx this is located. Shows stream w/ marsh and surrounding hills leading west to Bx River. “E=lines thrown up by the rebels in 1776 to defend the passae of the Bronx. F. Valentines Hill”. Location may be Valentines Hill(?) Would be very useful b/c of detail but only for the small area it covers (if I can figure out where that is exactly).

Archive	New York Historical Society
Title/reference	Henderson, James Y. Business and reference map of Westchester, West Farms, Mount Vernon & c. 1800. NS12M12.2.7
Description	Black ink w/ clor wash on paper.
Scale	
Size	69x84 cm
Format	5 sections
My notes	4 sections on 1 map. Bx Riv shown in 2 of these, but no ecol info, just river and land. Mainly a map of property plots, roads, RR, rivers, bldgs = no good.

Archive	New York Historical Society
Title/reference	“Bronckx Nek, Anno Domini/” NS11M17.4.14
Description	By Senfor, Lewis Morris. Modern copy of 1675 original. Black ink on paper. 1830
Scale	Not indicated.
Size	
Format	
My notes	Very charming map of West Bronx. Shows acreage of subdivisions, shows Bronx river’s western side. Shows wooded areas, rivers, marshes (?) – yellow/brown areas. Historical Society has 4

	mensions of this map. 3 w/ blue, pink, yellow watercolor (?) outlining. Hand drawn. Looks pretty detailed. Marshes drawn along western edge of Bx river, along southern shore of Bx, and patches of marsh elsewhere. Shows 2 rivers and maybe a stream between Bx and Hudson rivers.
--	--

Archive	New York Historical Society
Title/reference	“A plan of the country from Frogs Point to Croton River shewing the positions of the American and British Armies from the 12 of October 1776 until the engagement on the White Plains on the 28 <sup>th</sup> ”. NS12M7.3.11
Description	By Lewis, S.
Scale	1 in = 2 miles
Size	~8 in x 17
Format	
My notes	Small map w/ little detail for the Bx. Shows roads, rivers, camps, hills, town names. Extent = East River to Haverstraw Bay/Croton River. Not enough detail or ecol info for Bx = no good.

Archive	New York Historical Society
Title/reference	Continental Army Survey. No 19/crossroads to East Chester and above. 1778. NS4M30.2.19
Description	By Erskine, Robert. Erskine-deWitt map. Black ink and pencil on paper.
Scale	Not indicated
Size	39x49cm
Format	Photostat neg.
My notes	Simple road map, road names and property owner names shown. No rivers or other ecol data shown. = no good

Archive	New York Historical Society
Title/reference	A map of Pelham in the year 1850 showing roads, bounds holders of lands. NS10M21.3.63
Description	Black ink on paper. By Stacy H. Wood?
Scale	
Size	39x24 cm
Format	
My notes	Great map showing trees, plains, marshes and river. Shows Hutchinson Creek. But of Eastchester & Pelham & New Rochelle only. No Bx River shown = no good

Archive	New York Historical Society
Title/reference	1851. US Coast Survey. Hart and City Island. NS12M7.1.5A
Description	
Scale	
Size	44x54 cm
Format	Black ink on paper.
My notes	Bathymetry map of City and Hart Islands. Farmfields and road on City Island shown. No streams, topog, shown. Marshes aren't clear. = would be good only for marine aspects of project and only for this specific area.

Archive	New York Historical Society
Title/reference	1829. Map of the County of Westchester. NS10M22.2.7
Description	
Scale	
Size	73x43 cm
Format	Black and color ink on paper.
My notes	Know I've seen this before – I think I just downloaded digital version from LOC. Bx is shown too small –not enough detail, though does show marsh along southern coast of Bx and up Bx River.

Archive	New York Historical Society
Title/reference	Westchester. 1820. NS10M22.2.7

Description	
Scale	
Size	87x60 cm
Format	Black and color ink and color wash on paper
My notes	Very simple map. Just shows town outlines of towns within Westchester. = no good.

Archive	New York Public Library
Title/reference	Karpinski 296, "Carte des environs de la Nouvelle York"
Description	177-?
Scale	1 in=5 miles
Size	
Format	
My notes	Viewed on 5/13/04 by DTL. No topography or ecol info, very simple and also scale too small (1 in=5 miles) = no good

Archive	New York Public Library
Title/reference	Karpinski 298, "Carte de la Nouvelle York"
Description	177-?
Scale	1 in=5 miles
Size	
Format	
My notes	Viewed on 5/13/04 by DTL. Not of Bronx =no good

Archive	New York Public Library
Title/reference	Karpinski 299, "Carte de la Bayville Port"
Description	177-?
Scale	
Size	
Format	
My notes	Viewed on 5/13/04 by DTL. Too small, no detail =no good

Archive	New York Public Library
Title/reference	Facsimile of the Unpublished British Headquarter map, New York City and Vicinity.
Description	Atlas
Scale	
Size	
Format	
My notes	Viewed on 5/13/04 by DTL. Does not show Bronx, Manhattan only = no good

Archive	New York Public Library
Title/reference	Map of Progress of His Majesty's Armies
Description	
Scale	1 in = 2 miles
Size	~2ft x 3 ft
Format	1 sheet
My notes	Viewed on 5/13/04 by DTL. Map of entire metropolitan area, so not enough detail for Bronx, even though it has good topography. No march, streams or ponds show. = no good.

**Additional notes from Westchester County Archives & Historical Society:**

- Water Supply – pamphlet #11 William Weston – discusses possibility of using Bx River as water supply for NYC. 1799. Interesting, but no maps included.

- Bronx River Retrospective. Greenburgh Nature Center, Scarsdale Historical Society. #HoB200 pamphlet#2 – very informative 27 page pamphlet on history of Bx River. I'd like a copy of this! {[Requested this from Greenburgh Nature Cons. & Scarsdale Hist. Soc.](#)}
- Vertical File on Bx River – has lots of good articles (NY Times, WC Co paper), pamphlets including NYC Parks/Partnership for Parks/City Parks Foundation's square, tri-fold "Bronx River New York" which includes a modern map with walking trails, pts of interest, etc. No date (1999?) but its not very old b/c Giuliani is listed as mayor. Contact Jenny Hoffner, Bx River Coordinator at Partnership for Parks. {[emailed Partnership for Parks requesting this and other Bx River items](#)}
- Bolton, Robert. "History of The County of Westchester." 1848. Two-volume book has a map of W.Chester Co. I've seen this map before – Eric showed it to me at NYPL- "Westchester under the Mohegan Indians 1609" has Indian names for towns, states. Not enough detail of Bx though, = no good.
- Bolton, Robert. History of West Chester County. 1848. Larger maps (not Indian names) but otherwise similar to map in his book. But does show a bit more detail – marshes, hills - though still not enough = no good. "Compiled for Bolton's History of West Chester County, from Colton's 'Map of Long Island and the Vicinity of New York' 1848".
- Bronx Valley Sewer Summary of Reports of Engineer & Consulting Engineer. Dec 27, 1895. [Westchester County pamphlet #4]. A report by John Fairchild and JJR Croes (engineers) suggesting that Bx River should not be used as a sewer but used as stormwater and surface water drainage. Separate sewer pipe should be built along the edge of the river for sewage only.
- [Map of NYC 1728]. "A plan of the city of New York from an actual survey." Black ink & watercolor on paper. Shows Manhattan only = no good.
- 1789 Colles Road maps – I've seen one of these before; only shows river where roads intercept it. Not detailed enough = no good.
- Briggs, Josiah A. Not dated. "Map of Edenwald a beautiful home set in the borough of the Bronx, New York City." Little of river, mainly a new lots for sale map = no good.
- "Topographical Atlas of the City of New York including the annexed territory. Showing original water courses and made land. Prepared under the direction of Egbert L. Viele." 1874. Shows "meadow", "made" and "marsh" land, relief. Very detailed. In color. 1 in = 800 ft. Rivers, streams, Manhattan and Bx (Bx River and east to Hudson, north to Yonkers and south to East River). Very nice, too bad its not an earlier map!! Still, may be useful. Planned roads shown also, over "made" land.
- North Castle, NY 1762 [Map NoC 1762]. Hand drawn with pen and ink, of property lots but without much other info = no good
- [Map Rev. #35] Photostat negative of a portion of a map by John Montessor. ~1779. Extent= Eastern NJ & Western NY States. Too small scale to show any detail of the Bronx. But otherwise a lovely map showing roads, rivers, relief, swamp.
- Map made by Westchester Historical Society in 1933 for Indian Occupation c. 1600. Too general = no good.
- Manuscript tracing of Westchester County showing roads and landownership [map of Bronx c 1800]. Too simple = no good.
- Erskine, Robert. WC County NY & Vicinity. 1778-1780. Too large, not enough detail for Bronx = no good.

**Appendix 2. Putative historical plant list of the lower Bronx River watershed**

This flora should be considered preliminary. Additional checking beyond the means of this grant are required to more fully vet and test this flora. Users are advised to treat the list not as an exact transcript of all the plants that occurred in the past, but a general guide to what have might have once grown in New York City and in particular, the lower Bronx River watershed. See Chapter 2 of this report for methods and discussion. The symbol code is drawn from the PLANTS (2002) database.

<b>Family</b>	<b>Scientific name</b>	<b>Common name</b>	<b>Symbol</b>	<b>Ref.</b>
Pinaceae	<i>Abies balsamea</i> (L.) P. Mill.	balsam fir	ABBA	***
Euphorbiaceae	<i>Acalypha gracilens</i> Gray	slender threeseed mercury	ACGR2	**
Euphorbiaceae	<i>Acalypha rhomboidea</i> Raf.	Virginia threeseed mercury	ACRH	***
Euphorbiaceae	<i>Acalypha virginica</i> L.	Virginia threeseed mercury	ACVI	**
Aceraceae	<i>Acer negundo</i> L.	boxelder	ACNE2	***
Aceraceae	<i>Acer nigrum</i> Michx. f.	black maple	ACNI5	***
Aceraceae	<i>Acer pensylvanicum</i> L.	striped maple	ACPE	**
Aceraceae	<i>Acer rubrum</i> L.	red maple	ACRU	***
Aceraceae	<i>Acer saccharinum</i> L.	silver maple	ACSA2	***
Aceraceae	<i>Acer saccharum</i> Marsh.	sugar maple	ACSA3	***
Aceraceae	<i>Acer spicatum</i> Lam.	mountain maple	ACSP2	**
Acoraceae	<i>Acorus americanus</i> (Raf.) Raf.	sweetflag	ACAM	***
Acoraceae	<i>Acorus calamus</i> L.	calamus	ACCA4	**
Ranunculaceae	<i>Actaea pachypoda</i> Ell.	white baneberry	ACPA	***
Ranunculaceae	<i>Actaea rubra</i> (Ait.) Willd.	red baneberry	ACRU2	**
Pteridaceae	<i>Adiantum pedatum</i> L.	northern maidenhair	ADPE	**
Fumariaceae	<i>Adlumia fungosa</i> (Ait.) Greene ex B.S.P.	allegheeny vine	ADFU	**
Adoxaceae	<i>Adoxa moschatellina</i> L.	muskroot	ADMO	**
Scrophulariaceae	<i>Agalinis acuta</i> Pennell	sandplain false foxglove	AGAC	**
Scrophulariaceae	<i>Agalinis maritima</i> (Raf.) Raf.	saltmarsh false foxglove	AGMA3	**
Scrophulariaceae	<i>Agalinis paupercula</i> (Gray) Britt.	smallflower false foxglove	AGPA12	**
Scrophulariaceae	<i>Agalinis purpurea</i> (L.) Pennell	purple false foxglove	AGPU5	**
Scrophulariaceae	<i>Agalinis setacea</i> (J.F. Gmel.) Raf.	threadleaf false foxglove	AGSE3	**
Scrophulariaceae	<i>Agalinis tenuifolia</i> (Vahl) Raf.	slenderleaf false foxglove	AGTE3	***
Scrophulariaceae	<i>Agalinis tenuifolia</i> (Vahl) Raf. var. <i>parviflora</i> (Nutt.) Pennell	slenderleaf false foxglove	AGTEP2	*
Lamiaceae	<i>Agastache foeniculum</i> (Pursh) Kuntze	blue giant hyssop	AGFO	**
Lamiaceae	<i>Agastache nepetoides</i> (L.) Kuntze	yellow giant hyssop	AGNE2	**
Lamiaceae	<i>Agastache scrophulariifolia</i> (Willd.) Kuntze	purple giant hyssop	AGSC	**
Asteraceae	<i>Ageratina altissima</i> (L.) King & H.E. Robins.	white snakeroot	AGAL5	**

Asteraceae	<i>Ageratina altissima</i> (L.) King & H.E. Robins. <i>var. altissima</i>	white snakeroot	AGALA	***
Asteraceae	<i>Ageratina aromatica</i> (L.) Spach	lesser snakeroot	AGAR4	**
Asteraceae	<i>Ageratina aromatica</i> (L.) Spach <i>var. aromatica</i>	lesser snakeroot	AGARA	**
Rosaceae	<i>Agrimonia gryposepala</i> Wallr.	tall hairy agrimony	AGGR2	***
Rosaceae	<i>Agrimonia parviflora</i> Ait.	harvestlice	AGPA6	**
Rosaceae	<i>Agrimonia pubescens</i> Wallr.	soft agrimony	AGPU	**
Rosaceae	<i>Agrimonia rostellata</i> Wallr.	beaked agrimony	AGRO3	**
Rosaceae	<i>Agrimonia striata</i> Michx.	roadside agrimony	AGST	**
Poaceae	<i>Agrostis hyemalis</i> (Walt.) B.S.P.	winter bentgrass	AGHY	***
Poaceae	<i>Agrostis perennans</i> (Walt.) Tuckerman	upland bentgrass	AGPE	***
Poaceae	<i>Agrostis scabra</i> Willd.	rough bentgrass	AGSC5	**
Poaceae	<i>Agrostis stolonifera</i> L.	creeping bentgrass	AGST2	**
Liliaceae	<i>Aletris farinosa</i> L.	white colicroot	ALFA2	**
Alismataceae	<i>Alisma subcordatum</i> Raf.	American water plantain	ALSU	**
Alismataceae	<i>Alisma triviale</i> Pursh	northern water plantain	ALTR7	***
Liliaceae	<i>Allium canadense</i> L.	meadow garlic	ALCA3	***
Liliaceae	<i>Allium cernuum</i> Roth	nodding onion	ALCE2	**
Liliaceae	<i>Allium schoenoprasum</i> L. <i>var. sibiricum</i> (L.) <i>Hartman</i>	wild chives	ALSCS	**
Liliaceae	<i>Allium tricoccum</i> Ait.	wild leek	ALTR3	***
Betulaceae	<i>Alnus incana</i> (L.) Moench <i>ssp. rugosa</i> (Du Roi) <i>Clausen</i>	speckled alder	ALINR	**
Betulaceae	<i>Alnus maritima</i> (Marsh.) Muhl. <i>ex Nutt.</i>	seaside alder	ALMA7	*
Betulaceae	<i>Alnus serrulata</i> (Ait.) Willd.	hazel alder	ALSE2	***
Poaceae	<i>Alopecurus aequalis</i> Sobol.	shortawn foxtail	ALAE	**
Poaceae	<i>Alopecurus carolinianus</i> Walt.	Carolina foxtail	ALCA4	**
Amaranthaceae	<i>Amaranthus cannabinus</i> (L.) Sauer	tidalmarsh amaranth	AMCA2	**
Amaranthaceae	<i>Amaranthus pumilus</i> Raf.	seaside amaranth	AMPU2	**
Asteraceae	<i>Ambrosia artemisiifolia</i> L.	annual ragweed	AMAR2	***
Asteraceae	<i>Ambrosia trifida</i> L.	great ragweed	AMTR	***
Rosaceae	<i>Amelanchier arborea</i> (Michx. f.) Fern.	common serviceberry	AMAR3	***
Rosaceae	<i>Amelanchier canadensis</i> (L.) Medik.	Canadian serviceberry	AMCA4	***
Rosaceae	<i>Amelanchier laevis</i> Wieg.	Allegheny serviceberry	AMLA	**
Rosaceae	<i>Amelanchier sanguinea</i> (Pursh) DC.	roundleaf serviceberry	AMSA	**
Rosaceae	<i>Amelanchier stolonifera</i> Wieg.	running serviceberry	AMST80	**
Rosaceae	<i>Amelanchier xintermedia</i> Spach ( <i>pro sp.</i> )		AMIN4	**
Orchidaceae	<i>Amerorchis rotundifolia</i> (Banks ex Pursh) <i>Hultén</i>	roundleaf orchid	AMRO	**
Liliaceae	<i>Amianthium muscitoxicum</i> (Walt.) Gray	flypoison	AMMU	**

Poaceae	<i>Ammophila breviligulata</i> Fern.	American beachgrass	AMBR	**
Fabaceae	<i>Amphicarpaea bracteata</i> (L.) Fern.	American hogpeanut	AMBR2	***
Asteraceae	<i>Anaphalis margaritacea</i> (L.) Benth.	western pearly everlasting	ANMA	***
Ericaceae	<i>Andromeda polifolia</i> L. var. <i>glaucophylla</i> (Link) DC.	bog rosemary	ANPOG	**
Poaceae	<i>Andropogon gerardii</i> Vitman	big bluestem	ANGE	**
Poaceae	<i>Andropogon glomeratus</i> (Walt.) B.S.P.	bushy bluestem	ANGL2	***
Poaceae	<i>Andropogon gyrans</i> Ashe var. <i>gyrans</i>	Elliott's bluestem	ANGYG	**
Poaceae	<i>Andropogon virginicus</i> L.	broomsedge bluestem	ANVI2	**
Ranunculaceae	<i>Anemone canadensis</i> L.	Canadian anemone	ANCA8	**
Ranunculaceae	<i>Anemone cylindrica</i> Gray	candle anemone	ANCY	**
Ranunculaceae	<i>Anemone quinquefolia</i> L.	nightcaps	ANQU	***
Ranunculaceae	<i>Anemone virginiana</i> L.	tall thimbleweed	ANVI3	***
Ranunculaceae	<i>Anemone virginiana</i> L. var. <i>alba</i> (Oakes) Wood	tall thimbleweed	ANVIA2	**
Apiaceae	<i>Angelica atropurpurea</i> L.	purplestem angelica	ANAT	**
Apiaceae	<i>Angelica lucida</i> L.	seacoast angelica	ANLU	**
Apiaceae	<i>Angelica triquinata</i> Michx.	filmy angelica	ANTR2	**
Apiaceae	<i>Angelica venenosa</i> (Greenway) Fern.	hairy angelica	ANVE	**
Asteraceae	<i>Antennaria howellii</i> Greene ssp. <i>canadensis</i> (Greene) Bayer	Canadian pussytoes	ANHOC	***
Asteraceae	<i>Antennaria howellii</i> Greene ssp. <i>neodioica</i> (Greene) Bayer	Howell's pussytoes	ANHON	**
Asteraceae	<i>Antennaria marginata</i> Greene	whitemargin pussytoes	ANMA5	**
Asteraceae	<i>Antennaria neglecta</i> Greene	field pussytoes	ANNE	**
Asteraceae	<i>Antennaria parlinii</i> Fern.	Parlin's pussytoes	ANPA9	**
Asteraceae	<i>Antennaria parlinii</i> Fern. ssp. <i>fallax</i> (Greene) Bayer & Stebbins	Parlin's pussytoes	ANPAF	**
Asteraceae	<i>Antennaria plantaginifolia</i> (L.) Richards.	woman's tobacco	ANPL	***
Apiaceae	<i>Apiastrum angustifolium</i> Nutt.	mock parsley	APAN	**
Fabaceae	<i>Apios americana</i> Medik.	groundnut	APAM	***
Orchidaceae	<i>Aplectrum hyemale</i> (Muhl. ex Willd.) Torr.	Adam and Eve	APHY	**
Apocynaceae	<i>Apocynum androsaemifolium</i> L.	spreading dogbane	APAN2	***
Apocynaceae	<i>Apocynum cannabinum</i> L.	Indianhemp	APCA	***
Apocynaceae	<i>Apocynum xfloribundum</i> Greene (pro sp.)		APFL	**
Ranunculaceae	<i>Aquilegia canadensis</i> L.	red columbine	AQCA	**
Brassicaceae	<i>Arabis canadensis</i> L.	sicklepod	ARCA	***
Brassicaceae	<i>Arabis drummondii</i> Gray	Drummond's rockcress	ARDR	**
Brassicaceae	<i>Arabis glabra</i> (L.) Bernh.	tower rockcress	ARGL	**
Brassicaceae	<i>Arabis hirsuta</i> (L.) Scop.	hairy rockcress	ARHI	***



Brassicaceae	<i>Arabis hirsuta</i> (L.) Scop. var. <i>pyncocarpa</i> (M. Hopkins) Rollins	creamflower rockcress	ARHIP	**
Brassicaceae	<i>Arabis laevigata</i> (Muhl. ex Willd.) Poir.	smooth rockcress	ARLA	***
Brassicaceae	<i>Arabis lyrata</i> L.	lyrate rockcress	ARLY2	**
Brassicaceae	<i>Arabis missouriensis</i> Greene	green rockcress	ARMI5	**
Brassicaceae	<i>Arabis shortii</i> (Fern.) Gleason	Short's rockcress	ARSH2	**
Araliaceae	<i>Aralia hispida</i> Vent.	bristly sarsaparilla	ARHI2	**
Araliaceae	<i>Aralia nudicaulis</i> L.	wild sarsaparilla	ARNU2	***
Araliaceae	<i>Aralia racemosa</i> L.	American spikenard	ARRA	***
Viscaceae	<i>Arceuthobium pusillum</i> Peck	eastern dwarf mistletoe	ARPU3	**
Ericaceae	<i>Arctostaphylos uva-ursi</i> (L.) Spreng.	kinnikinnick	ARUV	**
Orchidaceae	<i>Arethusa bulbosa</i> L.	dragon's mouth	ARBU	**
Rosaceae	<i>Argentina anserina</i> (L.) Rydb.	silverweed cinquefoil	ARAN7	**
Araceae	<i>Arisaema dracontium</i> (L.) Schott	green dragon	ARDR3	**
Araceae	<i>Arisaema triphyllum</i> (L.) Schott	Jack in the pulpit	ARTR	***
Araceae	<i>Arisaema triphyllum</i> (L.) Schott ssp. <i>pusillum</i> (Peck) Huttleston	Jack in the pulpit	ARTRP	**
Araceae	<i>Arisaema triphyllum</i> (L.) Schott ssp. <i>stewardsonii</i> (Britt.) Huttleston	Jack in the pulpit	ARTRS	**
Poaceae	<i>Aristida dichotoma</i> Michx.	churchmouse threeawn	ARDI4	**
Poaceae	<i>Aristida longispica</i> Poir.	slimspike threeawn	ARLO2	**
Poaceae	<i>Aristida longispica</i> Poir. var. <i>longispica</i>	slimspike threeawn	ARLOL2	**
Poaceae	<i>Aristida purpurascens</i> Poir.	arrowfeather threeawn	ARPU8	**
Poaceae	<i>Aristida tuberculosa</i> Nutt.	seaside threeawn	ARTU	**
Aristolochiaceae	<i>Aristolochia macrophylla</i> Lam.	pipevine	ARMA7	**
Asteraceae	<i>Artemisia campestris</i> L.	field sagewort	ARCA12	**
Asteraceae	<i>Artemisia campestris</i> L. ssp. <i>borealis</i> (Pallas) Hall & Clements var. <i>borealis</i> (Pallas) M.E. Peck	field sagewort	ARCAB4	**
Asteraceae	<i>Artemisia campestris</i> L. ssp. <i>caudata</i> (Michx.) Hall & Clements	field sagewort	ARCAC	**
Aristolochiaceae	<i>Asarum canadense</i> L.	Canadian wildginger	ASCA	***
Asclepiadaceae	<i>Asclepias amplexicaulis</i> Sm.	clasping milkweed	ASAM	**
Asclepiadaceae	<i>Asclepias exaltata</i> L.	poke milkweed	ASEX	**
Asclepiadaceae	<i>Asclepias incarnata</i> L.	swamp milkweed	ASIN	***
Asclepiadaceae	<i>Asclepias incarnata</i> L. ssp. <i>pulchra</i> (Ehrh. ex Willd.) Woods.	swamp milkweed	ASINP2	**
Asclepiadaceae	<i>Asclepias purpurascens</i> L.	purple milkweed	ASPU2	***
Asclepiadaceae	<i>Asclepias quadrifolia</i> Jacq.	fourleaf milkweed	ASQU	**
Asclepiadaceae	<i>Asclepias rubra</i> L.	red milkweed	ASRU	**
Asclepiadaceae	<i>Asclepias syriaca</i> L.	common milkweed	ASSY	***

Asclepiadaceae	<i>Asclepias tuberosa L.</i>	butterfly milkweed	ASTU	***
Asclepiadaceae	<i>Asclepias variegata L.</i>	redring milkweed	ASVA	**
Asclepiadaceae	<i>Asclepias verticillata L.</i>	whorled milkweed	ASVE	**
Asclepiadaceae	<i>Asclepias viridiflora Raf.</i>	green comet milkweed	ASVI	**
Annonaceae	<i>Asimina triloba (L.) Dunal</i>	pawpaw	ASTR	**
Aspleniaceae	<i>Asplenium bradleyi D.C. Eat.</i>	Bradley's spleewort	ASBR2	**
Aspleniaceae	<i>Asplenium montanum Willd.</i>	mountain spleenwort	ASMO2	**
Aspleniaceae	<i>Asplenium platyneuron (L.) B.S.P.</i>	ebony spleenwort	ASPL	***
Aspleniaceae	<i>Asplenium rhizophyllum L.</i>	walking fern	ASRH2	**
Aspleniaceae	<i>Asplenium ruta-muraria L.</i>	wallrue	ASRU2	**
Aspleniaceae	<i>Asplenium trichomanes L.</i>	maidenhair spleenwort	ASTR2	**
Aspleniaceae	<i>Asplenium xebenoides R.R. Scott (pro sp.)</i>		ASEB	**
Fabaceae	<i>Astragalus canadensis L.</i>	Canadian milkvetch	ASCA11	**
Dryopteridaceae	<i>Athyrium filix-femina (L.) Roth</i>	common ladyfern	ATFI	**
Dryopteridaceae	<i>Athyrium filix-femina (L.) Roth ssp. angustum (Willd.) Clausen</i>	subarctic ladyfern	ATFIA	***
Dryopteridaceae	<i>Athyrium filix-femina (L.) Roth ssp. asplenioides (Michx.) Hultén</i>	asplenium ladyfern	ATFIA2	**
Chenopodiaceae	<i>Atriplex cristata Humb. &amp; Bonpl. ex Willd.</i>	crested saltbush	ATCR2	**
Chenopodiaceae	<i>Atriplex glabriuscula Edmondston</i>	Scotland orache	ATGL	**
Chenopodiaceae	<i>Atriplex prostrata Bouchér ex DC.</i>	triangle orache	ATPR	**
Chenopodiaceae	<i>Atriplex subspicata (Nutt.) Rydb.</i>	saline saltbush	ATSU2	**
Scrophulariaceae	<i>Aureolaria flava (L.) Farw.</i>	smooth yellow false foxglove	AUFL	**
Scrophulariaceae	<i>Aureolaria flava (L.) Farw. var. flava</i>	smooth yellow false foxglove	AUFLF	**
Scrophulariaceae	<i>Aureolaria pedicularia (L.) Raf.</i>	fernleaf yellow false foxglove	AUPE2	**
Scrophulariaceae	<i>Aureolaria virginica (L.) Pennell</i>	downy yellow false foxglove	AUVI	**
Azollaceae	<i>Azolla caroliniana Willd.</i>	Carolina mosquitofern	AZCA	**
Asteraceae	<i>Baccharis halimifolia L.</i>	eastern baccharis	BAHA	**
Fabaceae	<i>Baptisia australis (L.) R. Br. ex Ait. f.</i>	blue wild indigo	BAAU	**
Fabaceae	<i>Baptisia tinctoria (L.) R. Br. ex Ait. f.</i>	horseflyweed	BATI	***
Gentianaceae	<i>Bartonia paniculata (Michx.) Muhl.</i>	twining screwstem	BAPA2	**
Gentianaceae	<i>Bartonia virginica (L.) B.S.P.</i>	yellow screwstem	BAVI3	**
Apiaceae	<i>Berula erecta (Huds.) Coville</i>	cutleaf waterparsnip	BEER	**
Betulaceae	<i>Betula alleghaniensis Britt.</i>	yellow birch	BEAL2	**
Betulaceae	<i>Betula lenta L.</i>	sweet birch	BELE	***
Betulaceae	<i>Betula nana L.</i>	dwarf birch	BENA	**
Betulaceae	<i>Betula nigra L.</i>	river birch	BENI	**

Betulaceae	<i>Betula papyrifera</i> Marsh.	paper birch	BEPA	***
Betulaceae	<i>Betula populifolia</i> Marsh.	gray birch	BEPO	***
Betulaceae	<i>Betula pumila</i> L.	bog birch	BEP4	**
Asteraceae	<i>Bidens bidentoides</i> (Nutt.) Britt.	Delmarva beggarticks	BIBI3	**
Asteraceae	<i>Bidens bipinnata</i> L.	Spanish needles	BIBI7	***
Asteraceae	<i>Bidens cernua</i> L.	nodding beggartick	BICE	***
Asteraceae	<i>Bidens connata</i> Muhl. ex Willd.	purplestem beggarticks	BICO5	**
Asteraceae	<i>Bidens coronata</i> (L.) Britt.	crowned beggarticks	BICO	**
Asteraceae	<i>Bidens discoidea</i> (Torr. & Gray) Britt.	small beggarticks	BIDI	**
Asteraceae	<i>Bidens eatonii</i> Fern.	Eaton's beggarticks	BIEA	*
Asteraceae	<i>Bidens frondosa</i> L.	devil's beggartick	BIFR	**
Asteraceae	<i>Bidens laevis</i> (L.) B.S.P.	smooth beggartick	BILA	***
Asteraceae	<i>Bidens tripartita</i> L.	threelobe beggarticks	BITR	***
Asteraceae	<i>Bidens vulgata</i> Greene	big devils beggartick	BIVU	**
Lamiaceae	<i>Blephilia ciliata</i> (L.) Benth.	downy pagoda-plant	BLCI	**
Lamiaceae	<i>Blephilia hirsuta</i> (Pursh) Benth.	hairy pagoda-plant	BLHI	**
Urticaceae	<i>Boehmeria cylindrica</i> (L.) Sw.	smallspike false nettle	BOCY	***
Asteraceae	<i>Boltonia asteroides</i> (L.) L'Hér.	white doll's daisy	BOAS	**
Asteraceae	<i>Boltonia asteroides</i> (L.) L'Hér. var. <i>recognita</i> (Fern. & Grisc.) Cronq.	white doll's daisy	BOASR	**
Ophioglossaceae	<i>Botrychium dissectum</i> Spreng.	cutleaf grapefern	BODI2	**
Ophioglossaceae	<i>Botrychium lanceolatum</i> (Gmel.) Angstr.	lanceleaf grapefern	BOLA	**
Ophioglossaceae	<i>Botrychium matricariifolium</i> (A. Braun ex Dowell) A. Braun ex Koch	matricary grapefern	BOMA2	**
Ophioglossaceae	<i>Botrychium multifidum</i> (Gmel.) Trev.	leathery grapefern	BOMU	**
Ophioglossaceae	<i>Botrychium oneidense</i> (Gilbert) House	bluntlobe grapefern	BOON	**
Ophioglossaceae	<i>Botrychium rugulosum</i> W.H. Wagner	ternate grapefern	BORU	**
Ophioglossaceae	<i>Botrychium simplex</i> E. Hitchc.	little grapefern	BOSI	**
Ophioglossaceae	<i>Botrychium virginianum</i> (L.) Sw.	rattlesnake fern	BOVI	***
Poaceae	<i>Bouteloua curtipendula</i> (Michx.) Torr.	sideoats grama	BOCU	**
Poaceae	<i>Bouteloua curtipendula</i> (Michx.) Torr. var. <i>curtipendula</i>	sideoats grama	BOCUC2	**
Poaceae	<i>Brachyelytrum erectum</i> (Schreb. ex Spreng.) Beauv.	bearded shorthusk	BRER2	***
Poaceae	<i>Brachyelytrum septentrionale</i> (Babel) G. Tucker	northern shorthusk	BRSE2	**
Cabombaceae	<i>Brasenia schreberi</i> J.F. Gmel.	watershield	BRSC	**
Asteraceae	<i>Brickellia eupatorioides</i> (L.) Shinnars	false boneset	BREU	**
Asteraceae	<i>Brickellia eupatorioides</i> (L.) Shinnars var. <i>eupatorioides</i>	false boneset	BREUE	**
Poaceae	<i>Bromus ciliatus</i> L.	fringed brome	BRCI2	***

Poaceae	<i>Bromus ciliatus L. var. ciliatus</i>	fringed brome	BRCIC3	*
Poaceae	<i>Bromus kalmii Gray</i>	arctic brome	BRKA2	**
Poaceae	<i>Bromus latiglumis (Shear) A.S. Hitchc.</i>	earlyleaf brome	BRLA4	**
Poaceae	<i>Bromus pubescens Muhl. ex Willd.</i>	hairy woodland brome	BRPU6	**
Scrophulariaceae	<i>Buchnera americana L.</i>	American bluehearts	BUAM	**
Cyperaceae	<i>Bulbostylis capillaris (L.) Kunth ex C.B. Clarke</i>	densetuft hairsedge	BUCA2	**
Brassicaceae	<i>Cakile edentula (Bigelow) Hook.</i>	American searocket	CAED	**
Poaceae	<i>Calamagrostis canadensis (Michx.) Beauv.</i>	bluejoint	CACA4	***
Poaceae	<i>Calamagrostis coarctata (Torr.) Eat.</i>	arctic reedgrass	CACO71	***
Poaceae	<i>Calamagrostis pickeringii Gray</i>	Pickering's reedgrass	CAPI	**
Araceae	<i>Calla palustris L.</i>	water arum	CAPA	***
Callitrichaceae	<i>Callitriche hermaphroditica L.</i>	northern water-starwort	CAHE2	**
Callitrichaceae	<i>Callitriche heterophylla Pursh</i>	twoheaded water-starwort	CAHE3	**
Callitrichaceae	<i>Callitriche palustris L.</i>	vernal water-starwort	CAPA52	**
Callitrichaceae	<i>Callitriche terrestris Raf.</i>	terrestrial water-starwort	CATE19	**
Orchidaceae	<i>Calopogon tuberosus (L.) B.S.P.</i>	tuberous grasspink	CATU5	**
Ranunculaceae	<i>Caltha palustris L.</i>	yellow marsh marigold	CAPA5	***
Convolvulaceae	<i>Calystegia sepium (L.) R. Br. ssp. americana (Sims) Brummitt</i>	hedge false bindweed	CASEA2	**
Convolvulaceae	<i>Calystegia sepium (L.) R. Br. ssp. angulata Brummitt</i>	hedge false bindweed	CASEA3	**
Convolvulaceae	<i>Calystegia spithamea (L.) Pursh</i>	low false bindweed	CASP14	**
Convolvulaceae	<i>Calystegia spithamea (L.) Pursh ssp. spithamea</i>	low false bindweed	CASPS2	**
Campanulaceae	<i>Campanula aparinoides Pursh</i>	marsh bellflower	CAAP2	**
Campanulaceae	<i>Campanula rotundifolia L.</i>	bluebell bellflower	CARO2	**
Campanulaceae	<i>Campanulastrum americanum (L.) Small</i>	American bellflower	CAAM18	**
Brassicaceae	<i>Cardamine bulbosa (Schreb. ex Muhl.) B.S.P.</i>	bulbous bittercress	CABU3	***
Brassicaceae	<i>Cardamine concatenata (Michx.) Sw.</i>	cutleaf toothwort	CACO26	***
Brassicaceae	<i>Cardamine diphylla (Michx.) Wood</i>	crinkleroot	CADI10	***
Brassicaceae	<i>Cardamine douglassii Britt.</i>	limestone bittercress	CADO	**
Brassicaceae	<i>Cardamine longii Fern.</i>	Long's bittercress	CALO11	**
Brassicaceae	<i>Cardamine maxima (Nutt.) Wood</i>	large toothwort	CAMA36	**
Brassicaceae	<i>Cardamine parviflora L.</i>	sand bittercress	CAPA12	**
Brassicaceae	<i>Cardamine pennsylvanica Muhl. ex Willd.</i>	Pennsylvania bittercress	CAPE3	***
Brassicaceae	<i>Cardamine pratensis L.</i>	cuckoo flower	CAPR3	***
Brassicaceae	<i>Cardamine rotundifolia Michx.</i>	American bittercress	CARO3	**
Cyperaceae	<i>Carex abscondita Mackenzie</i>	thicket sedge	CAAB5	**
Cyperaceae	<i>Carex adusta Boott</i>	lesser brown sedge	CAAD2	**

Cyperaceae	<i>Carex aestivalis</i> M.A. Curtis ex Gray	summer sedge	CAAE2	**
Cyperaceae	<i>Carex aggregata</i> Mackenzie	glomerate sedge	CAAG2	**
Cyperaceae	<i>Carex alata</i> Torr.	broadwing sedge	CAAL3	**
Cyperaceae	<i>Carex albicans</i> Willd. ex Spreng.	whitetinge sedge	CAAL25	**
Cyperaceae	<i>Carex albicans</i> Willd. ex Spreng. var. <i>albicans</i>	whitetinge sedge	CAALA	**
Cyperaceae	<i>Carex albicans</i> Willd. ex Spreng. var. <i>emmonsii</i> (Dewey ex Torr.) J. Rettig	Emmons' sedge	CAALE	**
Cyperaceae	<i>Carex albolutescens</i> Schwein.	greenwhite sedge	CAAL5	**
Cyperaceae	<i>Carex albursina</i> Sheldon	white bear sedge	CAAL11	**
Cyperaceae	<i>Carex alopecoidea</i> Tuckerman	foxtail sedge	CAAL8	**
Cyperaceae	<i>Carex amphibola</i> Steud.	eastern narrowleaf sedge	CAAM8	**
Cyperaceae	<i>Carex annectens</i> (Bickn.) Bickn.	yellowfruit sedge	CAAN6	***
Cyperaceae	<i>Carex appalachica</i> J. Webber & P.W. Ball	Appalachian sedge	CAAP5	**
Cyperaceae	<i>Carex aquatilis</i> Wahlenb.	water sedge	CAAQ	**
Cyperaceae	<i>Carex arctata</i> Boott ex Hook.	drooping woodland sedge	CAAR3	**
Cyperaceae	<i>Carex argyrantha</i> Tuckerman	hay sedge	CAAR4	**
Cyperaceae	<i>Carex atlantica</i> Bailey	prickly bog sedge	CAAT4	**
Cyperaceae	<i>Carex atlantica</i> Bailey ssp. <i>atlantica</i>	prickly bog sedge	CAATA2	**
Cyperaceae	<i>Carex atlantica</i> Bailey ssp. <i>capillacea</i> (Bailey) Reznicek	prickly bog sedge	CAATC	**
Cyperaceae	<i>Carex aurea</i> Nutt.	golden sedge	CAAU3	**
Cyperaceae	<i>Carex baileyi</i> Britt.	Bailey's sedge	CABA7	**
Cyperaceae	<i>Carex barrattii</i> Schwein. & Torr.	Barratt's sedge	CABA9	**
Cyperaceae	<i>Carex bebbii</i> Olney ex Fern.	Bebb's sedge	CABE2	**
Cyperaceae	<i>Carex bicknellii</i> Britt.	Bicknell's sedge	CABI3	**
Cyperaceae	<i>Carex blanda</i> Dewey	eastern woodland sedge	CABL	***
Cyperaceae	<i>Carex brevior</i> (Dewey) Mackenzie	shortbeak sedge	CABR10	**
Cyperaceae	<i>Carex bromoides</i> Schkuhr ex Willd.	bromelike sedge	CABR14	**
Cyperaceae	<i>Carex brunnescens</i> (Pers.) Poir.	brownish sedge	CABR15	**
Cyperaceae	<i>Carex bullata</i> Schkuhr ex Willd.	button sedge	CABU7	**
Cyperaceae	<i>Carex bushii</i> Mackenzie	Bush's sedge	CABU5	**
Cyperaceae	<i>Carex buxbaumii</i> Wahlenb.	Buxbaum's sedge	CABU6	**
Cyperaceae	<i>Carex canescens</i> L.	silvery sedge	CACA11	**
Cyperaceae	<i>Carex careyana</i> Torr. ex Dewey	Carey's sedge	CACA14	**
Cyperaceae	<i>Carex castanea</i> Wahlenb.	chestnut sedge	CACA16	**
Cyperaceae	<i>Carex cephaloidea</i> (Dewey) Dewey	thinleaf sedge	CACE2	**
Cyperaceae	<i>Carex cephalophora</i> Muhl. ex Willd.	oval-leaf sedge	CACE	***
Cyperaceae	<i>Carex chordorrhiza</i> Ehrh. ex L. f.	creeping sedge	CACH5	**
Cyperaceae	<i>Carex collinsii</i> Nutt.	Collins' sedge	CACO21	**

Cyperaceae	<i>Carex communis</i> Bailey	fibrousroot sedge	CACO7	**
Cyperaceae	<i>Carex comosa</i> Boott	longhair sedge	CACO8	**
Cyperaceae	<i>Carex complanata</i> Torr. & Hook.	hirsute sedge	CACO9	**
Cyperaceae	<i>Carex conjuncta</i> Boott	soft fox sedge	CACO13	**
Cyperaceae	<i>Carex conoidea</i> Schkuhr ex Willd.	openfield sedge	CACO14	**
Cyperaceae	<i>Carex crawei</i> Dewey	Crawe's sedge	CACR3	**
Cyperaceae	<i>Carex crawfordii</i> Fern.	Crawford's sedge	CACR4	**
Cyperaceae	<i>Carex crinita</i> Lam.	fringed sedge	CACR6	***
Cyperaceae	<i>Carex cristatella</i> Britt.	crested sedge	CACR7	***
Cyperaceae	<i>Carex cryptolepis</i> Mackenzie	northeastern sedge	CACR9	**
Cyperaceae	<i>Carex cumulata</i> (Bailey) Fern.	clustered sedge	CACU3	**
Cyperaceae	<i>Carex davisii</i> Schwein. & Torr.	Davis' sedge	CADA	**
Cyperaceae	<i>Carex debilis</i> Michx.	white edge sedge	CADE5	**
Cyperaceae	<i>Carex debilis</i> Michx. var. <i>rudgei</i> Bailey	white edge sedge	CADER	**
Cyperaceae	<i>Carex deweyana</i> Schwein.	Dewey sedge	CADE9	**
Cyperaceae	<i>Carex diandra</i> Schrank	lesser paniced sedge	CADI4	**
Cyperaceae	<i>Carex digitalis</i> Willd.	slender woodland sedge	CADI5	**
Cyperaceae	<i>Carex disperma</i> Dewey	softleaf sedge	CADI6	**
Cyperaceae	<i>Carex eburnea</i> Boott	bristleleaf sedge	CAEB2	**
Cyperaceae	<i>Carex echinata</i> Murr.	star sedge	CAEC	**
Cyperaceae	<i>Carex emoryi</i> Dewey	Emory's sedge	CAEM2	**
Cyperaceae	<i>Carex exilis</i> Dewey	coastal sedge	CAEX7	**
Cyperaceae	<i>Carex festucacea</i> Schkuhr ex Willd.	fescue sedge	CAFE3	**
Cyperaceae	<i>Carex flaccosperma</i> Dewey	thinfuit sedge	CAFL3	**
Cyperaceae	<i>Carex flava</i> L.	yellow sedge	CAFL4	**
Cyperaceae	<i>Carex foenea</i> Willd.	dryspike sedge	CAFO3	**
Cyperaceae	<i>Carex foenea</i> Willd. var. <i>foenea</i>	dryspike sedge	CAFOF	**
Cyperaceae	<i>Carex folliculata</i> L.	northern long sedge	CAFO6	**
Cyperaceae	<i>Carex formosa</i> Dewey	handsome sedge	CAFO4	**
Cyperaceae	<i>Carex glaucodea</i> Tuckerman ex Olney	blue sedge	CAGL6	**
Cyperaceae	<i>Carex gracilescens</i> Steud.	slender looseflower sedge	CAGR8	**
Cyperaceae	<i>Carex gracillima</i> Schwein.	graceful sedge	CAGR2	**
Cyperaceae	<i>Carex granularis</i> Muhl. ex Willd.	limestone meadow sedge	CAGR3	**
Cyperaceae	<i>Carex granularis</i> Muhl. ex Willd. var. <i>haleana</i> (Olney) Porter	limestone meadow sedge	CAGRH	**
Cyperaceae	<i>Carex grayi</i> Carey	Gray's sedge	CAGR5	**
Cyperaceae	<i>Carex gynandra</i> Schwein.	nodding sedge	CAGY4	**
Cyperaceae	<i>Carex haydenii</i> Dewey	Hayden's sedge	CAHA7	**
Cyperaceae	<i>Carex hirsutella</i> Mackenzie	fuzzy wuzzy sedge	CAHI6	**

Cyperaceae	<i>Carex hirtifolia</i> Mackenzie	pubescent sedge	CAH15	**
Cyperaceae	<i>Carex hitchcockiana</i> Dewey	Hitchcock's sedge	CAH18	**
Cyperaceae	<i>Carex hormathodes</i> Fern.	marsh straw sedge	CAHO8	**
Cyperaceae	<i>Carex hystericina</i> Muhl. ex Willd.	bottlebrush sedge	CAHY4	**
Cyperaceae	<i>Carex interior</i> Bailey	inland sedge	CAIN11	**
Cyperaceae	<i>Carex intumescens</i> Rudge	greater bladder sedge	CAIN12	**
Cyperaceae	<i>Carex lacustris</i> Willd.	hairy sedge	CALA16	**
Cyperaceae	<i>Carex laevivaginata</i> (Kükenth.) Mackenzie	smoothsheath sedge	CALA14	**
Cyperaceae	<i>Carex lasiocarpa</i> Ehrh.	woollyfruit sedge	CALA11	**
Cyperaceae	<i>Carex laxiculmis</i> Schwein.	spreading sedge	CALA18	**
Cyperaceae	<i>Carex laxiflora</i> Lam.	broad looseflower sedge	CALA19	**
Cyperaceae	<i>Carex leavenworthii</i> Dewey	Leavenworth's sedge	CALE6	**
Cyperaceae	<i>Carex lenticularis</i> Michx.	lakeshore sedge	CALE8	**
Cyperaceae	<i>Carex leptalea</i> Wahlenb.	bristlystalked sedge	CALE10	**
Cyperaceae	<i>Carex leptonevia</i> (Fern.) Fern.	nerveless woodland sedge	CALE11	**
Cyperaceae	<i>Carex limosa</i> L.	mud sedge	CALI7	**
Cyperaceae	<i>Carex livida</i> (Wahlenb.) Willd.	livid sedge	CALI	**
Cyperaceae	<i>Carex longii</i> Mackenzie	Long's sedge	CALO5	**
Cyperaceae	<i>Carex lucorum</i> Willd. ex Link	Blue Ridge sedge	CALU17	**
Cyperaceae	<i>Carex lupuliformis</i> Sartwell ex Dewey	false hop sedge	CALU3	**
Cyperaceae	<i>Carex lupulina</i> Muhl. ex Willd.	hop sedge	CALU4	***
Cyperaceae	<i>Carex lurida</i> Wahlenb.	shallow sedge	CALU5	***
Cyperaceae	<i>Carex magellanica</i> Lam. ssp. <i>irrigua</i> (Wahlenb.) Hultén	boreal bog sedge	CAMA12	**
Cyperaceae	<i>Carex mitchelliana</i> M.A. Curtis	Mitchell's sedge	CAMI18	**
Cyperaceae	<i>Carex molesta</i> Mackenzie ex Bright	troublesome sedge	CAMO11	**
Cyperaceae	<i>Carex muehlenbergii</i> Schkuhr ex Willd.	Muhlenberg's sedge	CAMU4	**
Cyperaceae	<i>Carex muehlenbergii</i> Schkuhr ex Willd. var. <i>enervis</i> Boott	Muhlenberg's sedge	CAMUE	**
Cyperaceae	<i>Carex nigra</i> (L.) Reichard	smooth black sedge	CANI5	**
Cyperaceae	<i>Carex nigromarginata</i> Schwein.	black edge sedge	CANI3	**
Cyperaceae	<i>Carex normalis</i> Mackenzie	greater straw sedge	CANO	**
Cyperaceae	<i>Carex oligocarpa</i> Schkuhr ex Willd.	richwoods sedge	CAOL2	**
Cyperaceae	<i>Carex oligosperma</i> Michx.	fewseed sedge	CAOL3	**
Cyperaceae	<i>Carex ovalis</i> Goodenough	eggbract sedge	CAOV8	*
Cyperaceae	<i>Carex pallescens</i> L.	pale sedge	CAPA17	**
Cyperaceae	<i>Carex pauciflora</i> Lightf.	fewflower sedge	CAPA19	**
Cyperaceae	<i>Carex pedunculata</i> Muhl. ex Willd.	longstalk sedge	CAPE4	**
Cyperaceae	<i>Carex peltita</i> Muhl. ex Willd.	woolly sedge	CAPE42	**

Cyperaceae	<i>Carex pensylvanica</i> Lam.	Pennsylvania sedge	CAPE6	***
Cyperaceae	<i>Carex plantaginea</i> Lam.	plantainleaf sedge	CAPL4	**
Cyperaceae	<i>Carex platyphylla</i> Carey	broadleaf sedge	CAPL5	**
Cyperaceae	<i>Carex polymorpha</i> Muhl.	variable sedge	CAPO4	**
Cyperaceae	<i>Carex prairea</i> Dewey ex Wood	prairie sedge	CAPR6	**
Cyperaceae	<i>Carex prasina</i> Wahlenb.	drooping sedge	CAPR12	**
Cyperaceae	<i>Carex projecta</i> Mackenzie	necklace sedge	CAPR9	**
Cyperaceae	<i>Carex pseudocyperus</i> L.	cypresslike sedge	CAPS	**
Cyperaceae	<i>Carex radiata</i> (Wahlenb.) Small	eastern star sedge	CARA8	**
Cyperaceae	<i>Carex retroflexa</i> Muhl. ex Willd.	reflexed sedge	CARE9	**
Cyperaceae	<i>Carex retrorsa</i> Schwein.	knotsheath sedge	CARE4	**
Cyperaceae	<i>Carex rosea</i> Schkuhr ex Willd.	rosy sedge	CARO22	***
Cyperaceae	<i>Carex scabrata</i> Schwein.	eastern rough sedge	CASC13	**
Cyperaceae	<i>Carex schweinitzii</i> Dewey ex Schwein.	Schweinitz's sedge	CASC9	**
Cyperaceae	<i>Carex scoparia</i> Schkuhr ex Willd.	broom sedge	CASC11	***
Cyperaceae	<i>Carex seorsa</i> Howe	weak stellate sedge	CASE6	**
Cyperaceae	<i>Carex silicea</i> Olney	beach sedge	CASI6	**
Cyperaceae	<i>Carex sparganioides</i> Muhl. ex Willd.	burr reed sedge	CASP3	**
Cyperaceae	<i>Carex sprengei</i> Dewey ex Spreng.	Sprengel's sedge	CASP7	**
Cyperaceae	<i>Carex squarrosa</i> L.	squarrose sedge	CASQ2	**
Cyperaceae	<i>Carex sterilis</i> Willd.	dioecious sedge	CAST16	**
Cyperaceae	<i>Carex stipata</i> Muhl. ex Willd.	owlfruit sedge	CAST5	***
Cyperaceae	<i>Carex straminea</i> Willd. ex Schkuhr	eastern straw sedge	CAST6	**
Cyperaceae	<i>Carex striata</i> Michx.	Walter's sedge	CAST41	**
Cyperaceae	<i>Carex striatula</i> Michx.	lined sedge	CAST17	**
Cyperaceae	<i>Carex stricta</i> Lam.	upright sedge	CAST8	***
Cyperaceae	<i>Carex styloflexa</i> Buckl.	bent sedge	CAST9	**
Cyperaceae	<i>Carex swanii</i> (Fern.) Mackenzie	Swan's sedge	CASW	**
Cyperaceae	<i>Carex tenera</i> Dewey	quill sedge	CATE3	**
Cyperaceae	<i>Carex tetanica</i> Schkuhr	rigid sedge	CATE6	**
Cyperaceae	<i>Carex tonsa</i> (Fern.) Bickn.	shaved sedge	CATO10	**
Cyperaceae	<i>Carex tonsa</i> (Fern.) Bickn. var. <i>rugosperma</i> (Mackenzie) Crins	parachute sedge	CATOR	**
Cyperaceae	<i>Carex torta</i> Boott ex Tuckerman	twisted sedge	CATO4	**
Cyperaceae	<i>Carex tribuloides</i> Wahlenb.	blunt broom sedge	CATR7	***
Cyperaceae	<i>Carex trichocarpa</i> Muhl. ex Willd.	hairyfruit sedge	CATR8	**
Cyperaceae	<i>Carex trisperma</i> Dewey	threeseeded sedge	CATR10	**
Cyperaceae	<i>Carex tuckermanii</i> Dewey	Tuckerman's sedge	CATU2	**
Cyperaceae	<i>Carex typhina</i> Michx.	cattail sedge	CATY	**



Cyperaceae	<i>Carex umbellata Schkuhr ex Willd.</i>	parasol sedge	CAUM4	**
Cyperaceae	<i>Carex utriculata Boott</i>	Northwest Territory sedge	CAUT	**
Cyperaceae	<i>Carex venusta Dewey var. minor Boeckl.</i>	darkgreen sedge	CAVEM	**
Cyperaceae	<i>Carex vesicaria L.</i>	blister sedge	CAVE6	*
Cyperaceae	<i>Carex vestita Willd.</i>	velvet sedge	CAVE9	**
Cyperaceae	<i>Carex virescens Muhl. ex Willd.</i>	ribbed sedge	CAVI4	**
Cyperaceae	<i>Carex vulpinoidea Michx.</i>	fox sedge	CAVU2	***
Cyperaceae	<i>Carex willdenowii Schkuhr ex Willd.</i>	Willdenow's sedge	CAWI2	**
Cyperaceae	<i>Carex woodii Dewey</i>	pretty sedge	CAWO2	**
Cyperaceae	<i>Carex xaestivaliformis Mackenzie</i>		CAAE3	**
Betulaceae	<i>Carpinus caroliniana Walt.</i>	American hornbeam	CACA18	***
Juglandaceae	<i>Carya alba (L.) Nutt. ex Ell.</i>	mockernut hickory	CAAL27	***
Juglandaceae	<i>Carya cordiformis (Wangenh.) K. Koch</i>	bitternut hickory	CACO15	***
Juglandaceae	<i>Carya glabra (P. Mill.) Sweet</i>	pignut hickory	CAGL8	***
Juglandaceae	<i>Carya laciniata (Michx. f.) G. Don</i>	shellbark hickory	CALA21	**
Juglandaceae	<i>Carya ovalis (Wangenh.) Sarg.</i>	red hickory	CAOV3	**
Juglandaceae	<i>Carya ovata (P. Mill.) K. Koch</i>	shagbark hickory	CAOV2	***
Fagaceae	<i>Castanea dentata (Marsh.) Borkh.</i>	American chestnut	CADE12	***
Scrophulariaceae	<i>Castilleja coccinea (L.) Spreng.</i>	scarlet Indian paintbrush	CACO17	**
Berberidaceae	<i>Caulophyllum thalictroides (L.) Michx.</i>	blue cohosh	CATH2	***
Rhamnaceae	<i>Ceanothus americanus L.</i>	New Jersey tea	CEAM	***
Celastraceae	<i>Celastrus scandens L.</i>	American bittersweet	CESC	***
Ulmaceae	<i>Celtis occidentalis L.</i>	common hackberry	CEOC	***
Poaceae	<i>Cenchrus longispinus (Hack.) Fern.</i>	mat sandbur	CELO3	**
Poaceae	<i>Cenchrus tribuloides L.</i>	sanddune sandbur	CETR	**
Asteraceae	<i>Centaurea transalpina Schleich. ex DC.</i>	alpine knapweed	CETR6	**
Rubiaceae	<i>Cephalanthus occidentalis L.</i>	common buttonbush	CEOC2	***
Caryophyllaceae	<i>Cerastium nutans Raf.</i>	nodding chickweed	CENU2	**
Ceratophyllaceae	<i>Ceratophyllum demersum L.</i>	coon's tail	CEDE4	**
Ceratophyllaceae	<i>Ceratophyllum echinatum Gray</i>	spineless hornwort	CEEC2	**
Fabaceae	<i>Cercis canadensis L.</i>	eastern redbud	CECA4	***
Apiaceae	<i>Chaerophyllum procumbens (L.) Crantz</i>	spreading chervil	CHPR	**
Fabaceae	<i>Chamaecrista fasciculata (Michx.) Greene</i>	sleepingplant	CHFA2	**
Fabaceae	<i>Chamaecrista nictitans (L.) Moench</i>	partridge pea	CHNI2	**
Cupressaceae	<i>Chamaecyparis thyoides (L.) B.S.P.</i>	Atlantic white cedar	CHTH2	***
Ericaceae	<i>Chamaedaphne calyculata (L.) Moench</i>	leatherleaf	CHCA2	**
Liliaceae	<i>Chamaelirium luteum (L.) Gray</i>	fairywand	CHLU	**
Euphorbiaceae	<i>Chamaesyce glyptosperma (Engelm.) Small</i>	ribseed sandmat	CHGL13	***
Euphorbiaceae	<i>Chamaesyce maculata (L.) Small</i>	spotted sandmat	CHMA15	**

Euphorbiaceae	<i>Chamaesyce nutans</i> (Lag.) Small	eyebane	CHNU9	**
Euphorbiaceae	<i>Chamaesyce polygonifolia</i> (L.) Small	seaside sandmat	CHPO6	**
Euphorbiaceae	<i>Chamaesyce vermiculata</i> (Raf.) House	wormseed sandmat	CHVE5	***
Onagraceae	<i>Chamerion angustifolium</i> (L.) Holub	fireweed	CHAN9	***
Poaceae	<i>Chasmanthium laxum</i> (L.) Yates	slender woodoats	CHLA6	**
Pteridaceae	<i>Cheilanthes lanosa</i> (Michx.) D.C. Eat.	hairy lipfern	CHLA2	**
Scrophulariaceae	<i>Chelone glabra</i> L.	white turtlehead	CHGL2	***
Chenopodiaceae	<i>Chenopodium album</i> L. var. <i>missouriense</i> (Aellen) I.J. Bassett & C.W. Crompton	Missouri lambsquarters	CHALM2	**
Chenopodiaceae	<i>Chenopodium berlandieri</i> Moq. var. <i>bushianum</i> (Aellen) Cronq.	Bush's goosefoot	CHBEB3	**
Chenopodiaceae	<i>Chenopodium berlandieri</i> Moq. var. <i>macrocalycium</i> (Aellen) Cronq.	pitseed goosefoot	CHBEM	**
Chenopodiaceae	<i>Chenopodium rubrum</i> L.	red goosefoot	CHRU	**
Chenopodiaceae	<i>Chenopodium simplex</i> (Torr.) Raf.	mapleleaf goosefoot	CHSI2	***
Chenopodiaceae	<i>Chenopodium standleyanum</i> Aellen	Standley's goosefoot	CHST2	**
Pyrolaceae	<i>Chimaphila maculata</i> (L.) Pursh	striped prince's pine	CHMA3	***
Pyrolaceae	<i>Chimaphila umbellata</i> (L.) W. Bart.	pipsissewa	CHUM	***
Asteraceae	<i>Chrysopsis mariana</i> (L.) Ell.	Maryland goldenaster	CHMA14	**
Saxifragaceae	<i>Chrysosplenium americanum</i> Schwein. ex Hook.	American golden saxifrage	CHAM2	**
Apiaceae	<i>Cicuta bulbifera</i> L.	bulblet-bearing water hemlock	CIBU	**
Apiaceae	<i>Cicuta maculata</i> L.	spotted water hemlock	CIMA2	***
Ranunculaceae	<i>Cimicifuga racemosa</i> (L.) Nutt.	black bugbane	CIRA	***
Poaceae	<i>Cinna arundinacea</i> L.	sweet woodreed	CIAR2	***
Poaceae	<i>Cinna latifolia</i> (Trev. ex Goep.) Griseb.	drooping woodreed	CILA2	**
Onagraceae	<i>Circaea alpina</i> L.	small enchanter's nightshade	CIAL	**
Onagraceae	<i>Circaea lutetiana</i> L.	broadleaf enchanter's nightshade	CILU	***
Asteraceae	<i>Cirsium altissimum</i> (L.) Hill	tall thistle	CIAL2	**
Asteraceae	<i>Cirsium discolor</i> (Muhl. ex Willd.) Spreng.	field thistle	CIDI	***
Asteraceae	<i>Cirsium horridulum</i> Michx.	yellow thistle	CIHO2	***
Asteraceae	<i>Cirsium horridulum</i> Michx. var. <i>horridulum</i>	yellow thistle	CIHOH	*
Asteraceae	<i>Cirsium muticum</i> Michx.	swamp thistle	CIMU	**
Asteraceae	<i>Cirsium pumilum</i> (Nutt.) Spreng.	pasture thistle	CIPU4	***
Cyperaceae	<i>Cladium mariscoides</i> (Muhl.) Torr.	smooth sawgrass	CLMA	**
Portulacaceae	<i>Claytonia caroliniana</i> Michx.	Carolina springbeauty	CLCA	**
Portulacaceae	<i>Claytonia virginica</i> L.	Virginia springbeauty	CLVI3	***
Ranunculaceae	<i>Clematis ochroleuca</i> Ait.	curlyheads	CLOC	**

Ranunculaceae	<i>Clematis virginiana L.</i>	devil's darning needles	CLVI5	***
Clethraceae	<i>Clethra alnifolia L.</i>	coastal sweetpepperbush	CLAL3	***
Liliaceae	<i>Clintonia borealis (Ait.) Raf.</i>	bluebead	CLBO3	**
Liliaceae	<i>Clintonia umbellulata (Michx.) Morong</i>	white clintonia	CLUM2	**
Fabaceae	<i>Clitoria mariana L.</i>	Atlantic pigeonwings	CLMA4	**
Orchidaceae	<i>Coeloglossum viride (L.) Hartman</i>	longbract frog orchid	COVI6	**
Lamiaceae	<i>Collinsonia canadensis L.</i>	richweed	COCA4	***
Santalaceae	<i>Comandra umbellata (L.) Nutt.</i>	bastard toadflax	COUM	**
Rosaceae	<i>Comarum palustre L.</i>	purple marshlocks	COPA28	**
Commelinaceae	<i>Commelina erecta L.</i>	whitemouth dayflower	COER	**
Myricaceae	<i>Comptonia peregrina (L.) Coult.</i>	sweet fern	COPE80	**
Apiaceae	<i>Conioselinum chinense (L.) B.S.P.</i>	Chinese hemlockparsley	COCH2	**
Asteraceae	<i>Conoclinium coelestinum (L.) DC.</i>	blue mistflower	COCO13	***
Orobanchaceae	<i>Conopholis americana (L.) Wallr. f.</i>	American squawroot	COAM	**
Asteraceae	<i>Conyza canadensis (L.) Cronq.</i>	Canadian horseweed	COCA5	**
Asteraceae	<i>Conyza canadensis (L.) Cronq. var. canadensis</i>	Canadian horseweed	COCAC3	***
Asteraceae	<i>Conyza canadensis (L.) Cronq. var. pusilla (Nutt.) Cronq.</i>	Canadian horseweed	COCAP3	**
Asteraceae	<i>Conyza ramosissima Cronq.</i>	dwarf horseweed	CORA4	**
Ranunculaceae	<i>Coptis trifolia (L.) Salisb.</i>	threeleaf goldthread	COTR2	**
Orchidaceae	<i>Corallorrhiza maculata (Raf.) Raf.</i>	summer coralroot	COMA4	**
Orchidaceae	<i>Corallorrhiza odontorhiza (Willd.) Poir.</i>	autumn coralroot	COOD	**
Orchidaceae	<i>Corallorrhiza trifida Chatelain</i>	yellow coralroot	COTR3	**
Empetraceae	<i>Corema conradii (Torr.) Torr. ex Loud.</i>	broom crowberry	COCO9	**
Asteraceae	<i>Coreopsis rosea Nutt.</i>	pink tickseed	CORO	**
Cornaceae	<i>Cornus alternifolia L. f.</i>	alternatleaf dogwood	COAL2	**
Cornaceae	<i>Cornus amomum P. Mill.</i>	silky dogwood	COAM2	***
Cornaceae	<i>Cornus canadensis L.</i>	bunchberry dogwood	COCA13	***
Cornaceae	<i>Cornus florida L.</i>	flowering dogwood	COFL2	***
Cornaceae	<i>Cornus foemina P. Mill.</i>	stiff dogwood	COFO	**
Cornaceae	<i>Cornus racemosa Lam.</i>	gray dogwood	CORA6	***
Cornaceae	<i>Cornus rugosa Lam.</i>	roundleaf dogwood	CORU	**
Cornaceae	<i>Cornus sericea L.</i>	redosier dogwood	COSE16	***
Fumariaceae	<i>Corydalis aurea Willd.</i>	scrambled eggs	COAU2	**
Fumariaceae	<i>Corydalis flavula (Raf.) DC.</i>	yellow fumewort	COFL3	**
Fumariaceae	<i>Corydalis sempervirens (L.) Pers.</i>	rock harlequin	COSE5	**
Betulaceae	<i>Corylus americana Walt.</i>	American hazelnut	COAM3	***
Betulaceae	<i>Corylus cornuta Marsh.</i>	beaked hazelnut	COCO6	***

Betulaceae	<i>Corylus cornuta</i> Marsh. var. <i>cornuta</i>	beaked hazelnut	COCOC2	**
Crassulaceae	<i>Crassula aquatica</i> (L.) Schoenl.	water pygmyweed	CRAQ	**
Rosaceae	<i>Crataegus brainerdii</i> Sarg.	Brainerd's hawthorn	CRBR3	**
Rosaceae	<i>Crataegus calpodendron</i> (Ehrh.) Medik.	pear hawthorn	CRCA	**
Rosaceae	<i>Crataegus chrysoarpa</i> Ashe	fireberry hawthorn	CRCH	**
Rosaceae	<i>Crataegus crus-galli</i> L.	cockspur hawthorn	CRCR2	**
Rosaceae	<i>Crataegus flabellata</i> (Spach) Kirchn.	fanleaf hawthorn	CRFL	**
Rosaceae	<i>Crataegus holmesiana</i> Ashe	Holmes' hawthorn	CRHO5	**
Rosaceae	<i>Crataegus intricata</i> Lange	Copenhagen hawthorn	CRIN3	**
Rosaceae	<i>Crataegus iracunda</i> Beadle	stolonbearing hawthorn	CRIR	**
Rosaceae	<i>Crataegus jesupii</i> Sarg.	Jesup's hawthorn	CRJE	**
Rosaceae	<i>Crataegus</i> L.	hawthorn	CRATA	***
Rosaceae	<i>Crataegus macrosperma</i> Ashe	bigfruit hawthorn	CRMA3	**
Rosaceae	<i>Crataegus mollis</i> Scheele	Arnold hawthorn	CRMO2	**
Rosaceae	<i>Crataegus pedicellata</i> Sarg.	scarlet hawthorn	CRPE	**
Rosaceae	<i>Crataegus pringlei</i> Sarg.	Pringle's hawthorn	CRPR	**
Rosaceae	<i>Crataegus pruinosa</i> (Wendl. f.) K. Koch	waxyfruit hawthorn	CRPR2	**
Rosaceae	<i>Crataegus punctata</i> Jacq.	dotted hawthorn	CRPU	**
Rosaceae	<i>Crataegus submollis</i> Sarg.	Quebec hawthorn	CRSU2	**
Rosaceae	<i>Crataegus succulenta</i> Schrad. ex Link	fleshy hawthorn	CRSU5	**
Rosaceae	<i>Crataegus uniflora</i> Muenchh.	dwarf hawthorn	CRUN	**
Fabaceae	<i>Crotalaria sagittalis</i> L.	arrowhead rattlebox	CRSA4	**
Pteridaceae	<i>Cryptogramma stelleri</i> (Gmel.) Prantl	fragile rockbrake	CRST2	**
Apiaceae	<i>Cryptotaenia canadensis</i> (L.) DC.	Canadian honewort	CRCA9	***
Lamiaceae	<i>Cunila origanoides</i> (L.) Britt.	common dittany	CUOR	**
Lythraceae	<i>Cuphea viscosissima</i> Jacq.	blue waxweed	CUVI	**
Cuscutaceae	<i>Cuscuta cephalanthi</i> Engelm.	buttonbush dodder	CUCE	**
Cuscutaceae	<i>Cuscuta compacta</i> Juss. ex Choisy	compact dodder	CUCO2	**
Cuscutaceae	<i>Cuscuta coryli</i> Engelm.	hazel dodder	CUCO3	**
Cuscutaceae	<i>Cuscuta gronovii</i> Willd. ex J.A. Schultes	scaldweed	CUGR	***
Cuscutaceae	<i>Cuscuta pentagona</i> Engelm.	fiveangled dodder	CUPE3	**
Cuscutaceae	<i>Cuscuta pentagona</i> Engelm. var. <i>pentagona</i>	fiveangled dodder	CUPEP2	**
Cuscutaceae	<i>Cuscuta polygonorum</i> Engelm.	smartweed dodder	CUPO	**
Asclepiadaceae	<i>Cynanchum laeve</i> (Michx.) Pers.	honeyvine	CYLA	**
Boraginaceae	<i>Cynoglossum virginianum</i> L.	wild comfrey	CYVI	**
Boraginaceae	<i>Cynoglossum virginianum</i> L. var. <i>boreale</i> (Fern.) Cooperrider	wild comfrey	CYVIB	**
Cyperaceae	<i>Cyperus aggregatus</i> (Willd.) Endl.	inflatedscale flatsedge	CYAG	**
Cyperaceae	<i>Cyperus bipartitus</i> Torr.	slender flatsedge	CYBI6	**

Cyperaceae	<i>Cyperus croceus</i> Vahl	Baldwin's flatsedge	CYCR6	**
Cyperaceae	<i>Cyperus dentatus</i> Torr.	toothed flatsedge	CYDE2	**
Cyperaceae	<i>Cyperus diandrus</i> Torr.	umbrella flatsedge	CYDI3	***
Cyperaceae	<i>Cyperus echinatus</i> (L.) Wood	globe flatsedge	CYEC2	**
Cyperaceae	<i>Cyperus erythrorhizos</i> Muhl.	redroot flatsedge	CYER2	***
Cyperaceae	<i>Cyperus flavescens</i> L.	yellow flatsedge	CYFL	**
Cyperaceae	<i>Cyperus grayi</i> Torr.	Gray's flatsedge	CYGR2	**
Cyperaceae	<i>Cyperus houghtonii</i> Torr.	Houghton's flatsedge	CYHO	**
Cyperaceae	<i>Cyperus lupulinus</i> (Spreng.) Marcks ssp. <i>lupulinus</i>	Great Plains flatsedge	CYLUL	**
Cyperaceae	<i>Cyperus lupulinus</i> (Spreng.) Marcks ssp. <i>macilentus</i> (Fern.) Marcks	Great Plains flatsedge	CYLUM	**
Cyperaceae	<i>Cyperus odoratus</i> L.	fragrant flatsedge	CYOD	***
Cyperaceae	<i>Cyperus polystachyos</i> Rottb.	manyspike flatsedge	CYPO	**
Cyperaceae	<i>Cyperus polystachyos</i> Rottb. var. <i>texensis</i> (Torr.) Fern.	Texan flatsedge	CYPOT	**
Cyperaceae	<i>Cyperus retrorsus</i> Chapman	pine barren flatsedge	CYRE5	**
Cyperaceae	<i>Cyperus schweinitzii</i> Torr.	Schweinitz's flatsedge	CYSC3	**
Cyperaceae	<i>Cyperus squarrosus</i> L.	bearded flatsedge	CYSQ	**
Cyperaceae	<i>Cyperus strigosus</i> L.	strawcolored flatsedge	CYST	***
Orchidaceae	<i>Cypripedium acaule</i> Ait.	moccasin flower	CYAC3	**
Orchidaceae	<i>Cypripedium arietinum</i> Ait. f.	ram's head lady's slipper	CYAR5	**
Orchidaceae	<i>Cypripedium candidum</i> Muhl. ex Willd.	white lady's slipper	CYCA5	**
Orchidaceae	<i>Cypripedium parviflorum</i> Salisb.	lesser yellow lady's slipper	CYPA19	**
Orchidaceae	<i>Cypripedium pubescens</i> Willd. var. <i>pubescens</i>	greater yellow lady's slipper	CYPUP	**
Orchidaceae	<i>Cypripedium reginae</i> Walt.	showy lady's slipper	CYRE6	**
Dryopteridaceae	<i>Cystopteris bulbifera</i> (L.) Bernh.	bulblet bladderfern	CYBU3	**
Dryopteridaceae	<i>Cystopteris fragilis</i> (L.) Bernh.	brittle bladderfern	CYFR2	**
Dryopteridaceae	<i>Cystopteris protrusa</i> (Weatherby) Blasdell	lowland bladderfern	CYPR4	**
Dryopteridaceae	<i>Cystopteris tenuis</i> (Michx.) Desv.	upland brittle bladderfern	CYTE7	**
Rosaceae	<i>Dalibarda repens</i> L.	robin runaway	DARE	**
Poaceae	<i>Danthonia compressa</i> Austin ex Peck	flattened oatgrass	DACO	***
Poaceae	<i>Danthonia sericea</i> Nutt.	downy danthonia	DASE2	**
Poaceae	<i>Danthonia spicata</i> (L.) Beauv. ex Roemer & J.A. Schultes	poverty oatgrass	DASP2	**
Rosaceae	<i>Dasiphora floribunda</i> (Pursh) Kartesz, comb. nov. ined.	shrubby cinquefoil	DAFL3	**
Lythraceae	<i>Decodon verticillatus</i> (L.) Ell.	swamp loosestrife	DEVE	**
Dennstaedtiaceae	<i>Dennstaedtia punctilobula</i> (Michx.) T. Moore	eastern hayscented fern	DEPU2	***

Dryopteridaceae	<i>Deparia acrostichoides</i> (Sw.) M. Kato	silver false spleenwort	DEAC4	***
Poaceae	<i>Deschampsia caespitosa</i> (L.) Beauv.	tufted hairgrass	DECA18	**
Poaceae	<i>Deschampsia flexuosa</i> (L.) Trin.	wavy hairgrass	DEFL	***
Brassicaceae	<i>Descurainia pinnata</i> (Walt.) Britt.	western tansymustard	DEPI	**
Fabaceae	<i>Desmodium canadense</i> (L.) DC.	showy ticktrefoil	DECA7	***
Fabaceae	<i>Desmodium canescens</i> (L.) DC.	hoary ticktrefoil	DECA8	**
Fabaceae	<i>Desmodium ciliare</i> (Muhl. ex Willd.) DC.	hairy small-leaf ticktrefoil	DECI	**
Fabaceae	<i>Desmodium cuspidatum</i> (Muhl. ex Willd.) DC. ex Loud.	largebract ticktrefoil	DECU	**
Fabaceae	<i>Desmodium glabellum</i> (Michx.) DC.	Dillenius' ticktrefoil	DEGL4	**
Fabaceae	<i>Desmodium glutinosum</i> (Muhl. ex Willd.) Wood	pointedleaf ticktrefoil	DEGL5	***
Fabaceae	<i>Desmodium humifusum</i> (Muhl. ex Bigelow) Beck	eastern trailing ticktrefoil	DEHU3	**
Fabaceae	<i>Desmodium laevigatum</i> (Nutt.) DC.	smooth ticktrefoil	DELA2	**
Fabaceae	<i>Desmodium marilandicum</i> (L.) DC.	smooth small-leaf ticktrefoil	DEMA2	**
Fabaceae	<i>Desmodium nudiflorum</i> (L.) DC.	nakedflower ticktrefoil	DENU4	***
Fabaceae	<i>Desmodium nuttallii</i> (Schindl.) Schub.	Nuttall's ticktrefoil	DENU5	**
Fabaceae	<i>Desmodium obtusum</i> (Muhl. ex Willd.) DC.	stiff ticktrefoil	DEOB5	**
Fabaceae	<i>Desmodium paniculatum</i> (L.) DC.	panicledleaf ticktrefoil	DEPA6	***
Fabaceae	<i>Desmodium pauciflorum</i> (Nutt.) DC.	fewflower ticktrefoil	DEPA7	**
Fabaceae	<i>Desmodium perplexum</i> Schub.	perplexed ticktrefoil	DEPE80	**
Fabaceae	<i>Desmodium rotundifolium</i> DC.	prostrate ticktrefoil	DERO3	***
Fabaceae	<i>Desmodium sessilifolium</i> (Torr.) Torr. & Gray	sessileleaf ticktrefoil	DESE	**
Fumariaceae	<i>Dicentra canadensis</i> (Goldie) Walp.	squirrel corn	DICA	**
Fumariaceae	<i>Dicentra cucullaria</i> (L.) Bernh.	dutchman's breeches	DICU	***
Fumariaceae	<i>Dicentra eximia</i> (Ker-Gawl.) Torr.	turkey corn	DIEX	**
Poaceae	<i>Dichanthelium acuminatum</i> (Sw.) Gould & C.A. Clark	tapered rosette grass	DIAC2	**
Poaceae	<i>Dichanthelium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>acuminatum</i>	tapered rosette grass	DIACA	***
Poaceae	<i>Dichanthelium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>fasciculatum</i> (Torr.) Freckmann	western panicgrass	DIACF	*
Poaceae	<i>Dichanthelium acuminatum</i> (Sw.) Gould & C.A. Clark var. <i>lindheimeri</i> (Nash) Gould & C.A. Clark	Lindheimer panicgrass	DIACL	*
Poaceae	<i>Dichanthelium boreale</i> (Nash) Freckmann	northern panicgrass	DIBO	**
Poaceae	<i>Dichanthelium boscii</i> (Poir.) Gould & C.A. Clark	Bosc's panicgrass	DIBO2	**
Poaceae	<i>Dichanthelium clandestinum</i> (L.) Gould	deertongue	DICL	***

Poaceae	<i>Dichanthelium commutatum</i> (J.A. Schultes) Gould	variable panicgrass	DICO2	**
Poaceae	<i>Dichanthelium depauperatum</i> (Muhl.) Gould	starved panicgrass	DIDE4	**
Poaceae	<i>Dichanthelium dichotomum</i> (L.) Gould	cypress panicgrass	DIDI6	**
Poaceae	<i>Dichanthelium latifolium</i> (L.) Gould & C.A. Clark	broadleaf rosette grass	DILA8	**
Poaceae	<i>Dichanthelium linearifolium</i> (Scribn. ex Nash) Gould	slimleaf panicgrass	DILI2	**
Poaceae	<i>Dichanthelium meridionale</i> (Ashe) Freckmann	matting rosette grass	DIME2	**
Poaceae	<i>Dichanthelium oligosanthos</i> (J.A. Schultes) Gould	Heller's rosette grass	DIOL	**
Poaceae	<i>Dichanthelium oligosanthos</i> (J.A. Schultes) Gould var. <i>oligosanthos</i>	Heller's rosette grass	DILO	**
Poaceae	<i>Dichanthelium oligosanthos</i> (J.A. Schultes) Gould var. <i>scribnerianum</i> (Nash) Gould	Scribner's rosette grass	DIOLS	**
Poaceae	<i>Dichanthelium ovale</i> (Ell.) Gould & C.A. Clark	eggleaf rosette grass	DIOV	**
Poaceae	<i>Dichanthelium ovale</i> (Ell.) Gould & C.A. Clark var. <i>addisonii</i> (Nash) Gould & C.A. Clark	Addison's rosette grass	DIOVA	*
Poaceae	<i>Dichanthelium ovale</i> (Ell.) Gould & C.A. Clark var. <i>ovale</i>	eggleaf rosette grass	DIOVO	**
Poaceae	<i>Dichanthelium sabulorum</i> (Lam.) Gould & C.A. Clark	hemlock rosette grass	DISA5	**
Poaceae	<i>Dichanthelium sabulorum</i> (Lam.) Gould & C.A. Clark var. <i>thinium</i> (A.S. Hitchc. & Chase) Gould & C.A. Clark	hemlock rosette grass	DISAT	**
Poaceae	<i>Dichanthelium scabriusculum</i> (Ell.) Gould & C.A. Clark	woolly rosette grass	DISC2	**
Poaceae	<i>Dichanthelium scoparium</i> (Lam.) Gould	velvet panicum	DISC3	***
Poaceae	<i>Dichanthelium sphaerocarpon</i> (Ell.) Gould	roundseed panicgrass	DISP2	**
Poaceae	<i>Dichanthelium spretum</i> (J.A. Schultes) Freckmann	Eaton's rosette grass	DISP4	**
Poaceae	<i>Dichanthelium villosissimum</i> (Nash) Freckmann	whitehair rosette grass	DIVI7	***
Poaceae	<i>Dichanthelium wrightianum</i> (Scribn.) Freckmann	Wright's rosette grass	DIWR3	**
Poaceae	<i>Dichanthelium xanthophysum</i> (Gray) Freckmann	slender rosette grass	DIXA	**
Caprifoliaceae	<i>Diervilla lonicera</i> P. Mill.	northern bush honeysuckle	DILO	**
Rubiaceae	<i>Diodia teres</i> Walt.	poorjoe	DITE2	**
Dioscoreaceae	<i>Dioscorea villosa</i> L.	wild yam	DIVI4	**
Ebenaceae	<i>Diospyros virginiana</i> L.	common persimmon	DIVI5	**
Dryopteridaceae	<i>Diplazium pycnocarpon</i> (Spreng.) Broun	glade fern	DIPY	**

Thymelaeaceae	<i>Dirca palustris</i> L.	eastern leatherwood	DIPA9	**
Poaceae	<i>Distichlis spicata</i> (L.) Greene	inland saltgrass	DISP	**
Asteraceae	<i>Doellingeria infirma</i> (Michx.) Greene	cornel-leaf whitetop	DOIN2	***
Asteraceae	<i>Doellingeria umbellata</i> (P. Mill.) Nees	parasol whitetop	DOUM2	**
Asteraceae	<i>Doellingeria umbellata</i> (P. Mill.) Nees var. <i>umbellata</i>	parasol whitetop	DOUMU	**
Brassicaceae	<i>Draba reptans</i> (Lam.) Fern.	Carolina draba	DRRE2	**
Droseraceae	<i>Drosera filiformis</i> Raf.	threadleaf sundew	DRFI	**
Droseraceae	<i>Drosera intermedia</i> Hayne	spoonleaf sundew	DRIN3	**
Droseraceae	<i>Drosera rotundifolia</i> L.	roundleaf sundew	DRRO	**
Dryopteridaceae	<i>Dryopteris campyloptera</i> Clarkson	mountain woodfern	DRCA3	**
Dryopteridaceae	<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	spinulose woodfern	DRCA11	***
Dryopteridaceae	<i>Dryopteris celsa</i> (Wm. Palmer) Knowlt., Palmer & Pollard ex Small	log fern	DRCE	**
Dryopteridaceae	<i>Dryopteris clintoniana</i> (D.C. Eat.) Dowell	Clinton's woodfern	DRCL	**
Dryopteridaceae	<i>Dryopteris cristata</i> (L.) Gray	crested woodfern	DRCR4	**
Dryopteridaceae	<i>Dryopteris goldiana</i> (Hook. ex Goldie) Gray	Goldie's woodfern	DRGO	***
Dryopteridaceae	<i>Dryopteris intermedia</i> (Muhl. ex Willd.) Gray	intermediate woodfern	DRIN5	**
Dryopteridaceae	<i>Dryopteris marginalis</i> (L.) Gray	marginal woodfern	DRMA4	**
Dryopteridaceae	<i>Dryopteris xboottii</i> (Tuckerman) Underwood (pro sp.)		DRBO2	**
Cyperaceae	<i>Dulichium arundinaceum</i> (L.) Britt.	threeway sedge	DUAR3	**
Asteraceae	<i>Echinacea purpurea</i> (L.) Moench	eastern purple coneflower	ECPU	**
Poaceae	<i>Echinochloa muricata</i> (Beauv.) Fern. var. <i>microstachya</i> Wieg.	rough barnyardgrass	ECMUM	**
Poaceae	<i>Echinochloa muricata</i> (Beauv.) Fern. var. <i>muricata</i>	rough barnyardgrass	ECMUM2	**
Poaceae	<i>Echinochloa walteri</i> (Pursh) Heller	coast cockspur grass	ECWA	***
Cucurbitaceae	<i>Echinocystis lobata</i> (Michx.) Torr. & Gray	wild cucumber	ECLO	***
Alismataceae	<i>Echinodorus tenellus</i> (Mart.) Buch.	mudbabies	ECTE2	**
Elaeagnaceae	<i>Elaeagnus commutata</i> Bernh. ex Rydb.	silverberry	ELCO	**
Elatinaceae	<i>Elatine americana</i> (Pursh) Arn.	American waterwort	ELAM3	**
Elatinaceae	<i>Elatine minima</i> (Nutt.) Fisch. & C.A. Mey.	small waterwort	ELMI	**
Cyperaceae	<i>Eleocharis acicularis</i> (L.) Roemer & J.A. Schultes	needle spikerush	ELAC	**
Cyperaceae	<i>Eleocharis elliptica</i> Kunth	elliptic spikerush	ELEL4	***
Cyperaceae	<i>Eleocharis engelmannii</i> Steud.	Engelmann's spikerush	ELEN	**
Cyperaceae	<i>Eleocharis equisetoides</i> (Ell.) Torr.	jointed spikesedge	ELEQ	**
Cyperaceae	<i>Eleocharis erythropoda</i> Steud.	bald spikerush	ELER	***
Cyperaceae	<i>Eleocharis fallax</i> Weatherby	creeping spikerush	ELFA	**



Cyperaceae	<i>Eleocharis halophila</i> (Fern. & Brack.) Fern. & Brack.	saltmarsh spikerush	ELHA2	**
Cyperaceae	<i>Eleocharis intermedia</i> J.A. Schultes	matted spikerush	ELIN	**
Cyperaceae	<i>Eleocharis melanocarpa</i> Torr.	blackfruit spikerush	ELME	**
Cyperaceae	<i>Eleocharis microcarpa</i> Torr.	smallfruit spikerush	ELMI2	**
Cyperaceae	<i>Eleocharis obtusa</i> (Willd.) J.A. Schultes	blunt spikerush	ELOB2	**
Cyperaceae	<i>Eleocharis olivacea</i> Torr.	bright green spikerush	ELOL	*
Cyperaceae	<i>Eleocharis olivacea</i> Torr. var. <i>olivacea</i>	bright green spikerush	ELOLO	**
Cyperaceae	<i>Eleocharis ovata</i> (Roth) Roemer & J.A. Schultes	ovate spikerush	ELOV	**
Cyperaceae	<i>Eleocharis palustris</i> (L.) Roemer & J.A. Schultes	common spikerush	ELPA3	**
Cyperaceae	<i>Eleocharis parvula</i> (Roemer & J.A. Schultes) Link ex Bluff, Nees & Schauer	dwarf spikerush	ELPA5	**
Cyperaceae	<i>Eleocharis quadrangulata</i> (Michx.) Roemer & J.A. Schultes	squarestem spikerush	ELQU	**
Cyperaceae	<i>Eleocharis quinqueflora</i> (F.X. Hartmann) Schwarz	fewflower spikerush	ELQU2	**
Cyperaceae	<i>Eleocharis robbinsii</i> Oakes	Robbins' spikerush	ELRO	**
Cyperaceae	<i>Eleocharis rostellata</i> (Torr.) Torr.	beaked spikerush	ELRO2	**
Cyperaceae	<i>Eleocharis tenuis</i> (Willd.) J.A. Schultes	slender spikerush	ELTE	**
Cyperaceae	<i>Eleocharis tenuis</i> (Willd.) J.A. Schultes var. <i>pseudoptera</i> (Weatherby ex Svens.) Svens.	slender spikerush	ELTEP	**
Cyperaceae	<i>Eleocharis tortilis</i> (Link) J.A. Schultes	twisted spikerush	ELTO	**
Cyperaceae	<i>Eleocharis tricostata</i> Torr.	three-angle spikerush	ELTR5	**
Cyperaceae	<i>Eleocharis tuberculosa</i> (Michx.) Roemer & J.A. Schultes	cone-cup spikerush	ELTU	**
Hydrophyllaceae	<i>Ellisia nyctelea</i> (L.) L.	Aunt Lucy	ELNY	**
Hydrocharitaceae	<i>Elodea canadensis</i> Michx.	Canadian waterweed	ELCA7	***
Hydrocharitaceae	<i>Elodea nuttallii</i> (Planch.) St. John	western waterweed	ELNU2	**
Poaceae	<i>Elymus canadensis</i> L.	Canada wildrye	ELCA4	***
Poaceae	<i>Elymus hystrix</i> L.	eastern bottlebrush grass	ELHY	**
Poaceae	<i>Elymus hystrix</i> L. var. <i>hystrix</i>	eastern bottlebrush grass	ELHYH	***
Poaceae	<i>Elymus riparius</i> Wieg.	riverbank wildrye	ELRI	***
Poaceae	<i>Elymus villosus</i> Muhl. ex Willd.	hairy wildrye	ELVI	***
Poaceae	<i>Elymus virginicus</i> L.	Virginia wildrye	ELVI3	***
Poaceae	<i>Elymus virginicus</i> L. var. <i>virginicus</i>	Virginia wildrye	ELVIV	**
Empetraceae	<i>Empetrum nigrum</i> L.	black crowberry	EMNI	**
Orobanchaceae	<i>Epifagus virginiana</i> (L.) W. Bart.	beechdrops	EPVI2	***
Ericaceae	<i>Epigaea repens</i> L.	trailing arbutus	EPRE2	**
Onagraceae	<i>Epilobium ciliatum</i> Raf.	fringed willowherb	EPCI	***
Onagraceae	<i>Epilobium coloratum</i> Biehler	purpleleaf willowherb	EPCO	***

Onagraceae	<i>Epilobium leptophyllum</i> Raf.	bog willowherb	EPLE2	**
Onagraceae	<i>Epilobium palustre</i> L.	marsh willowherb	EPPA	**
Onagraceae	<i>Epilobium strictum</i> Muhl. ex Spreng.	downy willowherb	EPST	**
Equisetaceae	<i>Equisetum arvense</i> L.	field horsetail	EQAR	***
Equisetaceae	<i>Equisetum fluviatile</i> L.	water horsetail	EQFL	**
Equisetaceae	<i>Equisetum hyemale</i> L.	scouringrush horsetail	EQHY	**
Equisetaceae	<i>Equisetum laevigatum</i> A. Braun	smooth horsetail	EQLA	**
Equisetaceae	<i>Equisetum palustre</i> L.	marsh horsetail	EQPA	**
Equisetaceae	<i>Equisetum pratense</i> Ehrh.	meadow horsetail	EQPR	**
Equisetaceae	<i>Equisetum scirpoides</i> Michx.	dwarf scouringrush	EQSC	**
Equisetaceae	<i>Equisetum sylvaticum</i> L.	woodland horsetail	EQSY	**
Equisetaceae	<i>Equisetum variegatum</i> Schleich. ex F. Weber & D.M.H. Mohr	variegated scouringrush	EQVA	**
Equisetaceae	<i>Equisetum xliorale</i> Kühlewein ex Rupr. (pro sp.)		EQLI	**
Poaceae	<i>Eragrostis capillaris</i> (L.) Nees	lace grass	ERCA	***
Poaceae	<i>Eragrostis frankii</i> C.A. Mey. ex Steud.	sandbar lovegrass	ERFR	**
Poaceae	<i>Eragrostis hypnoides</i> (Lam.) B.S.P.	teal lovegrass	ERHY	**
Poaceae	<i>Eragrostis pectinacea</i> (Michx.) Nees ex Steud.	tufted lovegrass	ERPE	***
Poaceae	<i>Eragrostis spectabilis</i> (Pursh) Steud.	purple lovegrass	ERSP	***
Asteraceae	<i>Erechtites hieraciifolia</i> (L.) Raf. ex DC.	American burnweed	ERHI2	***
Asteraceae	<i>Erechtites hieraciifolia</i> (L.) Raf. ex DC. var. <i>hieraciifolia</i>	American burnweed	ERHIH	**
Asteraceae	<i>Erigeron annuus</i> (L.) Pers.	eastern daisy fleabane	ERAN	***
Asteraceae	<i>Erigeron philadelphicus</i> L.	Philadelphia fleabane	ERPH	***
Asteraceae	<i>Erigeron pulchellus</i> Michx.	robin's plantain	ERPU	**
Asteraceae	<i>Erigeron strigosus</i> Muhl. ex Willd.	prairie fleabane	ERST3	***
Eriocaulaceae	<i>Eriocaulon aquaticum</i> (Hill) Druce	sevenangle pipewort	ERAQ2	**
Eriocaulaceae	<i>Eriocaulon compressum</i> Lam.	flattened pipewort	ERCO7	**
Eriocaulaceae	<i>Eriocaulon decangulare</i> L.	tenangle pipewort	ERDE5	**
Eriocaulaceae	<i>Eriocaulon parkeri</i> B.L. Robins.	estuary pipewort	ERPA4	**
Cyperaceae	<i>Eriophorum angustifolium</i> Honckeney	tall cottongrass	ERAN6	**
Cyperaceae	<i>Eriophorum angustifolium</i> Honckeney ssp. <i>subarcticum</i> (Vassiljev) Hultén ex Kartesz & Gandhi	tall cottongrass	ERANS2	**
Cyperaceae	<i>Eriophorum gracile</i> W.D.J. Koch	slender cottongrass	ERGR8	**
Cyperaceae	<i>Eriophorum tenellum</i> Nutt.	fewnerved cottongrass	ERTE12	**
Cyperaceae	<i>Eriophorum vaginatum</i> L. var. <i>vaginatum</i>	tussock cottongrass	ERVAV	**
Cyperaceae	<i>Eriophorum virginicum</i> L.	tawny cottongrass	ERV18	**
Cyperaceae	<i>Eriophorum viridicarinaratum</i> (Engelm.) Fern.	thinleaf cottonsedge	ERV19	**

Apiaceae	<i>Eryngium aquaticum L.</i>	rattlesnakemaster	ERAQ	**
Liliaceae	<i>Erythronium albidum Nutt.</i>	white fawnlily	ERAL9	**
Liliaceae	<i>Erythronium americanum Ker-Gawl.</i>	dogtooth violet	ERAM5	***
Celastraceae	<i>Euonymus americana L.</i>	strawberry bush	EUAM7	**
Celastraceae	<i>Euonymus atropurpurea Jacq.</i>	eastern wahoo	EUAT3	**
Celastraceae	<i>Euonymus obovata Nutt.</i>	running strawberry bush	EUOB9	***
Asteraceae	<i>Eupatorium album L.</i>	white thoroughwort	EUAL2	**
Asteraceae	<i>Eupatorium dubium Willd. ex Poir.</i>	coastalplain joepyeweed	EUDU	**
Asteraceae	<i>Eupatorium fistulosum Barratt</i>	trumpetweed	EUFI	***
Asteraceae	<i>Eupatorium hyssopifolium L.</i>	hyssopleaf thoroughwort	EUHY	**
Asteraceae	<i>Eupatorium hyssopifolium L. var. laciniatum Gray</i>	hyssopleaf thoroughwort	EUHYL	**
Asteraceae	<i>Eupatorium leucolepis (DC.) Torr. &amp; Gray</i>	justiceweed	EULE	**
Asteraceae	<i>Eupatorium maculatum L.</i>	spotted joepyeweed	EUMA6	***
Asteraceae	<i>Eupatorium perfoliatum L.</i>	common boneset	EUPE3	***
Asteraceae	<i>Eupatorium pilosum Walt.</i>	rough boneset	EUPI2	**
Asteraceae	<i>Eupatorium purpureum L.</i>	sweetscented joepyeweed	EUPU10	***
Asteraceae	<i>Eupatorium resinosum Torr. ex DC.</i>	Pine Barren thoroughwort	EURE8	**
Asteraceae	<i>Eupatorium rotundifolium L.</i>	roundleaf thoroughwort	EURO4	**
Asteraceae	<i>Eupatorium rotundifolium L. var. ovatum (Bigelow) Torr.</i>	roundleaf thoroughwort	EUROO	**
Euphorbiaceae	<i>Euphorbia corollata L.</i>	flowering spurge	EUCO10	**
Euphorbiaceae	<i>Euphorbia ipecacuanhae L.</i>	American ipecac	EUIP	**
Asteraceae	<i>Eurybia compacta Nesom</i>	slender aster	EUCO37	**
Asteraceae	<i>Eurybia divaricata (L.) Nesom</i>	white wood aster	EUDI16	***
Asteraceae	<i>Eurybia macrophylla (L.) Cass.</i>	bigleaf aster	EUMA27	**
Asteraceae	<i>Eurybia radula (Ait.) Nesom</i>	low rough aster	EURA10	**
Asteraceae	<i>Eurybia schreberi (Nees) Nees</i>	Schreber's aster	EUSC5	***
Asteraceae	<i>Eurybia spectabilis (Ait.) Nesom</i>	western showy aster	EUSP3	**
Asteraceae	<i>Euthamia graminifolia (L.) Nutt.</i>	flat-top goldentop	EUGR5	***
Asteraceae	<i>Euthamia graminifolia (L.) Nutt. var. graminifolia</i>	flat-top goldentop	EUGRG	**
Asteraceae	<i>Euthamia graminifolia (L.) Nutt. var. nuttallii (Greene) W. Stone</i>	flat-top goldentop	EUGRN	**
Asteraceae	<i>Euthamia tenuifolia (Pursh) Nutt.</i>	slender goldentop	EUTE7	***
Asteraceae	<i>Euthamia tenuifolia (Pursh) Nutt. var. tenuifolia</i>	slender goldentop	EUTET	*
Fagaceae	<i>Fagus grandifolia Ehrh.</i>	American beech	FAGR	***
Poaceae	<i>Festuca rubra L.</i>	red fescue	FERU2	***
Poaceae	<i>Festuca subverticillata (Pers.) Alexeev</i>	nodding fescue	FESU3	**
Rosaceae	<i>Filipendula rubra (Hill) B.L. Robins.</i>	queen of the prairie	FIRU2	**

Cyperaceae	<i>Fimbristylis autumnalis</i> (L.) Roemer & J.A. Schultes	slender fimbry	FIAU2	**
Cyperaceae	<i>Fimbristylis caroliniana</i> (Lam.) Fern.	Carolina fimbry	FICA3	**
Cyperaceae	<i>Fimbristylis castanea</i> (Michx.) Vahl	marsh fimbry	FICA4	**
Cyperaceae	<i>Fimbristylis puberula</i> (Michx.) Vahl	hairy fimbry	FIPU	**
Limnanthaceae	<i>Floerkea proserpinacoides</i> Willd.	false mermaidweed	FLPR	***
Rosaceae	<i>Fragaria vesca</i> L. ssp. <i>vesca</i>	woodland strawberry	FRVEV	**
Rosaceae	<i>Fragaria virginiana</i> Duchesne	Virginia strawberry	FRVI	***
Oleaceae	<i>Fraxinus americana</i> L.	white ash	FRAM2	***
Oleaceae	<i>Fraxinus nigra</i> Marsh.	black ash	FRNI	***
Oleaceae	<i>Fraxinus pennsylvanica</i> Marsh.	green ash	FRPE	***
Cyperaceae	<i>Fuirena pumila</i> (Torr.) Spreng.	dwarf umbrella-sedge	FUPU	**
Cyperaceae	<i>Fuirena squarrosa</i> Michx.	hairy umbrella-sedge	FUSQ	**
Fabaceae	<i>Galactia regularis</i> (L.) B.S.P.	eastern milkpea	GARE2	**
Fabaceae	<i>Galactia volubilis</i> (L.) Britt.	downy milkpea	GAVO	**
Orchidaceae	<i>Galearis spectabilis</i> (L.) Raf.	showy orchid	GASP5	**
Rubiaceae	<i>Galium aparine</i> L.	stickywilly	GAAP2	***
Rubiaceae	<i>Galium asprellum</i> Michx.	rough bedstraw	GAAS2	***
Rubiaceae	<i>Galium boreale</i> L.	northern bedstraw	GABO2	**
Rubiaceae	<i>Galium circaezans</i> Michx.	licorice bedstraw	GACI2	***
Rubiaceae	<i>Galium labradoricum</i> (Wieg.) Wieg.	northern bog bedstraw	GALA2	**
Rubiaceae	<i>Galium lanceolatum</i> Torr.	lanceleaf wild licorice	GALA3	**
Rubiaceae	<i>Galium obtusum</i> Bigelow	bluntleaf bedstraw	GAOB	**
Rubiaceae	<i>Galium obtusum</i> Bigelow ssp. <i>obtusum</i>	bluntleaf bedstraw	GAOBO	**
Rubiaceae	<i>Galium palustre</i> L.	common marsh bedstraw	GAPA3	**
Rubiaceae	<i>Galium pilosum</i> Ait.	hairy bedstraw	GAPI2	**
Rubiaceae	<i>Galium pilosum</i> Ait. var. <i>pilosum</i>	hairy bedstraw	GAPIP3	**
Rubiaceae	<i>Galium pilosum</i> Ait. var. <i>puncticulosum</i> (Michx.) Torr. & Gray	hairy bedstraw	GAPIP	**
Rubiaceae	<i>Galium tinctorium</i> L.	stiff marsh bedstraw	GATI	**
Rubiaceae	<i>Galium trifidum</i> L.	threepetal bedstraw	GATR2	**
Rubiaceae	<i>Galium triflorum</i> Michx.	fragrant bedstraw	GATR3	***
Asteraceae	<i>Gamochoeta purpurea</i> (L.) Cabrera	spoonleaf purple everlasting	GAPU3	**
Ericaceae	<i>Gaultheria hispidula</i> (L.) Muhl. ex Bigelow	creeping snowberry	GAHI2	**
Ericaceae	<i>Gaultheria procumbens</i> L.	eastern teaberry	GAPR2	***
Onagraceae	<i>Gaura biennis</i> L.	biennial beeblossom	GABI2	**
Ericaceae	<i>Gaylussacia baccata</i> (Wangenh.) K. Koch	black huckleberry	GABA	**
Ericaceae	<i>Gaylussacia dumosa</i> (Andr.) Torr. & Gray	dwarf huckleberry	GADU	**

Ericaceae	<i>Gaylussacia frondosa</i> (L.) Torr. & Gray ex Torr.	blue huckleberry	GAFR2	**
Gentianaceae	<i>Gentiana alba</i> Muhl. ex Nutt.	plain gentian	GEAL4	**
Gentianaceae	<i>Gentiana andrewsii</i> Griseb.	closed bottle gentian	GEAN	**
Gentianaceae	<i>Gentiana clausa</i> Raf.	bottle gentian	GECL	**
Gentianaceae	<i>Gentiana linearis</i> Froel.	narrowleaf gentian	GELI3	**
Gentianaceae	<i>Gentiana saponaria</i> L.	harvestbells	GESA	**
Gentianaceae	<i>Gentianella quinquefolia</i> (L.) Small	agueweed	GEQU2	**
Gentianaceae	<i>Gentianopsis crinita</i> (Froel.) Ma	greater fringed gentian	GECR2	**
Geraniaceae	<i>Geranium bicknellii</i> Britt.	Bicknell's cranesbill	GEBI2	***
Geraniaceae	<i>Geranium carolinianum</i> L.	Carolina geranium	GECA5	***
Geraniaceae	<i>Geranium carolinianum</i> L. var. <i>sphaerospermum</i> (Fern.) Breitung	Carolina geranium	GECAS	**
Geraniaceae	<i>Geranium maculatum</i> L.	spotted geranium	GEMA	***
Rosaceae	<i>Geum aleppicum</i> Jacq.	yellow avens	GEAL3	**
Rosaceae	<i>Geum canadense</i> Jacq.	white avens	GECA7	***
Rosaceae	<i>Geum laciniatum</i> Murr.	rough avens	GELA	**
Rosaceae	<i>Geum rivale</i> L.	purple avens	GERI2	**
Rosaceae	<i>Geum vernum</i> (Raf.) Torr. & Gray	spring avens	GEVE	**
Rosaceae	<i>Geum virginianum</i> L.	cream avens	GEVI4	**
Primulaceae	<i>Glaux maritima</i> L.	sea milkwort	GLMA	**
Poaceae	<i>Glyceria acutiflora</i> Torr.	creeping mannagrass	GLAC	**
Poaceae	<i>Glyceria borealis</i> (Nash) Batchelder	small floating mannagrass	GLBO	**
Poaceae	<i>Glyceria canadensis</i> (Michx.) Trin.	rattlesnake mannagrass	GLCA	**
Poaceae	<i>Glyceria grandis</i> S. Wats.	American mannagrass	GLGR	**
Poaceae	<i>Glyceria laxa</i> (Scribn.) Scribn.	limp mannagrass	GLLA	**
Poaceae	<i>Glyceria melicaria</i> (Michx.) F.T. Hubbard	melic mannagrass	GLME2	**
Poaceae	<i>Glyceria obtusa</i> (Muhl.) Trin.	Atlantic mannagrass	GLOB	**
Poaceae	<i>Glyceria septentrionalis</i> A.S. Hitchc.	floating mannagrass	GLSE3	**
Poaceae	<i>Glyceria striata</i> (Lam.) A.S. Hitchc.	fowl mannagrass	GLST	***
Orchidaceae	<i>Goodyera pubescens</i> (Willd.) R. Br. ex Ait. f.	downy rattlesnake plantain	GOPU	**
Orchidaceae	<i>Goodyera repens</i> (L.) R. Br. ex Ait. f.	lesser rattlesnake plantain	GORE2	**
Orchidaceae	<i>Goodyera tessellata</i> Lodd.	checkered rattlesnake plantain	GOTE	**
Scrophulariaceae	<i>Gratiola aurea</i> Pursh	golden hedgehyssop	GRAU	***
Scrophulariaceae	<i>Gratiola neglecta</i> Torr.	clammy hedgehyssop	GRNE	**
Dryopteridaceae	<i>Gymnocarpium dryopteris</i> (L.) Newman	western oakfern	GYDR	**
Boraginaceae	<i>Hackelia virginiana</i> (L.) I.M. Johnston	beggarslice	HAVI2	**
Gentianaceae	<i>Halenia deflexa</i> (Sm.) Griseb.	American spurred gentian	HADE2	**
Hamamelidaceae	<i>Hamamelis virginiana</i> L.	American witchhazel	HAVI4	***

Asteraceae	<i>Hasteola suaveolens</i> (L.) Pojark.	false Indian plaintain	HASU3	**
Lamiaceae	<i>Hedeoma hispida</i> Pursh	rough false pennyroyal	HEHI	**
Lamiaceae	<i>Hedeoma pulegioides</i> (L.) Pers.	American false pennyroyal	HEPU	**
Asteraceae	<i>Helenum autumnale</i> L.	common sneezeweed	HEAU	**
Asteraceae	<i>Helenum autumnale</i> L. var. <i>autumnale</i>	common sneezeweed	HEAUA	**
Asteraceae	<i>Helenum flexuosum</i> Raf.	purplehead sneezeweed	HEFL	**
Cistaceae	<i>Helianthemum bicknellii</i> Fern.	hoary frostweed	HEBI2	**
Cistaceae	<i>Helianthemum canadense</i> (L.) Michx.	longbranch frostweed	HECA3	**
Cistaceae	<i>Helianthemum dumosum</i> (Bickn.) Fern.	bushy frostweed	HEDU	**
Cistaceae	<i>Helianthemum propinquum</i> Bickn.	low frostweed	HEPR	**
Asteraceae	<i>Helianthus angustifolius</i> L.	swamp sunflower	HEAN2	**
Asteraceae	<i>Helianthus decapetalus</i> L.	thinleaf sunflower	HEDE	***
Asteraceae	<i>Helianthus divaricatus</i> L.	woodland sunflower	HEDI2	***
Asteraceae	<i>Helianthus giganteus</i> L.	giant sunflower	HEGI	***
Asteraceae	<i>Helianthus strumosus</i> L.	paleleaf woodland sunflower	HEST	**
Asteraceae	<i>Heliopsis helianthoides</i> (L.) Sweet	smooth oxeye	HEHE5	**
Liliaceae	<i>Helonias bullata</i> L.	swamppink	HEBU	**
Ranunculaceae	<i>Hepatica nobilis</i> Schreb.	hepatica	HENO2	**
Ranunculaceae	<i>Hepatica nobilis</i> Schreb. var. <i>acuta</i> (Pursh) Steyermark	sharplobe hepatica	HENOA	**
Ranunculaceae	<i>Hepatica nobilis</i> Schreb. var. <i>obtusa</i> (Pursh) Steyermark	roundlobe hepatica	HENOO	***
Apiaceae	<i>Heracleum maximum</i> Bartr.	common cowparsnip	HEMA80	***
Pontederiaceae	<i>Heteranthera dubia</i> (Jacq.) MacM.	grassleaf mudplantain	HEDU2	**
Pontederiaceae	<i>Heteranthera reniformis</i> Ruiz & Pavón	kidneyleaf mudplantain	HERE	**
Saxifragaceae	<i>Heuchera americana</i> L.	American alumroot	HEAM6	**
Malvaceae	<i>Hibiscus moscheutos</i> L.	crimson-eyed rosemallow	HIMO	**
Asteraceae	<i>Hieracium canadense</i> Michx.	Canadian hawkweed	HICA3	**
Asteraceae	<i>Hieracium gronovii</i> L.	queendevil	HIGR3	**
Asteraceae	<i>Hieracium kalmii</i> L.	Kalm's hawkweed	HIKA2	**
Asteraceae	<i>Hieracium paniculatum</i> L.	Allegheny hawkweed	HIPA2	***
Asteraceae	<i>Hieracium scabrum</i> Michx.	rough hawkweed	HISC	**
Asteraceae	<i>Hieracium venosum</i> L.	rattlesnakeweed	HIVE	**
Asteraceae	<i>Hieracium xmarianum</i> Willd. (pro sp.)		HIMA	**
Poaceae	<i>Hierochloa odorata</i> (L.) Beauv.	vanilla grass	HIOD	**
Caryophyllaceae	<i>Honckenya peploides</i> (L.) Ehrh.	seaside sandplant	HOPE	**
Caryophyllaceae	<i>Honckenya peploides</i> (L.) Ehrh. ssp. <i>robusta</i> (Fern.) Hultén	seaside sandplant	HOPER2	**
Primulaceae	<i>Hottonia inflata</i> Ell.	American featherfoil	HOIN	**

Rubiaceae	<i>Houstonia caerulea</i> L.	azure bluet	HOCA4	**
Rubiaceae	<i>Houstonia longifolia</i> Gaertn.	longleaf summer bluet	HOLO	**
Rubiaceae	<i>Houstonia purpurea</i> L.	Venus' pride	HOPU2	**
Cistaceae	<i>Hudsonia ericoides</i> L.	pinebarren goldenheather	HUER	**
Cistaceae	<i>Hudsonia tomentosa</i> Nutt.	woolly beachheather	HUTO	**
Lycopodiaceae	<i>Huperzia lucidula</i> (Michx.) Trevisan	shining clubmoss	HULU2	**
Lycopodiaceae	<i>Huperzia selago</i> (L.) Bernh. ex Mart. & Schrank var. <i>selago</i>	fir clubmoss	HUSES	**
Hydrangeaceae	<i>Hydrangea arborescens</i> L.	wild hydrangea	HYAR	**
Ranunculaceae	<i>Hydrastis canadensis</i> L.	goldenseal	HYCA	**
Apiaceae	<i>Hydrocotyle americana</i> L.	American marshpennywort	HYAM	***
Apiaceae	<i>Hydrocotyle umbellata</i> L.	manyflower marshpennywort	HYUM	**
Apiaceae	<i>Hydrocotyle verticillata</i> Thunb.	whorled marshpennywort	HYVE2	**
Hydrophyllaceae	<i>Hydrophyllum canadense</i> L.	bluntleaf waterleaf	HYCA3	**
Hydrophyllaceae	<i>Hydrophyllum virginianum</i> L.	Shawnee salad	HYVI	***
Clusiaceae	<i>Hypericum adpressum</i> Raf. ex W. Bart.	creeping St. Johnswort	HYAD	**
Clusiaceae	<i>Hypericum ascyron</i> L.	great St. Johnswort	HYAS80	**
Clusiaceae	<i>Hypericum boreale</i> (Britt.) Bickn.	northern St. Johnswort	HYBO2	**
Clusiaceae	<i>Hypericum canadense</i> L.	lesser Canadian St. Johnswort	HYCA7	**
Clusiaceae	<i>Hypericum crux-andreae</i> (L.) Crantz	St. Peterswort	HYCR3	**
Clusiaceae	<i>Hypericum ellipticum</i> Hook.	pale St. Johnswort	HYEL	**
Clusiaceae	<i>Hypericum gentianoides</i> (L.) B.S.P.	orangegrass	HYGE	**
Clusiaceae	<i>Hypericum hypericoides</i> (L.) Crantz ssp. <i>multicaule</i> (Michx. ex Willd.) Robson	St. Andrew's cross	HYHYM	**
Clusiaceae	<i>Hypericum majus</i> (Gray) Britt.	large St. Johnswort	HYMA2	**
Clusiaceae	<i>Hypericum mutilum</i> L.	dwarf St. Johnswort	HYMU	**
Clusiaceae	<i>Hypericum punctatum</i> Lam.	spotted St. Johnswort	HYPUP	***
Iridaceae	<i>Hypoxis hirsuta</i> (L.) Coville	common goldstar	HYHI2	***
Aquifoliaceae	<i>Ilex glabra</i> (L.) Gray	inkberry	ILGL	**
Aquifoliaceae	<i>Ilex laevigata</i> (Pursh) Gray	smooth winterberry	ILLA	**
Aquifoliaceae	<i>Ilex montana</i> Torr. & Gray ex Gray	mountain holly	ILMO	**
Aquifoliaceae	<i>Ilex verticillata</i> (L.) Gray	common winterberry	ILVE	***
Balsaminaceae	<i>Impatiens capensis</i> Meerb.	jewelweed	IMCA	***
Balsaminaceae	<i>Impatiens pallida</i> Nutt.	pale touch-me-not	IMPA	***
Asteraceae	<i>Ionactis linariifolius</i> (L.) Greene	flaxleaf whitetop aster	IOLI2	**
Convolvulaceae	<i>Ipomoea pandurata</i> (L.) G.F.W. Mey.	man of the earth	IPPA	**
Iridaceae	<i>Iris prismatica</i> Pursh ex Ker-Gawl.	slender blue iris	IRPR	**
Iridaceae	<i>Iris versicolor</i> L.	harlequin blueflag	IRVE2	***

Lamiaceae	<i>Isanthus brachiatus</i> (L.) B.S.P.	fluxweed	ISBR3	**
Isoetaceae	<i>Isoetes engelmannii</i> A. Braun	Appalachian quillwort	ISEN	**
Isoetaceae	<i>Isoetes lacustris</i> L.	lake quillwort	ISLA	**
Isoetaceae	<i>Isoetes riparia</i> Engelm. ex A. Braun	shore quillwort	ISRI	**
Isoetaceae	<i>Isoetes tenella</i> Léman	spiny-spore quillwort	ISTE5	**
Isoetaceae	<i>Isoetes tuckermanii</i> A. Braun	Tuckerman's quillwort	ISTU	**
Isoetaceae	<i>Isoetes xeatonii</i> Dodge (pro sp.)		ISEA	**
Isoetaceae	<i>Isoetes xfoveolata</i> A.A. Eat. ex Dodge (pro sp.)		ISFO	**
Orchidaceae	<i>Isotria medeoloides</i> (Pursh) Raf.	green fiveleaf orchid	ISME2	**
Orchidaceae	<i>Isotria verticillata</i> Raf.	purple fiveleaf orchid	ISVE	**
Asteraceae	<i>Iva frutescens</i> L.	Jesuit's bark	IVFR	**
Berberidaceae	<i>Jeffersonia diphylla</i> (L.) Pers.	twinleaf	JEDI	**
Juglandaceae	<i>Juglans cinerea</i> L.	butternut	JUCI	***
Juglandaceae	<i>Juglans nigra</i> L.	black walnut	JUNI	***
Juncaceae	<i>Juncus acuminatus</i> Michx.	tapertip rush	JUAC	**
Juncaceae	<i>Juncus articulatus</i> L.	jointleaf rush	JUAR4	**
Juncaceae	<i>Juncus balticus</i> Willd.	Baltic rush	JUBA	**
Juncaceae	<i>Juncus biflorus</i> Ell.	bog rush	JUBI	**
Juncaceae	<i>Juncus brachycarpus</i> Engelm.	whiteroot rush	JUBR	**
Juncaceae	<i>Juncus brachycephalus</i> (Engelm.) Buch.	smallhead rush	JUBR2	**
Juncaceae	<i>Juncus brevicaudatus</i> (Engelm.) Fern.	narrowpanicle rush	JUBR4	**
Juncaceae	<i>Juncus bufonius</i> L.	toad rush	JUBU	**
Juncaceae	<i>Juncus canadensis</i> J. Gay ex Laharpe	Canadian rush	JUCA3	***
Juncaceae	<i>Juncus debilis</i> Gray	weak rush	JUDE	**
Juncaceae	<i>Juncus dichotomus</i> Ell.	forked rush	JUDI	**
Juncaceae	<i>Juncus dudleyi</i> Wieg.	Dudley's rush	JUDU2	**
Juncaceae	<i>Juncus effusus</i> L.	common rush	JUEF	***
Juncaceae	<i>Juncus effusus</i> L. var. <i>conglomeratus</i> (L.) Engelm.	common rush	JUEFC2	**
Juncaceae	<i>Juncus effusus</i> L. var. <i>pylaei</i> (Laharpe) Fern. & Wieg.	common rush	JUEFP2	**
Juncaceae	<i>Juncus effusus</i> L. var. <i>solutus</i> Fern. & Wieg.	lamp rush	JUEFS	**
Juncaceae	<i>Juncus filiformis</i> L.	thread rush	JUFI	**
Juncaceae	<i>Juncus gerardii</i> Loisel.	saltmeadow rush	JUGE	**
Juncaceae	<i>Juncus marginatus</i> Rostk.	grassleaf rush	JUMA4	**
Juncaceae	<i>Juncus militaris</i> Bigelow	bayonet rush	JUMI2	**
Juncaceae	<i>Juncus nodosus</i> L.	knotted rush	JUNO2	**
Juncaceae	<i>Juncus pelocarpus</i> E. Mey.	brownfruit rush	JUPE	**
Juncaceae	<i>Juncus scirpoides</i> Lam.	needlepod rush	JUSC	**



Juncaceae	<i>Juncus secundus</i> Beauv. ex Poir.	lopsided rush	JUSE	**
Juncaceae	<i>Juncus subcaudatus</i> (Engelm.) Coville & Blake	woodland rush	JUSU	**
Juncaceae	<i>Juncus tenuis</i> Willd.	poverty rush	JUTE	***
Juncaceae	<i>Juncus torreyi</i> Coville	Torrey's rush	JUTO	**
Juncaceae	<i>Juncus trifidus</i> L.	highland rush	JUTR2	**
Cupressaceae	<i>Juniperus communis</i> L.	common juniper	JUCO6	***
Cupressaceae	<i>Juniperus virginiana</i> L.	eastern redcedar	JUVI	**
Acanthaceae	<i>Justicia americana</i> (L.) Vahl	American water-willow	JUAM	**
Ericaceae	<i>Kalmia angustifolia</i> L.	sheep laurel	KAAN	***
Ericaceae	<i>Kalmia latifolia</i> L.	mountain laurel	KALA	***
Ericaceae	<i>Kalmia polifolia</i> Wangeh.	bog laurel	KAPO	**
Poaceae	<i>Koeleria macrantha</i> (Ledeb.) J.A. Schultes	prairie Junegrass	KOMA	**
Malvaceae	<i>Kosteletzkya virginica</i> (L.) K. Presl ex Gray	Virginia saltmarsh mallow	KOVI	**
Asteraceae	<i>Krigia biflora</i> (Walt.) Blake	twoflower dwarfdandelion	KRBI	***
Asteraceae	<i>Krigia biflora</i> (Walt.) Blake var. <i>biflora</i>	twoflower dwarfdandelion	KRBIB	**
Asteraceae	<i>Krigia virginica</i> (L.) Willd.	Virginia dwarfdandelion	KRVI	**
Cyperaceae	<i>Kyllinga gracillima</i> Miq.	pasture spikesedge	KYGR	**
Haemodoraceae	<i>Lachnanthes caroliana</i> (Lam.) Dandy	Carolina redroot	LACA5	**
Asteraceae	<i>Lactuca biennis</i> (Moench) Fern.	tall blue lettuce	LABI	***
Asteraceae	<i>Lactuca canadensis</i> L.	Canada lettuce	LACA	***
Asteraceae	<i>Lactuca floridana</i> (L.) Gaertn.	woodland lettuce	LAFL	***
Asteraceae	<i>Lactuca floridana</i> (L.) Gaertn. var. <i>villosa</i> (Jacq.) Cronq.	woodland lettuce	LAFLV	**
Asteraceae	<i>Lactuca hirsuta</i> Muhl. ex Nutt.	hairy lettuce	LAHI	**
Asteraceae	<i>Lactuca xmorssii</i> B.L. Robins. (pro sp.)		LAMO4	**
Urticaceae	<i>Laportea canadensis</i> (L.) Weddell	Canadian woodnettle	LACA3	***
Boraginaceae	<i>Lappula occidentalis</i> (S. Wats.) Greene	flatspine stickseed	LAOC3	**
Pinaceae	<i>Larix laricina</i> (Du Roi) K. Koch	tamarack	LALA	***
Fabaceae	<i>Lathyrus japonicus</i> Willd.	beach pea	LAJA	**
Fabaceae	<i>Lathyrus japonicus</i> Willd. var. <i>maritimus</i> (L.) Kartesz & Gandhi	beach pea	LAJAM	**
Fabaceae	<i>Lathyrus japonicus</i> Willd. var. <i>pellitus</i> Fern.	beach pea	LAJAP2	**
Fabaceae	<i>Lathyrus ochroleucus</i> Hook.	cream pea	LAOC2	**
Fabaceae	<i>Lathyrus palustris</i> L.	marsh pea	LAPA4	***
Fabaceae	<i>Lathyrus venosus</i> Muhl. ex Willd.	veiny pea	LAVE	**
Cistaceae	<i>Lechea intermedia</i> Leggett ex Britt.	largepod pinweed	LEIN	**
Cistaceae	<i>Lechea maritima</i> Leggett ex B.S.P.	beach pinweed	LEMA	**
Cistaceae	<i>Lechea minor</i> L.	thymeleaf pinweed	LEMI	**
Cistaceae	<i>Lechea mucronata</i> Raf.	hairy pinweed	LEMU3	**

Cistaceae	<i>Lechea pulchella</i> Raf.	Leggett's pinweed	LEPU4	**
Cistaceae	<i>Lechea racemulosa</i> Michx.	Illinois pinweed	LERA	**
Cistaceae	<i>Lechea tenuifolia</i> Michx.	narrowleaf pinweed	LETE	**
Ericaceae	<i>Ledum groenlandicum</i> Oeder	bog Labrador tea	LEGR	**
Poaceae	<i>Leersia oryzoides</i> (L.) Sw.	rice cutgrass	LEOR	***
Poaceae	<i>Leersia virginica</i> Willd.	whitegrass	LEVI2	***
Ericaceae	<i>Leiophyllum buxifolium</i> (Berg.) Ell.	sandmyrtle	LEBU	**
Lemnaceae	<i>Lemna minor</i> L.	common duckweed	LEMI3	***
Lemnaceae	<i>Lemna perpusilla</i> Torr.	minute duckweed	LEPE	**
Lemnaceae	<i>Lemna trisulca</i> L.	star duckweed	LETR	**
Lemnaceae	<i>Lemna valdiviana</i> Phil.	valdivia duckweed	LEVA	**
Brassicaceae	<i>Lepidium virginicum</i> L. var. <i>medium</i> (Greene) C.L. Hitchc.	medium pepperweed	LEVIM	**
Poaceae	<i>Leptochloa fusca</i> (L.) Kunth ssp. <i>fascicularis</i> (Lam.) N. Snow	bearded sprangletop	LEFUF	**
Fabaceae	<i>Lespedeza angustifolia</i> (Pursh) Ell.	narrowleaf lespedeza	LEAN	**
Fabaceae	<i>Lespedeza capitata</i> Michx.	roundhead lespedeza	LECA8	**
Fabaceae	<i>Lespedeza hirta</i> (L.) Hornem.	hairy lespedeza	LEHI2	***
Fabaceae	<i>Lespedeza procumbens</i> Michx.	trailing lespedeza	LEPR	***
Fabaceae	<i>Lespedeza repens</i> (L.) W. Bart.	creeping lespedeza	LERE2	**
Fabaceae	<i>Lespedeza stuevei</i> Nutt.	tall lespedeza	LEST5	**
Fabaceae	<i>Lespedeza violacea</i> (L.) Pers.	violet lespedeza	LEVI6	***
Fabaceae	<i>Lespedeza virginica</i> (L.) Britt.	slender lespedeza	LEVI7	***
Fabaceae	<i>Lespedeza xbrittonii</i> Bickn. (pro sp.)		LEBR2	**
Fabaceae	<i>Lespedeza xnuttallii</i> Darl. (pro sp.)		LENU	**
Fabaceae	<i>Lespedeza xoblongifolia</i> (Britt.) W. Stone		LEOB3	**
Fabaceae	<i>Lespedeza xsimulata</i> Mackenzie & Bush (pro sp.)		LESI2	**
Ericaceae	<i>Leucothoe racemosa</i> (L.) Gray	swamp doghobble	LEA4	**
Ericaceae	<i>Leucothoe recurva</i> (Buckl.) Gray	redtwig doghobble	LERE6	**
Asteraceae	<i>Liatris pilosa</i> (Ait.) Willd. var. <i>pilosa</i>	shaggy blazing star	LIPI	**
Asteraceae	<i>Liatris scariosa</i> (L.) Willd.	devil's bite	LISC2	**
Asteraceae	<i>Liatris spicata</i> (L.) Willd.	dense blazing star	LISP	**
Apiaceae	<i>Ligusticum scoticum</i> L.	Scottish licorice-root	LISC3	**
Apiaceae	<i>Lilaeopsis chinensis</i> (L.) Kuntze	eastern grasswort	LICH	**
Liliaceae	<i>Lilium canadense</i> L.	Canada lily	LICA3	**
Liliaceae	<i>Lilium philadelphicum</i> L.	wood lily	LIPH	***
Liliaceae	<i>Lilium superbum</i> L.	turk's-cap lily	LISU	**
Plumbaginaceae	<i>Limonium carolinianum</i> (Walt.) Britt.	Carolina sealavender	LICA17	**
Scrophulariaceae	<i>Limosella australis</i> R. Br.	Welsh mudwort	LIAU6	**

Lauraceae	<i>Lindera benzoin</i> (L.) Blume	northern spicebush	LIBE3	***
Scrophulariaceae	<i>Lindernia dubia</i> (L.) Pennell	yellowseed false pimpernel	LIDU	**
Scrophulariaceae	<i>Lindernia dubia</i> (L.) Pennell var. <i>anagallidea</i> (Michx.) Cooperrider	yellowseed false pimpernel	LIDUA	**
Scrophulariaceae	<i>Lindernia dubia</i> (L.) Pennell var. <i>dubia</i>	yellowseed false pimpernel	LIDUD	**
Caprifoliaceae	<i>Linnaea borealis</i> L.	twinflower	LIBO3	**
Linaceae	<i>Linum intercursum</i> Bickn.	sandplain flax	LIIN	**
Linaceae	<i>Linum medium</i> (Planch.) Britt.	stiff yellow flax	LIME2	**
Linaceae	<i>Linum striatum</i> Walt.	ridged yellow flax	LIST	**
Linaceae	<i>Linum sulcatum</i> Riddell	grooved flax	LISU4	**
Linaceae	<i>Linum sulcatum</i> Riddell var. <i>sulcatum</i>	grooved flax	LISUS	**
Linaceae	<i>Linum virginianum</i> L.	woodland flax	LIVI	**
Orchidaceae	<i>Liparis liliifolia</i> (L.) L.C. Rich. ex Ker-Gawl.	brown widelip orchid	LILI3	**
Orchidaceae	<i>Liparis loeselii</i> (L.) L.C. Rich.	yellow widelip orchid	LILO	**
Cyperaceae	<i>Lipocarpa micrantha</i> (Vahl) G. Tucker	smallflower halfchaff sedge	LIMI12	**
Hamamelidaceae	<i>Liquidambar styraciflua</i> L.	sweetgum	LIST2	***
Magnoliaceae	<i>Liriodendron tulipifera</i> L.	tuliptree	LITU	***
Orchidaceae	<i>Listera australis</i> Lindl.	southern twayblade	LIAU3	**
Orchidaceae	<i>Listera convallarioides</i> (Sw.) Nutt. ex Ell.	broadlipped twayblade	LICO5	**
Orchidaceae	<i>Listera cordata</i> (L.) R. Br. ex Ait. f.	heartleaf twayblade	LICO6	**
Boraginaceae	<i>Lithospermum latifolium</i> Michx.	American stoneseed	LILA2	**
Campanulaceae	<i>Lobelia cardinalis</i> L.	cardinalflower	LOCA2	**
Campanulaceae	<i>Lobelia dortmanna</i> L.	Dortmann's cardinalflower	LODO	**
Campanulaceae	<i>Lobelia inflata</i> L.	Indian-tobacco	LOIN	***
Campanulaceae	<i>Lobelia kalmii</i> L.	Ontario lobelia	LOKA	**
Campanulaceae	<i>Lobelia nuttallii</i> J.A. Schultes	Nuttall's lobelia	LONU	**
Campanulaceae	<i>Lobelia siphilitica</i> L.	great blue lobelia	LOSI	***
Campanulaceae	<i>Lobelia spicata</i> Lam.	palespike lobelia	LOSP	**
Caprifoliaceae	<i>Lonicera canadensis</i> Bartr. ex Marsh.	American fly honeysuckle	LOCA7	***
Caprifoliaceae	<i>Lonicera dioica</i> L.	limber honeysuckle	LODI2	**
Caprifoliaceae	<i>Lonicera hirsuta</i> Eat.	hairy honeysuckle	LOHI	**
Caprifoliaceae	<i>Lonicera sempervirens</i> L.	trumpet honeysuckle	LOSE	**
Caprifoliaceae	<i>Lonicera villosa</i> (Michx.) J.A. Schultes	mountain fly honeysuckle	LOVI	**
Liliaceae	<i>Lophiola aurea</i> Ker-Gawl.	goldencrest	LOAU	**
Onagraceae	<i>Ludwigia alternifolia</i> L.	seedbox	LUAL2	***
Onagraceae	<i>Ludwigia palustris</i> (L.) Ell.	marsh seedbox	LUPA	***
Onagraceae	<i>Ludwigia polycarpa</i> Short & Peter	manyfruit primrose-willow	LUPO	**
Onagraceae	<i>Ludwigia sphaerocarpa</i> Ell.	globefruit primrose-willow	LUSP	**
Fabaceae	<i>Lupinus perennis</i> L.	sundial lupine	LUPE3	**

Juncaceae	<i>Luzula acuminata</i> Raf.	hairy woodrush	LUAC	**
Juncaceae	<i>Luzula bulbosa</i> (Wood) Smyth & Smyth	bulbous woodrush	LUBU	**
Juncaceae	<i>Luzula echinata</i> (Small) F.J. Herm.	hedgehog woodrush	LUEC	**
Juncaceae	<i>Luzula multiflora</i> (Ehrh.) Lej. ssp. <i>multiflora</i> var. <i>multiflora</i>	common woodrush	LUMUM2	**
Juncaceae	<i>Luzula parviflora</i> (Ehrh.) Desv.	smallflowered woodrush	LUPA4	**
Lycopodiaceae	<i>Lycopodiella alopecuroides</i> (L.) Cranfill	foxtail clubmoss	LYAL5	**
Lycopodiaceae	<i>Lycopodiella appressa</i> (Chapman) Cranfill	southern bog clubmoss	LYAP4	**
Lycopodiaceae	<i>Lycopodiella caroliniana</i> (L.) Pichi Sermolli	slender clubmoss	LYCA5	**
Lycopodiaceae	<i>Lycopodiella inundata</i> (L.) Holub	inundated clubmoss	LYIN2	**
Lycopodiaceae	<i>Lycopodium annotinum</i> L.	stiff clubmoss	LYAN2	**
Lycopodiaceae	<i>Lycopodium clavatum</i> L.	running clubmoss	LYCL	**
Lycopodiaceae	<i>Lycopodium complanatum</i> L.	groundcedar	LYCO3	***
Lycopodiaceae	<i>Lycopodium digitatum</i> Dill. ex A. Braun	fan clubmoss	LYDI3	**
Lycopodiaceae	<i>Lycopodium obscurum</i> L.	rare clubmoss	LYOB	***
Lycopodiaceae	<i>Lycopodium tristachyum</i> Pursh	deeproot clubmoss	LYTR	**
Lamiaceae	<i>Lycopus americanus</i> Muhl. ex W. Bart.	American water horehound	LYAM	***
Lamiaceae	<i>Lycopus amplexans</i> Raf.	clasping water horehound	LYAM2	**
Lamiaceae	<i>Lycopus rubellus</i> Moench	taperleaf water horehound	LYRU	**
Lamiaceae	<i>Lycopus uniflorus</i> Michx.	northern bugleweed	LYUN	**
Lamiaceae	<i>Lycopus virginicus</i> L.	Virginia water horehound	LYVI4	**
Lygodiaceae	<i>Lygodium palmatum</i> (Bernh.) Sw.	American climbing fern	LYP3	**
Ericaceae	<i>Lyonia ligustrina</i> (L.) DC.	maleberry	LYLI	**
Ericaceae	<i>Lyonia mariana</i> (L.) D. Don	piedmont staggerbush	LYMA2	**
Primulaceae	<i>Lysimachia ciliata</i> L.	fringed loosestrife	LYCI	***
Primulaceae	<i>Lysimachia hybrida</i> Michx.	lowland yellow loosestrife	LYHY	**
Primulaceae	<i>Lysimachia quadrifolia</i> L.	whorled yellow loosestrife	LYQU2	***
Primulaceae	<i>Lysimachia terrestris</i> (L.) B.S.P.	earth loosestrife	LYTE2	**
Primulaceae	<i>Lysimachia thyrsoiflora</i> L.	tufted loosestrife	LYTH2	**
Primulaceae	<i>Lysimachia xproducta</i> (Gray) Fern. (pro sp.)		LYPR	**
Lythraceae	<i>Lythrum alatum</i> Pursh	winged lythrum	LYAL4	***
Magnoliaceae	<i>Magnolia acuminata</i> (L.) L.	cucumber-tree	MAAC	**
Magnoliaceae	<i>Magnolia virginiana</i> L.	sweetbay	MAVI2	***
Liliaceae	<i>Maianthemum canadense</i> Desf.	Canada mayflower	MACA4	***
Liliaceae	<i>Maianthemum racemosum</i> (L.) Link	feathery false lily of the vally	MARA7	***
Liliaceae	<i>Maianthemum stellatum</i> (L.) Link	starry false lily of the vally	MAST4	***
Liliaceae	<i>Maianthemum trifolium</i> (L.) Sloboda	threeleaf false lily of the vally	MATR4	**
Orchidaceae	<i>Malaxis brachypoda</i> (Gray) Fern.	white adder's-mouth orchid	MABR5	**

Orchidaceae	<i>Malaxis unifolia</i> Michx.	green adder's-mouth orchid	MAUN	**
Rosaceae	<i>Malus coronaria</i> (L.) P. Mill.	sweet crabapple	MACO5	**
Rosaceae	<i>Malus glaucescens</i> Rehd.	Dunbar crabapple	MAGL11	**
Asclepiadaceae	<i>Matelea obliqua</i> (Jacq.) Woods.	climbing milkvine	MAOB2	**
Dryopteridaceae	<i>Matteuccia struthiopteris</i> (L.) Todaro	ostrich fern	MAST	***
Liliaceae	<i>Medeola virginiana</i> L.	Indian cucumber	MEVI	***
Asteraceae	<i>Megalodonta beckii</i> (Torr. ex Spreng.) Greene	Beck's watermarigold	MEBE2	**
Scrophulariaceae	<i>Melampyrum lineare</i> Desr.	narrowleaf cowwheat	MELI2	**
Liliaceae	<i>Melanthium latifolium</i> Desr.	slender bunchflower	MELA4	**
Liliaceae	<i>Melanthium virginicum</i> L.	Virginia bunchflower	MEVI2	**
Menispermaceae	<i>Menispermum canadense</i> L.	common moonseed	MECA3	***
Boraginaceae	<i>Mertensia virginica</i> (L.) Pers. ex Link	Virginia bluebells	MEVI3	**
Scrophulariaceae	<i>Micranthemum micranthemoides</i> (Nutt.) Wettst.	Nuttall's mudflower	MIMI6	**
Asteraceae	<i>Mikania scandens</i> (L.) Willd.	climbing hempvine	MISC	***
Poaceae	<i>Milium effusum</i> L.	American milletgrass	MIEF	**
Scrophulariaceae	<i>Mimulus alatus</i> Ait.	sharpwing monkeyflower	MIAL2	**
Scrophulariaceae	<i>Mimulus ringens</i> L.	Allegheny monkeyflower	MIRI	***
Caryophyllaceae	<i>Minuartia caroliniana</i> (Walt.) Mattf.	pinebarren stitchwort	MICA8	**
Caryophyllaceae	<i>Minuartia groenlandica</i> (Retz.) Ostenf.	Greenland stitchwort	MIGR7	**
Caryophyllaceae	<i>Minuartia michauxii</i> (Fenzl) Farw.	Michaux's stitchwort	MIMI2	**
Caryophyllaceae	<i>Minuartia michauxii</i> (Fenzl) Farw. var. <i>michauxii</i>	Michaux's stitchwort	MIMIM	**
Rubiaceae	<i>Mitchella repens</i> L.	partridgeberry	MIRE	***
Saxifragaceae	<i>Mitella diphylla</i> L.	twoleaf miterwort	MIDI3	**
Saxifragaceae	<i>Mitella nuda</i> L.	naked miterwort	MINU3	**
Caryophyllaceae	<i>Moehringia lateriflora</i> (L.) Fenzl	bluntleaf sandwort	MOLA6	**
Lamiaceae	<i>Monarda clinopodia</i> L.	white bergamot	MOCL	**
Lamiaceae	<i>Monarda didyma</i> L.	scarlet beebalm	MODI	**
Lamiaceae	<i>Monarda fistulosa</i> L.	wild bergamot	MOFI	***
Lamiaceae	<i>Monarda media</i> Willd.	purple bergamot	MOME	**
Lamiaceae	<i>Monarda punctata</i> L.	spotted beebalm	MOPU	**
Pyrolaceae	<i>Moneses uniflora</i> (L.) Gray	single delight	MOUN2	**
Monotropaceae	<i>Monotropa hypopithys</i> L.	pinemap	MOHY3	**
Monotropaceae	<i>Monotropa uniflora</i> L.	Indianpipe	MOUN3	***
Myricaceae	<i>Morella pensylvanica</i> (Mirbel) Kartesz, comb. nov. ined.	northern bayberry	MOPE6	***
Moraceae	<i>Morus rubra</i> L.	red mulberry	MORU2	***
Poaceae	<i>Muhlenbergia capillaris</i> (Lam.) Trin.	hairawn muhly	MUCA2	**

Poaceae	<i>Muhlenbergia frondosa</i> (Poir.) Fern.	wirestem muhly	MUFR2	***
Poaceae	<i>Muhlenbergia glomerata</i> (Willd.) Trin.	spiked muhly	MUGL3	**
Poaceae	<i>Muhlenbergia mexicana</i> (L.) Trin.	Mexican muhly	MUME2	**
Poaceae	<i>Muhlenbergia schreberi</i> J.F. Gmel.	nimblewill	MUSC	***
Poaceae	<i>Muhlenbergia sobolifera</i> (Muhl. ex Willd.) Trin.	rock muhly	MUSO	**
Poaceae	<i>Muhlenbergia sylvatica</i> Torr. ex Gray	woodland muhly	MUSY	**
Poaceae	<i>Muhlenbergia tenuiflora</i> (Willd.) B.S.P.	slender muhly	MUTE	**
Poaceae	<i>Muhlenbergia uniflora</i> (Muhl.) Fern.	bog muhly	MUUN	**
Boraginaceae	<i>Myosotis laxa</i> Lehm.	bay forget-me-not	MYLA	***
Boraginaceae	<i>Myosotis verna</i> Nutt.	spring forget-me-not	MYVE	**
Myricaceae	<i>Myrica gale</i> L.	sweetgale	MYGA	**
Haloragaceae	<i>Myriophyllum farwellii</i> Morong	Farwell's watermilfoil	MYFA2	**
Haloragaceae	<i>Myriophyllum heterophyllum</i> Michx.	twoleaf watermilfoil	MYHE2	**
Haloragaceae	<i>Myriophyllum humile</i> (Raf.) Morong	low watermilfoil	MYHU	**
Haloragaceae	<i>Myriophyllum pinnatum</i> (Walt.) B.S.P.	cutleaf watermilfoil	MYPI	**
Haloragaceae	<i>Myriophyllum sibiricum</i> Komarov	shortspike watermilfoil	MYSI	**
Haloragaceae	<i>Myriophyllum tenellum</i> Bigelow	slender watermilfoil	MYTE	**
Haloragaceae	<i>Myriophyllum verticillatum</i> L.	whorl-leaf watermilfoil	MYVE3	**
Najadaceae	<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt	nodding waternymph	NAFL	**
Najadaceae	<i>Najas gracillima</i> (A. Braun ex Engelm.) <i>Magnus</i>	slender waternymph	NAGR	**
Najadaceae	<i>Najas guadalupensis</i> (Spreng.) Magnus	southern waternymph	NAGU	**
Nelumbonaceae	<i>Nelumbo lutea</i> Willd.	American lotus	NELU	**
Aquifoliaceae	<i>Nemopanthus mucronatus</i> (L.) Loes.	catberry	NEMU2	**
Brassicaceae	<i>Neobeckia aquatica</i> (Eat.) Greene	lakecress	NEAQ2	**
Nymphaeaceae	<i>Nuphar lutea</i> (L.) Sm. ssp. <i>advena</i> (Ait.) Kartesz & Gandhi	yellow pond-lily	NULUA	**
Nymphaeaceae	<i>Nuphar lutea</i> (L.) Sm. ssp. <i>pumila</i> (Timm) E.O. <i>Beal</i>	yellow pond-lily	NULUP2	**
Nymphaeaceae	<i>Nuphar lutea</i> (L.) Sm. ssp. <i>rubrodisca</i> (Morong) <i>Hellquist &amp; Wiersema</i>	yellow pond-lily	NULUR	**
Nymphaeaceae	<i>Nuphar lutea</i> (L.) Sm. ssp. <i>variegata</i> (Dur.) <i>E.O. Beal</i>	variegated yellow pond-lily	NULUV	**
Nymphaeaceae	<i>Nymphaea odorata</i> Ait. ssp. <i>odorata</i>	American white waterlily	NYODO	**
Nymphaeaceae	<i>Nymphaea odorata</i> Ait. ssp. <i>tuberosa</i> (Paine) <i>Wiersma &amp; Hellquist</i>	American white waterlily	NYODT	**
Menyanthaceae	<i>Nymphoides cordata</i> (Ell.) Fern.	little floatingheart	NYCO	**
Nyssaceae	<i>Nyssa sylvatica</i> Marsh.	blackgum	NYSY	***
Asteraceae	<i>Oclemena acuminata</i> (Michx.) Greene	whorled wood aster	OCAC	***
Asteraceae	<i>Oclemena nemoralis</i> (Ait.) Greene	bog aster	OCNE2	**

Asteraceae	<i>Oclemena xblakei</i> (Porter) Nesom		OCBL	*
Onagraceae	<i>Oenothera biennis</i> L.	common evening-primrose	OEBI	***
Onagraceae	<i>Oenothera fruticosa</i> L.	narrowleaf evening-primrose	OEFR	**
Onagraceae	<i>Oenothera fruticosa</i> L. ssp. <i>fruticosa</i>	narrowleaf evening-primrose	OEFRF	**
Onagraceae	<i>Oenothera fruticosa</i> L. ssp. <i>glauca</i> (Michx.) Straley	narrowleaf evening-primrose	OEFRG	**
Onagraceae	<i>Oenothera laciniata</i> Hill	cutleaf evening-primrose	OELA	**
Onagraceae	<i>Oenothera oakesiana</i> (Gray) J.W. Robbins ex S. Wats. & Coult.	Oakes' evening-primrose	OEOA	**
Onagraceae	<i>Oenothera parviflora</i> L.	northern evening-primrose	OEPA5	**
Onagraceae	<i>Oenothera perennis</i> L.	little evening-primrose	OEPE	**
Rubiaceae	<i>Oldenlandia uniflora</i> L.	clustered mille grains	OLUN	**
Asteraceae	<i>Oligoneuron rigidum</i> (L.) Small	stiff goldenrod	OLRI	**
Asteraceae	<i>Oligoneuron rigidum</i> (L.) Small var. <i>rigidum</i>	stiff goldenrod	OLRIR	**
Dryopteridaceae	<i>Onoclea sensibilis</i> L.	sensitive fern	ONSE	***
Boraginaceae	<i>Onosmodium molle</i> Michx. ssp. <i>hispidissimum</i> (Mackenzie) Boivin	softhair marbleseed	ONMOH2	**
Boraginaceae	<i>Onosmodium virginianum</i> (L.) A. DC.	wild Job's tears	ONVI2	**
Ophioglossaceae	<i>Ophioglossum pusillum</i> Raf.	northern adderstongue	OPPU3	**
Ophioglossaceae	<i>Ophioglossum vulgatum</i> L.	southern adderstongue	OPVU	**
Cactaceae	<i>Opuntia humifusa</i> (Raf.) Raf.	devil's-tongue	OPHU	**
Orobanchaceae	<i>Orobanche uniflora</i> L.	oneflowered broomrape	ORUN	**
Araceae	<i>Orontium aquaticum</i> L.	goldenclub	ORAQ	**
Pyrolaceae	<i>Orthilia secunda</i> (L.) House	sidebells wintergreen	ORSE	**
Poaceae	<i>Oryzopsis asperifolia</i> Michx.	roughleaf ricegrass	ORAS	**
Apiaceae	<i>Osmorhiza longistylis</i> (Torr.) DC.	longstyle sweetroot	OSLO	**
Osmundaceae	<i>Osmunda cinnamomea</i> L.	cinnamon fern	OSCI	***
Osmundaceae	<i>Osmunda claytoniana</i> L.	interrupted fern	OSCL2	***
Osmundaceae	<i>Osmunda regalis</i> L.	royal fern	OSRE	**
Osmundaceae	<i>Osmunda regalis</i> L. var. <i>spectabilis</i> (Willd.) Gray	royal fern	OSRES	***
Betulaceae	<i>Ostrya virginiana</i> (P. Mill.) K. Koch	hophornbeam	OSVI	***
Oxalidaceae	<i>Oxalis montana</i> Raf.	mountain woodsorrel	OXMO	**
Oxalidaceae	<i>Oxalis stricta</i> L.	common yellow oxalis	OXST	***
Oxalidaceae	<i>Oxalis violacea</i> L.	violet woodsorrel	OXVI	**
Apiaceae	<i>Oxypolis rigidior</i> (L.) Raf.	stiff cowbane	OXRI	**
Asteraceae	<i>Packera anonyma</i> (Wood) W.A. Weber & A. Löve	Small's ragwort	PAAN6	**
Asteraceae	<i>Packera aurea</i> (L.) A. & D. Löve	golden ragwort	PAAU3	***

Asteraceae	<i>Packera obovata</i> (Muhl. ex Willd.) W.A. Weber & A. Löve	roundleaf ragwort	PAOB6	**
Asteraceae	<i>Packera paupercula</i> (Michx.) A. & D. Löve	balsam groundsel	PAPA20	**
Araliaceae	<i>Panax quinquefolius</i> L.	American ginseng	PAQU	***
Araliaceae	<i>Panax trifolius</i> L.	dwarf ginseng	PATR2	**
Poaceae	<i>Panicum amarum</i> Ell.	bitter panicgrass	PAAM2	**
Poaceae	<i>Panicum capillare</i> L.	witchgrass	PACA6	***
Poaceae	<i>Panicum flexile</i> (Gattinger) Scribn.	wiry panicgrass	PAFL2	**
Poaceae	<i>Panicum gattingeri</i> Nash	Gattinger's panicgrass	PAGA	**
Poaceae	<i>Panicum philadelphicum</i> Bernh. ex Trin.	Philadelphia panicgrass	PAPH	**
Poaceae	<i>Panicum rigidulum</i> Bosc ex Nees var. <i>pubescens</i> (Vasey) Lelong	redtop panicgrass	PARIP	**
Poaceae	<i>Panicum verrucosum</i> Muhl.	warty panicgrass	PAVE2	**
Poaceae	<i>Panicum virgatum</i> L.	switchgrass	PAVI2	***
Urticaceae	<i>Parietaria pensylvanica</i> Muhl. ex Willd.	Pennsylvania pellitory	PAPE5	**
Saxifragaceae	<i>Parnassia glauca</i> Raf.	fen grass of Parnassus	PAGL3	**
Caryophyllaceae	<i>Paronychia argyrocoma</i> (Michx.) Nutt.	silvery nailwort	PAAR4	**
Caryophyllaceae	<i>Paronychia canadensis</i> (L.) Wood	smooth forked nailwort	PACA11	**
Caryophyllaceae	<i>Paronychia fastigiata</i> (Raf.) Fern.	hairy forked nailwort	PAFA3	***
Vitaceae	<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	PAQU2	***
Vitaceae	<i>Parthenocissus vitacea</i> (Knerr) A.S. Hitchc.	woodbine	PAVI5	**
Poaceae	<i>Paspalum laeve</i> Michx.	field paspalum	PALA10	**
Poaceae	<i>Paspalum setaceum</i> Michx.	thin paspalum	PASE5	***
Scrophulariaceae	<i>Pedicularis canadensis</i> L.	Canadian lousewort	PECA	***
Scrophulariaceae	<i>Pedicularis lanceolata</i> Michx.	swamp lousewort	PELA2	**
Pteridaceae	<i>Pellaea atropurpurea</i> (L.) Link	purple cliffbrake	PEAT2	**
Araceae	<i>Peltandra virginica</i> (L.) Schott	green arrow arum	PEVI	***
Scrophulariaceae	<i>Penstemon calycosus</i> Small	longsepal beardtongue	PECA7	**
Scrophulariaceae	<i>Penstemon hirsutus</i> (L.) Willd.	hairy beardtongue	PEHI	**
Scrophulariaceae	<i>Penstemon laevigatus</i> Ait.	eastern smooth beardtongue	PELA8	**
Scrophulariaceae	<i>Penstemon pallidus</i> Small	pale beardtongue	PEPA7	**
Crassulaceae	<i>Penthorum sedoides</i> L.	ditch stonecrop	PESE6	***
Asteraceae	<i>Petasites frigidus</i> (L.) Fries var. <i>palmatus</i> (Ait.) Cronq.	arctic sweet coltsfoot	PEFRP	**
Fabaceae	<i>Phaseolus polystachios</i> (L.) B.S.P.	thicket bean	PHPO2	**
Thelypteridaceae	<i>Phegopteris connectilis</i> (Michx.) Watt	long beechfern	PHCO24	**
Thelypteridaceae	<i>Phegopteris hexagonoptera</i> (Michx.) Fée	broad beechfern	PHHE11	**
Polemoniaceae	<i>Phlox divaricata</i> L.	wild blue phlox	PHDI5	***
Polemoniaceae	<i>Phlox maculata</i> L.	wild sweetwilliam	PHMA4	**



Polemoniaceae	<i>Phlox pilosa L.</i>	downy phlox	PHPI	**
Polemoniaceae	<i>Phlox subulata L.</i>	moss phlox	PHSU3	**
Viscaceae	<i>Phoradendron leucarpum (Raf.) Reveal &amp; M.C. Johnston</i>	oak mistletoe	PHLE14	**
Rosaceae	<i>Photinia floribunda (Lindl.) Robertson &amp; Phipps</i>	purple chokeberry	PHFL9	**
Rosaceae	<i>Photinia melanocarpa (Michx.) Robertson &amp; Phipps</i>	black chokeberry	PHME13	***
Rosaceae	<i>Photinia pyrifolia (Lam.) Robertson &amp; Phipps</i>	red chokeberry	PHPY4	**
Poaceae	<i>Phragmites australis (Cav.) Trin. ex Steud.</i>	common reed	PHAU7	***
Verbenaceae	<i>Phryma leptostachya L.</i>	American lopseed	PHLE5	**
Verbenaceae	<i>Phyla lanceolata (Michx.) Greene</i>	lanceleaf fogfruit	PHLA3	**
Solanaceae	<i>Physalis heterophylla Nees</i>	clammy groundcherry	PHHE5	***
Solanaceae	<i>Physalis longifolia Nutt.</i>	longleaf groundcherry	PHLO4	**
Solanaceae	<i>Physalis pubescens L.</i>	husk tomato	PHPU7	**
Solanaceae	<i>Physalis virginiana P. Mill.</i>	Virginia groundcherry	PHVI5	**
Rosaceae	<i>Physocarpus opulifolius (L.) Maxim.</i>	common ninebark	PHOP	**
Rosaceae	<i>Physocarpus opulifolius (L.) Maxim. var. opulifolius</i>	common ninebark	PHOPO	**
Phytolaccaceae	<i>Phytolacca americana L.</i>	American pokeweed	PHAM4	***
Pinaceae	<i>Picea mariana (P. Mill.) B.S.P.</i>	black spruce	PIMA	**
Pinaceae	<i>Picea rubens Sarg.</i>	red spruce	PIRU	**
Urticaceae	<i>Pilea fontana (Lunell) Rydb.</i>	lesser clearweed	PIFO	**
Urticaceae	<i>Pilea pumila (L.) Gray</i>	Canadian clearweed	PIPU2	***
Pinaceae	<i>Pinus echinata P. Mill.</i>	shortleaf pine	PIEC2	**
Pinaceae	<i>Pinus resinosa Soland.</i>	red pine	PIRE	***
Pinaceae	<i>Pinus rigida P. Mill.</i>	pitch pine	PIRI	***
Pinaceae	<i>Pinus strobus L.</i>	eastern white pine	PIST	***
Pinaceae	<i>Pinus virginiana P. Mill.</i>	Virginia pine	PIVI2	**
Poaceae	<i>Piptatherum canadense (Poir) Barkworth, comb. nov. ined.</i>	Canadian ricegrass	PICA17	**
Poaceae	<i>Piptatherum pungens (Torr.) Barkworth, comb. nov. ined.</i>	mountain ricegrass	PIPU7	**
Poaceae	<i>Piptatherum racemosum Ricker ex A.S. Hitchc.</i>	blackseed ricegrass	PIRA5	**
Poaceae	<i>Piptochaetium avenaceum (L.) Parodi</i>	blackseed speargrass	PIAV	**
Asteraceae	<i>Pityopsis falcata (Pursh) Nutt.</i>	sickleleaf silkgrass	PIFA	**
Plantaginaceae	<i>Plantago cordata Lam.</i>	heartleaf plantain	PLCO2	**
Plantaginaceae	<i>Plantago maritima L.</i>	goose tongue	PLMA3	**
Plantaginaceae	<i>Plantago maritima L. var. juncooides (Lam.) Gray</i>	goose tongue	PLMAJ	**

Plantaginaceae	<i>Plantago pusilla</i> Nutt.	dwarf plantain	PLPU	**
Plantaginaceae	<i>Plantago rugelii</i> Dcne.	blackseed plantain	PLRU	***
Plantaginaceae	<i>Plantago virginica</i> L.	Virginia plantain	PLVI	**
Orchidaceae	<i>Platanthera blephariglottis</i> (Willd.) Lindl.	white fringed orchid	PLBL	**
Orchidaceae	<i>Platanthera ciliaris</i> (L.) Lindl.	yellow fringed orchid	PLCI2	**
Orchidaceae	<i>Platanthera clavellata</i> (Michx.) Luer	small green wood orchid	PLCL	**
Orchidaceae	<i>Platanthera cristata</i> (Michx.) Lindl.	crested yellow orchid	PLCR	**
Orchidaceae	<i>Platanthera dilatata</i> (Pursh) Lindl. ex Beck	scentbottle	PLDI3	**
Orchidaceae	<i>Platanthera flava</i> (L.) Lindl.	palegreen orchid	PLFL	**
Orchidaceae	<i>Platanthera grandiflora</i> (Bigelow) Lindl.	greater purple fringed orchid	PLGR2	**
Orchidaceae	<i>Platanthera hookeri</i> (Torr. ex Gray) Lindl.	Hooker's orchid	PLHO3	**
Orchidaceae	<i>Platanthera hyperborea</i> (L.) Lindl.	northern green orchid	PLHY2	**
Orchidaceae	<i>Platanthera lacera</i> (Michx.) G. Don	green fringed orchid	PLLA2	**
Orchidaceae	<i>Platanthera orbiculata</i> (Pursh) Lindl.	lesser roundleaved orchid	PLOR4	**
Orchidaceae	<i>Platanthera psycodes</i> (L.) Lindl.	lesser purple fringed orchid	PLPS2	**
Platanaceae	<i>Platanus occidentalis</i> L.	American sycamore	PLOC	***
Asteraceae	<i>Pluchea odorata</i> (L.) Cass.	sweetscent	PLOD	**
Asteraceae	<i>Pluchea odorata</i> (L.) Cass. var. <i>succulenta</i> (Fern.) Cronq.	sweetscent	PLODS	**
Poaceae	<i>Poa alsodes</i> Gray	grove bluegrass	POAL3	**
Poaceae	<i>Poa paludigena</i> Fern. & Wieg.	bog bluegrass	POPA	**
Poaceae	<i>Poa palustris</i> L.	fowl bluegrass	POPA2	**
Poaceae	<i>Poa saltuensis</i> Fern. & Wieg.	oldpasture bluegrass	POSA	**
Poaceae	<i>Poa sylvestris</i> Gray	woodland bluegrass	POSY	**
Berberidaceae	<i>Podophyllum peltatum</i> L.	mayapple	POPE	***
Podostemaceae	<i>Podostemum ceratophyllum</i> Michx.	hornleaf riverweed	POCE3	**
Orchidaceae	<i>Pogonia ophioglossoides</i> (L.) Ker-Gawl.	snakemouth orchid	POOP	**
Capparaceae	<i>Polanisia dodecandra</i> (L.) DC.	redwhisker clammyweed	PODO3	**
Polemoniaceae	<i>Polemonium reptans</i> L.	Greek valerian	PORE2	***
Polygalaceae	<i>Polygala ambigua</i> Nutt.	whorled milkwort	POAM9	**
Polygalaceae	<i>Polygala cruciata</i> L.	drumheads	POCR	**
Polygalaceae	<i>Polygala incarnata</i> L.	procession flower	POIN4	**
Polygalaceae	<i>Polygala lutea</i> L.	orange milkwort	POLU	**
Polygalaceae	<i>Polygala nuttallii</i> Torr. & Gray	Nuttall's milkwort	PONU2	**
Polygalaceae	<i>Polygala paucifolia</i> Willd.	gaywings	POPA5	**
Polygalaceae	<i>Polygala polygama</i> Walt.	racemed milkwort	POPO	**
Polygalaceae	<i>Polygala sanguinea</i> L.	purple milkwort	POSA3	**
Polygalaceae	<i>Polygala senega</i> L.	Seneca snakeroot	POSE3	**

Polygalaceae	<i>Polygala verticillata</i> L.	whorled milkwort	POVE	**
Polygalaceae	<i>Polygala verticillata</i> L. var. <i>isocycla</i> Fern.	whorled milkwort	POVEI	**
Liliaceae	<i>Polygonatum biflorum</i> (Walt.) Ell.	smooth Solomon's seal	POBI2	***
Liliaceae	<i>Polygonatum biflorum</i> (Walt.) Ell. var. <i>commutatum</i> (J.A. & J.H. Schultes) Morong	smooth Solomon's seal	POBIC	***
Liliaceae	<i>Polygonatum pubescens</i> (Willd.) Pursh	hairy Solomon's seal	POPU4	**
Polygonaceae	<i>Polygonella articulata</i> (L.) Meisn.	coastal jointweed	POAR4	**
Polygonaceae	<i>Polygonum amphibium</i> L.	water knotweed	POAM8	**
Polygonaceae	<i>Polygonum amphibium</i> L. var. <i>emersum</i> Michx.	longroot smartweed	POAME	**
Polygonaceae	<i>Polygonum amphibium</i> L. var. <i>stipulaceum</i> Coleman	water smartweed	POAMS	**
Polygonaceae	<i>Polygonum arifolium</i> L.	halberdleaf tearthumb	POAR6	***
Polygonaceae	<i>Polygonum buxiforme</i> Small	box knotweed	POBU2	**
Polygonaceae	<i>Polygonum careyi</i> Olney	Carey's smartweed	POCA8	**
Polygonaceae	<i>Polygonum cilinode</i> Michx.	fringed black bindweed	POCI	**
Polygonaceae	<i>Polygonum erectum</i> L.	erect knotweed	POER2	***
Polygonaceae	<i>Polygonum glaucum</i> Nutt.	seaside knotweed	POGL7	**
Polygonaceae	<i>Polygonum hydropiperoides</i> Michx.	swamp smartweed	POHY2	***
Polygonaceae	<i>Polygonum pennsylvanicum</i> L.	Pennsylvania smartweed	POPE2	***
Polygonaceae	<i>Polygonum punctatum</i> Ell.	dotted smartweed	POPU5	***
Polygonaceae	<i>Polygonum punctatum</i> Ell. var. <i>confertiflorum</i> (Meisn.) Fassett	dotted smartweed	POPUC2	**
Polygonaceae	<i>Polygonum punctatum</i> Ell. var. <i>punctatum</i>	dotted smartweed	POPUP4	**
Polygonaceae	<i>Polygonum ramosissimum</i> Michx.	bushy knotweed	PORA3	**
Polygonaceae	<i>Polygonum robustius</i> (Small) Fern.	stout smartweed	PORO	**
Polygonaceae	<i>Polygonum sagittatum</i> L.	arrowleaf tearthumb	POSA5	***
Polygonaceae	<i>Polygonum scandens</i> L.	climbing false buckwheat	POSC3	***
Polygonaceae	<i>Polygonum scandens</i> L. var. <i>cristatum</i> (Engelm. & Gray) Gleason	climbing false buckwheat	POSCC	**
Polygonaceae	<i>Polygonum scandens</i> L. var. <i>dumetorum</i> (L.) Gleason	climbing false buckwheat	POSCD	**
Polygonaceae	<i>Polygonum setaceum</i> Baldw.	bog smartweed	POSE6	**
Polygonaceae	<i>Polygonum tenue</i> Michx.	pleatleaf knotweed	POTE2	**
Polygonaceae	<i>Polygonum virginianum</i> L.	jumpseed	POVI2	***
Asteraceae	<i>Polymnia canadensis</i> L.	whiteflower leafcup	POCA11	**
Polypodiaceae	<i>Polypodium virginianum</i> L.	rock polypody	POVI7	**
Dryopteridaceae	<i>Polystichum acrostichoides</i> (Michx.) Schott	Christmas fern	POAC4	***
Dryopteridaceae	<i>Polystichum braunii</i> (Spenner) Fée	Braun's hollyfern	POBR4	**
Pontederiaceae	<i>Pontederia cordata</i> L.	pickerelweed	POCO14	***
Salicaceae	<i>Populus balsamifera</i> L.	balsam poplar	POBA2	**

Salicaceae	<i>Populus deltoides</i> Bartr. ex Marsh.	eastern cottonwood	PODE3	***
Salicaceae	<i>Populus grandidentata</i> Michx.	bigtooth aspen	POGR4	**
Salicaceae	<i>Populus heterophylla</i> L.	swamp cottonwood	POHE4	**
Salicaceae	<i>Populus tremuloides</i> Michx.	quaking aspen	POTR5	***
Rosaceae	<i>Porteranthus trifolius</i> (L.) Britt.	Bowman's root	POTR11	**
Potamogetonaceae	<i>Potamogeton alpinus</i> Balbis	alpine pondweed	POAL8	**
Potamogetonaceae	<i>Potamogeton amplifolius</i> Tuckerman	largeleaf pondweed	POAM5	**
Potamogetonaceae	<i>Potamogeton confervoides</i> Reichenb.	Tuckerman's pondweed	POCO12	**
Potamogetonaceae	<i>Potamogeton diversifolius</i> Raf.	waterthread pondweed	PODI	**
Potamogetonaceae	<i>Potamogeton epihydrus</i> Raf.	ribbonleaf pondweed	POEP2	**
Potamogetonaceae	<i>Potamogeton foliosus</i> Raf.	leafy pondweed	POFO3	**
Potamogetonaceae	<i>Potamogeton gramineus</i> L.	variableleaf pondweed	POGR8	**
Potamogetonaceae	<i>Potamogeton hillii</i> Morong	Hill's pondweed	POHI4	**
Potamogetonaceae	<i>Potamogeton illinoensis</i> Morong	Illinois pondweed	POIL	**
Potamogetonaceae	<i>Potamogeton</i> L.	pondweed	POTAM	***
Potamogetonaceae	<i>Potamogeton natans</i> L.	floating pondweed	PONA4	**
Potamogetonaceae	<i>Potamogeton nodosus</i> Poir.	longleaf pondweed	PONO2	**
Potamogetonaceae	<i>Potamogeton oakesianus</i> J.W. Robbins	Oakes' pondweed	POOA	**
Potamogetonaceae	<i>Potamogeton obtusifolius</i> Mert. & Koch	bluntleaf pondweed	POOB2	**
Potamogetonaceae	<i>Potamogeton perfoliatus</i> L.	claspingleaf pondweed	POPE7	**
Potamogetonaceae	<i>Potamogeton praelongus</i> Wulfen	whitestem pondweed	POPR5	**
Potamogetonaceae	<i>Potamogeton pulcher</i> Tuckerman	spotted pondweed	POPU6	**
Potamogetonaceae	<i>Potamogeton pusillus</i> L.	small pondweed	POPU7	**
Potamogetonaceae	<i>Potamogeton robbinsii</i> Oakes	Robbins' pondweed	PORO2	**
Potamogetonaceae	<i>Potamogeton spirillus</i> Tuckerman	spiral pondweed	POSP3	**
Potamogetonaceae	<i>Potamogeton vaseyi</i> J.W. Robbins	Vasey's pondweed	POVA3	**
Potamogetonaceae	<i>Potamogeton zosteriformis</i> Fern.	flatstem pondweed	POZO	**
Rosaceae	<i>Potentilla arguta</i> Pursh	tall cinquefoil	POAR7	**
Rosaceae	<i>Potentilla arguta</i> Pursh ssp. <i>arguta</i>	tall cinquefoil	POARA4	**
Rosaceae	<i>Potentilla canadensis</i> L.	dwarf cinquefoil	POCA17	***
Rosaceae	<i>Potentilla norvegica</i> L.	Norwegian cinquefoil	PONO3	***
Rosaceae	<i>Potentilla simplex</i> Michx.	common cinquefoil	POSI2	***
Asteraceae	<i>Prenanthes alba</i> L.	white rattlesnakeroot	PRAL2	***
Asteraceae	<i>Prenanthes altissima</i> L.	tall rattlesnakeroot	PRAL3	***
Asteraceae	<i>Prenanthes racemosa</i> Michx.	purple rattlesnakeroot	PRRA	**
Asteraceae	<i>Prenanthes racemosa</i> Michx. ssp. <i>multiflora</i> Cronq.	purple rattlesnakeroot	PRRAM	**
Asteraceae	<i>Prenanthes serpentaria</i> Pursh	cankerweed	PRSE	**
Asteraceae	<i>Prenanthes trifoliolata</i> (Cass.) Fern.	gall of the earth	PRTR	***

Haloragaceae	<i>Proserpinaca palustris</i> L.	marsh mermaidweed	PRPA3	***
Haloragaceae	<i>Proserpinaca pectinata</i> Lam.	combleaf mermaidweed	PRPE	**
Rosaceae	<i>Prunus alleghaniensis</i> Porter	Allegheny plum	PRAL5	**
Rosaceae	<i>Prunus americana</i> Marsh.	American plum	PRAM	**
Rosaceae	<i>Prunus maritima</i> Marsh.	beach plum	PRMA2	**
Rosaceae	<i>Prunus pensylvanica</i> L. f.	pin cherry	PRPE2	***
Rosaceae	<i>Prunus pumila</i> L.	sandcherry	PRPU3	**
Rosaceae	<i>Prunus pumila</i> L. var. <i>depressa</i> (Pursh) Gleason	eastern sandcherry	PRPUD	**
Rosaceae	<i>Prunus pumila</i> L. var. <i>susquehanae</i> (hort. ex Willd.) Jaeger	Susquehana sandcherry	PRPUS	**
Rosaceae	<i>Prunus serotina</i> Ehrh.	black cherry	PRSE2	***
Rosaceae	<i>Prunus virginiana</i> L.	chokecherry	PRVI	***
Rosaceae	<i>Prunus virginiana</i> L. var. <i>virginiana</i>	chokecherry	PRVIV	**
Asteraceae	<i>Pseudognaphalium helleri</i> (Britt.) A. Anderb. ssp. <i>helleri</i>	Heller's cudweed	PSHEH7	**
Asteraceae	<i>Pseudognaphalium macounii</i> (Greene) Kartesz, comb. nov. ined.	Macoun's cudweed	PSMA11	**
Asteraceae	<i>Pseudognaphalium obtusifolium</i> (L.) Hilliard & Burt	rabbittobacco	PSOB3	***
Rutaceae	<i>Ptelea trifoliata</i> L.	common hoptree	PTTR	**
Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn	western brackenfern	PTAQ	**
Dennstaedtiaceae	<i>Pteridium aquilinum</i> (L.) Kuhn var. <i>latiusculum</i> (Desv.) Underwood ex Heller	western brackenfern	PTAQL	***
Monotropaceae	<i>Pterospora andromedea</i> Nutt.	woodland pinedrops	PTAN2	**
Apiaceae	<i>Ptilimnium capillaceum</i> (Michx.) Raf.	herbwilliam	PTCA	**
Poaceae	<i>Puccinellia fasciculata</i> (Torr.) Bickn.	saltmarsh alkaligrass	PUFA	**
Lamiaceae	<i>Pycnanthemum clinopodioides</i> Torr. & Gray	basil mountainmint	PYCL	**
Lamiaceae	<i>Pycnanthemum incanum</i> (L.) Michx.	hoary mountainmint	PYIN	**
Lamiaceae	<i>Pycnanthemum muticum</i> (Michx.) Pers.	clustered mountainmint	PYMU	**
Lamiaceae	<i>Pycnanthemum setosum</i> Nutt.	awned mountainmint	PYSE2	**
Lamiaceae	<i>Pycnanthemum tenuifolium</i> Schrad.	narrowleaf mountainmint	PYTE	***
Lamiaceae	<i>Pycnanthemum torrei</i> Benth.	Torrey's mountainmint	PYTO	**
Lamiaceae	<i>Pycnanthemum verticillatum</i> (Michx.) Pers.	whorled mountainmint	PYVE	**
Lamiaceae	<i>Pycnanthemum verticillatum</i> (Michx.) Pers. var. <i>pilosum</i> (Nutt.) Cooperrider	whorled mountainmint	PYVEP	**
Lamiaceae	<i>Pycnanthemum verticillatum</i> (Michx.) Pers. var. <i>verticillatum</i>	whorled mountainmint	PYVEV	**
Lamiaceae	<i>Pycnanthemum virginianum</i> (L.) T. Dur. & B.D. Jackson ex B.L. Robins. & Fern.	Virginia mountainmint	PYVI	**
Pyrolaceae	<i>Pyrola americana</i> Sweet	American wintergreen	PYAM	**
Pyrolaceae	<i>Pyrola asarifolia</i> Michx.	liverleaf wintergreen	PYAS	**

Pyrolaceae	<i>Pyrola chlorantha</i> Sw.	greenflowered wintergreen	PYCH	**
Pyrolaceae	<i>Pyrola elliptica</i> Nutt.	waxflower shinleaf	PYEL	**
Diapensiaceae	<i>Pyxidantha barbulate</i> Michx.	flowering pixiemoss	PYBA	**
Fagaceae	<i>Quercus alba</i> L.	white oak	QUAL	***
Fagaceae	<i>Quercus bicolor</i> Willd.	swamp white oak	QUBI	**
Fagaceae	<i>Quercus coccinea</i> Muenchh.	scarlet oak	QUCO2	**
Fagaceae	<i>Quercus macrocarpa</i> Michx.	bur oak	QUMA2	***
Fagaceae	<i>Quercus marilandica</i> Muenchh.	blackjack oak	QUMA3	**
Fagaceae	<i>Quercus muehlenbergii</i> Engelm.	chinkapin oak	QUMU	**
Fagaceae	<i>Quercus palustris</i> Muenchh.	pin oak	QUPA2	***
Fagaceae	<i>Quercus phellos</i> L.	willow oak	QUPH	***
Fagaceae	<i>Quercus prinoides</i> Willd.	dwarf chinkapin oak	QUPR	***
Fagaceae	<i>Quercus prinus</i> L.	chestnut oak	QUPR2	**
Fagaceae	<i>Quercus rubra</i> L.	northern red oak	QURU	***
Fagaceae	<i>Quercus stellata</i> Wangenh.	post oak	QUST	**
Fagaceae	<i>Quercus velutina</i> Lam.	black oak	QUVE	***
Fagaceae	<i>Quercus xbrittonii</i> W.T. Davis (pro sp.)		QUBR	**
Fagaceae	<i>Quercus xheterophylla</i> Michx. f. (pro sp.)		QUHE	**
Fagaceae	<i>Quercus xrudkinii</i> Britt. (pro sp.)		QURU2	**
Fagaceae	<i>Quercus xsaulii</i> Schneid.		QUSA	**
Ranunculaceae	<i>Ranunculus abortivus</i> L.	littleleaf buttercup	RAAB	***
Ranunculaceae	<i>Ranunculus allegheniensis</i> Britt.	Allegheny Mountain buttercup	RAAL2	**
Ranunculaceae	<i>Ranunculus ambigens</i> S. Wats.	waterplantain spearwort	RAAM	**
Ranunculaceae	<i>Ranunculus cymbalaria</i> Pursh	alkali buttercup	RACY	**
Ranunculaceae	<i>Ranunculus fascicularis</i> Muhl. ex Bigelow	early buttercup	RAFA	**
Ranunculaceae	<i>Ranunculus flabellaris</i> Raf.	yellow water buttercup	RAFL	**
Ranunculaceae	<i>Ranunculus flammula</i> L.	greater creeping spearwort	RAFL2	**
Ranunculaceae	<i>Ranunculus hispidus</i> Michx.	bristly buttercup	RAHI	***
Ranunculaceae	<i>Ranunculus hispidus</i> Michx. var. <i>caricetorum</i> (Greene) T. Duncan	bristly buttercup	RAHIC	**
Ranunculaceae	<i>Ranunculus hispidus</i> Michx. var. <i>nitidus</i> (Chapman) T. Duncan	bristly buttercup	RAHIN	**
Ranunculaceae	<i>Ranunculus longirostris</i> Godr.	longbeak buttercup	RALO2	**
Ranunculaceae	<i>Ranunculus micranthus</i> Nutt.	rock buttercup	RAMI2	**
Ranunculaceae	<i>Ranunculus pensylvanicus</i> L. f.	Pennsylvania buttercup	RAPE2	***
Ranunculaceae	<i>Ranunculus pusillus</i> Poir.	low spearwort	RAPU	**
Ranunculaceae	<i>Ranunculus recurvatus</i> Poir.	blisterwort	RARE2	***
Ranunculaceae	<i>Ranunculus sceleratus</i> L.	cursed buttercup	RASC3	**
Ranunculaceae	<i>Ranunculus trichophyllus</i> Chaix	threadleaf crowfoot	RATR	**

Asteraceae	<i>Ratibida pinnata</i> (Vent.) Barnh.	pinnate prairie coneflower	RAPI	**
Rhamnaceae	<i>Rhamnus alnifolia</i> L'Hér.	alderleaf buckthorn	RHAL	**
Melastomataceae	<i>Rhexia mariana</i> L.	Maryland meadowbeauty	RHMA	**
Melastomataceae	<i>Rhexia virginica</i> L.	handsome Harry	RHVI	**
Scrophulariaceae	<i>Rhinanthus minor</i> L.	little yellowrattle	RHMI13	**
Crassulaceae	<i>Rhodiola rosea</i> L.	roseroot stonecrop	RHRO3	**
Ericaceae	<i>Rhododendron canadense</i> (L.) Torr.	rhodora	RHCA6	**
Ericaceae	<i>Rhododendron maximum</i> L.	great laurel	RHMA4	***
Ericaceae	<i>Rhododendron prinophyllum</i> (Small) Millais	early azalea	RHPR	**
Ericaceae	<i>Rhododendron viscosum</i> (L.) Torr.	swamp azalea	RHVI2	**
Anacardiaceae	<i>Rhus aromatica</i> Ait.	fragrant sumac	RHAR4	**
Anacardiaceae	<i>Rhus aromatica</i> Ait. var. <i>aromatica</i>	fragrant sumac	RHARA2	**
Anacardiaceae	<i>Rhus copallinum</i> L.	flameleaf sumac	RHCO	***
Cyperaceae	<i>Rhynchospora alba</i> (L.) Vahl	white beaksedge	RHAL3	**
Cyperaceae	<i>Rhynchospora capillacea</i> Torr.	needle beaksedge	RHCA11	**
Cyperaceae	<i>Rhynchospora capitellata</i> (Michx.) Vahl	brownish beaksedge	RHCA12	**
Cyperaceae	<i>Rhynchospora fusca</i> (L.) Ait. f.	brown beaksedge	RHFU	**
Cyperaceae	<i>Rhynchospora inundata</i> (Oakes) Fern.	narrowfruit horned beaksedge	RHIN7	**
Cyperaceae	<i>Rhynchospora macrostachya</i> Torr. ex Gray	tall horned beaksedge	RHMA6	**
Cyperaceae	<i>Rhynchospora nitens</i> (Vahl) Gray	shortbeak beaksedge	RHNI	**
Cyperaceae	<i>Rhynchospora pallida</i> M.A. Curtis	pale beaksedge	RHPA	**
Cyperaceae	<i>Rhynchospora scirpoides</i> (Torr.) Gray	longbeak beaksedge	RHSC5	**
Cyperaceae	<i>Rhynchospora torreyana</i> Gray	Torrey's beaksedge	RHTO4	**
Cyperaceae	<i>Rhynchospora</i> Vahl	beaksedge	RHYNC3	*
Grossulariaceae	<i>Ribes americanum</i> P. Mill.	American black currant	RIAM2	***
Grossulariaceae	<i>Ribes cynosbati</i> L.	eastern prickly gooseberry	RICY	**
Grossulariaceae	<i>Ribes glandulosum</i> Grauer	skunk currant	RIGL	**
Grossulariaceae	<i>Ribes hirtellum</i> Michx.	hairystem gooseberry	RIHI	**
Grossulariaceae	<i>Ribes lacustre</i> (Pers.) Poir.	prickly currant	RILA	**
Grossulariaceae	<i>Ribes rotundifolium</i> Michx.	Appalachian gooseberry	RIRO2	**
Grossulariaceae	<i>Ribes triste</i> Pallas	red currant	RITR	**
Ricciaceae	<i>Riccia fluitans</i> L.		RIFL4	*
Brassicaceae	<i>Rorippa palustris</i> (L.) Bess. ssp. <i>fernaldiana</i> (Butters & Abbe) Jonsell	Fernald's yellowcress	ROPAF2	**
Brassicaceae	<i>Rorippa palustris</i> (L.) Bess. ssp. <i>hispida</i> (Desv.) Jonsell	hispid yellowcress	ROPAH	**
Rosaceae	<i>Rosa blanda</i> Ait.	smooth rose	ROBL	**
Rosaceae	<i>Rosa carolina</i> L.	Carolina rose	ROCA4	**
Rosaceae	<i>Rosa nitida</i> Willd.	shining rose	RONI	**

Rosaceae	<i>Rosa palustris</i> Marsh.	swamp rose	ROPA	***
Rosaceae	<i>Rosa setigera</i> Michx.	climbing rose	ROSE2	**
Rosaceae	<i>Rosa virginiana</i> P. Mill.	Virginia rose	ROVI2	**
Lythraceae	<i>Rotala ramosior</i> (L.) Koehne	lowland rotala	RORA	**
Rosaceae	<i>Rubus allegheniensis</i> Porter	Allegheny blackberry	RUAL	***
Rosaceae	<i>Rubus baileyanus</i> Britt.	Bailey's dewberry	RUBA2	**
Rosaceae	<i>Rubus canadensis</i> L.	smooth blackberry	RUCA16	***
Rosaceae	<i>Rubus cuneifolius</i> Pursh	sand blackberry	RUCU	**
Rosaceae	<i>Rubus flagellaris</i> Willd.	northern dewberry	RUFL	***
Rosaceae	<i>Rubus hispidus</i> L.	bristly dewberry	RUHI	**
Rosaceae	<i>Rubus idaeus</i> L. ssp. <i>strigosus</i> (Michx.) Focke	grayleaf red raspberry	RUIDS2	**
Rosaceae	<i>Rubus occidentalis</i> L.	black raspberry	RUOC	**
Rosaceae	<i>Rubus odoratus</i> L.	purpleflowering raspberry	RUOD	***
Rosaceae	<i>Rubus pensilvanicus</i> Poir.	Pennsylvania blackberry	RUPE3	**
Rosaceae	<i>Rubus pubescens</i> Raf.	dwarf red blackberry	RUPU	**
Rosaceae	<i>Rubus setosus</i> Bigelow	setose blackberry	RUSE	**
Asteraceae	<i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i> Farw.	blackeyed Susan	RUHIP	**
Asteraceae	<i>Rudbeckia laciniata</i> L.	cutleaf coneflower	RULA3	***
Polygonaceae	<i>Rumex altissimus</i> Wood	pale dock	RUAL4	**
Polygonaceae	<i>Rumex hastatulus</i> Baldw.	heartwing sorrel	RUHA2	**
Polygonaceae	<i>Rumex maritimus</i> L.	golden dock	RUMA4	**
Polygonaceae	<i>Rumex orbiculatus</i> Gray	greater water dock	RUOR2	**
Polygonaceae	<i>Rumex pallidus</i> Bigelow	seaside dock	RUPA4	*
Polygonaceae	<i>Rumex salicifolius</i> Weinm.	willow dock	RUSA	**
Polygonaceae	<i>Rumex verticillatus</i> L.	swamp dock	RUVE3	**
Ruppiaceae	<i>Ruppia maritima</i> L.	widgeongrass	RUMA5	**
Gentianaceae	<i>Sabatia angularis</i> (L.) Pursh	rosepink	SAAN	**
Gentianaceae	<i>Sabatia campanulata</i> (L.) Torr.	slender rose gentian	SACA26	**
Gentianaceae	<i>Sabatia dodecandra</i> (L.) B.S.P.	marsh rose gentian	SADO	**
Gentianaceae	<i>Sabatia stellaris</i> Pursh	rose of Plymouth	SAST5	**
Poaceae	<i>Saccharum alopecuroidum</i> (L.) Nutt.	silver plumegrass	SAAL9	**
Poaceae	<i>Saccharum giganteum</i> (Walt.) Pers.	sugarcane plumegrass	SAGI	**
Caryophyllaceae	<i>Sagina decumbens</i> (Ell.) Torr. & Gray	trailing pearlwort	SADE	**
Alismataceae	<i>Sagittaria calycina</i> Engelm.	hooded arrowhead	SACA21	**
Alismataceae	<i>Sagittaria cuneata</i> Sheldon	arumleaf arrowhead	SACU	**
Alismataceae	<i>Sagittaria engelmanniana</i> J.G. Sm.	Engelmann's arrowhead	SAEN	**
Alismataceae	<i>Sagittaria graminea</i> Michx.	grassy arrowhead	SAGR	***
Alismataceae	<i>Sagittaria intermedia</i> Micheli	intermediate arrowhead	SAIN10	**



Alismataceae	<i>Sagittaria lancifolia</i> L.	bulltongue arrowhead	SALA	**
Alismataceae	<i>Sagittaria latifolia</i> Willd.	broadleaf arrowhead	SALA2	***
Alismataceae	<i>Sagittaria rigida</i> Pursh	sessilefruit arrowhead	SARI	**
Alismataceae	<i>Sagittaria subulata</i> (L.) Buch.	awl-leaf arrowhead	SASU	**
Alismataceae	<i>Sagittaria teres</i> S. Wats.	slender arrowhead	SATE2	**
Chenopodiaceae	<i>Salicornia bigelovii</i> Torr.	dwarf saltwort	SABI	**
Salicaceae	<i>Salix amygdaloides</i> Anderss.	peachleaf willow	SAAM2	*
Salicaceae	<i>Salix bebbiana</i> Sarg.	Bebb willow	SABE2	**
Salicaceae	<i>Salix candida</i> Flueggé ex Willd.	sageleaf willow	SACA4	**
Salicaceae	<i>Salix cordata</i> Michx.	heartleaf willow	SACO3	**
Salicaceae	<i>Salix discolor</i> Muhl.	pussy willow	SADI	***
Salicaceae	<i>Salix eriocephala</i> Michx.	Missouri River willow	SAER	**
Salicaceae	<i>Salix exigua</i> Nutt.	narrowleaf willow	SAEX	**
Salicaceae	<i>Salix humilis</i> Marsh.	prairie willow	SAHU2	**
Salicaceae	<i>Salix lucida</i> Muhl.	shining willow	SALU	**
Salicaceae	<i>Salix nigra</i> Marsh.	black willow	SANI	***
Salicaceae	<i>Salix pedicellaris</i> Pursh	bog willow	SAPE2	**
Salicaceae	<i>Salix petiolaris</i> Sm.	meadow willow	SAPE5	**
Salicaceae	<i>Salix sericea</i> Marsh.	silky willow	SASE	**
Salicaceae	<i>Salix xconifera</i> Wangenh. (pro sp.)		SACO10	**
Lamiaceae	<i>Salvia lyrata</i> L.	lyreleaf sage	SALY2	**
Caprifoliaceae	<i>Sambucus nigra</i> L.	European black elderberry	SANI4	**
Caprifoliaceae	<i>Sambucus nigra</i> L. ssp. <i>canadensis</i> (L.) R. Bolli	common elderberry	SANIC4	***
Caprifoliaceae	<i>Sambucus racemosa</i> L.	red elderberry	SARA2	**
Primulaceae	<i>Samolus valerandi</i> L. ssp. <i>parviflorus</i> (Raf.) Hultén	seaside brookweed	SAVAP	**
Papaveraceae	<i>Sanguinaria canadensis</i> L.	bloodroot	SACA13	***
Rosaceae	<i>Sanguisorba canadensis</i> L.	Canadian burnet	SACA14	**
Apiaceae	<i>Sanicula canadensis</i> L.	Canadian blacksnakeroot	SACA15	**
Apiaceae	<i>Sanicula marilandica</i> L.	Maryland sanicle	SAMA2	***
Apiaceae	<i>Sanicula odorata</i> (Raf.) K.M. Pryer & L.R. Phillippe	clustered blacksnakeroot	SAOD	**
Apiaceae	<i>Sanicula trifoliata</i> Bickn.	largefruit blacksnakeroot	SATR4	***
Chenopodiaceae	<i>Sarcocornia perennis</i> (P. Mill.) A.J. Scott	chickenclaws	SAPE11	**
Sarraceniaceae	<i>Sarracenia purpurea</i> L.	purple pitcherplant	SAPU4	**
Lauraceae	<i>Sassafras albidum</i> (Nutt.) Nees	sassafras	SAAL5	***
Saururaceae	<i>Saururus cernuus</i> L.	lizard's tail	SACE	**
Saxifragaceae	<i>Saxifraga pensylvanica</i> L.	eastern swamp saxifrage	SAPE8	**
Saxifragaceae	<i>Saxifraga virginensis</i> Michx.	early saxifrage	SAVI5	***

Scheuchzeriaceae	<i>Scheuchzeria palustris</i> L.	rannoch-rush	SCPA2	**
Poaceae	<i>Schizachne purpurascens</i> (Torr.) Swallen	false melic	SCPU	**
Poaceae	<i>Schizachyrium littorale</i> (Nash) Bickn.	shore little bluestem	SCLH1	**
Poaceae	<i>Schizachyrium scoparium</i> (Michx.) Nash	little bluestem	SCSC	***
Poaceae	<i>Schizachyrium scoparium</i> (Michx.) Nash var. <i>scoparium</i>	little bluestem	SCSCS	**
Schizaeaceae	<i>Schizaea pusilla</i> Pursh	little curlygrass fern	SCPU2	**
Cyperaceae	<i>Schoenoplectus acutus</i> (Muhl. ex Bigelow) A. & D. Löve	hardstem bulrush	SCAC3	**
Cyperaceae	<i>Schoenoplectus acutus</i> (Muhl. ex Bigelow) A. & D. Löve var. <i>acutus</i>	hardstem bulrush	SCACA	**
Cyperaceae	<i>Schoenoplectus americanus</i> (Pers.) Volk. ex Schinz & R. Keller	chairmaker's bulrush	SCAM6	***
Cyperaceae	<i>Schoenoplectus fluviatilis</i> (Torr.) M.T. Strong	river bulrush	SCFL11	**
Cyperaceae	<i>Schoenoplectus maritimus</i> (L.) Lye	cosmopolitan bulrush	SCMA8	**
Cyperaceae	<i>Schoenoplectus novae-angliae</i> (Britt.) M.T. Strong	New England bulrush	SCNO5	**
Cyperaceae	<i>Schoenoplectus pungens</i> (Vahl) Palla	common threesquare	SCPU10	**
Cyperaceae	<i>Schoenoplectus pungens</i> (Vahl) Palla var. <i>pungens</i>	common threesquare	SCPUP5	**
Cyperaceae	<i>Schoenoplectus purshianus</i> (Fern.) M.T. Strong	weakstalk bulrush	SCPU13	**
Cyperaceae	<i>Schoenoplectus robustus</i> (Pursh) M.T. Strong	sturdy bulrush	SCRO5	**
Cyperaceae	<i>Schoenoplectus smithii</i> (Gray) Soják	Smith's bulrush	SCSM2	**
Cyperaceae	<i>Schoenoplectus subterminalis</i> (Torr.) Soják	swaying bulrush	SCSU10	**
Cyperaceae	<i>Schoenoplectus tabernaemontani</i> (K.C. Gmel.) Palla	softstem bulrush	SCTA2	***
Cyperaceae	<i>Schoenoplectus torreyi</i> (Olney) Palla	Torrey's bulrush	SCTO3	**
Scrophulariaceae	<i>Schwalbea americana</i> L.	chaffseed	SCAM	**
Cyperaceae	<i>Scirpus atrocinctus</i> Fern.	blackgirdle bulrush	SCAT4	**
Cyperaceae	<i>Scirpus atrovirens</i> Willd.	green bulrush	SCAT2	**
Cyperaceae	<i>Scirpus cyperinus</i> (L.) Kunth	woolgrass	SCCY	***
Cyperaceae	<i>Scirpus expansus</i> Fern.	woodland bulrush	SCEX	**
Cyperaceae	<i>Scirpus flaccidifolius</i> (Fern.) Schuyler	reclining bulrush	SCFL2	**
Cyperaceae	<i>Scirpus georgianus</i> Harper	Georgia bulrush	SCGE2	**
Cyperaceae	<i>Scirpus hattorianus</i> Makino	mosquito bulrush	SCHA3	**
Cyperaceae	<i>Scirpus longii</i> Fern.	Long's bulrush	SCLO	**
Cyperaceae	<i>Scirpus microcarpus</i> J. & K. Presl	panicled bulrush	SCMI2	***
Cyperaceae	<i>Scirpus pedicellatus</i> Fern.	stalked bulrush	SCPE3	**
Cyperaceae	<i>Scirpus pendulus</i> Muhl.	rufous bulrush	SCPE4	**

Cyperaceae	<i>Scirpus polyphyllus</i> Vahl	leafy bulrush	SCPO2	**
Cyperaceae	<i>Scleria minor</i> W. Stone	slender nutrush	SCMI4	**
Cyperaceae	<i>Scleria muehlenbergii</i> Steud.	Muehlenberg's nutrush	SCMU8	**
Cyperaceae	<i>Scleria pauciflora</i> Muhl. ex Willd.	fewflower nutrush	SCPA5	**
Cyperaceae	<i>Scleria reticularis</i> Michx.	netted nutrush	SCRE	**
Cyperaceae	<i>Scleria triglomerata</i> Michx.	whip nutrush	SCTR	**
Cyperaceae	<i>Scleria verticillata</i> Muhl. ex Willd.	low nutrush	SCVE2	**
Asteraceae	<i>Sclerolepis uniflora</i> (Walt.) B.S.P.	pink bogbutton	SCUN3	**
Scrophulariaceae	<i>Scrophularia lanceolata</i> Pursh	lanceleaf figwort	SCLA	***
Scrophulariaceae	<i>Scrophularia marilandica</i> L.	carpenter's square	SCMA2	**
Lamiaceae	<i>Scutellaria elliptica</i> Muhl. ex Spreng.	hairy skullcap	SCEL	**
Lamiaceae	<i>Scutellaria galericulata</i> L.	marsh skullcap	SCGA	***
Lamiaceae	<i>Scutellaria integrifolia</i> L.	helmet flower	SCIN2	**
Lamiaceae	<i>Scutellaria lateriflora</i> L.	blue skullcap	SCLA2	***
Lamiaceae	<i>Scutellaria parvula</i> Michx.	small skullcap	SCPA7	**
Lamiaceae	<i>Scutellaria parvula</i> Michx. var. <i>missouriensis</i> (Torr.) Goodman & Lawson	Leonard's skullcap	SCPAM	*
Selaginellaceae	<i>Selaginella apoda</i> (L.) Spring	meadow spikemoss	SEAP	**
Selaginellaceae	<i>Selaginella rupestris</i> (L.) Spring	northern selaginella	SERU	**
Fabaceae	<i>Senna hebecarpa</i> (Fern.) Irwin & Barneby	American senna	SEHE3	**
Asteraceae	<i>Sericocarpus asteroides</i> (L.) B.S.P.	toothed whitetop aster	SEAS3	***
Asteraceae	<i>Sericocarpus linifolius</i> (L.) B.S.P.	narrowleaf whitetop aster	SELI5	**
Aizoaceae	<i>Sesuvium maritimum</i> (Walt.) B.S.P.	slender seapurslane	SEMA3	**
Poaceae	<i>Setaria parviflora</i> (Poir.) Kerguelen	marsh bristlegrass	SEPA10	**
Rosaceae	<i>Sibbaldiopsis tridentata</i> (Ait.) Rydb.	shrubby fivefingers	SITR3	**
Cucurbitaceae	<i>Sicyos angulatus</i> L.	oneseed burr cucumber	SIAN	***
Caryophyllaceae	<i>Silene antirrhina</i> L.	sleepy silene	SIAN2	**
Caryophyllaceae	<i>Silene caroliniana</i> Walt. ssp. <i>pennsylvanica</i> (Michx.) Clausen	Pennsylvania catchfly	SICAP	**
Caryophyllaceae	<i>Silene stellata</i> (L.) Ait. f.	widowsfrill	SIST	***
Caryophyllaceae	<i>Silene virginica</i> L.	fire pink	SIVI4	**
Iridaceae	<i>Sisyrinchium angustifolium</i> P. Mill.	narrowleaf blue-eyed grass	SIAN3	***
Iridaceae	<i>Sisyrinchium atlanticum</i> Bickn.	eastern blue-eyed grass	SIAT	**
Iridaceae	<i>Sisyrinchium fuscatum</i> Bickn.	coastalplain blue-eyed grass	SIFU2	**
Iridaceae	<i>Sisyrinchium montanum</i> Greene	strict blue-eyed grass	SIMO2	***
Iridaceae	<i>Sisyrinchium mucronatum</i> Michx.	needletip blue-eyed grass	SIMU3	**
Apiaceae	<i>Sium suave</i> Walt.	hemlock waterparsnip	SISU2	**
Asteraceae	<i>Smallanthus uvedalius</i> (L.) Mackenzie ex Small	hairy leafcup	SMUV	**

Smilacaceae	<i>Smilax glauca</i> Walt.	cat greenbrier	SMGL	***
Smilacaceae	<i>Smilax herbacea</i> L.	smooth carrionflower	SMHE	***
Smilacaceae	<i>Smilax pulverulenta</i> Michx.	downy carrionflower	SMPU2	**
Smilacaceae	<i>Smilax rotundifolia</i> L.	roundleaf greenbrier	SMRO	***
Smilacaceae	<i>Smilax tamnoides</i> L.	bristly greenbrier	SMTA2	**
Solanaceae	<i>Solanum physalifolium</i> Rusby	hoe nightshade	SOPH	**
Solanaceae	<i>Solanum ptychanthum</i> Dunal	West Indian nightshade	SOPT3	**
Asteraceae	<i>Solidago arguta</i> Ait.	Atlantic goldenrod	SOAR	**
Asteraceae	<i>Solidago bicolor</i> L.	white goldenrod	SOBI	***
Asteraceae	<i>Solidago caesia</i> L.	wreath goldenrod	SOCA4	***
Asteraceae	<i>Solidago canadensis</i> L.	Canada goldenrod	SOCA6	***
Asteraceae	<i>Solidago canadensis</i> L. var. <i>scabra</i> Torr. & Gray	Canada goldenrod	SOCAS5	***
Asteraceae	<i>Solidago flexicaulis</i> L.	zigzag goldenrod	SOFL2	***
Asteraceae	<i>Solidago gigantea</i> Ait.	giant goldenrod	SOGI	**
Asteraceae	<i>Solidago hispida</i> Muhl. ex Willd.	hairy goldenrod	SOHI	**
Asteraceae	<i>Solidago juncea</i> Ait.	early goldenrod	SOJU	***
Asteraceae	<i>Solidago latissimifolia</i> P. Mill.	Elliott's goldenrod	SOLA4	**
Asteraceae	<i>Solidago macrophylla</i> Pursh	largeleaf goldenrod	SOMA4	***
Asteraceae	<i>Solidago nemoralis</i> Ait.	gray goldenrod	SONE	***
Asteraceae	<i>Solidago odora</i> Ait.	anisescented goldenrod	SOOD	***
Asteraceae	<i>Solidago patula</i> Muhl. ex Willd.	roundleaf goldenrod	SOPA2	**
Asteraceae	<i>Solidago puberula</i> Nutt.	downy goldenrod	SOPU	**
Asteraceae	<i>Solidago rugosa</i> P. Mill.	wrinkleleaf goldenrod	SORU2	***
Asteraceae	<i>Solidago rugosa</i> P. Mill. ssp. <i>aspera</i> (Ait.) Cronq.	wrinkleleaf goldenrod	SORUA	**
Asteraceae	<i>Solidago sempervirens</i> L.	seaside goldenrod	SOSE	**
Asteraceae	<i>Solidago speciosa</i> Nutt.	showy goldenrod	SOSP2	***
Asteraceae	<i>Solidago squarrosa</i> Nutt.	stout goldenrod	SOSQ	**
Asteraceae	<i>Solidago uliginosa</i> Nutt.	bog goldenrod	SOUL	**
Asteraceae	<i>Solidago ulmifolia</i> Muhl. ex Willd.	elmleaf goldenrod	SOUL2	**
Rosaceae	<i>Sorbus americana</i> Marsh.	American mountain ash	SOAM3	***
Poaceae	<i>Sorghastrum nutans</i> (L.) Nash	Indiangrass	SONU2	**
Sparganiaceae	<i>Sparganium americanum</i> Nutt.	American bur-reed	SPAM	***
Sparganiaceae	<i>Sparganium androcladum</i> (Engelm.) Morong	branched bur-reed	SPAN	**
Sparganiaceae	<i>Sparganium angustifolium</i> Michx.	narrowleaf bur-reed	SPAN2	**
Sparganiaceae	<i>Sparganium eurycarpum</i> Engelm. ex Gray	broadfruit bur-reed	SPEU	***
Sparganiaceae	<i>Sparganium fluctuans</i> (Morong) B.L. Robins.	floating bur-reed	SPFL	**
Poaceae	<i>Spartina alterniflora</i> Loisel.	smooth cordgrass	SPAL	**

Poaceae	<i>Spartina cynosuroides</i> (L.) Roth	big cordgrass	SPCY	**
Poaceae	<i>Spartina patens</i> (Ait.) Muhl.	saltmeadow cordgrass	SPPA	**
Poaceae	<i>Spartina pectinata</i> Bosc ex Link	prairie cordgrass	SPPE	**
Caryophyllaceae	<i>Spergularia canadensis</i> (Pers.) G. Don	Canadian sandspurry	SPCA3	**
Poaceae	<i>Sphenopholis intermedia</i> (Rydb.) Rydb.	slender wedgescale	SPIN3	**
Poaceae	<i>Sphenopholis nitida</i> (Biehler) Scribn.	shiny wedgescale	SPNI	**
Poaceae	<i>Sphenopholis obtusata</i> (Michx.) Scribn.	prairie wedgescale	SPOB	**
Poaceae	<i>Sphenopholis pensylvanica</i> (L.) A.S. Hitchc.	swamp wedgescale	SPPE3	**
Rosaceae	<i>Spiraea alba</i> Du Roi	white meadowsweet	SPAL2	***
Rosaceae	<i>Spiraea alba</i> Du Roi var. <i>latifolia</i> (Ait.) Dippel	white meadowsweet	SPALL	***
Rosaceae	<i>Spiraea tomentosa</i> L.	steeplebush	SPTO2	***
Orchidaceae	<i>Spiranthes cernua</i> (L.) L.C. Rich.	nodding ladies'-tresses	SPCE	**
Orchidaceae	<i>Spiranthes lacera</i> (Raf.) Raf.	northern slender ladies'-tresses	SPLA4	**
Orchidaceae	<i>Spiranthes lacera</i> (Raf.) Raf. var. <i>gracilis</i> (Bigelow) Luer	northern slender ladies'-tresses	SPLAG	**
Orchidaceae	<i>Spiranthes lucida</i> (H.H. Eat.) Ames	shining ladies'-tresses	SPLU2	**
Orchidaceae	<i>Spiranthes ochroleuca</i> (Rydb.) Rydb.	yellow nodding ladies'-tresses	SPOC	**
Orchidaceae	<i>Spiranthes romanzoffiana</i> Cham.	hooded ladies'-tresses	SPRO	**
Orchidaceae	<i>Spiranthes tuberosa</i> Raf.	little ladies'-tresses	SPTU	**
Orchidaceae	<i>Spiranthes vernalis</i> Engelm. & Gray	spring ladies'-tresses	SPVE	**
Lemnaceae	<i>Spirodela polyrrhiza</i> (L.) Schleid.	common duckmeat	SPPO	**
Poaceae	<i>Sporobolus airoides</i> (Torr.) Torr.	alkali sacaton	SPAI	**
Poaceae	<i>Sporobolus clandestinus</i> (Biehler) A.S. Hitchc.	rough dropseed	SPCL	**
Poaceae	<i>Sporobolus compositus</i> (Poir.) Merr.	composite dropseed	SPCO16	**
Poaceae	<i>Sporobolus compositus</i> (Poir.) Merr. var. <i>compositus</i>	composite dropseed	SPCOC2	**
Poaceae	<i>Sporobolus coromandelianus</i> (Retz.) Kunth	Madagascar dropseed	SPCO17	**
Poaceae	<i>Sporobolus neglectus</i> Nash	puffsheath dropseed	SPNE2	**
Poaceae	<i>Sporobolus vaginiflorus</i> (Torr. ex Gray) Wood	poverty dropseed	SPVA	**
Lamiaceae	<i>Stachys hyssopifolia</i> Michx.	hyssopleaf hedgenettle	STHY3	**
Lamiaceae	<i>Stachys palustris</i> L.	marsh hedgenettle	STPA	**
Lamiaceae	<i>Stachys tenuifolia</i> Willd.	smooth hedgenettle	STTE	**
Staphyleaceae	<i>Staphylea trifolia</i> L.	American bladdernut	STTR	***
Caryophyllaceae	<i>Stellaria alsine</i> Grimm	bog chickweed	STAL4	**
Caryophyllaceae	<i>Stellaria borealis</i> Bigelow	boreal starwort	STBO3	**
Caryophyllaceae	<i>Stellaria borealis</i> Bigelow ssp. <i>borealis</i>	boreal starwort	STBOB	**

Caryophyllaceae	<i>Stellaria longifolia</i> Muhl. ex Willd.	longleaf starwort	STLO	**
Caryophyllaceae	<i>Stellaria longifolia</i> Muhl. ex Willd. var. <i>longifolia</i>	longleaf starwort	STLOL	**
Caryophyllaceae	<i>Stellaria longipes</i> Goldie	longstalk starwort	STLO2	**
Caryophyllaceae	<i>Stellaria pubera</i> Michx.	star chickweed	STPU	***
Liliaceae	<i>Streptopus amplexifolius</i> (L.) DC.	claspleaf twistedstalk	STAM2	**
Liliaceae	<i>Streptopus lanceolatus</i> (Ait.) Reveal	twistedstalk	STLA16	**
Fabaceae	<i>Strophostyles helvula</i> (L.) Ell.	trailing fuzzybean	STHE4	***
Fabaceae	<i>Strophostyles umbellata</i> (Muhl. ex Willd.) Britt.	pink fuzzybean	STUM2	**
Potamogetonaceae	<i>Stuckenia pectinatus</i> (L.) Boerner	sago pondweed	STPE12	**
Convolvulaceae	<i>Stylisma pickeringii</i> (Torr. ex M.A. Curtis) Gray var. <i>pickeringii</i>	Pickering's dawnflower	STPIP3	**
Chenopodiaceae	<i>Suaeda linearis</i> (Ell.) Moq.	annual seepweed	SULI	**
Chenopodiaceae	<i>Suaeda rolandii</i> Bassett & C.W. Crompton	Roland's seablite	SURO	**
Caprifoliaceae	<i>Symphoricarpos albus</i> (L.) Blake var. <i>albus</i>	common snowberry	SYALA	**
Asteraceae	<i>Symphyotrichum concolor</i> (L.) Nesom	eastern silver aster	SYCO3	**
Asteraceae	<i>Symphyotrichum cordifolium</i> (L.) Nesom	common blue wood aster	SYCO4	***
Asteraceae	<i>Symphyotrichum dumosum</i> (L.) Nesom	rice button aster	SYDU2	**
Asteraceae	<i>Symphyotrichum dumosum</i> (L.) Nesom var. <i>dumosum</i>	rice button aster	SYDUD2	**
Asteraceae	<i>Symphyotrichum ericoides</i> (L.) Nesom var. <i>ericoides</i>	white heath aster	SYERE	***
Asteraceae	<i>Symphyotrichum laeve</i> (L.) A. & D. Löve	smooth blue aster	SYLA3	***
Asteraceae	<i>Symphyotrichum laeve</i> (L.) A. & D. Löve var. <i>laeve</i>	smooth blue aster	SYLAL3	**
Asteraceae	<i>Symphyotrichum lanceolatum</i> (Willd.) Nesom	white panicle aster	SYLA6	**
Asteraceae	<i>Symphyotrichum lanceolatum</i> (Willd.) Nesom ssp. <i>lanceolatum</i> var. <i>lanceolatum</i>	white panicle aster	SYLAL4	***
Asteraceae	<i>Symphyotrichum lateriflorum</i> (L.) A. & D. Löve	calico aster	SYLA4	**
Asteraceae	<i>Symphyotrichum lateriflorum</i> (L.) A. & D. Löve var. <i>horizontale</i> (Desf.) Nesom	calico aster	SYLAH5	**
Asteraceae	<i>Symphyotrichum lateriflorum</i> (L.) A. & D. Löve var. <i>lateriflorum</i>	calico aster	SYLAL7	**
Asteraceae	<i>Symphyotrichum lowrieianum</i> (Porter) Nesom	Lowrie's blue wood aster	SYLO2	***
Asteraceae	<i>Symphyotrichum novae-angliae</i> (L.) Nesom	New England aster	SYNO2	***
Asteraceae	<i>Symphyotrichum novi-belgii</i> (L.) Nesom	New York aster	SYNO3	**
Asteraceae	<i>Symphyotrichum novi-belgii</i> (L.) Nesom var. <i>novi-belgii</i>	New York aster	SYNON	***
Asteraceae	<i>Symphyotrichum novi-belgii</i> (L.) Nesom var. <i>villicaule</i> (Gray) J. Labrecque & L. Brouillet	hairy New York aster	SYNOV	**

Asteraceae	<i>Symphiotrichum patens</i> (Ait.) Nesom	late purple aster	SYPA11	**
Asteraceae	<i>Symphiotrichum pilosum</i> (Willd.) Nesom	hairy white oldfield aster	SYPI2	**
Asteraceae	<i>Symphiotrichum pilosum</i> (Willd.) Nesom var. <i>pringlei</i> (Gray) Nesom	Pringle's aster	SYPIP2	**
Asteraceae	<i>Symphiotrichum praealtum</i> (Poir.) Nesom	willowleaf aster	SYPR5	**
Asteraceae	<i>Symphiotrichum praealtum</i> (Poir.) Nesom var. <i>praealtum</i>	willowleaf aster	SYPRP	**
Asteraceae	<i>Symphiotrichum prenanthoides</i> (Muhl. ex Willd.) Nesom	crookedstem aster	SYPR6	**
Asteraceae	<i>Symphiotrichum puniceum</i> (L.) A. & D. Löve	purplestem aster	SYPU	**
Asteraceae	<i>Symphiotrichum puniceum</i> (L.) A. & D. Löve var. <i>puniceum</i>	purplestem aster	SYPIP	***
Asteraceae	<i>Symphiotrichum racemosum</i> (Ell.) Nesom	smooth white oldfield aster	SYRA5	**
Asteraceae	<i>Symphiotrichum subulatum</i> (Michx.) Nesom	eastern annual saltmarsh aster	SYSU5	**
Asteraceae	<i>Symphiotrichum tenuifolium</i> (L.) Nesom	perennial saltmarsh aster	SYTE6	**
Asteraceae	<i>Symphiotrichum tradescantii</i> (L.) Nesom	shore aster	SYTR	**
Asteraceae	<i>Symphiotrichum undulatum</i> (L.) Nesom	waxy leaf aster	SYUN	**
Asteraceae	<i>Symphiotrichum xamethystinum</i> (Nutt.) Nesom		SYAM3	**
Araceae	<i>Symplocarpus foetidus</i> (L.) Salisb. ex Nutt.	skunk cabbage	SYFO	***
Apiaceae	<i>Taenidia integerrima</i> (L.) Drude	yellow pimpernel	TAIN	**
Taxaceae	<i>Taxus canadensis</i> Marsh.	Canada yew	TACA7	***
Fabaceae	<i>Tephrosia virginiana</i> (L.) Pers.	Virginia tephrosia	TEVI	**
Lamiaceae	<i>Teucrium canadense</i> L.	Canada germander	TECA3	**
Lamiaceae	<i>Teucrium canadense</i> L. var. <i>occidentale</i> (Gray) McClintock & Epling	western germander	TECAO	**
Ranunculaceae	<i>Thalictrum dasycarpum</i> Fisch. & Avé-Lall.	purple meadow-rue	THDA	**
Ranunculaceae	<i>Thalictrum dioicum</i> L.	early meadow-rue	THDI	***
Ranunculaceae	<i>Thalictrum pubescens</i> Pursh	king of the meadow	THPU2	***
Ranunculaceae	<i>Thalictrum revolutum</i> DC.	waxy leaf meadow-rue	THRE	**
Ranunculaceae	<i>Thalictrum thalictroides</i> (L.) Eames & Boivin	rue anemone	THTH2	***
Apiaceae	<i>Thaspium barbinode</i> (Michx.) Nutt.	hairy joint meadowparsnip	THBA	**
Apiaceae	<i>Thaspium trifoliatum</i> (L.) Gray	purple meadowparsnip	THTR	**
Apiaceae	<i>Thaspium trifoliatum</i> (L.) Gray var. <i>aureum</i> Britt.	purple meadowparsnip	THTRA	**
Thelypteridaceae	<i>Thelypteris noveboracensis</i> (L.) Nieuwl.	New York fern	THNO	***
Thelypteridaceae	<i>Thelypteris palustris</i> Schott	eastern marsh fern	THPA	**
Thelypteridaceae	<i>Thelypteris simulata</i> (Davenport) Nieuwl.	bog fern	THSI2	**
Saxifragaceae	<i>Tiarella cordifolia</i> L.	heartleaf foamflower	TICO	**
Tiliaceae	<i>Tilia americana</i> L.	American basswood	TIAM	***

Orchidaceae	<i>Tipularia discolor</i> (Pursh) Nutt.	crippled crane-fly	TIDI	**
Liliaceae	<i>Tofieldia glutinosa</i> (Michx.) Pers.	sticky tofieldia	TOGL2	**
Poaceae	<i>Torreyochloa pallida</i> (Torr.) Church	pale false mannagrass	TOPA6	**
Poaceae	<i>Torreyochloa pallida</i> (Torr.) Church var. <i>pallida</i>	pale false mannagrass	TOPAP	**
Anacardiaceae	<i>Toxicodendron radicans</i> (L.) Kuntze	eastern poison ivy	TORA2	**
Anacardiaceae	<i>Toxicodendron radicans</i> (L.) Kuntze ssp. <i>radicans</i>	eastern poison ivy	TORAR	***
Anacardiaceae	<i>Toxicodendron vernix</i> (L.) Kuntze	poison sumac	TOVE	**
Commelinaceae	<i>Tradescantia ohiensis</i> Raf.	bluejacket	TROH	**
Poaceae	<i>Tragus berteronianus</i> J.A. Schultes	spiked burr grass	TRBE	**
Clusiaceae	<i>Triadenum virginicum</i> (L.) Raf.	Virginia marsh St. Johnswort	TRVI2	**
Cyperaceae	<i>Trichophorum alpinum</i> (L.) Pers.	alpine bulrush	TRAL7	**
Cyperaceae	<i>Trichophorum planifolium</i> (Spreng.) Palla	bashful bulrush	TRPL6	**
Lamiaceae	<i>Trichostema dichotomum</i> L.	forked bluecurls	TRDI2	**
Lamiaceae	<i>Trichostema setaceum</i> Houtt.	narrowleaf bluecurls	TRSE5	**
Poaceae	<i>Tridens flavus</i> (L.) A.S. Hitchc.	purpletop tridens	TRFL2	***
Primulaceae	<i>Trientalis borealis</i> Raf.	starflower	TRBO2	**
Juncaginaceae	<i>Triglochin maritimum</i> L.	seaside arrowgrass	TRMA4	**
Juncaginaceae	<i>Triglochin palustre</i> L.	marsh arrowgrass	TRPA6	**
Liliaceae	<i>Trillium cernuum</i> L.	whip-poor-will flower	TRCE	**
Liliaceae	<i>Trillium erectum</i> L.	red trillium	TRER3	**
Liliaceae	<i>Trillium grandiflorum</i> (Michx.) Salisb.	snow trillium	TRGR4	**
Liliaceae	<i>Trillium undulatum</i> Willd.	painted trillium	TRUN	**
Campanulaceae	<i>Triodanis perfoliata</i> (L.) Nieuwl.	clasping Venus' looking-glass	TRPE4	***
Caprifoliaceae	<i>Triosteum angustifolium</i> L.	yellowfruit horse-gentian	TRAN3	**
Caprifoliaceae	<i>Triosteum aurantiacum</i> Bickn.	orange-fruit horse-gentian	TRAU4	**
Caprifoliaceae	<i>Triosteum perfoliatum</i> L.	feverwort	TRPE5	**
Orchidaceae	<i>Triphora trianthophora</i> (Sw.) Rydb.	threebirds	TRTR3	**
Poaceae	<i>Triplasis purpurea</i> (Walt.) Chapman	purple sandgrass	TRPU4	**
Poaceae	<i>Tripsacum dactyloides</i> (L.) L.	eastern gamagrass	TRDA3	**
Poaceae	<i>Trisetum melicoides</i> (Michx.) Vasey ex Scribn.	purple false oat	TRME3	**
Poaceae	<i>Trisetum spicatum</i> (L.) Richter	spike trisetum	TRSP2	**
Ranunculaceae	<i>Trollius laxus</i> Salisb.	American globeflower	TRLA14	**
Pinaceae	<i>Tsuga canadensis</i> (L.) Carr.	eastern hemlock	TSCA	***
Typhaceae	<i>Typha latifolia</i> L.	broadleaf cattail	TYLA	***
Typhaceae	<i>Typha xglauca</i> Godr. (pro sp.)		TYGL	**
Ulmaceae	<i>Ulmus americana</i> L.	American elm	ULAM	***



Ulmaceae	<i>Ulmus rubra</i> Muhl.	slippery elm	ULRU	***
Ulmaceae	<i>Ulmus thomasii</i> Sarg.	rock elm	ULTH	**
Urticaceae	<i>Urtica dioica</i> L. ssp. <i>gracilis</i> (Ait.) Seland.	California nettle	URDIG	***
Lentibulariaceae	<i>Utricularia cornuta</i> Michx.	horned bladderwort	UTCO	**
Lentibulariaceae	<i>Utricularia geminiscapa</i> Benj.	hiddenfruit bladderwort	UTGE	**
Lentibulariaceae	<i>Utricularia gibba</i> L.	humped bladderwort	UTGI	**
Lentibulariaceae	<i>Utricularia intermedia</i> Hayne	flatleaf bladderwort	UTIN2	**
Lentibulariaceae	<i>Utricularia juncea</i> Vahl	southern bladderwort	UTJU	**
Lentibulariaceae	<i>Utricularia macrorhiza</i> Le Conte	common bladderwort	UTMA	***
Lentibulariaceae	<i>Utricularia minor</i> L.	lesser bladderwort	UTMI	**
Lentibulariaceae	<i>Utricularia purpurea</i> Walt.	eastern purple bladderwort	UTPU	**
Lentibulariaceae	<i>Utricularia radiata</i> Small	little floating bladderwort	UTRA	**
Lentibulariaceae	<i>Utricularia resupinata</i> B.D. Greene ex Bigelow	lavender bladderwort	UTRE	**
Lentibulariaceae	<i>Utricularia striata</i> Le Conte ex Torrey	striped bladderwort	UTST	**
Lentibulariaceae	<i>Utricularia subulata</i> L.	zigzag bladderwort	UTSU	**
Liliaceae	<i>Uvularia grandiflora</i> Sm.	largeflower bellwort	UVGR	**
Liliaceae	<i>Uvularia perfoliata</i> L.	perfoliate bellwort	UVPE	***
Liliaceae	<i>Uvularia puberula</i> Michx.	mountain bellwort	UVPU2	**
Liliaceae	<i>Uvularia sessilifolia</i> L.	sessileleaf bellwort	UVSE	***
Ericaceae	<i>Vaccinium angustifolium</i> Ait.	lowbush blueberry	VAAN	**
Ericaceae	<i>Vaccinium corymbosum</i> L.	highbush blueberry	VACO	***
Ericaceae	<i>Vaccinium macrocarpon</i> Ait.	cranberry	VAMA	**
Ericaceae	<i>Vaccinium myrtilloides</i> Michx.	velvetleaf huckleberry	VAMY	**
Ericaceae	<i>Vaccinium oxycoccos</i> L.	small cranberry	VAOX	**
Ericaceae	<i>Vaccinium pallidum</i> Ait.	Blue Ridge blueberry	VAPA4	***
Ericaceae	<i>Vaccinium stamineum</i> L.	deerberry	VAST	**
Valerianaceae	<i>Valeriana uliginosa</i> (Torr. & Gray) Rydb.	mountain valerian	VAUL2	**
Valerianaceae	<i>Valerianella chenopodiifolia</i> (Pursh) DC.	goosefoot cornsalad	VACH	**
Valerianaceae	<i>Valerianella umbilicata</i> (Sullivant) Wood	navel cornsalad	VAUM	**
Hydrocharitaceae	<i>Vallisneria americana</i> Michx.	American eelgrass	VAAM3	**
Liliaceae	<i>Veratrum viride</i> Ait.	green false hellebore	VEVI	***
Verbenaceae	<i>Verbena hastata</i> L.	swamp verbena	VEHA2	**
Verbenaceae	<i>Verbena simplex</i> Lehm.	narrowleaf vervain	VESI	**
Verbenaceae	<i>Verbena urticifolia</i> L.	white vervain	VEUR	**
Verbenaceae	<i>Verbena urticifolia</i> L. var. <i>leiocarpa</i> Perry & Fern.	white vervain	VEURL	**
Verbenaceae	<i>Verbena xengelmannii</i> Moldenke		VEEN2	**
Asteraceae	<i>Verbesina alternifolia</i> (L.) Britt. ex Kearney	wingstem	VEAL	**

Asteraceae	<i>Vernonia noveboracensis (L.) Michx.</i>	New York ironweed	VENO	**
Scrophulariaceae	<i>Veronica americana Schwein. ex Benth.</i>	American speedwell	VEAM2	**
Scrophulariaceae	<i>Veronica peregrina L.</i>	neckweed	VEPE2	**
Scrophulariaceae	<i>Veronica scutellata L.</i>	skullcap speedwell	VESC2	**
Scrophulariaceae	<i>Veronicastrum virginicum (L.) Farw.</i>	Culver's root	VEVI4	**
Caprifoliaceae	<i>Viburnum acerifolium L.</i>	mapleleaf viburnum	VIAC	***
Caprifoliaceae	<i>Viburnum dentatum L.</i>	southern arrowwood	VIDE	***
Caprifoliaceae	<i>Viburnum dentatum L. var. lucidum Ait.</i>	southern arrowwood	VIDEL	**
Caprifoliaceae	<i>Viburnum dentatum L. var. venosum (Britt.) Gleason</i>	southern arrowwood	VIDEV	**
Caprifoliaceae	<i>Viburnum lantanoides Michx.</i>	hobblebush	VILA11	**
Caprifoliaceae	<i>Viburnum lentago L.</i>	nannyberry	VILE	**
Caprifoliaceae	<i>Viburnum nudum L.</i>	possumhaw	VINU	**
Caprifoliaceae	<i>Viburnum nudum L. var. cassinoides (L.) Torr. &amp; Gray</i>	withe-rod	VINUC	**
Caprifoliaceae	<i>Viburnum opulus L. var. americanum Ait.</i>	American cranberrybush	VIOPA2	*
Caprifoliaceae	<i>Viburnum prunifolium L.</i>	blackhaw	VIPR	**
Caprifoliaceae	<i>Viburnum rafinesquianum J.A. Schultes</i>	downy arrowwood	VIRA	**
Fabaceae	<i>Vicia caroliniana Walt.</i>	Carolina vetch	VICA2	**
Violaceae	<i>Viola adunca Sm.</i>	hookedspur violet	VIAD	**
Violaceae	<i>Viola affinis Le Conte</i>	sand violet	VIAF2	**
Violaceae	<i>Viola bicolor Pursh</i>	field pansy	VIBI	**
Violaceae	<i>Viola blanda Willd.</i>	sweet white violet	VIBL	**
Violaceae	<i>Viola brittoniana Pollard</i>	northern coastal violet	VIBR	**
Violaceae	<i>Viola canadensis L.</i>	Canadian white violet	VICA4	**
Violaceae	<i>Viola conspersa Reichenb.</i>	American dog violet	VICO2	**
Violaceae	<i>Viola cucullata Ait.</i>	marsh blue violet	VICU	**
Violaceae	<i>Viola hirsutula Brainerd</i>	southern woodland violet	VIHI2	**
Violaceae	<i>Viola lanceolata L.</i>	bog white violet	VILA4	**
Violaceae	<i>Viola macloskeyi Lloyd</i>	small white violet	VIMA2	**
Violaceae	<i>Viola macloskeyi Lloyd ssp. pallens (Banks ex Ging) M.S. Baker</i>	smooth white violet	VIMAP3	**
Violaceae	<i>Viola palmata L.</i>	early blue violet	VIPA3	**
Violaceae	<i>Viola pedata L.</i>	birdfoot violet	VIPE	**
Violaceae	<i>Viola pubescens Ait.</i>	downy yellow violet	VIPU3	**
Violaceae	<i>Viola renifolia Gray</i>	white violet	VIRE2	**
Violaceae	<i>Viola rostrata Pursh</i>	longspur violet	VIRO	**
Violaceae	<i>Viola rotundifolia Michx.</i>	roundleaf yellow violet	VIRO2	**
Violaceae	<i>Viola sagittata Ait.</i>	arrowleaf violet	VISA2	**
Violaceae	<i>Viola selkirkii Pursh ex Goldie</i>	Selkirk's violet	VISE2	**

Violaceae	<i>Viola sororia</i> Willd.	common blue violet	VISO	**
Violaceae	<i>Viola striata</i> Ait.	striped cream violet	VIST3	**
Vitaceae	<i>Vitis aestivalis</i> Michx.	summer grape	VIAE	**
Vitaceae	<i>Vitis aestivalis</i> Michx. var. <i>bicolor</i> Deam	summer grape	VIAEB	**
Vitaceae	<i>Vitis labrusca</i> L.	fox grape	VILA8	**
Vitaceae	<i>Vitis riparia</i> Michx.	riverbank grape	VIRI	**
Poaceae	<i>Vulpia octoflora</i> (Walt.) Rydb.	sixweeks fescue	VUOC	**
Poaceae	<i>Vulpia octoflora</i> (Walt.) Rydb. var. <i>glauca</i> (Nutt.) Fern.	sixweeks fescue	VUOCG	**
Rosaceae	<i>Waldsteinia fragarioides</i> (Michx.) Tratt.	Appalachian barren strawberry	WAFR	**
Lemnaceae	<i>Wolffia brasiliensis</i> Weddell	Brazilian watermeal	WOBR	**
Lemnaceae	<i>Wolffia columbiana</i> Karst.	Columbian watermeal	WOCO	**
Dryopteridaceae	<i>Woodsia glabella</i> R. Br. ex Richards.	smooth woodsia	WOGL	**
Dryopteridaceae	<i>Woodsia ilvensis</i> (L.) R. Br.	rusty woodsia	WOIL	**
Dryopteridaceae	<i>Woodsia obtusa</i> (Spreng.) Torr.	bluntlobe cliff fern	WOOB2	**
Blechnaceae	<i>Woodwardia areolata</i> (L.) T. Moore	netted chainfern	WOAR	**
Blechnaceae	<i>Woodwardia virginica</i> (L.) Sm.	Virginia chainfern	WOVI	**
Ranunculaceae	<i>Xanthorhiza simplicissima</i> Marsh.	yellowroot	XASI	**
Xyridaceae	<i>Xyris difformis</i> Chapman	bog yelloweyed grass	XYDI	**
Xyridaceae	<i>Xyris montana</i> Ries	northern yelloweyed grass	XYMO	**
Xyridaceae	<i>Xyris smalliana</i> Nash	Small's yelloweyed grass	XYSM	**
Xyridaceae	<i>Xyris torta</i> Sm.	slender yelloweyed grass	XYTO	**
Agavaceae	<i>Yucca filamentosa</i> L.	Adam's needle	YUFI	**
Zannichelliaceae	<i>Zannichellia palustris</i> L.	horned pondweed	ZAPA	**
Rutaceae	<i>Zanthoxylum americanum</i> P. Mill.	common pricklyash	ZAAM	**
Liliaceae	<i>Zigadenus leimanthoides</i> Gray	pinebarren deathcamas	ZILE	**
Poaceae	<i>Zizania aquatica</i> L.	annual wildrice	ZIAQ	**
Poaceae	<i>Zizania palustris</i> L.	northern wildrice	ZIPA3	**
Apiaceae	<i>Zizia aptera</i> (Gray) Fern.	meadow zizia	ZIAP	**
Apiaceae	<i>Zizia aurea</i> (L.) W.D.J. Koch	golden zizia	ZIAU	**
Zosteraceae	<i>Zostera marina</i> L.	seawrack	ZOMA	**



## “Walk the Watershed”

Saturday, October 15, 2005

10:00 am, Concrete Plant Park, the Bronx

**Lush forests. Rushing river. Wild animals. The Bronx.**

Think one of these things is not like the others? Wrong! Come back in time with us and explore the natural history of the Bronx River watershed, the region that drains into the Bronx River.

Imagine a time before subways, paved roads and concrete sidewalks when the Bronx River ran free, surrounded by miles of marshland and filled with fish and wading birds. Expert ecologist Dr. Eric Sanderson of the Wildlife Conservation Society/Bronx Zoo will guide you through the Bronx River watershed as we “see” bears and deer tromping through the neighborhoods now known as Crotona Park East, Bronx River, West Farms and Bronx Park South. You won't believe your eyes!

This one-way, 3.3-mile walk starts at the entrance of Concrete Plant Park and ends at the annual Bronx River Golden Ball Festival of the Bronx Zoo (by Bronx Parkway Recommended age is 12 years and Teresa by October 10 to reserve your or (718) 430 - 4690. Bring water, shoes, and your imagination. This tour will be given in English and is expected to end around 1:30pm.



at the Mitsubishi RiverWalk just outside parking lot). Everyone is welcome! up. Space is limited, so please contact spot: [teresa.crimmens@parks.nyc.gov](mailto:teresa.crimmens@parks.nyc.gov) sunscreen, long pants, good walking

### Directions to Concrete Plant Park

By subway: #6 train to Whitlock Avenue. Walk north to Westchester Avenue and take a right. Take another right into the Concrete Plant after crossing the Sheridan Expwy. If you've crossed the river you've gone too far.

By car: We recommend the subway, but if you must drive, please contact Teresa for directions: [teresa.crimmens@parks.nyc.gov](mailto:teresa.crimmens@parks.nyc.gov) or (718)430-4690.

Sponsored by the Wildlife Conservation Society, the Bronx River Alliance and Congressman Jose E. Serrano's WCS-NOAA Lower Bronx River Partnership.

