THE MARSH at DEN ROCK PARK
Lawrence, Massachusetts

BOTANICAL RESOURCE INVENTORY

&

MANAGEMENT RECOMMENDATIONS

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November 2006

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ACKNOWLEDGEMENTS

This report is the final project for my Advanced Certificate in Field Botany/Floristics from the New England Wild Flower Society. Sincere thanks to the Director of Education Greg Lowenberg, my teacher Francis Clark who taught me about wetlands and botanical inventory methodology, and the many other instructors who made learning native plants rewarding and exciting.

Thanks to Christine Tabak, Executive Director of the Merrimack River Watershed Council, Inc. for support and permission to do this study. Thanks also to Tim Simmons, Restoration Ecologist for the Massachusetts Natural Heritage and Endangered Species Program, and the Lawrence and Andover Conservation Commissions and other town offices for their help.

Special thanks to my wife Roberta Fox for her encouragement, help, and support and to my niece Haleigh Niziak, whose geocaching outing led to my interest in The Marsh at Den Rock Park.

SECTION 1 – EXECUTIVE SUMMARY

Purpose

This report describes a wetland area owned by the Merrimack River Watershed Council, Inc. on the south side of Den Rock Park, the flora found there, and the values of this diverse natural resource. In addition, this report identifies threats to this area and makes recommendations for protection. The intention is to:

- Raise awareness of this diverse natural resource
- Establish a baseline botanical inventory
- Make practical recommendations and provide information for management
- Help protect rare and endangered species
- Provide information for educational and volunteer activities
- Encourage interest and concern for Den Rock Park
- Stimulate general interest in natural resource protection

Distribution

This written report was written for and provided to:

- Merrimack River Watershed Council, Inc. (MRWC)
- City of Lawrence Conservation Commission
- Town of Andover Conservation Commission

A copy was also provided to:

- New England Wild Flower Society

Summary of Findings

The area studied and surveyed is referred to here as "The Marsh at Den Rock Park" or more succinctly as "The Marsh." This land parcel, recently acquired by MRWC, adds unique value to the park.

A large portion of The Marsh is marsh land. However, several other plant communities are also present, including river birch swamp, red maple swamp, and successional forest. The marsh land here is the largest marsh in Den Rock Park.

These plant communities include many wetland plants, some of which are rare, and provide habitat for many species of insects and other animals.

The accessibility, aesthetics, relatively small size, and diversity of this area make it well-suited for nature study, bird watching, and educational use.

Concerns

Threats to this special natural resource and the plants found there include:

- Impact from the adjacent residential development in Andover
- Competition from invasive plants
- Disturbance from inappropriate use
- Potential hydrologic changes

Recommendations

Long-term stewardship and periodic monitoring of The Marsh is warranted to deal with threats that could seriously disturb this special place. More immediate actions are also recommended:

- Inform abutters of the wetland treasure in their backyards and their responsibilities thereto. Make specific recommendations regarding abutter stewardship.
- Continue invasive plant monitoring and control. The purple loosestrife management begun in 2005 has shown measurable success and should be continued. Gray willow removal is needed for rare plant habitat conservation.
- Encourage proper use of this area through management and signage.
- Encourage educational use.

SECTION 2 – INVENTORY

Introduction

SECTION 2 provides detailed information about The Marsh. The site location and position in the regional context is shown. Physical characteristics, including topography, geology, soil, hydrology, and land use, are key factors to the plant communities found in The Marsh.

Plant communities have been delineated and surveyed, and are described here. Appendices A, B, and C list identified plants by botanical name, plant family, and plant community, respectively. Plant lists include botanical name, plant family, site, common name, frequency of occurrence, and invasive status. Animals and insects have not been inventoried, but some observations are noted in the plant community descriptions.

Methodology

The physical nature of the site presented here was based on existing information in town and city records, MRWC records, U.S. Geographical Service topographical and bedrock maps, Natural Resource Conservation Service soil maps and descriptions, Massachusetts Geographic Information Service (MassGIS) resource maps and aerial photos, Microsoft aerial photos, neighborhood interviews, and the Town of Andover Geographic Information Systems (Andover GIS). Maps and photos were annotated by the author.

The botanical survey based on plant communities was conducted from September 2005 to November 2006 with bi-weekly field work. Botanical field guides and floras were used for plant identification. Massachusetts Natural Heritage and Endangered Species Program (NHESP) provided information on plant communities and rare plants.

Site

Location

The area studied for this report is located in Den Rock Park in the City of Lawrence. The Den Rock Park Trail Guide describes the park as follows:

> "Den Rock Park is a 120-acre wooded preserve that includes walking trails, a granite rock face with fissures perfect for technical climbing, scenic overlooks, and access to the Shawsheen River."

The park is situated at the intersection of Interstate Route 495 and Salem Turnpike (MA Route 114). The Shawsheen River runs along the northwest side of the park. The Stirling Woods residential development (2000–2003) in Andover abuts the park on the south. (Refer to Figure 1.)

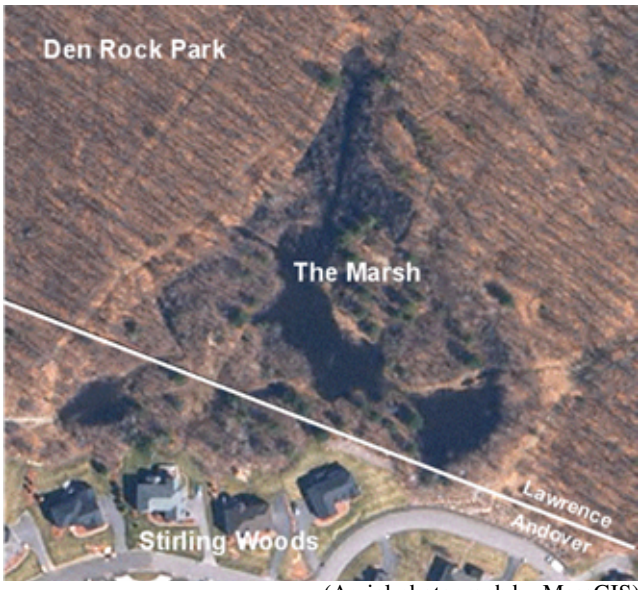
(Map from Den Rock Park Trail Guide)

Figure 1. Den Rock Park

The Marsh is a five-acre, triangular wetland located on the south side of Den Rock Park. Most of The Marsh is in the City of Lawrence; the southwest section is in the Town of Andover. (Refer to Figure 2.)

Study Area

The area surveyed for this report is the section of The Marsh in Lawrence. The Andover section, though mentioned occasionally, is not formally part of the study.



(Aerial photograph by MassGIS)

Figure 2. The Marsh and Stirling Woods

Ownership

Much of Den Rock Park is owned by the City of Lawrence. The Town of Andover and the MRWC own portions on the south side.

The Lawrence section of The Marsh is owned by the MRWC as conservation land. MRWC received this land from the residential developer, Stirling Woods, LLC in 2000. The property changed hands several times before this (Essex County Registry of Deeds, Northern District).

Ownership History	Sale Date
Merrimack River Watershed Council, Inc.	05/09/2000
Stirling Woods, LLC	02/01/1999
FPF Corp.	1997
Rose Champy, Champy Construction Co., Inc	1986
DeCrosta	

The Andover section is privately owned by The Marsh abutters at 1, 3, and 5 Whittemore Terrace (lots 15, 14, and 13, respectively) and 36 Stirling Street (lot 16) in the Stirling Woods development.

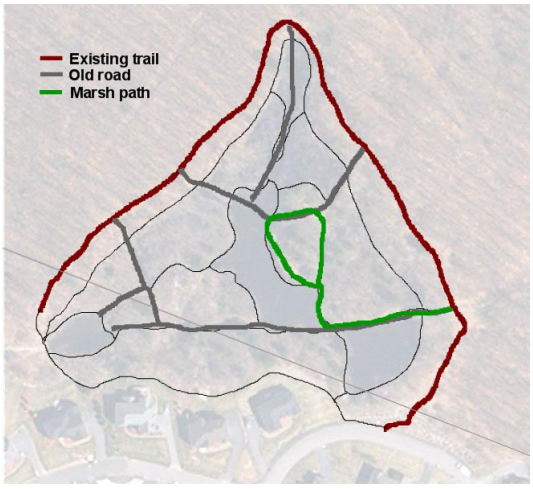
Public Access

Park use. The Marsh, as part of Den Rock Park, is open dawn to dusk for walking, rock climbing, and nature observation. Overnight camping, motorized or off-road vehicles, and camp fires are not permitted (*Den Rock Park Trail Map*).

Entry points. The main entrance and visitor parking lot for Den Rock Pack is located on Salem Turnpike (MA Route 114) in Lawrence. The Marsh is approximately 1/2 mile to the west by trail.

A secondary entrance with street parking only, located on Stirling Street in Andover, provides more direct access. The Marsh is on the left a short distance down the trail. (Refer to Figure 1.)

Marsh access. Existing trails run along the eastern and western sides of The Marsh, providing visibility into The Marsh. Old roads enter The Marsh from several points along these trails, providing easy access when not flooded. The most reliable and least obtrusive access is the path shown in green on the map. (Refer to Figure 3.)



(Aerial photograph by MassGIS)

Figure 3. Marsh Access

Physical Nature

Topography

The Marsh is located near the summit of a small hill on the south side of the park. The Marsh was formerly the northern tip of a gravel pit. Excavation has left the triangular marsh area relatively flat and nearly surrounded by an 8–10 foot embankment.

Elevation in The Marsh is about 88 feet with slightly lower elevation in the marsh areas and swamp at the northern tip. The flat successional forest areas are at a slightly higher elevation (1–3 feet) than The Marsh areas. Two small knolls, elevation about 98 feet, are within The Marsh.

The embankment slope to The Marsh is consistently about 30º on the east and west sides, but more variable and generally less steep on the south side. The southwest corner is only slightly higher than The Marsh. The top of the east and west embankments is flat carrying an old road, now an active trail.

The surrounding land slopes away from the top of the embankment: 3–8% increasing to 15% to the east, north, and south and to 25% to the west (*Soil Survey,* 1981).

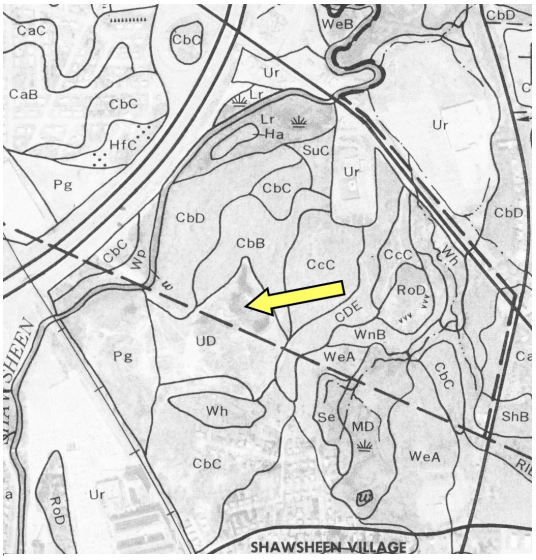
Geology

Prior to sand and gravel removal, The Marsh and area to the south had significant deposits of glacial till. The outwash deposits were left as glacier receded.

According to the *Bedrock Geologic Map of Massachusetts* (1983), Den Rock Park lies within the Andover Pluton zone. The plutonic intrusive igneous bedrock is granite, described in the map legend as "biotite granitic gneiss (probably mostly Devonian, but may be older in part) – mainly small lenses."

Soils

The *Soil Survey of Essex County, Massachusetts, Northern Part* (1981) shows the general soil type in Den Rock Park is "Canton-Charlton-Sutton association: Deep, nearly level to steep, well-drained and moderately well-drained, loamy soils formed in friable glacial till." Excavation of the glacial till that formerly filled The Marsh removed the organic layer and left only a thin layer of compacted sand and gravel over the underlying bedrock. Specific soil types are shown in the map excerpt from Map Sheet 29 of the soil survey. (Refer to Figure 4.)



Key

UD – Udorthents, smoothed

CbB – Canton, 3–8% slope
CbC – Canton, 8–15% slope
CbC – Canton, 15–25% slope

(Map by *Soil Survey*, 1981)

Figure 4. Marsh and Surrounds Soil Types

The Marsh soil (marked by the arrow on the map) is now nearly entirely Udorthents with only a thin surface organic layer. Udorthents are highly disturbed soils where soil material has been excavated. In The Marsh, the remaining soil is a mixture of silt, sand, and gravel. The substrate is wet. Marsh soil testing, by the University of Massachusetts Soil and Plant Tissue Testing Laboratory, show the soil to be very acidic (pH 5.3) with low to very low nutrient (P, K, Ca, Mg, NO_3-), micronutrient (B, Mn, Zn, Cu) levels, and cation exchange capacity (CEC).

The adjacent areas to the north, east, and west have Canton soil. Canton soil is characterized by very stony fine sandy loam over well-drained substrates formed from glacial till.

The area to the south is now residential. A loam surface was added to the udorthents substrate.

Hydrology

Den Rock Park lies within the Shawsheen River watershed, a part of the larger Merrimack River watershed. The Shawsheen River runs along the northern side of the park, eventually emptying into the Merrimack River.

The Marsh is perched at a relatively high elevation on a small hill. Nearly all water is directly from precipitation. A spring to the east of The Marsh was reported as reliable prior to sand and gravel operations, but exhausted thereafter (Clark, personal conversation). Runoff from surrounding land is minimal, as land slopes away from The Marsh. There are no streams feeding The Marsh. Water level is limited by the relatively flat topography and a swale leading to the Shawsheen River from the southwest corner of The Marsh.

The marsh and swamp areas remain inundated throughout at least a portion (winter and spring) of the year. In 2005, no standing water was present in late summer and early fall. In 2006, a pond in the central marsh remained throughout the year, with its lowest water depth in September at about one foot.

(Photograph by Bruce M. Patterson, 2006)

Figure 5. Central Marsh, May 17, 2006

(Photograph by Bruce M. Patterson, 2006)

Figure 6. Central Marsh, September 18, 2006

Land-use History

Den Rock Park has been a City of Lawrence park since 1896 with improvements made by the Civilian Conservation Corps in the 1930's. Interstate Route 495 construction cut the park off from Lawrence and park use dwindled. In 2003 and 2004, efforts to revitalize to park were begun by the City of Lawrence, Groundwork Lawrence, and the Student Conservation Association.

Prior to 1995, the land in Andover adjacent to Den Rock Park was zoned for industrial use. The top soil and a great quantity of sand and gravel were removed from this area and The Marsh for the construction of route I-495. Sand and gravel operations ended in 1963. The remaining sand and gravel was leveled, but no restoration was done. (Clark, personal conversation).

In the 1970's, the site became popular for off-road vehicle recreation and "partying"; this continued into the 1990's. The site became a popular place for dumping stolen cars throughout the 1980's. Scattered car parts can still be found in the area. (Clark, personal conversation).

In 1995, the Town of Andover rezoned this area to residential. The land was purchased by Stirling Woods, LLC in 1999 for a residential development, completed in 2003. The swale from the southwest corner of The Marsh to the Shawsheen River was constructed at this time. With the Stirling Woods development and revitalizations efforts in Den Rock Park, off-road vehicle use and stolen-car activity ceased. (Clark, personal conversation).

In 2000, Stirling Woods deeded over several parcels of land in Andover and Lawrence, including The Marsh, to the MRWC. These parcels are now conservation land and considered part of Den Rock Park. Today, Den Rock Park is a 120-acre wooded preserve used for hiking, dog-walking, rock climbing, and bird watching (*Den Rock Park Trail Map*).

Botanical Survey

Method

The site was mapped by plant communities. Community boundaries were roughly determined by examining aerial photographs and topographical maps, and refined through field observation at different times during the year. Community types are based on physical site characteristics and dominant plant species.

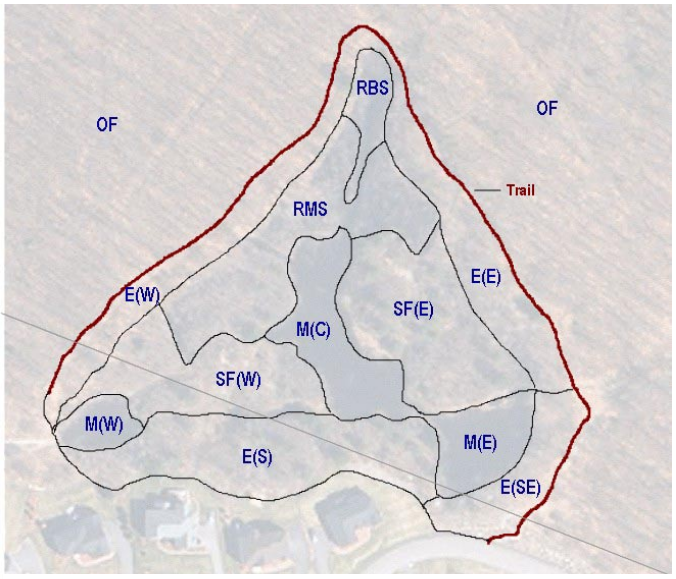
Using the relevÈ (or "sample stand") method, points in each plant community were used to determine tree canopy, shrub/sapling, and herbaceous/groundcover dominants. Informal plots provided data on species cover and abundance. Walkabouts located other plant species. Plant species were examined and identified. The resultant plant lists in the appendices are a good representation of the diverse flora in each community. Grasses, sedges, and rushes were not all identified and other species were likely missed.

Primary sources used for plant ID were *Newcomb's Wildflower Guide;* Gleason and Cronquist's *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*, Second Edition; and Haines and Vining's *Flora of Maine*. Botanical names used are from Haines' *Synonymized Checklist of New England Tracheophytes.* Massachusetts NHESP was a source for information on plant communities and rare plants.

The following plant community descriptions describe the environmental and botanical structure of each area. Canopy, shrub/sapling, and herbaceous/groundcover layer composition and cover are given. Cover is the amount of shade produced when the plants are in full leaf. Special features and concerns regarding the community are mentioned.

Plant Communities

Several different plant community types are found within the study area. Palustrine (wetland) communities are open marsh and swamps. Forest/woodland communities are successional mixed deciduous forest within The Marsh, mixed forest along The Marsh embankment, and oak forest in the surrounding areas.



(Aerial photograph by MassGIS)

Key

Wetland:

M(E)	Marsh (East)
M(C)	Marsh (Central)
M(W)	Marsh (West)
RBS	River Birch Swamp
RMS	Red Maple Swamp

Forest:

E(E)	Embankment (East)
E(S)	Embankment (South)
E(SE)	Embankment (Southeast)
E(W)	Embankment (West)
SF(E)	Successional Forest (East)
SF(W)	Successional Forest (West)
OF	Oak Forest

Figure 7. Plant Community Delineation

Other distinct micro-habitats (such as potential vernal pools, dry knolls, old road depressions) are described within the following community descriptions.

Marsh Areas

The three marsh areas are best classified as shallow emergent marsh. This type of marsh is grass, sedge, and/or rush dominated; seasonally inundated; and permanently saturated.

Environmental setting. In winter and spring, these marshes are fully inundated to a depth of ½–1½ feet. The water level fluctuates with precipitation, but levels gradually decrease during summer and early fall until much of the area has no surface water. Soil consists of a thin layer of organic matter over sand and gravel. The substrate remains saturated throughout the year.

Central Marsh, M(C)

Though best classified as a shallow emergent marsh, the central marsh has vegetation zonation resembling that of a kettlehole wet meadow, inland acidic pondshore, or coastal pondshore. (See the *Classification of the Natural Communities of Massachusetts*, Swain and Kearsely, 2001, for a description these community types.)

(Photograph by Bruce M. Patterson, 2006)

Figure 8. Central Marsh

Environmental setting. The shore of the central pond is flat, rising very gradually as you move away from the pond. As water levels diminish in the summer, more of the shore is exposed. A pond remains in the center marsh. By early fall in drier years, this pond completely dries of surface water (2005); in years with more precipitation, the pond area is reduced, but water remains (2006). The seasonal drawdown of water levels reduces competition for plants adapted to such a regime.

Vegetation description. This marsh has a rich diversity of plant species. There is no tree canopy, except where shaded by adjacent forested areas. Few shrubs are found, except for the invasive gray willow (*Salix cinerea*) in the north. The marsh is dominated by sedges and rushes, but has a continual successional bloom of wildflowers starting with lance-leaved violet, amelanchier, and rhodora in May and ending with milkwort, goldenrod, and boneset in October.

As you move from the adjacent drier areas outside the marsh to the waterline of the pond, plant zones are: upland oak forest; successional forest; shrub zone, pond shore edge, emergent exposed pondshore, and semi-permanently flooded zone. The successional forest meets the marsh along some of the pond shore edge; at other places, a narrow shrub zone with highbush blueberry (*Vaccinium corymbosum*), sheep laurel (*Kalmia angustifolia*), and lowbush blueberry (*Vaccinium* ssp.) borders the marsh. The pondshore edge, the outermost marsh zone, has large swaths of sphagnum moss (*Sphagnum* ssp.)

and haircap moss (*Polytrichum* sp.) with occasional purple milkwort (*Polygala sanguinea*), nodding ladies' tresses (*Spiranthes cernua*), and woolgrass (*Scirpus cyperinus*). In the emergent exposed pondshore, Plymouth gentian (*Sabatia kennedyana*), lance-leaf violet (*Viola lanceolata*), St. Johnswort (*Hypericum* ssp.), panic grass (*Panicum* ssp.), sedge (*Carex* ssp.), rush *(Juncus* ssp.), beggar-ticks (*Bidens frondosa*), spatulate-leaved sundew (*Drosera intermedia*), small leaf aster (*Symphyotrichum racemosum*), northern bugleweed (*Lycopus uniflorus*), golden pert (*Gratiola aurea*), and purple loosestrife (*Lythrum salicaria*) are all common. The semi-permanently flooded zone has common arrowhead (*Sagittaria latifolia*), sedge, and a large patch of swamp candles (*Lysimachia terrestris*) south of the pond.

Special features. A large population of Plymouth gentian occurs in the northern part of the marsh with individuals scattered elsewhere in the emergent exposed pondshore.

Wildlife. Pondshore is an important habitat for dragonflies and damselflies. Many species have been observed, though not identified for this survey. The pond is teeming with tadpoles in the spring and frogs throughout the summer. Waterfowl visits in spring and numerous bird species have been observed throughout the year. White tail deer visit the marsh and in rutting season have stripped the bark off edge shrubs. Coyote have been seen at pond edge, presumably hunting frogs.

Concerns. Spread of invasive plants and trampling are the most immediate threats to marsh plant community. Purple loosestrife is found scattered throughout the marsh. Gray willow is threatening the Plymouth gentian population. Though not yet a problem, trampling and soil compaction by foot and mountain bike have been observed. Increased disturbance could result in habitat loss.

Eastern Marsh, M(E)

Environmental setting. The eastern marsh slopes slightly upward from the south to the north. The northern end transitions into a narrow grassland at the edge of the successional forest. A pond remains in the southwest corner as the northerly side becomes drier. By late summer, no standing water remains (2005, 2006).

(Photograph by Bruce M. Patterson, 2006)

Figure 9. Eastern Marsh

Vegetation description. The marsh has no tree canopy, except where shaded by adjacent forested areas. Shrub layer cover is about 5%, consisting primarily of river birch (*Betula nigra*) with occasional willows (*Salix* ssp.) and steeplebush (*Spirea tomentosa*). The river birches are multi-stem small trees and shrubs scattered on the southern and central portion of the marsh. A small population of buttonbush (C*ephalanthus occidentalis*) occurs in the southwest corner of the marsh. The herbaceous layer provides 60% cover, consisting primarily of graminoids, with a significant population of small white aster

(*Symphyotrichum racemosum*) and invasive purple loosestrife (*Lythrum salicari*a). The loosestrife is densest along the south and west sides, but is present throughout the marsh. Plymouth gentian (*Sabatia kennedyana*), nodding ladies' tresses (*Spiranthes cernua*), golden pert (*Gratiola aurea*), boneset (*Eupatorium* ssp.), lance-leaved goldenrod (*Euthamia graminifolia*), and northern bugleweed (*Lycopus uniflorus*) occur occasionally. The 50% groundcover is primarily sphagnum with significant populations of spatulate-leaved sundew (*Drosera intermedia*) and lance-leaf violet (*Viola lanceolata*). The sundew and violets are in a large swath in the northern half of the marsh.

Special features. The large population of spatulate-leaved sundew is noteworthy.

Concerns. The largest infestation of purple loosestrife is found in this marsh. The population becomes denser as one approaches the residential development to the south.

River Birch Swamp, RBS

Though river birch swamp is not generally recognized as a distinct community type, it is described separately here due to its uniqueness.

(Photograph by Bruce M. Patterson, 2006)

Figure 10. River Birch Swamp

Environmental setting. The northernmost portion of The Marsh is a seasonally flooded forested basin swamp. This swamp area is inundated for a longer period of time and to a deeper level (maximum depth 26 inches in 2006) than the adjacent red maple swamp. The area is small with a steep embankment (approximately 30º slope) on the northern, eastern, and western sides. To the south, the river birch edge an old road depression, where the water depth is greater than the adjacent red maple swamp to the east and west. Soil is a thin layer of organic matter over sand and gravel. The transition from river birch swamp to red maple swamp is abrupt.

Vegetation description. Species diversity in the river birch swamp is quite limited. The tree canopy, 90% river birch (*Betula nigra*) and occasional red maple (*Acer rubrum*) and gray birch (*Betula populifolia*), provides 70% cover with a more open central area. Neither shrub nor herbaceous layer exists in the northern portion where the river birch is more mature and the cover is densest. The central area is treeless with woolgrass (*Scirpus cyperinus*) in the middle and buttonbush (C*ephalanthus occidentalis*) towards the edge. The old road depression to the south is lined with river birch saplings and occasional steeplebush (*Spirea tomentosa*) and gray willow (*Salix cinerea*). Occasional marsh fern (*Thelypteris palustris*) and royal fern (*Osmunda regalis*) are also present.

Special features. River birch is on the Massachusetts rare plant watch list. The larger of the mature river birch here exceed 10 inches in diameter.

Concerns. The invasive glossy buckthorn is rare in the river birch swamp. Monitoring is recommended to check for any buckthorn progression.

Red Maple Swamp, RMS

The red maple swamp is a common natural forest type of Massachusetts. It is an acidic forested swamp, dominated by red maple growing in wetland soils. Swamps inundated for two to three months may function as vernal pools, providing important breeding habitat for amphibians (Swain 2001).

(Photograph by Bruce M. Patterson, 2006)

Figure 11. Red Maple Swamp

Environmental setting. The wooded area north and northwest of the central marsh is a seasonally flooded red maple basin swamp. The area is flooded up to about a foot throughout the winter and spring, saturated in early summer, but dries enough to walk on in later summer and fall. The land is flat, becoming only slightly higher from north to south. Soil is a thin layer of organic matter over sand and gravel.

Vegetation description. Red maple (*Acer rubrum*) provides 70–90% of the tree canopy. River birch (*Betula nigra*), gray birch (*Betula populifolia*), and occasional red oak (*Quercus rubra*) add to the canopy, providing a total 60–70% cover. Poor soil nutrition may contribute to the short canopy height (25–30 feet) of the relatively young trees. The thin (10–20%) shrub/sapling layer includes saplings of the canopy trees and steeplebush (*Spirea tomentosa*), black huckleberry (*Gaylussacia baccata*), and glossy buckthorn (*Frangula alnus*). An herbaceous layer is lacking in most of the swamp, except for occasional plants. The southwestern part of the swamp has a 30% herbaceous cover made up of graminoids, moss, lowbush blueberry (*Vaccinium angustifolium*), white pine (*Pinus strobus*), red oak, and glossy buckthorn.

Concerns. Glossy buckthorn is moving in from the east and the west.

Successional Forest, SF(E), SF(W)

The forest on the eastern and western sides of The Marsh is a transitional community, now populated with shrubs, saplings, and young trees.

(Photograph by Bruce M. Patterson, 2006)

Figure 12. Successional Forest

Environmental setting. The early successional forest occurs in areas of previous disturbance within a northern hardwood forest. Soil is a thin layer of organic matter over sand and gravel. Soil is wet for at least part of the year, but is drier than the adjacent marsh and swamp (Swain 2001).

The terrain in both the eastern and western successional forest areas is flat, except for a small, open knoll in each, with elevation equal to the oak forest surrounding The Marsh. The knoll soil is poor, compacted, and well-drained.

Vegetation description. Gray birch (*Betula populifolia*), red maple (*Acer rubrum*), and aspen (*Populus tremuloides*) trees and saplings dominate this community. The 25–35 foot canopy varies from 40% coverage in the western section to 70% coverage in portions of the eastern section. Other trees include red oak (*Quercus rubra*), large-toothed aspen (*Populus grandidentata*), white pine (*Pinus strobus*), and white oak (*Quercus alba*). In addition to saplings, the shrub layer is primarily black huckleberry (*Gaylussacia baccata*), highbush blueberry (*Vaccinium corymbosum*), glossy buckthorn (*Frangula alnus*), steeplebush (*Spirea tomentosa*), and gray willow (*Salix cinerea*). The herbaceous/groundcover layer provides 60-70% cover. This is dominated by lowbush blueberry (*Vaccinium angustifolium*), Pennsylvania sedge (*Carex pensylvanica*), dewberry (*Rubus flagellaris*), moss, and other graminoids.

The southern and western edge of the successional forest to the east is a grassland microhabitat, dominated by little bluestem (*Schizachyrium scoparium*). Goldenrods (*Solidago* ssp.), steeplebush (*Spirea tomentosa*), small-flowered gerardia (*Agalinis paupercula*), purple milkwort (*Polygala sanguinea*), sweetfern (*Comptonia peregrina*), nodding ladies' tresses (*Spiranthes cernua*) are found here.

The knoll microhabitats support plant communities that can tolerate poor, open soil. Plants include pitch pine (*Pinus rigida*), Scots pine (*Pinus sylvestris*), sweetfern, wild indigo (*Baptisia tinctura*), little bluestem, and bush clover (*Lespedeza capitata*) in the western section.

Special features. The knolls provide habitat to plants not found in the wetter areas.

Wildlife. Successional forests provide important habitat for a differing set of birds and other animals as the forest matures.

Concerns. Glossy buckthorn is moving in from the east and the west.

Mixed Deciduous Forest, E(E), E(S), E(SE), E(W)

The forested embankment surrounding The Marsh does not fit well in the traditional plant community classification. It is a transitional area between the marsh, swamp, and successional forest communities and the surrounding oak forest.

Environmental setting. The Marsh embankment is a disturbed area where forest succession has progressed for a longer time than the successional forests within The Marsh. The embankment is steeply sloped (up to 30º), except for a flatter section to the south. Soil is somewhat better than within The Marsh.

Vegetation description. The eastern and southeastern embankments are dominated by red maple (*Acer rubrum*), red oak (*Quercus rubra*), and gray birch (*Betula populifolia*), providing a variable canopy from 30–80 feet in height with 30–70% cover. The shrub layer provides 20% cover with glossy buckthorn (*Frangula alnus*), red maple, and red oak being most prevalent. Lowbush blueberry (*Vaccinium* ssp.), bracken fern (*Pteridium aquilinum*), wild indigo (*Baptisia tinctura*), dewberry (*Rubus flagellaris*), moss, Canada mayflower (*Maianthemum canadensis*), Pennsylvania sedge (*Carex pensylvanica*), and other graminoids provide most of the 70% herbaceous layer. Pink lady's slipper (*Cypripedium acaule*) is also present.

The western embankment canopy is dominated by red oak, with less red maple and gray birch than the eastern embankment. The canopy here varies from 30–70% cover with trees 40–80 feet in height. A 10–30% shrub layer cover is a mix of red oak, glossy buckthorn, wild black cherry (*Prunus serotina*), sweetfern (*Comptonia peregrina*), white oak (*Quercus alba*), viburnum (*Viburnum* ssp.), and black huckleberry (*Gaylussacia baccata*). The herbaceous layer with 40–70% cover is primarily lowbush blueberry (*Vaccinium* ssp.) with dewberry (*Rubus flagellaris*), bracken fern, goldenrods (*Solidago* ssp.), spotted wintergreen (*Chimaphila maculata*), Canada mayflower, pink lady's slipper, moss, Pennsylvania sedge, and other graminoids.

The southern embankment is dominated by red maple, white pine, gray birch, and aspen (*Populus* ssp.). Canopy cover is 50–80% with height from 50–70 feet in height. Shrubs include black huckleberry and sweetfern, in addition to tree saplings. The 40–80% herbaceous layer is primarily lowbush blueberry, moss, and graminoids.

Concerns. Glossy buckthorn is occasionally found in the embankments.

Mixed Oak Forest, OF

The Marsh is surrounded by a mixed oak forest on the northern, eastern, and western sides. Though not included in this study, its potential impact on The Marsh is noted.

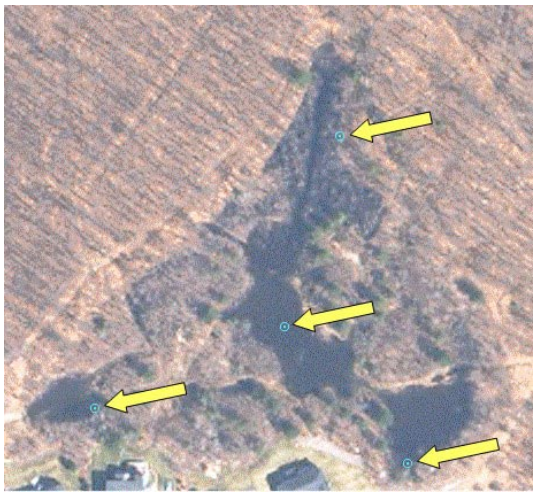
Environmental setting. The dry, acidic soil of forest slopes away from The Marsh. Little runoff into The Marsh occurs.

Vegetation description. This typical oak forest is dominated by red oak (*Quercus rubra*). Shrub and herbaceous layer is primarily huckleberry (*Gaylussacia baccata*) and blueberry (*Vaccinium* ssp.). On the eastern side of The Marsh, the oak forest edge includes some open shrubby area with sheep laurel (*Kalmia angustifolia*), bracken fern (*Pteridium aquilinum*), blueberry, and huckleberry, and edge trees including white oak (*Quercus alba*), pitch pine (*Pinus rigida*), and gray birch (*Betula populifolia*).

Vernal Pools

Massachusetts NHESP identifies a number of potential, unverified, vernal pools at this site (data from MassGIS). These have not been certified, as of this date. Refer to NHESP for certification guidelines.

"Vernal pools are small, shallow ponds characterized by a lack of fish and annual or semi-annual periods of dryness. Vernal pool habitats are extremely important to a variety of wildlife species, including some amphibians that breed exclusively in vernal pools, and other organisms such as fairy shrimp which spend their entire life cycles confined to such locales." (Massachusetts NHESP).



(Aerial photograph by MassGIS)

Figure 13. Potential Vernal Pools

Special Plants

The Marsh provides habitat for a large number of plant species, which add interest and beauty. A few of these plants are described below.

(Photographs by Bruce M. Patterson, 2006)

Spatulate-leaved Sundew (*Drosera intermedia*)

Description. The sundew can be seen from early spring through summer with delicate white flowers in August. Sundews are insectivorous, capturing insects in the sticky hairs on the pads (modified leaves).

Population. A large swath of sundews can be found in the northern half of the Eastern Marsh and along the western side of the Central Marsh.

Nodding Ladies' Tresses (*Spiranthes cernua*)

Description. This lovely orchid appears suddenly in late summer, blooming through early fall. Flowers are arranged in a double spiral around the stalk and droop downward slightly.

Population. Nodding ladies' tresses is found around the edges of the marshes. In 2005, only a few individuals were seen. In 2006, the population increased considerably.

Golden Pert (*Gratiola aurea*)

Description. This low creeping plant, also knows as golden hedge-hyssop, blooms with small, tubular yellow flowers June through September.

Population. As the water recedes, the yellow flowers carpet the north and east of the pond in the Central Marsh. Individuals are scattered elsewhere throughout the marshes, but are concentrated in the wetter areas.

Lance-leaved violet (*Viola lanceolata*)

Description. This violet with long, narrow leaves blooms from April through June. The lower petal of the white flower is striated with purple.

Population. This violet is common in the damp outer areas of the marshes where water recedes earlier in the season.

Small-flowered Gerardia (*Agalinis paupercula*)

Description. This delicate plant grows 6–18 inches tall with thread-like leaves and 1/2-inch, rose-pink flowers in August and September.

Population. The gerardia is found in small groups on the southern edge of the central marsh, along the old road separating the western successional forest from the southern embankment, and scattered elsewhere at the marsh edge.

SECTION 3 – ANALYSIS AND RECOMMENDATIONS

Values

The Marsh has significant value to both wildlife and park visitors.

Ecological

Though other wetlands are found within the park, The Marsh contains the most significant marsh area, providing habitat for numerous wetland plants, amphibians, insects, and birds. The site supports a substantial population of river birch. Most noteworthy is the large population of Plymouth gentian, which normally is found in more coastal areas.

Recreational

The Marsh provides a rich and convenient place for nature observation. Rare plants and other wildflowers not commonly seen can be observed here. Birds, dragonflies, and amphibians are plentiful.

Educational

The Marsh affords educational resources for outdoor classroom – plant communities, wetlands, wetland plants and animals, rare and endangered plants. There is an opportunity for vernal pool certification, understanding invasive plant threats, and participation in invasive plant management. ["Guidelines for the Certification of Vernal Pool Habitat" are available from Massachusetts NHESP.]

Aesthetic

New beauty emerges with each change of season.

Concerns

Several threats could degrade The Marsh and reduce the value it provides.

Invasive plants

Competition from invasive plants could impinge on the success of the native wetland and upland plants in The Marsh.

- Gray willow, an invasive species threatening Plymouth gentian in southern Massachusetts (Tim Simmons, Massachusetts NHESP), has taken hold in the immediate vicinity of the Plymouth gentian in The Marsh and has become an immediate threat to the population there.
- Purple loosestrife is invading the marsh areas from the southern side, where the densest population is found. If left unchecked, the loosestrife may become dominant and force out native marsh plants.
- Glossy buckthorn, frequently found in the successional forest areas and embankments, may affect the plant diversity in these areas and spread to other parts of The Marsh.

Area misuse

Seasonal inundation naturally limits use. However, some disturbance has been observed. Plants are directly impacted by:

- Trampling and soil compaction by walking and mountain biking. Visible tracks are clearly under-vegetated. Recovery of such disturbed areas is slow.
- Dumping of grass, garden cuttings, and tree and shrub branches.
- Prior dumping of trash, tires, and auto parts is still evident.

Abutter impact

Inadvertent impact from the Stirling Woods residential development abutting The Marsh could exacerbate area threats.

- Runoff from fertilized and chemically treated lawns could affect marsh plants and promote invasive plant success by changing soil conditions.
- Dumping of yard waste could change local soil conditions and affect marsh hydrology.
- Increased marsh access points could increase trampling and soil compaction.

Hydrology

Changes in the current marsh hydrology could have a negative impact. The marsh and swamp habitat depends upon seasonal water fluctuation. It is critical to Plymouth gentian success and to the amphibian life cycles. Hydrology could change from:

- Natural weather patterns.
- Dumping.
- Deliberate or inadvertent Marsh outflow modifications. The outflow on the southwest corner is on private property.

Succession

Natural forest and marsh succession could change plant species composition and reduce marsh area.

Recommendations

Long term stewardship and periodic monitoring of The Marsh is warranted to deal with potential threats that could seriously disturb this area. More immediate specific actions are recommended to encourage proper use, manage invasive plants, and educate abutters of the marsh value and the abutters' responsibilities. These actions are detailed in the sections that follow.

Encourage proper use

The natural resources of The Marsh provide a benefit to Den Rock Park visitors. Proper recreational and educational use should be encouraged. Signage and trail management could reduce activities negatively affecting the area.

Signage. Consider posting park rules and regulations at the Stirling Street entrance. Rules of no dumping and restricting mountain bikes to main trails could be added.

Marsh access. If disturbance increases, consider marking the area as a protected and fragile habitat, reducing access points, and providing an approved trail.

Cleanup. Consider removal of existing trash, tires, and automobile parts.

Manage invasive plants

Purple loosestrife. Prior purple loosestrife management has shown measurable success and should be continued. Removal by pulling flowering (and non-flowering) stems in August is practical, considering the size of the existing population and root systems limited by soil conditions. If pulling cannot be completed, deadheading and removal of flowers will slow population growth by eliminating seed dispersal. [In 2005, purple loosestrife was pulled from the central marsh and deadheaded in the eastern marsh. A 60% reduction in flowering stems was observed in the central marsh in 2006; the population in the eastern marsh remained constant. Again, in 2006 the central marsh was pulled and the eastern marsh was deadheaded.]

Gray willow. Removal is needed for rare plant habitat conservation of the Plymouth gentian. The cut-and-paint method is best done in October. Shrubs are cut near the ground and an herbicide formulated for wetlands (e.g., Rodeo) is applied to cut stems.

Glossy buckthorn. The buckthorn is less of an immediate problem, but removal may want to be considered. Removal is easier before the plants mature and many are now small. Smaller plants can be pulled by hand or with a weed wrench. Larger plants can be removed by the cut-and-paint method.

Educate abutters

Inform the Andover abutters of the wetland treasure in their backyards and their responsibilities thereto. Make specific recommendations regarding abutter stewardship, including:

- Non-obtrusive lawn care
- Proper yard waste disposal
- Rare plant protection on their land
- Invasive plant control

Conclusion

The Marsh at Den Rock Park is a rich, natural resource that can continue to benefit the community and wildlife for many years if modest management and control efforts are adopted.

REFERENCES

Physical Nature

Clark, Wayne. Personal conversation. 21 Liberty St., Andover.

Den Rock Park Trail Guide. City of Lawrence and Groundwork Lawrence.

Fuller, Donald C. and Charles F. Hotz. 1981. *Soil Survey of Essex County, Massachusetts, Northern Part*. United States Department of Agriculture, Soil Conservation Service.

Microsoft Virtual Earth. 2006. Microsoft Corp.

Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Environmental Affairs.

Soil Analysis Reports, University of Massachusetts Soil and Plant Tissue Testing Laboratory.

Town of Andover Geographic Information Systems (Andover GIS), Andover, Massachusetts.

U.S. Geographical Service.

Plant Communities

Leahy, Christopher, John Hanson Mitchell, and Thomas Conuel. 1996. *The Nature of Massachusetts*. Massachusetts Audubon Society. Addison-Wesley Publishing Company, Inc.

Swain, Patricia C. and Jennifer B. Kearsley. 2001. *Classification of the Natural Communities of Massachusetts*, Version 1.3. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife.

Plant Species

Brown, Lauren. *Grasses, An Identification Guide.* Houghton Mifflin Company, Boston.

Dwelley, Marilyn J. 2000. *Spring Wildflowers of New England*. Down East Books, Camden.

Dwelley, Marilyn J. 2004. *Summer & Fall Wildflowers of New England*. Down East Books, Camden.

Gleason, Henry A. and Arthur Cronquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada, Second Edition*. The New York Botanical Garden, Bronx, NY.

Haines, Arthur and Thomas E. Vining. 1998. *Flora of Maine, a Manual for Identification of Native and Naturalized Vascular Plants of Maine*. V. F. Thomas Co., Bar Harbor.

Haines, Arthur. *Synonymized Checklist of New England Tracheophytes.* 2006. Unpublished.

Harris, Stuart K. 1975. *The Flora of Essex County, Massachusetts*. Peabody Museum, Salem, Massachusetts.

Holmgren, Noel H. *Illustrated Companion to Gleason and Cronquist's Manual, Illustrations of the Vascular Plants of Northeastern united States and Adjacent Canada*. 1998. The New York Botanical Garden, Bronx, NY.

Massachusetts Natural Heritage and Endangered Species Program. 1985. *Massachusetts Rare and Endangered Plants: Plymouth Gentian* (*S. kennedyana* Fern.), Fact Sheet.

Newcomb, Lawrence. *Newcomb's Wildflower Guide*. 1977. Little, Brown, and Company, Boston.

Orrell Elliston, L.C. 2006. *The Natural History, Genetics and Population Biology of Sabatia kennedyana (Plymouth Gentian): An Endangered Plant of Atlantic Coastal Pondshores*, (unpublished thesis).University of Massachusetts, Boston.

Petrides, George *A. A Field Guide to Trees and Shrubs, Second Edition*. 1972. Houghton Mifflin Company, Boston.

Sorrie, Bruce A. and Paul Somers. 1999. *The Vascular Plants of Massachusetts: A County Checklist*. Massachusetts Division of Fisheries and Wildlife, Natural Heritage & Endangered Species Program.

APPENDIX A – Vascular Plant List by Botanical Name

Genus / species / variety	Common name	Community	Freq.	Notes
Acer rubrum L.	red maple	Embankment (E)	C	
Acer rubrum L.	red maple	Embankment (W)	F	
Acer rubrum L.	red maple	Embankment (S)	C	
Acer rubrum L.	red maple	Embankment (SE)	C	
Acer rubrum L.	red maple	Red Maple Swamp	A	
Acer rubrum L.	red maple	River Birch Swamp	O	
Acer rubrum L.	red maple	Successional (E)	C	
Acer rubrum L.	red maple	Successional (W)	C	
Agalinis paupercula (Gray) Britt.	Small-flowered gerardia	Marsh (Central)	O	
Agalinis paupercula (Gray) Britt.	Small-flowered gerardia	Marsh (East)	O	
Agalinis paupercula (Gray) Britt.	Small-flowered gerardia	Old Road (S)	O	
Agalinis paupercula (Gray) Britt.	Small-flowered gerardia	Successional (E)	O	
Agalinis paupercula (Gray) Britt.	Small-flowered gerardia	Successional (W)	O	
Amelanchier sp.	Shadbush	Red Maple Swamp	O	
Apocynum sp.	Dogbane	Embankment (W)	O	
Apocynum sp.	Dogbane	Successional (W)	R	
Aralia hispida Vent.	Bristly sarsaparilla	Embankment (W)	R	
Aronia sp.	Chokeberry	Marsh (East)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (E)	F	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (W)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (SE)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Old Road (S)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Successional (E)	F	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Successional (W)	O	
Betula nigra L.	river birch	Marsh (East)	O	
Betula nigra L.	river birch	Red Maple Swamp	O	
Betula nigra L.	river birch	River Birch Swamp	A	
Betula nigra L.	river birch	Successional (W)	R	
Betula populifolia Marsh.	Gray birch	Embankment (E)	F	
Betula populifolia Marsh.	Gray birch	Embankment (W)	O	
Betula populifolia Marsh.	Gray birch	Embankment (S)	C	
Betula populifolia Marsh.	Gray birch	Embankment (SE)	C	
Betula populifolia Marsh.	Gray birch	Marsh (East)	O	
Betula populifolia Marsh.	Gray birch	Old Road (S)	O	
Betula populifolia Marsh.	Gray birch	Red Maple Swamp	F	
Betula populifolia Marsh.	Gray birch	River Birch Swamp	O	
Betula populifolia Marsh.	Gray birch	Successional (E)	A	
Betula populifolia Marsh.	Gray birch	Successional (W)	C	
Bidens frondosa L.	beggar-ticks	Marsh (Central)	O	
Bidens frondosa L.	beggar-ticks	Marsh (East)	O	
Carex crinita Lam.	Fringed sedge	Marsh (Central)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (E)	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (W)	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (SE)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Red Maple Swamp	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Successional (E)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Successional (W)	A	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Carex sp.	Sedge	Successional (E)	O	
Carex straminea var. *straminea*	eastern straw sedge	Marsh (Central)	O	
Carya sp.	Hickory	Embankment (W)	R	
Cephalanthus occidentalis L.	buttonbush	Marsh (East)	O	
Cephalanthus occidentalis L.	buttonbush	River Birch Swamp	F	
Chimaphila □*aculate* (L.) Pursh	spotted wintergreen	Embankment (E)	O	
Chimaphila □*aculate* (L.) Pursh	spotted wintergreen	Embankment (W)	F	
Chimaphila □*aculate* (L.) Pursh	spotted wintergreen	Embankment (S)	O	
Chimaphila □*aculate* (L.) Pursh	spotted wintergreen	Embankment (SE)	O	
Chimaphila □*aculate* (L.) Pursh	spotted wintergreen	Successional (E)	O	
Cladium mariscoides (Muhl.) Torr.	Twig-rush	Marsh (Central)	F	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Embankment (E)	O	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Embankment (W)	F	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Embankment (S)	F	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Embankment (SE)	O	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Old Road (S)	O	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Successional (E)	F	
Comptonia □*aculate*□ (L.) Coult.	Sweetfern	Successional (W)	O	
Convallaria majalis L.	lily-of-the-valley	Embankment (W)	O	Exotic
Corylus □*aculate*□ Walt.	American hazelnut	Embankment (SE)	O	
Corylus □*aculate*□ Walt.	American hazelnut	Red Maple Swamp	O	
Corylus □*aculate*□ Walt.	American hazelnut	Successional (W)	O	
Crocanthemum canadense (L.) Britt.	Frostweed	Embankment (W)	F	
Cypripedium acaule Ait.	Pink lady's slipper	Embankment (E)	O	
Cypripedium acaule Ait.	Pink lady's slipper	Embankment (W)	O	
Cypripedium acaule Ait.	Pink lady's slipper	Embankment (SE)	O	
Cypripedium acaule Ait.	Pink lady's slipper	Successional (E)	O	
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Embankment (E)	O	
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Successional (E)	O	
Dennstaedtia punctilobula (Michx.) T. Moore	hay-scented fern	Embankment (E)	O	
Doellingeria □*aculate*□ (P. Mill.) Nees var. *umbellata*	flat-topped aster	Marsh (East)	O	
Drosera intermedia Hayne	spatulate-leaved sundew	Marsh (Central)	F	
Drosera intermedia Hayne	spatulate-leaved sundew	Marsh (East)	C	
Drosera intermedia Hayne	spatulate-leaved sundew	Old Road (S)	O	
Eleocharis sp.	Spike-rush	Marsh (Central)	O	
Eupatorium perfoliatum L.	boneset	Marsh (Central)	O	
Eupatorium perfoliatum L.	boneset	Marsh (East)	O	
Eupatorium perfoliatum L.	boneset	Old Road (S)	O	
Eupatorium perfoliatum L.	boneset	Successional (E)	O	
Eupatorium pilosum Walt.	Rough boneset	Marsh (Central)	O	
Eupatorium pilosum Walt.	Rough boneset	Marsh (East)	O	
Eupatorium pilosum Walt.	Rough boneset	Old Road (S)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Embankment (E)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Marsh (Central)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Marsh (East)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Successional (W)	O	
Eutrochium dubium (Willd. *Ex* Poir. E.E. Lamont	eastern joe-pye weed	Marsh (Central)	R	
Fagus grandifolia Ehrh.	Beech	Embankment (E)	R	
Frangula alnus P. Mill.	Glossy buckthorn	Embankment (E)	F	Invasive

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Frangula alnus P. Mill.	Glossy buckthorn	Embankment (W)	C	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Embankment (S)	O	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Embankment (SE)	C	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Old Road (S)	O	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Red Maple Swamp	O	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	River Birch Swamp	R	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Successional (E)	F	Invasive
Frangula alnus P. Mill.	Glossy buckthorn	Successional (W)	F	Invasive
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (E)	O	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (W)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (S)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Red Maple Swamp	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Successional (E)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Successional (W)	C	
Gratiola aurea Pursh	golden pert	Marsh (Central)	C	
Gratiola aurea Pursh	golden pert	Marsh (East)	O	
Hieracium kalmii L.	Canada hawkweed	Embankment (W)	O	
Hieracium kalmii L.	Canada hawkweed	Embankment (SE)	O	
Houstonia caerulea L.	bluets	Marsh (East)	O	
Hypericum canadense L.	Canada St. Johnswort	Successional (E)	R	
Hypericum canadense L.	Canada St. Johnswort	Successional (W)	R	
Hypericum ellipticum Hook.	Pale St. Johnswort	Marsh (East)	O	
Hypericum perforatum L.	common St. Johnswort	Embankment (E)	O	
Hypericum sp.	St. Johnswort	Marsh (Central)	C	
Hypericum sp.	St. Johnswort	Marsh (East)	C	
Ilex verticillata (L.) Gray	winterberry	Red Maple Swamp	O	
Juncus aculate J. Gay *ex* Laharpe	Canadian rush	Marsh (Central)	F	
Juncus aculat L.	soft rush	Marsh (Central)	F	
Juniperus communis L. var. *depressa* Pursh	common juniper	Embankment (W)	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Successional (E)	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Successional (W)	R	
Kalmia angustifolia L.	sheep laurel	Embankment (E)	O	
Kalmia angustifolia L.	sheep laurel	Embankment (S)	O	
Kalmia angustifolia L.	sheep laurel	Marsh (Central)	O	
Kalmia angustifolia L.	sheep laurel	Red Maple Swamp	O	
Lespedeza capitata Michx.	Round-headed bush clover	Embankment (SE)	O	
Lespedeza capitata Michx.	Round-headed bush clover	Successional (W)	O	
Lonicera sp.	Honeysuckle	Embankment (W)	R	Exotic
Lycopodium clavatum L.	common clubmoss	Embankment (E)	O	
Lycopus uniflorus Michx.	Northern bugleweed	Marsh (Central)	F	
Lycopus uniflorus Michx.	Northern bugleweed	Marsh (East)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (E)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (W)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (S)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Marsh (Central)	R	
Lysimachia quadrifolia L.	whorled loosestrife	Red Maple Swamp	O	
Lysimachia quadrifolia L.	whorled loosestrife	Successional (W)	O	
Lysimachia terrestris (L.) B.S.P.	swamp candles	Marsh (Central)	C	
Lythrum salicaria L.	purple loosestrife	Embankment (S)	O	Invasive

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Lythrum salicaria L.	purple loosestrife	Marsh (Central)	F	Invasive
Lythrum salicaria L.	purple loosestrife	Marsh (East)	C	Invasive
Lythrum salicaria L.	purple loosestrife	Old Road (S)	F	Invasive
Lythrum salicaria L.	purple loosestrife	Successional (W)	O	Invasive
Maianthemum canadense Desf.	Canada mayflower	Embankment (E)	F	
Maianthemum canadense Desf.	Canada mayflower	Embankment (W)	F	
Maianthemum canadense Desf.	Canada mayflower	Embankment (SE)	O	
Maianthemum canadense Desf.	Canada mayflower	Successional (E)	O	
Maianthemum racemosum (L.) Link ssp. *Racemosum*	false Solomon's seal	Embankment (E)	O	
Maianthemum racemosum (L.) Link ssp. *Racemosum*	false Solomon's seal	Embankment (SE)	O	
Medeola virginiana L.	acula cucumber root	Embankment (W)	O	
Nabalus trifoliolatus Cass.	Gall of the earth	Embankment (SE)	R	
Onoclea sensibilis L.	sensitive fern	Old Road (S)	O	
Osmunda cinnamomea L.	cinnamon fern	Embankment (E)	O	
Osmunda claytoniana L.	interrupted fern	Embankment (SE)	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Red Maple Swamp	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	River Birch Swamp	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Successional (E)	O	
Panicum rigidulum Bosc *ex* Nees	panic grass	Marsh (Central)	C	
Parathelypteris noveboracensis (L.) Ching	New York fern	Embankment (SE)	O	
Phalaris arundinacea L.	reed canary-grass	Marsh (Central)	O	
Pinus resinosa Ait.	Red pine	Successional (E)	R	
Pinus rigida P. Mill.	Pitch pine	Embankment (E)	O	
Pinus rigida P. Mill.	Pitch pine	Embankment (S)	R	
Pinus rigida P. Mill.	Pitch pine	Embankment (SE)	O	
Pinus rigida P. Mill.	Pitch pine	Successional (E)	O	
Pinus aculat L.	white pine	Embankment (E)	O	
Pinus aculat L.	white pine	Embankment (W)	O	
Pinus aculat L.	white pine	Embankment (S)	C	
Pinus aculat L.	white pine	Embankment (SE)	O	
Pinus aculat L.	white pine	Old Road (S)	O	
Pinus aculat L.	white pine	Red Maple Swamp	O	
Pinus aculat L.	white pine	Successional (E)	O	
Pinus aculat L.	white pine	Successional (W)	O	
Pinus sylvestris L.	Scots pine	Red Maple Swamp	R	
Pinus sylvestris L.	Scots pine	Successional (E)	R	
Pinus sylvestris L.	Scots pine	Successional (W)	R	
Poa palustris L.	fowl-meadow grass	Marsh (Central)	F	
Poa palustris L.	fowl-meadow grass	Marsh (East)	F	
Polygala sanguinea L.	purple milkwort	Marsh (Central)	O	
Polygala sanguinea L.	purple milkwort	Old Road (S)	O	
Polygala sanguinea L.	purple milkwort	Successional (E)	O	
Populus grandidentata Michx.	Large-toothed aspen	Embankment (S)	O	
Populus grandidentata Michx.	Large-toothed aspen	Embankment (SE)	O	
Populus grandidentata Michx.	Large-toothed aspen	Red Maple Swamp	O	
Populus grandidentata Michx.	Large-toothed aspen	Successional (E)	O	
Populus grandidentata Michx.	Large-toothed aspen	Successional (W)	O	
Populus tremuloides Michx.	Quaking aspen	Embankment (E)	O	
Populus tremuloides Michx.	Quaking aspen	Embankment (S)	F	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Populus tremuloides Michx.	Quaking aspen	Embankment (SE)	O	
Populus tremuloides Michx.	Quaking aspen	Red Maple Swamp	O	
Populus tremuloides Michx.	Quaking aspen	Successional (E)	O	
Populus tremuloides Michx.	Quaking aspen	Successional (W)	F	
Potentilla simplex Michx.	Common cinquefoil	Old Road (S)	O	
Potentilla simplex Michx.	Common cinquefoil	Successional (W)	O	
Prunus serotina Ehrh. Var. *serotina*	wild black cherry	Embankment (E)	O	
Prunus serotina Ehrh. Var. *serotina*	wild black cherry	Embankment (W)	F	
Prunus serotina Ehrh. Var. *serotina*	wild black cherry	Embankment (SE)	O	
Prunus serotina Ehrh. Var. serotina	wild black cherry	Successional (W)	O	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Embankment (E)	R	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Successional (W)	O	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (E)	C	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (W)	F	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (SE)	O	
Quercus alba L.	white oak	Embankment (E)	O	
Quercus alba L.	white oak	Embankment (W)	F	
Quercus alba L.	white oak	Embankment (SE)	O	
Quercus alba L.	white oak	Red Maple Swamp	O	
Quercus alba L.	white oak	Successional (E)	O	
Quercus alba L.	white oak	Successional (W)	O	
Quercus bicolor Willd.	Swamp white oak	Red Maple Swamp	R	
Quercus coccinea Muenchh.	Scarlet oak	Successional (E)	R	
Quercus ilicifolia Wangenh.	Scrub oak	Embankment (E)	R	
Quercus rubra L.	red oak	Embankment (E)	F	
Quercus rubra L.	red oak	Embankment (W)	A	
Quercus rubra L.	red oak	Embankment (S)	O	
Quercus rubra L.	red oak	Embankment (SE)	C	
Quercus rubra L.	red oak	Red Maple Swamp	F	
Quercus rubra L.	red oak	Successional (E)	F	
Quercus rubra L.	red oak	Successional (W)	O	
Rhododendron canadense (L.) Torr.	Rhodora	Red Maple Swamp	R	
Rubus allegheniensis Porter	highbush blackberry	Successional (W)	O	
Rubus flagellaris Willd.	Dewberry	Embankment (E)	F	
Rubus flagellaris Willd.	Dewberry	Embankment (W)	C	
Rubus flagellaris Willd.	Dewberry	Embankment (S)	O	
Rubus flagellaris Willd.	Dewberry	Embankment (SE)	F	
Rubus flagellaris Willd.	Dewberry	Red Maple Swamp	O	
Rubus flagellaris Willd.	Dewberry	Successional (E)	O	
Rubus flagellaris Willd.	Dewberry	Successional (W)	O	
Sabatia kennedyana Fern.	Plymouth gentian	Marsh (Central)	C	
Sabatia kennedyana Fern.	Plymouth gentian	Marsh (East)	O	
Sagittaria latifolia Willd.	Common arrowhead	Marsh (Central)	F	
Salix cinerea L.	gray willow	Embankment (S)	O	Exotic
Salix cinerea L.	gray willow	Marsh (Central)	F	Exotic
Salix cinerea L.	gray willow	Marsh (East)	O	Exotic
Salix cinerea L.	gray willow	Old Road (S)	O	Exotic
Salix cinerea L.	gray willow	Red Maple Swamp	O	Exotic
Salix cinerea L.	gray willow	River Birch Swamp	R	Exotic

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Salix cinerea L.	gray willow	Successional (E)	O	Exotic
Salix cinerea L.	gray willow	Successional (W)	O	Exotic
Salix eriocephala Michx.	Red-tipped willow	Marsh (Central)	R	
Salix eriocephala Michx.	Red-tipped willow	Marsh (East)	R	
Sassafras albidum (Nutt.) Nees	sassafras	Embankment (E)	R	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Embankment (E)	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Embankment (SE)	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Successional (E)	F	
Scirpus atrovirens Willd.	Dark green bullsedge	Red Maple Swamp	R	
Scirpus cyperinus (L.) Kunth	woolgrass	Marsh (Central)	O	
Scirpus cyperinus (L.) Kunth	woolgrass	Marsh (East)	O	
Solidago □*aculate*□ L.	Canada goldenrod	Embankment (E)	O	
Solidago juncea Ait.	Early goldenrod	Old Road (S)	O	
Solidago nemoralis Ait. Ssp. *Nemoralis*	gray goldenrod	Embankment (E)	O	
Solidago nemoralis Ait. Ssp. *Nemoralis*	gray goldenrod	Old Road (S)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Embankment (E)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Embankment (SE)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Successional (E)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Successional (W)	O	
Solidago odora Ait. Var. odora	sweet goldenrod	Embankment (W)	O	
Solidago puberula Nutt. Var. *puberula*	downy goldenrod	Successional (W)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (E)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (W)	F	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (S)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (SE)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Old Road (S)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Red Maple Swamp	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Successional (E)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Successional (W)	O	
Sorbus aucuparia L.	European mountain ash	Embankment (W)	R	Exotic
Sorbus aucuparia L.	European mountain ash	Successional (E)	R	Exotic
Spiraea tomentosa L.	steeplebush	Embankment (S)	O	
Spiraea tomentosa L.	steeplebush	Marsh (East)	O	
Spiraea tomentosa L.	steeplebush	Old Road (S)	O	
Spiraea tomentosa L.	steeplebush	Red Maple Swamp	F	
Spiraea tomentosa L.	steeplebush	River Birch Swamp	O	
Spiraea tomentosa L.	steeplebush	Successional (E)	O	
Spiraea tomentosa L.	steeplebush	Successional (W)	F	
Spiranthes cernua (L.) L.C. Rich.	Nodding ladies' tresses	Marsh (Central)	O	
Spiranthes cernua (L.) L.C. Rich.	Nodding ladies' tresses	Marsh (East)	O	
Spiranthes cernua (L.) L.C. Rich.	Nodding ladies' tresses	Old Road (S)	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Botanical Name (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Spiranthes cernua (L.) L.C. Rich.	Nodding ladies' tresses	Successional (E)	O	
Spiranthes cernua (L.) L.C. Rich.	Nodding ladies' tresses	Successional (W)	O	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Embankment (E)	R	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Marsh (Central)	F	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Marsh (East)	F	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Old Road (S)	F	
Thelypteris palustris Schott var. *pubescens* (Lawson) Fern.	Marsh fern	River Birch Swamp	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Embankment (E)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Embankment (W)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Red Maple Swamp	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Successional (E)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Successional (W)	O	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (E)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (W)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (S)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (SE)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Red Maple Swamp	F	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Successional (E)	F	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Successional (W)	F	
Vaccinium corymbosum L.	highbush blueberry	Embankment (E)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (W)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (S)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (SE)	O	
Vaccinium corymbosum L.	highbush blueberry	Red Maple Swamp	O	
Vaccinium corymbosum L.	highbush blueberry	River Birch Swamp	R	
Vaccinium corymbosum L.	highbush blueberry	Successional (E)	F	
Vaccinium corymbosum L.	highbush blueberry	Successional (E)	O	
Vaccinium corymbosum L.	highbush blueberry	Successional (W)	O	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (E)	F	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (W)	F	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (SE)	O	
Vaccinium pallidum Ait.	Early lowbush blueberry	Successional (E)	F	
Viburnum acerifolium L.	maple-leaved viburnum	Embankment (E)	O	
Viburnum acerifolium L.	maple-leaved viburnum	Embankment (W)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (E)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (W)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (S)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Red Maple Swamp	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Successional (W)	O	
Viola lanceolata L. ssp. *Lanceolata*	lance-leaf violet	Marsh (Central)	C	
Viola lanceolata L. ssp. *Lanceolata*	lance-leaf violet	Marsh (East)	C	
Viola lanceolata L. ssp. *Lanceolata*	lance-leaved violet	Old Road (S)	O	
Viola lanceolata L. ssp. *Lanceolata*	lance-leaved violet	Successional (W)	O	
Viola sagittata Ait. Var. ovata (Nutt.)	ovate-leaved violet	Embankment (SE)	O	
Viola sagittata Ait. Var. ovata (Nutt.)	ovate-leaved violet	Successional (E)	O	
Vitis labrusca L.	fox grape	Embankment (W)	R	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

APPENDIX B – Vascular Plant List by Plant Family

Genus / species / variety	Common name	Community	Freq.	Notes
Adoxaceae				
Viburnum acerifolium L.	maple-leaved viburnum	Embankment (E)	O	
Viburnum acerifolium L.	maple-leaved viburnum	Embankment (W)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (E)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (W)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Embankment (S)	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Red Maple Swamp	O	
Viburnum dentatum L. var. *lucidum* Ait.	Northern arrowwood	Successional (W)	O	
Alismataceae				
Sagittaria latifolia Willd.	Common arrowhead	Marsh (Central)	F	
Anacardiaceae				
Toxicodendron radicans (L.) Kuntze	poison ivy	Embankment (E)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Embankment (W)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Red Maple Swamp	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Successional (E)	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Successional (W)	O	
Apiaceae				
Aralia hispida Vent.	Bristly sarsaparilla	Embankment (W)	R	
Apocynaceae				
Apocynum sp.	Dogbane	Embankment (W)	O	
Apocynum sp.	Dogbane	Successional (W)	R	
Aquifoliaceae				
Ilex verticillata (L.) Gray	winterberry	Red Maple Swamp	O	
Asteraceae				
Bidens frondosa L.	beggar-ticks	Marsh (Central)	O	
Bidens frondosa L.	beggar-ticks	Marsh (East)	O	
Doellingeria □*aculate*□ (P. Mill.) Nees var. *umbellata*	flat-topped aster	Marsh (East)	O	
Eupatorium perfoliatum L.	boneset	Marsh (Central)	O	
Eupatorium perfoliatum L.	boneset	Marsh (East)	O	
Eupatorium perfoliatum L.	boneset	Old Road (S)	O	
Eupatorium perfoliatum L.	boneset	Successional (E)	O	
Eupatorium pilosum Walt.	Rough boneset	Marsh (Central)	O	
Eupatorium pilosum Walt.	Rough boneset	Marsh (East)	O	
Eupatorium pilosum Walt.	Rough boneset	Old Road (S)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Embankment (E)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Marsh (Central)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Marsh (East)	O	
Euthamia graminifolia (L.) Nutt.	Lance-leaved goldenrod	Successional (W)	O	
Eutrochium dubium (Willd. *Ex* Poir.) E.E. Lamont	eastern joe-pye weed	Marsh (Central)	R	
Hieracium kalmii L.	Canada hawkweed	Embankment (W)	O	
Hieracium kalmii L.	Canada hawkweed	Embankment (SE)	O	
Nabalus trifoliolatus Cass.	Gall of the earth	Embankment (SE)	R	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Embankment (E)	R	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Successional (W)	O	
Solidago □*aculate*□ L.	Canada goldenrod	Embankment (E)	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Solidago juncea Ait.	Early goldenrod	Old Road (S)	O	
Solidago nemoralis Ait. Ssp. *Nemoralis*	gray goldenrod	Embankment (E)	O	
Solidago nemoralis Ait. Ssp. *Nemoralis*	gray goldenrod	Old Road (S)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Embankment (E)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Embankment (SE)	O	
Solidago odora Ait. Var. odora	sweet goldenrod	Successional (E)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Successional (W)	O	
Solidago odora Ait. Var. *odora*	sweet goldenrod	Embankment (W)	O	
Solidago puberula Nutt. Var. *puberula*	downy goldenrod	Successional (W)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (E)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (W)	F	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (S)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Embankment (SE)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Old Road (S)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Red Maple Swamp	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Successional (E)	O	
Solidago rugosa P. Mill.	Rough-stemmed goldenrod	Successional (W)	O	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Embankment (E)	R	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Marsh (Central)	F	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Marsh (East)	F	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Old Road (S)	F	
Betulaceae				
Betula nigra L.	river birch	Marsh (East)	O	
Betula nigra L.	river birch	Red Maple Swamp	O	
Betula nigra L.	river birch	River Birch Swamp	A	
Betula nigra L.	river birch	Successional (W)	R	
Betula populifolia Marsh.	Gray birch	Embankment (E)	F	
Betula populifolia Marsh.	Gray birch	Embankment (W)	O	
Betula populifolia Marsh.	Gray birch	Embankment (S)	C	
Betula populifolia Marsh.	Gray birch	Embankment (SE)	C	
Betula populifolia Marsh.	Gray birch	Marsh (East)	O	
Betula populifolia Marsh.	Gray birch	Old Road (S)	O	
Betula populifolia Marsh.	Gray birch	Red Maple Swamp	F	
Betula populifolia Marsh.	Gray birch	River Birch Swamp	O	
Betula populifolia Marsh.	Gray birch	Successional (E)	A	
Betula populifolia Marsh.	Gray birch	Successional (W)	C	
Corylus □aculate□ Walt.	American hazelnut	Embankment (SE)	O	
Corylus □aculate□ Walt.	American hazelnut	Red Maple Swamp	O	
Corylus □aculate□ Walt.	American hazelnut	Successional (W)	O	
Caprifoliaceae				
Lonicera sp.	Honeysuckle	Embankment (W)	R	Exotic

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Cistaceae				
Crocanthemum canadense (L.) Britt.	Frostweed	Embankment (W)	F	
Clusiaceae				
Hypericum canadense L.	Canada St. Johnswort	Successional (E)	R	
Hypericum canadense L.	Canada St. Johnswort	Successional (W)	R	
Hypericum ellipticum Hook.	Pale St. Johnswort	Marsh (East)	O	
Hypericum perforatum L.	common St. Johnswort	Embankment (E)	O	
Hypericum sp.	St. Johnswort	Marsh (Central)	C	
Hypericum sp.	St. Johnswort	Marsh (East)	C	
Cupressaceae				
Juniperus communis L. var. *depressa* Pursh	common juniper	Embankment (W)	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Successional (E)	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Successional (W)	R	
Cyperaceae				
Carex crinita Lam.	Fringed sedge	Marsh (Central)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (E)	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (W)	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Embankment (SE)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Red Maple Swamp	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Successional (E)	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Successional (W)	A	
Carex sp.	Sedge	Successional (E)	O	
Carex straminea var. *straminea*	eastern straw sedge	Marsh (Central)	O	
Cladium mariscoides (Muhl.) Torr.	Twig-rush	Marsh (Central)	F	
Eleocharis sp.	Spike-rush	Marsh (Central)	O	
Scirpus atrovirens Willd.	Dark green bullsedge	Red Maple Swamp	R	
Scirpus cyperinus (L.) Kunth	woolgrass	Marsh (Central)	O	
Scirpus cyperinus (L.) Kunth	woolgrass	Marsh (East)	O	
Droseraceae				
Drosera intermedia Hayne	spatulate-leaved sundew	Marsh (Central)	F	
Drosera intermedia Hayne	spatulate-leaved sundew	Marsh (East)	C	
Drosera intermedia Hayne	spatulate-leaved sundew	Old Road (S)	O	
Ericaceae				
Chimaphila maculate (L.) Pursh	spotted wintergreen	Embankment (E)	O	
Chimaphila maculate (L.) Pursh	spotted wintergreen	Embankment (W)	F	
Chimaphila maculate (L.) Pursh	spotted wintergreen	Embankment (S)	O	
Chimaphila maculate (L.) Pursh	spotted wintergreen	Embankment (SE)	O	
Chimaphila maculate (L.) Pursh	spotted wintergreen	Successional (E)	O	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (E)	O	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (W)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Embankment (S)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Red Maple Swamp	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Successional (E)	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Successional (W)	C	
Kalmia angustifolia L.	sheep laurel	Embankment (E)	O	
Kalmia angustifolia L.	sheep laurel	Embankment (S)	O	
Kalmia angustifolia L.	sheep laurel	Marsh (Central)	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Kalmia angustifolia L.	sheep laurel	Red Maple Swamp	O	
Rhododendron canadense (L.) Torr.	Rhodora	Red Maple Swamp	R	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (E)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (W)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (S)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Embankment (SE)	C	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Red Maple Swamp	F	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Successional (E)	F	
Vaccinium angustifolium Ait.	Late lowbush blueberry	Successional (W)	F	
Vaccinium corymbosum L.	highbush blueberry	Embankment (E)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (W)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (S)	O	
Vaccinium corymbosum L.	highbush blueberry	Embankment (SE)	O	
Vaccinium corymbosum L.	highbush blueberry	Red Maple Swamp	O	
Vaccinium corymbosum L.	highbush blueberry	River Birch Swamp	R	
Vaccinium corymbosum L.	highbush blueberry	Successional (E)	F	
Vaccinium corymbosum L.	highbush blueberry	Successional (E)	O	
Vaccinium corymbosum L.	highbush blueberry	Successional (W)	O	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (E)	F	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (W)	F	
Vaccinium pallidum Ait.	Early lowbush blueberry	Embankment (SE)	O	
Vaccinium pallidum Ait.	Early lowbush blueberry	Successional (E)	F	
Fabaceae				
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (E)	F	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (W)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Embankment (SE)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Old Road (S)	O	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Successional (E)	F	
Baptisia tinctoria (L.) R. Br. *Ex* Ait. F.	wild indigo	Successional (W)	O	
Lespedeza capitata Michx.	Round-headed bush clover	Embankment (SE)	O	
Lespedeza capitata Michx.	Round-headed bush clover	Successional (W)	O	
Fagaceae				
Fagus grandifolia Ehrh.	Beech	Embankment (E)	R	
Quercus alba L.	white oak	Embankment (E)	O	
Quercus alba L.	white oak	Embankment (W)	F	
Quercus alba L.	white oak	Embankment (SE)	O	
Quercus alba L.	white oak	Red Maple Swamp	O	
Quercus alba L.	white oak	Successional (E)	O	
Quercus alba L.	white oak	Successional (W)	O	
Quercus bicolor Willd.	Swamp white oak	Red Maple Swamp	R	
Quercus coccinea Muenchh.	scarlet oak	Successional (E)	R	
Quercus ilicifolia Wangenh.	scrub oak	Embankment (E)	R	
Quercus rubra L.	red oak	Embankment (E)	F	
Quercus rubra L.	red oak	Embankment (W)	A	
Quercus rubra L.	red oak	Embankment (S)	O	
Quercus rubra L.	red oak	Embankment (SE)	C	
Quercus rubra L.	red oak	Red Maple Swamp	F	
Quercus rubra L.	red oak	Successional (E)	F	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Quercus rubra L.	red oak	Successional (W)	O	
Gentianaceae				
Sabatia kennedyana Fern.	Plymouth gentian	Marsh (Central)	C	
Sabatia kennedyana Fern.	Plymouth gentian	Marsh (East)	O	
Juglandaceae				
Carya sp.	hickory	Embankment (W)	R	
Juncaceae				
Juncus canadensis J. Gay *ex* Laharpe	Canadian rush	Marsh (Central)	F	
Juncus effusus L.	soft rush	Marsh (Central)	F	
Lamiaceae				
Lycopus uniflorus Michx.	northern bugleweed	Marsh (Central)	F	
Lycopus uniflorus Michx.	northern bugleweed	Marsh (East)	O	
Lauraceae				
Sassafras albidum (Nutt.) Nees	sassafras	Embankment (E)	R	
Liliaceae				
Medeola virginiana L.	indian cucumber root	Embankment (W)	O	
Lycopodiaceae				
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Embankment (E)	O	
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Successional (E)	O	
Lycopodium clavatum L.	common clubmoss	Embankment (E)	O	
Lythraceae				
Lythrum salicaria L.	purple loosestrife	Embankment (S)	O	Invasive
Lythrum salicaria L.	purple loosestrife	Marsh (Central)	F	Invasive
Lythrum salicaria L.	purple loosestrife	Marsh (East)	C	Invasive
Lythrum salicaria L.	purple loosestrife	Old Road (S)	F	Invasive
Lythrum salicaria L.	purple loosestrife	Successional (W)	O	Invasive
Myricaceae				
Comptonia peregrina (L.) Coult.	sweetfern	Embankment (E)	O	
Comptonia peregrina (L.) Coult.	sweetfern	Embankment (W)	F	
Comptonia peregrina (L.) Coult.	sweetfern	Embankment (S)	F	
Comptonia peregrina (L.) Coult.	sweetfern	Embankment (SE)	O	
Comptonia peregrina (L.) Coult.	sweetfern	Old Road (S)	O	
Comptonia peregrina (L.) Coult.	sweetfern	Successional (E)	F	
Comptonia peregrina (L.) Coult.	sweetfern	Successional (W)	O	
Myrsinaceae				
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (E)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (W)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Embankment (S)	O	
Lysimachia quadrifolia L.	whorled loosestrife	Marsh (Central)	R	
Lysimachia quadrifolia L.	whorled loosestrife	Red Maple Swamp	O	
Lysimachia quadrifolia L.	whorled loosestrife	Successional (W)	O	
Lysimachia terrestris (L.) B.S.P.	swamp candles	Marsh (Central)	C	
Orchidaceae				
Cypripedium acaule Ait.	pink lady's slipper	Embankment (E)	O	
Cypripedium acaule Ait.	pink lady's slipper	Embankment (W)	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Cypripedium acaule Ait.	pink lady's slipper	Embankment (SE)	O	
Cypripedium acaule Ait.	pink lady's slipper	Successional (E)	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Marsh (Central)	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Marsh (East)	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Old Road (S)	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Successional (E)	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Successional (W)	O	
Orobanchaceae				
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Marsh (Central)	O	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Marsh (East)	O	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Old Road (S)	O	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Successional (E)	O	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Successional (W)	O	
Osmundaceae				
Osmunda cinnamomea L.	cinnamon fern	Embankment (E)	O	
Osmunda claytoniana L.	interrupted fern	Embankment (SE)	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Red Maple Swamp	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	River Birch Swamp	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Successional (E)	O	
Pinaceae				
Pinus resinosa Ait.	red pine	Successional (E)	R	
Pinus rigida P. Mill.	pitch pine	Embankment (E)	O	
Pinus rigida P. Mill.	pitch pine	Embankment (S)	R	
Pinus rigida P. Mill.	pitch pine	Embankment (SE)	O	
Pinus rigida P. Mill.	pitch pine	Successional (E)	O	
Pinus strobus L.	white pine	Embankment (E)	O	
Pinus strobus L.	white pine	Embankment (W)	O	
Pinus strobus L.	white pine	Embankment (S)	C	
Pinus strobus L.	white pine	Embankment (SE)	O	
Pinus strobus L.	white pine	Old Road (S)	O	
Pinus strobus L.	white pine	Red Maple Swamp	O	
Pinus strobus L.	white pine	Successional (E)	O	
Pinus strobus L.	white pine	Successional (W)	O	
Pinus sylvestris L.	Scots pine	Red Maple Swamp	R	
Pinus sylvestris L.	Scots pine	Successional (E)	R	
Pinus sylvestris L.	Scots pine	Successional (W)	R	
Plantaginaceae				
Gratiola aurea Pursh	golden pert	Marsh (Central)	C	
Gratiola aurea Pursh	golden pert	Marsh (East)	O	
Poaceae				
Panicum rigidulum Bosc *ex* Nees	panic grass	Marsh (Central)	C	
Phalaris arundinacea L.	reed canary-grass	Marsh (Central)	O	
Poa palustris L.	fowl-meadow grass	Marsh (Central)	F	
Poa palustris L.	fowl-meadow grass	Marsh (East)	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Embankment (E)	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Embankment (SE)	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Successional (E)	F	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Polygalaceae				
Polygala sanguinea L.	purple milkwort	Marsh (Central)	O	
Polygala sanguinea L.	purple milkwort	Old Road (S)	O	
Polygala sanguinea L.	purple milkwort	Successional (E)	O	
Polypodiaceae				
Dennstaedtia punctilobula (Michx.) T. Moore	hay-scented fern	Embankment (E)	O	
Onoclea sensibilis L.	sensitive fern	Old Road (S)	O	
Parathelypteris noveboracensis (L.) Ching	New York fern	Embankment (SE)	O	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (E)	C	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (W)	F	
Pteridium aquilinum (L.) Kuhn	bracken fern	Embankment (SE)	O	
Thelypteris palustris Schott var. *pubescens* (Lawson) Fern.	marsh fern	River Birch Swamp	O	
Rhamnaceae				
Frangula alnus P. Mill.	glossy buckthorn	Embankment (E)	F	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Embankment (W)	C	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Embankment (S)	O	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Embankment (SE)	C	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Old Road (S)	O	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Red Maple Swamp	O	Invasive
Frangula alnus P. Mill.	glossy buckthorn	River Birch Swamp	R	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Successional (E)	F	Invasive
Frangula alnus P. Mill.	glossy buckthorn	Successional (W)	F	Invasive
Rosaceae				
Amelanchier sp.	shadbush	Red Maple Swamp	O	
Aronia sp.	chokeberry	Marsh (East)	O	
Potentilla simplex Michx.	common cinquefoil	Old Road (S)	O	
Potentilla simplex Michx.	common cinquefoil	Successional (W)	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Embankment (E)	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Embankment (W)	F	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Embankment (SE)	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Successional (W)	O	
Rubus allegheniensis Porter	highbush blackberry	Successional (W)	O	
Rubus flagellaris Willd.	dewberry	Embankment (E)	F	
Rubus flagellaris Willd.	dewberry	Embankment (W)	C	
Rubus flagellaris Willd.	dewberry	Embankment (S)	O	
Rubus flagellaris Willd.	dewberry	Embankment (SE)	F	
Rubus flagellaris Willd.	dewberry	Red Maple Swamp	O	
Rubus flagellaris Willd.	dewberry	Successional (E)	O	
Rubus flagellaris Willd.	dewberry	Successional (W)	O	
Sorbus aucuparia L.	European mountain ash	Embankment (W)	R	Exotic
Sorbus aucuparia L.	European mountain ash	Successional (E)	R	Exotic
Spiraea tomentosa L.	steeplebush	Embankment (S)	O	
Spiraea tomentosa L.	steeplebush	Marsh (East)	O	
Spiraea tomentosa L.	steeplebush	Old Road (S)	O	
Spiraea tomentosa L.	steeplebush	Red Maple Swamp	F	
Spiraea tomentosa L.	steeplebush	River Birch Swamp	O	
Spiraea tomentosa L.	steeplebush	Successional (E)	O	
Spiraea tomentosa L.	steeplebush	Successional (W)	F	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Rubiaceae				
Cephalanthus occidentalis L.	buttonbush	Marsh (East)	O	
Cephalanthus occidentalis L.	buttonbush	River Birch Swamp	F	
Houstonia caerulea L.	bluets	Marsh (East)	O	
Ruscaceae				
Convallaria majalis L.	lily-of-the-valley	Embankment (W)	O	Exotic
Maianthemum canadense Desf.	Canada mayflower	Embankment (E)	F	
Maianthemum canadense Desf.	Canada mayflower	Embankment (W)	F	
Maianthemum canadense Desf.	Canada mayflower	Embankment (SE)	O	
Maianthemum canadense Desf.	Canada mayflower	Successional (E)	O	
Maianthemum racemosum (L.) Link ssp. *racemosum*	false Solomon's seal	Embankment (E)	O	
Maianthemum racemosum (L.) Link ssp. *racemosum*	false Solomon's seal	Embankment (SE)	O	
Salicaceae				
Populus grandidentata Michx.	large-toothed aspen	Embankment (S)	O	
Populus grandidentata Michx.	large-toothed aspen	Embankment (SE)	O	
Populus grandidentata Michx.	large-toothed aspen	Red Maple Swamp	O	
Populus grandidentata Michx.	large-toothed aspen	Successional (E)	O	
Populus grandidentata Michx.	large-toothed aspen	Successional (W)	O	
Populus tremuloides Michx.	quaking aspen	Embankment (E)	O	
Populus tremuloides Michx.	quaking aspen	Embankment (S)	F	
Populus tremuloides Michx.	quaking aspen	Embankment (SE)	O	
Populus tremuloides Michx.	quaking aspen	Red Maple Swamp	O	
Populus tremuloides Michx.	quaking aspen	Successional (E)	O	
Populus tremuloides Michx.	quaking aspen	Successional (W)	F	
Salix cinerea L.	gray willow	Embankment (S)	O	Exotic
Salix cinerea L.	gray willow	Marsh (Central)	F	Exotic
Salix cinerea L.	gray willow	Marsh (East)	O	Exotic
Salix cinerea L.	gray willow	Old Road (S)	O	Exotic
Salix cinerea L.	gray willow	Red Maple Swamp	O	Exotic
Salix cinerea L.	gray willow	River Birch Swamp	R	Exotic
Salix cinerea L.	gray willow	Successional (E)	O	Exotic
Salix cinerea L.	gray willow	Successional (W)	O	Exotic
Salix eriocephala Michx.	red-tipped willow	Marsh (Central)	R	
Salix eriocephala Michx.	red-tipped willow	Marsh (East)	R	
Sapindaceae				
Acer rubrum L.	red maple	Embankment (E)	C	
Acer rubrum L.	red maple	Embankment (W)	F	
Acer rubrum L.	red maple	Embankment (S)	C	
Acer rubrum L.	red maple	Embankment (SE)	C	
Acer rubrum L.	red maple	Red Maple Swamp	A	
Acer rubrum L.	red maple	River Birch Swamp	O	
Acer rubrum L.	red maple	Successional (E)	C	
Acer rubrum L.	red maple	Successional (W)	C	
Violaceae				
Viola lanceolata L. ssp. *lanceolata*	lance-leaf violet	Marsh (Central)	C	
Viola lanceolata L. ssp. *lanceolata*	lance-leaf violet	Marsh (East)	C	
Viola lanceolata L. ssp. *lanceolata*	lance-leaved violet	Old Road (S)	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Family (cont.)

Genus / species / variety	Common name	Community	Freq.	Notes
Viola lanceolata L. ssp. *lanceolata*	lance-leaved violet	Successional (W)	O	
Viola sagittata Ait. var. *ovata* (Nutt.)	ovate-leaved violet	Embankment (SE)	O	
Viola sagittata Ait. var. *ovata* (Nutt.)	ovate-leaved violet	Successional (E)	O	
Vitaceae				
Vitis labrusca L.	fox grape	Embankment (W)	R	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

APPENDIX C – Vascular Plant List by Plant Community

Botanical name	Common name	Plant family	Freq.	Notes
Embankment (East)				
Acer rubrum L.	red maple	Sapindaceae	C	
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	C	
Pteridium aquilinum (L.) Kuhn	bracken fern	Polypodiaceae	C	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	C	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	F	
Betula populifolia Marsh.	gray birch	Betulaceae	F	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	F	Invasive
Maianthemum canadense Desf.	Canada mayflower	Ruscaceae	F	
Quercus rubra L.	red oak	Fagaceae	F	
Rubus flagellaris Willd.	dewberry	Rosaceae	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Poaceae	F	
Vaccinium pallidum Ait.	early lowbush blueberry	Ericaceae	F	
Chimaphila maculata (L.) Pursh	spotted wintergreen	Ericaceae	O	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	O	
Cypripedium acaule Ait.	pink lady's slipper	Orchidaceae	O	
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Lycopodiaceae	O	
Dennstaedtia punctilobula (Michx.) T. Moore	hay-scented fern	Polypodiaceae	O	
Euthamia graminifolia (L.) Nutt.	lance-leaved goldenrod	Asteraceae	O	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	O	
Hypericum perforatum L.	common St. Johnswort	Clusiaceae	O	
Kalmia angustifolia L.	sheep laurel	Ericaceae	O	
Lycopodium clavatum L.	common clubmoss	Lycopodiaceae	O	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	O	
Maianthemum racemosum (L.) Link ssp. *racemosum*	false Solomon's seal	Ruscaceae	O	
Osmunda cinnamomea L.	cinnamon fern	Osmundaceae	O	
Pinus rigida P. Mill.	pitch pine	Pinaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Populus tremuloides Michx.	quaking aspen	Salicaceae	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Rosaceae	O	
Quercus alba L.	white oak	Fagaceae	O	
Solidago canadensis L.	Canada goldenrod	Asteraceae	O	
Solidago nemoralis Ait. ssp. *nemoralis*	gray goldenrod	Asteraceae	O	
Solidago odora Ait. var. *odora*	sweet goldenrod	Asteraceae	O	
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Anacardiaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viburnum acerifolium L.	maple-leaved viburnum	Adoxaceae	O	
Viburnum dentatum L. var. *lucidum* Ait.	northern arrowwood	Adoxaceae	O	
Fagus grandifolia Ehrh.	beech	Fagaceae	R	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Asteraceae	R	
Quercus ilicifolia Wangenh.	scrub oak	Fagaceae	R	
Sassafras albidum (Nutt.) Nees	sassafras	Lauraceae	R	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Asteraceae	R	
Embankment (West)				
Quercus rubra L.	red oak	Fagaceae	A	
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	C	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	C	Invasive
Rubus flagellaris Willd.	dewberry	Rosaceae	C	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	C	
Acer rubrum L.	red maple	Sapindaceae	F	
Chimaphila maculata (L.) Pursh	spotted wintergreen	Ericaceae	F	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	F	
Crocanthemum canadense (L.) Britt.	frostweed	Cistaceae	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	F	
Maianthemum canadense Desf.	Canada mayflower	Ruscaceae	F	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Rosaceae	F	
Pteridium aquilinum (L.) Kuhn	bracken fern	Polypodiaceae	F	
Quercus alba L.	white oak	Fagaceae	F	
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	F	
Vaccinium pallidum Ait.	early lowbush blueberry	Ericaceae	F	
Apocynum sp.	dogbane	Apocynaceae	O	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	O	
Betula populifolia Marsh.	gray birch	Betulaceae	O	
Convallaria majalis L.	lily-of-the-valley	Ruscaceae	O	Exotic
Cypripedium acaule Ait.	pink lady's slipper	Orchidaceae	O	
Hieracium kalmii L.	Canada hawkweed	Asteraceae	O	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	O	
Medeola virginiana L.	indian cucumber root	Liliaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Solidago odora Ait. var. *odora*	sweet goldenrod	Asteraceae	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Anacardiaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viburnum acerifolium L.	maple-leaved viburnum	Adoxaceae	O	
Viburnum dentatum L. var. *lucidum* Ait.	northern arrowwood	Adoxaceae	O	
Aralia hispida Vent.	bristly sarsaparilla	Apiaceae	R	
Carya sp.	hickory	Juglandaceae	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Cupressaceae	R	
Lonicera sp.	honeysuckle	Caprifoliaceae	R	Exotic
Sorbus aucuparia L.	European mountain ash	Rosaceae	R	Exotic
Vitis labrusca L.	fox grape	Vitaceae	R	
Embankment (South)				
Acer rubrum L.	red maple	Sapindaceae	C	
Betula populifolia Marsh.	gray birch	Betulaceae	C	
Pinus strobus L.	white pine	Pinaceae	C	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	C	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	F	
Populus tremuloides Michx.	quaking aspen	Salicaceae	F	
Chimaphila maculata (L.) Pursh	spotted wintergreen	Ericaceae	O	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	O	Invasive
Kalmia angustifolia L.	sheep laurel	Ericaceae	O	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	O	
Lythrum salicaria L.	purple loosestrife	Lythraceae	O	Invasive
Populus grandidentata Michx.	large-toothed aspen	Salicaceae	O	
Quercus rubra L.	red oak	Fagaceae	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Rubus flagellaris Willd.	dewberry	Rosaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Spiraea tomentosa L.	steeplebush	Rosaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viburnum dentatum L. var. *lucidum* Ait.	northern arrowwood	Adoxaceae	O	
Pinus rigida P. Mill.	pitch pine	Pinaceae	R	
Embankment (Southeast)				
Acer rubrum L.	red maple	Sapindaceae	C	
Betula populifolia Marsh.	gray birch	Betulaceae	C	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	C	Invasive
Quercus rubra L.	red oak	Fagaceae	C	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	C	
Rubus flagellaris Willd.	dewberry	Rosaceae	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Poaceae	F	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	O	
Chimaphila maculata (L.) Pursh	spotted wintergreen	Ericaceae	O	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	O	
Corylus americana Walt.	American hazelnut	Betulaceae	O	
Cypripedium acaule Ait.	pink lady's slipper	Orchidaceae	O	
Hieracium kalmii L.	Canada hawkweed	Asteraceae	O	
Lespedeza capitata Michx.	round-headed bush clover	Fabaceae	O	
Maianthemum canadense Desf.	Canada mayflower	Ruscaceae	O	
Maianthemum racemosum (L.) Link ssp. *racemosum*	false Solomon's seal	Ruscaceae	O	
Osmunda claytoniana L.	interrupted fern	Osmundaceae	O	
Parathelypteris noveboracensis (L.) Ching	New York fern	Polypodiaceae	O	
Pinus rigida P. Mill.	pitch pine	Pinaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Populus grandidentata Michx.	large-toothed aspen	Salicaceae	O	
Populus tremuloides Michx.	quaking aspen	Salicaceae	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Rosaceae	O	
Pteridium aquilinum (L.) Kuhn	bracken fern	Polypodiaceae	O	
Quercus alba L.	white oak	Fagaceae	O	
Solidago odora Ait. var. *odora*	sweet goldenrod	Asteraceae	O	
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Vaccinium pallidum Ait.	early lowbush blueberry	Ericaceae	O	
Viola sagittata Ait. var. *ovata* (Nutt.)	ovate-leaved violet	Violaceae	O	
Nabalus trifoliolatus Cass.	gall of the earth	Asteraceae	R	
Marsh (Central)				
Gratiola aurea Pursh	golden pert	Plantaginaceae	C	
Hypericum sp.	St. Johnswort	Clusiaceae	C	
Lysimachia terrestris (L.) B.S.P.	swamp candles	Myrsinaceae	C	
Panicum rigidulum Bosc *ex* Nees	panic grass	Poaceae	C	
Sabatia kennedyana Fern.	Plymouth gentian	Gentianaceae	C	
Viola lanceolata L. ssp. *lanceolata*	lance-leaf violet	Violaceae	C	
Cladium mariscoides (Muhl.) Torr.	twig-rush	Cyperaceae	F	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Drosera intermedia Hayne	spatulate-leaved sundew	Droseraceae	F	
Juncus canadensis J. Gay *ex* Laharpe	Canadian rush	Juncaceae	F	
Juncus effusus L.	soft rush	Juncaceae	F	
Lycopus uniflorus Michx.	northern bugleweed	Lamiaceae	F	
Lythrum salicaria L.	purple loosestrife	Lythraceae	F	Invasive
Poa palustris L.	fowl-meadow grass	Poaceae	F	
Sagittaria latifolia Willd.	common arrowhead	Alismataceae	F	
Salix cinerea L.	gray willow	Salicaceae	F	Exotic
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Asteraceae	F	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Orobanchaceae	O	
Bidens frondosa L.	beggar-ticks	Asteraceae	O	
Carex crinita Lam.	fringed sedge	Cyperaceae	O	
Carex straminea var. *straminea*	eastern straw sedge	Cyperaceae	O	
Eleocharis sp.	spike-rush	Cyperaceae	O	
Eupatorium perfoliatum L.	boneset	Asteraceae	O	
Eupatorium pilosum Walt.	rough boneset	Asteraceae	O	
Euthamia graminifolia (L.) Nutt.	lance-leaved goldenrod	Asteraceae	O	
Kalmia angustifolia L.	sheep laurel	Ericaceae	O	
Phalaris arundinacea L.	reed canary-grass	Poaceae	O	
Polygala sanguinea L.	purple milkwort	Polygalaceae	O	
Scirpus cyperinus (L.) Kunth	woolgrass	Cyperaceae	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Orchidaceae	O	
Eutrochium dubium (Willd. ex Poir.) E.E. Lamont	eastern joe-pye weed	Asteraceae	R	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	R	
Salix eriocephala Michx.	red-tipped willow	Salicaceae	R	
Marsh (East)				
Drosera intermedia Hayne	spatulate-leaved sundew	Droseraceae	C	
Lythrum salicaria L.	purple loosestrife	Lythraceae	C	Invasive
Hypericum sp.	St. Johnswort	Clusiaceae	C	
Viola lanceolata L. ssp. *lanceolata*	lance-leaf violet	Violaceae	C	
Poa palustris L.	fowl-meadow grass	Poaceae	F	
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Asteraceae	F	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Orobanchaceae	O	
Aronia sp.	chokeberry	Rosaceae	O	
Betula nigra L.	river birch	Betulaceae	O	
Betula populifolia Marsh.	gray birch	Betulaceae	O	
Bidens frondosa L.	beggar-ticks	Asteraceae	O	
Cephalanthus occidentalis L.	buttonbush	Rubiaceae	O	
Doellingeria umbellata (P. Mill.) Nees var. *umbellata*	flat-topped aster	Asteraceae	O	
Eupatorium perfoliatum L.	boneset	Asteraceae	O	
Eupatorium pilosum Walt.	rough boneset	Asteraceae	O	
Euthamia graminifolia (L.) Nutt.	lance-leaved goldenrod	Asteraceae	O	
Gratiola aurea Pursh	golden pert	Plantaginaceae	O	
Houstonia caerulea L.	bluets	Rubiaceae	O	
Hypericum ellipticum Hook.	pale St. Johnswort	Clusiaceae	O	
Lycopus uniflorus Michx.	northern bugleweed	Lamiaceae	O	
Sabatia kennedyana Fern.	Plymouth gentian	Gentianaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Scirpus cyperinus (L.) Kunth	woolgrass	Cyperaceae	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Spiraea tomentosa L.	steeplebush	Rosaceae	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Orchidaceae	O	
Salix eriocephala Michx.	red-tipped willow	Salicaceae	R	
Old Road (S) – between Successional Forest (West) and Embankment (South)				
Lythrum salicaria L.	purple loosestrife	Lythraceae	F	Invasive
Symphyotrichum racemosum (Ell.) Nesom	small white aster	Asteraceae	F	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Orobanchaceae	O	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	O	
Betula populifolia Marsh.	gray birch	Betulaceae	O	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	O	
Drosera intermedia Hayne	spatulate-leaved sundew	Droseraceae	O	
Eupatorium perfoliatum L.	boneset	Asteraceae	O	
Eupatorium pilosum Walt.	rough boneset	Asteraceae	O	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	O	Invasive
Onoclea sensibilis L.	sensitive fern	Polypodiaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Polygala sanguinea L.	purple milkwort	Polygalaceae	O	
Potentilla simplex Michx.	common cinquefoil	Rosaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Solidago juncea Ait.	early goldenrod	Asteraceae	O	
Solidago nemoralis Ait. ssp. *nemoralis*	gray goldenrod	Asteraceae	O	
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Spiraea tomentosa L.	steeplebush	Rosaceae	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Orchidaceae	O	
Viola lanceolata L. ssp. *lanceolata*	lance-leaved violet	Violaceae	O	
Red Maple Swamp				
Acer rubrum L.	red maple	Sapindaceae	A	
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	C	
Betula populifolia Marsh.	gray birch	Betulaceae	F	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	F	
Quercus rubra L.	red oak	Fagaceae	F	
Spiraea tomentosa L.	steeplebush	Rosaceae	F	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	F	
Amelanchier sp.	shadbush	Rosaceae	O	
Betula nigra L.	river birch	Betulaceae	O	
Corylus americana Walt.	American hazelnut	Betulaceae	O	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	O	Invasive
Ilex verticillata (L.) Gray	winterberry	Aquifoliaceae	O	
Kalmia angustifolia L.	sheep laurel	Ericaceae	O	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Osmundaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Populus grandidentata Michx.	large-toothed aspen	Salicaceae	O	
Populus tremuloides Michx.	quaking aspen	Salicaceae	O	
Quercus alba L.	white oak	Fagaceae	O	
Rubus flagellaris Willd.	dewberry	Rosaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Toxicodendron radicans (L.) Kuntze	poison ivy	Anacardiaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viburnum dentatum L. var. *lucidum* Ait.	northern arrowwood	Adoxaceae	O	
Pinus sylvestris L.	Scots pine	Pinaceae	R	
Quercus bicolor Willd.	swamp white oak	Fagaceae	R	
Rhododendron canadense (L.) Torr.	rhodora	Ericaceae	R	
Scirpus atrovirens Willd.	dark green bullsedge	Cyperaceae	R	
River Birch Swamp				
Betula nigra L.	river birch	Betulaceae	A	
Cephalanthus occidentalis L.	buttonbush	Rubiaceae	F	
Acer rubrum L.	red maple	Sapindaceae	O	
Betula populifolia Marsh.	gray birch	Betulaceae	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Osmundaceae	O	
Spiraea tomentosa L.	steeplebush	Rosaceae	O	
Thelypteris palustris Schott var. *pubescens* (Lawson) Fern.	marsh fern	Polypodiaceae	O	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	R	Invasive
Salix cinerea L.	gray willow	Salicaceae	R	Exotic
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	R	
Successional Forest (East)				
Betula populifolia Marsh.	gray birch	Betulaceae	A	
Acer rubrum L.	red maple	Sapindaceae	C	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	F	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	F	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	F	Invasive
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	F	
Quercus rubra L.	red oak	Fagaceae	F	
Schizachyrium scoparium (Michx.) Nash var. *scoparium*	little bluestem	Poaceae	F	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	F	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	F	
Vaccinium pallidum Ait.	early lowbush blueberry	Ericaceae	F	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Orobanchaceae	O	
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	O	
Carex sp.	sedge	Cyperaceae	O	
Chimaphila maculata (L.) Pursh	spotted wintergreen	Ericaceae	O	
Cypripedium acaule Ait.	pink lady's slipper	Orchidaceae	O	
Dendrolycopodium obscurum (L.) A. Haines	princess pine	Lycopodiaceae	O	
Eupatorium perfoliatum L.	boneset	Asteraceae	O	
Maianthemum canadense Desf.	Canada mayflower	Ruscaceae	O	
Osmunda regalis L. var. *spectabilis* (Willd.) Gray	royal fern	Osmundaceae	O	
Pinus rigida P. Mill.	pitch pine	Pinaceae	O	
Pinus strobus L.	white pine	Pinaceae	O	
Polygala sanguinea L.	purple milkwort	Polygalaceae	O	
Populus grandidentata Michx.	large-toothed aspen	Salicaceae	O	
Populus tremuloides Michx.	quaking aspen	Salicaceae	O	
Quercus alba L.	white oak	Fagaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Rubus flagellaris Willd.	dewberry	Rosaceae	O	
Solidago odora Ait. var. *odora*	sweet goldenrod	Asteraceae	O	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Spiraea tomentosa L.	steeplebush	Rosaceae	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Orchidaceae	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Anacardiaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viola sagittata Ait. var. *ovata* (Nutt.)	ovate-leaved violet	Violaceae	O	
Hypericum canadense L.	Canada St. Johnswort	Clusiaceae	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Cupressaceae	R	
Pinus resinosa Ait.	red pine	Pinaceae	R	
Pinus sylvestris L.	Scots pine	Pinaceae	R	
Quercus coccinea Muenchh.	scarlet oak	Fagaceae	R	
Sorbus aucuparia L.	European mountain ash	Rosaceae	R	Exotic
Successional Forest (West)				
Carex pensylvanica Lam.	Pennsylvania sedge	Cyperaceae	A	
Acer rubrum L.	red maple	Sapindaceae	C	
Betula populifolia Marsh.	gray birch	Betulaceae	C	
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry	Ericaceae	C	
Frangula alnus P. Mill.	glossy buckthorn	Rhamnaceae	F	Invasive
Populus tremuloides Michx.	quaking aspen	Salicaceae	F	
Spiraea tomentosa L.	steeplebush	Rosaceae	F	
Vaccinium angustifolium Ait.	late lowbush blueberry	Ericaceae	F	
Agalinis paupercula (Gray) Britt.	small-flowered gerardia	Orobanchaceae	O	
Baptisia tinctoria (L.) R. Br. *ex* Ait. f.	wild indigo	Fabaceae	O	
Comptonia peregrina (L.) Coult.	sweetfern	Myricaceae	O	
Corylus americana Walt.	American hazelnut	Betulaceae	O	
Euthamia graminifolia (L.) Nutt.	lance-leaved goldenrod	Asteraceae	O	
Lespedeza capitata Michx.	round-headed bush clover	Fabaceae	O	
Lysimachia quadrifolia L.	whorled loosestrife	Myrsinaceae	O	
Lythrum salicaria L.	purple loosestrife	Lythraceae	O	Invasive
Pinus strobus L.	white pine	Pinaceae	O	
Populus grandidentata Michx.	large-toothed aspen	Salicaceae	O	
Potentilla simplex Michx.	common cinquefoil	Rosaceae	O	
Prunus serotina Ehrh. var. *serotina*	wild black cherry	Rosaceae	O	
Pseudognaphalium macounii (Greene) Kartesz	clammy everlasting	Asteraceae	O	
Quercus alba L.	white oak	Fagaceae	O	
Quercus rubra L.	red oak	Fagaceae	O	
Rubus allegheniensis Porter	highbush blackberry	Rosaceae	O	
Rubus flagellaris Willd.	dewberry	Rosaceae	O	
Salix cinerea L.	gray willow	Salicaceae	O	Exotic
Solidago odora Ait. var. *odora*	sweet goldenrod	Asteraceae	O	
Solidago puberula Nutt. var. *puberula*	downy goldenrod	Asteraceae	O	
Solidago rugosa P. Mill.	rough-stemmed goldenrod	Asteraceae	O	
Spiranthes cernua (L.) L.C. Rich.	nodding ladies' tresses	Orchidaceae	O	
Toxicodendron radicans (L.) Kuntze	poison ivy	Anacardiaceae	O	
Vaccinium corymbosum L.	highbush blueberry	Ericaceae	O	
Viburnum dentatum L. var. *lucidum* Ait.	northern arrowwood	Adoxaceae	O	
Viola lanceolata L. ssp. *lanceolata*	lance-leaved violet	Violaceae	O	
Apocynum sp.	dogbane	Apocynaceae	R	
Betula nigra L.	river birch	Betulaceae	R	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)

Vascular Plant List by Plant Community (cont.)

Botanical name	Common name	Plant family	Freq.	Notes
Hypericum canadense L.	Canada St. Johnswort	Clusiaceae	R	
Juniperus communis L. var. *depressa* Pursh	common juniper	Cupressaceae	R	
Pinus sylvestris L.	Scots pine	Pinaceae	R	

Freq. (relative frequency): Abundant/dominate, Common, Frequent, Occasional, Rare
Notes: Exotic (not native to NE); Invasive (in MA)