

Summary of Field Data From Minuteman National Park Plant Communities Study

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November 1992

Report prepared under a contract with the
Massachusetts Natural Heritage & Endangered Species Program for the
National Park Service

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2. Introduction

This is a summary of the field data from a survey of the plant communities at Minuteman National Park in Concord, ? Lincoln, and Lexington, Massachusetts. The data was gathered during six days of field work (24-25 May, 30-31 June, 7-8 October) in 1992. The survey was commissioned by the National Park Service and supervised by the Massachusetts Natural Heritage Program, who contracted with the authors.

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The purpose of this study was to document and evaluate the plant communities occurring at the park, to locate exemplary communities, and to find rare species.

This document summarizes the results, and gives species lists and observation point data¹ for the communities that we judged to be the most important.

1. Observation point data consists of brief lists of the most important species in each vegetation layer at points judged to be typical of the community.

In order to give an approximate sense of the biological value of the different communities at the park we assigned each example of a community a 'park rank' of A, B, C, or D. A-ranked communities were the best examples of biological communities at the park. In particular A ranks were reserved for communities which had:

- 1) little or no recent physical disturbance
- 2) in the case of wetlands, a more or less natural nutrient budget and hydrology
- 3) few or no alien species, and, in any case, very little ($<1\%$?) dominance by alien species
- 4) a full enough suite of native species that the community may be taken as a good biological example of the community as it is known throughout eastern Massachusetts

Most of the communities in the park failed to meet 2) and 3) above. Only three communities (a wooded swamp, small pond, and a sedge meadow) were given park ranks of A.

B ranks were given to communities with more disturbance, more aliens, and fewer native species than the A ranked communities, but which were still biologically representative of the community as it is known in eastern Massachusetts, and which, furthermore, were sufficiently above the average for the park in biology and appearance that they seem to us to merit permanent protection.

C ranks were given to communities that are either early successional (and hence a very common community type in eastern Massachusetts), or were sufficiently altered or invaded by aliens that they are no longer biologically representative of undisturbed examples of the community. In practice communities in which 25% or more of the area was disturbed, or 25% or more of the dominance (in any layer) was contributed by alien species were judged C communities. C was the average rank for the communities at the park.

D ranks were used in a few cases when the community was over 50% invaded by aliens, and no longer resembled any undisturbed community.

In order to compare the communities at the park to those elsewhere in the state, we assigned state ranks, which are the same thing as Heritage Program element occurrence ranks. As with park ranks, these run from A to D. A is as good as any occurrence in the state, B is above average, C is average, and D is degraded. Because the communities at the park are in most cases small and disturbed, the state ranks in all cases are lower than the park ranks.

3. General Summary

Minuteman Park contains approximately one square mile of land divided into two units. The western unit is a triangle about one half mile on a side, centered on the Concord river. The eastern unit is a corridor about 3.5 miles long and 1/4 to 1/2 mile wide centered on the Lexington Road and the North Great Road.

The land is mostly a gently-rolling coastal plain covered with stony glacial tills and some glacial sands and gravels. There are only a few bedrock outcrops and no major cliffs. Impervious layers are common, and there are a number of small kettlehole ponds and swampy basins. Small alluvial terraces occur along Mill Brook, and larger ones along the Concord river.

The dominant plant communities, in order of abundance, are dry-mesic oak-hickory forests, mesic oak-maple forests, wet-mesic red maple forests, and wet red maple swamps. There are also four small ponds, a number of open wetlands, a substantial amount of active agricultural land, and a number of post-agricultural thickets and young successional wood

Because of fairly complicated land use and successional histories, all the communities at the park tend to occur in small patches (commonly 1-4 acres, only rarely over 6 acres). Many of them abut on agricultural or developed lands, and so have open or disturbed edges.

So far as we can determine the forests are all secondary woodlands on former agricultural lands. The heights and diameters of trees tend to be uniform in all the upland woods (though more variable in the swamps and alluvial woods). Canopy trees are for the most part 8-11" dbh., and only rarely exceed 14" dbh.

The woody flora is fairly diverse with 29 native species of trees, 27 species of upland shrubs, and 12 species of wetland shrubs. There are, in addition, approximately 10 alien woody species that were well established. Three of these (European bush honeysuckle, common buckthorn, European buckthorn) are locally dominant in thickets and in the understories of many woods, to the detriment of native species. A fourth, a small-leaved linden, probably *Tilia cordata*, is well established in a few woods in the North Bridge unit of the park, and locally becomes an important member of the understory.

The upland forests have relatively few herbs. We noted only 39 species total, and saw only a few stands where herbs were abundant. We regard this as a very impoverished herb flora, and think that it reflects the successional history, the small patch size, and the widespread prevalence of woody weeds.

The alien woody species are most prevalent in the wet and mesic woods and much less important in the dry woods. In many cases they seem to invade from the disturbed edge of forested areas. To the extent that this is so, the small patch size here may be an important contributor to the weed problem.

The wetland flora contains approximately 96 species of native wetland herbs and 12 species of wetland shrubs. It is largely a native flora, with the exception of purple loosestrife, reed canary grass, and the two buckthorns mentioned above. These four alien species are unfortunately extremely common here, and have altered a number of examples of both wooded and open wetlands to the point where they have very little value as native communities.

The most intact wetland communities seem to be the open wetlands associated with three ponds, several small open wetlands in the woods, and the wettest forested wetlands. In contrast the wet-mesic woods, post-agricultural wet meadows, and open wetlands in the flood plain of the Concord River and are invaded by aliens, and hence have depuperate native floras.

The river shore proper has a mixture of aquatic and emergent species; the river is eutrophic and probably is or has been polluted. The diversity of shore and aquatic species is fairly low, and all the species present are fairly tough opportunists that tolerate pollution and can use the high nutrient levels.

Geographically the woody plant flora contains a number of species of the oak-zone and the coastal plain (pepperbush, dangleberry, mockernut, pitch pine ...) and so is a moderately well differentiated regional flora. The herb flora, on the other hand, contains mostly wide ranging species. It is not at all a coastal plain flora, and with the exception of a few species from the driest woods, is not an oak-zone flora.

Altogether we examined about 75 areas of the park.² Maps 1-4 summarize our findings. We concentrated on native communities, and did not examine developed, agricultural, or recent post-agricultural lands. We gave three of these communities park ranks of A, about 25 of them park ranks of B, and the rest park ranks of C. We gave all the communities state ranks of C or D.

The low ranking of many sites is the consequence of low species diversity and extensive invasion by aliens. Given that the woods are fairly young it is possible that some of them may improve with time as the canopy becomes more complete and more native species arrive. But we have reservations about this. The patches are small and have a lot of edge, making it harder for them to resist invasion. The habitat is fragmented, mitigating against the establishment of native herbs. And there is a measure of urban stresses and associated tree mortality.

4. North Bridge Unit

4.1 General Summary

The North Bridge is a triangle ca. 1km on a side centered on the North Bridge over the Concord River. It includes two estates and their associated grounds; small amounts of emergent marsh and shoreline wetlands along the river; swampy silver maple woods adjacent to the river; a wet meadow near the river; and a band of upland woods extending east from Monument Street to a pond.

Most of the natural communities here are small, patchy as a result of disturbance, and extensively invaded by alien species. They were given park ranks of C, indicating that, while they have merit as wildlife and native plant habitats, they were too altered to be considered good examples of na-

2. Each of these corresponded to anywhere from one to five polygons on the cover type maps produced by the Environmental Data Center of the University of Rhode Island.

tive plant communities. The eastern half of the upland woods east of Monument Street was given a park rank of C, indicating that it is comparatively less altered than the C communities, and can be considered a reasonably good example of a native community.

4.2 River and Shores (Sites 61, 62)

The Concord River is slow, mud-bottomed, variously bordered with mudflats, wet loosestrife or sedge meadows, buttonbush thickets, or silvermaple woods. It is obviously polluted and eutrophic.

The channel and wetter parts of the shore have:

<i>Callitriche</i> sp.	<i>Nuphar luteum</i>
<i>Ceratophyllum demersum</i>	<i>Potamogeton crispus</i>
<i>Elodea</i>	<i>Sagittaria latifolia</i>
<i>Lythrum salicaria</i>	

Elsewhere along the shore there are sedge and sedge-buttonbush meadows dominated by *Carex stricta*, with:

<i>Acorus calamus</i>	<i>Leersia oryzoides</i> +
<i>Aster vimineus</i> +	<i>Lemna minor</i> +
<i>Boehmeria cylindrica</i> +	<i>Lythrum salicaria</i> ++
<i>Cardamine pratensis</i> v. <i>pratensis</i>	<i>Onoclea sensibilis</i> +
<i>Carex crinita</i>	<i>Osmunda regalis</i> +
<i>Carex stipata</i>	<i>Panicum dichotomoflorum</i>
<i>Carex stricta</i> ++	<i>Phalaris arundinacea</i> ++
<i>Carex vesicaria</i> +	<i>Pilea pumila</i>
<i>Cephalanthus occidentalis</i> ++	<i>Polygonum amphibium</i>
<i>Cicuta maculata</i>	<i>Polygonum hydropiperoides</i>
<i>Cinna arundinacea</i> +	<i>Polygonum pensylvanicum</i>
<i>Cornus foemina</i> +	<i>Polygonum punctatum</i>
<i>Cornus stolonifera</i> +	<i>Pontederia cordata</i>
<i>Dulichium arundinaceum</i>	<i>Sagittaria latifolia</i> +
<i>Echinochloa walteri</i>	<i>Salix nigra</i>
<i>Eleocharis smallii</i>	<i>Sium suave</i>
<i>Galium</i> sp.	<i>Sparganium eurycarpum</i> +
<i>Gratiola neglecta</i>	<i>Thelypteris palustris</i> +
<i>Impatiens</i> sp.	<i>Typha latifolia</i> ++ ³

Phalaris is common, especially in areas that are successional. Purple loosestrife is common throughout, and locally dominant. Red and grey dogwoods are common. Substantial portions of these meadows are of quite low diversity and dominated by a single species. The over-

3. Here and elsewhere a single + indicates a common species, and ++ indicates a species that is locally dominant.

all diversity of ca. 38 species is low for habitats of this sort and probably reflects the combined effects of disturbance, pollution, eutrophication, and invasion by loosestrife.

This community would receive a Heritage rank of C or D in comparison to undisturbed rivershore communities, and a park rank of C (average) relative to other communities at the park.

4.3 Flood Plain Forests (Sites 61, 63, 64, 66)

These are low hardwoods forests, mostly dominated by silver maple, that flood in the spring. They vary from narrow bands only 1-2 trees wide along the river to larger patches of 1-5 acres. They are typically very uneven-aged, and can have diameters from 4" to 36" in the same stand. The stands immediately adjacent to the river are often open (probably from flooding and ice) and have an understory of herbs and ferns. The ones further back from the river are denser and more thickety, and commonly have a dense understory of alien shrubs and vines.

The following is an aggregate flora for the silver maple stands.

Acer saccharinum +
Aster vimineus +
Betula papyrifera
Boehmeria cylindrica +
Cardamine pratensis
Carex crinita
Cephalanthus occidentalis
Cinna arundinacea +
Cornus amomum +
Cornus foemina
Dulichium arundinaceum
Fraxinus americana +
Gratiola neglecta
Impatiens capensis +
Iris versicolor
Leersia oryzoides
Lemna minor

Lonicera morrowii ++
Lysimacha terrestris
Lysimachia nummularia +
Lythrum salicaria +
Myosotis scorpioides
Onoclea sensibilis +
Osmunda regalis +
Pilea pumila +
Polygonum punctatum
Quercus bicolor
Rhamnus frangula ++
Rhus radicans +
Salix nigra
Sium suave
Smilax herbacea
Ulmus rubra
Viburnum recognitum

The aggregate flora of 34 species is fairly typical for this kind of habitat; flood plain wood, even when undisturbed, tend to have vigorous dominants and fairly low overall diversity.

This community would receive a Heritage rank of C or D in comparison to undisturbed floodplain communities, and has a park rank of C (average) relative to other communities at the park. It is an interesting habitat and has a reasonable number of native species, but is very patchy and limited in area, and much invaded by alien species.

Examples of flood plain forests:

Site 61, a narrow band of silver maples along the river, ca. 2 acres total.

Site 63, a slightly wider band along the river, ca. 2-3 acres.

Site 64, low woods, with about 1 acre of fairly nice woods adjacent to the river (which may not belong to the National Park) and then about 2 acres of dense, thickety, essentially impenetrable woods south of them.

Site 66, About 15 acres of mixed silver maple woods, shrubby thickets, and open wet meadows. Approximately a third of this is silver maple woods. The woods immediately adjacent to the river are open and fairly attractive; the woods back from the river are patchy and much invaded by buckthorn and honeysuckle.

4.4 Open Wetlands (Site 66)

The open wetlands along the river were described in Section 3.2 above. There are also open meadows dominated variously by mixtures of loosestrife, *Carex stricta*, and *Scirpus cyperinus*. They appear to be on wet, postagricultural lands, possibly old hay meadows, in the SW part of Site 66. Parts are dominated by loosestrife and given a park rank of D; others are native, though probably successional, communities, and are given a park rank of C. The total area of these open-wetlands here is about 3 acres.

4.5 Mixed Woodlands (Site 65)

There are about 10 acres of mixed mesic woodlands east of Monument Road. The woods are mixed oak, pine, hemlock and maple, fairly typical in size and age for the park. The canopy is continuous, the trees in good condition, and the woods as a whole are attractive and private. The western part of this site has a lot of buckthorn in the understory and very few herbs. It was given a park rating of C. The eastern part has relatively few aliens (with the exception of a *Tilia*, probably *T. cordata*, which is well established in the understory of several woods) and a more diverse herb and fern flora. It was given a park rating of B.

Data from mixed woodlands:

Observation point in the west part; deciduous, dry-mesic forest on knoll:

Dominants *Acer rubrum*, *Acer saccharum*, *Quercus rubra*, *Quercus alba*, *Pinus strobus*, mostly 6-13" x 60-70'; few *Quercus coccinea*. Understory dense to open, with *Rhamnus frangula*, *Tilia sp.*, *Gaylussacia baccata*, *Prunus serotina*, *Cornus alternifolia*; few *Quercus velutina* occur; very few herbs.

OP in east part on shore above river; mixed mesic forest:

Dominants: *Quercus velutina*, *Fraxinus americana*, *Tsuga canadensis*, *Acer rubrum*, *Acer saccharum*, *Carya glabra*, *Tilia ? cordata*; ave 6-10" x 40-60'. Medium stocking, fairly open woods with straight trees.

Sparse woody understory: few *Tilia*, *Berberis thunbergii*, *Taxus* sp.

Ground layer: *Polystichum acrostichoides*, *Athyrium filix-femina*, *Rhus radicans*, *Mitchella repens*, *Carex rosea*, *Dryopteris carthusiana*.

Woods open, not as weedy as those near road, fair native diversity, rated B.

Additional species seen near pond shore:

Aralia nudicaulis
Athyrium filix-femina
Carya glabra
Chimaphila maculata
Corylus americana
Crataegus sp.
Dryopteris carthusiana
Juniperus communis
Juniperus virginiana

Maianthemum canadense
Monotropa hypopithys
Pinus sylvestris
Polystichum acrostichoides
Pyrola elliptica
Rhamnus cathartica
Rhus radicans
Viburnum recognitum

5. Battle Road Unit

5.1 General Summary

The main section of Minuteman National Park is an east-west strip of land about three and one half miles long and one quarter to one half mile wide that lies on either side of the Lexington Road and the Great North Road (Rt. 2a). It includes a visitor center, a number of historic buildings, a number of modern houses (presumably as inholdings), active and abandoned agricultural lands, shrub lands, deciduous, coniferous, and mixed woods, two ponds, one bog, and both open and forested wetlands.

The farmlands and young shrublands were not of interest as native plant communities and were not studied.

The woods range from very dry oak-hickory to mesic maple-oak woods, to wet red maple swamps. So far as we could determine, all the woods are fairly young: only a few stands had any trees larger than 12-14" dbh. The mesic woods were extensively invaded by weeds and had, for the most part, very low native species diversities. We gave most of them park ranks of C. The dryer woods were much less weedy and ranged in diversity from low to about average for this community. We gave some of them park ranks of C and some park ranks of B. The wet woods

ranged from very weedy and disturbed to relatively weed-free and undisturbed. We gave them park ranks ranging from C to A.

The two ponds are both small, and both dried up in the summer of 1992. One (Folly Pond) was surrounded by loosestrife and had comparatively few native plants. It was given a park rank of C. The other (near Fiske Hill) had a fairly distinctive community of native species, including at least one species that is apparently scarce in the area. It had only a little loosestrife and a relatively diverse flora, and was given a park rank of A.

The bog is very small and probably has had its water levels altered in the past. It is not highly diverse but does include some species that don't occur elsewhere in the park, and was given a park rank of B.

The forested wetlands grade into the wet woods discussed above. As with these woods they vary in weediness and diversity, and were given park ranks from C to A. The only one to be ranked A was the wetland between Virginia Road and the North Great Road; it is about 5-8 acres in extent, and is the only community of substantial size in the park that we thought sufficiently diverse and undisturbed to be worth an A rank.

The open wetlands (which may be mostly post-agricultural land) seem for the most part to be successional wetlands which are dominated by mixtures of loosestrife, cattails, and common grasses and sedges. They are almost all weedy and disturbed and were given park ranks of C. The only exception to this was a small wetland (Site 58) near ??? that was dominated by native sedges and which was rated B.

5.2 Dry Woods (Sites 1, 3, 5, 6, 18, 22, T30, J34, J35, T35, 57)

These are dry mesic to xeric woods on well-drained, rocky or sandy soils on slopes and knolls. They are dominated by a mixture of oaks, often with pignut or mockernut hickory, and often with white pine or pitch pine. Beech is characteristic, but usually in small amounts. Maples occur, but are not important. The understory is typically canopy trees seedlings, plus seedlings of somewhat more mesic species like cherry and beech, plus a low shrub layer of blueberry and huckleberry. Herb diversity in all but one case was very low. The canopy trees are commonly fairly uniform in size, and rarely over 13" dbh. Only small amounts of buckthorn and other aliens occur.

These are young but very attractive woods with straight, moderately tall (50-70') trees, a spacious understory, a good diversity of oaks and hickories, and very few weeds. If they are not subject to tree mortality from air pollution they may mature in the next 100 years into some very handsome forests. A number of examples were rated B, meaning that they are good examples of the regional oak-hickory forests and deserve protection. A single example had a more diverse flora than the others and was rated A.

The community is very common in Massachusetts; none of these examples would have a state rank higher than C.

Site 1: Fiske Hill

Open park-like oak-pine woods, ca. 8 acres, on a fairly dry hill with some rock outcrops.

Observation Point 1: E side of Fiske Hill; red oak, white oak, white pine. Understory of scattered *Prunus virginiana*, some *Rhamnus frangula*, *Prunus serotina*, generally native species. Very sparse ground layer, few herbs.

Trees

Acer rubrum
Carya tomentosa
Pinus rigida

Pinus strobus
Quercus alba
Quercus rubra

Shrubs

Gaylussacia baccata
Prunus serotina
Prunus virginiana

Quercus rubra
Rhamnus cathartica
Rhamnus frangula

Herbs

Carex rosea
Maianthemum canadense

Rhus radicans
Trientalis borealis

Park Ranking: B

State Ranking: C

Full flora for Fiske Hill:

Acer rubrum
Betula populifolia
Carya glabra
Deschampsia flexuosa
Fagus grandifolia
Gaylussacia baccata ++
Maianthemum canadense
Pinus resinosa
Pinus strobus

Polytrichum sp.
Prunus serotina
Pteridium aquilinum
Quercus alba
Quercus coccinea
Quercus velutina
Rhamnus frangula
Solidago rugosa

Site 3: Burned Oak Forest

Narrow band of dry oak-hickory woods, ca. 3 acres, and a rock ridge adjacent to a powerline. The woods are open and sunny, and have had a recent fire in their understory; including the plants at

the edge where they join the powerline the herb flora is more diverse than that of any other woods we examined: they have three species of *Hieracium*, several goldenrods, *Helianthemum bicknellii*, and *Gerardia pedicularia*.

Observation Point 3: rocky hilltop with dry woods, burned recently.

Acer saccharum
Carya ovalis
Carya tomentosa
Pinus strobus

Quercus alba
Quercus coccinea
Quercus rubra

Trees 6-14" dbh x 20-50'.

Shrubs

Corylus americana
Prunus serotina

Quercus alba
Sassafras albidum

Herbs

Carex cephalophora
Chimaphila umbellata
Danthonia spicata
Galium circaezans
Hieracium venosum

Melampyrum lineare
Pteridium aquilinum
Rhus radicans
Smilacina racemosa
Solidago flexicaulis

Full Flora

Acer saccharum
Achillea millefolium
Antennaria plantaginifolia
Aster dumosus
Aster paternus
Carex pensylvanica
Carya tomentosa
Chimaphila umbellata
Comptonia peregrina
Cornus foemina
Desmodium paniculatum
Fraxinus americana
Galium circaezans
Hieracium ? gronovii
Hieracium paniculatum
Hieracium scabrum
Hieracium venosum

Moneses uniflora
Pinus strobus
Prunus serotina
Quercus alba
Quercus coccinea
Quercus rubra
Rhamnus cathartica
Rhus radicans
Smilacina racemosa
Solidago bicolor
Solidago flexicaulis
Solidago juncea ?
Spiranthes lacera group
Vaccinium angustifolium
Vaccinium pallens
Viburnum acerifolium

Note that there are over 30 species here, compared to under 20 for most other stands of dry woods.

Park Ranking: B+ to A

State Ranking: C

Flora of Open Grassy Powerline Adjacent to Forest

Agrostis sp.
Andropogon scoparius ++
Baptisia tinctoria
Carex pensylvanica
Comptonia peregrina ++
Danthonia spicata ++
Eragrostis spectabilis
Gerardia pedicularia
Helianthemum sp.
Hypericum perforatum

Lechea intermedia
Linaria canadensis
Linaria vulgaris
Poa pratensis
Potentilla simplex
Pteridium aquilinum ++
Rubus allegheniensis
Solidago odora
Solidago puberula
Viola fimbriatula

This powerline, while by definition a disturbed habitat, has a number of the characteristic plants of native *Andropogon* meadows.

Site 5: Hill north of Marrett Street.

Young mixed oak woods, ca 6 acres, not as dry as Site 3; flora is largely native flora, diversity low, nothing very distinctive.

Observation Point 5: hill with dry woods

Trees

Carya tomentosa
Pinus strobus
Quercus coccinea

Quercus rubra
Quercus velutina

Shrubs

Carya tomentosa

Rhamnus frangula

Few herbs.

Park Ranking: B

State Ranking: C

Site 6: Just west of Site 5

Similar woods, ca. 4 acres. Trees are little older and woods are somewhat more attractive and ranked slightly higher.

Observation Point 6: Oak woods

Fagus grandifolia
Pinus strobus
Quercus coccinea

Quercus rubra
Quercus velutina

Trees to 60', mostly 10-11" dbh.

Tall Shrubs

Sassafras albidum

Low shrubs

Gaylussacia baccata
Prunus serotina

Vaccinium pallens

Herbs

Maianthemum canadense

Park Ranking: B+

State Ranking: C

This site is quite pretty. It is more mesic than Sites 1 and 3, as evidence by a large percentage of red oaks; it may have fewer aliens than other sites this mesic.

Site 18: Young pine-oak woods W of the Nelson House site, ca. 2-3 acres.

Observation Point 18, pine-oak woods.

Trees

Pinus rigida
Pinus strobus

Quercus rubra
Quercus velutina

Tall Shrubs

Juniperus virginiana
Pinus strobus

Prunus serotina

Low Shrubs

Vaccinium angustifolium

Park Ranking: B

State Ranking: C

Site 22: East of Mill Street

Oak-pine woods, ca. 5 acres, with trees to 12" dbh.

Observation point 22: oak-pine woods:

Trees

Pinus strobus

Quercus coccinea

Quercus rubra

Quercus velutina

Understory

Acer rubrum

Castanea dentata

Fagus grandifolia

Pinus strobus

Pinus strobus

Quercus rubra

Quercus velutina

Low Shrubs

Gaylussacia baccata

Vaccinium angustifolium

Vaccinium vacillans

Herbs

Maianthemum canadense

Park Ranking: B+

State Ranking: C

Site T30: West of Mill Street

Pine-oak woods, ca. 6 acres, land flat with a few boulders. Trees 6-10", understory not too weedy.

Observation Point 30:

Trees

Acer rubrum

Quercus coccinea

Pinus strobus
Quercus alba

Quercus velutina

Tall Shrubs

Pinus strobus
Prunus serotina

Quercus rubra
Rhamnus frangula

Low Shrubs

Gaylussacia baccata
Vaccinium angustifolium

Vaccinium vacillans

Herbs

Maianthemum canadense

Trientalis borealis

Park Ranking: B
State Ranking: C

Observation point 20: Pine-oak

Trees

Acer rubrum
Betula populifolia

Pinus strobus
Quercus coccinea

Understory

Castanea dentata

Low Shrubs

Vaccinium myrtilloides

Vaccinium vacillans

Herbs

Maianthemum canadense

Park Ranking: B
State Ranking: C

Site T35: Steep-sided gravel knoll by Meriams corners

Dry oak forest, ca 2-3 acres, on top of knoll.

Trees

Carya tomentosa
Pinus strobus
Quercus alba

Quercus coccinea
Quercus rubra
Quercus velutina

Tall Shrubs

Pinus strobus
Ligustrum vulgare

Quercus velutina

Shrubs

Gaylussacia baccata

Vaccinium vacillans

Herbs

Andropogon scoparius
Carex pensylvanica
Carex pensylvanica

Lechea intermedia
Maianthemum canadense

Park Ranking: B-
State Ranking: C

Site J34: West of Bedford Road & South of North Great Road

Dry-mesic successional hardwoods and pine; exact extent not known, at least 4 acres.

Trees

Acer rubrum
Betula lenta
Pinus strobus

Quercus rubra
Quercus alba

Tall Shrubs

Betula lenta
Pinus strobus

Prunus serotina

Low Shrubs

Gaylussacia baccata

Vaccinium angustifolium

Herbs

Carex pensylvanica

Melampyrum lineare

Maianthemum canadense

Trees to 13" dbh; very few herbs.

Park Ranking: B

State Ranking: C

Site J35: Between Old Bedford Road and Virginia Road

Dry oak woods, ca. 2-3 acres.

Trees

Acer rubrum
Quercus coccinea

Quercus velutina
Quercus rubra

Tall Shrubs

Cornus foemina
Nyssa sylvatica

Rhamnus frangula

Low Shrubs

Juniperus communis

Herbs

Carex pensylvanica

Maianthemum canadense

Low diversity; trees ave 6-10" dbh, max. 14" dbh.

Park Ranking: B

State Ranking: C

Site 57: South of Folly Pond

Oak-woods, ca. 3 acres. Examined briefly, no composition data. Woods are pretty and spacious, and not very weedy.

Park Ranking: B

State Ranking: C

5.3 Mesic Woods (Sites J33, J34, 41B, 57)

These are typical mixed red maple-sugar maple-red oak woods. They are all successional on post agricultural land, and are in many cases fairly patchy, with thickets, small open wetlands, and wetland forests interspersed with them. They are heavily invaded by European bush honeysuckle, two species of buckthorn, privet, garlic mustard, and a number of other aliens. Native herb diversity is fairly low, partly because of the aliens and partly because of the successional history. Few of the examples we saw were good representatives of the mesic forest community, and we gave most of them park ranks of C.

Aggregate flora of mesic woods on either side of Old Bedford Road

<i>Acer rubrum</i>	<i>Osmunda cinnamomea</i>
<i>Acer saccharum</i>	<i>Pinus rigida</i>
<i>Actaea rubra</i>	<i>Pinus strobus</i>
<i>Arisaema triphyllum</i>	<i>Polygonatum pubescens</i>
<i>Athyrium filix-femina</i>	<i>Polygonum pensylvanicum</i>
<i>Betula lenta</i>	<i>Prunus serotina</i>
<i>Betula papyrifera</i>	<i>Prunus virginiana</i>
<i>Carex debilis</i>	<i>Quercus alba</i>
<i>Carex pensylvanica</i>	<i>Quercus rubra</i>
<i>Carex rosea</i>	<i>Rhamnus cathartica</i>
<i>Carya glabra</i>	<i>Rhamnus frangula</i>
<i>Carya tomentosa</i>	<i>Rhus radicans</i>
<i>Chimaphila umbellata</i>	<i>Rubus allegheniensis</i>
<i>Circaea quadrisulcata</i>	<i>Rubus hispidus</i>
<i>Corylus sp.</i>	<i>Rubus idaeus</i>
<i>Cypripedium acaule</i>	<i>Sedum telephium</i>
<i>Fagus grandifolia</i>	<i>Smilacina racemosa</i>
<i>Fraxinus americana</i>	<i>Smilax herbacea</i>
<i>Gaultheria procumbens</i>	<i>Smilax rotundifolia</i>
<i>Geum sp.</i>	<i>Solidago caesia</i>
<i>Juniperus communis</i>	<i>Solidago rugosa</i>
<i>Juniperus virginiana</i>	<i>Thelypteris noveboracensis</i>
<i>Kalmia latifolia</i>	<i>Trientalis borealis</i>
<i>Ligustrum vulgare</i>	<i>Vaccinium angustifolium</i>
<i>Lindera benzoin</i>	<i>Vaccinium corymbosum</i>
<i>Lonicera morrowii</i>	<i>Vaccinium pallidum</i>
<i>Lysimachia nummularia</i>	<i>Viburnum recognitum</i>
<i>Maianthemum canadense</i>	<i>Vitis sp.</i>
<i>Nyssa sylvatica</i>	

Note that these woods are much richer in herb species than the oak woods, but that the ratio of woody to herb species is high (indicating a relatively low herb diversity), and that the herbs are all very common species, without geographic character.

Data from mesic woods:

Site J33: South of North Great Road, Adjacent to the Bloody Angles

Thickety, wet-mesic maple woods, surrounding a seasonal wetland forest, ca 2-3 acres.

Trees

Acer rubrum
Acer saccharum

Fraxinus americana

Tall Shrubs

Ilex verticillata
Carpinus caroliniana

Cornus alternifolia
Rhamnus cathartica

Low Shrubs

Berberis thunbergii

Herbs

Impatiens capensis
Parthenocissus sp.

Rhus radicans
Smilacina racemosa

Trees to ca 13" dbh; fairly dense tall shrub layer.

Park Ranking: B-

State Ranking: C

Site J34: East of Elm Brook

Dry-mesic hardwoods; ca. 2-4 acres of fairly good maple-oak woods surrounded by younger, patchy woods.

Trees

Betula populifolia
Fagus grandifolia
Quercus alba

Quercus rubra
Acer rubrum
Acer saccharum

Tall Shrubs

Rhamnus frangula

Low Shrubs

Gaylussacia baccata

Vaccinum pallens

Herbs

Maianthemum canadense

Diversity is low, sizes range from 4"-12" dbh.

Park Ranking: B

State Ranking: C

Site 41B: West of Hardy's Hill

Observation Point 41B: Successional moist red maple woods, ca. 3-4 acres

Trees

Acer rubrum

Shrubs

Ligustrum sp.

Rhamnus frangula

Vaccinium corymbosum

Viburnum recognitum

Herbs

Agrimonia sp.

Athyrium filix-femina

Carex virescens

Maianthemum canadense

Park Ranking: B-

State Ranking: D

Site 57; Woods South of Folly Pond

Successional maple and pine woods, ca. 2-3 acres, wet but not swampy.

Observation Point 57:

Trees

Acer rubrum

Betula lenta

Fagus grandifolia

Pinus strobus

Quercus alba

Tall shrubs

Castanea dentata
Clethra alnifolia

Quercus alba
Vaccinium corymbosum

Herbs

Aralia nudicaulis
Athyrium filix-femina

Maianthemum canadense +
Mitchella repens

Trees to 60', max dbh 9-14", apparently fairly young; 1 vernal pool ca 50' in shade.

Park Ranking: B-
State Ranking: C

5.4 Wet Woods and Wooded Wetlands (Sites 2, 17, 25, J30, J32, J42, 67)

These are red maple woods which range from seasonally to permanently wet. The wettest examples have an understory of ferns, tussock sedges, wetland herbs and wetland shrubs; they are a distinctive community which, compared to the open wetland communities of the park, seems in fairly good condition and relatively little disturbed.

The following list is the aggregate list for wet woods and wooded swamps. The species marked by an asterisk were in all or almost all the swamps where the wetness was suitable.

*Acer rubrum**
Acer saccharum
Anemone quinquefolia
Aralia nudicaulis
Arisaema triphyllum
Aster puniceus
Athyrium filix-femina
Berberis thunbergii
Betula alleghaniensis
Betula lenta
Carex crinita
Carex debilis
Carex echinata
Carex folliculata
Carex stipata
Castanea dentata
*Clethra alnifolia**
Corylus cornuta
Dennstaedtia punctiloba
Dryopteris intermedia
Flaxinus americana
Gaylussacia baccata

*Osmunda claytoniana**
Osmunda regalis
Panax trifolia
*Pinus strobus**
Prunus serotina
Puccinellia fernaldii
Quercus alba
Quercus rubra
Quercus velutina
Rhamnus cathartica
*Rhamnus frangula**
Rhododendron periclymenoides
Rhododendron viscosum
Rhus radicans
Rosa multiflora
Sambucus pubens
Scirpus atrovirens sens. lat.
Senecio aureus
Smilacina racemosa
Smilax rotundifolia
Solanum dulcamara
Solidago gigantea

Gaylussacia frondosa
Glyceria striata
Ilex verticillata
*Impatiens capensis**
Juncus effusus
Kalmia angustifolia
*Lindera benzoin**
Lycopodium obscurum
Lysimachia terrestris
*Maianthemum canadense**
Mitchella repens
*Nyssa sylvatica**
Onoclea sensibilis
Osmunda cinnamomea

*Symplocarpus foetidus**
*Thelypteris palustris**
Trientalis borealis
*Ulmus americana**
Uvularia sessilifolia
Vaccinium angustifolium
*Vaccinium corymbosum**
Vaccinium pallens
Veratrum viride
Verbena urticifolia
Viburnum lentago
*Viburnum recognitum**
Viola pallens

A total of 67 native species and four aliens were recorded in the community. This makes it the most diverse community at the park, but noticeably less diverse than this community is elsewhere. Note that most of the plants that occurred in a number of examples of the community are trees and shrubs; even very common wetland herbs like *Glyceria striata*, *Aster puniceus*, and *Arisaema triphyllum* only occurred in a few of the swamps. In consequence the individual swamps are species-poor relative to better examples of the community. We suspect that this is a consequence of succession in small, fragmented patches.

Data from wooded swamps:

Site 67: Large Red Maple Swamp between North Great Road and Virginia Road

This is the best example of a wooded wetland in the park. It is a swamp of 6-8 acres which is wettest in the center and dryer peripherally. It is surrounded by a very weedy mixed oak, red maple, and black gum forest. The center part is a root-and-pool wetland (shallow pools with hummocks and bridges made from roots and fallen trees) with lots of moss. The wetland trees are red maple and black gum, with occasional white pine and yellow birch. Characteristic native shrubs are clethra, a rhododendron, highbush blueberry, spicebush, young black gum, dangleberry (*Gaylussacia frondosa*) and American hazelnut. Some honeysuckle and European buckthorn also occur, but they are much less abundant than in the surrounding woods. The dominant herbs are cinnamon fern and skunk cabbage; *Carex echinata* and *Carex folliculata* occurred, *Senecio aureus*, marsh fern, evergreen wood fern and a few others. The total diversity of the herbs was not great, but it was fairly typical for an acid swamp. The hummocks were nice and mossy. The dominant species were *Sphagnum squarrosum*, *capillifolium*, *Aulocomnium palustre* and *Dicranum scoparium*. *Maianthemum canadense* and starflower were the commonest wildflowers in the dry sections.

Total species list for the wet woods and wooded wetland:

Acer rubrum

Onoclea sensibilis

Anemone quinquefolia
Aralia nudicaulis
Athyrium filix-femina
Betula alleghaniensis
Carex debilis
Carex echinata
Carex folliculata
Carex stricta
Castanea dentata
Clethra acuminata
Dennstaedtia punctiloba
Dryopteris intermedia
Gaylussacia baccata
Gaylussacia frondosa
Impatiens sp.
Lindera benzoin
Lycopodium obscurum
Maianthemum canadense
Mitchella repens
Nyssa sylvatica

Osmunda cinnamomea
Osmunda regalis
Panax trifolia
Pinus strobus
Quercus alba
Rhamnus cathartica
Rhamnus frangula
Rhododendron periclymenoides
Rosa multiflora
Senecio aureus
Smilax rotundifolia
Symplocarpus foetidus
Thelypteris palustris
Trientalis borealis
Ulmus americana
Uvularia sessilifolia
Vaccinium angustifolium
Vaccinium corymbosum
Viburnum recognitum
Viola pallens

Observation Point 67A: In Swamp

Trees

Acer rubrum
Nyssa sylvatica
Pinus strobus

Quercus alba
Quercus rubra

Tall Shrubs

Clethra alnifolia
Nyssa sylvatica
Pinus strobus

Rhamnus frangula
Vaccinium corymbosum

Trees to ca 12" dbh. Ground layer very mossy.

Herbs

Maianthemum canadense

Thelypteris palustris

Observation Point 67B; 100' E of 67A

Trees

Acer rubrum
Nyssa sylvatica

Quercus velutina

Tall Shrubs

Clethra alnifolia
Rhamnus frangula

Vaccinium corymbosum
Viburnum recognitum

Herbs

Maianthemum canadense
Puccinellia fernaldii

Symplocarpus foetidus

Park Ranking: A
State Ranking: ? B-C

Observation point 67C; mesic woods near swamp

Trees

Acer rubrum
Carya tomentosa
Pinus strobus

Quercus alba
Quercus rubra
Ulmus americana

Tall Shrubs

Corylus cornuta
Prunus serotina
Rhamnus frangula ++

Vaccinium corymbosum
Viburnum recognitum

Herbs

Maianthemum canadense

Rhus radicans

Observation Point 67D; wet mesic woods near center of swamp

Trees

Acer rubrum
Nyssa sylvatica

Pinus strobus
Quercus rubra

Tall Shrubs

Clethra alnifolia
Rhamnus cathartica
Rhododendron sp.

Vaccinium corymbosum
Vaccinium pallens

Herbs



Lycopodium obscurum
Maianthemum canadense

Trientalis borealis

Observation Point 67D; middle of swamp

Trees

Acer rubrum
Betula lenta

Pinus strobus

Tall Shrubs

Clethra alnifolia
Smilax rotundifolia

Vaccinium corymbosum
Viburnum recognitum

Herbs

Maianthemum canadense
Osmunda cinnamomea

Symplocarpus foetidus

Site 2: Small forested wetland in the angle between Marrett Road and Old Mass. Avenue

A small red maple swamp, ca. 1/2-1 acre, not permanently wet.

Observation Pt 2: in wetland

Trees

Acer rubrum

Shrubs

Fraxinus americana
Kalmia angustifolia
Rhamnus frangula
Sambucus pubens

Rhododendron viscosum
Vaccinium corymbosum
Viburnum recognitum

Herbs

Aster puniceus
Athyrium filix-femina
Carex crinita
Carex stipata
Carex stricta

Osmunda claytoniana
Osmunda regalis
Scirpus atrovirens sens. lat.
Solanum dulcamara
Solidago gigantea

Glyceria striata
Impatiens capensis
Juncus effusus
Lysimachia terrestris

Symplocarpus foetidus
Thelypteris palustris
Verbena urticifolia

Site 17: Small wetland by Airport Road

Small forested wetland, ca. 1 ac., permanently wet.

Trees

Acer rubrum

Fraxinus americana

Tall Shrubs

Clethra alnifolia
Ilex verticillata
Rhododendron sp

Ulmus americana
Vaccinium corymbosum
Viburnum recognitum

Herbs

Impatiens capensis
Thelypteris palustris

Osmunda claytoniana
Symplocarpus foetidus

Park Ranking: B
State Ranking: D

Site 21: Small forested wetland east of Mill Street

Small red maple wetland of ca. 1 acre.

Trees

Acer rubrum

Prunus serotina

Tall Shrubs

Vaccinium corymbosum
Viburnum lentago

Viburnum recognitum

Herbs

Osmunda claytoniana

Park Ranking: B

State Ranking: C

Site 25: Low Wet Woods, East of Site 21

Swampy white pine stand of ca. 1 acre.

Trees

Pinus strobus

Shrubs

Rhododendron viscosum

Vaccinium corymbosum

Herbs

Maianthemum canadense

Osmunda cinnamomea

Park Ranking: B

State Ranking: C

Site J30: Wet Woods South of North Great Road, near the Bloody Angles

Trees

Acer rubrum

Ulmus americana

Acer saccharum

Tall Shrubs

Lindera benzoin

Herbs

Arisaema triphyllum

Onoclea sensibilis

Athyrium filix-femina

Smilacina racemosa

Trees to 14" dbh.

Park Ranking: B

State Ranking: C

Site J32: Swamp East of Site J31

Red maple swamp of 1-2 acres, without tussocks or sphagnum, not permanently wet.

Trees

Fraxinus americana

Acer rubrum

Tall Shrubs

Rosa multiflora
Viburnum recognitum

Berberis thunbergii
Lindera benzoin
Rhamnus cathartica

Herbs

Rhus radicans
Symplocarpus foetidus
Veratrum viride

Impatiens capensis
Onoclea sensibilis
Osmunda cinnamomea

Trees to 10" dbh.

Park Ranking: B+
State Ranking: C

Site J42: Red Maple Swamp East of Hardy Hill

Wet, somewhat swampy red maple woods, ca 2-3 acres, adjacent to Site 41B.

Trees

Acer rubrum

Tall Shrubs

Viburnum recognitum

Rhamnus frangula
Vaccinium corymbosum

Herbs

Onoclea sensibilis
Symplocarpus foetidus
Thelypteris palustris

Carex stricta
Glyceria striata
Impatiens capensis

Park Ranking: B
State Ranking: C

5.5 Ponds

This portion of the park has four small ponds of about 1-1.5 acres each. Two are treated here. The third, a bog pond, is treated in Section 5.6, and the fourth, which has a sedge meadow associated with it, in Section 5.7.

Site 4: Small Pond North of Fiske Hill

This is a small but pretty marsh pond, apparently in a kettlehole, with a ring of shrubs around it. It was 1-2' deep in the spring, and completely dry in the summer. There is a ring of *Decodon* and shore line herbs at the edge, then a dense ring of *Glyceria pallida* in the shallow water, then a looser ring of *G. acutiflora* in the deeper water, with scattered *Nuphar* and *Pontederia* in the center. After the pond dried up the bottom was covered with *Agrostis stolonifera* & *Eleocharis acicularis*, and there were patches *Juncus canadensis* (in a very robust form) and *Eleocharis smallii* in the center.

The edge of the pond had a moderately diversity of native shoreline herbs and very few aliens. *Lysimachia hybrida* is common here. A small soft sphagnum at the edge may be *S. tenellum*.

Observation Point 4: small pond

In water

Glyceria acutiflora
Nuphar luteum

Pontederia cordata

Around Edge, in Spring

Carex stricta
Cephalanthus occidentalis
Decodon verticillatus
Eleocharis acicularis
Galium tinctorium
Hypericum ellipticum

Lysimachia hybrida
Polygonum amphibium
Scirpus cyperinus sens. lat.
Sphagnum ? tenellum
Thelypteris palustris

On exsiccated mud and shores in later summer

Agrostis stolonifera
Bidens cernua +
Glyceria acutiflora
Bidens tripartita +
Hypericum perforatum +
Callitriche sp.
Juncus canadensis
Dulichium arundinaceum
Lycopus uniflorus

Lysimachia terrestris
Eleocharis smallii
Polygonum amphibium
Galium palustre ?
Scirpus cyperinus sens. lat.
Gratiola neglecta
Ludwigia palustris
Leersia oryzoides
Carex stricta

Eleocharis acicularis +++
Lysimachia hybrida
Eleocharis olivacea

Osmunda regalis
Thelypteris palustris

Park Ranking: A
State Ranking: C

The total flora is around 33 species; we ranked this site highly because it is a reasonably diverse community, and because it is relatively undisturbed and has almost no alien species.

Site 56: Folly Pond

A small pond and an adjacent wetland meadow, totaling ca. 1.5 acres, apparently disturbed. The pond looks to be about 0.5-0.7 acre in the spring, and had dried to about a third of that in late summer. There was trash dumped on both the east and north sides of the pond; the wet meadow adjacent to it was dominated by loosestrife and had a small area of *Phragmites* as well. The plant diversity was low; the flora contained less than 15 native species, or less than half that of the pond at Site 4.

Major plants in pond

Eleocharis acicularis
Eleocharis smallii
Glyceria acutiflora
Juncus sp.
Ludwigia palustris

Nuphar luteum
Nymphaea odorata
Sparganium chlorocarpum
Typha latifolia
Wolffia borealis

A ring of tall *Phalaris arundinacea* and *Lythrum salicaria* covers about three quarters of the basin.

We gave this site a park ranking C, because of the low diversity and dominance of weeds; it would have a state rank of D.

5.6 Bog Pond South of Intersection of Airport Road and Massachusetts Ave

This is a small pond of about 1-1.5 acres with a ring of shrubs, a moat 1-2 feet deep, and a floating mat of leatherleaf, grasses, and sphagnum. Beyond the floating mat is a deepwater buttonbush swamp with dead trees that may have been flooded some time in the past.

Sphagnum torreyi and *Drepanocladus* sp. are abundant in the moat.

Observation Point 12: floating bog and adjacent shrub swamp

Shrubs on shores

Rhamnus frangula
Rhododendron viscosum

Vaccinium corymbosum
Viburnum recognitum

Moat (lagg) and shores

Bidens tripartita
Cephalanthus occidentalis
Drepanocladus sp.
Nuphar luteum

Sphagnum torreyanum ++
Triadenum
Utricularia geminiscapa !
Utricularia vulgaris

Deepwater swamp

Acer rubrum
Carex stricta
Cephalanthus occidentalis

Clethra alnifolia
Lemna minor

Floating Mat

Aulacomnium palustre
Carex canescens
Cephalanthus occidentalis
Chamaedaphne calyculata ++
Drepanocladus sp.
Glyceria obtusa

Sphagnum cuspidatum
Sphagnum palustre group
Sphagnum recurvum
Triadenum sp.
Typha latifolia

This community is given a park rank of B because it is a reasonably good example of a kettlehole bog, but is not rated A because the diversity is low and the waterlevels have apparently been altered.

State Ranking: C

5.7 Open Wetlands and Shrub Swamps (Sites 7, J37, J41, 68)

These are variously wet post agricultural meadows, tussock sedge meadows of unknown history, small cattail marshes, and small wet openings in the woods.

The small wetlands surrounded by woods tend to have mostly native species and be dominated by some mixture of sedges, grasses, tall herbs, and wetland shrubs. They are fairly representative of native open wetland communities, and were typically ranked B for diversity and integrity, though with the proviso that many of them are quite small.

The small cattail stands tend to be low in diversity, and may in many cases be related to erosion and hydrological disturbance. They were mostly given park ratings of C.

Two medium-sized (1-2 acre) wet meadows are associated with ponds, and are likely peatlands that were formerly flooded by the ponds. One is dominated by loosestrife and has very low diversity. The other (Site 41) has mostly native species and seem to be a reasonably good example of a sedge meadow community.

The wet post agricultural meadows either have grown up to dense shrub thickets (which we give a park rank of C because they are a very common community, or have been invaded by loosestrife and are of low diversity and have few native species. These we variously give park ranks of C or D.

Data from open wetlands:

Site 7: Small Open Wetland South of Airport Road

This was a shrub-tussock swamp of under 1 acre, partly wooded, partly open, with some cattails.

Observation point 7: small open wetland

Tall Shrubs and Trees

Acer rubrum

Alnus rugosa

Herbs

Carex crinita

Lythrum salicaria

Carex stricta

Onoclea sensibilis

Galium tinctorium

Thelypteris palustris

Hypericum ellipticum

Typha latifolia

Juncus effusus

Park Ranking: B

State Ranking: C

This has a B rating because it is a native community, but it is small and not particularly striking.

Site J37: Small Wetland South of Hartwell Farm Site

A small open wetland of about 1/2 acre surrounded by wet woods.

Observation Point 37: Small open wetland

Herbs

Acorus calamus +

Sambucus pubens

Calamagrostis canadensis +
Impatiens capensis
Poa palustris

Solidago rugosa
Symplocarpus foetidus +
Typha latifolia +

This is a very small site, given a park rank of B because it is largely native.

Site J41: Small pond and sedge meadow near Meriam's Corner

This is a wet basin of about 6 acres which contains wet woods, a small pond on ca. 1 acre, some wet meadows dominated by loosestrife (1-2 acres) and some wet tussock sedge meadows dominated by native species (1-2 acres). The diversity of bryophytes and native herbs is higher here than in any other open wetland in the park, and the tussock sedge meadow was given a park ranking of A.

Observation Point J41, native sedge meadow

Shrubs and trees (mostly at edges)

Acer rubrum
Cornus amomum
Quercus bicolor

Spiraea latifolia
Spiraea tomentosa
Ulmus americana

Bryophytes

Aulacomnium palustre
Sphagnum ? cuspidatum

Sphagnum centrale
Sphagnum girgensohnii

Vascular Plants

Callitriche sp.
Carex atlantica ?
Carex brevior
Carex bromoides
Carex lupulina
Carex lurida
Carex scoparia
Carex stipata
Carex tenera
Eleocharis obtusa
Eleocharis smallii

Glyceria acutiflora
Glyceria canadensis
Hypericum boreale
Juncus effusus
Ludwigia palustris
Lysimachia terrestris
Nuphar luteum
Proserpinaca palustris
Scirpus cyperinus sens. lat.
Spiraea tomentosa
Triadenum virginianum

Park Ranking: A

State Ranking: C

The overall diversity is comparable to that of the small pond near Fiske Hill, and like it, merits a park rank of A. There are more sedges here than anywhere in the park.

Site 68: Large Wet Meadow at the Bloody Angles

This appears to be a postagricultural wetland of ca. 7-9 acres along a brook. It is the largest open wetland in the park, but, unfortunately, is dominated by purple loosestrife and a few other common wetland species. It has lots of goldenrods and aster, some skunk cabbage, some cattails, and an enormous stand of loosestrife. It was given a park rank of C.

Observation point 68: weedy wet meadow

Shrubby edge

Alnus rugosa
Arisaema triphyllum
Cornus foemina
Geranium maculatum

Onoclea sensibilis
Rosa multiflora
Rubus alleghaniensis
Thalictrum pubescens

Open Meadow

Arenaria lateriflora
Aster puniceus
Carex stipata
Carex stricta
Chelone glabra
Cicuta maculata
Cuscuta sp.
Epilobium sp.
Equisetum arvense
Eupatorium maculatum
Galium mollugo
Geum allepicum
Impatiens sp.
Iris pseudoacorus

Lythrum salicaria ++
Onoclea sensibilis
Polygonum sagittatum
Ranunculus repens
Rhamnus frangula
Solidago gigantea
Solidago graminifolia
Solidago rugosa
Spiraea latifolia
Symplocarpus foetidus
Tanacetum vulgare
Thelypteris palustris
Typha latifolia
Verbena hastata

6. Plant Geography and Distinctive Species

The majority of the plants at the park are wide-ranging species that are common throughout the northeastern United States. A smaller group of plants includes species that are geographically specialized in that they are limited to a particular geographic region, or in some cases to a particular community. These include the following:

Plants of dry forests in the oak zone:

Aster dumosus

Hieracium venosum

Aster paternus
Carya tomentosa
Desmodium paniculatum
Gerardia pedicularia
Hieracium gronovii

Quercus coccinea
Quercus coccinea
Quercus velutina

Plants of coastal plain wetlands

Carex atlantica
Clethra alnifolia
Eleocharis olivacea
Gaylussacia frondosa
Glyceria acutiflora
Glyceria obtusa

Glyceria pallida
Lysimachia hybrida
Polygonum hastatum
Rhododendron viscosum
Sphagnum ? tenellum
Sphagnum torreyanum

7. Rare and Scarce Species

No rare species were found. The sedge *Carex atlantica* (found at the sedge meadow, Site J41) is probably a scarce species in eastern Massachusetts. The bladderwort *Utricularia geminiscapa* (found at the bog pond, Site 12), may be a new county record, but is known from eastern Massachusetts and is not surprising here.

8. Aggregate Flora, All Communities

The following list includes 265 species that were observed at our sample points and transects; it is thus a list of the common and reasonably common plants of the native communities of the park. No attempt was made to make exhaustive lists of each community, or to list the ruderal and post-agricultural floras. Had this been done the list would be substantially longer.

Acer rubrum
Acer saccharinum
Acer saccharum
Achillea millefolium
Acorus calamus
Actaea rubra
Agrimonia sp.
Agrostis sp.
Alnus rugosa
Andropogon scoparius
Anemone quinquefolia
Antennaria plantaginifolia
Aralia nudicaulis

Lemna minor
Ligustrum vulgare
Linaria canadensis
Linaria vulgaris
Lindera benzoin
Lonicera morrowii
Ludwigia palustris
Lycopodium obscurum
Lycopus uniflorus
Lysimachia terrestris
Lysimachia hybrida
Lysimachia nummularia
Lysimachia terrestris

Arenaria lateriflora
Arisaema triphyllum
Aster dumosus
Aster paternus
Aster puniceus
Aster vimineus
Athyrium filix-femina
Aulacomnium palustre
Baptisia tinctoria
Berberis thunbergii
Betula alleghaniensis
Betula lenta
Betula papyrifera
Betula populifolia
Bidens cernua
Bidens tripartita
Boehmeria cylindrica
Calamagrostis canadensis
Callitriche sp.
Cardamine pratensis v. *pratensis*
Carex atlantica
Carex brevior
Carex bromoides
Carex canescens
Carex cephalophora
Carex crinita
Carex debilis
Carex echinata
Carex folliculata
Carex lupulina
Carex lurida
Carex pennsylvanica
Carex rosea
Carex scoparia
Carex stipata
Carex stricta
Carex tenera
Carex vesicaria
Carex virescens
Carpinus caroliniana
Carya glabra
Carya tomentosa
Castanea dentata
Cephalanthus occidentalis
Ceratophyllum demersum
Chamaedaphne calyculata
Chelone glabra
Chimaphila maculata

Lythrum salicaria
Maianthemum canadense
Melampyrum lineare
Mitchella repens
Moneses uniflora
Monotropa hypopithys
Myosotis scorpioides
Nuphar luteum
Nymphaea odorata
Nyssa sylvatica
Onoclea sensibilis
Osmunda cinnamomea
Osmunda claytoniana
Osmunda regalis
Panax trifolia
Panicum dichotomoflorum
Parthenocissus sp.
Phalaris arundinacea
Pilea pumila

Pinus strobus
Pinus sylvestris
Poa palustris
Poa pratensis
Polygonatum pubescens
Polygonum amphibium
Polygonum hastatum
Polygonum hydropiperoides
Polygonum pennsylvanicum
Polygonum sagittatum
Polystichum acrostichoides
Polytrichum sp.
Pontederia cordata
Potamogeton crispus
Potentilla simplex
Proserpinaca palustris
Prunus serotina
Prunus virginiana
Pteridium aquilinum
Puccinellia fernaldii
Pyrola elliptica
Quercus alba
Quercus bicolor
Quercus coccinea
Quercus rubra
Quercus velutina
Ranunculus repens
Rhamnus cathartica

Chimaphila umbellata
Cicuta maculata
Cinna arundinacea
Circaea quadrisulcata
Clethra alnifolia
Comptonia peregrina
Cornus alternifolia
Cornus amomum
Cornus foemina
Cornus stolonifera
Corylus americana
Corylus cornuta
Crataegus sp.
Cuscuta sp.
Cypripedium acaule
Danthonia spicata
Decodon verticillatus
Dennstaedtia punctiloba
Deschampsia flexuosa
Desmodium paniculatum
Drepanocladus sp.
Dryopteris carthusiana
Dryopteris intermedia
Dulichium arundinaceum
Echinochloa walteri
Eleocharis acicularis
Eleocharis intermedia
Eleocharis obtusa
Eleocharis smallii
Elodea sp.
Epilobium sp.
Equisetum arvense
Eragrostis spectabilis
Eupatorium maculatum
Fagus grandifolia
Fraxinus americana
Galium circaezans
Galium mollugo
Galium palustre ?
Galium tinctorium
Gaultheria procumbens
Gaylussacia baccata
Gaylussacia frondosa
Geranium maculatum
Gerardia pedicularia
Geum allepicum
Glyceria acutiflora
Glyceria canadensis

Rhamnus frangula
Rhododendron periclymenoides
Rhododendron viscosum
Rhus radicans
Rosa multiflora
Rubus allegheniensis
Rubus hispidus
Rubus idaeus
Sagittaria latifolia
Salix nigra
Sambucus pubens
Sassafras albidum
Scirpus cyperinus sens. lat.
Sedum telephium
Senecio aureus
Sium suave
Smilacina racemosa
Smilax herbacea
Smilax rotundifolia
Solanum dulcamara
Solidago bicolor
Solidago caesia
Solidago flexicaulis
Solidago gigantea
Solidago graminifolia
Solidago juncea ?
Solidago odora
Solidago puberula
Solidago rugosa
Sparganium chlorocarpum
Sparganium eurycarpum
Sphagnum cuspidatum
Sphagnum ? tenellum
Sphagnum centrale
Sphagnum cuspidatum
Sphagnum girgensohnii
Sphagnum palustre group
Sphagnum recurvum
Sphagnum tenellum
Sphagnum torreyanum
Spiraea latifolia
Spiraea tomentosa
Spiranthes lacera group
Symplocarpus foetidus
Tanacetum vulgare
Thalictrum pubescens
Thelypteris noveboracensis
Thelypteris palustris

Glyceria obtusa
Glyceria pallida
Glyceria striata
Gratiola neglecta
Helianthemum sp.
Hieracium ? gronovii
Hieracium paniculatum
Hieracium scabrum
Hieracium venosum
Hypericum boreale
Hypericum ellipticum
Hypericum perforatum
Ilex verticillata
Impatiens capensis
Iris pseudoacorus
Iris versicolor
Juncus canadensis
Juncus effusus
Juniperus communis
Juniperus virginiana
Kalmia angustifolia
Kalmia latifolia
Lechea intermedia
Leersia oryzoides

Triadenum virginianum
Trientalis borealis
Typha latifolia
Ulmus americana
Ulmus rubra
Utricularia geminiscapa
Utricularia vulgaris
Uvularia sessilifolia
Vaccinium angustifolium
Vaccinium corymbosum
Vaccinium myrtilloides
Vaccinium pallidum
Veratrum viride
Verbena hastata
Verbena urticifolia
Viburnum acerifolium
Viburnum lentago
Viburnum recognitum
Viola fimbriatula
Viola pallens
Vitis sp.
Wolfia borealis

MINUTEMAN NATIONAL PARK CONCORD RIVER (WESTERN) UNIT

SITE 62: Open Shoreline Wetlands
Variousy dominated by loosestrife,
sedges, or deepwater emergents

SITE 61: Alluvial Silver Maple Woods
Narrow band of silver maples with
open understory by shore

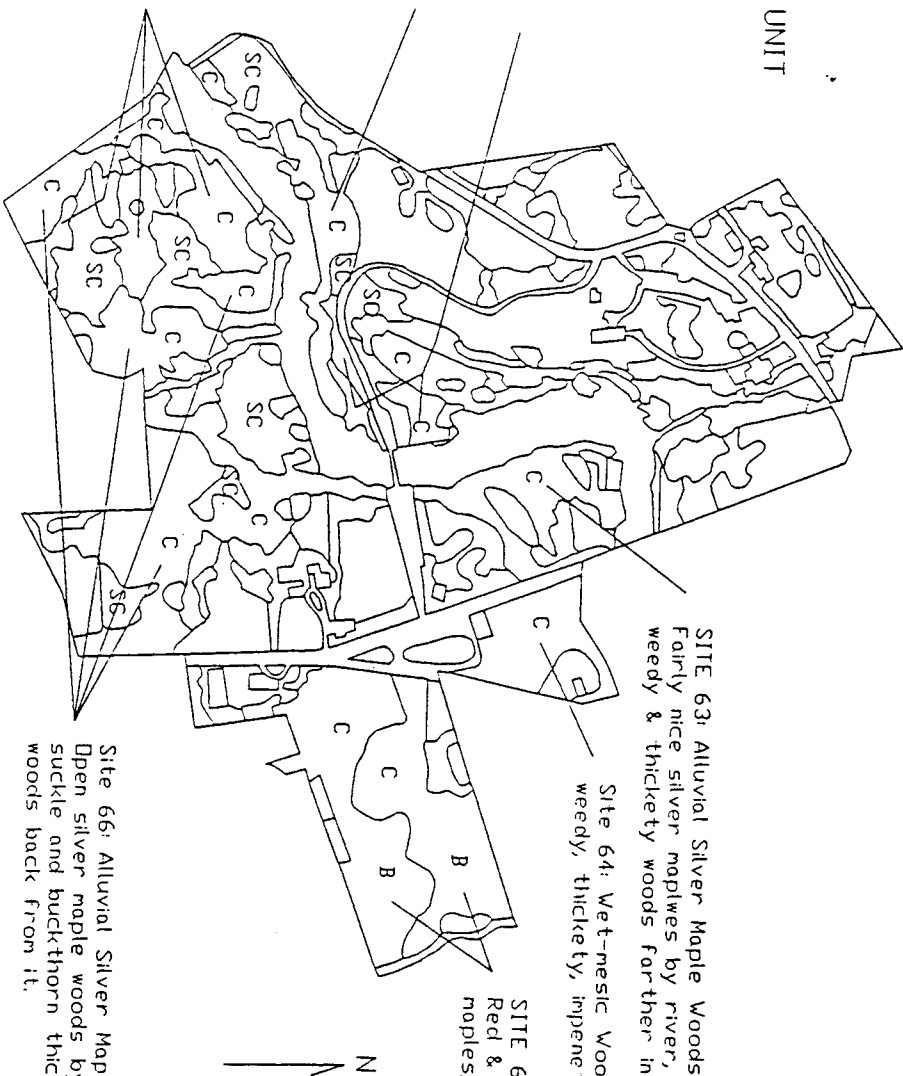
Site 66: Open Wet Meadows
Dominated by loosestrife and
Carex stricta.

SITE 63: Alluvial Silver Maple Woods
Fairly nice silver maples by river,
weedy & thickety woods farther in

Site 64: Wet-mesic Woods
weedy, thickety, impenetrable

SITE 65: Mixed Mesic Woods
Red & white oak, sugar & red
maples, white pine, ash, hemlock

Site 66: Alluvial Silver Maple Woods & Thickets
Open silver maple woods by the river, honey-
suckle and buckthorn thickets mixed with maple
woods back from it.



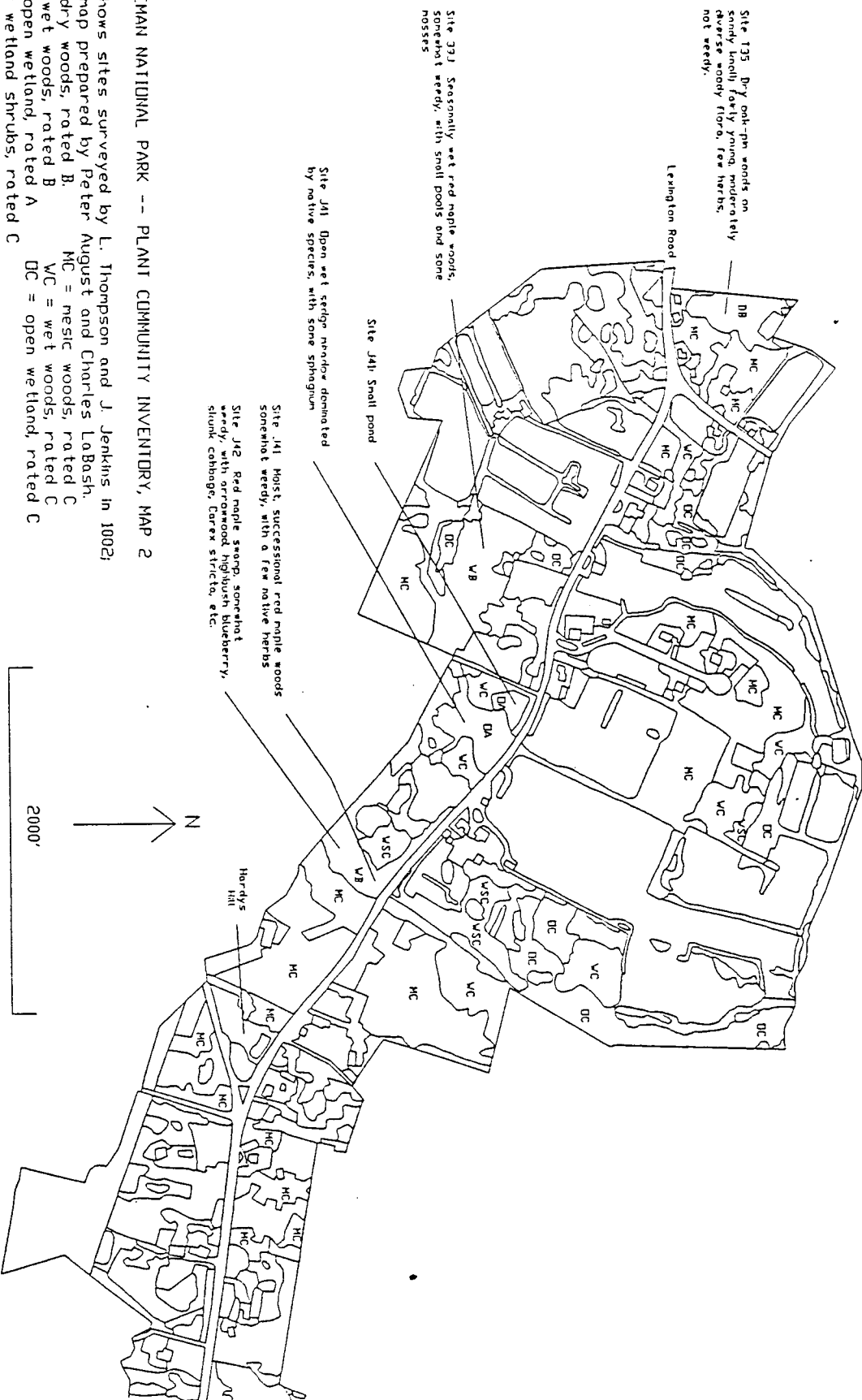
MINUTEMAN NATIONAL PARK -- PLANT COMMUNITY INVENTORY, MAP 1

Map shows sites surveyed by L. Thompson and J. Jenkins. C = a community rated C (coverage to degraded)
SC = shrub-dominated community rated C. B = a community rated B (reasonably undisturbed, above average
within the park). Base map prepared from air photos by Peter August and Charles Labash for the
National park Service, used by permission.

MINUTE MAN NATIONAL PARK -- PLANT COMMUNITY INVENTORY, MAP 2

Map shows sites surveyed by L. Thompson and J. Jenkins in 1002;
 base map prepared by Peter August and Charles LaBash.

DB = dry woods, rated B.
 MC = mesic woods, rated C
 WB = wet woods, rated B
 WC = wet woods, rated C
 DA = open wetland, rated A
 DC = open wetland, rated C
 WSC = wetland shrubs, rated C



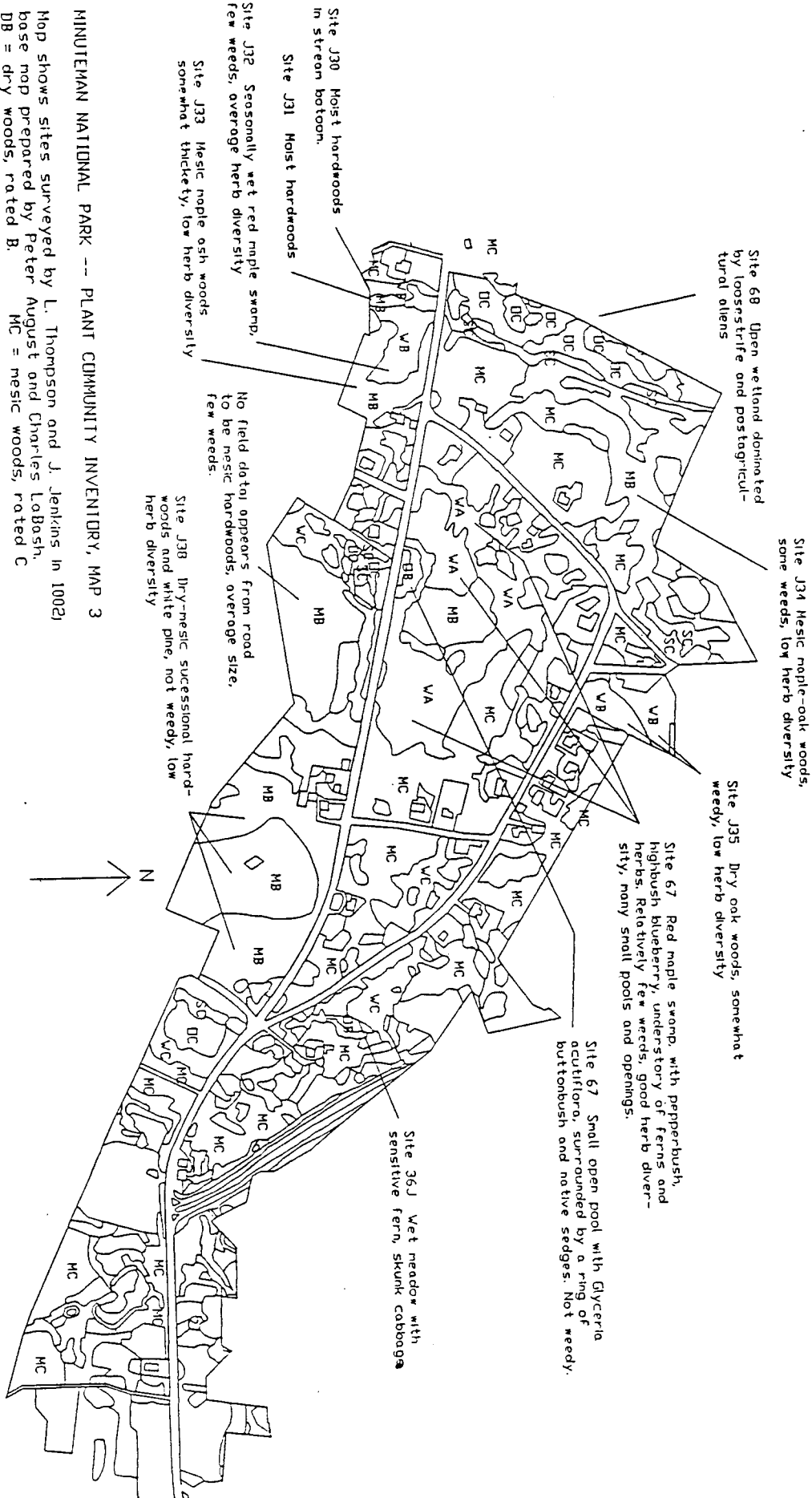
MINUTEMAN NATIONAL PARK -- PLANT COMMUNITY INVENTORY, MAP 3

Map shows sites surveyed by L. Thompson and J. Jenkins in 1002, base map prepared by Peter August and Charles Lobash.

DB = dry woods, rated B.
 MB = mesic woods, rated B.
 VA = wet woods, rated B.
 DC = open wetland, rated C.
 SC = wetland shrubs, rated C.

VC = wet woods, rated C.
 VA = wet woods, rated A.
 DB = open wetland, rated B.

2000'



MINUTEMAN NATIONAL PARK -- PLANT COMMUNITY INVENTORY, MAP 4

Map shows sites surveyed by L. Thompson and J. Jenkins in 1002; base map prepared by Peter August and Charles Labash.

DB = dry woods, rated B
 MC = mesic woods, rated C
 WC = wet woods, rated C
 DB = open wetland, rated B

DC = dry woods, rated C
 VB = wet woods, rated B
 DA = open wetland, rated A
 DC = open wetland, rated C

