



Implementation of a Long-term Vegetation Monitoring Program at Isle Royale National Park

Natural Resource Report NPS/GLKN/NRTR—2011/387



ON THE COVER

Clockwise from top left: *Cryptogramma acrostichoides* (rockbrake); *Oplopanax horridus* (devil's club) in fruit; *Rubus parviflorus* (thimbleberry) flower; *O. horridus* stem. All three species are western disjunct species found on Isle Royale. Photographs by: *O. horridus*: GLKN field crew; *C. acrostichoides* and *R. parviflorus*: Peter Widin

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Executive Summary

We initiated a long-term vegetation monitoring program at Isle Royale National Park (ISRO) in summer 2010. The goals of this monitoring program are to detect forest change and to draw inferences about forest health so that management recommendations can be provided to Network parks. In 2010, we established 52 plots at ISRO, distributed among five forest types: balsam fir mixed, white spruce/trembling aspen mixed, paper birch mixed, eastern white cedar, and sugar maple/birch. While the cedar and the maple/birch forests on the west side of the island, and the fir forests on the east side appear to be mature, the paper birch and spruce/aspen types are transitioning. Red maple and black ash are replacing paper birch while balsam fir is replacing spruce and aspen. We found very little evidence of browse, either in the sapling/shrub layer or in the understory. It is unclear if the continued low density of moose on the island is contributing to this. Qualitative comparisons with a vegetation assessment from a 1910 visit suggest most change in the previous century has occurred in the shrub layer and understory. *Taxus canadensis* and *Oplopanax horridus* populations have become smaller, while three understory species not noted in the 1910 work are now common: *Eurybia macrophylla* (big-leaved aster), *Polygala paucifolia* (gay wings), and *Streptopus lanceolatus* var. *roseus* (twisted-stalk). We did note the presence of earthworms in at least two plots. This will adversely impact the understory in the coming decades. Park managers should acquaint themselves with expected impacts on both the overstory and understory assemblages as climate change advances. Adaptation strategies which promote resilience, as well as facilitated adaptation techniques, may be needed to ensure the presence of stable species assemblages in the future.

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Introduction

Long-term forest monitoring provides an assessment of forest health by showing the status of plant communities at the time of each sampling event and elucidating how these communities change over time. Despite this value, large-scale monitoring programs for forest health with regularly scheduled return intervals are not common (for an exception, see U. S. Department of Agriculture (2005)).

In 2007, the Great Lakes Inventory & Monitoring Network of the National Park Service initiated a long-term forest vegetation monitoring program for nine national parks in the Great Lakes Region. The general goals of this program are to monitor forest vegetation to gain a better understanding of its dynamics, and to compare, ultimately, vegetation indices to baseline conditions. The summer of 2010 was the initiation of the program at Isle Royale National Park (ISRO) in Lake Superior. As this was the initial year of data collection at this park, no comparisons between time intervals can be made. Nonetheless, meaningful data were obtained to demonstrate the current status of ISRO forests.

The goals of the long-term vegetation monitoring effort during the first sampling year at a given park focus on obtaining baseline data on the status of park forests. Here, we report on this effort at ISRO. Specifically, we wanted to answer the following questions for key forest habitats: 1) What is the relationship between density and stem diameter for key tree species? 2) What is the basal area of both individual tree species and all species collectively? 3) What is the density of seedlings? 4) What is the percentage of shrub cover?

Methods

Sampling was conducted at ISRO from June 8-August 24, 2010. Site locations were selected using a generalized random-tessellation stratified design (GRTS, Stevens and Olsen 2004), ensuring that sites are both randomly located, but also spatially balanced throughout the park. All potential sites were overlain on an aerial photography layer using GIS prior to visiting the site in the field. In this way, we were able to eliminate any potential sites that did not meet the minimum 10% forest cover requirement. Potential sites that did not meet the minimum 10% cover requirement, were moved the shortest distance possible, to a maximum of 100 m, so that they fell within the desired amount of cover. If a potential site could not be moved ≤ 100 m to meet the criteria for acceptance, it was not sampled. Maps of individual sites are presented in Appendix A.

Field Methods

Sites were sampled using the hybrid plot (Figure 1), developed specifically for the Great Lakes Network long-term vegetation monitoring needs (Johnson et al. 2006, Johnson et al. 2008). This plot is composed of three parallel transects oriented east-west. Tree data were collected in a 6 m wide band along the length of each transect. Tree data collected included species, diameter at breast height (DBH), whether the tree was alive, and any evident damage or disease. Trees were defined as having a DBH of ≥ 2.5 cm (1 in). Groundlayer vegetation was collected in 1m^2 quadrats placed every 5 meters along each transect ($n = 30$ per plot). Within each quadrat, we recorded all herbaceous, vine, and shrub species present. Shrub cover and seedling abundance

were assessed within each of six 2.82 m radius (25 m² area) shrub circles, located at the transect ends. Here, we visually estimated percent cover of each shrub species present, as well as counted seedlings of each tree species present. Seedlings are defined as trees <2.5 cm DBH, but at least 15 cm in height and showing evidence of growth from the previous year. We measured coarse woody materials (CWM) along each of the three transects using the planar intercept method (Brown 1974, Woodall and Williams 2005) and recorded the diameter at the point of intercept, the small end, and the large end, and recorded the length. We also noted the decay class and species. Because we defined CWM as having a diameter ≥ 7.5 cm (3 in), the length of a piece was recorded only along where the diameter exceeded this amount. Finally, we performed a half-hour time delimited search of the entire 50 m $\times$ 100 m plot area to locate any additional species not previously recorded in any of the sampling.

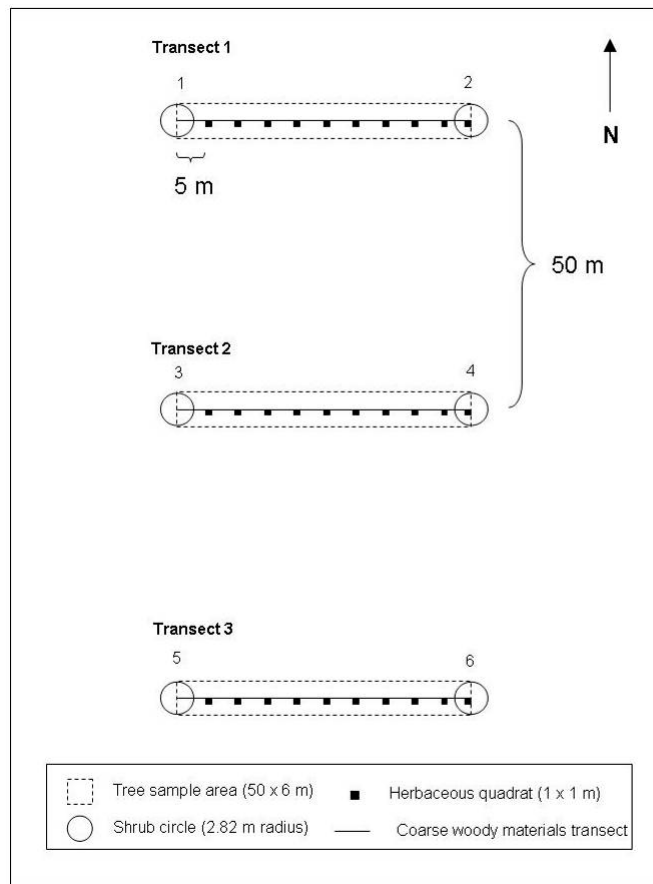


Figure 1. Diagram of hybrid plot.

We examined winter and summer browse pressure using both direct and indirect measures. Direct browse was measured along each of the three 50 meter transects, as well as along both of the 100 m transects running north-south at the plot (broken down into 50 meter segments for consistency). Direct browse measurements were conducted in 4 m² circular sampling areas (Figure 2). These browse sampling circles were centered every 5 meters along each transect, for a total of 68 for the plot. This resulted in a total sampling area of 272 m². For each direct browse sampling circle, all woody species present in the browse zone, defined as between 0.20 m and 2.0 m in height, were recorded. In addition to species presence, evidence of any ungulate browse

on that species in the sampling circle was recorded. Typically, winter browse surveys are conducted in the spring, prior to the new season's growth. Because we were not able to sample in the spring, we only considered a plant browsed when it was apparent that the browse occurred before the start of the current season's growth. This was evidenced by new growth arising from the bud immediately below the point of browse. Direct browse data was used to calculate a browse index based on the ratio of woody species with evident browse to all woody species present (Morellet et al. 2001, Morellet et al. 2003).

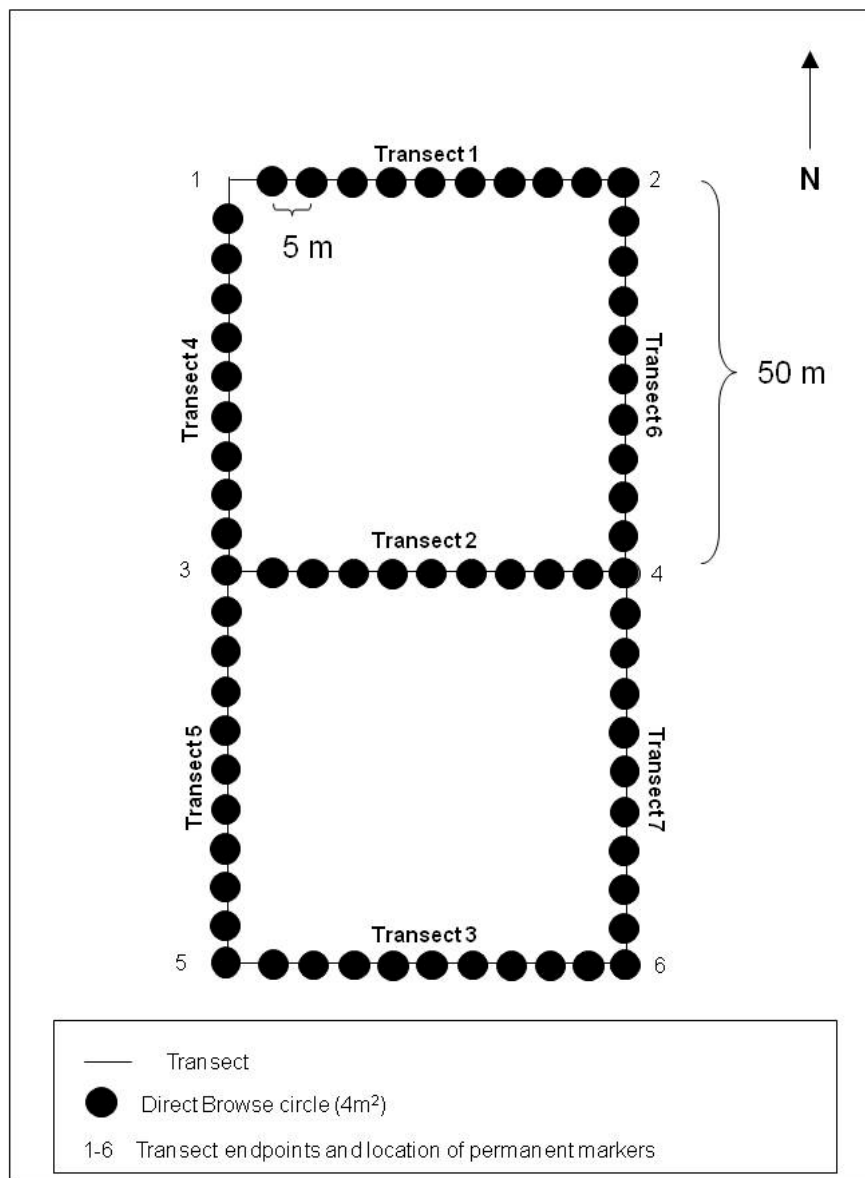


Figure 2. Direct browse sampling circles in plot.

To assess the indirect impacts of summer browse on understory species, we selected three target species, *Trillium grandiflorum* (large-flowered trillium), *Aralia nudicaulis* (wild sarsaparilla), and *Streptopus* sp. (twistedstalk), that are known to be browsed by white-tailed deer in mainland areas, off Isle Royale. Although summer moose browse on terrestrial herbs is not as great as that on shrubs, trees, or aquatic herbs, we wanted consistency of the methods at Isle Royale with

those at other parks, where deer browse is monitored. In addition, we felt that this could potentially be an opportunity to note previously unreported impacts on vegetation that are largely overlooked due to the large impacts of browse on woody plants. In each 1m² herbaceous quadrat (Figure 1), for each target species, we counted the number of individuals that were non-reproductive and unbrowsed, the number that were reproductive and unbrowsed, and the number that were browsed (regardless of reproductive state). We also measured the height of the tallest individual of each of the three target species, if present.

To assess tree disease, we viewed the boles, leaves, and branches of all trees in the 6 × 50 m tree transects where DBH was measured. We looked for symptoms of target diseases, as well as evidence of abiotic damage (Table 1) and, if found, the severity of damage and disease was recorded.

Table 1. Disease organisms and damage agents targeted in the vegetation monitoring protocol.

Bark beetles	Boring insects
eastern larch beetle (<i>Dendroctonus simplex</i>)	two-lined chestnut borer (<i>Agilus bilineatus</i>)
pine engraver (<i>Ips pini</i>)	Asian long-horned beetle (<i>Anoplophora glabripennis</i>)
Defoliators	hemlock borer (<i>Melanophila fulvoguttata</i>)
large aspen tortrix (<i>Choristoneura conflictana</i>)	Sirex woodwasp (<i>Sirex noctilio</i>)
spruce budworm (<i>Choristoneura fumiferana</i>)	Stem rust
jackpine budworm (<i>Choristoneura pinus</i>)	white pine blister rust (<i>Cronartium ribicola</i>)
larch casebearer (<i>Coleophora laricella</i>)	Fire
aspen blotch miner (<i>Lithocolletis tremuloidiella</i>)	Wild animals
gypsy moth (<i>Lymantria dispar</i>)	Abiotic damage
Sucking insects	Human activities
balsam wooly adelgid (<i>Adelges piceae</i>)	Unknown
hemlock wooly adelgid (<i>Adelges tsugae</i>)	broken top
pine spittlebug (<i>Aphrophora parabella</i>)	dead top
Saratoga spittlebug (<i>Aphrophora saratogensis</i>)	canker/gall
	open wound
	resinosis
	damaged or discolored foliage

Because we may want to stratify by forest or habitat type during later analyses (i.e., post stratification), we planned to declare a forest type for all plots sampled, while we were at the plot, using the Kotar classification system (Burger and Kotar 2003). Under this system, the forest type of an area is based on the potential vegetation rather than the current vegetation. Potential vegetation is the expected climax forest in a stand and reflects both the moisture level, as well as the nutrient availability within the stand. Moisture and nutrient availability are inherent properties of the soil and are not expected to change over decadal time scales. As such, the expected climax type should not vary between site visits. Thus, any post-sampling stratification that is performed should result in the same groupings of plots following any sampling event. While the Kotar system has been developed for the entire mainland Upper Peninsula of Michigan, classes have not been defined for all habitats on Lake Superior Islands. Hence, we experienced difficulty classifying plots in the field using this system. Beginning in late June, we began classifying plots according to the National Vegetation Classification System (Federal Geographic Data Committee 2008), assigning plots to their current (2010) vegetation type. We

continued to use the Kotar classification system as well, provided a plot clearly fell into one of the pre-defined classes.

Finally, documenting visual assessment of site change will be as important as statistical documentation, and potentially more informative. Therefore, we took six photographs at each plot. The six photopoints were located at each of the six transect endpoints, with the camera facing into the plot (i.e., due east at points 1, 3, and 5 and due west at points 2, 4, and 6, Figure 1).

We attempted to identify all plants to the species level in the field. When this was not possible, we typically collected specimens for later identification. In some instances, it is not possible to distinguish between multiple species present in a park, unless they are flowering or fruiting, which often was not the case. In these instances, we made the decision to record to genus instead. Examples of this include *Amelanchier* (serviceberry) and *Salix* (willow). For *Amelanchier* sp., the genus was taken down to three groups of species complexes, with Group 1 containing *A. bartramiana*, Group 2 containing *A. arborea*, *A. laevis*, and *A. interior*, and Group 3 containing an uncertain number of species (Smith 2008). In other instances, we were not able to identify certain specimens due to lack of taxonomic expertise. For example, many grasses and sedges were not identified beyond the family or genus level.

Analysis Methods

Cluster analysis

Because not all plots were classified by a single classification system, we used cluster analysis to group the plots into ecologically meaningful classes. Collectively, the 52 plots supported 19 taxa of tree stature. We determined the abundance of each tree species in each plot using Microsoft Access. These plots were clustered into 5 groups based on tree species abundance using PC-ORD software with a Sørensen distance measure and a flexible beta linkage ($\beta = -0.25$) (McCune and Grace 2002). Forest type names were assigned based on the dominant trees in these groups.

Functional groups

All taxa were assigned to classes within each of four functional groups. Within the life history group, taxa were either annual, biennial, or perennial. For taxa that are known to exhibit a range of life history strategies, we assigned the shortest strategy. For example, if a taxa is known to be either biennial or perennial, we assigned it to the biennial class. Within the growth form group, taxa were considered to be either woody (trees and shrubs), graminoid (grasses, sedges, and rushes), or forbs. This latter class included ferns and fern allies in this report. For the pollination group, taxa were considered to be abiotically pollinated if the flowers are non-existent (conifers) or not showy, and not known to produce any sensory attractants. These are typically wind pollinated. Otherwise, taxa were considered to be biotically pollinated. Fern and fern allies were not assigned to classes within this functional group. Within the nativity group, taxa were assigned to either native, non-native, or native/non-native. Naturalized taxa (e.g., *Clinopodium vulgare*) were considered non-native. In some instances taxa were identified only to the genus level and could not be assigned a nativity as species within these genera are both native and otherwise. Examples include *Lonicera* sp. and *Typha* sp.

Coefficients of conservatism

Coefficient of conservatism (COC) values describe the affinity of species to non-degraded habitats. Values range from zero (either non-native species or generalists with no faithfulness to any particular habitat) to 10 (conservative species found only in high-quality, non-degraded habitats). Since a given species may be conservative in one area of its distribution, but a generalist in the center of its range, COC values vary by region. Typically, values are assigned at the state level by experienced botanists and ecologists. For this report, we used COC values defined for the state of Michigan (Herman et al. 2001). Although Isle Royale is geographically distant from most of the landmass of Michigan, species affinities for habitats throughout the entire state were taken into consideration (Tony Reznicek, University of Michigan, personal communication). For this reason, we felt it was more appropriate to use those values assigned for Michigan rather than any other area, including the province of Ontario. Mean COC values were calculated for each of the five forest types.

Results

A total of 52 plots were completed at ISRO (Figure 3). Examination of the species assemblages in these groups, along with Kotar and NVCS classifications for many plots, and first hand accounts of the plots, allowed us to subjectively assign a forest type to each group (Table 2). Twenty-four tree species were recorded in the sampling plots (Appendix B), as were 47 shrub species and 232 herbaceous species.

Table 2. Forest types at ISRO and the plots classified in each.

Forest type	Plots
Balsam fir mixed forest	4001, 4020, 4028, 4032, 4038, 4042, 4054, 4058, 4064
White spruce/trembling aspen mixed forest	4002, 4006, 4010, 4016, 4017, 4019, 4022, 4024, 4026, 4029, 4031, 4033, 4034, 4040, 4043, 4047, 4050, 4056, 4059
Paper birch mixed forest	4003, 4009, 4011, 4023, 4044, 4045
Eastern white cedar forest	4004, 4014, 4018, 4025, 4027, 4036, 4037, 4041, 4053, 4063
Sugar maple/birch forest	4005, 4008, 4012, 4021, 4030, 4046, 4049, 4052

Balsam fir mixed forest – There sites are located in the eastern third of the island and are largely balsam fir, but with inclusions of several other species including white spruce, black ash, and paper birch. There are nine plots in this forest type.

White spruce/trembling aspen mixed forest – This is the largest forest type grouping containing 19 of the 52 plots. These plots typically contain a significant white spruce component, but are extremely variable. Other species include trembling aspen, paper birch, eastern white cedar, balsam fir, and black ash. These plots are fairly evenly distributed throughout the park.

Paper birch mixed forest – These sites are located throughout the island but with more toward the center. Paper birch sites were typically open with rocky outcrops and large amounts of beaked hazel. Alder was also commonly present within these plots and adjacent to them. Six plots were classified as the paper birch type.

Eastern white cedar forest – Ten sites were grouped within the eastern white cedar forest type. These sites were located in the central and western third of the island and were dominated by cedar although the habitats and, consequently, the composition of other tree species varied greatly. Large inclusions of yellow birch were common as were paper birch and trembling aspen. Groundlayer vegetation was variable, being dense in many plots but sparse in others.

Sugar maple/birch forest – These sites were all located in the western third of the park and were dominated by sugar maple, with large inclusions of eastern white cedar and, to a lesser degree, yellow birch and paper birch. Eight plots were grouped in this forest type.

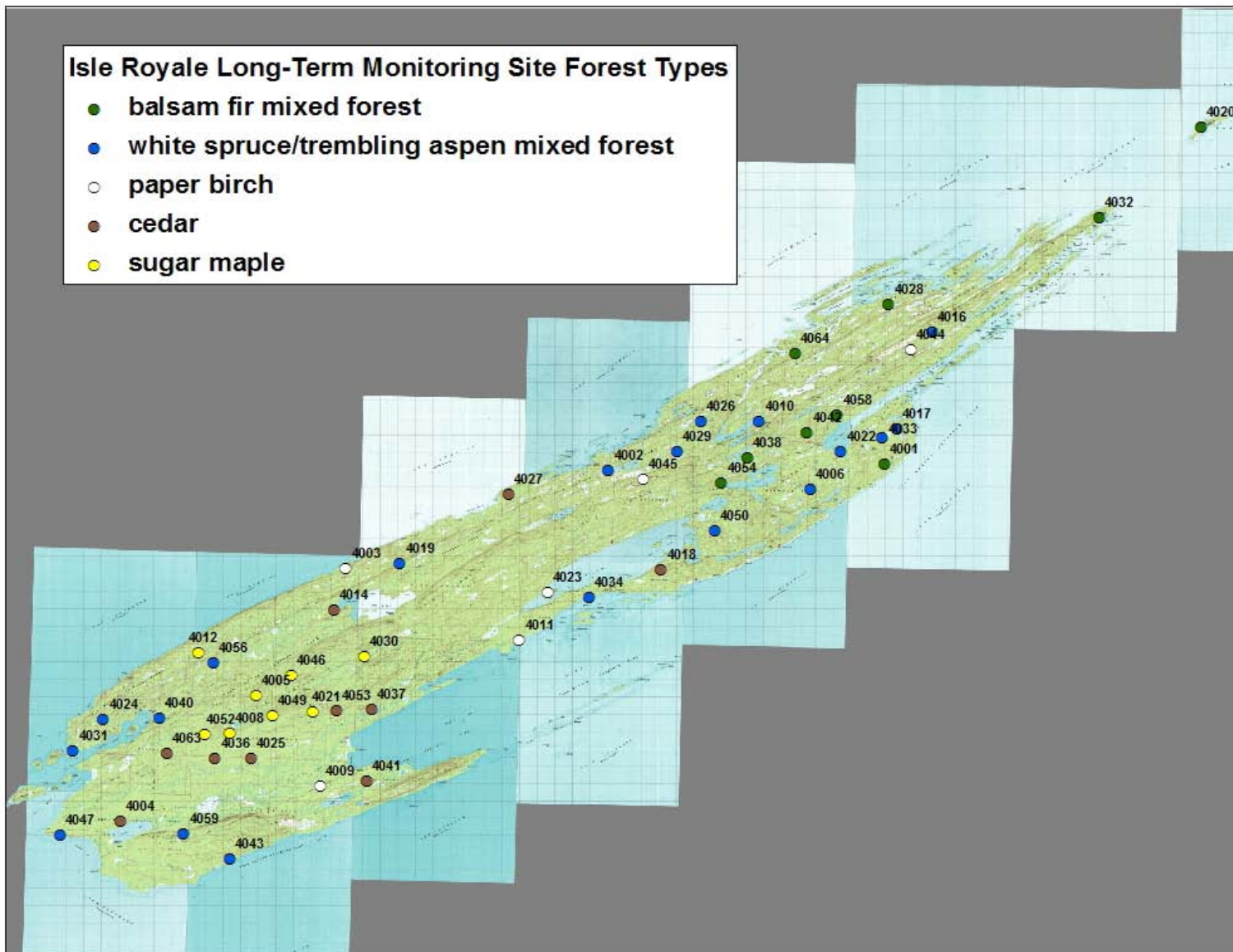


Figure 3. Isle Royale long-term vegetation monitoring plot locations and forest types (in 2010).

Balsam Fir Mixed Forests

Nine plots were in balsam fir mixed forests at ISRO, with eight of these located in the eastern third of the main island and one on Passage Island. Among the five forest types at ISRO, this one had the highest tree density, at 3,490 trees/ha (Table 3). Individuals of balsam fir comprised 75% of that total (Table 3, Figure 4a), while hardwood trees, collectively, comprised just over 9% (Table 3, Figure 4b).

Seedling density was 8,474 seedlings/ha (Table 4), the second lowest of the five forest types. Balsam fir and trembling aspen seedlings comprised 43% and 29% of the individuals, respectively.

Twenty-five shrub species were identified (Table 5). Percent cover was greater than 1% for several species: thimbleberry (4.46%), Canada yew (3.91%), devil's club (3.70%), speckled alder (2.59%), bush honeysuckle (1.07%), and squashberry (1.06%).

Table 3. Basal area and density of live trees in balsam fir mixed forests.

Latin name	Common name	Basal area m ² /ha	Density trees/ha
<i>Betula papyrifera</i>	paper birch	3.23	54.32
<i>Fraxinus nigra</i>	black ash	0.44	70.37
<i>Populus tremuloides</i>	trembling aspen	5.39	106.17
<i>Prunus pensylvanica</i>	pin cherry	0.02	17.28
<i>Sorbus decora</i>	mountain ash	0.33	72.84
<i>Abies balsamea</i>	balsam fir	8.51	2,614.81
<i>Picea glauca</i>	white spruce	4.47	340.74
<i>Picea mariana</i>	black spruce	0.58	79.01
<i>Pinus strobus</i>	white pine	<0.01	2.47
<i>Thuja occidentalis</i>	eastern white cedar	2.38	132.10
Total		25.36	3,490.11

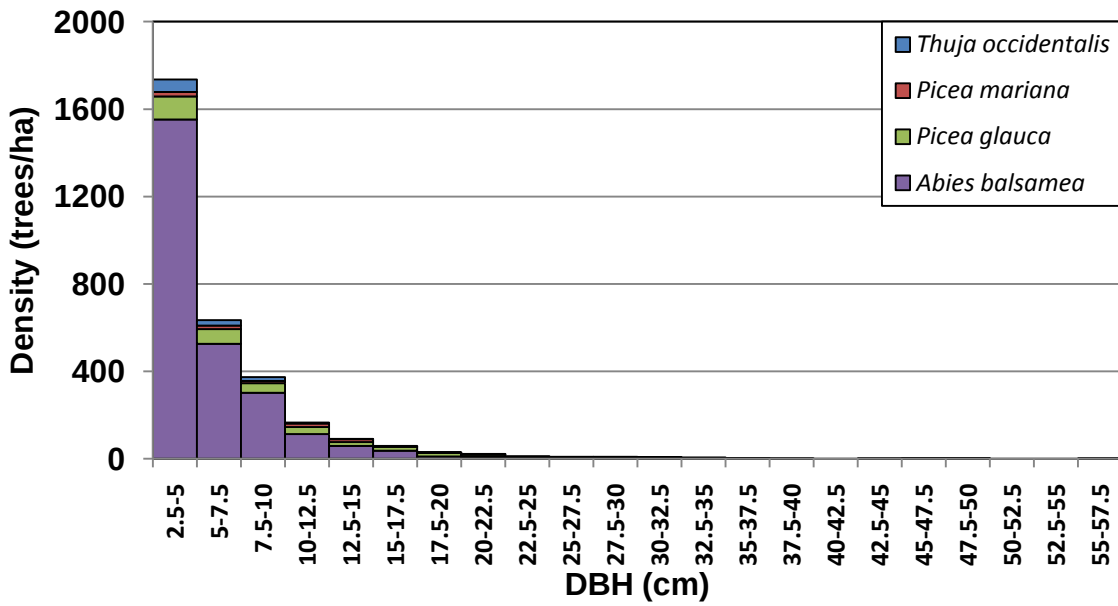


Figure 4a. Density-diameter graph of conifers in balsam fir mixed forests.

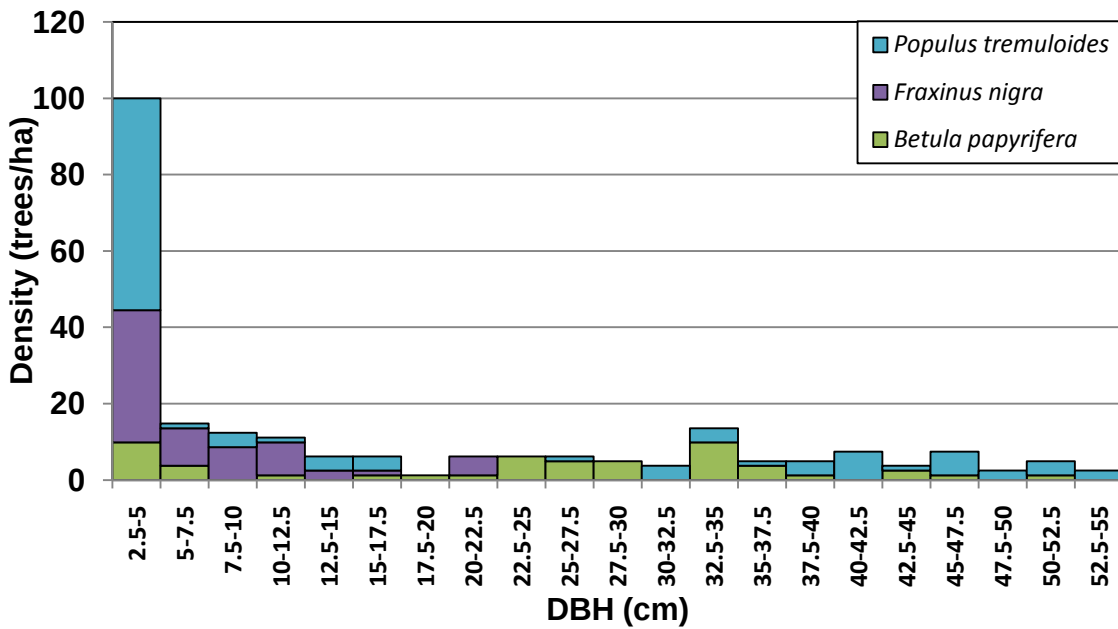


Figure 4b. Density-diameter graph of hardwoods in balsam fir mixed forests.

Table 4. Seedling density in balsam fir mixed forests.

Latin name	Common name	Density seedlings/ha
<i>Acer spicatum</i>	mountain maple	466.67
<i>Betula papyrifera</i>	paper birch	333.33
<i>Fraxinus nigra</i>	black ash	207.41
<i>Prunus pensylvanica</i>	pin cherry	66.67
<i>Prunus virginiana</i>	choke cherry	7.41
<i>Sorbus decora</i>	mountain ash	829.63
<i>Populus tremuloides</i>	trembling aspen	2,481.48
<i>Abies balsamea</i>	balsam fir	3,651.85
<i>Picea glauca</i>	white spruce	214.82
<i>Picea mariana</i>	black spruce	59.29
<i>Thuja occidentalis</i>	eastern white cedar	155.56
Total		8,474.07

Table 5. Shrub percent cover in balsam fir mixed forests.

Family	Latin name	Common name	Cover %
Araliaceae	<i>Oplopanax horridus</i>	devil's club	3.70
Betulaceae	<i>Alnus incana</i> ssp. <i>rugosa</i>	speckled alder	2.59
	<i>Corylus cornuta</i>	beaked hazel	0.37
Caprifoliaceae	<i>Diervilla lonicera</i>	bush honeysuckle	1.07
	<i>Lonicera canadensis</i>	fly honeysuckle	0.59
	<i>Lonicera hirsuta</i>	hairy honeysuckle	0.19
	<i>Lonicera involucrata</i>	twinberry honeysuckle	0.02
	<i>Symphoricarpos albus</i>	snowberry	0.02
	<i>Viburnum edule</i>	squashberry	1.06
Cornaceae	<i>Cornus rugosa</i>	roundleaf dogwood	0.02
	<i>Cornus sericea</i>	red osier dogwood	0.83
Ericaceae	<i>Arctostaphylos uva-ursi</i>	bearberry	0.06
	<i>Ledum groenlandicum</i>	Labrador tea	0.06
	<i>Vaccinium angustifolium</i>	lowbush blueberry	0.15
Grossulariaceae	<i>Ribes glandulosum</i>	skunk currant	0.02
	<i>Ribes triste</i>	red currant	0.09
Rosaceae	<i>Amelanchier</i> sp. group 2	serviceberry	0.22
	<i>Amelanchier</i> sp. group 3	serviceberry	0.09
	<i>Rosa acicularis</i>	prickly rose	0.24
	<i>Rubus canadensis</i>	smooth blackberry	0.06
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	red raspberry	0.35
	<i>Rubus parviflorus</i>	thimbleberry	4.46
	<i>Rubus pubescens</i>	dwarf red raspberry	0.48
Salicaceae	<i>Salix humilis</i>	prairie willow	0.07
Taxaceae	<i>Taxus canadensis</i>	Canada yew	3.91

White Spruce/Trembling Aspen Mixed Forests

Nineteen of the 52 plots were classified as white spruce/trembling aspen mixed forests, making it the most abundant of the five forest types sampled. These plots were located throughout the island. White spruce was the most abundant conifer species in this forest type, which also supported a high density of eastern white cedar (Table 6). Although both white spruce and cedar are regenerating, as evidenced by the increasing density in successively smaller size classes (Figure 5a), balsam fir is also present in the smallest size classes. Trembling aspen and yellow birch were the most abundant hardwood species (Table 6), although both yellow birch and paper birch are less abundant in the smaller size classes compared with larger classes (Figure 5b).

Table 6. Basal area and density of live trees in white spruce/trembling aspen mixed forests.

Latin name	Common name	Basal area m ² /ha	Density trees/ha
<i>Acer rubrum</i>	red maple	<0.01	0.58
<i>Acer saccharum</i>	sugar maple	0.04	4.68
<i>Acer spicatum</i>	mountain maple	<0.01	0.58
<i>Betula alleghaniensis</i>	yellow birch	3.42	101.75
<i>Betula papyrifera</i>	paper birch	3.07	76.02
<i>Fraxinus nigra</i>	black ash	0.47	60.23
<i>Populus tremuloides</i>	trembling aspen	6.43	159.65
<i>Prunus pensylvanica</i>	pin cherry	0.01	0.58
<i>Salix bebbiana</i>	Bebb willow	0.02	0.58
<i>Sorbus decora</i>	mountain ash	0.09	4.68
<i>Abies balsamea</i>	balsam fir	0.30	73.10
<i>Picea glauca</i>	white spruce	7.35	466.08
<i>Picea mariana</i>	black spruce	0.38	24.56
<i>Pinus banksiana</i>	jack pine	0.19	4.68
<i>Pinus resinosa</i>	red pine	0.27	4.68
<i>Pinus strobus</i>	white pine	0.35	4.68
<i>Thuja occidentalis</i>	eastern white cedar	4.68	226.32
<i>Total</i>		27.06	1,213.43

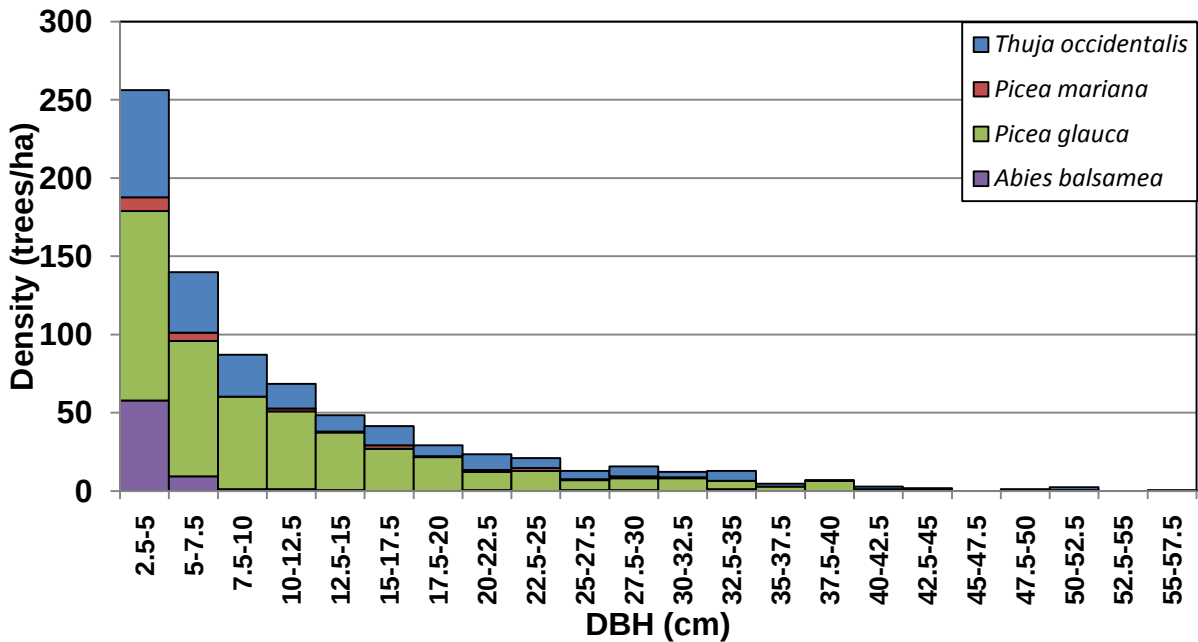


Figure 5a. Density-diameter graph of conifers in white spruce/trembling aspen mixed forests.

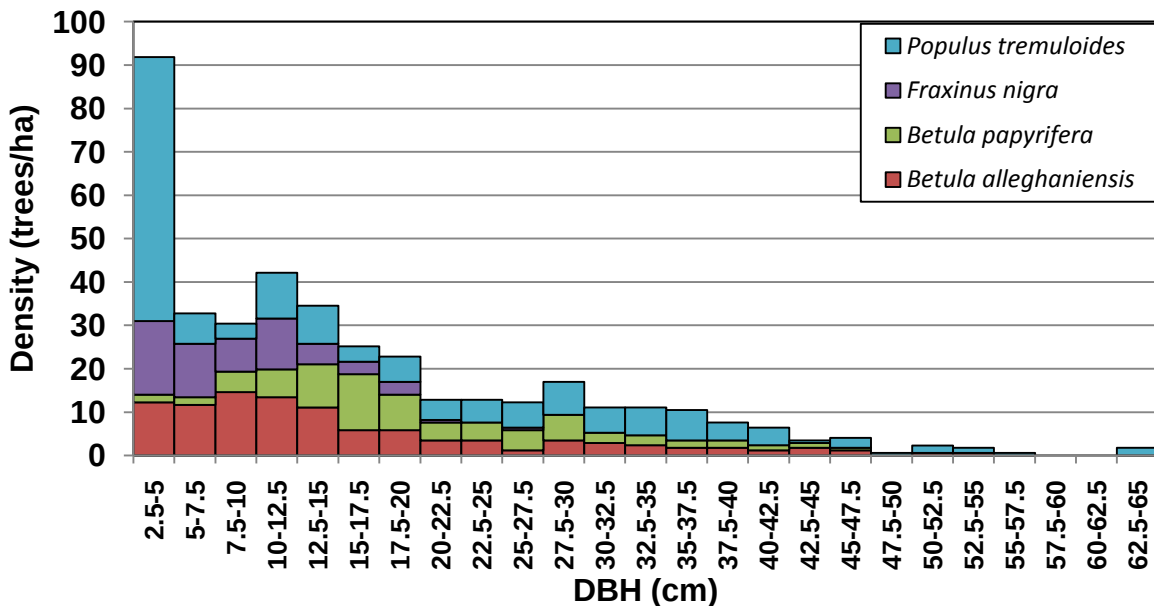


Figure 5b. Density-diameter graph of hardwoods in white spruce/trembling aspen mixed forests.

Balsam fir had the most conifer seedlings in this forest type with 1,242 seedlings/ha, about five times greater than the density of white spruce seedlings (Table 7). Abundant hardwood seedlings were trembling aspen, mountain ash, and mountain maple, although the latter two species do not typically reach pole size at ISRO (Table 7).

Table 7. Seedling density in white spruce/trembling aspen mixed forests.

Latin name	Common name	Density seedlings/ha
<i>Acer rubrum</i>	red maple	3.51
<i>Acer saccharum</i>	sugar maple	322.81
<i>Acer spicatum</i>	mountain maple	1,235.09
<i>Betula alleghaniensis</i>	yellow birch	343.86
<i>Betula papyrifera</i>	paper birch	252.63
<i>Crataegus douglasii</i>	hawthorn	7.02
<i>Fraxinus nigra</i>	black ash	266.67
<i>Prunus pensylvanica</i>	pin cherry	105.26
<i>Prunus virginiana</i>	choke cherry	21.05
<i>Sorbus americana</i>	American mountain ash	200.00
<i>Sorbus decora</i>	northern mountain ash	1,649.13
<i>Populus tremuloides</i>	trembling aspen	2,112.28
<i>Salix bebbiana</i>	Bebb willow	3.51
<i>Abies balsamea</i>	balsam fir	1,242.11
<i>Picea glauca</i>	white spruce	266.67
<i>Picea mariana</i>	black spruce	63.16
<i>Thuja occidentalis</i>	eastern white cedar	694.74
Total		8,789.50

The white spruce/trembling aspen forest type had the richest shrub community of the five forest types with 33 species (Table 8). Only four species had a cover of greater than 1%, with thimbleberry (8.10%) being the most dominant.

Table 8. Shrub percent cover in white spruce/trembling aspen mixed forests.

Family	Latin name	Common name	Cover %
Betulaceae	<i>Alnus incana</i> ssp. <i>rugosa</i>	speckled alder	0.78
	<i>Alnus viridis</i> ssp. <i>crispa</i>	green alder	0.09
Caprifoliaceae	<i>Corylus cornuta</i>	beaked hazel	1.38
	<i>Diervilla lonicera</i>	bush honeysuckle	1.51
	<i>Lonicera canadensis</i>	fly honeysuckle	0.62
	<i>Lonicera dioica</i>	limber honeysuckle	0.02
	<i>Lonicera hirsuta</i>	hairy honeysuckle	0.37
	<i>Sambucus racemosa</i>	red elderberry	0.10
	<i>Viburnum edule</i>	squashberry	0.19
Cornaceae	<i>Cornus rugosa</i>	roundleaf dogwood	0.03
	<i>Cornus sericea</i>	red osier dogwood	0.63
Cupressaceae	<i>Juniperus communis</i> var. <i>depressa</i>	juniper	0.54
Elaeagnaceae	<i>Shepherdia canadensis</i>	buffaloberry	0.07
Ericaceae	<i>Arctostaphylos uva-ursi</i>	bearberry	0.31
	<i>Vaccinium angustifolium</i>	lowbush blueberry	0.04
	<i>Vaccinium myrtilloides</i>	velvetleaf blueberry	0.01
Grossulariaceae	<i>Ribes glandulosum</i>	skunk currant	0.05
	<i>Ribes hirtellum</i>	hairystem gooseberry	0.01
	<i>Ribes hudsonianum</i>	northern black currant	0.01
	<i>Ribes lacustre</i>	prickly currant	0.01
	<i>Ribes oxyacanthoides</i>	Canadian gooseberry	0.02
	<i>Ribes triste</i>	red currant	0.25
Rhamnaceae	<i>Rhamnus alnifolia</i>	alderleaf buckthorn	0.03
Rosaceae	<i>Amelanchier</i> sp. group 2	serviceberry	0.28
	<i>Amelanchier</i> sp. group 3	serviceberry	0.25
	<i>Rosa acicularis</i>	prickly rose	0.23
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	red raspberry	2.04
	<i>Rubus parviflorus</i>	thimbleberry	8.10
Salicaceae	<i>Rubus pubescens</i>	dwarf red raspberry	0.67
	<i>Salix discolor</i>	pussy willow	0.02
	<i>Salix humilis</i>	prairie willow	0.11
Taxaceae	<i>Taxus canadensis</i>	Canada yew	0.21
Thymelaeaceae	<i>Dirca palustris</i>	leatherwood	0.03

Paper Birch Mixed Forests

Six plots were classified as paper birch mixed forest type, the fewest number of plots in any of the five forest types. These plots were widely scattered, primarily within the central third of the island (Figure 3). Paper birch was the most abundant tree, comprising just over 49% of the individuals in the forest type (Table 9). Black spruce and white spruce, collectively, comprised 76% of the conifer species (Table 9).

The density diameter graph of hardwoods at ISRO (Figure 6a) shows the greatest abundance of paper birch in the 15.0 – 17.5 cm diameter at breast height (DBH) size class with generally decreasing abundance in successively smaller size classes. There were no red maple individuals sampled greater than 12.5 cm DBH, although red maple density generally increased in successively smaller size classes (Figure 6a). Similarly, there were no white cedar individuals sampled in this forest type larger than 12.5 cm DBH, although white cedar density increased as size class decreases (Figure 6b).

Table 9. Basal area and density of live trees in paper birch mixed forests.

Latin name	Common name	Basal area m ² /ha	Density trees/ha
<i>Acer rubrum</i>	red maple	0.19	55.56
<i>Acer saccharum</i>	sugar maple	0.01	1.85
<i>Acer spicatum</i>	mountain maple	<0.01	3.70
<i>Betula alleghaniensis</i>	yellow birch	0.03	1.85
<i>Betula papyrifera</i>	paper birch	13.34	477.78
<i>Crataegus douglasii</i>	Hawthorn	<0.01	1.85
<i>Fraxinus nigra</i>	black ash	0.37	53.70
<i>Populus tremuloides</i>	trembling aspen	0.66	9.26
<i>Sorbus decora</i>	mountain ash	<0.01	1.85
<i>Abies balsamea</i>	balsam fir	0.01	7.41
<i>Picea glauca</i>	white spruce	2.07	105.56
<i>Picea mariana</i>	black spruce	0.91	170.37
<i>Thuja occidentalis</i>	eastern white cedar	0.22	79.63
Total		17.81	970.37

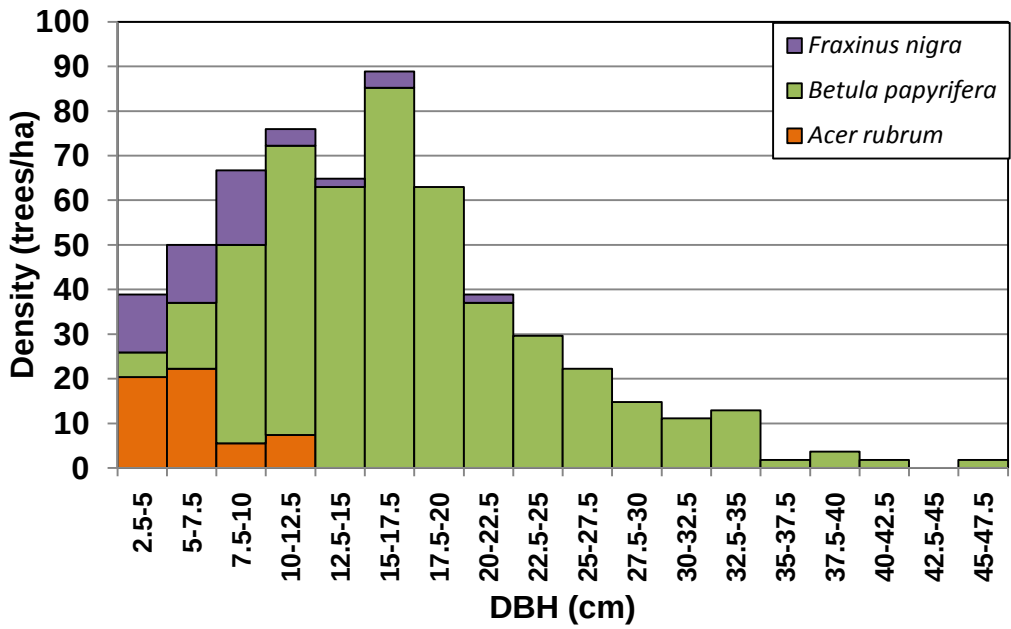


Figure 6a. Density-diameter graph of hardwoods in paper birch mixed forests.

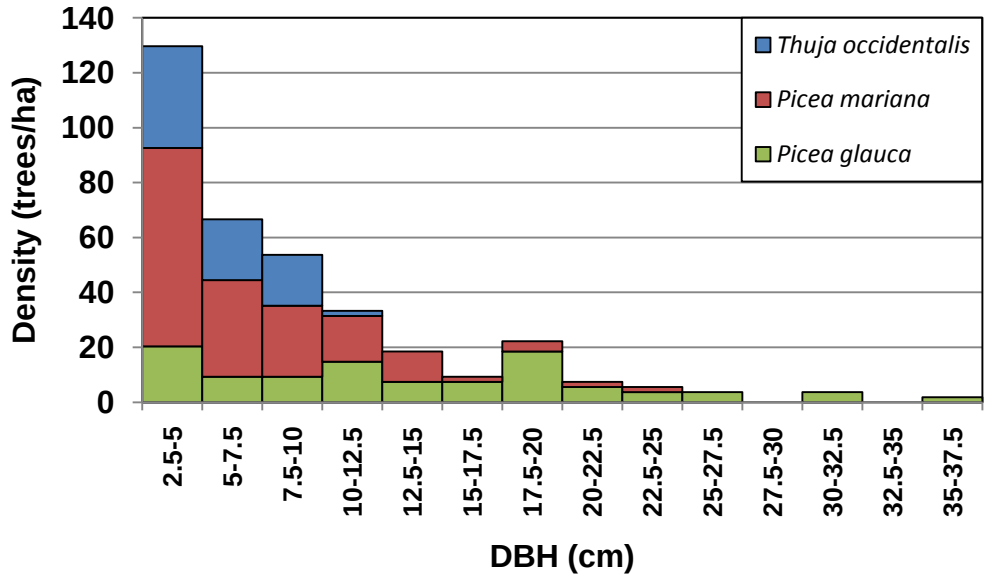


Figure 6b. Density-diameter graph of conifers in paper birch mixed forests.

Of the five forest types sampled, the lowest density of seedlings at ISRO was present in the paper birch mixed forest type (Table 10). Only three species, paper birch, trembling aspen, and mountain ash, had densities greater than 1,000 seedlings/ha.

Table 10. Seedling density in paper birch mixed forests.

Latin name	Common name	Density seedlings/ha
<i>Acer rubrum</i>	red maple	277.78
<i>Acer saccharum</i>	sugar maple	177.78
<i>Acer spicatum</i>	mountain maple	266.67
<i>Betula papyrifera</i>	paper birch	1,022.22
<i>Crataegus douglasii</i>	hawthorn	33.33
<i>Fraxinus nigra</i>	black ash	477.78
<i>Populus tremuloides</i>	trembling aspen	1,222.22
<i>Prunus pensylvanica</i>	pin cherry	33.33
<i>Prunus virginiana</i>	choke cherry	211.11
<i>Sorbus decora</i>	mountain ash	1,466.67
<i>Abies balsamea</i>	balsam fir	788.89
<i>Picea glauca</i>	white spruce	133.33
<i>Thuja occidentalis</i>	eastern white cedar	388.89
Total		6,500.00

Twenty-five shrub species were recorded in paper birch mixed forest with greatest cover from beaked hazel (14.61%), thimbleberry (6.56%) and speckled alder (4.0%, Table 11). No other species had more than 2% cover.

Table 11. Shrub percent cover in paper birch mixed forests.

Family	Latin name	Common name	Cover %
Betulaceae	<i>Alnus incana</i> ssp. <i>rugosa</i>	speckled alder	4.00
	<i>Alnus viridis</i> ssp. <i>crispa</i>	green alder	0.06
Caprifoliaceae	<i>Corylus cornuta</i>	beaked hazel	14.61
	<i>Diervilla lonicera</i>	bush honeysuckle	1.69
	<i>Lonicera canadensis</i>	fly honeysuckle	0.42
	<i>Lonicera hirsuta</i>	hairy honeysuckle	0.14
	<i>Sambucus racemosa</i>	red elderberry	0.03
	<i>Symphoricarpos albus</i>	snowberry	0.03
	<i>Viburnum edule</i>	squashberry	0.08
	<i>Cornus sericea</i>	red osier dogwood	1.39
Cupressaceae	<i>Juniperus communis</i> var. <i>depressa</i>	juniper	0.14
Ericaceae	<i>Arctostaphylos uva-ursi</i>	bearberry	0.06
	<i>Ledum groenlandicum</i>	Labrador tea	0.14
	<i>Vaccinium angustifolium</i>	lowbush blueberry	0.06
	<i>Vaccinium myrtilloides</i>	velvetleaf blueberry	0.06
Grossulariaceae	<i>Ribes triste</i>	red currant	0.31
Rhamnaceae	<i>Rhamnus alnifolia</i>	alderleaf buckthorn	0.08
Rosaceae	<i>Amelanchier</i> sp. group 2	serviceberry	1.17
	<i>Amelanchier</i> sp. group 3	serviceberry	0.14
	<i>Rosa acicularis</i>	prickly rose	0.36
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	red raspberry	0.22
	<i>Rubus parviflorus</i>	thimbleberry	6.56
	<i>Rubus pubescens</i>	dwarf red raspberry	0.61
Salicaceae	<i>Salix eriocephala</i>	Missouri river willow	0.03
Taxaceae	<i>Taxus canadensis</i>	Canada yew	0.08

Eastern White Cedar Forests

Ten plots were classified as eastern white cedar forest type and these were primarily located in the western third of the island. Cedar was the most abundant species, comprising just over 75% of all trees sampled (Table 12, Figure 7a). Paper birch, sugar maple, and black ash were the most abundant hardwood species, with the latter two species having their greatest densities in the smaller size classes (Table 12, Figure 7b).

Table 12. Basal area and density of live trees in eastern white cedar forests.

Latin name	Common name	Basal area m ² /ha	Density trees/ha
<i>Acer rubrum</i>	red maple	0.02	2.22
<i>Acer saccharum</i>	sugar maple	0.25	66.67
<i>Acer spicatum</i>	mountain maple	0.01	5.56
<i>Betula alleghaniensis</i>	yellow birch	2.98	33.33
<i>Betula papyrifera</i>	paper birch	3.67	72.22
<i>Fraxinus nigra</i>	black ash	0.09	45.56
<i>Populus tremuloides</i>	trembling aspen	2.94	24.44
<i>Prunus pensylvanica</i>	pin cherry	0.02	1.11
<i>Sorbus decora</i>	mountain ash	<0.01	2.22
<i>Abies balsamea</i>	balsam fir	0.08	7.78
<i>Larix laricina</i>	tamarack	0.22	8.89
<i>Picea glauca</i>	white spruce	3.30	162.22
<i>Picea mariana</i>	black spruce	1.48	126.67
<i>Thuja occidentalis</i>	eastern white cedar	25.51	1,693.33
Total		40.57	2,252.22

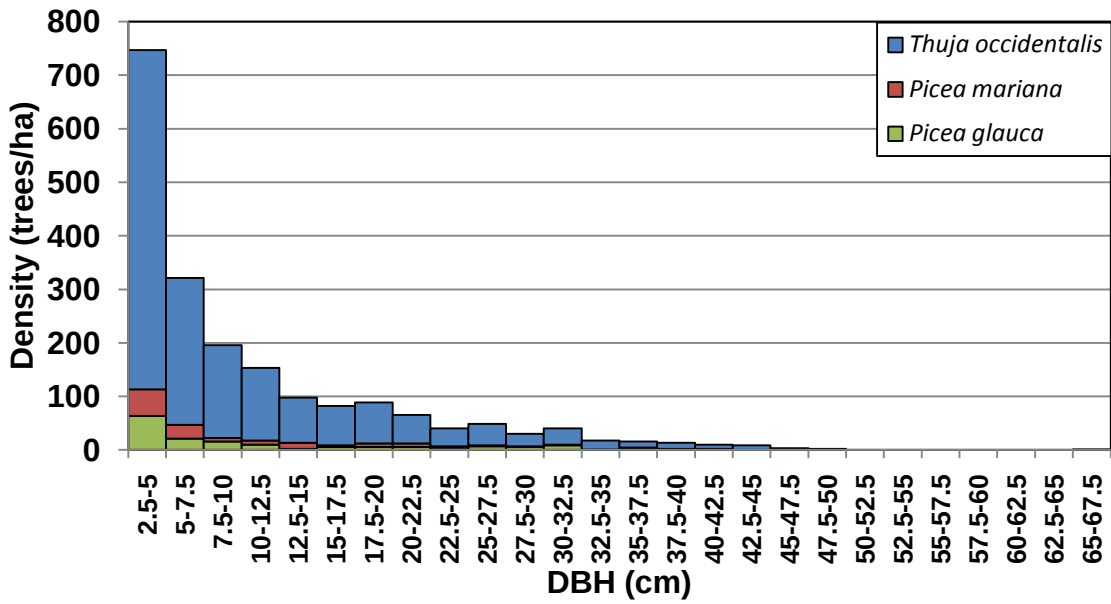


Figure 7a. Density-diameter graph of conifers in eastern white cedar forests.

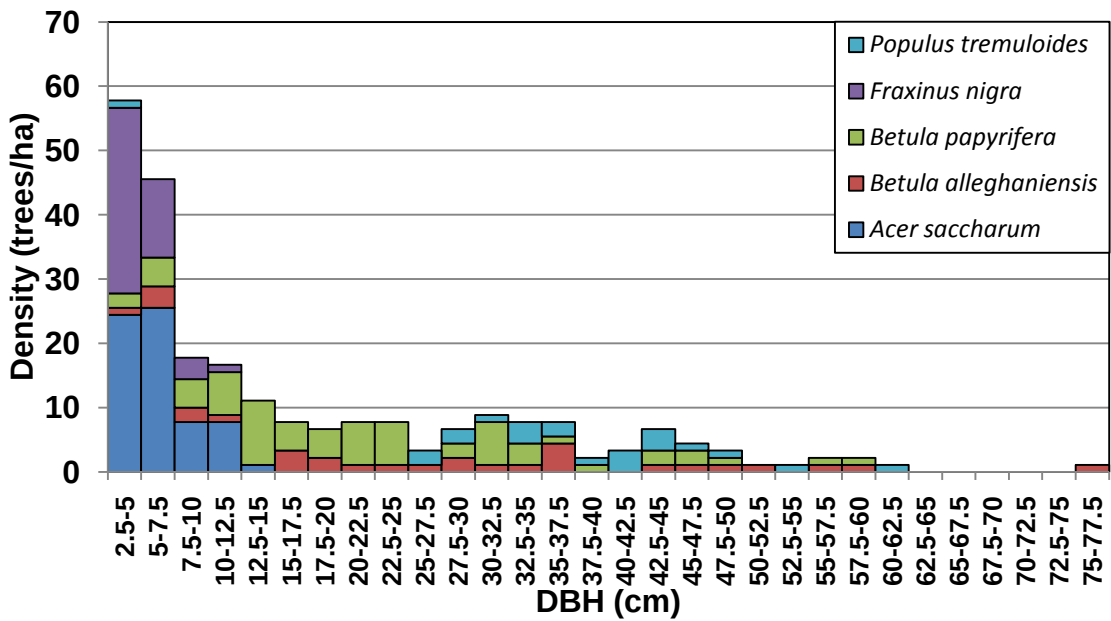


Figure 7b. Density-diameter graph of hardwoods in eastern white cedar forests.

In eastern white cedar forests, the species with the greatest seedling density were cedar (3,433/ha) and balsam fir (3,380/ha, Table 13). Three hardwood species (sugar maple, mountain ash, and mountain maple) had densities greater than 1,000 seedlings/ha.

Table 13. Seedling density in eastern white cedar forests.

Latin name	Common name	Density seedlings/ha
<i>Acer rubrum</i>	red maple	273.33
<i>Acer saccharum</i>	sugar maple	1,786.67
<i>Acer spicatum</i>	mountain maple	1,033.33
<i>Betula alleghaniensis</i>	yellow birch	460.00
<i>Betula papyrifera</i>	paper birch	233.33
<i>Fraxinus nigra</i>	black ash	100.00
<i>Populus tremuloides</i>	trembling aspen	533.33
<i>Prunus pensylvanica</i>	pin cherry	40.00
<i>Prunus virginiana</i>	choke cherry	6.67
<i>Quercus rubra</i>	red oak	13.33
<i>Sorbus decora</i>	mountain ash	1,386.67
<i>Abies balsamea</i>	balsam fir	3,380.00
<i>Picea glauca</i>	white spruce	266.67
<i>Picea mariana</i>	black spruce	360.00
<i>Thuja occidentalis</i>	eastern white cedar	3,433.33
Total		13,306.67

Twenty-three species of shrubs were recorded in cedar forests, although cover was not great. Only three species had cover greater than 1%: thimbleberry (3.72%), speckled alder (1.65%) and dwarf red raspberry (1.12%).

Table 14. Shrub percent cover in eastern white cedar forests.

Family name	Latin name	Common name	Cover %
Betulaceae	<i>Alnus incana</i> ssp. <i>rugosa</i>	speckled alder	1.65
	<i>Corylus cornuta</i>	beaked hazel	0.53
Caprifoliaceae	<i>Diervilla lonicera</i>	bush honeysuckle	0.73
	<i>Lonicera canadensis</i>	fly honeysuckle	0.60
	<i>Lonicera dioica</i>	limber honeysuckle	0.08
	<i>Viburnum edule</i>	squashberry	0.07
Cornaceae	<i>Cornus rugosa</i>	roundleaf dogwood	0.07
	<i>Cornus sericea</i>	red osier dogwood	0.28
Ericaceae	<i>Ledum groenlandicum</i>	Labrador tea	0.37
	<i>Vaccinium angustifolium</i>	lowbush blueberry	0.05
	<i>Vaccinium myrtilloides</i>	velvetleaf blueberry	0.03
Grossulariaceae	<i>Ribes hudsonianum</i>	northern black currant	0.02
	<i>Ribes triste</i>	red currant	0.12
Rhamnaceae	<i>Rhamnus alnifolia</i>	alderleaf buckthorn	0.07
Rosaceae	<i>Amelanchier</i> sp. group 2	serviceberry	0.12
	<i>Amelanchier</i> sp. group 3	serviceberry	0.05
	<i>Rosa acicularis</i>	prickly rose	0.10
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	red raspberry	0.08
	<i>Rubus parviflorus</i>	thimbleberry	3.72
	<i>Rubus pubescens</i>	dwarf red raspberry	1.12
Salicaceae	<i>Salix discolor</i>	pussy willow	0.05
	<i>Salix serissima</i>	autumn willow	0.03
Taxaceae	<i>Taxus canadensis</i>	Canada yew	0.50

Sugar Maple/Birch Forests

Eight plots were classified as the sugar maple/birch forest type and these were all in the western third of the island. Sugar maple comprised 91% of the hardwood species, while eastern white cedar represented 85% of the conifers (Table 15). Both paper birch and yellow birch were present in sugar maple/birch forests, although the density of both of these did not increase in successively smaller size classes (Figure 8a). Beside white cedar, white spruce was the only other conifer with notable abundance. There were limited individuals in scattered size classes (Figure 8b).

Table 15. Basal area and density of live trees in sugar maple/birch forests.

Latin name	Common name	Basal area m ² /ha	Density trees/ha
<i>Acer rubrum</i>	red maple	0.05	9.72
<i>Acer saccharum</i>	sugar maple	10.09	1,400.00
<i>Betula alleghaniensis</i>	yellow birch	9.60	113.89
<i>Betula papyrifera</i>	paper birch	1.29	9.72
<i>Populus tremuloides</i>	trembling aspen	0.21	1.39
<i>Abies balsamea</i>	balsam fir	0.30	5.56
<i>Picea glauca</i>	white spruce	1.13	38.89
<i>Picea mariana</i>	black spruce	0.08	2.78
<i>Pinus strobus</i>	white pine	1.00	2.78
<i>Thuja occidentalis</i>	eastern white cedar	13.27	294.44
Total		37.03	1,879.17

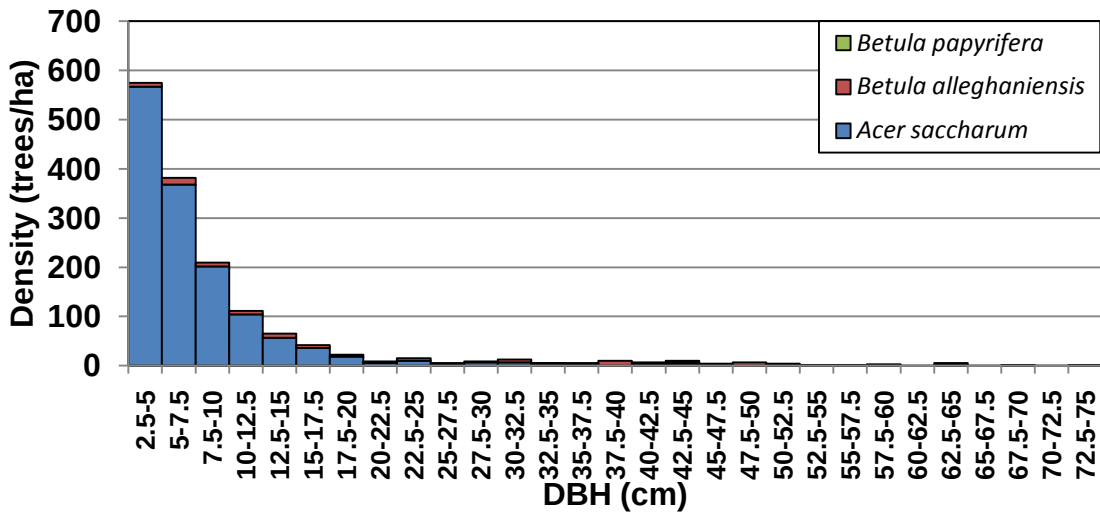


Figure 8a. Density-diameter graph of hardwoods in sugar maple/birch forests.

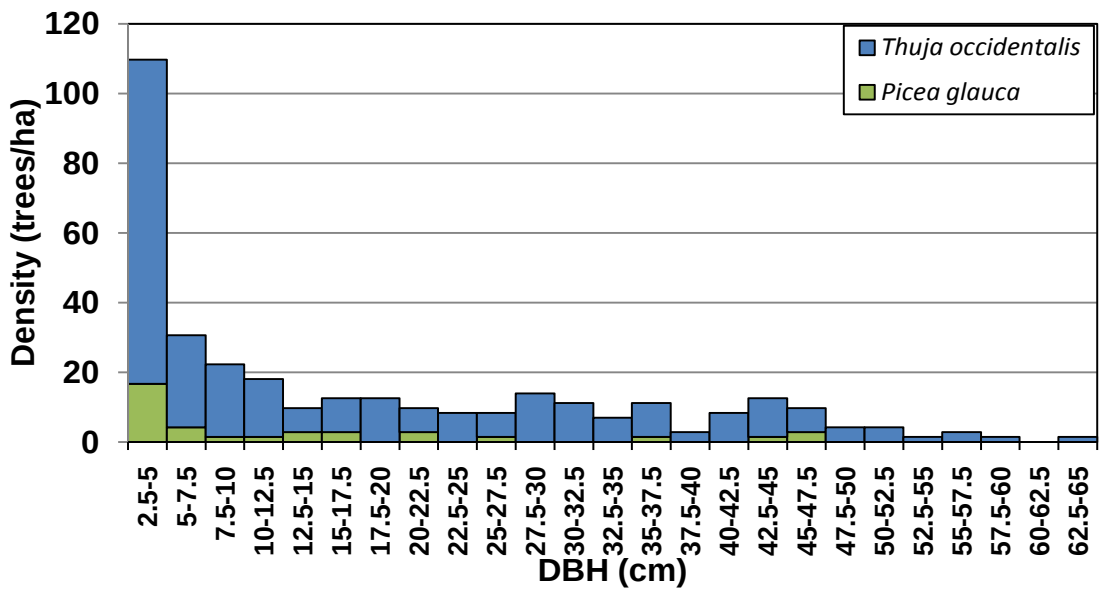


Figure 8b. Density-diameter graph of conifers in sugar maple/birch forests.

Seedling density was highest in the sugar maple/birch cover type, with 26,750 seedlings/ha (Table 16) with sugar maple comprising 68%. White cedar had the greatest conifer seedling density at 2,167/ha.

Table 16. Seedling density in sugar maple/birch forests.

Latin name	Common name	Density seedlings/ha
<i>Acer rubrum</i>	red maple	2,250.00
<i>Acer saccharum</i>	sugar maple	18,083.33
<i>Acer spicatum</i>	mountain maple	1,591.67
<i>Betula alleghaniensis</i>	yellow birch	333.33
<i>Betula papyrifera</i>	paper birch	58.33
<i>Fraxinus nigra</i>	black ash	8.33
<i>Populus tremuloides</i>	trembling aspen	308.33
<i>Quercus rubra</i>	red oak	33.33
<i>Sorbus decora</i>	mountain ash	1,041.67
<i>Abies balsamea</i>	balsam fir	800.00
<i>Picea glauca</i>	white spruce	58.33
<i>Picea mariana</i>	black spruce	8.33
<i>Pinus strobus</i>	white pine	8.33
<i>Thuja occidentalis</i>	eastern white cedar	2,166.67
Total		26,750.00

Shrub cover in sugar maple forests was limited; only 13 species were recorded, with only thimbleberry (4.81% cover) and beaked hazel (1% cover) having at least 1% cover (Table 17).

Table 17. Shrub percent cover in sugar maple/birch forests.

Family name	Latin name	Common name	Cover %
Betulaceae	<i>Corylus cornuta</i>	beaked hazel	1.00
Caprifoliaceae	<i>Diervilla lonicera</i>	bush honeysuckle	0.02
	<i>Lonicera canadensis</i>	fly honeysuckle	0.35
	<i>Lonicera dioica</i>	limber honeysuckle	0.02
	<i>Lonicera oblongifolia</i>	swamp fly honeysuckle	0.02
	<i>Viburnum edule</i>	squash berry	0.02
Cornaceae	<i>Cornus alternifolia</i>	alternate-leaf dogwood	0.06
Grossulariaceae	<i>Ribes triste</i>	red currant	0.06
Rosaceae	<i>Amelanchier</i> sp. group 2	serviceberry	0.19
	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	red raspberry	0.10
	<i>Rubus parviflorus</i>	thimbleberry	4.81
	<i>Rubus pubescens</i>	dwarf red raspberry	0.31
Taxaceae	<i>Taxus canadensis</i>	Canada yew	0.50

Coarse Woody Material

Coarse woody (CWM) varied greatly between habitats with sugar maple/birch forests having the greatest volume (111 m³/ha) and biomass (30,693 kg/ha, Table 18) and paper birch forests having the least (44.87 m³/ha and 14,506 kg/ha, respectively). Despite having the largest volume and biomass of the five forest types, sugar maple forests supported the lowest density (489 pieces/ha, Table 19). Cedar and white spruce/trembling aspen forests both had >2 large (≥ 46 cm diameter) CWM pieces/ha. All forest types except paper birch as at least 30 standing dead trees of ≥30 DBH (Table 20).

Table 18. Coarse woody material volume and biomass for each forest type.

Forest type	Number of plots in habitat	Volume	Biomass	Biomass
		m ³ /ha	kg/ha	tons/ac
Balsam fir mixed	9	86.00	22,856.57	10.20
Eastern white cedar	10	83.97	24,298.79	10.84
Paper birch mixed	6	44.87	14,505.73	6.47
Sugar maple / birch	8	111.30	30,693.43	13.69
White spruce / trembling aspen mixed	19	74.81	22,635.10	10.10

Table 19. Coarse woody material density in four diameter classes.

Forest type	Density (pieces/ha) in diameter classes (cm)				Total pieces/ha
	7.5-19.9	20.0-32.9	33.0-45.9	46.0-60.0	
Balsam fir mixed	582.89	159.95	7.87	0.69	751.40
Eastern white cedar	793.26	132.78	10.96	2.80	939.80
Paper birch mixed	534.47	85.32	4.77	0.00	624.56
Sugar maple/birch	346.99	109.41	31.32	1.02	488.75
White spruce/trembling aspen mixed	496.63	141.89	10.35	2.86	651.72

Table 20. Density of standing dead trees ≥30 cm DBH.

Forest type	Density
	(trees/ha)
Balsam fir mixed	32.06
Eastern white cedar	31.08
Paper birch mixed	18.52
Sugar maple/birch	31.97
White spruce/trembling aspen mixed	31.76

Browse and Disease

Browse pressure at ISRO in 2010 was low, with only paper birch mixed forests and white spruce/trembling aspen forests having browse indices (approximately equal to the ratio of the number of browse circles with evident browse over the number of browse circles present) greater than 0.1 (Table 21).

Table 21. Direct browse at the 4 m² browse circles, by habitat and for the whole park.

Habitat	Number of plots	Browse circles with species present	Browse circles with evident browse	Browse index
Balsam fir	9	592	45	0.08
Eastern white cedar	10	672	57	0.09
Paper birch mixed	6	407	71	0.18
Sugar maple/birch	8	540	45	0.08
White spruce/trembling aspen	19	1,275	227	0.18
Whole park	52	3,486	445	0.13

The indirect browse assessment of the three target herbaceous species showed there is minimal evidence of browse on the three target herbaceous species (Table 22). No *Trillium grandiflorum* individuals were recorded in herbaceous quadrats.

We did not detect the presence of any of the target disease or damage agents at Isle Royale.

Table 22. Summary of indirect browse for 2010.

Forest type	Species	Number of quadrats where present	Mean maximum height per quadrat	Abundance	Number of unbrowsed and non-reproductive individuals	Number of unbrowsed and reproductive individuals	Number of browsed individuals
Balsam fir	<i>Streptopus lanceolatus</i> var. <i>roseus</i>	65	22.6	820	708	107	5
	<i>Aralia nudicaulis</i>	167	33.4	724	689	29	6
Eastern white cedar	<i>Streptopus lanceolatus</i> var. <i>roseus</i>	72	16.7	383	333	46	4
	<i>Aralia nudicaulis</i>	127	34.9	546	533	12	1
Paper birch mixed	<i>Streptopus lanceolatus</i> var. <i>roseus</i>	40	23.6	331	240	88	3
	<i>Aralia nudicaulis</i>	92	31.1	429	390	38	1
	<i>Streptopus lanceolatus</i> var. <i>roseus</i>	53	17.2	254	207	44	3
Sugar maple/birch	<i>Aralia nudicaulis</i>	84	32.0	316	305	11	0
	<i>Streptopus lanceolatus</i> var. <i>roseus</i>	129	26.1	810	592	198	20
White spruce/ trembling aspen	<i>Aralia nudicaulis</i>	317	34.4	1,499	1,418	74	7

Community Indices

There were 298 species in the 52 plots, with a mean of 68.60 species/plot. Across all habitats, the overwhelming majority were perennial and native (Table 23). Herbaceous species represented 69% of the total and, of those that are pollinated, 70.3% are done so via biotic means.

Table 23. Plot species richness within classes of each functional group.

Functional group	Class	Mean richness 2010
Live history	annual	1.33
	biennial	0.33
	perennial	66.94
Growth form	forb	36.17
	graminoid	7.67
	woody	24.75
Pollination	abiotic	17.94
	biotic	42.42
	N/A	8.23
Nativity	native	68.48
	non-native	1.44
	native/non-native	0.67

Coefficient of conservatism (COC) values ranged from 4.34 – 5.01 for the five habitats (Figure 9), with a mean for the entire park of 4.59. Mean plot species richness ranged from 54 – 71 across the five habitats (Figure 9).

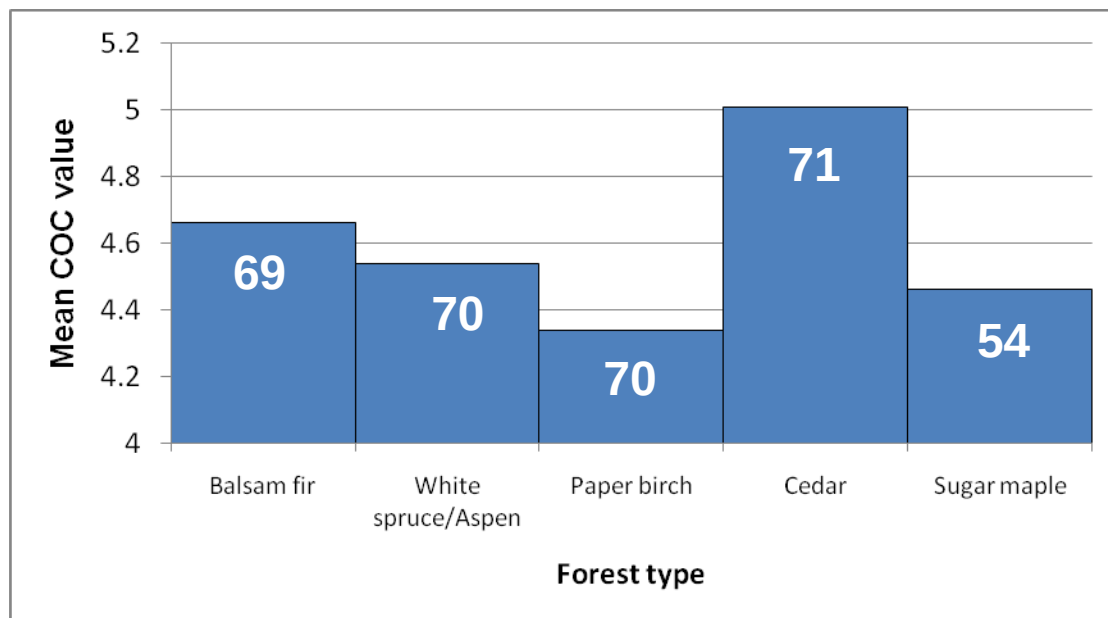


Figure 9. Mean coefficient of conservatism (COC) values for the five forest types. White numbers on the blue bars are the mean plot species richness in those forest types.

Discussion

Ecology and Interpretation

Cluster analysis revealed five forest types on Isle Royale. The density-diameter graphs for sugar maple forests (Figure 8a) and cedar forests (Figure 7a), both primarily on the western side of the island, as well as balsam fir forests on the east side, suggest that the overstory components of these forest types will remain unchanged in the near future. In contrast, both paper birch (Figure 6a) and spruce/aspen mixed forests (Figures 5a and b), are in a transitional state.

The six paper birch plots are widely scattered throughout the central part of the island. The density-diameter graph revealed that the highest density was in the 15.0-17.5 cm DBH class, with density lower in progressively smaller size classes. Density in the smallest size class, 2.5 – 5.0 cm DBH was only 5.6 trees/ha. Paper birch is an early successional species, rarely living beyond 140 years (Burns and Hankala 1990) although survival beyond 90 years is not typical, due largely to windthrow (Rich et al. 2007). The paper birch recruitment that occurred after the 1936 burn is now senescing and may be moving toward red maple, black ash, and black spruce assemblages (Figures 5a and 5b).

In the white spruce/trembling aspen mixed forests, the transition is not as readily apparent, although balsam fir, as well as black ash, is increasingly abundant in the smallest size classes. In the absence of disturbance, these forests will likely transition to these species, although trembling aspen will likely remain a large component.

There have been few comprehensive vegetation sampling efforts on Isle Royale which are broad in focus and geographically span the entire island. Although there is an active research program at the Park, previous studies of vegetation have typically focused on a single aspect of vegetation. For example, Flakne (2003) examined the holocene vegetation history of the island while Karberg and Gale (2006) looked at genetic diversity of pitcher plant (*Sarracenia purpurea*). One of these aspects that has received considerable attention over the previous 40 years is the impact of moose browse.

Several studies have examined some aspect of moose browse on Isle Royale (McInnes et al. 1992, McLaren 1996, De Jager et al. 2009), with the most comprehensive study being the 50 year project headed by Peter Jordan of the University of Minnesota (Jordan et al. 2000). Although there has been a great deal of focus on moose browse, we noted only very low browse rates in our work. Balsam fir was present in 441 browse circles (of 603 total present) in the nine plots in the balsam fir forest type although, we did not observe browse in any of these. Similarly, browse on white cedar was observed in only two of the 494 browse circles in cedar forests. Our non-quantitative visual assessment of cedar supports this. We did not observe cedar trees with the lower limbs browsed; we primarily saw cedar trees with robust branching arising from the lower bole, so much so, that obtaining the diameter at breast height was difficult. There was also a large number of cedar seedlings recorded in both the cedar and the sugar maple forests. Recent estimates of moose density show that the population has been fairly steady, but low, since 2005, with abundance hovering around 500 moose, or approximately half of the long-term mean. The official estimates are 530 individuals for 2008-2009 (Vucetich and Peterson 2009) and 510 individuals for 2009-2010 (Vucetich and Peterson 2010).

It is unclear whether this reduction in population size explains our browse results. Isle Royale park staff reviewed our preliminary results and feel that, at the 2010 moose densities, we should have detected more direct moose browse. While we acknowledge that it is possible to have overlooked some instances of browse, we feel confident about the GLKN vegetation monitoring crew's ability to assess where browse occurred. We feel that our results are indicative of the fact that our plots are randomly distributed throughout the island. If plots had been preferentially located adjacent to water sources, we would have detected greater incidence of browse. Nonetheless, we plan to meet with park staff prior to the commencement of monitoring in 2016, the next time that we will sample at ISRO. During this time, we will examine and discuss specific examples of browsed trees and shrubs.

Despite the limited number of recent vegetation projects at Isle Royale, two separate projects early in the twentieth century can place the recent vegetation work at Isle Royale into context. Dr. Charles C. Adams led an expedition from the University of Michigan in 1904-1905 (Adams 1910). This team established "stations" to describe the biotic component (flora, birds, invertebrates) and to relate this to the environment attributes (climate, soils) of the island. In total, 10 stations (with each station representing a "region," e.g., balsam-spruce forest) and 38 substations (with each station representing a "habitat") were established. Unfortunately, all work was qualitative so solid comparisons between the two time periods are not possible. A second project, led by William Cooper in 1909 and 1910 (Cooper 1913), quantitatively assessed trees in six quadrats. Unfortunately, four of these quadrats were located on Smithwick Island, one was near Blake Point, and one was adjacent to Tobin Harbor. The small number and limited distribution of these plots precludes any statistical comparisons.

Qualitative descriptions from both papers suggests that most forest change between the two time periods has occurred primarily in the understory. Cooper (1913), describing the shrub layer on the eastern third of the island, noted dense populations of *Taxus canadensis* (Canada yew). While we commonly observed Canada yew, it was never more than a few centimeters in height, a cumulative effect of many years of moose browse. Cooper (1913) also describes the understory by detailing a "prominent...association of about eight herbs," in the Isle Royale climax forest (defined by Cooper as the dense balsam fir forest on the east side of Isle Royale). Table 24 shows the 30 most frequent herbs located in quadrats in balsam fir forests in 2010, and notes which were among Cooper's prominent association. Cooper (1913) also noted common, but less prominent herbs (Table 25). While no species on either list is surprising, some differences between the 1910 and 2010 sampling are of note. *Eurybia macrophylla* (large-leaved aster), *Polygala paucifolia* (gay wings), and *Streptopus lanceolatus* var. *roseus* (rosy twisted-stalk) were not included in the 1910 prominent association, nor in Cooper's list of 12 additional species described as being less characteristic and abundant but still common (Table 25). Large-leaved aster is the second most frequent herbaceous species encountered in 2010. This species is a generalist, capable of reproducing under a range of light levels (Schulz and Adams 1995, Frelich et al. 2003), although Frelich et al. (2003) found that it preferentially grows in deep soils and in areas of low soil nitrogen availability. It is possible that this species initially exploited gaps created on the east side of Isle Royale, whether caused by humans or by natural means, such as windthrow, then slowly migrated into the forest understory. The clonal nature of this species may also have facilitated its spread.

Table 24. Thirty most frequent herbs in 1 m² quadrats in 2010 monitoring. Prominent herbs denoted by Cooper (1910) are noted by †. Nomenclature was standardized to the International Taxonomic Information System, as of 2011.

Rank	Latin name	2010 Frequency
1	<i>Aralia nudicaulis</i> (wild sarsaparilla) [†]	0.6222
2	<i>Eurybia macrophylla</i> (large-leaved aster)	0.6074
3	<i>Maianthemum canadense</i> (Canada mayflower) [†]	0.5926
4	<i>Clintonia borealis</i> (blue bead lily) [†]	0.5259
5	<i>Cornus canadensis</i> (bunchberry) [†]	0.3519
6	<i>Linnaea borealis</i> (twinflower) [†]	0.3037
7	<i>Polygala paucifolia</i> (gay wings)	0.2815
8	<i>Streptopus lanceolatus</i> var. <i>roseus</i> (rosy twisted-stalk)	0.2444
9	<i>Mitella nuda</i> (mitrewort) [†]	0.2333
10	<i>Pteridium aquilinum</i> (bracken fern)	0.2296
11	<i>Lycopodium dendroideum</i> (groundpine)	0.1519
13	<i>Trientalis borealis</i> (star flower) [†]	0.1111
14	<i>Chimaphila umbellata</i> (pipsissewa)	0.1111
15	<i>Melampyrum lineare</i> (cow wheat)	0.1111
16	<i>Lycopodium annotinum</i> (stiff clubmoss)	0.1074
17	<i>Gymnocarpium dryopteris</i> (oak fern)	0.0963
19	<i>Galium triflorum</i> (fragrant bedstraw)	0.0963
20	<i>Lycopodium clavatum</i> (running clubmoss)	0.0889
21	<i>Pyrola</i> sp. (shinleaf)	0.0852
22	<i>Coptis trifolia</i> (goldthread) [†]	0.0778
23	<i>Viola</i> sp. (violet)	0.0704
24	<i>Equisetum palustre</i> (marsh horsetail)	0.0667
25	<i>Hepatica nobilis</i> var. <i>obtusa</i> (roundleaved liverwort)	0.0667
26	<i>Dryopteris carthusiana</i> (spinulose woodfern)	0.0519
27	<i>Thalictrum dasycarpum</i> (purple meadowrue)	0.0444
28	<i>Impatiens capensis</i> (pale touch-me-not)	0.0333
29	<i>Actaea</i> sp. (baneberry)	0.0333
30	<i>Apocynum androsaemifolium</i> (dogbane)	0.0296

Table 25. Herbs listed by Cooper (1913) as being common but less prominent and abundant than the association presented in Table 24. Dashed lines indicate the species was not located in the 1m² quadrats. Nomenclature was standardized to the International Taxonomic Information System, as of 2011.

Latin name	Common name	2010 Frequency
<i>Lycopodium annotinum</i>	stiff club moss	0.1074
<i>Lycopodium obscurum</i>	ground pine	--
<i>Gymnocarpium dryopteris</i>	oak fern	0.0963
<i>Dryopteris carthusiana</i>	shield fern	0.0519
<i>Polypodium virginianum</i>	rock polypody	0.0037
<i>Cystopteris fragilis</i>	fragile fern	--
<i>Moneses uniflora</i>	single-flowered pyrola	0.0074
<i>Ribes glandulosum</i>	skunk currant	0.0148
<i>Goodyera repens</i>	rattlesnake plantain	0.0259 ^a
<i>Oxalis montana</i>	wood sorrel	--
<i>Platanthera obtusata</i>	bluntleaved orchid	--
<i>Geocaulon lividum</i>	false toadflax	--

^a collective frequency for all *Goodyera* species

While forest change has been fairly subtle over the previous century, the rate of change is anticipated to increase in the next century, due to climate change and exotic pests and pathogens. One group of these pests that is expected to impact the understory is earthworms. These are not native to the island were observed in at least two plots, including 4063, south of Washington Harbor and approximately 1.8 km from a trail. The vegetation sampling crews were not able to identify it to species or any other taxonomic group. Earthworms consume the organic layer, i.e., “forest floor”, (Suárez et al. 2006), which is essential for seed germination and fine root development in most plant species. In the absence of an organic layer, the few species that are able reproduce in mineral soil will dominate the site. One such species is Pennsylvania sedge (*Carex pensylvanica*), which outcompetes other herbs and eventually forms monospecific lawns in areas highly impacted by earthworms (Hale et al. 2006, Holdsworth et al. 2007).

Management Directions

The vegetation at Isle Royale is not experiencing many of the stressors affecting other national parks: large numbers of exotic plant species, introduced pathogens, and acid deposition. Nonetheless, stressors will play an increasing role on the impacts of Isle Royale vegetation, particularly in light of climate change.

In general, the climate of the upper Midwest is expected to become warmer (Christensen et al. 2007) with the area covered in boreal forests anticipated to contract (Galatowitsch et al. 2009). Species in our area that are currently near the southern end of their ranges are anticipated to migrate northward, out of our area. These include balsam fir, black spruce, white spruce, jack pine, red pine, and balsam poplar (Frelich and Reich 2009). This is primarily due to heat and drought, although the pines are also threatened by the mountain pine beetle (*Dendroctonus ponderosae*), balsam fir is vulnerable to the balsam wooly adelgid (*Adelges piceae*), and balsam poplar is susceptible to the Asian long-horned beetle (*Anoplophora glabripennis*). While none of these exotic pests are within the range of Isle Royale, they are spreading and should remain a concern for park managers. Tree species currently in our area expected to increase in abundance under climate prediction scenarios include basswood (*Tilia americana*), northern red oak (*Quercus rubra*), red maple (*Acer rubrum*), and yellow birch (*Betula alleghaniensis*). Finally, a

few species are expected to have range extensions and move into the upper Midwest and include black cherry (*Prunus serotina*) and cottonwood (*Populus deltoides*).

Climate change adaptation strategies focus on resisting change, promoting resilience to change, and facilitating change. While resistance strategies are not likely to work beyond the short-term – Millar et al. (2007) compare it to paddling upstream - they do provide the opportunity to “buy time” until more effective resilience strategies are developed. Resistance strategies may include altering hydrology, spraying for insect outbreaks, and controlling the populations of herbivores. Resilience strategies focus on maintaining stable, highly functioning ecosystems so that native species assemblages can migrate in, preventing the development of a stable ecosystem dominated by a few non-native species.

Isle Royale is in a unique position compared with other national parks and other preserves in general, due to its isolation. While this isolation has allowed it to retain a high degree of ecological integrity, it might also hinder attempts to promote resilience. Species with greater long-distance dispersal capacity (e.g., black cherry, cottonwood) may favorably colonize the island over those species less capable of long-distance dispersal (e.g., oaks).

Facilitated adaptation is a strategy whereby individuals and populations of key species are introduced as a means to promote resilience. This is a controversial topic with two obvious drawbacks being the disruption of coadapted gene complexes and the potential introduction of unforeseen diseases or pathogens. Despite these risks, facilitated adaptation is perceived by many to be a better alternative than no facilitation of species movements. Managers at ISRO should consider these adaptation strategies in the next few decades as new species begin to appear in the park.

In addition to focusing on trees and other live vegetation, managers should continue to monitor snags and coarse woody material on the island as they provide habitat. This is especially relevant for the marten (*Martes americana*) once believed extirpated on Isle Royale. Microsatellite DNA analysis of marten scat collected along the trail network between 2006 and 2008 revealed 29 individuals on the island (Mark Romanski, Isle Royale National Park Biologist, unpublished data). Wynne and Sherburne (1984) found that maternal marten dens in northwestern Maine were preferentially located in hollow cedar logs and in over mature cedar stems ≥ 40 cm DBH. Steventon and Major (1982) reported on winter resting sites in Maine, and found that of the 31 sites examined, 19 were adjacent to large, decayed stumps. Further, they noted the advanced decay of these stumps, describing the woody material as pulpy and moss covered.

While literature suggests that marten utilize conifer trees more than hardwoods, the majority of scat samples collected on the island has been within the sugar maple/yellow birch forest. Our eight plots in the sugar maple/birch forest type had 19.44 standing dead trees ≥ 40 cm DBH per hectare. The majority of these (13.89 trees/ha) were yellow birch. In cedar forests, our ten plots had 11.11 standing dead trees ≥ 40 cm DBH per hectare, with trembling aspen contributing approximately half of this. There were no pieces of coarse woody material (CWM) in decay classes 4 or 5 in either forest type. Decay class 4 CWM has rotten heartwood and does not support its own weight, although it maintains its shape. Decay class 5 CWM spreads out on the

ground and is easy to pull apart. Managers should continue to monitor standing and down woody material in these forest types to assess marten habitat.

Implementation: Problems, Logistics, and Future Plans

Sampling during the 2010 field season went fairly smoothly, although difficulties were encountered at times. Many of these difficulties centered both on slow sampling and weather-related boating issues (fog, storms, etc.). While these particular challenges may not necessarily arise in 2016 during the next sampling season at Isle Royale, other challenges will likely materialize so that time will be factored into the sampling schedule to deal with them.

We will make every attempt in 2016 to resample all of the plots that were established in 2010. We would also like to establish a second plot on Passage Island and additional plots within the zone of the 1936 burn. We did accomplish our goal of establishing several (10) plots in cedar forests. Under some climate change scenarios, a drying trend is anticipated to accompany the warming trend (Heinselman 1996) whereby species such as cedar that inhabit moist areas will be greatly impacted.

While the sampling protocol carried out in 2010 was detailed and exhaustive, we anticipate incorporating additional aspects in 2016. First, we may perform some cursory earthworm analyses, examining litter horizon depth and looking for evidence of earthworms, such as castings and middens. Second, we will likely incorporate some aspect of carbon accounting into reporting, based on the tree diameter data collected. Finally, we may also collect soils for laboratory analysis of carbon. We feel that these additional indices would provide a comprehensive forest health monitoring program.

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Appendix A

Field Sites Maps

Maps have been omitted from this electronic version due to the large files size and to protect sensitive information.
Anyone wishing to obtain copies should contact the Great Lakes Network office.

Appendix B

Complete List of Species Sampled

Species Encountered during Site Visits - by Park

Park: ISRO Year: 2010

This report reflects data from Original Plots only.

Species

HERBACEOUS

Apiaceae

Heracleum maximum
Osmorhiza berteroi
Osmorhiza claytonii
Osmorhiza sp.
Sanicula marilandica

Apocynaceae

Apocynum androsaemifolium

Araceae

Arisaema triphyllum
Calla palustris
Symplocarpus foetidus

Araliaceae

Aralia nudicaulis

Asteraceae

Achillea millefolium
Anaphalis margaritacea
Antennaria howellii ssp. neodioica
Antennaria neglecta
Antennaria sp.
Asteraceae fam.
Bidens cernua
Cirsium muticum
Cirsium sp.
Doellingeria umbellata
Eupatorium maculatum
Eurybia macrophylla
Hieracium aurantiacum
Hieracium canadense
Hieracium piloselloides
Hieracium sp.
Hieracium umbellatum
Lactuca biennis
Lactuca canadensis
Lactuca sp.
Leucanthemum vulgare
Petasites frigidus
Petasites frigidus var. palmatus
Prenanthes alba
Solidago altissima
Solidago canadensis
Solidago hispida
Solidago sp.
Solidago uliginosa
Symphyotrichum ciliolatum
Symphyotrichum lateriflorum var. lateriflorum
Symphyotrichum puniceum var. puniceum
Symphyotrichum sp.
Taraxacum officinale
Tragopogon sp.

Balsaminaceae

Impatiens capensis

HERBACEOUS

Boraginaceae

Cynoglossum virginianum
Cynoglossum virginianum var. boreale

Brassicaceae

Arabis glabra

Campanulaceae

Campanula rotundifolia

Caprifoliaceae

Linnaea borealis

Caryophyllaceae

Cerastium fontanum
Cerastium sp.
Stellaria sp.

Convolvulaceae

Calystegia spithamea

Cornaceae

Cornus canadensis

Cyperaceae

Carex arctata
Carex brunnescens
Carex canescens
Carex communis
Carex crinita
Carex deweyana
Carex disperma
Carex gracillima
Carex gynandra
Carex interior
Carex intumescens
Carex leptalea
Carex leptonervia
Carex magellanica
Carex peckii
Carex pedunculata
Carex pellita
Carex retrorsa
Carex sp.
Carex stipata
Carex stricta
Carex tenuiflora
Carex trisperma
Carex utriculata
Carex vesicaria
Eleocharis palustris
Eriophorum viridicarinarum
Scirpus atrovirens
Scirpus cyperinus
Scirpus sp.

Dennstaedtiaceae

Pteridium aquilinum

Droseraceae

Drosera rotundifolia

Dryopteridaceae

Athyrium filix-femina
Cystopteris fragilis

Species Encountered during Site Visits - by Park

HERBACEOUS

Dryopteridaceae

Dryopteris carthusiana
Dryopteris cristata
Dryopteris intermedia
Dryopteris marginalis
Dryopteris sp.
Gymnocarpium dryopteris
Matteuccia struthiopteris
Onoclea sensibilis
Woodsia ilvensis

Equisetaceae

Equisetum arvense
Equisetum fluviatile
Equisetum palustre
Equisetum pratense
Equisetum scirpoides
Equisetum sp.
Equisetum sylvaticum
Equisetum variegatum

Ericaceae

Gaultheria hispidula
Gaultheria procumbens

Fabaceae

Lathyrus ochroleucus
Trifolium aureum
Trifolium pratense
Trifolium repens
Trifolium sp.
Vicia americana

Fumariaceae

Corydalis sempervirens

Gentianaceae

Halenia deflexa

Geraniaceae

Geranium bicknellii

Iridaceae

Iris versicolor

Juncaceae

Juncus effusus
Juncus tenuis
Luzula parviflora

Lamiaceae

Clinopodium vulgare
Lycopus americanus
Lycopus sp.
Lycopus uniflorus
Mentha arvensis
Prunella vulgaris
Scutellaria galericulata
Scutellaria lateriflora

Lemnaceae

Lemna sp.

Liliaceae

Clintonia borealis

HERBACEOUS

Liliaceae

Lilium philadelphicum
Maianthemum canadense
Maianthemum racemosum
Maianthemum trifolium
Polygonatum pubescens
Streptopus amplexifolius
Streptopus lanceolatus var. roseus
Trillium cernuum
Trillium grandiflorum
Trillium sp.

Lycopodiaceae

Huperzia lucidula
Lycopodium annotinum
Lycopodium clavatum
Lycopodium complanatum
Lycopodium dendroideum
Lycopodium hickeyi
Lycopodium sp.

Menyanthaceae

Menyanthes trifoliata

Monotropaceae

Monotropa hypopithys
Monotropa uniflora

Onagraceae

Chamerion angustifolium ssp. angustifolium
Circaea alpina
Epilobium ciliatum
Epilobium sp.

Ophioglossaceae

Botrychium virginianum

Orchidaceae

Coeloglossum viride
Coeloglossum viride var. viride
Corallorhiza maculata
Corallorhiza sp.
Corallorhiza striata
Corallorhiza trifida
Cypripedium acaule
Cypripedium arietinum
Cypripedium calceolus
Cypripedium sp.
Goodyera oblongifolia
Goodyera repens
Goodyera sp.
Goodyera tessellata
Listera convallarioides
Orchidaceae fam.
Platanthera clavellata
Platanthera dilatata
Platanthera hyperborea
Platanthera orbiculata
Platanthera sp.

Osmundaceae

Osmunda cinnamomea
Osmunda claytoniana

Species Encountered during Site Visits - by Park

HERBACEOUS

Osmundaceae

Osmunda regalis

Oxalidaceae

Oxalis montana

Plantaginaceae

Plantago major

Poaceae

Agrostis scabra
Bromus ciliatus
Calamagrostis canadensis
Cinna latifolia
Danthonia spicata
Deschampsia flexuosa
Dichanthelium xanthophyllum
Elymus repens
Elymus trachycaulus
Festuca occidentalis
Glyceria canadensis
Glyceria sp.
Glyceria striata
Miliium effusum
Oryzopsis asperifolia
Phleum pratense
Poa compressa
Poa nemoralis
Poa palustris
Poa pratensis
Poa sp.
Poaceae fam.
Schizachne purpurascens

Polygalaceae

Polygala paucifolia

Polygonaceae

Polygonum cilinode
Polygonum convolvulus
Rumex obtusifolius

Polypodiaceae

Polypodium virginianum

Portulacaceae

Claytonia caroliniana

Primulaceae

Lysimachia thyrsiflora
Trientalis borealis

Pyrolaceae

Chimaphila umbellata
Moneses uniflora
Orthilia secunda
Pyrola americana
Pyrola asarifolia
Pyrola elliptica
Pyrola minor
Pyrola sp.

Ranunculaceae

Actaea pachypoda
Actaea rubra

HERBACEOUS

Ranunculaceae

Actaea sp.
Anemone virginiana
Aquilegia canadensis
Caltha palustris
Clematis sp.
Clematis virginiana
Coptis trifolia
Hepatica nobilis var. obtusa
Ranunculaceae fam.
Ranunculus abortivus
Ranunculus acris
Ranunculus hispidus
Ranunculus pensylvanicus
Ranunculus recurvatus
Ranunculus rhomboideus
Ranunculus sceleratus
Ranunculus sp.
Thalictrum dasycarpum

Rosaceae

Agrimonia sp.
Comarum palustre
Fragaria sp.
Fragaria vesca
Fragaria virginiana
Geum aleppicum
Geum sp.

Rubiaceae

Galium asprellum
Galium sp.
Galium trifidum
Galium triflorum
Mitchella repens

Santalaceae

Comandra umbellata
Geocaulon lividum

Saxifragaceae

Mitella nuda

Scrophulariaceae

Castilleja septentrionalis
Collinsia parviflora
Melampyrum lineare
Verbascum thapsus
Veronica americana
Veronica sp.

Selaginellaceae

Selaginella rupestris

Thelypteridaceae

Phegopteris connectilis
Thelypteris palustris

Typhaceae

Typha sp.

Violaceae

Viola blanda
Viola renifolia

Species Encountered during Site Visits - by Park

HERBACEOUS

Violaceae

Viola sp.

SHRUB

Anacardiaceae

Rhus hirta

Araliaceae

Oplopanax horridus

Betulaceae

Alnus incana ssp. rugosa

Alnus viridis ssp. crispa

Corylus cornuta

Caprifoliaceae

Diervilla lonicera

Lonicera canadensis

Lonicera dioica

Lonicera hirsuta

Lonicera involucrata

Lonicera oblongifolia

Lonicera sp.

Lonicera villosa

Sambucus racemosa

Symphoricarpos albus

Viburnum edule

Viburnum opulus

Viburnum opulus var. americanum

Cornaceae

Cornus alternifolia

Cornus rugosa

Cornus sericea

Cupressaceae

Juniperus communis var. depressa

Elaeagnaceae

Shepherdia canadensis

Ericaceae

Arctostaphylos uva-ursi

Ledum groenlandicum

Vaccinium angustifolium

Vaccinium myrtilloides

Grossulariaceae

Ribes glandulosum

Ribes hirtellum

Ribes hudsonianum

Ribes lacustre

Ribes oxyacanthoides

Ribes sp.

Ribes triste

Rhamnaceae

Rhamnus alnifolia

Rosaceae

Amelanchier sp. Group 2

Amelanchier sp. Group 3

Crataegus macrosperma

Rosa acicularis

Rosa sp.

SHRUB

Rosaceae

Rubus canadensis

Rubus idaeus ssp. strigosus

Rubus parviflorus

Rubus pubescens

Salicaceae

Salix discolor

Salix eriocephala

Salix humilis

Salix planifolia

Salix serissima

Salix sp.

Taxaceae

Taxus canadensis

Thymelaeaceae

Dirca palustris

TREE

Aceraceae

Acer rubrum

Acer saccharum

Acer sp.

Acer spicatum

Betulaceae

Betula alleghaniensis

Betula papyrifera

Betula sp.

Cupressaceae

Thuja occidentalis

Fagaceae

Quercus rubra

Oleaceae

Fraxinus nigra

Pinaceae

Abies balsamea

Larix laricina

Picea glauca

Picea mariana

Picea sp.

Pinus banksiana

Pinus resinosa

Pinus sp.

Pinus strobus

Rosaceae

Crataegus douglasii

Prunus pensylvanica

Prunus virginiana

Sorbus americana

Sorbus decora

Salicaceae

Populus balsamifera

Populus grandidentata

Populus tremuloides

Salix bebbiana

Appendix C

Individual Plot Data

Density and Basal Area of Tree Species (Live trees)

Plot: 4001	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	44.4	1.8
<i>Populus tremuloides</i>	11.1	2.6
softwood		
<i>Abies balsamea</i>	2077.8	5.0
<i>Picea glauca</i>	322.2	3.0
<i>Picea mariana</i>	644.4	4.7
<i>Thuja occidentalis</i>	233.3	14.9
TOTAL	3,333.3	32.0

Plot: 4002	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	144.4	3.1
<i>Fraxinus nigra</i>	44.4	0.1
<i>Populus tremuloides</i>	177.8	22.2
softwood		
<i>Picea glauca</i>	722.2	11.6
<i>Pinus strobus</i>	11.1	1.4
<i>Thuja occidentalis</i>	11.1	0.4
TOTAL	1,111.1	38.9

Plot: 4003	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	1000.0	13.5
<i>Populus tremuloides</i>	11.1	0.7
softwood		
<i>Picea glauca</i>	322.2	5.7
<i>Thuja occidentalis</i>	455.6	1.3
TOTAL	1,788.9	21.2

Plot: 4004	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	22.2	0.3
<i>Betula papyrifera</i>	11.1	1.7
softwood		
<i>Picea glauca</i>	400.0	7.6
<i>Thuja occidentalis</i>	2433.3	14.6
TOTAL	2,866.7	24.1

Plot: 4005	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.0
<i>Acer saccharum</i>	2433.3	16.0
<i>Betula alleghaniensis</i>	66.7	4.5
softwood		
<i>Picea glauca</i>	11.1	0.0
<i>Picea mariana</i>	22.2	0.7
<i>Thuja occidentalis</i>	100.0	6.6
TOTAL	2,644.4	27.7

Plot: 4006	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.0
<i>Betula papyrifera</i>	100.0	2.0
<i>Populus tremuloides</i>	33.3	1.2
<i>Sorbus decora</i>	22.2	0.2
softwood		
<i>Picea glauca</i>	355.6	9.9
<i>Picea mariana</i>	100.0	3.1
<i>Pinus banksiana</i>	77.8	2.7
<i>Thuja occidentalis</i>	300.0	3.0
TOTAL	1,000.0	22.1

Plot: 4008	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	44.4	0.2
<i>Acer saccharum</i>	1300.0	4.8
<i>Betula alleghaniensis</i>	211.1	14.2
softwood		
<i>Abies balsamea</i>	11.1	0.7
<i>Picea glauca</i>	77.8	0.7
<i>Thuja occidentalis</i>	466.7	20.5
TOTAL	2,111.1	41.1

Plot: 4009	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	455.6	18.5
<i>Fraxinus nigra</i>	22.2	0.1
softwood		
<i>Picea glauca</i>	44.4	0.4
TOTAL	522.2	19.0

Plot: 4010		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	44.4	1.2
<i>Populus tremuloides</i>	1000.0	16.0
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	33.3	3.0
TOTAL	1,088.9	20.3
Plot: 4011		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	222.2	8.7
<i>Populus tremuloides</i>	33.3	3.2
softwood		
<i>Abies balsamea</i>	44.4	0.0
<i>Picea glauca</i>	155.6	5.1
<i>Picea mariana</i>	911.1	5.1
TOTAL	1,366.7	22.3
Plot: 4012		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Acer saccharum</i>	744.4	8.9
<i>Betula alleghaniensis</i>	322.2	16.5
softwood		
<i>Abies balsamea</i>	11.1	0.1
<i>Picea glauca</i>	33.3	2.0
<i>Thuja occidentalis</i>	44.4	7.2
TOTAL	1,155.6	34.7
Plot: 4014		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Acer rubrum</i>	11.1	0.2
<i>Acer saccharum</i>	166.7	0.7
<i>Betula papyrifera</i>	77.8	5.6
<i>Fraxinus nigra</i>	433.3	0.9
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	166.7	2.3
<i>Thuja occidentalis</i>	1833.3	44.4
TOTAL	2,700.0	54.2
Plot: 4016		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	33.3	1.9
<i>Populus tremuloides</i>	377.8	4.5
softwood		
<i>Picea glauca</i>	177.8	0.8
TOTAL	588.9	7.2

Plot: 4017		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula alleghaniensis</i>	22.2	0.2
<i>Betula papyrifera</i>	88.9	3.4
<i>Populus tremuloides</i>	277.8	21.5
softwood		
<i>Abies balsamea</i>	266.7	0.3
<i>Picea glauca</i>	400.0	2.9
<i>Picea mariana</i>	222.2	3.7
<i>Pinus banksiana</i>	11.1	1.0
<i>Thuja occidentalis</i>	755.6	6.8
TOTAL	2,044.4	39.6
Plot: 4018		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Acer spicatum</i>	55.6	0.1
<i>Betula papyrifera</i>	311.1	6.6
<i>Populus tremuloides</i>	11.1	2.5
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	400.0	7.2
<i>Thuja occidentalis</i>	933.3	21.1
TOTAL	1,722.2	37.5
Plot: 4019		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	33.3	1.1
<i>Populus tremuloides</i>	188.9	22.9
softwood		
<i>Picea glauca</i>	333.3	7.6
<i>Pinus resinosa</i>	88.9	5.0
<i>Pinus strobus</i>	44.4	1.4
<i>Thuja occidentalis</i>	500.0	3.2
TOTAL	1,188.9	41.3
Plot: 4020		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	88.9	0.2
<i>Prunus pensylvanica</i>	155.6	0.2
<i>Sorbus decora</i>	611.1	2.6
softwood		
<i>Abies balsamea</i>	855.6	13.4
TOTAL	1,711.1	16.4

Plot: 4021	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	1188.9	11.8
<i>Betula papyrifera</i>	66.7	8.6
<i>Populus tremuloides</i>	11.1	1.7
softwood		
<i>Picea glauca</i>	11.1	1.2
<i>Thuja occidentalis</i>	11.1	0.6
TOTAL	1,288.9	23.9

Plot: 4022	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	88.9	4.2
<i>Fraxinus nigra</i>	11.1	0.1
<i>Populus tremuloides</i>	344.4	2.9
softwood		
<i>Abies balsamea</i>	577.8	1.3
<i>Picea glauca</i>	444.4	1.5
<i>Thuja occidentalis</i>	477.8	10.7
TOTAL	1,944.4	20.7

Plot: 4023	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer spicatum</i>	22.2	0.0
<i>Betula alleghaniensis</i>	11.1	0.2
<i>Betula papyrifera</i>	133.3	9.0
<i>Fraxinus nigra</i>	288.9	2.0
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	66.7	0.4
<i>Picea mariana</i>	44.4	0.2
<i>Thuja occidentalis</i>	22.2	0.1
TOTAL	600.0	11.8

Plot: 4024	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer spicatum</i>	11.1	0.0
<i>Betula alleghaniensis</i>	400.0	10.3
<i>Populus tremuloides</i>	11.1	1.8
<i>Sorbus decora</i>	11.1	0.1
softwood		
<i>Picea glauca</i>	55.6	6.1
<i>Thuja occidentalis</i>	44.4	6.6
TOTAL	533.3	24.8

Plot: 4025	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	44.4	4.7
<i>Betula papyrifera</i>	66.7	5.1
softwood		
<i>Picea glauca</i>	188.9	4.4
<i>Picea mariana</i>	55.6	1.8
<i>Thuja occidentalis</i>	1422.2	28.8
TOTAL	1,777.8	44.8

Plot: 4026	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.4
<i>Fraxinus nigra</i>	911.1	7.0
<i>Populus tremuloides</i>	44.4	1.4
softwood		
<i>Abies balsamea</i>	122.2	0.1
<i>Picea glauca</i>	566.7	4.9
<i>Thuja occidentalis</i>	422.2	5.5
TOTAL	2,088.9	20.4

Plot: 4027	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.8
softwood		
<i>Abies balsamea</i>	55.6	0.1
<i>Larix laricina</i>	11.1	0.5
<i>Picea glauca</i>	33.3	0.1
<i>Picea mariana</i>	600.0	4.3
<i>Thuja occidentalis</i>	1500.0	13.6
TOTAL	2,222.2	19.5

Plot: 4028	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	100.0	10.4
<i>Fraxinus nigra</i>	511.1	3.5
<i>Populus tremuloides</i>	133.3	5.1
<i>Sorbus decora</i>	11.1	0.3
softwood		
<i>Abies balsamea</i>	888.9	2.1
<i>Picea glauca</i>	222.2	1.6
<i>Picea mariana</i>	33.3	0.3
<i>Thuja occidentalis</i>	66.7	0.4
TOTAL	1,966.7	23.6

Plot: 4029	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	33.3	0.5
<i>Populus tremuloides</i>	344.4	12.1
softwood		
<i>Abies balsamea</i>	122.2	0.3
<i>Picea glauca</i>	1166.7	10.7
<i>Picea mariana</i>	133.3	0.4
<i>Pinus strobus</i>	33.3	3.8
TOTAL	1,833.3	27.9

Plot: 4030	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	1177.8	7.2
<i>Betula alleghaniensis</i>	122.2	18.8
softwood		
<i>Picea glauca</i>	66.7	2.7
<i>Thuja occidentalis</i>	755.6	26.6
TOTAL	2,122.2	55.4

Plot: 4031	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	244.4	5.7
<i>Sorbus decora</i>	22.2	0.2
softwood		
<i>Picea glauca</i>	688.9	15.1
<i>Thuja occidentalis</i>	100.0	0.7
TOTAL	1,055.6	21.6

Plot: 4032	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.1
<i>Sorbus decora</i>	33.3	0.0
softwood		
<i>Abies balsamea</i>	9200.0	21.9
<i>Picea glauca</i>	355.6	8.5
TOTAL	9,611.1	30.6

Plot: 4033	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.9
<i>Fraxinus nigra</i>	155.6	0.9
<i>Populus tremuloides</i>	77.8	6.1
softwood		
<i>Abies balsamea</i>	255.6	0.4
<i>Picea glauca</i>	166.7	2.7
<i>Picea mariana</i>	11.1	0.0
<i>Thuja occidentalis</i>	333.3	11.1
TOTAL	1,022.2	22.0

Plot: 4034	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	200.0	14.9
softwood		
<i>Picea glauca</i>	688.9	8.4
<i>Thuja occidentalis</i>	33.3	3.3
TOTAL	922.2	26.6

Plot: 4036	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.0
<i>Fraxinus nigra</i>	22.2	0.0
softwood		
<i>Abies balsamea</i>	11.1	0.6
<i>Picea glauca</i>	100.0	1.7
<i>Picea mariana</i>	433.3	5.4
<i>Thuja occidentalis</i>	4611.1	41.6
TOTAL	5,200.0	50.3

Plot: 4037	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	155.6	9.1
<i>Populus tremuloides</i>	133.3	14.2
softwood		
<i>Larix laricina</i>	77.8	1.7
<i>Picea glauca</i>	111.1	2.4
<i>Picea mariana</i>	22.2	0.0
<i>Thuja occidentalis</i>	1111.1	28.0
TOTAL	1,611.1	55.5

Plot: 4038	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	77.8	5.3
<i>Populus tremuloides</i>	55.6	0.9
softwood		
<i>Abies balsamea</i>	2522.2	9.7
<i>Picea glauca</i>	344.4	4.8
TOTAL	3,000.0	20.7

Plot: 4040	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	677.8	10.0
<i>Betula papyrifera</i>	33.3	1.1
<i>Salix bebbiana</i>	11.1	0.4
softwood		
<i>Picea glauca</i>	422.2	5.1
<i>Thuja occidentalis</i>	400.0	19.7
TOTAL	1,544.4	36.3

Plot: 4041	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.1
<i>Populus tremuloides</i>	44.4	6.7
softwood		
<i>Abies balsamea</i>	11.1	0.1
<i>Picea glauca</i>	122.2	3.9
<i>Picea mariana</i>	144.4	3.2
<i>Thuja occidentalis</i>	911.1	15.5
TOTAL	1,255.6	30.5

Plot: 4042	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.6
<i>Populus tremuloides</i>	355.6	29.2
softwood		
<i>Abies balsamea</i>	2077.8	8.5
<i>Picea glauca</i>	277.8	3.8
<i>Pinus strobus</i>	22.2	0.0
<i>Thuja occidentalis</i>	88.9	0.7
TOTAL	2,844.4	43.8

Plot: 4043	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	66.7	6.4
<i>Populus tremuloides</i>	11.1	1.1
softwood		
<i>Picea glauca</i>	733.3	10.1
TOTAL	811.1	17.6

Plot: 4044	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	333.3	1.2
<i>Betula papyrifera</i>	88.9	6.1
<i>Crataegus douglasii</i>	11.1	0.0
TOTAL	433.3	7.3

Plot: 4045	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	11.1	0.0
<i>Betula papyrifera</i>	966.7	24.1
<i>Fraxinus nigra</i>	11.1	0.0
<i>Populus tremuloides</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	44.4	0.8
<i>Picea mariana</i>	66.7	0.2
TOTAL	1,111.1	25.2

Plot: 4046	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	1200.0	6.8
<i>Betula alleghaniensis</i>	77.8	8.2
softwood		
<i>Abies balsamea</i>	11.1	1.0
<i>Picea glauca</i>	44.4	0.1
<i>Pinus strobus</i>	11.1	8.0
<i>Thuja occidentalis</i>	322.2	15.4
TOTAL	1,666.7	39.4

Plot: 4047	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	33.3	5.5
<i>Sorbus decora</i>	22.2	1.1
softwood		
<i>Abies balsamea</i>	11.1	1.0
<i>Picea glauca</i>	322.2	17.5
TOTAL	388.9	25.2

Plot: 4049	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	800.0	5.3
<i>Betula alleghaniensis</i>	77.8	10.2
<i>Betula papyrifera</i>	11.1	1.7
softwood		
<i>Abies balsamea</i>	11.1	0.6
<i>Picea glauca</i>	55.6	2.1
<i>Pinus strobus</i>	11.1	0.0
<i>Thuja occidentalis</i>	600.0	28.9
TOTAL	1,566.7	48.8

Plot: 4050	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	200.0	2.9
<i>Populus tremuloides</i>	144.4	8.2
softwood		
<i>Picea glauca</i>	1111.1	11.4
<i>Thuja occidentalis</i>	544.4	3.8
TOTAL	2,000.0	26.3

Plot: 4052	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	22.2	0.2
<i>Acer saccharum</i>	2355.6	19.8
<i>Betula alleghaniensis</i>	33.3	4.4
softwood		
<i>Picea glauca</i>	11.1	0.2
<i>Thuja occidentalis</i>	55.6	0.5
TOTAL	2,477.8	25.2

Plot: 4053	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	88.9	12.7
<i>Betula papyrifera</i>	33.3	5.8
<i>Populus tremuloides</i>	55.6	5.9
softwood		
<i>Picea glauca</i>	44.4	1.2
<i>Thuja occidentalis</i>	888.9	4.9
TOTAL	1,111.1	30.4

Plot: 4054	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	55.6	2.5
<i>Populus tremuloides</i>	144.4	1.9
softwood		
<i>Abies balsamea</i>	1277.8	2.0
<i>Picea glauca</i>	333.3	3.9
<i>Thuja occidentalis</i>	377.8	3.1
TOTAL	2,188.9	13.4

Plot: 4056	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	88.9	0.7
<i>Betula alleghaniensis</i>	311.1	12.0
<i>Betula papyrifera</i>	77.8	7.5
<i>Prunus pensylvanica</i>	11.1	0.2
softwood		
<i>Picea glauca</i>	177.8	6.0
<i>Thuja occidentalis</i>	222.2	8.6
TOTAL	888.9	35.1

Plot: 4058	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	33.3	2.6
<i>Populus tremuloides</i>	244.4	8.2
softwood		
<i>Abies balsamea</i>	2822.2	7.0
<i>Picea glauca</i>	622.2	4.5
<i>Thuja occidentalis</i>	333.3	0.9
TOTAL	4,055.6	23.3

Plot: 4059	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	488.9	26.9
<i>Betula papyrifera</i>	11.1	0.2
<i>Fraxinus nigra</i>	22.2	0.9
softwood		
<i>Abies balsamea</i>	33.3	2.3
<i>Picea glauca</i>	288.9	4.4
<i>Thuja occidentalis</i>	155.6	5.5
TOTAL	1,000.0	40.2

Plot: 4063	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.0
<i>Acer saccharum</i>	500.0	1.8
<i>Betula alleghaniensis</i>	177.8	12.2
<i>Prunus pensylvanica</i>	11.1	0.2
softwood		
<i>Picea glauca</i>	55.6	2.2
<i>Picea mariana</i>	11.1	0.1
<i>Thuja occidentalis</i>	1288.9	42.4
TOTAL	2,055.6	58.9

Plot: 4064	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	44.4	4.6
<i>Fraxinus nigra</i>	122.2	0.4
<i>Populus tremuloides</i>	11.1	0.5
softwood		
<i>Abies balsamea</i>	1811.1	7.0
<i>Picea glauca</i>	588.9	10.1
<i>Picea mariana</i>	33.3	0.2
<i>Thuja occidentalis</i>	88.9	1.5
TOTAL	2,700.0	24.3

Density and Basal Area of Tree Species (Dead trees)

Plot: 4001	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	44.4	0.9
softwood		
<i>Abies balsamea</i>	344.4	0.5
<i>Picea glauca</i>	22.2	0.8
<i>Picea mariana</i>	22.2	0.1
<i>Picea sp.</i>	44.4	0.1
<i>Thuja occidentalis</i>	33.3	0.2
unknown dead tree - softwood	11.1	0.3
TOTAL	522.2	3.0

Plot: 4002	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	44.4	0.4
<i>Populus tremuloides</i>	66.7	9.9
<i>Prunus pensylvanica</i>	33.3	0.0
softwood		
<i>Picea glauca</i>	11.1	0.4
TOTAL	155.6	10.7

Plot: 4003	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	900.0	8.0
<i>Populus tremuloides</i>	11.1	0.3
softwood		
<i>Picea glauca</i>	22.2	0.1
TOTAL	933.3	8.4

Plot: 4004	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.0
softwood		
<i>Picea glauca</i>	44.4	2.0
<i>Thuja occidentalis</i>	44.4	0.2
TOTAL	111.1	3.2

Plot: 4005	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	177.8	1.2
<i>Betula alleghaniensis</i>	11.1	1.2
unknown dead tree - hardwood	11.1	0.0
softwood		
<i>Abies balsamea</i>	11.1	0.6
<i>Thuja occidentalis</i>	22.2	0.1
TOTAL	233.3	3.1

Plot: 4006	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.0
<i>Betula papyrifera</i>	200.0	1.9
<i>Populus tremuloides</i>	33.3	0.3
<i>Sorbus decora</i>	44.4	0.3
softwood		
<i>Picea glauca</i>	22.2	0.1
<i>Pinus banksiana</i>	44.4	0.4
TOTAL	355.6	2.9

Plot: 4008	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.0
<i>Acer saccharum</i>	77.8	0.1
<i>Acer sp.</i>	44.4	0.0
<i>Betula alleghaniensis</i>	22.2	4.4
softwood		
<i>Thuja occidentalis</i>	66.7	0.3
TOTAL	222.2	4.8

Plot: 4009	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	111.1	0.8
<i>Populus tremuloides</i>	11.1	0.2
<i>Prunus virginiana</i>	22.2	0.2
TOTAL	144.4	1.2

Plot: 4010	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	100.0	6.6
<i>Populus tremuloides</i>	222.2	10.6
TOTAL	322.2	17.2

Plot: 4011	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	244.4	7.1
softwood		
<i>unknown dead tree - softwood</i>	33.3	0.8
TOTAL	277.8	7.9

Plot: 4012	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	122.2	0.1
<i>Betula alleghaniensis</i>	88.9	2.4
softwood		
<i>Picea glauca</i>	33.3	0.5
TOTAL	244.4	3.0

Plot: 4014	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.8
<i>Fraxinus nigra</i>	11.1	0.1
softwood		
<i>Abies balsamea</i>	11.1	0.5
<i>Picea glauca</i>	33.3	3.3
<i>Thuja occidentalis</i>	44.4	0.1
TOTAL	122.2	4.8

Plot: 4016	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.7
<i>Populus tremuloides</i>	77.8	6.5
TOTAL	100.0	7.2

Plot: 4017	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	66.7	1.9
<i>Populus tremuloides</i>	88.9	3.6
softwood		
<i>Abies balsamea</i>	11.1	0.8
<i>Picea glauca</i>	11.1	0.5
<i>Picea sp.</i>	33.3	0.3
<i>Thuja occidentalis</i>	11.1	0.0
TOTAL	222.2	7.2

Plot: 4018	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.2
<i>Populus tremuloides</i>	22.2	0.6
<i>unknown dead tree - hardwood</i>	11.1	0.0
softwood		
<i>Abies balsamea</i>	33.3	1.4
<i>Thuja occidentalis</i>	55.6	0.2
TOTAL	144.4	2.3

Plot: 4019	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
softwood		
<i>Pinus sp.</i>	11.1	0.2
<i>Pinus strobus</i>	11.1	0.4
TOTAL	22.2	0.6

Plot: 4020	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	0.4
<i>Sorbus decora</i>	200.0	0.8
softwood		
<i>Abies balsamea</i>	522.2	7.4
TOTAL	744.4	8.6

Plot: 4021	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	66.7	0.5
<i>Betula papyrifera</i>	100.0	8.0
<i>Populus tremuloides</i>	33.3	2.9
softwood		
<i>Thuja occidentalis</i>	11.1	0.0
TOTAL	211.1	11.4

Plot: 4022	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	11.1	0.4
<i>Betula papyrifera</i>	166.7	5.5
<i>Populus tremuloides</i>	33.3	6.4
softwood		
<i>Abies balsamea</i>	44.4	0.4
<i>Picea glauca</i>	44.4	4.3
<i>unknown dead tree - softwood</i>	22.2	4.2
TOTAL	322.2	21.1

Plot: 4023	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer spicatum</i>	11.1	0.0
<i>Betula papyrifera</i>	233.3	13.2
<i>Fraxinus nigra</i>	33.3	0.1
TOTAL	277.8	13.3

Plot: 4024	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	22.2	2.7
<i>Populus tremuloides</i>	55.6	10.8
TOTAL	77.8	13.5

Plot: 4025	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	22.2	1.3
softwood		
<i>Picea glauca</i>	11.1	0.3
<i>Thuja occidentalis</i>	88.9	3.5
TOTAL	122.2	5.0

Plot: 4026	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Fraxinus nigra</i>	77.8	0.6
softwood		
<i>Abies balsamea</i>	22.2	0.0
<i>Picea glauca</i>	155.6	7.2
TOTAL	255.6	7.9

Plot: 4027	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
softwood		
<i>Abies balsamea</i>	77.8	0.8
<i>Picea mariana</i>	22.2	0.2
<i>Thuja occidentalis</i>	66.7	0.4
TOTAL	166.7	1.4

Plot: 4028	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	166.7	11.6
<i>Fraxinus nigra</i>	22.2	0.0
<i>Populus tremuloides</i>	44.4	7.6
<i>Sorbus decora</i>	11.1	0.2
softwood		
<i>Picea glauca</i>	11.1	0.0
TOTAL	255.6	19.4

Plot: 4029	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Populus tremuloides</i>	355.6	5.8
softwood		
<i>Abies balsamea</i>	44.4	0.2
<i>Picea mariana</i>	11.1	0.0
TOTAL	411.1	6.0

Plot: 4030	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	133.3	0.2
<i>Betula alleghaniensis</i>	22.2	6.1
softwood		
<i>Picea glauca</i>	11.1	2.0
<i>Thuja occidentalis</i>	122.2	0.4
TOTAL	288.9	8.7

Plot: 4031	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	33.3	0.5
<i>Prunus pensylvanica</i>	33.3	0.1
<i>Sorbus decora</i>	33.3	0.8
softwood		
<i>Picea glauca</i>	33.3	0.1
TOTAL	133.3	1.5

Plot: 4032	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	66.7	3.8
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Abies balsamea</i>	455.6	1.4
<i>Picea glauca</i>	33.3	0.4
unknown dead tree - softwood	22.2	0.3
TOTAL	588.9	6.0

Plot: 4033	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	100.0	3.6
<i>Populus tremuloides</i>	11.1	2.1
unknown dead tree - hardwood	11.1	0.4
softwood		
<i>Abies balsamea</i>	44.4	0.5
<i>Thuja occidentalis</i>	22.2	0.2
unknown dead tree - softwood	33.3	0.1
softwood / hardwood		
unknown dead tree	22.2	0.1
TOTAL	244.4	7.1

Plot: 4034	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	122.2	6.1
unknown dead tree - hardwood	11.1	0.1
softwood		
<i>Picea glauca</i>	77.8	5.3
unknown dead tree - softwood	11.1	0.2
TOTAL	222.2	11.7

Plot: 4036	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
softwood		
<i>Abies balsamea</i>	11.1	0.7
<i>Thuja occidentalis</i>	66.7	1.0
TOTAL	77.8	1.7

Plot: 4037	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	133.3	6.1
<i>Populus tremuloides</i>	55.6	4.1
softwood		
<i>Larix laricina</i>	111.1	1.5
<i>Picea glauca</i>	33.3	1.2
<i>Thuja occidentalis</i>	255.6	1.1
TOTAL	588.9	13.9

Plot: 4038	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	88.9	7.6
<i>Populus tremuloides</i>	33.3	3.4
softwood		
<i>Abies balsamea</i>	411.1	0.5
<i>Picea glauca</i>	22.2	0.3
unknown dead tree - softwood	22.2	0.0
TOTAL	577.8	11.8

Plot: 4040	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	44.4	1.9
softwood		
<i>Picea glauca</i>	33.3	0.8
TOTAL	77.8	2.7

Plot: 4041	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	55.6	6.2
<i>Populus tremuloides</i>	11.1	3.0
softwood		
<i>Picea mariana</i>	22.2	0.9
<i>Thuja occidentalis</i>	66.7	1.1
TOTAL	155.6	11.1

Plot: 4042	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	55.6	3.6
<i>Populus tremuloides</i>	44.4	1.4
unknown dead tree - hardwood	11.1	0.0
softwood		
<i>Abies balsamea</i>	411.1	0.5
<i>Picea glauca</i>	22.2	0.2
unknown dead tree - softwood	11.1	0.0
TOTAL	555.6	5.6

Plot: 4043	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	244.4	9.3
softwood		
<i>Picea glauca</i>	55.6	0.1
TOTAL	300.0	9.4

Plot: 4044	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer rubrum</i>	44.4	0.0
<i>Betula papyrifera</i>	66.7	5.4
TOTAL	111.1	5.4

Plot: 4045	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	411.1	3.6
softwood		
<i>Picea glauca</i>	33.3	0.2
<i>Picea mariana</i>	11.1	0.0
TOTAL	455.6	3.8

Plot: 4046	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	11.1	0.9
<i>Betula alleghaniensis</i>	22.2	3.6
softwood		
<i>Abies balsamea</i>	11.1	0.2
<i>Picea glauca</i>	11.1	0.7
<i>Thuja occidentalis</i>	22.2	1.3
unknown dead tree - softwood	22.2	1.2
TOTAL	100.0	7.9

Plot: 4047	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
softwood		
<i>Abies balsamea</i>	11.1	1.6
<i>Picea glauca</i>	66.7	6.1
TOTAL	77.8	7.7

Plot: 4049	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	44.4	0.1
<i>Betula alleghaniensis</i>	11.1	0.4
<i>Betula papyrifera</i>	11.1	1.0
softwood		
<i>Abies balsamea</i>	11.1	0.9
<i>Thuja occidentalis</i>	33.3	2.0
TOTAL	111.1	4.4

Plot: 4050	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	11.1	0.0
<i>Populus tremuloides</i>	88.9	3.4
softwood		
<i>Picea glauca</i>	55.6	0.2
<i>Thuja occidentalis</i>	33.3	0.1
TOTAL	188.9	3.6

Plot: 4052	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	100.0	4.2
<i>Betula alleghaniensis</i>	44.4	9.5
TOTAL	144.4	13.7

Plot: 4053	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Populus tremuloides</i>	88.9	10.7
TOTAL	88.9	10.7

Plot: 4054	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	11.1	0.8
<i>Populus tremuloides</i>	44.4	1.2
unknown dead tree - hardwood	11.1	0.2
softwood		
<i>Abies balsamea</i>	100.0	0.1
TOTAL	166.7	2.3

Plot: 4056	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	22.2	0.1
<i>Betula papyrifera</i>	22.2	2.1
<i>Sorbus decora</i>	11.1	0.0
softwood		
<i>Picea glauca</i>	33.3	0.5
TOTAL	88.9	2.7

Plot: 4058	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula papyrifera</i>	66.7	2.5
<i>Populus tremuloides</i>	33.3	2.7
softwood		
<i>Abies balsamea</i>	322.2	0.2
<i>Picea glauca</i>	33.3	0.1
<i>Thuja occidentalis</i>	11.1	0.0
TOTAL	466.7	5.6

Plot: 4059	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Betula alleghaniensis</i>	77.8	0.3
<i>Betula papyrifera</i>	11.1	1.5
<i>Fraxinus nigra</i>	11.1	0.0
softwood		
<i>Abies balsamea</i>	22.2	0.4
<i>Picea glauca</i>	11.1	0.7
<i>Thuja occidentalis</i>	22.2	1.1
TOTAL	155.6	4.1

Plot: 4063	Density (individuals / ha)	Basal Area (m ² / ha)
Species		
hardwood		
<i>Acer saccharum</i>	44.4	0.1
<i>Betula alleghaniensis</i>	44.4	5.9
<i>Betula papyrifera</i>	11.1	1.8
softwood		
<i>Thuja occidentalis</i>	22.2	0.1
TOTAL	122.2	7.9

Plot: 4064		
Species	Density (individuals / ha)	Basal Area (m ² / ha)
hardwood		
<i>Betula papyrifera</i>	22.2	2.7
softwood		
<i>Abies balsamea</i>	366.7	0.7
<i>Picea glauca</i>	44.4	2.8
<i>unknown dead tree - softwood</i>	11.1	0.4
TOTAL	444.4	6.6

Percent Cover of Shrub Species

Plot: 4001

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	2						0.33
Amelanchier sp. Group 3		2					0.33
Arctostaphylos uva-ursi	2						0.33
Cornus sericea					1		0.17
Diervilla lonicera	1			1			0.33
Lonicera canadensis					2		0.33
Rosa acicularis	2	1	2				0.83
Rubus parviflorus					5	2	1.17
Taxus canadensis				1	1		0.33
Vaccinium angustifolium	5	3					1.33
Viburnum edule		2	1			1	0.67

Number of Shrub Circles Not Sampled in Plot 4001: 0

Plot: 4002

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	1	1					0.33
Amelanchier sp. Group 3	1	1					0.33
Cornus sericea	1		2			1	0.67
Corylus cornuta	25	25	1	1			8.67
Diervilla lonicera	2		1		3	1	1.17
Lonicera canadensis		1	1	1	1		0.67
Lonicera hirsuta	1	2		1	1	1	1.00
Ribes triste			1				0.17
Rosa acicularis			3				0.50
Rubus idaeus ssp. strigosus	1						0.17
Rubus parviflorus	10			50	10		11.67
Rubus pubescens		1	2	1			0.67
Taxus canadensis		1		1			0.33

Number of Shrub Circles Not Sampled in Plot 4002: 0

Plot: 4003

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2			2	2	1		0.83
Diervilla lonicera		1		2		2	0.83
Lonicera canadensis				1			0.17
Lonicera hirsuta	1		1				0.33
Ribes triste	2		2				0.67
Rosa acicularis				1			0.17
Rubus parviflorus	1		1	1	2	5	1.67
Rubus pubescens	1		1		1	1	0.67

Number of Shrub Circles Not Sampled in Plot 4003: 0

Plot: 4004							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Diervilla lonicera						1	0.17
Lonicera canadensis		1	1			1	0.50
Ribes triste	2						0.33
Rubus idaeus ssp. strigosus		1			1		0.33
Rubus parviflorus	2	1					0.50
Rubus pubescens	4	2	2	3	2	3	2.67
Taxus canadensis			1		1		0.33
Number of Shrub Circles Not Sampled in Plot 4004: 0							

Plot: 4005							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Corylus cornuta	1	2			2	1	1.00
Lonicera canadensis	1	1		1	1		0.67
Taxus canadensis		1		2		1	0.67
Number of Shrub Circles Not Sampled in Plot 4005: 0							

Plot: 4006							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa		2					0.33
Alnus viridis ssp. crispa					10		1.67
Amelanchier sp. Group 2					1	10	1.83
Amelanchier sp. Group 3	10						1.67
Arctostaphylos uva-ursi	2					3	0.83
Cornus sericea		1	2				0.50
Diervilla lonicera			3			2	0.83
Juniperus communis var. depressa	2						0.33
Lonicera canadensis			3	1		2	1.00
Lonicera dioica					1		0.17
Lonicera hirsuta						1	0.17
Rosa acicularis	1		1				0.33
Rubus parviflorus		5	20	1	8		5.67
Rubus pubescens		1	1	2			0.67
Vaccinium angustifolium	1				1	1	0.50
Vaccinium myrtilloides						1	0.17
Viburnum edule		3		2			0.83
Number of Shrub Circles Not Sampled in Plot 4006: 0							

Plot: 4008							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Corylus cornuta		1					0.17
Lonicera canadensis		1					0.17
Rubus parviflorus			1				0.17
Taxus canadensis	1	1	1	1	1	1	1.00
Number of Shrub Circles Not Sampled in Plot 4008: 0							

Plot: 4009							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
<i>Alnus incana</i> ssp. <i>rugosa</i>						85	14.17
<i>Amelanchier</i> sp. Group 2				1		1	0.33
<i>Amelanchier</i> sp. Group 3				1			0.17
<i>Cornus sericea</i>				1	1		0.33
<i>Corylus cornuta</i>	5	5	1	5			2.67
<i>Lonicera canadensis</i>	1						0.17
<i>Rhamnus alnifolia</i>				1			0.17
<i>Ribes triste</i>						1	0.17
<i>Rubus idaeus</i> ssp. <i>strigosus</i>					2	1	0.50
<i>Rubus parviflorus</i>	30	50	1				13.50
<i>Rubus pubescens</i>	1			1	1	1	0.67
<i>Salix eriocephala</i>					1		0.17
<i>Sambucus racemosa</i>		1					0.17
<i>Vaccinium myrtilloides</i>				1			0.17

Number of Shrub Circles Not Sampled in Plot 4009: 0

Plot: 4010							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
<i>Amelanchier</i> sp. Group 2		4		1			0.83
<i>Amelanchier</i> sp. Group 3					1	1	0.33
<i>Cornus rugosa</i>				1			0.17
<i>Cornus sericea</i>		1					0.17
<i>Corylus cornuta</i>	15	35	5		3		9.67
<i>Diervilla lonicera</i>			2				0.33
<i>Lonicera canadensis</i>	2				1		0.50
<i>Lonicera hirsuta</i>					20	3	3.83
<i>Rosa acicularis</i>					3	1	0.67
<i>Rubus parviflorus</i>	20	40	10	1			11.83
<i>Salix humilis</i>						1	0.17

Number of Shrub Circles Not Sampled in Plot 4010: 0

Plot: 4011							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa		25					4.17
Amelanchier sp. Group 2	2	1	1	2		1	1.17
Cornus sericea				3			0.50
Diervilla lonicera	3	3		2	10	20	6.33
Ledum groenlandicum	2	2					0.67
Lonicera canadensis					3		0.50
Lonicera hirsuta		1					0.17
Ribes triste					1	1	0.33
Rosa acicularis		1					0.17
Rubus parviflorus					5	3	1.33
Rubus pubescens	1	1		1	1		0.67
Vaccinium myrtilloides	1						0.17
Viburnum edule		1				1	0.33
Number of Shrub Circles Not Sampled in Plot 4011: 0							

Plot: 4012							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2				1			0.17
Lonicera canadensis	1		1				0.33
Ribes triste						1	0.17
Rubus idaeus ssp. strigosus						1	0.17
Rubus parviflorus	5	2					1.17
Rubus pubescens	1	1	1	1		1	0.83
Taxus canadensis	1	1		1		1	0.67
Number of Shrub Circles Not Sampled in Plot 4012: 0							

Plot: 4014							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa	4	4		3			1.83
Cornus rugosa	1		2	1			0.67
Lonicera canadensis		1		1	1	1	0.67
Lonicera dioica		2				1	0.50
Ribes triste	1	1					0.33
Rubus pubescens	3	1	3	1	5		2.17
Taxus canadensis		1		1	1	1	0.67
Number of Shrub Circles Not Sampled in Plot 4014: 0							

Plot: 4016							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	1	1			2		0.67
Amelanchier sp. Group 3		1		1			0.33
Arctostaphylos uva-ursi		2		20	5		4.50
Cornus rugosa		1					0.17
Cornus sericea	1		3	1		2	1.17
Corylus cornuta	1	1	2	3		3	1.67
Diervilla lonicera	2	3	2	3	1	1	2.00
Juniperus communis var. depressa		1			40	1	7.00
Lonicera canadensis						1	0.17
Rosa acicularis		1	1			1	0.50
Rubus parviflorus	2						0.33
Salix humilis	1						0.17
Shepherdia canadensis		2	1				0.50
Number of Shrub Circles Not Sampled in Plot 4016: 0							

Plot: 4017							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Cornus sericea	2					3	0.83
Diervilla lonicera					1	1	0.33
Lonicera canadensis	2	2		1	5	2	2.00
Lonicera hirsuta	1					4	0.83
Ribes lacustre					1		0.17
Rosa acicularis						4	0.67
Rubus idaeus ssp. strigosus					2		0.33
Rubus parviflorus		3				5	1.33
Rubus pubescens	1					1	0.33
Taxus canadensis				1			0.17
Vaccinium angustifolium	1		1				0.33
Viburnum edule	1	3			2	2	1.33
Number of Shrub Circles Not Sampled in Plot 4017: 0							

Plot: 4018							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2						1	0.17
Amelanchier sp. Group 3						1	0.17
Corylus cornuta			3	2			0.83
Diervilla lonicera			1	2			0.50
Lonicera canadensis	1		2	2			0.83
Rubus parviflorus			3	1			0.67
Rubus pubescens	1						0.17
Taxus canadensis		1	1				0.33
Number of Shrub Circles Not Sampled in Plot 4018: 0							

Plot: 4019							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 3					1		0.17
Arctostaphylos uva-ursi					3		0.50
Cornus sericea		1					0.17
Corylus cornuta			2				0.33
Diervilla lonicera				1			0.17
Dirca palustris					3		0.50
Juniperus communis var. depressa					2	10	2.00
Lonicera canadensis		2	1	2			0.83
Lonicera hirsuta	1						0.17
Ribes triste	1						0.17
Rubus parviflorus	20	25	2	3		20	11.67
Salix discolor					1		0.17
Taxus canadensis			1				0.17
Viburnum edule	1						0.17

Number of Shrub Circles Not Sampled in Plot 4019: 0

Plot: 4020							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Cornus sericea	1	2				2	0.83
Diervilla lonicera		1				5	1.00
Oplopanax horridus	20		50	70	60		33.33
Ribes glandulosum				1			0.17
Ribes triste			1	1			0.33
Rubus idaeus ssp. strigosus	1		3	5	1		1.67
Taxus canadensis	40	90	8	8	35	25	34.33
Viburnum edule	20	5	5	10	5	3	8.00

Number of Shrub Circles Not Sampled in Plot 4020: 0

Plot: 4021							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	2					1	0.50
Cornus alternifolia	1	1		1			0.50
Corylus cornuta	25	1		2	1	5	5.67
Lonicera dioica					1		0.17
Ribes triste		1	1				0.33
Rubus parviflorus	1	20	25	65	15	10	22.67
Viburnum edule		1					0.17

Number of Shrub Circles Not Sampled in Plot 4021: 0

Plot: 4022							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 3	1	1		1			0.50
Cornus sericea	2	1		5	2		1.67
Diervilla lonicera			2		1	1	0.67
Lonicera canadensis	1	1			1	1	0.67
Lonicera hirsuta					2	1	0.50
Rhamnus alnifolia	1						0.17
Ribes hudsonianum	1						0.17
Ribes triste	1			1			0.33
Rosa acicularis				1			0.17
Rubus parviflorus	2		1		2	1	1.00
Rubus pubescens	1	1		1	1		0.67
Taxus canadensis			1		1	1	0.50
Viburnum edule	1	1		1	2		0.83
Number of Shrub Circles Not Sampled in Plot 4022: 0							

Plot: 4023							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus viridis ssp. crispa	2						0.33
Amelanchier sp. Group 2	1	2	1	2	2	1	1.50
Amelanchier sp. Group 3					1		0.17
Corylus cornuta		3	70	65	55	60	42.17
Diervilla lonicera		1		1	2	2	1.00
Ledum groenlandicum	1						0.17
Lonicera canadensis	2	1				1	0.67
Rhamnus alnifolia	2						0.33
Rubus idaeus ssp. strigosus					2		0.33
Rubus parviflorus				1	3	3	1.17
Rubus pubescens	1						0.17
Taxus canadensis			1			1	0.33
Vaccinium angustifolium	1						0.17
Number of Shrub Circles Not Sampled in Plot 4023: 0							

Plot: 4024							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 3						1	0.17
Corylus cornuta			1		1	5	1.17
Diervilla lonicera					1		0.17
Lonicera canadensis	5	1				2	1.33
Ribes triste				1			0.17
Rubus idaeus ssp. strigosus	1		10		50	35	16.00
Rubus parviflorus	35	5	50	1	15	10	19.33
Rubus pubescens			1				0.17
Sambucus racemosa				1			0.17
Taxus canadensis		1		1		1	0.50
Number of Shrub Circles Not Sampled in Plot 4024: 0							

Plot: 4025							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa					1	2	0.50
Lonicera canadensis					1		0.17
Rubus idaeus ssp. strigosus						1	0.17
Rubus parviflorus					1		0.17
Rubus pubescens			1		1	2	0.67
Taxus canadensis	3	1			2		1.00
Number of Shrub Circles Not Sampled in Plot 4025: 0							

Plot: 4026							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa					4		0.67
Amelanchier sp. Group 2	1						0.17
Amelanchier sp. Group 3			1	1			0.33
Cornus sericea				1		10	1.83
Corylus cornuta	2	1	3				1.00
Diervilla lonicera	2	1	3	2			1.33
Lonicera canadensis				1	1	1	0.50
Lonicera hirsuta		1					0.17
Rhamnus alnifolia					1		0.17
Ribes hirtellum					1		0.17
Ribes triste						1	0.17
Rosa acicularis	3		1				0.67
Rubus idaeus ssp. strigosus					3		0.50
Rubus parviflorus				4			0.67
Rubus pubescens					1	5	1.00
Salix humilis	4	1					0.83
Number of Shrub Circles Not Sampled in Plot 4026: 0							

Plot: 4027							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa	5	3	5	2	10	25	8.33
Amelanchier sp. Group 3						1	0.17
Cornus sericea	1	1	1	1			0.67
Ledum groenlandicum	2	2	2	5	5	2	3.00
Rubus pubescens	1	1	1	2	1		1.00
Salix discolor		3					0.50
Salix serissima		2					0.33
Taxus canadensis		1	1	1		1	0.67
Number of Shrub Circles Not Sampled in Plot 4027: 0							

Plot: 4028							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	2						0.33
Cornus sericea					5	30	5.83
Corylus cornuta					3		0.50
Diervilla lonicera			2			15	2.83
Ledum groenlandicum					3		0.50
Lonicera canadensis	2						0.33
Lonicera hirsuta	1						0.17
Ribes triste		1					0.17
Rubus idaeus ssp. strigosus	3			4			1.17
Rubus parviflorus	15		8	60		25	18.00
Rubus pubescens		3			3		1.00
Number of Shrub Circles Not Sampled in Plot 4028: 0							

Plot: 4029							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2						1	0.17
Diervilla lonicera	2		1	1	1	2	1.17
Juniperus communis var. depressa			1		2	2	0.83
Lonicera canadensis				1			0.17
Lonicera dioica				1			0.17
Rubus parviflorus		3	2		1		1.00
Salix humilis	1		1			1	0.50
Shepherdia canadensis	1			2	1	1	0.83
Number of Shrub Circles Not Sampled in Plot 4029: 0							

Plot: 4030							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2			1				0.17
Corylus cornuta	1			1	3		0.83
Lonicera canadensis	1		1	1			0.50
Rubus parviflorus	2	1	1	8			2.00
Rubus pubescens	1		2	2			0.83
Taxus canadensis	1	1	1			1	0.67
Number of Shrub Circles Not Sampled in Plot 4030: 0							

Plot: 4031							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2				1			0.17
Amelanchier sp. Group 3			1				0.17
Diervilla lonicera	1	1	10	1	1	1	2.50
Lonicera canadensis	1		1	1			0.50
Ribes triste			1				0.17
Rubus idaeus ssp. strigosus	1		1				0.33
Rubus parviflorus	1		5	1	2		1.50
Taxus canadensis		1		1			0.33

Number of Shrub Circles Not Sampled in Plot 4031: 0

Plot: 4032							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Taxus canadensis			1			1	0.33

Number of Shrub Circles Not Sampled in Plot 4032: 0

Plot: 4033							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa						5	0.83
Amelanchier sp. Group 2				1	1		0.33
Amelanchier sp. Group 3				1			0.17
Cornus sericea						1	0.17
Corylus cornuta		1	1	1	1		0.67
Diervilla lonicera	1	1	1	1			0.67
Lonicera canadensis	1	1	1	1	1	1	1.00
Lonicera hirsuta	1	1					0.33
Rhamnus alnifolia						1	0.17
Ribes triste						1	0.17
Rosa acicularis		1		1			0.33
Rubus parviflorus	25	1	1	2	1		5.00
Rubus pubescens					1	1	0.33
Taxus canadensis	1	1		1	1	1	0.83

Number of Shrub Circles Not Sampled in Plot 4033: 0

Plot: 4034

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
<i>Alnus incana</i> ssp. <i>rugosa</i>	2						0.33
<i>Cornus rugosa</i>					1		0.17
<i>Diervilla lonicera</i>	3						0.50
<i>Ribes glandulosum</i>	1						0.17
<i>Ribes oxyacanthoides</i>	1	1					0.33
<i>Ribes triste</i>				1	1	1	0.50
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	2	1			1		0.67
<i>Rubus parviflorus</i>	5	3	60	1	2	1	12.00
<i>Rubus pubescens</i>	1	2		5	2	1	1.83
<i>Sambucus racemosa</i>	2	2					0.67
<i>Viburnum edule</i>	1						0.17

Number of Shrub Circles Not Sampled in Plot 4034: 0

Plot: 4036

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
<i>Cornus sericea</i>		1				1	0.33
<i>Corylus cornuta</i>	1				1		0.33
<i>Lonicera canadensis</i>		1	1				0.33
<i>Rosa acicularis</i>	1						0.17
<i>Rubus parviflorus</i>	1						0.17
<i>Rubus pubescens</i>		1		1	1	1	0.67
<i>Taxus canadensis</i>		2				1	0.50

Number of Shrub Circles Not Sampled in Plot 4036: 0

Plot: 4037

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
<i>Alnus incana</i> ssp. <i>rugosa</i>						10	1.67
<i>Amelanchier</i> sp. Group 2					1	1	0.33
<i>Cornus sericea</i>	2	1		1	2	2	1.33
<i>Corylus cornuta</i>					3	8	1.83
<i>Diervilla lonicera</i>			1			25	4.33
<i>Ledum groenlandicum</i>					2		0.33
<i>Lonicera canadensis</i>			2	1		2	0.83
<i>Rhamnus alnifolia</i>				1			0.17
<i>Rosa acicularis</i>	2				3		0.83
<i>Rubus parviflorus</i>	8		20	3	10	5	7.67
<i>Rubus pubescens</i>	1	1	2	5			1.50
<i>Vaccinium angustifolium</i>	3						0.50
<i>Vaccinium myrtilloides</i>					1		0.17
<i>Viburnum edule</i>			4				0.67

Number of Shrub Circles Not Sampled in Plot 4037: 0

Plot: 4038

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	1						0.17
Cornus sericea						1	0.17
Corylus cornuta		3					0.50
Diervilla lonicera	2				2	1	0.83
Lonicera canadensis	1		1		1	8	1.83
Lonicera hirsuta	2				1		0.50
Ribes triste						1	0.17
Rubus canadensis						3	0.50
Rubus parviflorus	3	5	1		4		2.17
Taxus canadensis	1						0.17
Viburnum edule						1	0.17

Number of Shrub Circles Not Sampled in Plot 4038: 0

Plot: 4040

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa				10	50	5	10.83
Amelanchier sp. Group 2	1						0.17
Cornus sericea	1			1	1	1	0.67
Corylus cornuta			2	5		1	1.33
Diervilla lonicera		10					1.67
Lonicera canadensis				1	1	2	0.67
Ribes triste	1			1	1		0.50
Rubus idaeus ssp. strigosus	2					1	0.50
Rubus parviflorus	5	35					6.67
Rubus pubescens				1	2	1	0.67
Salix discolor				1			0.17
Taxus canadensis	1		1				0.33

Number of Shrub Circles Not Sampled in Plot 4040: 0

Plot: 4041

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa	15	5	5				4.17
Amelanchier sp. Group 2		1					0.17
Cornus sericea	1	1					0.33
Diervilla lonicera					1		0.17
Ledum groenlandicum	2						0.33
Lonicera canadensis	1	1	2	1	1		1.00
Rhamnus alnifolia	1	1	1				0.50
Ribes hudsonianum		1					0.17
Ribes triste		1					0.17
Rubus idaeus ssp. strigosus						1	0.17
Rubus pubescens	1	1	1	1			0.67
Taxus canadensis			1	1			0.33

Number of Shrub Circles Not Sampled in Plot 4041: 0

Plot: 4042							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2						1	0.17
Arctostaphylos uva-ursi				1			0.17
Cornus sericea						2	0.33
Corylus cornuta	1		1	1			0.50
Diervilla lonicera	1		1		1	2	0.83
Lonicera canadensis					1		0.17
Lonicera hirsuta			1			1	0.33
Lonicera involucrata						1	0.17
Ribes triste						1	0.17
Rosa acicularis		1		1		1	0.50
Rubus idaeus ssp. strigosus						1	0.17
Rubus parviflorus	3				1	1	0.83
Rubus pubescens					1	1	0.33
Viburnum edule						1	0.17

Number of Shrub Circles Not Sampled in Plot 4042: 0

Plot: 4043							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 3	1			1	1		0.50
Cornus sericea	2	4		2	1	3	2.00
Diervilla lonicera	35	2	3	6	15	12	12.17
Juniperus communis var. depressa				1			0.17
Lonicera canadensis				1			0.17
Rosa acicularis						1	0.17
Rubus idaeus ssp. strigosus			3				0.50
Rubus parviflorus	7	50	25	10	55	2	24.83
Viburnum edule					2		0.33

Number of Shrub Circles Not Sampled in Plot 4043: 0

Plot: 4044							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	5	5	1	2		5	3.00
Amelanchier sp. Group 3					3		0.50
Arctostaphylos uva-ursi						2	0.33
Cornus sericea	1		2				0.50
Corylus cornuta	75	50	35	75		20	42.50
Diervilla lonicera	1	1		1		2	0.83
Juniperus communis var. depressa				5			0.83
Lonicera canadensis	1		1			1	0.50
Lonicera hirsuta			1	1			0.33
Ribes triste			1				0.17
Rosa acicularis			1		8		1.50
Rubus parviflorus	1	1	1	1		1	0.83
Rubus pubescens			1		1		0.33
Symphoricarpos albus				1			0.17
Taxus canadensis	1						0.17
Vaccinium angustifolium				1			0.17
Viburnum edule			1				0.17
Number of Shrub Circles Not Sampled in Plot 4044: 0							

Plot: 4045							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa	30	0	2		2		5.67
Amelanchier sp. Group 2		0				1	0.17
Cornus sericea	40	0	1			1	7.00
Corylus cornuta			1		1		0.33
Diervilla lonicera			5	2			1.17
Lonicera canadensis					1	2	0.50
Ribes triste				1	1	1	0.50
Rosa acicularis	1				1		0.33
Rubus idaeus ssp. strigosus	2	0	1				0.50
Rubus parviflorus			45	50	15	15	20.83
Rubus pubescens	3	0	1	1	1	1	1.17
Number of Shrub Circles Not Sampled in Plot 4045: 0							

Plot: 4046							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2			1	1	1		0.50
Diervilla lonicera				1			0.17
Lonicera canadensis			1	1			0.33
Lonicera oblongifolia			1				0.17
Rubus parviflorus				15			2.50
Rubus pubescens			1		1		0.33
Taxus canadensis				1			0.17
Number of Shrub Circles Not Sampled in Plot 4046: 0							

Plot: 4047							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 3				1			0.17
Diervilla lonicera	15						2.50
Ribes glandulosum			1	2	2		0.83
Ribes triste		1		3	2	3	1.50
Rubus idaeus ssp. strigosus	4		25	5	65	10	18.17
Rubus parviflorus	60	30	15				17.50
Rubus pubescens					1		0.17
Sambucus racemosa						1	0.17
Number of Shrub Circles Not Sampled in Plot 4047: 0							

Plot: 4049							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2		1					0.17
Lonicera canadensis	1			2	1	1	0.83
Rubus parviflorus	45	5		10			10.00
Rubus pubescens			1	1			0.33
Taxus canadensis				1		1	0.33
Number of Shrub Circles Not Sampled in Plot 4049: 0							

Plot: 4050							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa					2	1	0.50
Amelanchier sp. Group 2	1						0.17
Cornus sericea		2	1		3	2	1.33
Diervilla lonicera				2	1		0.50
Lonicera canadensis					1		0.17
Ribes triste		1			2		0.50
Rosa acicularis		2					0.33
Rubus idaeus ssp. strigosus					2		0.33
Rubus parviflorus			2	1	2	4	1.50
Rubus pubescens		1			2	3	1.00
Salix humilis	1	2					0.50
Number of Shrub Circles Not Sampled in Plot 4050: 0							

Plot: 4052							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Corylus cornuta	2						0.33
Rubus idaeus ssp. strigosus						4	0.67
Rubus pubescens						1	0.17
Taxus canadensis		1		1	1		0.50
Number of Shrub Circles Not Sampled in Plot 4052: 0							

Plot: 4053

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2		1	1				0.33
Amelanchier sp. Group 3	1						0.17
Cornus sericea	1						0.17
Corylus cornuta	1		5	5	1	2	2.33
Diervilla lonicera	1	1	1	5		5	2.17
Lonicera canadensis	1	1	2		1		0.83
Lonicera dioica	1		1				0.33
Ribes triste			1		1		0.33
Rubus parviflorus	10	25	25	50	40	10	26.67
Rubus pubescens		1	1	1	2		0.83
Taxus canadensis	1						0.17
Vaccinium myrtilloides			1				0.17

Number of Shrub Circles Not Sampled in Plot 4053: 0

Plot: 4054

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa					50	50	16.67
Amelanchier sp. Group 2	1	1	1			1	0.67
Cornus sericea				1			0.17
Corylus cornuta	1						0.17
Diervilla lonicera		1	3	1	1		1.00
Lonicera canadensis					2		0.33
Lonicera hirsuta	2			1			0.50
Rosa acicularis				1			0.17
Rubus idaeus ssp. strigosus					1		0.17
Rubus parviflorus	1	1	1	1			0.67
Rubus pubescens				2	5	10	2.83
Salix humilis	2						0.33
Symphoricarpos albus				1			0.17
Viburnum edule		3					0.50

Number of Shrub Circles Not Sampled in Plot 4054: 0

Plot: 4056

Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa			2	1		5	1.33
Amelanchier sp. Group 2			2		1		0.50
Cornus sericea						5	0.83
Corylus cornuta		2	2				0.67
Lonicera canadensis		1			5	1	1.17
Ribes triste					1	1	0.33
Rubus idaeus ssp. strigosus	5						0.83
Rubus parviflorus			1	50	5		9.33
Rubus pubescens		5	1	1	5	10	3.67
Taxus canadensis	1	1	1	1			0.67

Number of Shrub Circles Not Sampled in Plot 4056: 0

Plot: 4058							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	1						0.17
Amelanchier sp. Group 3				2		1	0.50
Cornus rugosa			1				0.17
Corylus cornuta	2		3		1		1.00
Diervilla lonicera	2			1	2		0.83
Lonicera canadensis		2	1		3	2	1.33
Lonicera hirsuta	1						0.17
Rosa acicularis	1		1	1			0.50
Rubus parviflorus		5		1	1	2	1.50
Salix humilis			1		1		0.33

Number of Shrub Circles Not Sampled in Plot 4058: 0

Plot: 4059							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Corylus cornuta					3	3	1.00
Lonicera canadensis			1			1	0.33
Rubus idaeus ssp. strigosus					3		0.50
Rubus parviflorus	3	15	20		20	8	11.00
Rubus pubescens	5			2		2	1.50
Sambucus racemosa					5		0.83
Taxus canadensis	1						0.17

Number of Shrub Circles Not Sampled in Plot 4059: 0

Plot: 4063							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Amelanchier sp. Group 2	1						0.17
Lonicera canadensis		1		1	1	2	0.83
Rubus idaeus ssp. strigosus	1						0.17
Rubus parviflorus		8					1.33
Rubus pubescens			1	1	1	2	0.83
Taxus canadensis		1	1	2	1	1	1.00

Number of Shrub Circles Not Sampled in Plot 4063: 0

Plot: 4064							
Species	Percent cover in shrub circles						mean percent cover
	1	2	3	4	5	6	
Alnus incana ssp. rugosa						40	6.67
Amelanchier sp. Group 2	1						0.17
Corylus cornuta		1		3			0.67
Diervilla lonicera	10			2			2.00
Lonicera canadensis		1	4	1			1.00
Rosa acicularis			1				0.17
Rubus parviflorus	40	15	15	10	15		15.83
Rubus pubescens						1	0.17

Number of Shrub Circles Not Sampled in Plot 4064: 0

Frequency of Species in Groundlayer Quadrats

Plot: 4001

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.3	0.7	0.40
<i>Amelanchier</i> sp. Group 2	0.1	0.0	0.0	0.03
<i>Aralia nudicaulis</i>	0.4	0.7	0.4	0.50
<i>Carex pedunculata</i>	0.0	0.0	0.3	0.10
<i>Carex</i> sp.	0.0	0.0	0.1	0.03
<i>Chimaphila umbellata</i>	0.3	0.3	0.1	0.23
<i>Clintonia borealis</i>	0.2	0.9	0.8	0.63
<i>Coptis trifolia</i>	0.0	0.1	0.3	0.13
<i>Cornus canadensis</i>	0.7	0.8	0.7	0.73
<i>Corylus cornuta</i>	0.0	0.0	0.1	0.03
<i>Deschampsia flexuosa</i>	0.7	0.1	0.0	0.27
<i>Diervilla lonicera</i>	0.1	0.0	0.0	0.03
<i>Eurybia macrophylla</i>	0.6	0.9	0.8	0.77
<i>Gaultheria hispidula</i>	0.0	0.0	0.2	0.07
<i>Gymnocarpium dryopteris</i>	0.0	0.0	0.2	0.07
<i>Linnaea borealis</i>	0.6	0.7	0.7	0.67
<i>Lonicera canadensis</i>	0.1	0.0	0.1	0.07
<i>Lycopodium annotinum</i>	0.0	0.3	0.4	0.23
<i>Lycopodium clavatum</i>	0.1	0.4	0.1	0.20
<i>Lycopodium dendroideum</i>	0.0	0.6	0.0	0.20
<i>Maianthemum canadense</i>	0.9	0.9	0.6	0.80
<i>Melampyrum lineare</i>	0.0	0.0	0.1	0.03
<i>Mitella nuda</i>	0.0	0.1	0.6	0.23
<i>Oryzopsis asperifolia</i>	0.2	0.0	0.0	0.07
<i>Picea glauca</i>	0.0	0.0	0.1	0.03
<i>Polygala paucifolia</i>	0.1	0.5	0.6	0.40
<i>Populus tremuloides</i>	0.1	0.0	0.0	0.03
<i>Pyrola asarifolia</i>	0.0	0.0	0.2	0.07
<i>Pyrola</i> sp.	0.0	0.1	0.2	0.10
<i>Rosa acicularis</i>	0.1	0.3	0.0	0.13
<i>Rubus parviflorus</i>	0.0	0.0	0.1	0.03
<i>Rubus pubescens</i>	0.0	0.2	0.0	0.07
<i>Sorbus decora</i>	0.2	0.0	0.1	0.10
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.3	0.0	0.10
<i>Thuja occidentalis</i>	0.0	0.0	0.1	0.03
<i>Trientalis borealis</i>	0.0	0.0	0.1	0.03
<i>Vaccinium angustifolium</i>	0.6	0.0	0.1	0.23
<i>Viburnum edule</i>	0.1	0.0	0.2	0.10

Plot: 4002

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.4	0.0	0.0	0.13
<i>Acer spicatum</i>	0.0	0.4	0.0	0.13
<i>Actaea</i> sp.	0.0	0.2	0.0	0.07
<i>Amelanchier</i> sp. Group 2	0.4	0.0	0.0	0.13
<i>Aralia nudicaulis</i>	1.0	0.9	0.8	0.90
<i>Athyrium filix-femina</i>	0.0	0.1	0.0	0.03
<i>Bromus ciliatus</i>	0.1	0.0	0.0	0.03
<i>Carex</i> sp.	0.2	0.8	0.0	0.33
<i>Chimaphila umbellata</i>	0.2	0.1	0.0	0.10
<i>Clintonia borealis</i>	0.1	0.7	0.0	0.27
<i>Cornus canadensis</i>	0.1	0.1	0.3	0.17
<i>Cornus sericea</i>	0.1	0.0	0.0	0.03
<i>Corylus cornuta</i>	0.4	0.0	0.0	0.13
<i>Diervilla lonicera</i>	0.2	0.3	0.4	0.30
<i>Eurybia macrophylla</i>	1.0	0.7	0.8	0.83
<i>Galium triflorum</i>	0.2	0.1	0.0	0.10
<i>Gymnocarpium dryopteris</i>	0.0	0.6	0.0	0.20
<i>Hieracium</i> sp.	0.1	0.0	0.0	0.03
<i>Linnaea borealis</i>	0.3	0.0	0.4	0.23
<i>Lonicera canadensis</i>	0.0	0.0	0.2	0.07
<i>Lonicera hirsuta</i>	0.4	0.0	0.0	0.13
<i>Lycopodium clavatum</i>	0.4	0.0	0.1	0.17
<i>Maianthemum canadense</i>	0.7	0.8	0.4	0.63
<i>Melampyrum lineare</i>	0.3	0.0	0.0	0.10
<i>Mitella nuda</i>	0.2	1.0	0.5	0.57
<i>Oryzopsis asperifolia</i>	0.7	0.0	0.1	0.27
<i>Picea glauca</i>	0.2	0.0	0.0	0.07
<i>Poaceae</i> fam.	0.1	0.0	0.0	0.03
<i>Polygala paucifolia</i>	0.6	0.0	0.2	0.27
<i>Populus tremuloides</i>	0.6	0.5	0.1	0.40
<i>Prenanthes alba</i>	0.0	0.2	0.0	0.07
<i>Pteridium aquilinum</i>	0.0	0.2	0.2	0.13
<i>Rubus parviflorus</i>	0.5	0.7	0.6	0.60
<i>Rubus pubescens</i>	0.0	0.3	0.1	0.13
<i>Sorbus decora</i>	0.1	0.0	0.0	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.3	0.9	0.1	0.43
<i>Taxus canadensis</i>	0.1	0.1	0.0	0.07
<i>Trientalis borealis</i>	0.0	0.2	0.0	0.07
<i>Trifolium pratense</i>	0.1	0.0	0.0	0.03
<i>Viola</i> sp.	0.0	0.4	0.2	0.20

Plot: 4003

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.0	0.1	0.03
Actaea rubra	0.3	0.0	0.0	0.10
Actaea sp.	0.0	0.0	0.1	0.03
Amelanchier sp. Group 2	0.0	0.2	0.1	0.10
Anaphalis margaritacea	0.1	0.1	0.0	0.07
Apocynum androsaemifolium	0.0	0.1	0.0	0.03
Aralia nudicaulis	1.0	0.8	0.6	0.80
Arctostaphylos uva-ursi	0.0	0.1	0.0	0.03
Betula papyrifera	0.1	0.0	0.1	0.07
Bromus ciliatus	0.0	0.0	0.1	0.03
Calamagrostis canadensis	0.0	0.0	0.1	0.03
Carex arctata	0.0	0.0	0.1	0.03
Chamerion angustifolium ssp. angustifolium	0.1	0.0	0.0	0.03
Chimaphila umbellata	0.1	0.1	0.2	0.13
Clinopodium vulgare	0.0	0.1	0.0	0.03
Clintonia borealis	0.3	0.0	0.4	0.23
Cornus canadensis	0.6	0.0	0.0	0.20
Deschampsia flexuosa	0.1	0.2	0.0	0.10
Diervilla lonicera	0.1	0.3	0.1	0.17
Eurybia macrophylla	0.8	0.9	0.6	0.77
Fragaria virginiana	0.6	0.5	0.3	0.47
Galium triflorum	0.4	0.3	0.4	0.37
Goodyera oblongifolia	0.1	0.0	0.1	0.07
Gymnocarpium dryopteris	0.3	0.1	0.0	0.13
Hieracium sp.	0.0	0.5	0.2	0.23
Linnaea borealis	0.6	0.4	0.7	0.57
Lonicera canadensis	0.1	0.0	0.0	0.03
Lonicera dioica	0.0	0.1	0.0	0.03
Lonicera hirsuta	0.0	0.1	0.0	0.03
Lycopodium clavatum	0.0	0.0	0.2	0.07
Maianthemum canadense	0.3	0.6	0.5	0.47
Melampyrum lineare	0.5	1.0	0.5	0.67
Milium effusum	0.4	0.5	0.2	0.37
Mitella nuda	0.9	0.4	0.7	0.67
Osmorhiza claytonii	0.2	0.0	0.0	0.07
Picea glauca	0.0	0.0	0.1	0.03
Poa pratensis	0.0	0.2	0.1	0.10
Poaceae fam.	0.1	0.6	0.1	0.27
Populus tremuloides	0.3	0.2	0.3	0.27
Pteridium aquilinum	0.5	0.1	0.4	0.33
Pyrola sp.	0.1	0.1	0.2	0.13
Ranunculus acris	0.0	0.4	0.0	0.13
Ribes triste	0.1	0.0	0.1	0.07
Rosa acicularis	0.0	0.3	0.0	0.10
Rubus idaeus ssp. strigosus	0.0	0.1	0.0	0.03
Rubus parviflorus	0.2	0.2	0.8	0.40
Rubus pubescens	0.6	0.2	0.2	0.33
Sorbus decora	0.0	0.1	0.2	0.10
Streptopus lanceolatus var. roseus	0.3	0.1	0.0	0.13
Symphotrichum sp.	0.0	0.2	0.0	0.07
Taraxacum officinale	0.0	0.2	0.0	0.07
Thuja occidentalis	0.1	0.1	0.1	0.10
Trientalis borealis	0.0	0.1	0.0	0.03
Trifolium aureum	0.0	0.2	0.0	0.07
Viola sp.	0.2	0.0	0.1	0.10

Plot: 4004

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.4	0.4	0.2	0.33
Aralia nudicaulis	0.4	0.3	0.8	0.50
Athyrium filix-femina	0.2	0.3	0.2	0.23
Betula alleghaniensis	0.2	0.2	0.2	0.20
Calamagrostis canadensis	0.0	0.0	0.2	0.07
Carex arctata	0.0	0.2	0.0	0.07
Carex brunnescens	0.0	0.0	0.1	0.03
Carex sp.	0.5	0.5	0.8	0.60
Carex stipata	0.0	0.0	0.1	0.03
Chamerion angustifolium ssp. angustifolium	0.0	0.0	0.2	0.07
Circaea alpina	0.3	0.0	0.0	0.10
Clintonia borealis	0.8	0.5	0.8	0.70
Coptis trifolia	0.3	0.5	0.6	0.47
Cornus canadensis	0.8	0.8	0.8	0.80
Cornus sericea	0.0	0.0	0.1	0.03
Diervilla lonicera	0.1	0.0	0.0	0.03
Doellingeria umbellata	0.1	0.0	0.2	0.10
Dryopteris intermedia	1.0	0.8	0.6	0.80
Epilobium sp.	0.0	0.0	0.1	0.03
Equisetum pratense	0.3	0.0	0.5	0.27
Equisetum sylvaticum	0.3	0.8	0.0	0.37
Eurybia macrophylla	0.0	0.0	0.3	0.10
Galium triflorum	0.5	0.2	0.3	0.33
Gymnocarpium dryopteris	0.4	0.7	0.4	0.50
Hieracium sp.	0.0	0.0	0.1	0.03
Impatiens capensis	0.1	0.3	0.2	0.20
Lactuca biennis	0.0	0.0	0.2	0.07
Lactuca sp.	0.1	0.0	0.0	0.03
Linnaea borealis	0.6	0.6	0.6	0.60
Lonicera canadensis	0.1	0.2	0.0	0.10
Lycopodium annotinum	0.6	0.4	0.2	0.40
Lycopodium clavatum	0.0	0.0	0.1	0.03
Lycopodium dendroideum	0.0	0.0	0.2	0.07
Maianthemum canadense	0.6	0.5	0.5	0.53
Milium effusum	0.0	0.0	0.3	0.10
Mitella nuda	0.6	0.6	0.3	0.50
Moneses uniflora	0.0	0.1	0.1	0.07
Oxalis montana	0.6	1.0	0.4	0.67
Phegopteris connectilis	0.6	0.2	0.6	0.47
Picea glauca	0.0	0.1	0.1	0.07
Poaceae fam.	0.3	0.4	0.4	0.37
Ranunculus acris	0.0	0.0	0.4	0.13
Ranunculus pensylvanicus	0.0	0.0	0.1	0.03
Ribes triste	0.1	0.1	0.0	0.07
Rubus pubescens	0.8	0.7	0.8	0.77
Scirpus sp.	0.0	0.0	0.1	0.03
Sorbus decora	0.0	0.2	0.5	0.23
Streptopus amplexifolius	0.0	0.1	0.0	0.03
Symphotrichum ciliolatum	0.0	0.0	0.1	0.03
Symphotrichum puniceum var. puniceum	0.1	0.0	0.2	0.10
Symplocarpus foetidus	0.1	0.1	0.0	0.07
Thelypteris palustris	0.0	0.0	0.1	0.03
Thuja occidentalis	0.5	0.4	0.0	0.30
Trientalis borealis	0.7	0.6	0.7	0.67
Viola sp.	0.1	0.0	0.0	0.03

Plot: 4005

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.0	0.0	0.03
Acer rubrum	0.2	0.5	0.0	0.23
Acer saccharum	0.6	0.5	0.5	0.53
Acer spicatum	0.1	0.0	0.1	0.07
Amelanchier sp. Group 3	0.0	0.0	0.1	0.03
Aralia nudicaulis	0.1	0.0	0.0	0.03
Carex communis	0.0	0.3	0.0	0.10
Carex sp.	0.1	0.0	0.0	0.03
Clintonia borealis	0.1	0.1	0.0	0.07
Corylus cornuta	0.0	0.1	0.1	0.07
Dryopteris carthusiana	0.0	0.1	0.0	0.03
Maianthemum canadense	0.2	0.4	0.0	0.20
Poaceae fam.	0.0	0.1	0.1	0.07
Prenanthes alba	0.1	0.0	0.0	0.03
Sorbus decora	0.1	0.1	0.1	0.10
Streptopus lanceolatus var. roseus	0.0	0.1	0.0	0.03
Taxus canadensis	0.0	0.0	0.1	0.03
Thuja occidentalis	0.1	0.1	0.1	0.10

Plot: 4006

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer rubrum	0.0	0.1	0.0	0.03
Achillea millefolium	0.0	0.0	0.2	0.07
Actaea sp.	0.0	0.2	0.0	0.07
Alnus viridis ssp. crispa	0.1	0.0	0.0	0.03
Amelanchier sp. Group 2	0.0	0.0	0.1	0.03
Anaphalis margaritacea	0.0	0.0	0.1	0.03
Apocynum androsaemifolium	0.0	0.0	0.3	0.10
Aralia nudicaulis	0.3	0.9	0.3	0.50
Arctostaphylos uva-ursi	0.4	0.0	0.4	0.27
Asteraceae fam.	0.0	0.0	0.2	0.07
Campanula rotundifolia	0.0	0.0	0.1	0.03
Carex pedunculata	0.1	0.7	0.0	0.27
Carex sp.	0.1	0.1	0.0	0.07
Chimaphila umbellata	0.3	0.0	0.1	0.13
Clinopodium vulgare	0.0	0.0	0.1	0.03
Clintonia borealis	0.2	0.7	0.3	0.40
Cornus canadensis	0.5	0.9	0.0	0.47
Danthonia spicata	0.3	0.0	0.3	0.20
Deschampsia flexuosa	0.7	0.1	0.6	0.47
Dichanthelium xanthophyllum	0.1	0.0	0.0	0.03
Diervilla lonicera	0.4	0.3	0.2	0.30
Doellingeria umbellata	0.0	0.1	0.0	0.03
Dryopteris carthusiana	0.0	0.2	0.0	0.07
Equisetum palustre	0.1	0.0	0.0	0.03
Equisetum sp.	0.0	0.1	0.0	0.03
Equisetum sylvaticum	0.0	0.1	0.0	0.03
Eurybia macrophylla	0.7	0.7	1.0	0.80
Fragaria sp.	0.0	0.0	0.1	0.03
Fragaria virginiana	0.4	0.0	0.6	0.33
Galium triflorum	0.0	0.2	0.0	0.07
Geocaulon lividum	0.0	0.0	0.2	0.07
Goodyera oblongifolia	0.0	0.5	0.0	0.17
Goodyera tessellata	0.0	0.1	0.0	0.03
Gymnocarpium dryopteris	0.0	0.1	0.0	0.03
Hieracium canadense	0.0	0.0	0.1	0.03
Hieracium sp.	0.0	0.0	0.2	0.07
Huperzia lucidula	0.0	0.1	0.0	0.03
Lilium philadelphicum	0.0	0.0	0.1	0.03
Linnaea borealis	0.5	0.8	0.4	0.57
Lonicera canadensis	0.0	0.4	0.0	0.13
Lonicera hirsuta	0.0	0.1	0.3	0.13
Lycopodium clavatum	0.0	0.0	0.4	0.13
Maianthemum canadense	0.7	0.8	0.8	0.77
Melampyrum lineare	0.3	0.0	0.5	0.27
Mitella nuda	0.1	1.0	0.0	0.37
Oryzopsis asperifolia	0.2	0.0	0.8	0.33
Petasites frigidus var. palmatus	0.1	0.3	0.0	0.13
Picea glauca	0.2	0.0	0.0	0.07
Poaceae fam.	0.1	0.1	0.0	0.07
Polygala paucifolia	0.3	0.2	0.2	0.23
Populus tremuloides	0.0	0.6	0.2	0.27
Pteridium aquilinum	0.2	0.0	0.4	0.20
Pyrola asarifolia	0.0	0.1	0.0	0.03
Pyrola sp.	0.0	0.2	0.0	0.07
Ribes triste	0.0	0.4	0.1	0.17
Rosa acicularis	0.0	0.1	0.1	0.07
Rubus parviflorus	0.0	0.5	0.1	0.20

Plot: 4006

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Rubus pubescens	0.2	0.8	0.0	0.33
Solidago sp.	0.2	0.0	0.0	0.07
Streptopus lanceolatus var. roseus	0.0	0.3	0.0	0.10
Symplocarpus foetidus	0.1	0.0	0.0	0.03
Thuja occidentalis	0.1	0.0	0.0	0.03
Trientalis borealis	0.1	0.1	0.0	0.07
Vaccinium angustifolium	0.4	0.0	0.3	0.23
Vaccinium myrtilloides	0.1	0.0	0.0	0.03
Viola sp.	0.3	0.2	0.0	0.17

Plot: 4008

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.3	0.1	0.13
Acer rubrum	0.4	0.0	0.3	0.23
Acer saccharum	0.9	0.7	0.3	0.63
Acer spicatum	0.1	0.1	0.1	0.10
Aralia nudicaulis	0.5	0.6	0.5	0.53
Betula alleghaniensis	0.0	0.1	0.0	0.03
Carex communis	0.1	0.0	0.1	0.07
Carex pedunculata	0.2	0.0	0.0	0.07
Chimaphila umbellata	0.0	0.0	0.1	0.03
Clintonia borealis	0.6	0.3	0.5	0.47
Cornus canadensis	0.0	0.0	0.6	0.20
Dryopteris carthusiana	0.0	0.0	0.2	0.07
Galium triflorum	0.0	0.0	0.1	0.03
Gymnocarpium dryopteris	0.0	0.0	0.1	0.03
Huperzia lucidula	0.2	0.0	0.0	0.07
Linnaea borealis	0.0	0.0	0.3	0.10
Lycopodium annotinum	0.0	0.0	0.5	0.17
Lycopodium clavatum	0.0	0.2	0.0	0.07
Lycopodium dendroideum	0.8	0.2	0.0	0.33
Maianthemum canadense	0.1	0.3	0.3	0.23
Mitella nuda	0.0	0.0	0.3	0.10
Picea glauca	0.1	0.0	0.0	0.03
Pyrola sp.	0.0	0.0	0.4	0.13
Rubus parviflorus	0.1	0.0	0.4	0.17
Rubus pubescens	0.0	0.0	0.1	0.03
Sorbus decora	0.1	0.1	0.2	0.13
Streptopus lanceolatus var. roseus	0.1	0.2	0.1	0.13
Taxus canadensis	0.1	0.1	0.5	0.23
Thuja occidentalis	0.1	0.3	0.5	0.30
Viola sp.	0.2	0.3	0.2	0.23

Plot: 4009

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer saccharum	0.1	0.1	0.0	0.07
Acer spicatum	0.0	0.1	0.0	0.03
Actaea rubra	0.7	0.6	0.0	0.43
Alnus incana ssp. rugosa	0.0	0.0	0.5	0.17
Amelanchier sp. Group 3	0.0	0.1	0.0	0.03
Aquilegia canadensis	0.0	0.1	0.0	0.03
Aralia nudicaulis	1.0	0.8	0.0	0.60
Calamagrostis canadensis	0.0	0.0	0.8	0.27
Carex brunnescens	0.0	0.0	0.1	0.03
Carex communis	0.0	0.1	0.0	0.03
Carex crinita	0.0	0.0	0.1	0.03
Carex deweyana	0.0	0.2	0.0	0.07
Carex gracillima	0.0	0.1	0.0	0.03
Carex intumescens	0.0	0.0	0.2	0.07
Carex sp.	0.1	0.1	0.2	0.13
Carex stricta	0.0	0.0	0.1	0.03
Chamerion angustifolium ssp. angustifolium	0.0	0.0	0.5	0.17
Clintonia borealis	0.4	0.1	0.1	0.20
Cornus canadensis	0.0	0.0	0.2	0.07
Cornus sericea	0.0	0.2	0.0	0.07
Corylus cornuta	0.6	0.5	0.0	0.37
Dryopteris carthusiana	0.4	0.6	0.2	0.40
Equisetum palustre	0.0	0.0	0.9	0.30
Equisetum sylvaticum	0.0	0.0	0.2	0.07
Eurybia macrophylla	0.4	0.8	0.0	0.40
Fragaria virginiana	0.1	0.1	0.0	0.07
Fraxinus nigra	0.1	0.0	0.0	0.03
Galium triflorum	0.6	0.4	0.0	0.33
Gymnocarpium dryopteris	0.4	0.0	0.0	0.13
Heracleum maximum	0.9	0.8	0.0	0.57
Impatiens capensis	0.1	0.0	0.4	0.17
Lonicera canadensis	0.1	0.0	0.0	0.03
Lonicera dioica	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.0	0.0	0.1	0.03
Lycopodium dendroideum	0.0	0.0	0.1	0.03
Lysimachia thyrsoiflora	0.0	0.0	0.3	0.10
Maianthemum canadense	0.7	0.4	0.4	0.50
Maianthemum racemosum	0.0	0.1	0.0	0.03
Milium effusum	0.8	0.8	0.0	0.53
Mitella nuda	0.8	0.3	0.0	0.37
Osmorhiza claytonii	0.0	0.3	0.0	0.10
Poaceae fam.	0.1	0.1	0.0	0.07
Prenanthes alba	0.9	0.3	0.0	0.40
Prunus virginiana	0.0	0.3	0.0	0.10
Pyrola sp.	0.1	0.0	0.0	0.03
Ranunculus acris	0.2	0.0	0.0	0.07
Ribes triste	0.2	0.2	0.0	0.13
Rubus idaeus ssp. strigosus	0.0	0.3	0.6	0.30
Rubus parviflorus	0.9	0.1	0.0	0.33
Rubus pubescens	0.0	0.1	0.5	0.20
Sambucus racemosa	0.0	0.1	0.0	0.03
Sanicula marilandica	0.1	0.1	0.0	0.07
Streptopus lanceolatus var. roseus	0.3	0.3	0.0	0.20
Taraxacum officinale	0.5	0.1	0.0	0.20
Trientalis borealis	0.8	0.1	0.5	0.47
Trillium cernuum	0.8	0.6	0.0	0.47

Plot: 4009

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	

Plot: 4010

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer spicatum	0.5	0.0	0.0	0.17
Actaea rubra	0.0	0.1	0.0	0.03
Actaea sp.	0.1	0.2	0.0	0.10
Amelanchier sp. Group 2	0.0	0.2	0.0	0.07
Apocynum androsaemifolium	0.0	0.2	0.0	0.07
Aralia nudicaulis	0.0	0.2	0.3	0.17
Calamagrostis canadensis	0.0	0.0	0.2	0.07
Carex arctata	0.0	0.0	0.1	0.03
Carex deweyana	0.0	0.0	0.1	0.03
Carex pedunculata	0.0	0.0	0.1	0.03
Carex sp.	0.0	0.1	0.1	0.07
Chamerion angustifolium ssp. angustifolium	0.0	0.1	0.1	0.07
Chimaphila umbellata	0.0	0.3	0.0	0.10
Clintonia borealis	0.1	0.1	0.2	0.13
Cornus canadensis	0.3	0.0	0.2	0.17
Cornus sericea	0.0	0.0	0.2	0.07
Corylus cornuta	0.6	0.3	0.0	0.30
Diervilla lonicera	0.1	0.0	0.6	0.23
Elymus trachycaulus	0.0	0.0	0.4	0.13
Eurybia macrophylla	0.4	1.0	0.7	0.70
Fragaria virginiana	0.0	0.1	0.5	0.20
Gaultheria procumbens	0.0	0.1	0.0	0.03
Gymnocarpium dryopteris	0.2	0.0	0.2	0.13
Hepatica nobilis var. obtusa	0.0	0.3	0.0	0.10
Hieracium piloselloides	0.0	0.0	0.4	0.13
Hieracium sp.	0.0	0.1	0.0	0.03
Linnaea borealis	0.0	0.5	0.1	0.20
Lonicera canadensis	0.1	0.0	0.0	0.03
Lonicera dioica	0.1	0.0	0.1	0.07
Lonicera hirsuta	0.0	0.0	0.1	0.03
Maianthemum canadense	0.1	0.6	0.4	0.37
Melampyrum lineare	0.0	0.9	0.2	0.37
Monotropa hypopithys	0.1	0.0	0.0	0.03
Oryzopsis asperifolia	0.0	0.1	0.1	0.07
Poa pratensis	0.0	0.5	0.4	0.30
Poa sp.	0.0	0.0	0.1	0.03
Polygala paucifolia	0.0	0.5	0.1	0.20
Populus tremuloides	0.3	0.2	0.5	0.33
Pteridium aquilinum	0.5	1.0	0.7	0.73
Pyrola elliptica	0.0	0.0	0.1	0.03
Ribes triste	0.0	0.1	0.0	0.03
Rosa acicularis	0.0	0.2	0.0	0.07
Rubus parviflorus	0.9	0.2	0.1	0.40
Rubus pubescens	0.2	0.0	0.2	0.13
Sorbus decora	0.1	0.2	0.1	0.13
Streptopus lanceolatus var. roseus	0.0	0.1	0.1	0.07
Taxus canadensis	0.1	0.0	0.0	0.03
Trientalis borealis	0.1	0.0	0.3	0.13
Trifolium pratense	0.0	0.1	0.0	0.03
Verbascum thapsus	0.0	0.0	0.1	0.03

Plot: 4011

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.8	0.4	0.40
Alnus incana ssp. rugosa	0.1	0.0	0.0	0.03
Amelanchier sp. Group 2	0.0	0.1	0.0	0.03
Amelanchier sp. Group 3	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.8	0.0	0.8	0.53
Athyrium filix-femina	0.4	0.0	0.0	0.13
Betula papyrifera	0.0	0.2	0.1	0.10
Calamagrostis canadensis	0.9	0.1	0.1	0.37
Carex arctata	0.2	0.1	0.0	0.10
Carex pedunculata	0.5	0.1	0.0	0.20
Carex sp.	0.4	0.5	0.0	0.30
Cinna latifolia	0.0	0.0	0.1	0.03
Clintonia borealis	0.9	0.9	0.9	0.90
Coptis trifolia	0.7	0.0	0.1	0.27
Corallorhiza sp.	0.1	0.0	0.0	0.03
Cornus canadensis	1.0	1.0	1.0	1.00
Deschampsia flexuosa	0.0	0.0	0.2	0.07
Diervilla lonicera	0.4	0.0	0.4	0.27
Dryopteris carthusiana	0.0	0.0	0.1	0.03
Dryopteris intermedia	0.0	0.1	0.0	0.03
Equisetum palustre	0.7	0.3	0.0	0.33
Eurybia macrophylla	1.0	0.8	1.0	0.93
Galium triflorum	0.0	0.0	0.2	0.07
Gaultheria hispidula	0.1	0.0	0.0	0.03
Geocaulon lividum	0.7	0.2	0.1	0.33
Gymnocarpium dryopteris	0.1	0.1	0.3	0.17
Ledum groenlandicum	0.8	0.0	0.0	0.27
Linnaea borealis	0.3	0.8	0.7	0.60
Lycopodium annotinum	0.8	0.8	0.8	0.80
Lycopodium clavatum	0.0	0.2	0.0	0.07
Lycopodium dendroideum	0.0	0.4	0.3	0.23
Maianthemum canadense	0.7	0.7	0.7	0.70
Melampyrum lineare	0.3	0.4	0.6	0.43
Milium effusum	0.0	0.0	0.6	0.20
Mitella nuda	0.0	0.0	0.5	0.17
Petasites frigidus var. palmatus	0.3	0.1	0.0	0.13
Picea mariana	0.0	0.1	0.1	0.07
Populus tremuloides	0.0	0.1	0.1	0.07
Pyrola sp.	0.1	0.1	0.3	0.17
Rosa acicularis	0.2	0.0	0.0	0.07
Rubus parviflorus	0.2	0.0	0.4	0.20
Rubus pubescens	0.3	0.1	0.1	0.17
Sorbus decora	0.2	0.3	0.3	0.27
Streptopus lanceolatus var. roseus	0.7	0.0	0.2	0.30
Taxus canadensis	0.0	0.0	0.1	0.03
Trientalis borealis	0.6	0.3	0.6	0.50
Vaccinium myrtilloides	0.1	0.0	0.0	0.03
Viburnum edule	0.1	0.0	0.0	0.03

Plot: 4012

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.3	0.0	0.13
Acer saccharum	0.9	1.0	0.9	0.93
Acer spicatum	0.0	0.6	0.5	0.37
Aralia nudicaulis	0.5	0.7	0.7	0.63
Carex arctata	0.0	0.3	0.0	0.10
Carex pedunculata	0.2	0.3	0.0	0.17
Carex sp.	0.0	0.1	0.0	0.03
Clintonia borealis	0.2	0.3	0.2	0.23
Cornus canadensis	0.1	0.1	0.0	0.07
Diervilla lonicera	0.1	0.0	0.0	0.03
Dryopteris intermedia	0.0	0.4	0.2	0.20
Dryopteris sp.	0.0	0.2	0.0	0.07
Gymnocarpium dryopteris	0.0	0.2	0.0	0.07
Huperzia lucidula	0.0	0.0	0.2	0.07
Lonicera canadensis	0.2	0.0	0.0	0.07
Lycopodium annotinum	0.1	0.1	0.3	0.17
Maianthemum canadense	0.3	0.2	0.4	0.30
Milium effusum	0.1	0.0	0.0	0.03
Mitella nuda	0.3	0.1	0.0	0.13
Orthilia secunda	0.1	0.0	0.0	0.03
Picea glauca	0.0	0.0	0.1	0.03
Polygala paucifolia	0.0	0.1	0.0	0.03
Rubus parviflorus	0.4	0.0	0.0	0.13
Rubus pubescens	0.3	0.5	0.0	0.27
Sorbus decora	0.2	0.0	0.1	0.10
Streptopus lanceolatus var. roseus	0.6	0.2	0.5	0.43
Taxus canadensis	0.2	0.0	0.0	0.07

Plot: 4014

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.7	0.5	0.0	0.40
Acer saccharum	0.1	0.2	1.0	0.43
Acer spicatum	0.0	0.1	0.2	0.10
Alnus incana ssp. rugosa	0.0	0.1	0.0	0.03
Aralia nudicaulis	0.0	0.2	0.6	0.27
Betula papyrifera	0.1	0.0	0.1	0.07
Carex arctata	0.0	0.0	0.1	0.03
Carex brunnescens	0.2	0.1	0.0	0.10
Carex leptalea	0.0	0.4	0.1	0.17
Carex pedunculata	0.1	0.6	0.2	0.30
Carex sp.	0.8	0.8	0.1	0.57
Circaea alpina	0.0	0.0	0.1	0.03
Clintonia borealis	0.5	0.5	0.5	0.50
Coptis trifolia	0.6	0.3	0.3	0.40
Cornus canadensis	1.0	0.5	0.5	0.67
Cornus sericea	0.3	0.1	0.0	0.13
Dryopteris sp.	0.0	0.1	0.0	0.03
Equisetum scirpoides	0.4	0.4	0.4	0.40
Equisetum sylvaticum	0.0	0.0	0.2	0.07
Eurybia macrophylla	0.0	0.1	0.0	0.03
Fraxinus nigra	0.3	0.2	0.0	0.17
Galium triflorum	0.3	0.2	0.0	0.17
Gaultheria hispidula	0.4	0.2	0.1	0.23
Goodyera oblongifolia	0.0	0.1	0.1	0.07
Gymnocarpium dryopteris	0.0	0.0	0.5	0.17
Linnaea borealis	0.2	0.6	0.1	0.30
Listera convallarioides	0.3	0.0	0.1	0.13
Lonicera canadensis	0.0	0.5	0.3	0.27
Lycopodium annotinum	0.0	0.5	0.1	0.20
Lycopus uniflorus	0.1	0.0	0.0	0.03
Maianthemum canadense	0.5	0.7	0.4	0.53
Mitella nuda	0.8	0.6	0.4	0.60
Oryzopsis asperifolia	0.0	0.0	0.1	0.03
Osmunda cinnamomea	0.0	0.0	0.1	0.03
Phegopteris connectilis	0.0	0.0	0.1	0.03
Pyrola sp.	0.0	0.1	0.2	0.10
Rubus parviflorus	0.0	0.0	0.3	0.10
Rubus pubescens	1.0	0.7	0.5	0.73
Sorbus decora	0.2	0.3	0.3	0.27
Streptopus lanceolatus var. roseus	0.0	0.0	0.3	0.10
Symplocarpus foetidus	0.2	0.1	0.0	0.10
Taxus canadensis	0.2	0.2	0.1	0.17
Thuja occidentalis	0.7	0.5	0.2	0.47
Trientalis borealis	0.5	0.4	0.4	0.43
Viola sp.	0.4	0.0	0.0	0.13

Plot: 4016

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Alnus viridis</i> ssp. <i>crispa</i>	0.1	0.0	0.0	0.03
<i>Amelanchier</i> sp. Group 2	0.4	0.0	0.2	0.20
<i>Anaphalis margaritacea</i>	0.0	0.0	0.1	0.03
<i>Antennaria howellii</i> ssp. <i>neodioica</i>	0.0	0.0	0.1	0.03
<i>Apocynum androsaemifolium</i>	0.5	0.0	0.2	0.23
<i>Aralia nudicaulis</i>	0.8	0.9	0.2	0.63
<i>Arctostaphylos uva-ursi</i>	0.1	0.1	0.3	0.17
<i>Asteraceae</i> fam.	0.0	0.0	0.1	0.03
<i>Betula papyrifera</i>	0.0	0.1	0.0	0.03
<i>Campanula rotundifolia</i>	0.0	0.0	0.1	0.03
<i>Chamerion angustifolium</i> ssp. <i>angustifolium</i>	0.2	0.3	0.0	0.17
<i>Chimaphila umbellata</i>	0.6	0.1	0.4	0.37
<i>Clintonia borealis</i>	0.7	0.2	0.2	0.37
<i>Cornus canadensis</i>	0.6	0.7	0.2	0.50
<i>Cornus sericea</i>	0.1	0.3	0.1	0.17
<i>Corylus cornuta</i>	0.6	0.1	0.2	0.30
<i>Danthonia spicata</i>	0.0	0.0	0.6	0.20
<i>Deschampsia flexuosa</i>	0.1	0.0	0.7	0.27
<i>Diervilla lonicera</i>	0.8	0.6	0.8	0.73
<i>Eurybia macrophylla</i>	1.0	0.9	0.7	0.87
<i>Fragaria</i> sp.	0.0	0.0	0.1	0.03
<i>Fragaria virginiana</i>	0.0	0.4	0.1	0.17
<i>Hieracium piloselloides</i>	0.0	0.0	0.1	0.03
<i>Hieracium umbellatum</i>	0.0	0.1	0.1	0.07
<i>Juniperus communis</i> var. <i>depressa</i>	0.0	0.0	0.1	0.03
<i>Lilium philadelphicum</i>	0.1	0.0	0.1	0.07
<i>Linnaea borealis</i>	0.4	0.6	0.0	0.33
<i>Lonicera canadensis</i>	0.1	0.0	0.0	0.03
<i>Lonicera dioica</i>	0.1	0.0	0.1	0.07
<i>Lycopodium complanatum</i>	0.2	0.0	0.0	0.07
<i>Maianthemum canadense</i>	0.9	1.0	0.8	0.90
<i>Melampyrum lineare</i>	0.4	0.5	0.5	0.47
<i>Mitella nuda</i>	0.0	0.1	0.0	0.03
<i>Oryzopsis asperifolia</i>	0.5	0.9	0.8	0.73
<i>Picea glauca</i>	0.0	0.0	0.1	0.03
<i>Poaceae</i> fam.	0.0	0.2	0.1	0.10
<i>Polygala paucifolia</i>	0.7	0.4	0.3	0.47
<i>Populus tremuloides</i>	0.4	0.5	0.1	0.33
<i>Prunus pensylvanica</i>	0.0	0.0	0.1	0.03
<i>Pteridium aquilinum</i>	0.8	0.3	0.4	0.50
<i>Pyrola</i> sp.	0.1	0.0	0.0	0.03
<i>Rhus hirta</i>	0.0	0.0	0.1	0.03
<i>Rosa acicularis</i>	0.1	0.4	0.2	0.23
<i>Rosa</i> sp.	0.1	0.0	0.0	0.03
<i>Rubus parviflorus</i>	0.4	0.2	0.0	0.20
<i>Rubus pubescens</i>	0.0	0.2	0.0	0.07
<i>Sanicula marilandica</i>	0.1	0.0	0.0	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.1	0.0	0.0	0.03
unknown living Herbaceous species	0.1	0.0	0.0	0.03
<i>Vaccinium angustifolium</i>	0.0	0.0	0.2	0.07
<i>Vaccinium myrtilloides</i>	0.1	0.0	0.0	0.03
<i>Viburnum edule</i>	0.1	0.0	0.0	0.03

Plot: 4017

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.5	0.4	0.4	0.43
<i>Acer spicatum</i>	0.0	0.0	0.1	0.03
<i>Actaea</i> sp.	0.2	0.1	0.0	0.10
<i>Amelanchier</i> sp. Group 2	0.0	0.0	0.1	0.03
<i>Aralia nudicaulis</i>	0.4	0.7	0.9	0.67
<i>Betula papyrifera</i>	0.0	0.1	0.0	0.03
<i>Chimaphila umbellata</i>	0.5	0.5	0.4	0.47
<i>Clintonia borealis</i>	0.8	0.8	0.9	0.83
<i>Coptis trifolia</i>	0.1	0.0	0.0	0.03
<i>Cornus canadensis</i>	0.6	0.7	0.9	0.73
<i>Diervilla lonicera</i>	0.2	0.1	0.3	0.20
<i>Eurybia macrophylla</i>	0.8	0.8	0.8	0.80
<i>Gaultheria hispidula</i>	0.1	0.1	0.0	0.07
<i>Goodyera oblongifolia</i>	0.2	0.1	0.0	0.10
<i>Gymnocarpium dryopteris</i>	0.1	0.2	0.1	0.13
<i>Linnaea borealis</i>	0.5	0.6	0.5	0.53
<i>Lonicera canadensis</i>	0.1	0.5	0.1	0.23
<i>Lonicera hirsuta</i>	0.1	0.0	0.1	0.07
<i>Lycopodium annotinum</i>	0.3	0.5	0.6	0.47
<i>Lycopodium clavatum</i>	0.4	0.3	0.0	0.23
<i>Maianthemum canadense</i>	0.7	0.8	0.9	0.80
<i>Melampyrum lineare</i>	0.2	0.2	0.2	0.20
<i>Mitella nuda</i>	0.4	0.5	0.5	0.47
<i>Orthilia secunda</i>	0.1	0.0	0.0	0.03
<i>Picea glauca</i>	0.0	0.1	0.0	0.03
<i>Picea mariana</i>	0.0	0.1	0.0	0.03
<i>Poaceae</i> fam.	0.0	0.1	0.0	0.03
<i>Polygala paucifolia</i>	0.7	0.4	0.2	0.43
<i>Populus tremuloides</i>	0.1	0.1	0.0	0.07
<i>Pyrola</i> sp.	0.1	0.1	0.2	0.13
<i>Rosa acicularis</i>	0.0	0.0	0.1	0.03
<i>Rubus parviflorus</i>	0.5	0.3	0.3	0.37
<i>Rubus pubescens</i>	0.2	0.1	0.0	0.10
<i>Sorbus decora</i>	0.0	0.1	0.0	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.1	0.4	0.5	0.33
<i>Taxus canadensis</i>	0.1	0.1	0.0	0.07
<i>Thuja occidentalis</i>	0.3	0.1	0.1	0.17
<i>Vaccinium angustifolium</i>	0.0	0.0	0.1	0.03
<i>Viburnum edule</i>	0.2	0.1	0.2	0.17
<i>Viola</i> sp.	0.1	0.0	0.4	0.17

Plot: 4018

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.3	0.3	0.28
<i>Acer spicatum</i>	0.1	0.0	0.0	0.03
<i>Anaphalis margaritacea</i>	0.0	0.0	0.2	0.06
<i>Aralia nudicaulis</i>	0.6	0.8	0.8	0.74
<i>Chimaphila umbellata</i>	0.2	0.4	0.2	0.26
<i>Clintonia borealis</i>	0.8	1.0	0.2	0.66
<i>Cornus canadensis</i>	0.2	0.8	0.3	0.44
<i>Corylus cornuta</i>	0.1	0.0	0.0	0.03
<i>Deschampsia flexuosa</i>	0.0	0.0	0.3	0.11
<i>Diervilla lonicera</i>	0.0	1.0	0.3	0.44
<i>Equisetum palustre</i>	0.2	0.0	0.0	0.07
<i>Eurybia macrophylla</i>	0.1	0.6	0.7	0.46
<i>Geocaulon lividum</i>	0.0	0.0	0.3	0.11
<i>Goodyera oblongifolia</i>	0.3	0.4	0.0	0.23
<i>Gymnocarpium dryopteris</i>	0.4	0.2	0.0	0.20
<i>Linnaea borealis</i>	0.0	0.5	0.7	0.39
<i>Lonicera canadensis</i>	0.3	0.1	0.0	0.13
<i>Lycopodium annotinum</i>	0.4	0.7	0.0	0.37
<i>Lycopodium clavatum</i>	0.0	0.5	0.0	0.17
<i>Lycopodium complanatum</i>	0.0	0.0	0.2	0.06
<i>Maianthemum canadense</i>	0.7	1.0	0.8	0.84
<i>Melampyrum lineare</i>	0.0	0.5	0.5	0.33
<i>Mitella nuda</i>	0.3	0.1	0.0	0.13
<i>Orthilia secunda</i>	0.0	0.1	0.0	0.03
<i>Oryzopsis asperifolia</i>	0.0	0.0	0.3	0.11
<i>Poaceae</i> fam.	0.0	0.2	0.0	0.07
<i>Polygala paucifolia</i>	0.1	0.1	0.0	0.07
<i>Populus tremuloides</i>	0.0	0.2	0.0	0.07
<i>Rubus parviflorus</i>	0.2	0.2	0.0	0.13
<i>Sorbus decora</i>	0.1	0.2	0.2	0.16
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.8	1.0	0.0	0.60
<i>Symplocarpus foetidus</i>	0.1	0.0	0.0	0.03
<i>Taxus canadensis</i>	0.0	0.0	0.2	0.06
<i>Thuja occidentalis</i>	0.1	0.2	0.0	0.10
<i>Trientalis borealis</i>	0.0	0.1	0.0	0.03
<i>Viburnum edule</i>	0.1	0.3	0.0	0.13
<i>Viola</i> sp.	0.5	0.4	0.0	0.30

Plot: 4019

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.2	0.0	0.13
<i>Acer rubrum</i>	0.0	0.1	0.0	0.03
<i>Acer saccharum</i>	0.0	0.4	0.0	0.13
<i>Acer spicatum</i>	0.1	0.3	0.0	0.13
<i>Apocynum androsaemifolium</i>	0.0	0.0	0.2	0.07
<i>Aralia nudicaulis</i>	0.9	0.8	0.0	0.57
<i>Arctostaphylos uva-ursi</i>	0.0	0.0	0.1	0.03
<i>Betula papyrifera</i>	0.0	0.0	0.1	0.03
<i>Carex</i> sp.	0.1	0.1	0.0	0.07
<i>Clinopodium vulgare</i>	0.0	0.0	0.1	0.03
<i>Clintonia borealis</i>	0.0	0.4	0.0	0.13
<i>Cornus canadensis</i>	0.7	0.6	0.0	0.43
<i>Cornus sericea</i>	0.1	0.0	0.0	0.03
<i>Corydalis sempervirens</i>	0.0	0.0	0.1	0.03
<i>Corylus cornuta</i>	0.1	0.2	0.0	0.10
<i>Danthonia spicata</i>	0.0	0.0	0.4	0.13
<i>Diervilla lonicera</i>	0.1	0.4	0.0	0.17
<i>Elymus repens</i>	0.0	0.0	0.2	0.07
<i>Eurybia macrophylla</i>	0.6	0.6	0.3	0.50
<i>Fragaria virginiana</i>	0.0	0.1	0.2	0.10
<i>Galium triflorum</i>	0.1	0.0	0.0	0.03
<i>Geranium bicknellii</i>	0.0	0.0	0.1	0.03
<i>Gymnocarpium dryopteris</i>	0.3	0.0	0.0	0.10
<i>Hieracium</i> sp.	0.0	0.0	0.3	0.10
<i>Juniperus communis</i> var. <i>depressa</i>	0.0	0.0	0.4	0.13
<i>Lactuca biennis</i>	0.0	0.0	0.1	0.03
<i>Linnaea borealis</i>	0.3	0.2	0.0	0.17
<i>Lonicera canadensis</i>	0.1	0.0	0.0	0.03
<i>Lonicera hirsuta</i>	0.5	0.0	0.0	0.17
<i>Lycopodium</i> sp.	0.1	0.0	0.0	0.03
<i>Maianthemum canadense</i>	0.2	0.5	0.2	0.30
<i>Melampyrum lineare</i>	0.0	0.2	0.1	0.10
<i>Mitella nuda</i>	0.5	0.1	0.0	0.20
<i>Oryzopsis asperifolia</i>	0.0	0.1	0.3	0.13
<i>Picea glauca</i>	0.2	0.0	0.0	0.07
<i>Picea mariana</i>	0.1	0.0	0.0	0.03
<i>Poa compressa</i>	0.0	0.0	0.2	0.07
<i>Poaceae</i> fam.	0.0	0.1	0.3	0.13
<i>Polygala paucifolia</i>	0.1	0.2	0.0	0.10
<i>Polypodium virginianum</i>	0.0	0.0	0.1	0.03
<i>Populus tremuloides</i>	0.4	0.4	0.0	0.27
<i>Pteridium aquilinum</i>	0.0	0.3	0.0	0.10
<i>Pyrola</i> sp.	0.2	0.3	0.0	0.17
<i>Ribes triste</i>	0.4	0.0	0.0	0.13
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	0.0	0.0	0.1	0.03
<i>Rubus parviflorus</i>	1.0	0.3	0.1	0.47
<i>Rubus pubescens</i>	0.2	0.1	0.0	0.10
<i>Selaginella rupestris</i>	0.0	0.0	0.1	0.03
<i>Sorbus decora</i>	0.2	0.0	0.0	0.07
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.4	0.0	0.13
<i>Thuja occidentalis</i>	0.2	0.1	0.0	0.10
<i>Trientalis borealis</i>	0.2	0.5	0.0	0.23
<i>Woodsia ilvensis</i>	0.0	0.0	0.1	0.03

Plot: 4020

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.3	0.0	0.0	0.10
Actaea rubra	0.5	0.2	0.0	0.23
Aralia nudicaulis	0.5	0.2	0.2	0.30
Athyrium filix-femina	0.0	0.2	0.0	0.07
Betula papyrifera	0.1	0.0	0.0	0.03
Calamagrostis canadensis	0.0	0.0	0.2	0.07
Carex sp.	0.0	0.2	0.0	0.07
Chamerion angustifolium ssp. angustifolium	0.0	0.0	0.3	0.10
Clintonia borealis	0.7	0.8	0.8	0.77
Coptis trifolia	0.1	0.5	0.0	0.20
Cornus canadensis	0.1	0.2	0.2	0.17
Cornus sericea	0.1	0.5	0.1	0.23
Diervilla lonicera	0.1	0.0	0.3	0.13
Dryopteris carthusiana	0.1	0.3	0.4	0.27
Eurybia macrophylla	0.1	0.0	0.0	0.03
Galium triflorum	0.1	0.2	0.0	0.10
Gymnocarpium dryopteris	0.0	0.2	0.0	0.07
Huperzia lucidula	0.0	0.0	0.1	0.03
Linnaea borealis	0.1	0.1	0.0	0.07
Luzula parviflora	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.2	0.6	0.4	0.40
Lycopodium dendroideum	0.2	0.3	0.4	0.30
Maianthemum canadense	0.4	0.3	0.3	0.33
Melampyrum lineare	0.0	0.1	0.0	0.03
Milium effusum	0.0	0.0	0.1	0.03
Mitella nuda	0.4	0.8	0.4	0.53
Oplopanax horridus	0.3	0.6	0.1	0.33
Poa sp.	0.0	0.1	0.0	0.03
Poaceae fam.	0.1	0.1	0.0	0.07
Prunus pensylvanica	0.0	0.1	0.5	0.20
Pyrola sp.	0.2	0.1	0.1	0.13
Ribes glandulosum	0.1	0.1	0.2	0.13
Ribes sp.	0.1	0.0	0.0	0.03
Ribes triste	0.0	0.2	0.0	0.07
Rubus idaeus ssp. strigosus	0.6	0.2	0.4	0.40
Sorbus decora	0.2	0.1	0.1	0.13
Streptopus lanceolatus var. roseus	0.2	0.2	0.1	0.17
Taxus canadensis	0.4	0.7	0.7	0.60
Trientalis borealis	0.0	0.1	0.0	0.03
Viburnum edule	0.3	0.3	0.4	0.33
Viola sp.	0.0	0.5	0.0	0.17

Plot: 4021

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer saccharum	1.0	0.6	0.2	0.60
Acer spicatum	0.2	0.2	0.1	0.17
Actaea rubra	0.0	0.2	0.2	0.13
Amelanchier sp. Group 2	0.2	0.0	0.1	0.10
Amelanchier sp. Group 3	0.1	0.0	0.0	0.03
Apocynum androsaemifolium	0.2	0.0	0.0	0.07
Aralia nudicaulis	0.9	1.0	0.9	0.93
Botrychium virginianum	0.0	0.1	0.0	0.03
Chimaphila umbellata	0.3	0.1	0.0	0.13
Clintonia borealis	0.8	0.0	0.0	0.27
Cornus alternifolia	0.2	0.2	0.0	0.13
Corylus cornuta	0.7	0.4	0.0	0.37
Diervilla lonicera	0.0	0.0	0.1	0.03
Eurybia macrophylla	0.5	0.3	0.2	0.33
Hepatica nobilis var. obtusa	0.5	0.0	0.0	0.17
Maianthemum canadense	0.9	0.7	0.8	0.80
Melampyrum lineare	0.5	0.2	0.1	0.27
Oryzopsis asperifolia	0.9	0.3	0.0	0.40
Poa sp.	0.0	0.0	0.1	0.03
Poaceae fam.	0.1	0.0	0.0	0.03
Polygala paucifolia	1.0	0.0	0.0	0.33
Populus tremuloides	0.4	0.3	0.2	0.30
Pteridium aquilinum	0.1	0.0	0.1	0.07
Pyrola asarifolia	0.0	0.1	0.0	0.03
Pyrola sp.	0.1	0.0	0.0	0.03
Rubus parviflorus	0.9	1.0	0.9	0.93
Streptopus lanceolatus var. roseus	0.3	0.3	0.1	0.23
Thuja occidentalis	0.0	0.1	0.0	0.03
Viola sp.	0.1	0.3	0.0	0.13

Plot: 4022

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.3	0.2	0.2	0.23
Aralia nudicaulis	0.8	0.8	0.9	0.83
Athyrium filix-femina	0.1	0.0	0.0	0.03
Betula papyrifera	0.1	0.1	0.0	0.07
Botrychium virginianum	0.1	0.1	0.0	0.07
Carex disperma	0.4	0.1	0.0	0.17
Carex gracillima	0.1	0.3	0.0	0.13
Carex leptalea	0.0	0.2	0.0	0.07
Carex sp.	0.2	0.4	0.1	0.23
Chimaphila umbellata	0.0	0.0	0.2	0.07
Clintonia borealis	0.4	0.6	0.8	0.60
Corallorhiza striata	0.0	0.1	0.0	0.03
Cornus canadensis	0.7	0.4	0.5	0.53
Cornus sericea	0.1	0.3	0.0	0.13
Diervilla lonicera	0.0	0.0	0.7	0.23
Doellingeria umbellata	0.0	0.2	0.0	0.07
Dryopteris carthusiana	0.0	0.1	0.0	0.03
Equisetum arvense	0.4	0.0	0.0	0.13
Equisetum palustre	0.6	0.7	0.0	0.43
Equisetum scirpoides	0.2	0.4	0.0	0.20
Equisetum sylvaticum	0.3	0.3	0.0	0.20
Eupatorium maculatum	0.0	0.1	0.0	0.03
Eurybia macrophylla	0.3	0.5	1.0	0.60
Festuca occidentalis	0.0	0.0	0.1	0.03
Fragaria virginiana	0.0	0.3	0.0	0.10
Galium triflorum	0.8	0.4	0.2	0.47
Gymnocarpium dryopteris	0.5	0.5	0.2	0.40
Impatiens capensis	0.3	0.3	0.0	0.20
Linnaea borealis	0.2	0.1	0.0	0.10
Lonicera canadensis	0.1	0.0	0.1	0.07
Lonicera hirsuta	0.0	0.0	0.1	0.03
Lycopodium annotinum	0.1	0.0	0.1	0.07
Lycopodium clavatum	0.0	0.1	0.3	0.13
Lycopodium dendroideum	0.0	0.0	0.2	0.07
Lycopus uniflorus	0.0	0.1	0.0	0.03
Maianthemum canadense	0.5	0.2	0.7	0.47
Melampyrum lineare	0.0	0.0	0.2	0.07
Milium effusum	0.1	0.0	0.1	0.07
Mitella nuda	0.9	0.7	0.2	0.60
Petasites frigidus var. palmatus	0.3	0.4	0.0	0.23
Picea glauca	0.1	0.0	0.0	0.03
Platanthera sp.	0.2	0.1	0.0	0.10
Poaceae fam.	0.0	0.3	0.0	0.10
Polygala paucifolia	0.0	0.1	0.4	0.17
Populus tremuloides	0.2	0.1	0.2	0.17
Prenanthes alba	0.2	0.3	0.0	0.17
Ribes hudsonianum	0.0	0.1	0.0	0.03
Ribes triste	0.1	0.2	0.0	0.10
Rubus idaeus ssp. strigosus	0.1	0.1	0.0	0.07
Rubus parviflorus	0.0	0.0	0.8	0.27
Rubus pubescens	0.9	0.9	0.2	0.67
Sorbus decora	0.3	0.1	0.1	0.17
Streptopus lanceolatus var. roseus	0.2	0.5	0.4	0.37
Symphotrichum puniceum var. puniceum	0.0	0.1	0.0	0.03
Symplocarpus foetidus	0.1	0.1	0.0	0.07
Taraxacum officinale	0.0	0.1	0.0	0.03

Plot: 4022

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Taxus canadensis	0.0	0.0	0.1	0.03
Thelypteris palustris	0.1	0.0	0.0	0.03
Thuja occidentalis	0.3	0.0	0.0	0.10
Trientalis borealis	0.4	0.2	0.2	0.27
Vaccinium myrtilloides	0.0	0.0	0.1	0.03
Viburnum edule	0.0	0.0	0.1	0.03
Viola sp.	0.2	0.0	0.2	0.13

Plot: 4023

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.1	0.0	0.0	0.03
<i>Acer spicatum</i>	0.2	0.1	0.3	0.20
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.1	0.0	0.0	0.03
<i>Amelanchier</i> sp. Group 2	0.1	0.0	0.2	0.10
<i>Aralia nudicaulis</i>	0.3	0.8	0.8	0.63
<i>Athyrium filix-femina</i>	0.2	0.0	0.0	0.07
<i>Carex arctata</i>	0.1	0.0	0.0	0.03
<i>Carex brunnescens</i>	0.2	0.0	0.0	0.07
<i>Carex canescens</i>	0.1	0.0	0.0	0.03
<i>Carex intumescens</i>	0.1	0.0	0.0	0.03
<i>Carex retrorsa</i>	0.1	0.0	0.0	0.03
<i>Carex</i> sp.	0.2	0.0	0.2	0.13
<i>Clintonia borealis</i>	0.6	0.8	1.0	0.80
<i>Coptis trifolia</i>	0.5	0.0	0.1	0.20
<i>Cornus canadensis</i>	0.4	0.3	0.8	0.50
<i>Corylus cornuta</i>	0.6	0.9	0.8	0.77
<i>Diervilla lonicera</i>	0.4	0.5	0.8	0.57
<i>Eurybia macrophylla</i>	0.6	0.8	1.0	0.80
<i>Fraxinus nigra</i>	0.3	0.0	0.0	0.10
<i>Galium trifidum</i>	0.2	0.0	0.0	0.07
<i>Galium triflorum</i>	0.1	0.1	0.2	0.13
<i>Gymnocarpium dryopteris</i>	0.1	0.0	0.0	0.03
<i>Impatiens capensis</i>	0.2	0.0	0.0	0.07
<i>Lactuca</i> sp.	0.1	0.0	0.0	0.03
<i>Linnaea borealis</i>	0.1	0.0	0.0	0.03
<i>Lonicera canadensis</i>	0.0	0.0	0.6	0.20
<i>Lycopodium annotinum</i>	0.5	0.9	0.5	0.63
<i>Lycopodium clavatum</i>	0.3	0.0	0.6	0.30
<i>Lycopodium dendroideum</i>	0.1	0.7	0.1	0.30
<i>Lycopus uniflorus</i>	0.1	0.0	0.0	0.03
<i>Lysimachia thyrsiflora</i>	0.1	0.0	0.0	0.03
<i>Maianthemum canadense</i>	0.7	0.9	0.7	0.77
<i>Maianthemum trifolium</i>	0.1	0.0	0.0	0.03
<i>Melampyrum lineare</i>	0.1	0.1	0.2	0.13
<i>Milium effusum</i>	0.0	0.0	0.1	0.03
<i>Mitella nuda</i>	0.2	0.0	0.1	0.10
<i>Poaceae</i> fam.	0.4	0.2	0.3	0.30
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	0.0	0.0	0.1	0.03
<i>Rubus parviflorus</i>	0.0	0.2	0.7	0.30
<i>Rubus pubescens</i>	0.5	0.1	0.1	0.23
<i>Scutellaria galericulata</i>	0.2	0.0	0.0	0.07
<i>Sorbus decora</i>	0.5	0.1	0.1	0.23
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.4	0.9	0.43
<i>Symplocarpus foetidus</i>	0.3	0.0	0.0	0.10
<i>Taxus canadensis</i>	0.1	0.0	0.0	0.03
<i>Thalictrum dasycarpum</i>	0.1	0.0	0.0	0.03
<i>Trientalis borealis</i>	0.1	0.0	0.1	0.07
<i>Trillium cernuum</i>	0.1	0.0	0.0	0.03
<i>Viola</i> sp.	0.2	0.4	0.0	0.20

Plot: 4024

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.0	0.2	0.13
<i>Acer spicatum</i>	0.4	0.8	0.5	0.57
<i>Actaea rubra</i>	0.1	0.0	0.1	0.07
<i>Actaea</i> sp.	0.3	0.0	0.2	0.17
<i>Aralia nudicaulis</i>	1.0	0.9	1.0	0.97
<i>Carex arctata</i>	0.2	0.1	0.0	0.10
<i>Carex brunnescens</i>	0.0	0.1	0.0	0.03
<i>Carex pedunculata</i>	0.0	0.2	0.7	0.30
<i>Carex</i> sp.	0.2	0.1	0.1	0.13
<i>Cinna latifolia</i>	0.2	0.0	0.0	0.07
<i>Clintonia borealis</i>	0.7	0.4	0.4	0.50
<i>Cornus canadensis</i>	0.4	0.0	0.2	0.20
<i>Corylus cornuta</i>	0.0	0.0	0.4	0.13
<i>Diervilla lonicera</i>	0.0	0.0	0.4	0.13
<i>Dryopteris carthusiana</i>	0.2	0.3	0.5	0.33
<i>Elymus trachycaulus</i>	0.0	0.0	0.1	0.03
<i>Eurybia macrophylla</i>	0.1	0.3	0.5	0.30
<i>Galium triflorum</i>	0.3	0.5	0.4	0.40
<i>Heracleum maximum</i>	0.1	0.8	0.1	0.33
<i>Huperzia lucidula</i>	0.0	0.2	0.0	0.07
<i>Lactuca</i> sp.	0.0	0.1	0.0	0.03
<i>Linnaea borealis</i>	0.0	0.0	0.1	0.03
<i>Lonicera canadensis</i>	0.0	0.1	0.2	0.10
<i>Lycopodium clavatum</i>	0.4	0.0	0.0	0.13
<i>Lycopodium dendroideum</i>	0.0	0.0	0.1	0.03
<i>Maianthemum canadense</i>	1.0	0.6	0.8	0.80
<i>Melampyrum lineare</i>	0.1	0.0	0.0	0.03
<i>Milium effusum</i>	0.1	0.1	0.2	0.13
<i>Mitella nuda</i>	0.4	0.6	0.8	0.60
<i>Osmorhiza claytonii</i>	0.3	1.0	0.4	0.57
<i>Poa</i> sp.	0.1	0.0	0.0	0.03
<i>Poaceae</i> fam.	0.1	0.5	0.6	0.40
<i>Populus tremuloides</i>	0.8	0.1	0.3	0.40
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	0.2	0.3	0.2	0.23
<i>Rubus parviflorus</i>	0.8	0.3	0.4	0.50
<i>Sorbus decora</i>	0.1	0.2	0.2	0.17
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.8	0.3	0.8	0.63
<i>Taraxacum officinale</i>	0.0	0.4	0.0	0.13
<i>Taxus canadensis</i>	0.2	0.0	0.3	0.17
<i>Trientalis borealis</i>	0.0	0.1	0.0	0.03
<i>Trillium cernuum</i>	0.0	0.1	0.0	0.03
<i>Viola</i> sp.	0.2	0.5	0.1	0.27

Plot: 4025

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.1	0.1	0.1	0.10
<i>Acer saccharum</i>	0.2	0.0	0.1	0.10
<i>Acer spicatum</i>	0.1	0.0	0.0	0.03
<i>Aralia nudicaulis</i>	0.0	0.3	0.6	0.30
<i>Athyrium filix-femina</i>	0.0	0.0	0.3	0.10
<i>Betula alleghaniensis</i>	0.1	0.1	0.0	0.07
<i>Carex arcata</i>	0.0	0.0	0.1	0.03
<i>Carex pedunculata</i>	0.0	0.0	0.6	0.20
<i>Carex sp.</i>	0.2	0.1	0.3	0.20
<i>Carex trisperma</i>	0.0	0.0	0.1	0.03
<i>Cinna latifolia</i>	0.0	0.0	0.1	0.03
<i>Clintonia borealis</i>	0.7	1.0	0.9	0.87
<i>Coptis trifolia</i>	0.3	0.3	0.3	0.30
<i>Cornus canadensis</i>	0.6	1.0	0.7	0.77
<i>Dryopteris carthusiana</i>	0.0	0.0	0.1	0.03
<i>Dryopteris cristata</i>	0.1	0.0	0.0	0.03
<i>Dryopteris intermedia</i>	0.6	0.5	0.7	0.60
<i>Dryopteris sp.</i>	0.0	0.0	0.1	0.03
<i>Equisetum sylvaticum</i>	0.0	0.3	0.5	0.27
<i>Eurybia macrophylla</i>	0.0	0.3	0.3	0.20
<i>Goodyera tessellata</i>	0.0	0.0	0.2	0.07
<i>Gymnocarpium dryopteris</i>	0.1	0.0	0.1	0.07
<i>Huperzia lucidula</i>	0.7	0.2	0.6	0.50
<i>Linnaea borealis</i>	0.2	0.1	0.2	0.17
<i>Lonicera canadensis</i>	0.0	0.1	0.1	0.07
<i>Lycopodium annotinum</i>	0.7	1.0	0.6	0.77
<i>Lycopodium clavatum</i>	0.1	0.0	0.0	0.03
<i>Lycopodium dendroideum</i>	0.5	0.8	0.0	0.43
<i>Maianthemum canadense</i>	0.3	0.7	0.7	0.57
<i>Melampyrum lineare</i>	0.1	0.0	0.0	0.03
<i>Mitella nuda</i>	0.0	0.0	0.8	0.27
<i>Oxalis montana</i>	0.8	0.5	0.3	0.53
<i>Petasites frigidus</i> var. <i>palmatus</i>	0.0	0.0	0.3	0.10
<i>Phegopteris connectilis</i>	0.1	0.2	0.5	0.27
<i>Poa sp.</i>	0.1	0.0	0.0	0.03
Poaceae fam.	0.0	0.1	0.1	0.07
<i>Polygala paucifolia</i>	0.0	0.1	0.0	0.03
<i>Prunus pensylvanica</i>	0.0	0.1	0.0	0.03
<i>Rubus pubescens</i>	0.1	0.1	0.8	0.33
<i>Sorbus decora</i>	0.0	0.3	0.1	0.13
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.3	0.4	0.6	0.43
<i>Taxus canadensis</i>	0.0	0.1	0.0	0.03
<i>Thuja occidentalis</i>	0.5	0.1	0.5	0.37
<i>Trientalis borealis</i>	0.4	0.5	0.3	0.40
<i>Viola sp.</i>	0.1	0.0	0.3	0.13

Plot: 4026

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.1	0.0	0.0	0.03
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.0	0.0	0.2	0.07
<i>Amelanchier</i> sp. Group 2	0.1	0.0	0.0	0.03
<i>Aralia nudicaulis</i>	0.0	0.8	0.1	0.30
<i>Athyrium filix-femina</i>	0.0	0.0	0.6	0.20
<i>Botrychium virginianum</i>	0.0	0.1	0.0	0.03
<i>Carex leptalea</i>	0.0	0.0	0.2	0.07
<i>Carex pedunculata</i>	0.0	0.4	0.0	0.13
<i>Carex pellita</i>	0.0	0.0	0.5	0.17
<i>Carex sp.</i>	0.2	0.0	0.1	0.10
<i>Chimaphila umbellata</i>	0.4	0.4	0.0	0.27
<i>Clintonia borealis</i>	0.1	0.5	0.2	0.27
<i>Coptis trifolia</i>	0.0	0.0	0.2	0.07
<i>Cornus canadensis</i>	0.4	0.8	0.4	0.53
<i>Corylus cornuta</i>	0.1	0.1	0.0	0.07
<i>Danthonia spicata</i>	0.1	0.0	0.0	0.03
<i>Diervilla lonicera</i>	0.9	0.5	0.0	0.47
<i>Doellingeria umbellata</i>	0.0	0.0	0.2	0.07
<i>Dryopteris carthusiana</i>	0.0	0.0	0.4	0.13
<i>Dryopteris cristata</i>	0.0	0.0	0.1	0.03
<i>Eurybia macrophylla</i>	0.9	0.9	0.0	0.60
<i>Fragaria virginiana</i>	0.1	0.0	0.0	0.03
<i>Fraxinus nigra</i>	0.0	0.0	0.2	0.07
<i>Galium triflorum</i>	0.0	0.0	0.8	0.27
<i>Gymnocarpium dryopteris</i>	0.0	0.0	0.3	0.10
<i>Hieracium</i> sp.	0.1	0.0	0.0	0.03
<i>Huperzia lucidula</i>	0.0	0.0	0.1	0.03
<i>Impatiens capensis</i>	0.0	0.0	0.1	0.03
<i>Lonicera canadensis</i>	0.1	0.1	0.2	0.13
<i>Lonicera dioica</i>	0.0	0.0	0.1	0.03
<i>Lycopodium complanatum</i>	0.1	0.0	0.0	0.03
<i>Lycopus uniflorus</i>	0.0	0.0	0.3	0.10
<i>Maianthemum canadense</i>	0.8	0.5	0.3	0.53
<i>Melampyrum lineare</i>	0.1	0.3	0.0	0.13
<i>Mitella nuda</i>	0.0	0.0	0.9	0.30
<i>Oryzopsis asperifolia</i>	0.0	0.2	0.0	0.07
<i>Picea glauca</i>	0.0	0.0	0.2	0.07
<i>Platanthera hyperborea</i>	0.0	0.0	0.3	0.10
Poaceae fam.	0.4	0.0	0.0	0.13
<i>Polygala paucifolia</i>	0.5	0.3	0.0	0.27
<i>Populus tremuloides</i>	0.3	0.6	0.1	0.33
<i>Pteridium aquilinum</i>	0.0	0.8	0.0	0.27
<i>Pyrola elliptica</i>	0.1	0.3	0.1	0.17
<i>Rhamnus alnifolia</i>	0.0	0.0	0.1	0.03
<i>Ribes hirtellum</i>	0.0	0.0	0.3	0.10
<i>Ribes triste</i>	0.0	0.0	0.1	0.03
<i>Rosa acicularis</i>	0.2	0.1	0.0	0.10
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	0.0	0.0	0.1	0.03
<i>Rubus parviflorus</i>	0.0	0.8	0.0	0.27
<i>Rubus pubescens</i>	0.0	0.0	1.0	0.33
<i>Salix humilis</i>	0.1	0.0	0.0	0.03
<i>Sorbus decora</i>	0.0	0.1	0.0	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.0	0.2	0.07
<i>Symplocarpus foetidus</i>	0.0	0.0	1.0	0.33
<i>Thuja occidentalis</i>	0.1	0.0	0.0	0.03
<i>Trientalis borealis</i>	0.0	0.0	0.1	0.03
<i>Vaccinium myrtilloides</i>	0.0	0.1	0.0	0.03

Plot: 4026

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Viola sp.	0.1	0.3	0.6	0.33

Plot: 4027

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.6	0.2	0.5	0.43
Alnus incana ssp. rugosa	0.4	0.5	0.1	0.33
Aralia nudicaulis	0.0	0.1	0.6	0.23
Athyrium filix-femina	0.0	0.0	0.1	0.03
Betula papyrifera	0.3	0.0	0.0	0.10
Bidens cernua	0.1	0.0	0.0	0.03
Calamagrostis canadensis	0.0	0.4	0.4	0.27
Caltha palustris	0.0	0.1	0.0	0.03
Carex brunnescens	0.1	0.3	0.0	0.13
Carex leptalea	0.0	0.5	0.1	0.20
Carex sp.	0.5	0.7	0.5	0.57
Carex stricta	0.5	0.6	0.1	0.40
Carex tenuiflora	0.0	0.6	0.0	0.20
Clintonia borealis	1.0	0.8	0.7	0.83
Coptis trifolia	0.7	0.9	0.9	0.83
Cornus canadensis	0.7	0.7	0.7	0.70
Cornus sericea	0.3	0.1	0.0	0.13
Drosera rotundifolia	0.1	0.0	0.0	0.03
Equisetum palustre	0.2	0.3	1.0	0.50
Equisetum scirpoides	0.0	0.1	0.0	0.03
Equisetum variegatum	0.2	0.0	0.0	0.07
Eupatorium maculatum	0.0	0.4	0.0	0.13
Eurybia macrophylla	0.1	0.0	0.6	0.23
Galium triflorum	0.0	0.2	0.5	0.23
Gaultheria hispidula	0.8	0.4	0.1	0.43
Geocaulon lividum	0.3	0.0	0.3	0.20
Gymnocarpium dryopteris	0.0	0.4	0.5	0.30
Ledum groenlandicum	0.7	0.4	0.1	0.40
Linnaea borealis	0.2	0.2	0.3	0.23
Lycopodium annotinum	0.0	0.0	0.5	0.17
Lycopodium sp.	0.0	0.1	0.5	0.20
Maianthemum canadense	0.2	0.3	0.5	0.33
Melampyrum lineare	0.0	0.0	0.1	0.03
Menyanthes trifoliata	0.0	0.2	0.0	0.07
Mitella nuda	0.7	0.7	0.1	0.50
Phegopteris connectilis	0.0	0.0	0.2	0.07
Picea glauca	0.0	0.0	0.1	0.03
Picea mariana	0.2	0.2	0.2	0.20
Poaceae fam.	0.3	0.1	0.4	0.27
Polygala paucifolia	0.7	0.0	0.0	0.23
Rhamnus alnifolia	0.1	0.0	0.0	0.03
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Rubus pubescens	0.7	1.0	0.7	0.80
Solidago uliginosa	0.2	0.1	0.0	0.10
Sorbus decora	0.0	0.0	0.2	0.07
Streptopus lanceolatus var. roseus	0.0	0.0	0.5	0.17
Symphyotrichum puniceum var. puniceum	0.0	0.2	0.0	0.07
Symplocarpus foetidus	0.6	1.0	0.6	0.73
Taxus canadensis	0.1	0.0	0.0	0.03
Thuja occidentalis	0.6	0.1	0.0	0.23
Trientalis borealis	0.9	0.7	0.4	0.67
unknown living Herbaceous species	0.1	0.0	0.0	0.03
Vaccinium angustifolium	0.1	0.0	0.0	0.03
Veronica americana	0.1	0.5	0.1	0.23
Viburnum edule	0.0	0.1	0.0	0.03

Plot: 4027

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Viola sp.	0.1	0.4	0.4	0.30

Plot: 4028

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.2	0.1	0.3	0.20
Acer spicatum	0.3	0.2	0.2	0.23
Actaea sp.	0.2	0.4	0.0	0.20
Amelanchier sp. Group 2	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.8	1.0	0.6	0.80
Betula papyrifera	0.0	0.0	0.1	0.03
Calamagrostis canadensis	0.0	0.0	0.4	0.13
Carex arctata	0.0	0.2	0.0	0.07
Carex leptalea	0.0	0.0	0.1	0.03
Carex pedunculata	0.3	0.1	0.0	0.13
Carex sp.	0.6	0.0	0.1	0.23
Carex trisperma	0.0	0.0	0.1	0.03
Chimaphila umbellata	0.0	0.0	0.1	0.03
Clintonia borealis	0.7	0.6	0.7	0.67
Coptis trifolia	0.0	0.0	0.5	0.17
Cornus canadensis	0.9	0.4	0.7	0.67
Cornus sericea	0.0	0.0	0.2	0.07
Diervilla lonicera	0.0	0.3	0.5	0.27
Dryopteris carthusiana	0.1	0.0	0.0	0.03
Elymus trachycaulus	0.0	0.1	0.0	0.03
Equisetum palustre	0.7	0.0	0.1	0.27
Eupatorium maculatum	0.0	0.0	0.2	0.07
Eurybia macrophylla	0.8	0.9	0.7	0.80
Fragaria virginiana	0.0	0.2	0.0	0.07
Fraxinus nigra	0.2	0.1	0.1	0.13
Galium sp.	0.0	0.0	0.1	0.03
Galium triflorum	0.5	0.3	0.1	0.30
Gaultheria hispidula	0.1	0.0	0.0	0.03
Gymnocarpium dryopteris	0.6	0.0	0.1	0.23
Impatiens capensis	0.1	0.0	0.0	0.03
Ledum groenlandicum	0.0	0.0	0.1	0.03
Linnaea borealis	0.4	0.2	0.5	0.37
Lonicera canadensis	0.1	0.0	0.1	0.07
Lonicera hirsuta	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.1	0.0	0.0	0.03
Lycopodium clavatum	0.0	0.5	0.3	0.27
Lycopodium dendroideum	0.1	0.1	0.0	0.07
Lycopus americanus	0.0	0.0	0.1	0.03
Maianthemum canadense	0.4	0.8	0.9	0.70
Melampyrum lineare	0.1	0.5	0.4	0.33
Milium effusum	0.1	0.0	0.0	0.03
Mitella nuda	0.4	0.4	0.5	0.43
Moneses uniflora	0.0	0.2	0.0	0.07
Osmorhiza sp.	0.0	0.1	0.0	0.03
Picea glauca	0.0	0.0	0.1	0.03
Poaceae fam.	0.2	0.0	0.1	0.10
Polygala paucifolia	0.2	0.2	0.5	0.30
Populus tremuloides	0.4	0.6	0.2	0.40
Prenanthes alba	0.0	0.0	0.1	0.03
Prunus virginiana	0.0	0.0	0.1	0.03
Pteridium aquilinum	0.0	0.3	0.2	0.17
Pyrola sp.	0.1	0.2	0.0	0.10
Ranunculaceae fam.	0.1	0.0	0.0	0.03
Ribes triste	0.0	0.1	0.0	0.03
Rosa acicularis	0.0	0.0	0.1	0.03
Rubus idaeus ssp. strigosus	0.1	0.3	0.0	0.13
Rubus parviflorus	0.7	0.7	0.6	0.67

Plot: 4028

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Rubus pubescens	0.7	0.4	0.5	0.53
Sorbus decora	0.1	0.0	0.0	0.03
Streptopus lanceolatus var. roseus	0.5	0.6	0.4	0.50
Symphyotrichum puniceum var. puniceum	0.0	0.0	0.1	0.03
Symplocarpus foetidus	0.1	0.0	0.2	0.10
Taxus canadensis	0.1	0.1	0.0	0.07
Trientalis borealis	0.4	0.4	0.4	0.40
Viola sp.	0.2	0.0	0.1	0.10

Plot: 4029

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Alnus viridis ssp. crispa	0.0	0.0	0.1	0.03
Apocynum androsaemifolium	0.0	0.3	0.0	0.10
Aralia nudicaulis	0.4	0.4	0.0	0.27
Chamerion angustifolium ssp. angustifolium	0.1	0.0	0.0	0.03
Chimaphila umbellata	0.2	0.2	0.0	0.13
Clintonia borealis	0.1	0.0	0.0	0.03
Comandra umbellata	0.1	0.0	0.4	0.17
Cornus canadensis	0.1	0.2	0.3	0.20
Cypripedium sp.	0.0	0.0	0.3	0.10
Danthonia spicata	0.0	0.0	0.2	0.07
Diervilla lonicera	0.7	0.8	0.9	0.80
Eurybia macrophylla	0.9	0.9	1.0	0.93
Fragaria virginiana	0.0	0.2	0.0	0.07
Galium triflorum	0.1	0.0	0.0	0.03
Hepatica nobilis var. obtusa	0.8	0.5	0.5	0.60
Hieracium piloselloides	0.0	0.0	0.2	0.07
Hieracium sp.	0.1	0.2	0.1	0.13
Juniperus communis var. depressa	0.3	0.2	0.0	0.17
Lathyrus ochroleucus	0.3	0.2	0.3	0.27
Linnaea borealis	0.3	0.3	0.0	0.20
Lonicera canadensis	0.1	0.0	0.0	0.03
Lonicera dioica	0.0	0.1	0.1	0.07
Lonicera hirsuta	0.0	0.1	0.0	0.03
Lycopodium annotinum	0.5	0.1	0.0	0.20
Lycopodium clavatum	0.0	0.0	0.3	0.10
Lycopodium complanatum	0.0	0.1	0.0	0.03
Maianthemum canadense	0.8	0.7	0.7	0.73
Melampyrum lineare	0.5	0.3	0.5	0.43
Oryzopsis asperifolia	0.1	0.4	0.8	0.43
Picea glauca	0.1	0.1	0.0	0.07
Picea mariana	0.0	0.0	0.1	0.03
Polygala paucifolia	0.8	0.6	0.6	0.67
Populus tremuloides	0.0	0.1	0.2	0.10
Rosa acicularis	0.4	0.1	0.0	0.17
Rubus parviflorus	0.3	0.0	0.4	0.23
Shepherdia canadensis	0.1	0.2	0.1	0.13
Streptopus lanceolatus var. roseus	0.0	0.0	0.1	0.03
Trifolium pratense	0.1	0.1	0.0	0.07
Viola sp.	0.0	0.1	0.0	0.03

Plot: 4030

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.2	0.0	0.0	0.07
Acer saccharum	0.9	0.4	0.4	0.57
Acer spicatum	0.1	0.5	0.2	0.27
Aralia nudicaulis	0.4	0.1	0.3	0.27
Athyrium filix-femina	0.0	0.2	0.1	0.10
Botrychium virginianum	0.0	0.0	0.1	0.03
Carex arctata	0.1	0.0	0.1	0.07
Carex sp.	0.3	0.2	0.7	0.40
Clintonia borealis	1.0	1.0	1.0	1.00
Coptis trifolia	0.0	0.1	0.2	0.10
Cornus canadensis	0.2	0.2	0.6	0.33
Corylus cornuta	0.0	0.1	0.0	0.03
Dryopteris carthusiana	0.1	0.0	0.0	0.03
Dryopteris intermedia	0.0	0.1	0.0	0.03
Eurybia macrophylla	0.0	0.1	0.1	0.07
Galium triflorum	0.2	0.1	0.1	0.13
Goodyera oblongifolia	0.3	0.2	0.1	0.20
Gymnocarpium dryopteris	0.2	0.0	0.0	0.07
Huperzia lucidula	0.2	0.0	0.0	0.07
Linnaea borealis	0.0	0.1	0.2	0.10
Lonicera canadensis	0.0	0.1	0.0	0.03
Lycopodium annotinum	0.3	0.0	0.0	0.10
Lycopodium clavatum	0.0	0.7	0.6	0.43
Lycopodium dendroideum	0.0	0.0	0.2	0.07
Maianthemum canadense	0.6	0.6	0.9	0.70
Mitella nuda	0.5	0.2	0.7	0.47
Oryzopsis asperifolia	0.0	0.1	0.0	0.03
Osmorhiza claytonii	0.0	0.0	0.2	0.07
Poaceae fam.	0.0	0.1	0.0	0.03
Polygala paucifolia	0.2	0.1	0.0	0.10
Rubus parviflorus	0.3	0.4	0.3	0.33
Rubus pubescens	0.2	0.3	0.3	0.27
Sorbus decora	0.3	0.1	0.1	0.17
Streptopus lanceolatus var. roseus	0.8	0.8	0.7	0.77
Taxus canadensis	0.0	0.1	0.1	0.07
Thuja occidentalis	0.3	0.1	0.2	0.20
Trientalis borealis	0.2	0.2	0.1	0.17
Viola sp.	0.3	0.1	0.3	0.23

Plot: 4031

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.1	0.3	0.17
Acer spicatum	0.2	0.0	0.0	0.07
Amelanchier sp. Group 3	0.0	0.0	0.1	0.03
Aralia nudicaulis	0.6	0.9	0.3	0.60
Betula alleghaniensis	0.1	0.0	0.0	0.03
Betula papyrifera	0.2	0.1	0.1	0.13
Calamagrostis canadensis	0.5	0.1	0.0	0.20
Carex arctata	0.1	0.1	0.0	0.07
Carex brunnescens	0.1	0.0	0.0	0.03
Carex deweyana	0.0	0.0	0.1	0.03
Carex sp.	0.5	0.2	0.2	0.30
Chamerion angustifolium ssp. angustifolium	0.0	0.0	0.1	0.03
Clintonia borealis	0.5	0.6	0.5	0.53
Coptis trifolia	0.2	0.1	0.0	0.10
Cornus canadensis	0.7	0.7	0.4	0.60
Diervilla lonicera	0.2	0.6	0.0	0.27
Dryopteris carthusiana	0.6	0.0	0.1	0.23
Dryopteris intermedia	0.1	0.0	0.0	0.03
Galium triflorum	0.2	0.2	0.1	0.17
Geocaulon lividum	0.0	0.1	0.0	0.03
Gymnocarpium dryopteris	0.2	0.0	0.0	0.07
Hieracium sp.	0.1	0.0	0.0	0.03
Linnaea borealis	0.2	0.4	0.8	0.47
Lonicera canadensis	0.0	0.1	0.1	0.07
Lycopodium annotinum	0.1	0.1	0.0	0.07
Lycopodium clavatum	0.2	0.2	0.0	0.13
Lycopodium dendroideum	0.4	0.3	0.0	0.23
Maianthemum canadense	0.8	0.6	0.7	0.70
Melampyrum lineare	0.4	0.1	0.4	0.30
Osmorhiza berteroi	0.0	0.1	0.1	0.07
Phegopteris connectilis	0.1	0.0	0.0	0.03
Picea glauca	0.2	0.0	0.0	0.07
Poa palustris	0.3	0.1	0.1	0.17
Poaceae fam.	0.2	0.0	0.3	0.17
Populus tremuloides	0.5	0.0	0.0	0.17
Prunus pensylvanica	0.2	0.1	0.0	0.10
Pyrola sp.	0.0	0.1	0.0	0.03
Ribes triste	0.0	0.2	0.1	0.10
Rubus parviflorus	0.0	0.5	0.0	0.17
Rubus pubescens	0.1	0.0	0.0	0.03
Sorbus decora	0.2	0.3	0.5	0.33
Streptopus lanceolatus var. roseus	0.2	0.3	0.1	0.20
Taraxacum officinale	0.3	0.0	0.0	0.10
Thuja occidentalis	0.1	0.0	0.0	0.03
Trientalis borealis	0.5	0.3	0.0	0.27
Viola sp.	0.5	0.2	0.0	0.23

Plot: 4032

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.2	0.2	0.13
Aralia nudicaulis	0.1	0.1	0.2	0.13
Carex sp.	0.0	0.3	0.2	0.17
Clintonia borealis	0.2	0.3	0.2	0.23
Cornus canadensis	0.3	0.0	0.1	0.13
Dryopteris carthusiana	0.0	0.2	0.0	0.07
Linnaea borealis	0.2	0.3	0.2	0.23
Lycopodium annotinum	0.2	0.0	0.1	0.10
Lycopodium dendroideum	0.4	0.3	0.4	0.37
Maianthemum canadense	0.3	0.5	0.6	0.47
Pyrola sp.	0.1	0.0	0.0	0.03
Sorbus decora	0.0	0.1	0.2	0.10
Taxus canadensis	0.3	0.1	0.0	0.13
Trientalis borealis	0.0	0.0	0.1	0.03

Plot: 4033

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.1	0.4	0.23
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.0	0.0	0.3	0.10
<i>Amelanchier</i> sp. Group 2	0.2	0.0	0.0	0.07
<i>Aralia nudicaulis</i>	0.9	0.8	0.2	0.63
<i>Athyrium filix-femina</i>	0.0	0.0	0.2	0.07
<i>Caltha palustris</i>	0.0	0.0	0.2	0.07
<i>Carex leptalea</i>	0.0	0.0	0.2	0.07
<i>Carex</i> sp.	0.0	0.0	0.2	0.07
<i>Chimaphila umbellata</i>	0.4	0.1	0.0	0.17
<i>Clintonia borealis</i>	0.0	0.5	0.5	0.33
<i>Comarum palustre</i>	0.0	0.0	0.1	0.03
<i>Coptis trifolia</i>	0.0	0.0	0.2	0.07
<i>Cornus canadensis</i>	0.0	0.2	0.6	0.27
<i>Cornus sericea</i>	0.0	0.0	0.3	0.10
<i>Corylus cornuta</i>	0.2	0.2	0.0	0.13
<i>Danthonia spicata</i>	0.1	0.0	0.0	0.03
<i>Deschampsia flexuosa</i>	0.1	0.0	0.0	0.03
<i>Diervilla lonicera</i>	0.3	0.2	0.0	0.17
<i>Doellingeria umbellata</i>	0.0	0.0	0.1	0.03
<i>Dryopteris carthusiana</i>	0.0	0.0	0.2	0.07
<i>Equisetum palustre</i>	0.0	0.0	0.4	0.13
<i>Equisetum scirpoides</i>	0.0	0.0	0.2	0.07
<i>Eurybia macrophylla</i>	0.9	1.0	0.1	0.67
<i>Fragaria virginiana</i>	0.2	0.0	0.0	0.07
<i>Fraxinus nigra</i>	0.0	0.0	0.4	0.13
<i>Galium triflorum</i>	0.0	0.0	0.2	0.07
<i>Gaultheria hispidula</i>	0.0	0.0	0.2	0.07
<i>Hepatica nobilis</i> var. <i>obtusata</i>	0.3	0.0	0.0	0.10
<i>Iris versicolor</i>	0.0	0.0	0.1	0.03
<i>Lilium philadelphicum</i>	0.3	0.0	0.0	0.10
<i>Linnaea borealis</i>	0.4	0.1	0.3	0.27
<i>Lonicera canadensis</i>	0.3	0.1	0.1	0.17
<i>Lonicera hirsuta</i>	0.1	0.0	0.0	0.03
<i>Lycopodium annotinum</i>	0.0	0.0	0.1	0.03
<i>Lycopodium clavatum</i>	0.2	0.0	0.0	0.07
<i>Lycopodium dendroideum</i>	0.0	0.0	0.1	0.03
<i>Lycopus uniflorus</i>	0.0	0.0	0.3	0.10
<i>Lysimachia thyrsiflora</i>	0.0	0.0	0.1	0.03
<i>Maianthemum canadense</i>	0.8	0.8	0.5	0.70
<i>Maianthemum trifolium</i>	0.0	0.3	0.0	0.10
<i>Melampyrum lineare</i>	0.5	0.6	0.0	0.37
<i>Menyanthes trifoliata</i>	0.0	0.0	0.2	0.07
<i>Milium effusum</i>	0.0	0.0	0.1	0.03
<i>Mitella nuda</i>	0.0	0.1	0.5	0.20
<i>Oryzopsis asperifolia</i>	0.7	0.7	0.0	0.47
<i>Picea glauca</i>	0.1	0.0	0.0	0.03
<i>Picea mariana</i>	0.0	0.0	0.1	0.03
<i>Platanthera hyperborea</i>	0.0	0.0	0.1	0.03
Poaceae fam.	0.0	0.1	0.5	0.20
<i>Polygala paucifolia</i>	0.4	0.1	0.4	0.30
<i>Populus tremuloides</i>	0.3	0.7	0.0	0.33
<i>Pteridium aquilinum</i>	0.5	0.0	0.0	0.17
<i>Pyrola minor</i>	0.1	0.2	0.1	0.13
<i>Rhamnus alnifolia</i>	0.0	0.0	0.2	0.07
<i>Rosa acicularis</i>	0.1	0.0	0.1	0.07
<i>Rubus parviflorus</i>	0.5	0.7	0.0	0.40
<i>Rubus pubescens</i>	0.0	0.0	0.8	0.27

Plot: 4033

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Sorbus decora</i>	0.0	0.0	0.1	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.3	0.5	0.1	0.30
<i>Symplocarpus foetidus</i>	0.0	0.0	0.8	0.27
<i>Taxus canadensis</i>	0.1	0.0	0.0	0.03
<i>Thuja occidentalis</i>	0.1	0.0	0.2	0.10
<i>Trientalis borealis</i>	0.0	0.0	0.4	0.13
<i>Viburnum edule</i>	0.1	0.1	0.0	0.07
<i>Viola renifolia</i>	0.0	0.0	0.5	0.17
<i>Viola</i> sp.	0.0	0.1	0.0	0.03

Plot: 4034

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.0	0.2	0.07
Acer spicatum	0.2	0.0	0.0	0.07
Aralia nudicaulis	0.0	0.6	0.7	0.43
Athyrium filix-femina	0.1	0.1	0.2	0.13
Botrychium virginianum	0.0	0.1	0.0	0.03
Carex sp.	0.2	0.3	0.3	0.27
Circaea alpina	0.4	0.3	0.0	0.23
Clintonia borealis	0.0	0.1	0.8	0.30
Comandra umbellata	0.0	0.0	0.1	0.03
Coptis trifolia	0.0	0.0	0.2	0.07
Cornus canadensis	0.3	0.4	0.9	0.53
Cornus sericea	0.1	0.1	0.3	0.17
Cypripedium calceolus	0.0	0.0	0.1	0.03
Doellingeria umbellata	0.1	0.0	0.0	0.03
Dryopteris intermedia	0.3	0.2	0.2	0.23
Equisetum pratense	0.4	0.0	0.2	0.20
Equisetum scirpoides	0.0	0.0	0.1	0.03
Eurybia macrophylla	0.4	0.4	0.2	0.33
Galium triflorum	0.4	0.7	0.3	0.47
Gymnocarpium dryopteris	0.6	0.8	0.8	0.73
Heracleum maximum	0.5	0.2	0.0	0.23
Impatiens capensis	0.4	0.1	0.1	0.20
Lactuca sp.	0.2	0.1	0.0	0.10
Linnaea borealis	0.0	0.0	0.3	0.10
Lonicera canadensis	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.0	0.1	0.1	0.07
Maianthemum canadense	0.1	0.0	0.4	0.17
Milium effusum	0.8	0.5	0.1	0.47
Mitella nuda	1.0	0.8	0.9	0.90
Osmorhiza claytonii	0.1	0.0	0.0	0.03
Petasites frigidus var. palmatus	0.0	0.0	0.4	0.13
Phegopteris connectilis	0.1	0.1	0.0	0.07
Picea glauca	0.0	0.1	0.1	0.07
Poa nemoralis	0.0	0.1	0.0	0.03
Prenanthes alba	0.0	0.2	0.1	0.10
Pyrola sp.	0.0	0.2	0.0	0.07
Ranunculus abortivus	0.1	0.0	0.0	0.03
Ribes glandulosum	0.1	0.1	0.0	0.07
Ribes triste	0.5	0.3	0.1	0.30
Rosa acicularis	0.0	0.0	0.4	0.13
Rubus idaeus ssp. strigosus	0.3	0.4	0.0	0.23
Rubus parviflorus	1.0	1.0	0.2	0.73
Rubus pubescens	0.9	0.5	0.8	0.73
Sorbus decora	0.0	0.0	0.3	0.10
Streptopus amplexifolius	0.0	0.0	0.1	0.03
Streptopus lanceolatus var. roseus	0.0	0.2	0.9	0.37
Symplocarpus foetidus	0.1	0.0	0.3	0.13
Thalictrum dasycarpum	0.0	0.0	0.4	0.13
Trientalis borealis	0.0	0.1	0.2	0.10
Viburnum edule	0.0	0.0	0.2	0.07
Viola sp.	0.1	0.4	0.3	0.27

Plot: 4036

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.5	0.4	0.4	0.43
Alnus incana ssp. rugosa	0.3	0.0	0.0	0.10
Aralia nudicaulis	0.4	0.4	0.1	0.30
Athyrium filix-femina	0.4	0.1	0.1	0.20
Betula papyrifera	0.0	0.1	0.0	0.03
Botrychium virginianum	0.0	0.0	0.1	0.03
Carex brunnescens	0.0	0.1	0.2	0.10
Carex disperma	0.0	0.2	0.1	0.10
Carex pedunculata	0.5	0.7	0.6	0.60
Carex sp.	0.7	0.3	0.4	0.47
Carex trisperma	0.0	0.3	0.3	0.20
Clintonia borealis	0.5	0.5	0.7	0.57
Coptis trifolia	0.2	0.3	0.1	0.20
Cornus canadensis	0.4	0.6	0.5	0.50
Cornus sericea	0.1	0.2	0.1	0.13
Cypripedium acaule	0.0	0.1	0.0	0.03
Cypripedium calceolus	0.0	0.2	0.1	0.10
Equisetum scirpoides	0.7	1.0	1.0	0.90
Fraxinus nigra	0.1	0.0	0.0	0.03
Galium triflorum	0.2	0.2	0.2	0.20
Gaultheria hispidula	0.1	0.6	0.5	0.40
Gymnocarpium dryopteris	0.8	0.6	0.7	0.70
Linnaea borealis	0.7	0.7	0.5	0.63
Lonicera canadensis	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.1	0.2	0.3	0.20
Maianthemum canadense	0.4	0.4	0.3	0.37
Mitella nuda	0.8	0.8	0.9	0.83
Orchidaceae fam.	0.1	0.0	0.0	0.03
Osmunda claytoniana	0.0	0.2	0.1	0.10
Phegopteris connectilis	0.1	0.1	0.1	0.10
Picea mariana	0.2	0.1	0.1	0.13
Polygala paucifolia	0.0	0.0	0.1	0.03
Pyrola sp.	0.0	0.1	0.0	0.03
Ribes triste	0.1	0.0	0.0	0.03
Rosa acicularis	0.0	0.0	0.2	0.07
Rubus pubescens	0.7	0.6	0.6	0.63
Streptopus lanceolatus var. roseus	0.3	0.6	0.6	0.50
Symphotrichum puniceum var. puniceum	0.0	0.0	0.1	0.03
Symplocarpus foetidus	0.5	0.7	0.6	0.60
Taxus canadensis	0.1	0.0	0.0	0.03
Thuja occidentalis	0.6	0.4	0.4	0.47
Trientalis borealis	0.3	0.4	0.7	0.47
Trillium sp.	0.0	0.1	0.0	0.03
Vaccinium angustifolium	0.0	0.0	0.1	0.03
Viola sp.	0.2	0.2	0.3	0.23

Plot: 4037

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.1	0.4	0.1	0.20
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.0	0.0	0.1	0.03
<i>Amelanchier</i> sp. Group 2	0.0	0.0	0.1	0.03
<i>Aralia nudicaulis</i>	0.0	0.3	0.9	0.40
<i>Athyrium filix-femina</i>	0.0	0.1	0.1	0.07
<i>Betula papyrifera</i>	0.0	0.0	0.2	0.07
<i>Carex pedunculata</i>	0.1	0.4	0.1	0.20
<i>Carex</i> sp.	0.2	0.3	0.3	0.27
<i>Chimaphila umbellata</i>	0.1	0.5	0.4	0.33
<i>Claytonia caroliniana</i>	0.0	0.1	0.0	0.03
<i>Clintonia borealis</i>	0.0	0.6	0.6	0.40
<i>Coptis trifolia</i>	0.1	0.1	0.1	0.10
<i>Cornus canadensis</i>	0.2	0.9	0.6	0.57
<i>Cornus sericea</i>	0.0	0.1	0.0	0.03
<i>Diervilla lonicera</i>	0.0	0.5	0.4	0.30
<i>Equisetum palustre</i>	0.0	0.5	0.4	0.30
<i>Eurybia macrophylla</i>	0.3	0.9	0.5	0.57
<i>Galium triflorum</i>	0.3	0.6	0.1	0.33
<i>Gaultheria hispidula</i>	0.1	0.0	0.0	0.03
<i>Goodyera oblongifolia</i>	0.0	0.0	0.1	0.03
<i>Gymnocarpium dryopteris</i>	0.4	0.5	0.1	0.33
<i>Linnaea borealis</i>	0.4	0.8	0.4	0.53
<i>Listera convallarioides</i>	0.0	0.1	0.0	0.03
<i>Lonicera canadensis</i>	0.1	0.1	0.0	0.07
<i>Lycopodium annotinum</i>	0.0	0.1	0.3	0.13
<i>Lycopodium complanatum</i>	0.1	0.0	0.0	0.03
<i>Maianthemum canadense</i>	0.5	1.0	0.9	0.80
<i>Melampyrum lineare</i>	0.0	0.2	0.1	0.10
<i>Milium effusum</i>	0.0	0.0	0.2	0.07
<i>Mitella nuda</i>	1.0	0.7	0.3	0.67
<i>Orthilia secunda</i>	0.2	0.3	0.0	0.17
<i>Picea glauca</i>	0.2	0.1	0.0	0.10
<i>Polygala paucifolia</i>	0.0	0.2	0.2	0.13
<i>Populus tremuloides</i>	0.1	0.3	0.4	0.27
<i>Pyrola</i> sp.	0.2	0.4	0.3	0.30
<i>Rubus parviflorus</i>	0.4	0.8	0.8	0.67
<i>Rubus pubescens</i>	0.2	0.7	0.0	0.30
<i>Sorbus decora</i>	0.1	0.0	0.1	0.07
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.2	0.2	0.13
<i>Taxus canadensis</i>	0.0	0.0	0.1	0.03
<i>Thuja occidentalis</i>	0.2	0.3	0.3	0.27
<i>Trientalis borealis</i>	0.7	0.5	0.0	0.40
<i>Viola</i> sp.	0.4	0.2	0.5	0.37

Plot: 4038

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.6	0.3	0.37
<i>Acer spicatum</i>	0.0	0.1	0.0	0.03
<i>Amelanchier</i> sp. Group 2	0.1	0.1	0.0	0.07
<i>Apocynum androsaemifolium</i>	0.1	0.1	0.2	0.13
<i>Aralia nudicaulis</i>	0.9	0.8	0.9	0.87
<i>Athyrium filix-femina</i>	0.0	0.1	0.0	0.03
<i>Carex pedunculata</i>	0.0	0.0	0.1	0.03
<i>Carex</i> sp.	0.1	0.0	0.4	0.17
<i>Chimaphila umbellata</i>	0.0	0.0	0.1	0.03
<i>Clintonia borealis</i>	0.5	1.0	0.6	0.70
<i>Cornus canadensis</i>	0.0	0.2	0.0	0.07
<i>Corylus cornuta</i>	0.1	0.1	0.1	0.10
<i>Deschampsia flexuosa</i>	0.1	0.0	0.1	0.07
<i>Diervilla lonicera</i>	0.0	0.1	0.5	0.20
<i>Eurybia macrophylla</i>	0.8	0.9	0.9	0.87
<i>Fragaria virginiana</i>	0.0	0.0	0.1	0.03
<i>Galium asprellum</i>	0.1	0.0	0.0	0.03
<i>Galium triflorum</i>	0.0	0.1	0.0	0.03
<i>Goodyera oblongifolia</i>	0.0	0.2	0.0	0.07
<i>Gymnocarpium dryopteris</i>	0.0	0.1	0.0	0.03
<i>Linnaea borealis</i>	0.1	0.0	0.1	0.07
<i>Lonicera canadensis</i>	0.0	0.2	0.2	0.13
<i>Lycopodium dendroideum</i>	0.4	0.3	0.0	0.23
<i>Maianthemum canadense</i>	0.9	0.8	0.6	0.77
<i>Melampyrum lineare</i>	0.0	0.0	0.1	0.03
<i>Milium effusum</i>	0.3	0.3	0.1	0.23
<i>Oryzopsis asperifolia</i>	0.0	0.0	0.1	0.03
Poaceae fam.	0.0	0.0	0.1	0.03
<i>Polygala paucifolia</i>	0.3	0.0	0.2	0.17
<i>Populus tremuloides</i>	0.2	0.3	0.1	0.20
<i>Pteridium aquilinum</i>	0.7	1.0	0.8	0.83
<i>Rubus parviflorus</i>	0.9	0.0	0.6	0.50
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.4	0.0	0.3	0.23
<i>Trientalis borealis</i>	0.1	0.2	0.1	0.13

Plot: 4040

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.4	0.3	0.1	0.27
<i>Acer saccharum</i>	0.0	0.1	0.0	0.03
<i>Acer spicatum</i>	0.0	0.1	0.1	0.07
<i>Actaea</i> sp.	0.2	0.0	0.0	0.07
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.0	0.1	0.1	0.07
<i>Aralia nudicaulis</i>	0.2	0.0	0.1	0.10
<i>Athyrium filix-femina</i>	0.0	0.0	0.3	0.10
<i>Betula alleghaniensis</i>	0.0	0.0	0.1	0.03
<i>Calamagrostis canadensis</i>	0.0	0.2	0.1	0.10
<i>Carex arctata</i>	0.3	0.2	0.0	0.17
<i>Carex gracillima</i>	0.0	0.1	0.0	0.03
<i>Carex intumescens</i>	0.0	0.2	0.0	0.07
<i>Carex pedunculata</i>	0.0	0.0	0.4	0.13
<i>Carex</i> sp.	0.0	0.4	0.4	0.27
<i>Carex trisperma</i>	0.0	0.0	0.1	0.03
<i>Clintonia borealis</i>	1.0	0.6	0.0	0.53
<i>Cornus canadensis</i>	0.2	0.6	0.2	0.33
<i>Cornus sericea</i>	0.0	0.1	0.3	0.13
<i>Danthonia spicata</i>	0.1	0.0	0.0	0.03
<i>Diervilla lonicera</i>	0.2	0.0	0.0	0.07
<i>Dryopteris carthusiana</i>	0.0	0.0	0.1	0.03
<i>Dryopteris intermedia</i>	0.4	0.3	0.0	0.23
<i>Equisetum palustre</i>	0.0	0.0	0.1	0.03
<i>Equisetum scirpoides</i>	0.0	0.0	0.7	0.23
<i>Eurybia macrophylla</i>	0.1	0.2	0.0	0.10
<i>Fragaria virginiana</i>	0.0	0.1	0.0	0.03
<i>Glyceria striata</i>	0.0	0.1	0.0	0.03
<i>Gymnocarpium dryopteris</i>	0.1	0.1	0.5	0.23
<i>Hieracium</i> sp.	0.1	0.1	0.0	0.07
<i>Impatiens capensis</i>	0.0	0.0	0.6	0.20
<i>Linnaea borealis</i>	0.0	0.5	0.1	0.20
<i>Lonicera canadensis</i>	0.1	0.2	0.1	0.13
<i>Maianthemum canadense</i>	0.8	0.5	0.0	0.43
<i>Mitella nuda</i>	0.0	0.0	0.5	0.17
<i>Phegopteris connectilis</i>	0.0	0.1	0.0	0.03
<i>Picea glauca</i>	0.0	0.0	0.1	0.03
Poaceae fam.	0.1	0.1	0.0	0.07
<i>Ranunculus acris</i>	0.0	0.2	0.0	0.07
<i>Ribes triste</i>	0.0	0.1	0.0	0.03
<i>Rubus parviflorus</i>	0.4	0.2	0.0	0.20
<i>Rubus pubescens</i>	0.0	0.3	0.5	0.27
<i>Sambucus racemosa</i>	0.1	0.0	0.0	0.03
<i>Sorbus decora</i>	0.5	0.4	0.2	0.37
<i>Taxus canadensis</i>	0.1	0.0	0.2	0.10
<i>Thuja occidentalis</i>	0.0	0.1	0.0	0.03
<i>Trientalis borealis</i>	0.1	0.1	0.6	0.27
<i>Trillium cernuum</i>	0.1	0.0	0.0	0.03

Plot: 4041

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.6	0.2	0.4	0.40
<i>Acer spicatum</i>	0.1	0.0	0.0	0.03
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.1	0.0	0.0	0.03
<i>Aralia nudicaulis</i>	0.0	0.5	0.8	0.43
<i>Betula papyrifera</i>	0.2	0.1	0.0	0.10
<i>Carex disperma</i>	0.4	0.1	0.0	0.17
<i>Carex pedunculata</i>	0.2	0.0	0.0	0.07
<i>Carex</i> sp.	0.8	0.1	0.1	0.33
<i>Clintonia borealis</i>	0.3	0.6	0.4	0.43
<i>Coptis trifolia</i>	0.4	0.1	0.1	0.20
<i>Cornus canadensis</i>	0.7	0.8	0.7	0.73
<i>Cornus sericea</i>	0.7	0.0	0.0	0.23
<i>Deschampsia flexuosa</i>	0.0	0.0	0.4	0.13
<i>Dryopteris carthusiana</i>	0.0	0.1	0.0	0.03
<i>Equisetum scirpoides</i>	0.1	0.1	0.0	0.07
<i>Eurybia macrophylla</i>	0.2	0.1	0.2	0.17
<i>Galium</i> sp.	0.1	0.0	0.0	0.03
<i>Galium triflorum</i>	0.2	0.0	0.0	0.07
<i>Gaultheria hispidula</i>	0.7	0.0	0.0	0.23
<i>Glyceria</i> sp.	0.2	0.0	0.1	0.10
<i>Gymnocarpium dryopteris</i>	0.0	0.1	0.0	0.03
<i>Hieracium</i> sp.	0.1	0.0	0.0	0.03
<i>Huperzia lucidula</i>	0.9	0.2	0.0	0.37
<i>Ledum groenlandicum</i>	0.3	0.0	0.0	0.10
<i>Linnaea borealis</i>	0.6	0.5	0.4	0.50
<i>Lonicera canadensis</i>	0.0	0.2	0.0	0.07
<i>Lycopodium annotinum</i>	0.0	0.4	0.1	0.17
<i>Lycopodium clavatum</i>	0.0	0.1	0.4	0.17
<i>Lycopodium dendroideum</i>	0.1	0.0	0.0	0.03
<i>Maianthemum canadense</i>	0.2	0.6	0.7	0.50
<i>Melampyrum lineare</i>	0.0	0.2	0.4	0.20
<i>Mitella nuda</i>	0.9	0.6	0.0	0.50
<i>Moneses uniflora</i>	0.0	0.1	0.0	0.03
Poaceae fam.	0.0	0.0	0.3	0.10
<i>Polygala paucifolia</i>	0.2	0.1	0.0	0.10
<i>Populus tremuloides</i>	0.0	0.6	0.2	0.27
<i>Ribes hudsonianum</i>	0.1	0.0	0.0	0.03
<i>Ribes triste</i>	0.1	0.1	0.0	0.07
<i>Rubus pubescens</i>	0.9	0.2	0.0	0.37
<i>Sorbus decora</i>	0.2	0.1	0.0	0.10
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.1	0.1	0.07
<i>Symplocarpus foetidus</i>	0.2	0.0	0.0	0.07
<i>Thuja occidentalis</i>	0.4	0.1	0.1	0.20
<i>Trientalis borealis</i>	0.7	0.7	0.2	0.53
<i>Viola</i> sp.	0.6	0.3	0.0	0.30

Plot: 4042

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.3	0.2	0.3	0.27
<i>Acer spicatum</i>	0.0	0.1	0.0	0.03
<i>Actaea</i> sp.	0.0	0.0	0.1	0.03
<i>Amelanchier</i> sp. Group 2	0.0	0.1	0.0	0.03
<i>Aralia nudicaulis</i>	0.9	0.9	0.5	0.77
<i>Arctostaphylos uva-ursi</i>	0.0	0.1	0.0	0.03
Asteraceae fam.	0.1	0.0	0.0	0.03
<i>Carex deweyana</i>	0.0	0.0	0.1	0.03
<i>Carex pedunculata</i>	0.1	0.0	0.0	0.03
<i>Carex</i> sp.	0.1	0.0	0.0	0.03
<i>Chimaphila umbellata</i>	0.0	0.1	0.2	0.10
<i>Clinopodium vulgare</i>	0.1	0.0	0.0	0.03
<i>Clintonia borealis</i>	0.2	0.6	0.2	0.33
<i>Comandra umbellata</i>	0.3	0.0	0.0	0.10
<i>Cornus canadensis</i>	0.3	0.2	0.4	0.30
<i>Cornus sericea</i>	0.0	0.1	0.4	0.17
<i>Cypripedium arietinum</i>	0.2	0.0	0.0	0.07
<i>Diervilla lonicera</i>	0.2	0.5	0.2	0.30
<i>Eurybia macrophylla</i>	0.8	1.0	1.0	0.93
<i>Fragaria virginiana</i>	0.6	0.1	0.1	0.27
<i>Gaultheria procumbens</i>	0.1	0.0	0.0	0.03
<i>Goodyera oblongifolia</i>	0.0	0.0	0.3	0.10
<i>Gymnocarpium dryopteris</i>	0.1	0.0	0.0	0.03
<i>Hepatica nobilis</i> var. <i>obtusata</i>	0.5	0.2	0.2	0.30
<i>Hieracium piloselloides</i>	0.1	0.0	0.0	0.03
<i>Lathyrus ochroleucus</i>	0.3	0.0	0.0	0.10
<i>Lilium philadelphicum</i>	0.1	0.0	0.0	0.03
<i>Linnaea borealis</i>	0.2	0.0	0.6	0.27
<i>Lonicera dioica</i>	0.3	0.0	0.0	0.10
<i>Lonicera hirsuta</i>	0.1	0.0	0.1	0.07
<i>Maianthemum canadense</i>	0.6	0.4	0.2	0.40
<i>Melampyrum lineare</i>	0.7	0.1	0.1	0.30
<i>Mitella nuda</i>	0.0	0.1	0.4	0.17
<i>Oryzopsis asperifolia</i>	0.6	0.2	0.0	0.27
Poaceae fam.	0.1	0.0	0.0	0.03
<i>Polygala paucifolia</i>	0.5	0.3	0.6	0.47
<i>Polypodium virginianum</i>	0.1	0.0	0.0	0.03
<i>Populus tremuloides</i>	0.1	0.7	0.4	0.40
<i>Pteridium aquilinum</i>	0.7	0.5	0.2	0.47
<i>Pyrola</i> sp.	0.1	0.1	0.2	0.13
<i>Rosa acicularis</i>	0.1	0.1	0.2	0.13
<i>Rubus parviflorus</i>	0.2	0.4	0.4	0.33
<i>Rubus pubescens</i>	0.1	0.1	0.4	0.20
<i>Salix humilis</i>	0.0	0.0	0.1	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.0	0.4	0.2	0.20
<i>Taraxacum officinale</i>	0.1	0.0	0.0	0.03
<i>Trientalis borealis</i>	0.0	0.1	0.0	0.03
<i>Vaccinium angustifolium</i>	0.1	0.0	0.0	0.03
<i>Vaccinium myrtilloides</i>	0.3	0.0	0.0	0.10
<i>Viburnum edule</i>	0.0	0.0	0.1	0.03
<i>Viola</i> sp.	0.1	0.0	0.0	0.03

Plot: 4043

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Actaea rubra</i>	0.0	0.1	0.0	0.03
<i>Actaea</i> sp.	0.0	0.0	0.1	0.03
<i>Amelanchier</i> sp. Group 3	0.0	0.2	0.1	0.10
<i>Anaphalis margaritacea</i>	0.1	0.0	0.0	0.03
<i>Apocynum androsaemifolium</i>	0.0	0.0	0.1	0.03
<i>Aquilegia canadensis</i>	0.0	0.0	0.1	0.03
<i>Aralia nudicaulis</i>	0.9	1.0	0.5	0.80
<i>Betula papyrifera</i>	0.0	0.2	0.0	0.07
<i>Botrychium virginianum</i>	0.0	0.0	0.3	0.10
<i>Carex</i> sp.	0.1	0.1	0.2	0.13
<i>Chamerion angustifolium</i> ssp. <i>angustifolium</i>	0.0	0.0	0.2	0.07
<i>Chimaphila umbellata</i>	0.1	0.1	0.0	0.07
<i>Cinna latifolia</i>	0.1	0.0	0.0	0.03
<i>Clintonia borealis</i>	0.2	0.0	0.0	0.07
<i>Cornus canadensis</i>	0.9	0.7	0.2	0.60
<i>Cornus sericea</i>	0.0	0.0	0.2	0.07
<i>Deschampsia flexuosa</i>	0.0	0.1	0.0	0.03
<i>Diervilla lonicera</i>	0.8	0.8	1.0	0.87
<i>Eurybia macrophylla</i>	0.9	0.9	0.6	0.80
<i>Fragaria virginiana</i>	0.5	0.9	0.4	0.60
<i>Galium triflorum</i>	0.9	0.4	0.3	0.53
<i>Gymnocarpium dryopteris</i>	0.1	0.0	0.0	0.03
<i>Heracleum maximum</i>	0.0	0.2	0.1	0.10
<i>Hieracium</i> sp.	0.0	0.0	0.1	0.03
<i>Lathyrus ochroleucus</i>	0.7	0.5	0.4	0.53
<i>Linnaea borealis</i>	0.3	0.4	0.2	0.30
<i>Lonicera canadensis</i>	0.1	0.0	0.0	0.03
<i>Lonicera dioica</i>	0.0	0.1	0.0	0.03
<i>Lycopodium annotinum</i>	0.1	0.0	0.0	0.03
<i>Lycopodium clavatum</i>	0.4	0.0	0.0	0.13
<i>Maianthemum canadense</i>	0.4	0.3	0.3	0.33
<i>Melampyrum lineare</i>	0.7	0.7	0.0	0.47
<i>Milium effusum</i>	0.7	0.4	0.2	0.43
<i>Mitella nuda</i>	0.4	0.1	0.1	0.20
<i>Oryzopsis asperifolia</i>	0.1	0.0	0.0	0.03
<i>Osmorhiza</i> sp.	0.4	0.1	0.3	0.27
<i>Poa pratensis</i>	0.1	0.0	0.0	0.03
Poaceae fam.	0.1	0.1	0.2	0.13
<i>Populus tremuloides</i>	0.2	0.2	0.5	0.30
<i>Pyrola asarifolia</i>	0.1	0.1	0.0	0.07
<i>Pyrola elliptica</i>	0.5	0.3	0.1	0.30
<i>Ribes triste</i>	0.0	0.2	0.0	0.07
<i>Rosa acicularis</i>	0.0	0.0	0.3	0.10
<i>Rubus parviflorus</i>	1.0	0.6	1.0	0.87
<i>Rubus pubescens</i>	0.0	0.3	0.3	0.20
<i>Sorbus decora</i>	0.0	0.0	0.1	0.03
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.6	0.1	0.0	0.23
<i>Symphyotrichum ciliolatum</i>	0.0	0.1	0.1	0.07
<i>Trifolium pratense</i>	0.0	0.0	0.1	0.03
<i>Vicia americana</i>	0.1	0.4	0.1	0.20
<i>Viola</i> sp.	0.0	0.1	0.0	0.03

Plot: 4044

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer rubrum	0.2	0.0	0.0	0.07
Acer spicatum	0.0	0.0	0.2	0.07
Achillea millefolium	0.0	0.0	0.2	0.07
Actaea rubra	0.0	0.1	0.0	0.03
Actaea sp.	0.1	0.0	0.2	0.10
Amelanchier sp. Group 2	0.2	0.3	0.3	0.27
Anaphalis margaritacea	0.0	0.0	0.1	0.03
Aralia nudicaulis	0.2	0.1	0.5	0.27
Arctostaphylos uva-ursi	0.0	0.1	0.0	0.03
Betula papyrifera	0.0	0.0	0.1	0.03
Campanula rotundifolia	0.0	0.0	0.1	0.03
Carex pedunculata	0.0	0.2	0.2	0.13
Carex sp.	0.0	0.4	0.2	0.20
Clematis sp.	0.0	0.0	0.1	0.03
Clinopodium vulgare	0.0	0.0	0.2	0.07
Clintonia borealis	0.7	0.5	0.5	0.57
Cornus canadensis	0.2	0.1	0.2	0.17
Cornus sericea	0.0	0.0	0.1	0.03
Corylus cornuta	0.9	1.0	0.6	0.83
Danthonia spicata	0.0	0.1	0.3	0.13
Deschampsia flexuosa	0.4	0.5	0.5	0.47
Diervilla lonicera	0.6	0.4	0.2	0.40
Eurybia macrophylla	0.9	0.9	0.9	0.90
Fragaria virginiana	0.1	0.1	0.3	0.17
Galium triflorum	0.3	0.3	0.3	0.30
Geocaulon lividum	0.1	0.2	0.5	0.27
Hepatica nobilis var. obtusa	0.0	0.0	0.4	0.13
Hieracium canadense	0.0	0.1	0.4	0.17
Hieracium sp.	0.1	0.1	0.4	0.20
Lilium philadelphicum	0.0	0.0	0.1	0.03
Linnaea borealis	0.0	0.3	0.1	0.13
Lonicera canadensis	0.2	0.0	0.3	0.17
Lonicera hirsuta	0.0	0.1	0.0	0.03
Lycopodium annotinum	0.2	0.1	0.1	0.13
Lycopodium clavatum	0.0	0.5	0.3	0.27
Maianthemum canadense	0.7	1.0	0.8	0.83
Melampyrum lineare	0.8	0.4	0.5	0.57
Mitella nuda	0.1	0.0	0.0	0.03
Oryzopsis asperifolia	0.4	0.4	0.3	0.37
Picea glauca	0.0	0.0	0.1	0.03
Poa sp.	0.0	0.0	0.1	0.03
Poaceae fam.	0.3	0.6	0.4	0.43
Polygala paucifolia	0.2	0.1	0.5	0.27
Populus tremuloides	0.0	0.0	0.1	0.03
Pteridium aquilinum	0.2	0.0	0.0	0.07
Pyrola sp.	0.1	0.1	0.0	0.07
Rosa acicularis	0.1	0.1	0.3	0.17
Rubus parviflorus	0.7	0.4	0.4	0.50
Rubus pubescens	0.0	0.1	0.0	0.03
Sanicula marilandica	0.0	0.1	0.4	0.17
Shepherdia canadensis	0.0	0.0	0.1	0.03
Streptopus lanceolatus var. roseus	0.2	0.4	0.2	0.27
Trientalis borealis	0.0	0.1	0.0	0.03
Viola sp.	0.1	0.1	0.3	0.17

Plot: 4045

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.0	0.1	0.03
Acer rubrum	0.4	0.0	0.0	0.13
Acer saccharum	0.0	0.0	0.1	0.03
Alnus incana ssp. rugosa	0.3	0.0	0.0	0.10
Aralia nudicaulis	0.0	0.2	0.6	0.27
Asteraceae fam.	0.1	0.0	0.0	0.03
Athyrium filix-femina	0.0	0.4	0.0	0.13
Betula papyrifera	0.1	0.0	0.2	0.10
Calla palustris	0.1	0.0	0.0	0.03
Carex pedunculata	0.3	0.4	0.1	0.27
Chimaphila umbellata	0.0	0.0	0.3	0.10
Clintonia borealis	0.0	0.1	0.0	0.03
Coptis trifolia	0.1	0.1	0.0	0.07
Cornus canadensis	0.2	0.6	0.4	0.40
Cornus sericea	0.4	0.0	0.3	0.23
Diervilla lonicera	0.0	0.6	0.0	0.20
Doellingeria umbellata	0.1	0.0	0.0	0.03
Dryopteris carthusiana	0.1	0.0	0.0	0.03
Dryopteris cristata	0.1	0.0	0.0	0.03
Equisetum palustre	0.7	0.3	0.0	0.33
Eupatorium maculatum	0.1	0.0	0.0	0.03
Eurybia macrophylla	0.0	0.0	0.5	0.17
Fragaria virginiana	0.0	0.2	0.6	0.27
Fraxinus nigra	0.4	0.0	0.0	0.13
Galium asprellum	0.1	0.0	0.0	0.03
Galium triflorum	0.1	0.0	0.0	0.03
Glyceria striata	0.1	0.0	0.0	0.03
Gymnocarpium dryopteris	0.0	0.2	0.1	0.10
Linnaea borealis	0.0	0.2	0.1	0.10
Lonicera canadensis	0.0	0.1	0.1	0.07
Lycopodium annotinum	0.0	0.3	0.0	0.10
Maianthemum canadense	0.5	0.6	0.6	0.57
Mitella nuda	0.3	0.1	0.3	0.23
Orthilia secunda	0.0	0.1	0.0	0.03
Oryzopsis asperifolia	0.2	0.0	0.1	0.10
Osmunda claytoniana	0.0	0.1	0.0	0.03
Poaceae fam.	0.0	0.0	0.2	0.07
Polygala paucifolia	0.0	0.1	0.0	0.03
Populus tremuloides	0.0	0.0	0.2	0.07
Prenanthes alba	0.1	0.0	0.0	0.03
Pteridium aquilinum	0.0	0.0	0.1	0.03
Pyrola sp.	0.0	0.0	0.6	0.20
Rhamnus alnifolia	0.1	0.0	0.0	0.03
Ribes triste	0.1	0.2	0.0	0.10
Rosa acicularis	0.0	0.0	0.1	0.03
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Rubus parviflorus	0.0	1.0	0.9	0.63
Rubus pubescens	0.8	0.7	0.3	0.60
Symplocarpus foetidus	0.9	0.0	0.0	0.30
Thuja occidentalis	0.0	0.0	0.3	0.10
Trientalis borealis	0.4	0.1	0.3	0.27

Plot: 4046

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.1	0.0	0.03
Acer rubrum	0.1	0.0	0.1	0.07
Acer saccharum	0.9	0.5	0.7	0.70
Acer spicatum	0.1	0.8	0.0	0.30
Aralia nudicaulis	0.4	0.4	0.0	0.27
Carex sp.	0.3	0.5	0.0	0.27
Clintonia borealis	0.3	0.8	0.2	0.43
Coptis trifolia	0.0	0.1	0.0	0.03
Cornus canadensis	0.2	0.2	0.0	0.13
Corylus cornuta	0.1	0.0	0.0	0.03
Lonicera canadensis	0.0	0.0	0.1	0.03
Lycopodium annotinum	0.0	0.6	0.4	0.33
Maianthemum canadense	0.1	0.8	0.3	0.40
Oryzopsis asperifolia	0.0	0.1	0.0	0.03
Picea glauca	0.1	0.2	0.0	0.10
Polygala paucifolia	0.0	0.0	0.1	0.03
Polygonatum pubescens	0.0	0.1	0.0	0.03
Rubus parviflorus	0.2	0.3	0.0	0.17
Sorbus decora	0.0	0.1	0.2	0.10
Streptopus lanceolatus var. roseus	0.0	0.0	0.1	0.03
Thuja occidentalis	0.2	0.2	0.1	0.17
Trientalis borealis	0.0	0.2	0.1	0.10
Vaccinium myrtilloides	0.0	0.1	0.0	0.03
Viola sp.	0.1	0.1	0.0	0.07

Plot: 4047

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.0	0.0	0.03
Acer spicatum	0.3	0.4	0.7	0.47
Actaea rubra	0.0	0.0	0.3	0.10
Aralia nudicaulis	0.0	0.6	0.6	0.40
Betula alleghaniensis	0.2	0.3	0.1	0.20
Carex arctata	0.0	0.2	0.1	0.10
Carex brunnescens	0.0	0.0	0.1	0.03
Carex deweyana	0.0	0.0	0.2	0.07
Carex sp.	0.1	0.0	0.2	0.10
Chamerion angustifolium ssp. angustifolium	0.0	0.0	0.3	0.10
Circaea alpina	0.0	0.4	0.0	0.13
Clintonia borealis	0.6	1.0	1.0	0.87
Cornus canadensis	0.6	0.2	0.4	0.40
Dryopteris intermedia	1.0	0.8	0.7	0.83
Galium triflorum	0.1	0.6	0.6	0.43
Gymnocarpium dryopteris	0.8	1.0	0.8	0.87
Heracleum maximum	0.0	0.2	0.3	0.17
Lactuca sp.	0.0	0.2	0.2	0.13
Lycopodium annotinum	0.9	0.4	0.3	0.53
Maianthemum canadense	0.9	0.4	0.7	0.67
Milium effusum	0.0	0.9	0.8	0.57
Mitella nuda	0.0	0.4	0.5	0.30
Osmorhiza sp.	0.0	0.1	0.1	0.07
Oxalis montana	0.9	0.9	0.9	0.90
Poaceae fam.	0.3	0.1	0.0	0.13
Ribes glandulosum	0.2	0.5	0.1	0.27
Ribes triste	0.2	0.4	0.7	0.43
Rubus idaeus ssp. strigosus	0.1	0.1	0.5	0.23
Rubus parviflorus	0.2	0.2	0.1	0.17
Rubus pubescens	0.1	0.0	0.0	0.03
Sorbus decora	0.6	0.4	0.4	0.47
Stellaria sp.	0.0	0.0	0.3	0.10
Streptopus lanceolatus var. roseus	0.6	0.9	1.0	0.83
Trientalis borealis	0.9	0.3	0.7	0.63
Viola sp.	0.0	0.4	0.2	0.20

Plot: 4049

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.2	0.1	0.0	0.10
Acer rubrum	0.1	0.0	0.3	0.13
Acer saccharum	0.5	0.8	0.8	0.70
Acer spicatum	0.2	0.1	0.0	0.10
Anaphalis margaritacea	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.2	0.0	0.0	0.07
Betula alleghaniensis	0.3	0.1	0.0	0.13
Carex arctata	0.1	0.2	0.0	0.10
Carex gracillima	0.1	0.0	0.0	0.03
Carex intumescens	0.0	0.2	0.0	0.07
Carex pedunculata	0.5	0.3	0.0	0.27
Carex sp.	0.5	0.2	0.0	0.23
Carex trisperma	0.0	0.2	0.0	0.07
Clintonia borealis	0.6	0.3	0.1	0.33
Cornus canadensis	0.0	0.1	0.0	0.03
Dryopteris carthusiana	0.0	0.2	0.0	0.07
Dryopteris intermedia	0.1	0.1	0.0	0.07
Eurybia macrophylla	0.1	0.1	0.0	0.07
Glyceria striata	0.0	0.1	0.0	0.03
Goodyera oblongifolia	0.0	0.1	0.0	0.03
Gymnocarpium dryopteris	0.1	0.0	0.0	0.03
Huperzia lucidula	0.3	0.5	0.0	0.27
Lonicera canadensis	0.0	0.1	0.0	0.03
Lycopodium annotinum	0.0	0.3	0.6	0.30
Lycopodium clavatum	0.1	0.0	0.1	0.07
Lycopodium dendroideum	0.0	0.0	0.1	0.03
Maianthemum canadense	0.7	0.1	0.2	0.33
Poaceae fam.	0.0	0.1	0.0	0.03
Polygala paucifolia	0.1	0.0	0.0	0.03
Pyrola sp.	0.0	0.1	0.0	0.03
Quercus rubra	0.0	0.0	0.1	0.03
Rubus idaeus ssp. strigosus	0.0	0.1	0.0	0.03
Rubus parviflorus	0.4	0.5	0.0	0.30
Rubus pubescens	0.0	0.1	0.0	0.03
Sorbus decora	0.1	0.1	0.0	0.07
Streptopus lanceolatus var. roseus	0.1	0.0	0.0	0.03
Taxus canadensis	0.1	0.0	0.3	0.13
Thuja occidentalis	0.0	0.3	0.0	0.10
Trientalis borealis	0.3	0.1	0.4	0.27

Plot: 4050

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Actaea sp.	0.0	0.0	0.3	0.10
Alnus incana ssp. rugosa	0.0	0.0	0.2	0.07
Amelanchier sp. Group 3	0.1	0.0	0.0	0.03
Anaphalis margaritacea	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.5	0.9	0.9	0.77
Athyrium filix-femina	0.0	0.0	0.3	0.10
Carex arctata	0.0	0.1	0.0	0.03
Carex sp.	0.0	0.2	0.6	0.27
Chamerion angustifolium ssp. angustifolium	0.1	0.1	0.0	0.07
Circaea alpina	0.0	0.0	0.1	0.03
Clintonia borealis	0.4	1.0	0.2	0.53
Corallorhiza maculata	0.0	0.1	0.0	0.03
Cornus canadensis	0.6	0.9	0.0	0.50
Cornus sericea	0.1	0.0	0.2	0.10
Danthonia spicata	0.1	0.0	0.0	0.03
Diervilla lonicera	0.5	0.5	0.1	0.37
Doellingeria umbellata	0.0	0.0	0.1	0.03
Dryopteris carthusiana	0.0	0.0	0.5	0.17
Equisetum sylvaticum	0.0	0.0	0.1	0.03
Eurybia macrophylla	1.0	0.9	0.9	0.93
Fragaria virginiana	0.2	0.1	0.0	0.10
Galium triflorum	0.1	0.4	0.6	0.37
Gymnocarpium dryopteris	0.0	0.0	0.4	0.13
Hieracium sp.	0.2	0.0	0.0	0.07
Lactuca sp.	0.0	0.0	0.1	0.03
Linnaea borealis	0.4	0.0	0.0	0.13
Lonicera canadensis	0.0	0.0	0.1	0.03
Lycopodium annotinum	0.2	0.0	0.0	0.07
Lycopodium clavatum	0.0	0.4	0.0	0.13
Maianthemum canadense	0.7	0.6	0.1	0.47
Melampyrum lineare	0.2	0.4	0.1	0.23
Milium effusum	0.0	0.2	0.3	0.17
Mitella nuda	0.1	0.0	0.5	0.20
Petasites frigidus var. palmatus	0.2	0.0	0.0	0.07
Picea glauca	0.2	0.0	0.0	0.07
Poaceae fam.	0.0	0.0	0.2	0.07
Polygala paucifolia	0.5	0.8	0.0	0.43
Populus tremuloides	0.1	0.1	0.2	0.13
Pteridium aquilinum	0.2	0.8	0.1	0.37
Pyrola asarifolia	0.0	0.0	0.1	0.03
Pyrola elliptica	0.1	0.1	0.4	0.20
Ribes glandulosum	0.0	0.0	0.1	0.03
Ribes triste	0.0	0.0	0.3	0.10
Rosa acicularis	0.2	0.0	0.0	0.07
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Rubus parviflorus	0.0	0.3	0.8	0.37
Rubus pubescens	0.2	0.2	1.0	0.47
Solidago sp.	0.0	0.0	0.2	0.07
Streptopus lanceolatus var. roseus	0.0	0.1	0.4	0.17
Symplocarpus foetidus	0.0	0.0	0.1	0.03
Taxus canadensis	0.0	0.0	0.1	0.03
Thuja occidentalis	0.1	0.0	0.0	0.03
Trientalis borealis	0.0	0.0	0.1	0.03
Trifolium sp.	0.1	0.0	0.0	0.03
Trillium cernuum	0.0	0.0	0.4	0.13
Vaccinium angustifolium	0.3	0.0	0.0	0.10

Plot: 4050

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Viburnum edule	0.0	0.0	0.1	0.03
Viola sp.	0.0	0.2	0.1	0.10

Plot: 4052

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Acer rubrum	0.0	0.0	0.2	0.07
Acer saccharum	1.0	1.0	1.0	1.00
Acer spicatum	0.1	0.1	0.0	0.07
Aralia nudicaulis	0.0	0.0	0.3	0.10
Carex arctata	0.1	0.0	0.0	0.03
Carex communis	0.0	0.1	0.0	0.03
Clintonia borealis	0.0	0.0	0.1	0.03
Galium triflorum	0.0	0.1	0.1	0.07
Lycopodium dendroideum	0.1	0.0	0.0	0.03
Maianthemum canadense	0.1	0.3	0.0	0.13
Prunus virginiana	0.0	0.1	0.0	0.03
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Sorbus decora	0.1	0.0	0.1	0.07
Streptopus lanceolatus var. roseus	0.1	0.2	0.0	0.10
Taxus canadensis	0.0	0.1	0.1	0.07
Thuja occidentalis	0.0	0.0	0.3	0.10

Plot: 4053

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.0	0.2	0.0	0.07
Acer saccharum	0.1	0.1	0.0	0.07
Acer spicatum	0.3	0.2	0.2	0.23
Actaea rubra	0.0	0.2	0.1	0.10
Amelanchier sp. Group 2	0.0	0.0	0.1	0.03
Apocynum androsaemifolium	0.1	0.5	0.0	0.20
Aralia nudicaulis	0.9	0.8	1.0	0.90
Carex arctata	0.0	0.0	0.1	0.03
Carex pedunculata	0.2	0.0	0.0	0.07
Chimaphila umbellata	0.4	0.0	0.2	0.20
Clintonia borealis	0.3	0.5	0.9	0.57
Coeloglossum viride	0.2	0.0	0.0	0.07
Cornus canadensis	0.6	0.6	0.5	0.57
Cornus sericea	0.0	0.1	0.0	0.03
Corylus cornuta	0.3	0.6	0.0	0.30
Diervilla lonicera	0.2	0.4	0.4	0.33
Eurybia macrophylla	0.4	0.4	0.4	0.40
Fragaria virginiana	0.0	0.1	0.0	0.03
Galium triflorum	0.4	0.3	0.2	0.30
Gymnocarpium dryopteris	0.1	0.0	0.1	0.07
Linnaea borealis	0.0	0.0	0.5	0.17
Lonicera canadensis	0.0	0.1	0.0	0.03
Lonicera dioica	0.2	0.0	0.0	0.07
Lycopodium annotinum	0.0	0.0	0.3	0.10
Lycopodium clavatum	0.2	0.1	0.3	0.20
Lycopodium sp.	0.0	0.0	0.2	0.07
Maianthemum canadense	0.6	0.4	0.5	0.50
Melampyrum lineare	0.0	0.0	0.4	0.13
Mitella nuda	0.3	0.2	0.4	0.30
Orthilia secunda	0.0	0.0	0.3	0.10
Oryzopsis asperifolia	0.0	0.0	0.1	0.03
Osmorhiza claytonii	0.0	0.3	0.0	0.10
Picea glauca	0.0	0.1	0.0	0.03
Poaceae fam.	0.1	0.2	0.0	0.10
Polygala paucifolia	0.2	0.4	0.0	0.20
Populus tremuloides	0.5	0.3	0.4	0.40
Pteridium aquilinum	0.0	0.5	0.4	0.30
Pyrola asarifolia	0.1	0.0	0.1	0.07
Pyrola sp.	0.0	0.0	0.5	0.17
Ribes triste	0.0	0.1	0.0	0.03
Rubus parviflorus	1.0	0.9	1.0	0.97
Rubus pubescens	0.1	0.2	0.0	0.10
Sorbus decora	0.2	0.0	0.2	0.13
Streptopus lanceolatus var. roseus	0.4	0.2	0.5	0.37
Taxus canadensis	0.0	0.0	0.1	0.03
Thuja occidentalis	0.2	0.2	0.2	0.20
Viola sp.	0.1	0.0	0.1	0.07

Plot: 4054

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.4	0.0	0.17
Alnus incana ssp. rugosa	0.0	0.0	0.3	0.10
Amelanchier sp. Group 2	0.1	0.0	0.0	0.03
Apocynum androsaemifolium	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.8	0.9	0.3	0.67
Athyrium filix-femina	0.0	0.0	0.2	0.07
Caltha palustris	0.0	0.0	0.4	0.13
Carex gracillima	0.0	0.0	0.4	0.13
Carex intumescens	0.0	0.0	0.4	0.13
Carex leptoneura	0.0	0.0	0.1	0.03
Carex sp.	0.0	0.0	0.6	0.20
Chamerion angustifolium ssp. angustifolium	0.1	0.0	0.0	0.03
Chimaphila umbellata	0.5	0.6	0.0	0.37
Circaea alpina	0.0	0.0	0.2	0.07
Clintonia borealis	1.0	0.5	0.1	0.53
Coptis trifolia	0.1	0.0	0.1	0.07
Cornus canadensis	0.6	0.2	0.1	0.30
Diervilla lonicera	0.7	0.9	0.0	0.53
Doellingeria umbellata	0.0	0.0	0.5	0.17
Dryopteris carthusiana	0.0	0.0	0.1	0.03
Equisetum palustre	0.0	0.0	1.0	0.33
Equisetum sylvaticum	0.0	0.0	0.1	0.03
Eupatorium maculatum	0.0	0.0	0.1	0.03
Eurybia macrophylla	1.0	1.0	0.0	0.67
Fragaria vesca	0.1	0.0	0.0	0.03
Fragaria virginiana	0.1	0.0	0.0	0.03
Galium asprellum	0.0	0.0	0.4	0.13
Galium triflorum	0.2	0.0	0.6	0.27
Gymnocarpium dryopteris	0.0	0.0	0.4	0.13
Hepatica nobilis var. obtusa	0.3	0.1	0.0	0.13
Impatiens capensis	0.0	0.0	0.8	0.27
Iris versicolor	0.0	0.0	0.1	0.03
Lactuca sp.	0.0	0.0	0.4	0.13
Lathyrus ochroleucus	0.0	0.2	0.0	0.07
Linnaea borealis	0.7	0.4	0.1	0.40
Lonicera canadensis	0.1	0.1	0.0	0.07
Lonicera hirsuta	0.0	0.3	0.0	0.10
Lycopodium annotinum	0.1	0.0	0.0	0.03
Lycopodium clavatum	0.3	0.0	0.0	0.10
Lycopodium sp.	0.0	0.2	0.0	0.07
Lycopus uniflorus	0.0	0.0	0.7	0.23
Maianthemum canadense	0.7	0.9	0.4	0.67
Melampyrum lineare	0.3	0.1	0.0	0.13
Mitella nuda	0.0	0.0	0.3	0.10
Oryzopsis asperifolia	0.3	0.7	0.0	0.33
Platanthera hyperborea	0.0	0.0	0.2	0.07
Poaceae fam.	0.1	0.0	0.6	0.23
Polygala paucifolia	0.3	0.6	0.0	0.30
Populus tremuloides	0.6	0.0	0.0	0.20
Prenanthes alba	0.0	0.0	0.3	0.10
Pteridium aquilinum	0.2	1.0	0.0	0.40
Pyrola asarifolia	0.2	0.0	0.0	0.07
Pyrola sp.	0.0	0.2	0.2	0.13
Ribes triste	0.0	0.0	0.2	0.07
Rosa acicularis	0.0	0.1	0.0	0.03
Rubus idaeus ssp. strigosus	0.0	0.0	0.2	0.07

Plot: 4054

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Rubus parviflorus	0.7	0.1	0.0	0.27
Rubus pubescens	0.1	0.1	0.8	0.33
Salix humilis	0.0	0.1	0.0	0.03
Scirpus atrovirens	0.0	0.0	0.1	0.03
Sorbus decora	0.0	0.1	0.0	0.03
Streptopus lanceolatus var. roseus	0.4	0.0	0.1	0.17
Symphotrichum puniceum var. puniceum	0.0	0.0	0.6	0.20
Symplocarpus foetidus	0.0	0.0	0.1	0.03
Thalictrum dasycarpum	0.0	0.0	0.9	0.30
Trientalis borealis	0.0	0.0	0.2	0.07
Trillium cernuum	0.0	0.0	0.2	0.07
Viburnum edule	0.1	0.0	0.0	0.03
Viola sp.	0.0	0.0	0.1	0.03

Plot: 4056

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.2	0.1	0.2	0.17
<i>Acer saccharum</i>	0.7	0.7	0.1	0.50
<i>Acer spicatum</i>	0.1	0.0	0.1	0.07
<i>Actaea</i> sp.	0.1	0.0	0.0	0.03
<i>Alnus incana</i> ssp. <i>rugosa</i>	0.0	0.0	0.1	0.03
<i>Aralia nudicaulis</i>	0.9	0.8	0.1	0.60
<i>Athyrium filix-femina</i>	0.1	0.5	0.5	0.37
<i>Betula alleghaniensis</i>	0.1	0.0	0.0	0.03
<i>Carex arctata</i>	0.0	0.2	0.1	0.10
<i>Carex gracillima</i>	0.0	0.0	0.2	0.07
<i>Carex leptoneura</i>	0.2	0.0	0.0	0.07
<i>Carex pedunculata</i>	0.3	0.5	0.5	0.43
<i>Carex</i> sp.	0.1	0.3	0.3	0.23
<i>Clintonia borealis</i>	0.6	0.1	0.0	0.23
<i>Cornus canadensis</i>	1.0	0.8	0.1	0.63
<i>Corylus cornuta</i>	0.3	0.1	0.0	0.13
<i>Dryopteris carthusiana</i>	0.0	0.0	0.1	0.03
<i>Dryopteris intermedia</i>	0.0	0.4	0.6	0.33
<i>Equisetum palustre</i>	0.0	0.2	0.4	0.20
<i>Equisetum scirpoides</i>	0.2	0.4	0.2	0.27
<i>Equisetum sylvaticum</i>	0.2	0.5	0.4	0.37
<i>Fraxinus nigra</i>	0.0	0.0	0.1	0.03
<i>Galium triflorum</i>	0.1	0.0	0.0	0.03
<i>Gymnocarpium dryopteris</i>	0.0	0.1	0.0	0.03
<i>Impatiens capensis</i>	0.1	0.3	0.3	0.23
<i>Linnaea borealis</i>	0.4	0.1	0.0	0.17
<i>Lonicera canadensis</i>	0.0	0.1	0.0	0.03
<i>Lycopodium annotinum</i>	0.1	0.0	0.0	0.03
<i>Maianthemum canadense</i>	0.8	0.4	0.0	0.40
<i>Mitella nuda</i>	0.0	0.2	0.0	0.07
<i>Oryzopsis asperifolia</i>	0.3	0.0	0.0	0.10
<i>Picea glauca</i>	0.1	0.0	0.1	0.07
Poaceae fam.	0.0	0.2	0.0	0.07
<i>Polygala paucifolia</i>	0.0	0.1	0.0	0.03
<i>Prenanthes alba</i>	0.0	0.2	0.0	0.07
<i>Ribes triste</i>	0.0	0.1	0.2	0.10
<i>Rubus idaeus</i> ssp. <i>strigosus</i>	0.4	0.0	0.0	0.13
<i>Rubus parviflorus</i>	0.1	0.8	0.1	0.33
<i>Rubus pubescens</i>	0.6	1.0	0.9	0.83
<i>Sorbus decora</i>	0.2	0.2	0.2	0.20
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.2	0.0	0.0	0.07
<i>Thuja occidentalis</i>	0.0	0.0	0.1	0.03
<i>Trientalis borealis</i>	0.0	0.5	0.0	0.17
<i>Trillium cernuum</i>	0.0	0.0	0.1	0.03

Plot: 4058

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
<i>Abies balsamea</i>	0.3	0.1	0.4	0.27
<i>Apocynum androsaemifolium</i>	0.2	0.1	0.0	0.10
<i>Arabis glabra</i>	0.0	0.1	0.0	0.03
<i>Aralia nudicaulis</i>	0.9	0.6	0.6	0.70
Asteraceae fam.	0.1	0.0	0.0	0.03
<i>Chimaphila umbellata</i>	0.2	0.2	0.0	0.13
<i>Clintonia borealis</i>	0.3	0.3	0.0	0.20
<i>Cornus canadensis</i>	0.3	0.3	0.1	0.23
<i>Cornus sericea</i>	0.1	0.0	0.1	0.07
<i>Corylus cornuta</i>	0.2	0.2	0.1	0.17
<i>Diervilla lonicera</i>	0.5	0.2	0.6	0.43
<i>Eurybia macrophylla</i>	0.9	0.9	1.0	0.93
<i>Fragaria virginiana</i>	0.0	0.0	0.2	0.07
<i>Galium triflorum</i>	0.0	0.0	0.2	0.07
<i>Gaultheria procumbens</i>	0.0	0.3	0.1	0.13
<i>Goodyera oblongifolia</i>	0.1	0.0	0.0	0.03
<i>Goodyera</i> sp.	0.1	0.0	0.0	0.03
<i>Hepatica nobilis</i> var. <i>obtusata</i>	0.0	0.0	0.5	0.17
<i>Hieracium</i> sp.	0.0	0.0	0.1	0.03
<i>Juniperus communis</i> var. <i>depressa</i>	0.1	0.0	0.0	0.03
<i>Lilium philadelphicum</i>	0.0	0.1	0.0	0.03
<i>Linnaea borealis</i>	0.3	0.7	0.5	0.50
<i>Lonicera canadensis</i>	0.4	0.0	0.1	0.17
<i>Lonicera hirsuta</i>	0.0	0.1	0.3	0.13
<i>Lycopodium clavatum</i>	0.0	0.0	0.1	0.03
<i>Lycopodium complanatum</i>	0.0	0.1	0.0	0.03
<i>Maianthemum canadense</i>	0.9	0.7	0.2	0.60
<i>Melampyrum lineare</i>	0.1	0.0	0.0	0.03
<i>Mitchella repens</i>	0.1	0.1	0.0	0.07
<i>Mitella nuda</i>	0.2	0.0	0.1	0.10
<i>Oryzopsis asperifolia</i>	0.2	0.1	0.1	0.13
<i>Picea glauca</i>	0.0	0.1	0.0	0.03
Poaceae fam.	0.1	0.0	0.2	0.10
<i>Polygala paucifolia</i>	0.5	0.6	0.8	0.63
<i>Populus tremuloides</i>	0.3	0.1	0.1	0.17
<i>Pteridium aquilinum</i>	0.1	0.1	0.4	0.20
<i>Pyrola asarifolia</i>	0.0	0.0	0.1	0.03
<i>Pyrola</i> sp.	0.2	0.0	0.0	0.07
<i>Rosa acicularis</i>	0.3	0.4	0.5	0.40
<i>Rubus parviflorus</i>	0.6	0.4	0.8	0.60
<i>Rubus pubescens</i>	0.0	0.1	0.3	0.13
<i>Streptopus lanceolatus</i> var. <i>roseus</i>	0.5	0.2	0.0	0.23
<i>Taraxacum officinale</i>	0.0	0.0	0.1	0.03
<i>Trientalis borealis</i>	0.7	0.0	0.0	0.23

Plot: 4059

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.2	0.0	0.10
Acer spicatum	0.5	0.2	0.6	0.43
Actaea sp.	0.1	0.0	0.1	0.07
Aralia nudicaulis	0.4	0.2	0.8	0.47
Athyrium filix-femina	0.0	0.0	0.2	0.07
Betula alleghaniensis	0.0	0.3	0.0	0.10
Carex deweyana	0.1	0.0	0.0	0.03
Carex sp.	0.1	0.2	0.1	0.13
Cinna latifolia	0.1	0.0	0.0	0.03
Clintonia borealis	0.3	0.3	0.3	0.30
Cornus canadensis	0.8	1.0	0.5	0.77
Corylus cornuta	0.0	0.1	0.0	0.03
Dryopteris intermedia	0.6	0.6	0.8	0.67
Fraxinus nigra	0.0	0.0	0.1	0.03
Galium triflorum	0.0	0.0	0.1	0.03
Gymnocarpium dryopteris	0.0	0.0	0.1	0.03
Heracleum maximum	0.0	0.0	0.3	0.10
Lonicera canadensis	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.2	0.1	0.0	0.10
Maianthemum canadense	0.5	1.0	0.2	0.57
Mitella nuda	0.0	0.1	0.1	0.07
Oxalis montana	0.2	0.5	0.1	0.27
Phegopteris connectilis	0.0	0.2	0.0	0.07
Picea glauca	0.0	0.1	0.0	0.03
Poaceae fam.	0.2	0.2	0.2	0.20
Pyrola elliptica	0.0	0.1	0.0	0.03
Ribes triste	0.2	0.0	0.0	0.07
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Rubus parviflorus	0.3	0.1	1.0	0.47
Rubus pubescens	0.7	0.3	0.1	0.37
Sorbus decora	0.3	0.6	0.1	0.33
Taxus canadensis	0.2	0.0	0.0	0.07
Thuja occidentalis	0.0	0.2	0.0	0.07
Trientalis borealis	0.5	0.9	0.3	0.57
Viburnum edule	0.1	0.0	0.0	0.03

Plot: 4063

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.1	0.1	0.3	0.17
Acer rubrum	0.4	0.1	0.0	0.17
Acer saccharum	0.8	0.2	0.2	0.40
Acer spicatum	0.4	0.2	0.1	0.23
Amelanchier sp. Group 2	0.1	0.0	0.0	0.03
Aralia nudicaulis	0.5	0.0	0.3	0.27
Athyrium filix-femina	0.0	0.0	0.1	0.03
Betula alleghaniensis	0.2	0.2	0.2	0.20
Betula papyrifera	0.0	0.0	0.1	0.03
Carex leptalea	0.0	0.0	0.1	0.03
Carex pedunculata	0.3	0.1	0.1	0.17
Carex sp.	0.1	0.4	0.2	0.23
Clintonia borealis	0.3	0.1	0.2	0.20
Coptis trifolia	0.0	0.1	0.0	0.03
Cornus canadensis	0.3	0.3	0.7	0.43
Dryopteris carthusiana	0.3	0.0	0.0	0.10
Dryopteris intermedia	0.2	0.1	0.2	0.17
Equisetum palustre	0.4	0.0	0.0	0.13
Equisetum scirpoides	0.0	0.2	0.4	0.20
Galium triflorum	0.1	0.0	0.0	0.03
Gymnocarpium dryopteris	0.0	0.3	0.0	0.10
Linnaea borealis	0.0	0.2	0.1	0.10
Lonicera canadensis	0.0	0.0	0.2	0.07
Lycopodium annotinum	0.3	0.0	0.2	0.17
Lycopodium dendroideum	0.0	0.1	0.0	0.03
Maianthemum canadense	0.8	0.3	0.4	0.50
Milium effusum	0.2	0.0	0.0	0.07
Mitella nuda	0.2	0.6	0.8	0.53
Oxalis montana	0.3	0.0	0.0	0.10
Phegopteris connectilis	0.0	0.0	0.2	0.07
Picea glauca	0.1	0.0	0.0	0.03
Populus tremuloides	0.2	0.0	0.0	0.07
Pyrola sp.	0.1	0.2	0.0	0.10
Rubus parviflorus	0.2	0.0	0.0	0.07
Rubus pubescens	0.4	0.2	0.7	0.43
Sorbus decora	0.2	0.1	0.1	0.13
Streptopus amplexifolius	0.1	0.0	0.0	0.03
Streptopus lanceolatus var. roseus	0.0	0.0	0.1	0.03
Taxus canadensis	0.0	0.4	0.3	0.23
Thuja occidentalis	0.0	0.3	0.7	0.33
Trientalis borealis	0.0	0.3	0.3	0.20

Plot: 4064

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Abies balsamea	0.3	0.1	0.2	0.20
Actaea sp.	0.1	0.1	0.0	0.07
Aralia nudicaulis	0.9	1.0	0.7	0.87
Asteraceae fam.	0.0	0.0	0.1	0.03
Athyrium filix-femina	0.0	0.0	0.2	0.07
Botrychium virginianum	0.0	0.0	0.1	0.03
Caltha palustris	0.0	0.0	0.1	0.03
Carex arctata	0.0	0.0	0.1	0.03
Carex deweyana	0.0	0.0	0.1	0.03
Carex intumescens	0.0	0.0	0.1	0.03
Carex pedunculata	0.0	0.0	0.2	0.07
Carex sp.	0.1	0.0	0.3	0.13
Chimaphila umbellata	0.0	0.1	0.2	0.10
Clintonia borealis	0.8	0.8	0.4	0.67
Coptis trifolia	0.2	0.1	0.1	0.13
Cornus canadensis	0.6	0.7	0.4	0.57
Diervilla lonicera	0.1	0.4	0.2	0.23
Dryopteris carthusiana	0.0	0.1	0.1	0.07
Equisetum arvense	0.0	0.0	0.2	0.07
Eurybia macrophylla	0.5	0.7	0.2	0.47
Fragaria virginiana	0.0	0.0	0.1	0.03
Fraxinus nigra	0.0	0.0	0.1	0.03
Galium asprellum	0.0	0.0	0.2	0.07
Galium triflorum	0.0	0.3	0.0	0.10
Gymnocarpium dryopteris	0.7	0.0	0.2	0.30
Huperzia lucidula	0.4	0.0	0.0	0.13
Linnaea borealis	0.2	0.2	0.1	0.17
Lonicera canadensis	0.0	0.1	0.0	0.03
Lonicera dioica	0.1	0.0	0.0	0.03
Lycopodium annotinum	0.3	0.0	0.2	0.17
Lycopodium clavatum	0.1	0.5	0.0	0.20
Lycopodium dendroideum	0.5	0.1	0.0	0.20
Lycopus uniflorus	0.0	0.0	0.1	0.03
Maianthemum canadense	0.6	0.8	0.4	0.60
Maianthemum trifolium	0.1	0.0	0.1	0.07
Melampyrum lineare	0.0	0.3	0.0	0.10
Mitella nuda	0.5	0.5	0.6	0.53
Oryzopsis asperifolia	0.0	0.1	0.0	0.03
Poaceae fam.	0.2	0.2	0.0	0.13
Polygala paucifolia	0.4	0.2	0.2	0.27
Populus tremuloides	0.0	0.0	0.2	0.07
Prenanthes alba	0.2	0.0	0.1	0.10
Pyrola sp.	0.0	0.0	0.2	0.07
Ranunculus hispidus	0.0	0.0	0.1	0.03
Ribes hirtellum	0.1	0.0	0.0	0.03
Ribes triste	0.2	0.0	0.0	0.07
Rosa acicularis	0.0	0.3	0.0	0.10
Rubus idaeus ssp. strigosus	0.0	0.0	0.1	0.03
Rubus parviflorus	0.4	0.8	0.3	0.50
Rubus pubescens	0.7	0.1	0.5	0.43
Sorbus decora	0.3	0.0	0.0	0.10
Streptopus lanceolatus var. roseus	0.8	0.8	0.2	0.60
Symplocarpus foetidus	0.0	0.0	0.2	0.07
Taxus canadensis	0.0	0.1	0.0	0.03
Thalictrum dasycarpum	0.0	0.0	0.3	0.10
Thuja occidentalis	0.1	0.0	0.0	0.03
Trientalis borealis	0.1	0.0	0.0	0.03

Plot: 4064

Species	Quadrat Frequency			Mean Quadrat Frequency
	1	2	3	
Trillium sp.	0.0	0.1	0.0	0.03
Viburnum edule	0.1	0.0	0.0	0.03
Viola sp.	0.4	0.5	0.0	0.30

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

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