



Forest Vegetation Status in Shenandoah National Park

Long-term Ecological Monitoring Summary Report 2003-2011

Natural Resource Data Series NPS/MIDN/NRDS—2012/353



ON THE COVER

Sugar maple (*Acer saccharum*) grove on Crescent Rocks.
Photograph by: Wendy B. Cass

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Abstract

This report presents a summary of the forest vegetation monitoring data collected between 2003 and 2011 by the Shenandoah National Park (SHEN) Inventory and Monitoring (I&M) Program, a part of the Mid-Atlantic Inventory and Monitoring Network of the National Park Service. Measurements were made at 160 monitoring sites each of which contains two 15 m line transects, and a single 576 m² square permanent monitoring plot and associated subplots. Monitoring sites were stratified throughout the park based on combinations of elevation, aspect, and bedrock geology. This report includes results from three sampling blocks, 2003-2005, 2007, and 2008-2011, each of which includes a complete sampling of all 160 vegetation monitoring sites.

The SHEN forest monitoring program seeks to evaluate changes in forest composition, structure, regeneration, and growth as influenced by natural and anthropogenic factors over time, while also providing information on woody debris and snags abundance, and soil composition (Smith and Torbert 1990, Cass et al. 2011). All data summarized in this report were collected according to the specifications of the program's current forest vegetation monitoring protocol (Cass et al. 2011). The results reported here provide highlights of the available data. Additional analytical measures are being investigated and will be reported in the future to examine trends over time.

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Introduction

Forests are the dominant ecosystem in the eastern United States, and are a key ecosystem component in Shenandoah National Park (SHEN). Forest vegetation occupies 97% of the park's 80,539 hectare (199,015 acre) land area (Young et al. 2009), and is the matrix upon which many other organisms depend.

SHEN forest plant communities are relatively young (less than 100 years old) and vary based on numerous factors including slope, aspect, elevation, geology, and moisture, as well as land use history, and natural and anthropogenic disturbances. Forest communities dominated by oak (*Quercus* spp.), hickory (*Carya* spp.), and pine (*Pinus* spp.) compose 74% of park vegetation, while rich mixed hardwood forests of maple (*Acer* spp.), birch (*Betula* spp.), tulip tree (*Liriodendron tulipifera*), basswood (*Tilia americana*), and ash (*Fraxinus* spp.) compose 25% of park vegetation. The remaining 1% of park vegetation is composed of wetland and rock outcrop communities (Young et al. 2009).

Forest vegetation is one of the vital signs selected by the SHEN Inventory and Monitoring Program (I&M) for long-term study because describing the condition of forest vegetation is fundamental to knowing the status of park resources. Park managers need information on the status of prevalent and influential park resources like forest vegetation, in order to make management decisions and work with other agencies, and the public to protect park ecosystems (Fancy et al. 2009).

The SHEN forest monitoring program began in the 1980's and continued as an NPS I&M Program prototype in the 1990's. Current methods were initiated in 2003 and involve taking forest vegetation measurements at 160 stratified random sites over a four year sampling block. Variations in available funding have influenced sample block length, resulting in the occurrence of three sample blocks of unequal duration between 2003 and 2011 (Cass et al. 2011).

SHEN forest vegetation monitoring data describe the status and trends in forest vegetation metrics, and the impacts of stressors such as exotic plants on native vegetation, and acid deposition on forest soils. Information on snags and provide additional information on habitat characteristics. The purpose of this report is to provide a basic summarization of SHEN forest vegetation monitoring data from 2003 – 2011. Throughout the report, results are presented for each of three sampling blocks: 2003-2005, 2007, and 2008-2011. A more detailed report with temporal analyses for 2003-2011 is being prepared.

Methods

A summary of the methods used for forest monitoring and data summarization is provided in this section. More detailed methodology information may be found in the SHEN forest vegetation monitoring protocol (Cass et al. 2011).

Field Sampling

Vegetation and soil are monitored throughout the Park at 160 randomly located permanent sampling sites (Figures 1, 2, 3). Sites are stratified by ecological land units (ELU) defined by unique combinations of aspect (two classes: SW = 315-124 degrees, NE = 125-314 degrees), elevation (three classes: Low = 0-609 m, Mid = 610-914 m, High = 915-1144 m), and bedrock geology (three classes: Basaltic, Granitic, and Siliciclastic) (Diefenbach and Vreeland 2003; Figures 4, 5 and 6). All sites are located away from established trails, roads, and developed areas in areas with a slope less than 50%.

Field sampling is completed between mid-May and September (Table 1). The 24 x 24 m plot within each site includes several embedded sampling units used to document a variety of vegetation metrics (Figure 7). Woody species within the plot are subdivided into three sampling strata based on diameter at breast height (DBH, 1.37 m) and height: tree, shrub/sapling, and seedling/sprout (Table 2). At each site, the tree strata, herb cover, exotic cover, and ground cover measurements are collected within the entire 24 m x 24 m plot (576 m²). Woody species measurements in the shrub/sapling strata (“shrubs”) are collected within two 2 m x 24 m belt transects (96 m²). Woody species measurements in the seedling/sprout strata (“seedlings”) are collected within two 0.5 m x 12 m belt transects (12 m²). Fine fuels and coarse woody debris data are measured along two 15 m transects extending outward from the plot. In addition, a composite A-horizon soil sample and an average duff thickness was collected from the perimeter of each plot between 2007 and 2011. Detailed standard operating procedures for data collection are available in Cass et al. (2011).

Taxonomic Standards

Species nomenclature for this report follows that of the current NPSpecies database for Shenandoah National Park accessible through the Integration of Resource Management Applications (IRMA) portal (<https://irma.nps.gov/App/Portal/Home>). NPSpecies taxonomy is current with the most recent updates from the Integrated Taxonomic Information System (ITIS: <http://www.itis.gov>). In cases where a plant could not be identified to genus and species, the lowest level of taxonomy identifiable was used.

Taxonomic synchronization was performed to the standards outlined in Standard Operating Procedure 15 (Data Management and Quality Control) in Cass et al. (2011). As a result of this review, several groups of frequently confused taxa were identified. In such cases, species from the genus of concern were combined into a single custom taxonomic group for data summarization. For example, one taxa group that includes all representatives of the grape genus (*Vitis*) was assigned in the shrub strata. Taxa groups were created to alleviate taxonomic synchronization issues arising in the seedling strata. Examples include grouping seedlings of pignut hickory (*Carya glabra*), sweet picknut hickory (*Carya ovalis*), and hickory seedlings identified only to genera (*Carya* sp.) into a subgroup of hickory seedlings, and a separate grouping of dewberry (*Rubus flagellaris*), groundberry (*R. hispidus*), sawtooth blackberry (*R.*

argutus), allegheny blackberry (*R. allegheniensis*), and blackberries identified only to genus (*Rubus* spp.) into a subgroup of blackberry seedlings.

Data Summarization

Data summarization was done using a combination of techniques in Microsoft Access and Excel, and 'R' according to the guidelines outlined in the text of Standard Operating Procedure 16 and tables 16.2, 16.5 and 16.15 (Cass et al. 2011).

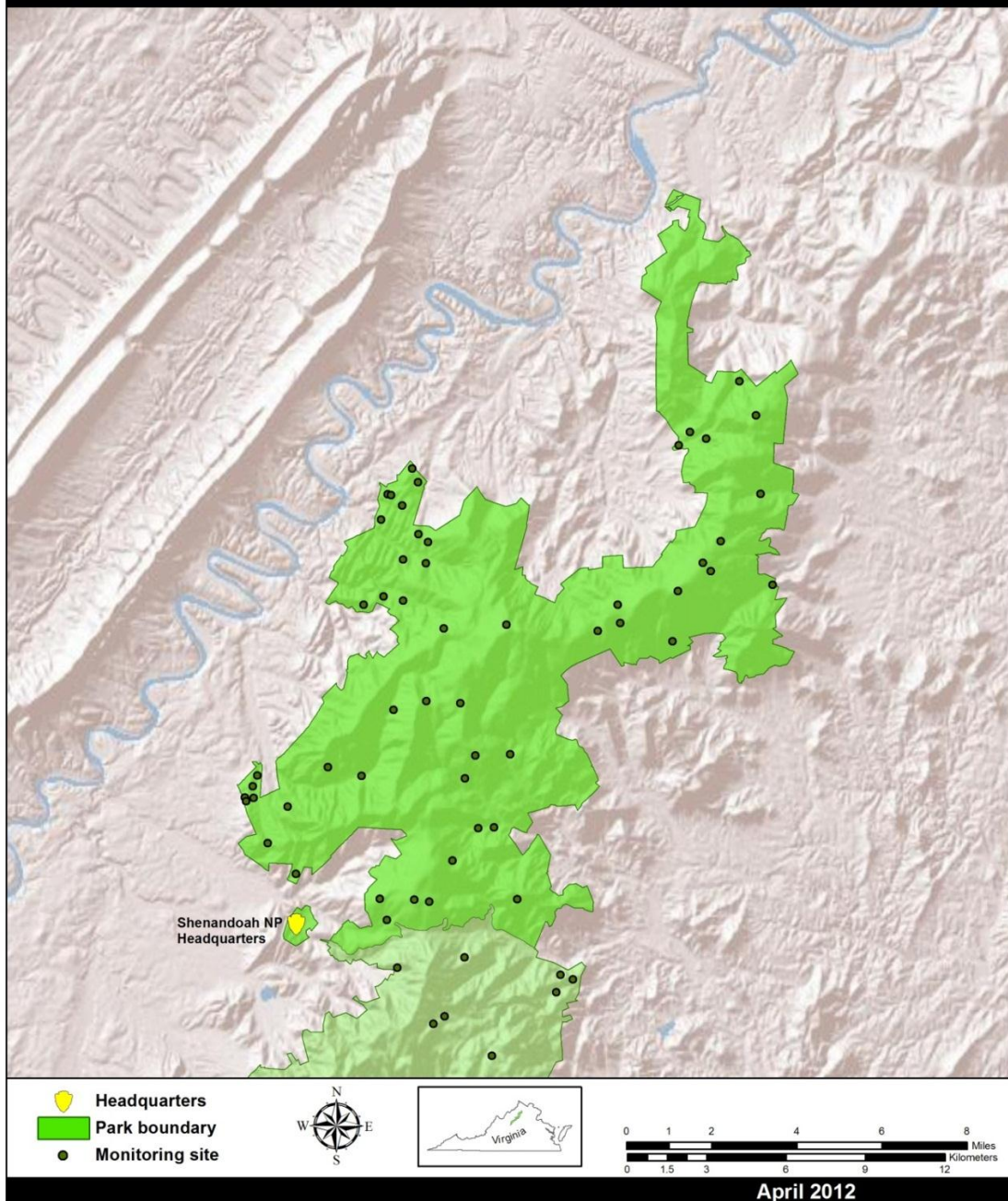


Figure 1. Location of long-term forest vegetation monitoring sites in the North District of Shenandoah National Park.

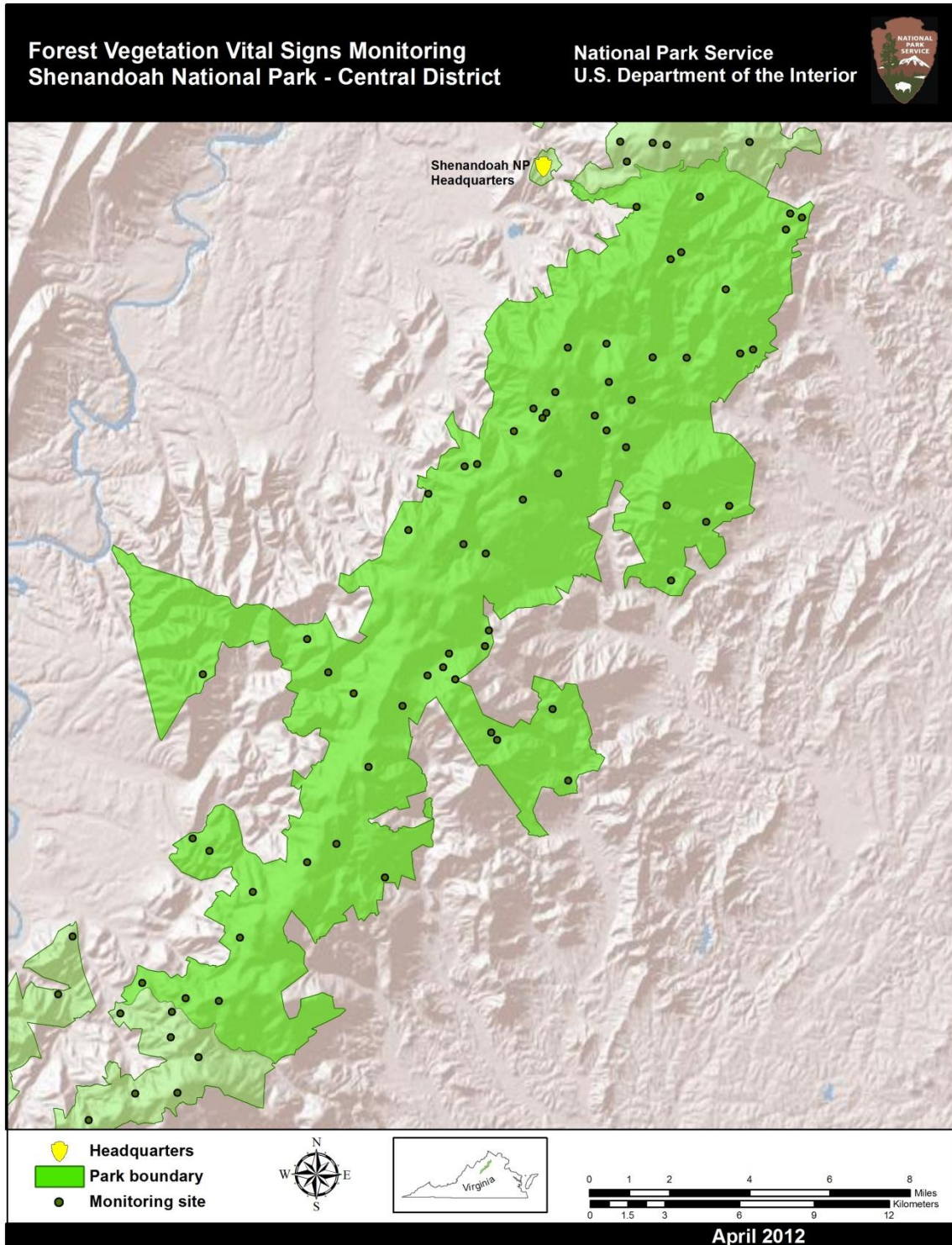


Figure 2. Location of long-term forest vegetation monitoring sites in the Central District of Shenandoah National Park.

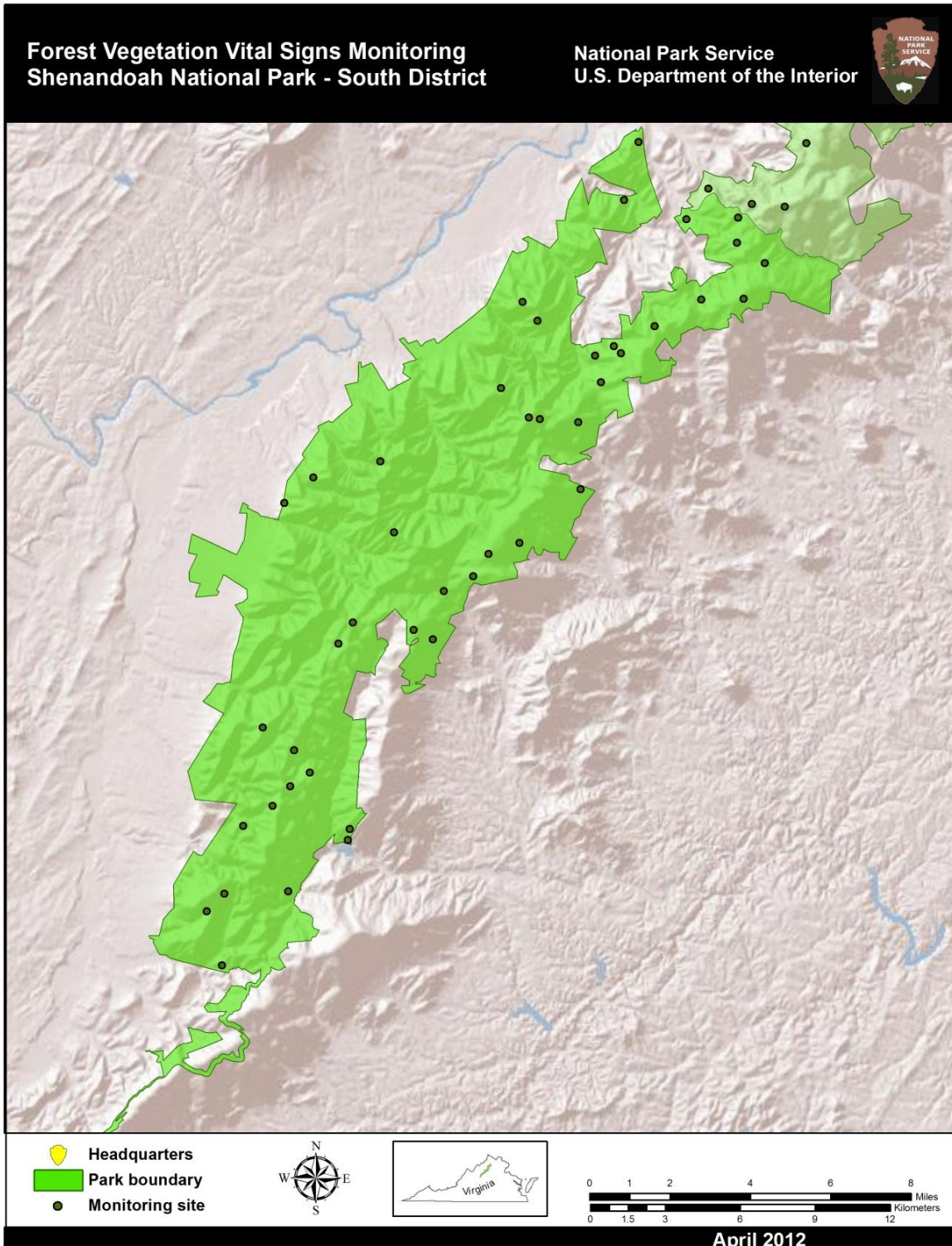


Figure 3. Location of long-term forest vegetation monitoring sites in the South District of Shenandoah National Park.



Figure 4. Documentation photo of forest vegetation monitoring site number 1L103 in the north district of Shenandoah National Park. Ecological land unit classification: siliciclastic / low-elevation / northeast aspect.



Figure 5. Documentation photo of forest vegetation monitoring site number 2L592 in the central district of Shenandoah National Park. Ecological land unit classification: granitic / mid-elevation / southwest aspect.



Figure 6. Documentation photo of forest vegetation monitoring site number 3L113 in the south district of Shenandoah National Park. Ecological land unit classification: basaltic / mid-elevation / northeast aspect.

Table 1. Number of vegetation monitoring sites established and sampled at SHEN by year.

Sampling Block	Year	Number of new sites installed	Number of existing and new sites sampled
1	2003	8	27
	2004	16	30
	2005	70	103
2	2007	--	160
3	2008	--	44
	2009	--	51
	2010	--	56
	2011	--	9

Table 2. Vegetation sampling classification of stems by diameter at breast height (DBH) and height.

	DBH	Height
Tree	≥ 10 cm	> 1.37 m
Shrub/Sapling	< 10 cm	≥ 1.5 m
Seedling/Sprout	< 10 cm	< 1.5 m

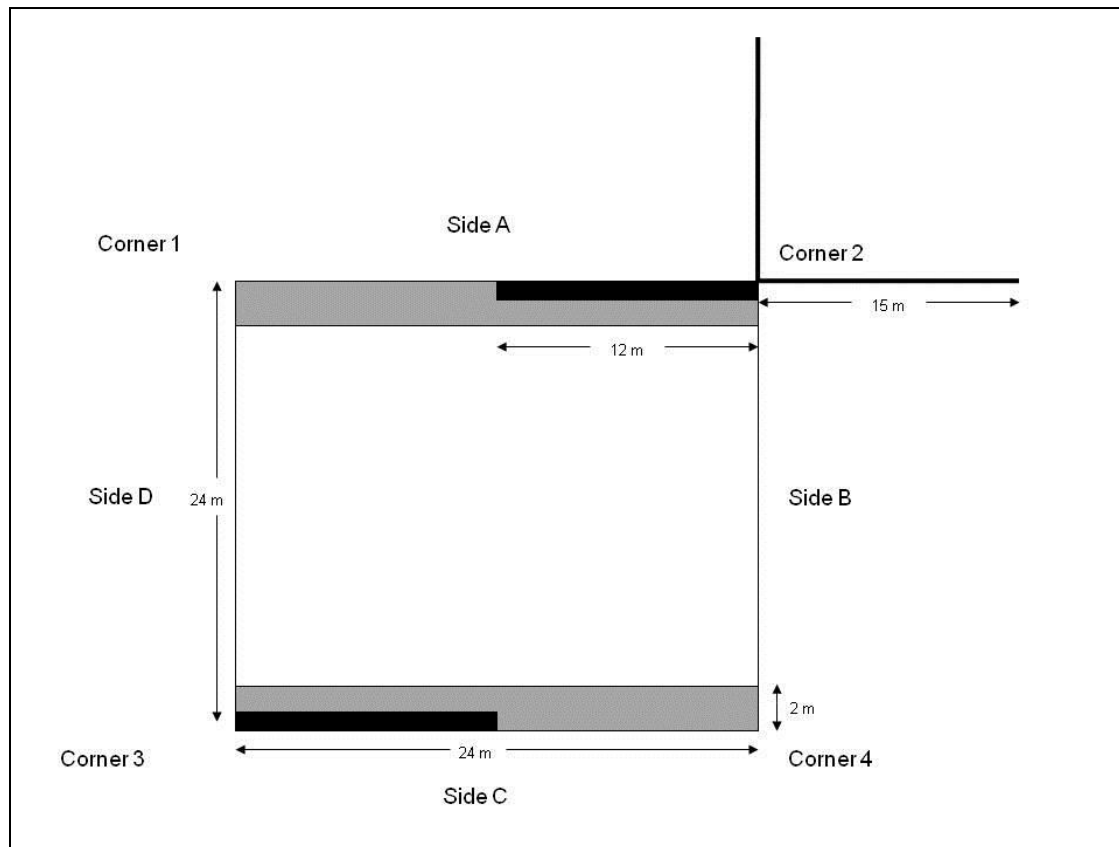


Figure 7. Site design for the Shenandoah National Park forest vegetation monitoring protocol. Tree, exotic plant, herb, and site measurements are collected within the 24 x 24 m plot (576 m²). Shrub, and tree sapling measurements are collected within the 2 x 12 m subplots (96 m² per site). Tree seedling and sprout measurements are collected within the 0.5 x 12 m subplots (12 m² per site). Course woody debris measurements are collected along two 15 m transects extending from Corner 2.

Results

This report presents data for environmental, vegetation structure, and community composition metrics. Tables 3 – 5 summarize environmental metrics including soil chemical characteristics (Table 3), soil texture (Table 4), and ground cover (Table 5). Tables 6 – 10 present the status of vegetation structure variables for woody species including density (Table 6), basal area (Table 7), density by tree crown health classes (Table 8), density by tree crown height classes (Table 9), and frequency (Table 10). Additional vegetation structure variables for exotic and herbaceous species are displayed in Tables 11 and 12. Table 11 summarizes the frequency of occurrence for select exotic species by cover class in plots for which a species was surveyed. Table 12 summarizes the frequency of occurrence for herb species by cover class, in plots where the listed species were recorded as one of the five dominant herb species. Table 13 presents the community composition metric of species richness for woody species by vegetation strata. In all text and tables where error values are displayed, values are standard error.

The genera designation is used in tables to represent a compilation of data for all listed species and species groups, as well as any data from within the genera that was not assigned to a species or species group. For density and basal area (Tables 6 and 7), shrub classes represent diameter size classes as follows: Class 1 is 0.1 cm – 1.0 cm, Class 2 is >1.0 cm – 2.5 cm, Class 3 is >2.5 cm – 5.0 cm, and Class 4 is >5.0 cm to <10.0 cm. Seedling classes represent height classes as follows: Class High is ≥ 15 cm to < 1.5 m, and Class Low is 0.1 cm to < 15 cm. Seedlings were not differentiated into size classes during the first sampling block from 2003-2005. For frequency of woody species (Table 10), the designated shrub and seedling strata respectively combine the shrub diameter classes and the seedling height classes.

The following symbols are used within Tables 6 – 11 immediately to the right of each scientific name, to designate the life form of mature individuals of any given species: “†” trees, “*” shrubs, “§” vines, and “~” herbs. However, because Tables 8 and 9 are almost completely dominated by tree species taxa, the “†” symbol has been omitted from the tree taxa, and the table only displays the “*” symbol as required to designate shrub species. Table 12 contains only herbaceous taxa and therefore contains no life form designation symbols to the right of the taxa names. In all tables, the “--” symbol is used to designate that a value is not present, and a “0” is used to indicate that the value is too small to display.

Environmental Characteristics

Soil samples revealed a distinct chemical profile for soil from sites within each of the three bedrock geology types (Table 3). Soil pH ranged from an average of 4.01 ± 0.05 in sites on siliciclastic bedrock to 5.11 ± 0.09 in sites on basaltic bedrock. Soil organic matter ranged from an average of 12.23 ± 2.09 % in sites on siliciclastic bedrock to an average of 15.88 ± 1.21 % in sites on basaltic bedrock. Sites on basaltic bedrock had soils with the highest concentrations of macronutrients such as calcium, magnesium, and potassium as well as micronutrients such as copper, zinc, boron, and manganese. Sites on siliciclastic bedrock had soils with the lowest concentrations of nutrients. The calcium to aluminum ratio was lowest in siliciclastic soils (0.34 ± 0.04) and highest in basaltic soils (1.15 ± 0.12) (Table 3).

Soil texture from sites within each bedrock geology type revealed that soil from sites on basaltic bedrock had the highest concentrations of silt (43.76 ± 1.45 %) and clay (13.07 ± 1.11 %),

whereas soil from sites on siliciclastic bedrock had the highest concentrations of sand ($58.56 \pm 1.85\%$) (Table 4).

In all three sampling blocks the ground cover within monitoring plots was consistently dominated by leaf litter and rock, with much less coverage by organic soil, moss, and mineral soil (Table 5).

Vegetation Structure

Woody species density

Live tree stem density for all taxa combined ranged from 434.5 ± 12.3 to 444.9 ± 12.2 stems per hectare among the three sampling blocks (Table 6). Chestnut oak (*Quercus prinus*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), black birch (*Betula lenta*), and black gum (*Nyssa sylvatica*) had the highest mean live stem density values, averaging approximately 74 stems per hectare (*Q. prinus*), 46 stems per hectare (*A. rubrum*), 35 stems per hectare (*Q. rubra*), and 30 stems per hectare (*B. lenta*, *N. sylvatica*) over the three sampling blocks (Table 6).

In all three sampling blocks, total live shrub stem density for all taxa combined decreased when moving from the smaller to the larger stem diameter classes (Table 6). Live shrub stem density for all taxa combined ranged from $1,513.5 \pm 184.7$ stems per hectare to $1,838.4 \pm 253.9$ stems per hectare across the three sampling blocks for stems less than 1 cm in diameter (Class 1), and ranged from 345.1 ± 22.4 stems per hectare to 370.2 ± 25.2 stems per hectare for stems between 5 and 9.9 cm diameter (Class 4) (Table 6). The most commonly encountered shrubs in all size classes were spicebush (*Lindera benzoin*), black birch (*Betula lenta*), and mountain laurel (*Kalmia latifolia*). Blackberries (*Rubus* spp.) and greenbrier (*Smilax* spp.) were also well represented in the smallest diameter size class in all three sampling blocks (Table 6).

Among all three sampling blocks, total combined seedling stem density for all taxa combined ranged from $263,177.4 \pm 45,467.6$ stems per hectare to $227,820.7 \pm 19,303$ stems per hectare (Table 6). The most commonly encountered woody seedlings were those of low bush blueberry (*Vaccinium pallidum*), black huckleberry (*Gaylussacia baccata*), and birch (*Betula* spp.) (Table 6).

Woody species basal area

The basal area for all live tree taxa combined ranged from 25.7105 ± 0.7435 m² per hectare to 26.9794 ± 0.7980 m² per hectare among the three sampling blocks (Table 7). Chestnut oak (*Quercus prinus*), tulip tree (*Liriodendron tulipifera*), and red oak (*Quercus rubra*) had the highest mean basal area values, averaging approximately 5 m² per hectare (*Q. prinus*), and 4 m² per hectare (*L. tulipifera*, *Q. rubra*) across the three sampling blocks (Table 7).

Density by tree crown health class

The mean stem density was highest in the healthiest tree crown health class (Class 1) and lowest in the dead crown health class (Class 5) for the vast majority of species in all three sampling blocks (Table 8). One notable exception occurred with eastern hemlock (*Tsuga canadensis*) where mean density was greater in the higher (less healthy) classes in all three sampling blocks (Table 8).

Live tree density by crown height class

The three tree genera with the highest tree strata frequency of occurrence of live individuals in all three sampling blocks were oaks (*Quercus*, primarily represented by chestnut oak, *Q. prinus*, and red oak, *Q. rubra*), maples (*Acer*, primarily represented by red maple, *A. rubrum*), and birches (*Betula*, primarily represented by black birch, *B. lenta*) (Table 9). Density results for the crown height classes for each of these genera are described below.

Oaks

In sampling block 1, 1,416 oak stems were measured within the tree strata. 19.4% (38.5 ± 3.6 stems/ha) of these stems were classified as dominant, 51.2% (101.5 ± 9.1 stems/ha) were classified as co-dominant, 19.7% (39.1 ± 4.7 stems/ha) were classified as intermediate, and 9.7% (19.2 ± 2.4 stems/ha) were classified as suppressed (Table 9a). In sampling block 2, 1,372 oak stems were measured within the tree strata. 35.4% (67.5 ± 5.4 stems/ha) of these stems were classified as dominant, 41.3% (78.6 ± 7.1 stems/ha) were classified as co-dominant, 18.7% (35.7 ± 4.2 stems/ha) were classified as intermediate, and 4.6% (8.7 ± 1.4 stems/ha) were classified as suppressed (Table 9b). In sampling block 3, 1,357 oak stems were measured within the tree strata. 21.2% (40.7 ± 4.1 stems/ha) of these stems were classified as dominant, 52.6% (100.8 ± 8.8 stems/ha) were classified as co-dominant, 18.1% (34.7 ± 3.9 stems/ha) were classified as intermediate, and 8.0% (15.4 ± 2.1 stems/ha) were classified as suppressed (Table 9c).

Maples

In sampling block 1, 566 maple stems were measured within the tree strata. 1.8% (1.5 ± 0.5 stems/ha) of these stems were classified as dominant, 17.0% (14.4 ± 2.2 stems/ha) were classified as co-dominant, 38.0% (32.2 ± 3.7 stems/ha) were classified as intermediate, and 43.3% (36.7 ± 3.6 stems/ha) were classified as suppressed (Table 9a). In sampling block 2, 570 maple stems were measured within the tree strata. 7.4% (6.2 ± 1.7 stems/ha) of these stems were classified as dominant, 19.5% (16.3 ± 2.4 stems/ha) were classified as co-dominant, 43.5% (36.5 ± 3.6 stems/ha) were classified as intermediate, and 29.6% (24.9 ± 2.6 stems/ha) were classified as suppressed (Table 9b). In sampling block 3, 596 maple stems were measured within the tree strata. 2.7% (2.3 ± 0.7 stems/ha) of these stems were classified as dominant, 19.8% (17.2 ± 2.7 stems/ha) were classified as co-dominant, 35.6% (30.9 ± 3.0 stems/ha) were classified as intermediate, and 41.9% (36.5 ± 3.6 stems/ha) were classified as suppressed (Table 9c).

Birches

In sampling block 1, 291 birch stems were measured within the tree strata. 8.2% (6.8 ± 4.1 stems/ha) of these stems were classified as dominant, 36.4% (30.2 ± 6.3 stems/ha) were classified as co-dominant, 31.6% (26.2 ± 3.5 stems/ha) were classified as intermediate, and 23.7% (19.6 ± 3.2 stems/ha) were classified as suppressed (Table 9a). In sampling block 2, 309 birch stems were measured within the tree strata. 9.1% (7.8 ± 3.1 stems/ha) of these stems were classified as dominant, 40.8% (35.3 ± 7.4 stems/ha) were classified as co-dominant, 35.0% (30.2 ± 3.7 stems/ha) were classified as intermediate, and 15.2% (13.2 ± 2.4 stems/ha) were classified as suppressed (Table 9b). In sampling block 3, 315 birch stems were measured within the tree strata. 4.4% (3.8 ± 2.0 stems/ha) of these stems were classified as dominant, 38.4% (32.8 ± 8.8 stems/ha) were classified as co-dominant, 35.6% (30.4 ± 3.8 stems/ha) were classified as intermediate, and 21.6% (18.4 ± 2.8 stems/ha) were classified as suppressed (Table 9c).

Woody taxa frequency of occurrence by strata

Within the seedling strata, the most frequently occurring taxa were maples (*Acer* spp., frequency range 88.1%-89.4% over the three sampling blocks), oaks (*Quercus* spp., frequency range 73.1%-80.0% over the three sampling blocks), ashes (*Fraxinus* spp., frequency range 48.8%-55.6% over the three sampling blocks), and sassafras (*Sassafras albidum*, frequency range 48.8%-58.1% over the three sampling blocks) (Table 10).

Within the shrub strata, the most frequently occurring taxa were maples (*Acer* spp., frequency range 63.1% - 64.4% over the three sampling blocks), sassafras (*Sassafras albidum*, frequency range 29.4%-35.0% over the three sampling blocks), mountain laurel (*Kalmia latifolia*, frequency 30% for all sampling blocks), spice bush (*Lindera benzoin*, frequency range 27.5%-30% over the three sampling blocks), and oaks (*Quercus* spp., frequency range 28.1% to 31.9% over the three sampling blocks) (Table 10).

Within the tree strata, the most frequently occurring taxa were oaks (frequency range 76.9%-78.1% over the three sampling blocks), maples (frequency range 72.5% - 76.9% over the three sampling blocks), birches (*Betula* spp., frequency range 38.1% – 40.0% over the three sampling blocks), and black gum (*Nyssa sylvatica*, frequency 36.3% for all sampling blocks) (Table 10).

Frequency of exotic species presence by cover class

For most exotic species monitored among the three sampling blocks, the percentage of plots that were free of the targeted exotic species decreased over time (Table 11). Some species such as Japanese stilt grass (*Microstegium vimineum*) and multiflora rose (*Rosa multiflora*) showed clear evidence of increase in frequency of occurrence over time. Plots free of Japanese stilt grass decreased from 90.0% in sampling block 1, to 85.6% in sampling block 2, and 82.5% in sampling block 3. Plots free of multiflora rose decreased from 94.4% in sampling block 1, to 93.1% in sampling block 2, and 92.5% in sampling block 3 (Table 11). Data for other species did not always show as clear a trend. For example, the percentage of plots free of garlic mustard (*Alliaria petiolata*) varied from 57.9%, 61.3%, and 51.9% in sampling blocks 1, 2 and 3, respectively (Table 11). Similarly, the percentage of plots free of oriental lady's thumb (*Polygonum caespitosum*) varied from 61.3%, 67.5%, and 66.9% in sampling blocks 1, 2 and 3, respectively (Table 11).

Frequency of dominant herb species displayed by cover class

Across all three sampling blocks, the exotic herbs garlic mustard (*Alliaria petiolata*) and oriental lady's thumb (*Polygonum caespitosum*) were identified as one of the top five herbs (based on percent cover) in at least 15% of monitoring plots (Table 12). In the second sampling block, garlic mustard was identified as one of the top five herbs in 23% of monitoring plots. Across all three sampling blocks, however, native herbs such as hay scented fern (*Dennstaedtia punctilobula*), wood nettle (*Laportea canadensis*), black cohosh (*Actaea racemosa*), and hog peanut (*Amphicarpaea bracteata*) were chosen most frequently as one of the top five herbaceous species within a plot (Table 12).

Snags and coarse woody debris

Snag density for all taxa combined was 7.6 ± 3.0 stems per hectare in sampling block 1, 1.3 ± 0.6 stems per hectare in sampling block 2, and 4.5 ± 1.2 stems per hectare in sampling block 3.

Coarse woody debris data are not being addressed in this report.

Community Composition

Total woody species richness within all 160 sampling plots ranged from a low of 108 species in sampling block 3 to a high of 112 species in sampling block 1 (Table 13). Tree strata richness averaged six species per plot, and ranged from a total of 51-53 species in all plots combined in each of the three sampling blocks. Shrub strata richness averaged six species per plot, and ranged from 81 – 85 species in all plots combined in each of the three sampling blocks. Woody seedling richness averaged between 16 and 17 species per plot, and ranged from 108 – 112 species in all plots combined in each of the three sampling blocks (Table 13).

An exploration of these results will be undertaken in a forthcoming trend report.

Table 3. Mean soil chemical characteristics ($\pm$ SE) by bedrock geology class. Collections were made between 2007 and 2011 (n=160). (*) indicates Mehlich III extractable elements. (^s) represents the percent of a given element found in the total exchange capacity of the soil.

	Basaltic n = 59	Granitic n = 54	Siliciclastic n = 47
Total Exchange Capacity meq/100 g	21.58 $\pm$ 0.70	20.71 $\pm$ 0.82	23.05 $\pm$ 0.91
pH (1:1 soil to water)	5.11 $\pm$ 0.09	4.76 $\pm$ 0.09	4.01 $\pm$ 0.05
SMP/Sikora Buffer pH	5.82 $\pm$ 0.07	5.62 $\pm$ 0.08	5.25 $\pm$ 0.07
OrganicMatter (%)	15.88 $\pm$ 1.21	12.55 $\pm$ 0.92	12.23 $\pm$ 2.09
Estimated Nitrogen Release #'s N/acre	123.29 $\pm$ 1.08	118.29 $\pm$ 1.56	109.29 $\pm$ 2.49
S* (mg/kg)	22.34 $\pm$ 1.07	23.35 $\pm$ 1.24	16.77 $\pm$ 0.60
P* (mg/kg)	24.66 $\pm$ 3.70	38.72 $\pm$ 5.88	17.45 $\pm$ 2.92
Ca (mg/kg)	1282.58 $\pm$ 101.14	740.59 $\pm$ 74.64	356.28 $\pm$ 48.01
Mg (mg/kg)	131.71 $\pm$ 12.33	76.46 $\pm$ 11.17	31.57 $\pm$ 5.40
K (mg/kg)	125.58 $\pm$ 8.32	94.81 $\pm$ 5.89	71.04 $\pm$ 3.72
Na (mg/kg)	27.88 $\pm$ 2.43	24.69 $\pm$ 1.01	23.49 $\pm$ 0.88
Ca ^s (%)	31.30 $\pm$ 2.49	19.85 $\pm$ 2.19	8.07 $\pm$ 1.12
Mg ^s (%)	5.76 $\pm$ 0.63	3.83 $\pm$ 0.63	1.20 $\pm$ 0.21
K ^s (%)	1.65 $\pm$ 0.14	1.42 $\pm$ 0.17	0.82 $\pm$ 0.04
Na ^s (%)	0.59 $\pm$ 0.05	0.56 $\pm$ 0.03	0.48 $\pm$ 0.03
H ^s (%)	60.71 $\pm$ 3.11	74.33 $\pm$ 2.91	89.42 $\pm$ 1.32
B* (mg/kg)	0.53 $\pm$ 0.05	0.34 $\pm$ 0.03	0.50 $\pm$ 0.12
Fe* (mg/kg)	216.80 $\pm$ 11.61	261.87 $\pm$ 15.24	324.32 $\pm$ 13.64
Mn* (mg/kg)	119.12 $\pm$ 9.30	38.35 $\pm$ 5.19	36.04 $\pm$ 8.77
Cu* (mg/kg)	2.23 $\pm$ 0.12	1.28 $\pm$ 0.12	1.22 $\pm$ 0.09
Zn* (mg/kg)	6.03 $\pm$ 0.55	3.33 $\pm$ 0.24	2.03 $\pm$ 0.17
Al* (mg/kg)	1303.31 $\pm$ 49.33	1508.24 $\pm$ 58.21	1067.89 $\pm$ 50.62
Ca: Al (mg/kg)	1.15 $\pm$ 0.12	0.59 $\pm$ 0.10	0.34 $\pm$ 0.04

Table 4. Mean soil texture characteristics ($\pm$ SE) by bedrock geology class. Collections were made between 2007 and 2011 (n=159).

	Basaltic n = 59	Granitic n = 53	Siliciclastic n = 47
% Sand	43.17 $\pm$ 1.83	54.87 $\pm$ 1.57	58.56 $\pm$ 1.85
% Silt	43.76 $\pm$ 1.45	33.59 $\pm$ 1.14	32.27 $\pm$ 1.49
% Clay	13.07 $\pm$ 1.11	11.54 $\pm$ 0.90	9.17 $\pm$ 0.81

Table 5. Frequency of ground cover type (%) by cover class for the three SHEN forest vegetation monitoring sampling blocks (1: 2003-2005, n=160; 2: 2007, n=160; 3: 2008-2011, n=159). Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%).

Sampling Block	Ground Cover	Cover Class									
		1	2	3	4	5	6	7	8	9	10
1	Leaf Litter	0.00	0.00	0.00	0.63	0.00	0.63	5.63	18.75	46.25	28.13
	Moss	6.88	68.75	11.88	7.50	3.13	1.25	0.63	0.00	0.00	0.00
	Mineral Soil	27.50	55.00	9.38	4.38	0.63	1.88	1.25	0.00	0.00	0.00
	Organic Soil	11.88	43.75	16.25	16.88	4.38	5.00	1.88	0.00	0.00	0.00
	Rock	1.25	33.75	20.00	16.88	6.88	9.38	9.38	2.50	0.00	0.00
2	Leaf Litter	0.00	0.00	0.00	0.00	1.25	1.25	5.00	11.25	43.13	38.13
	Moss	3.75	53.75	26.88	10.63	1.25	2.50	0.63	0.63	0.00	0.00
	Mineral Soil	26.25	58.75	11.88	1.88	0.63	0.00	0.63	0.00	0.00	0.00
	Organic Soil	3.13	48.75	26.25	12.50	3.75	3.13	1.25	1.25	0.00	0.00
	Rock	2.50	28.75	21.88	14.38	13.13	6.88	10.63	1.25	0.63	0.00
3	Leaf Litter	0.00	0.00	0.00	1.26	0.00	0.63	1.26	10.69	44.65	41.51
	Moss	1.89	67.92	18.24	9.43	1.89	0.00	0.63	0.00	0.00	0.00
	Mineral Soil	18.87	69.81	6.92	3.14	0.63	0.00	0.63	0.00	0.00	0.00
	Organic Soil	2.52	61.64	22.01	5.66	5.66	1.89	0.63	0.00	0.00	0.00
	Rock	1.26	32.70	24.53	14.47	6.29	11.32	8.18	0.00	0.63	0.63

Table 6a. Mean density (live stems per ha) for SHEN forest vegetation monitoring sampling block 1 (2003-2005) for each woody vegetation strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

DENSITY Sampling Block 1 Taxa	Trees	Shrubs				Class High	Seedlings	
		Class 1	Class 2	Class 3	Class 4		Class Low	High/Low Combined
All Taxa	442.2 (12.3)	1838.4 (253.9)	1414.1 (123.7)	730.3 (58.5)	357.6 (25.8)	--	--	263177.4 (45467.6)
Acer	61.6 (5.3)	161.8 (28.8)	198.1 (33.3)	93.5 (15.5)	71.2 (10.1)	--	--	17659.3 (1580.9)
<i>Acer negundo</i> †	0.8 (0.3)	1.9 (1.4)	0.6 (0.6)	0.6 (0.6)	1.9 (1.4)	--	--	47.1 (25.8)
<i>Acer pensylvanicum</i> †	11.7 (2.1)	80.2 (20.2)	102.0 (23.9)	39.2 (7.0)	31.4 (7.3)	--	--	2825.5 (537.5)
<i>Acer rubrum</i> †	46.0 (4.7)	78.3 (19.4)	93.5 (20.4)	51.0 (13.6)	37.9 (6.8)	--	--	14263.9 (1422.9)
<i>Acer saccharum</i> †	3.2 (1.2)	1.3 (0.9)	--	2.0 (1.1)	--	--	--	522.8 (330.9)
<i>Acer spicatum</i> †	--	--	1.9 (1.9)	0.6 (0.6)	--	--	--	--
<i>Ailanthus altissima</i> †	1.9 (1.1)	14.3 (5.5)	5.2 (3.3)	1.3 (0.8)	0.6 (0.6)	--	--	605.0 (168.8)
<i>Albizia julibrissin</i> †	--	--	--	--	--	--	--	405.0 (405.0)
<i>Alnus serrulata</i> *	--	--	--	--	--	--	--	5.4 (5.4)
Amelanchier	2.9 (1.1)	4.0 (2.3)	11.1 (2.9)	9.2 (3.2)	2.6 (1.3)	--	--	1278.0 (518.2)
<i>Amelanchier arborea</i> †	2.9 (1.1)	4.0 (2.3)	11.1 (2.9)	9.2 (3.2)	2.6 (1.3)	--	--	--
<i>Amelanchier laevis</i> *	--	--	--	--	--	--	--	--
<i>Asimina triloba</i> †	--	6.4 (4.5)	7.1 (7.1)	--	--	--	--	51.1 (42.3)
<i>Berberis thunbergii</i> *	--	--	--	--	--	--	--	--
Betula	31.4 (5.2)	150.9 (60.0)	96.3 (39.4)	34.7 (12.6)	22.3 (5.8)	--	--	79323.9 (44634.5)
<i>Betula alleghaniensis</i> †	2.5 (1.0)	10.8 (7.2)	9.7 (7.3)	4.5 (3.0)	1.9 (1.4)	--	--	--
<i>Betula lenta</i> †	29.0 (5.0)	140.2 (54.8)	86.0 (33.4)	30.2 (10.9)	20.4 (5.7)	--	--	--
<i>Broussonetia papyrifera</i> †	--	--	--	--	--	--	--	20.5 (20.5)
<i>Campsis radicans</i> §	--	--	--	--	--	--	--	--
<i>Carpinus caroliniana</i> †	0.1 (0.1)	0.7 (0.7)	0.7 (0.7)	2.0 (1.5)	--	--	--	73.3 (42.5)
Carya	25.8 (4.2)	7.3 (3.3)	13.8 (4.0)	9.9 (3.2)	16.4 (4.1)	--	--	854.0 (108.1)
<i>Carya alba</i> †	2.1 (1.0)	--	2.0 (2.0)	0.7 (0.7)	1.3 (0.9)	--	--	116.9 (51.8)
<i>Carya cordiformis</i> †	1.0 (0.4)	4.0 (2.8)	3.9 (1.8)	3.9 (2.1)	1.3 (0.9)	--	--	191.6 (46.3)
<i>Carya glabra</i> †	8.1 (2.0)	2.0 (1.1)	3.3 (2.0)	0.7 (0.7)	6.5 (2.3)	--	--	--
<i>Carya ovalis</i> †	11.5 (2.2)	1.3 (0.9)	3.9 (1.8)	4.6 (1.9)	6.0 (2.0)	--	--	--
<i>Carya ovata</i> †	2.8 (1.5)	--	--	--	1.3 (0.9)	--	--	94.5 (33.5)

DENSITY Sampling Block 1		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--	--	--	451.0 (78.0)
Castanea	0.2 (0.1)	13.2 (4.4)	21.6 (6.6)	11.8 (4.1)	4.6 (2.1)	--	--	190.6 (77.0)
<i>Castanea dentata</i> †	0.2 (0.1)	11.9 (4.2)	15.7 (4.7)	10.5 (3.9)	4.6 (2.1)	--	--	169.6 (74.6)
<i>Castanea pumila</i> †	--	1.3 (1.3)	5.9 (4.8)	1.3 (1.3)	--	--	--	21.0 (16.2)
<i>Celastrus orbiculatus</i> §	--	15.5 (13.7)	0.7 (0.7)	0.7 (0.7)	--	--	--	398.6 (207.4)
<i>Celtis occidentalis</i> *	0.6 (0.3)	--	--	3.4 (2.4)	3.0 (2.5)	--	--	223.5 (138.7)
<i>Cercis canadensis</i> †	2.8 (1.4)	11.4 (10.2)	7.0 (5.1)	2.6 (1.3)	1.3 (1.3)	--	--	1574.2 (538.6)
<i>Chimaphila maculata</i> *	--	--	--	--	--	--	--	36.2 (36.2)
<i>Clematis virginiana</i> §	--	6.4 (6.4)	--	--	--	--	--	336.3 (231.6)
Cornus	1.8 (0.8)	3.9 (1.8)	8.6 (3.2)	12.4 (3.2)	13.2 (3.3)	--	--	124.2 (44.3)
<i>Cornus alternifolia</i> *	--	1.3 (1.3)	1.3 (1.3)	0.6 (0.6)	--	--	--	50.3 (31.2)
<i>Cornus florida</i> †	1.8 (0.8)	2.6 (1.3)	7.3 (2.9)	11.9 (3.1)	13.2 (3.3)	--	--	73.9 (31.8)
Corylus	--	1.9 (1.4)	0.6 (0.6)	--	--	--	--	123.8 (67.3)
<i>Corylus americana</i> *	--	1.3 (1.3)	--	--	--	--	--	43.2 (43.2)
<i>Corylus cornuta</i> *	--	0.6 (0.6)	0.6 (0.6)	--	--	--	--	80.6 (51.6)
Crataegus	0.5 (0.5)	1.3 (1.3)	0.6 (0.6)	3.9 (2.2)	2.6 (1.5)	--	--	311.9 (157.5)
<i>Diospyros virginiana</i> †	1.7 (0.8)	--	--	--	0.6 (0.6)	--	--	31.2 (22.1)
<i>Dirca palustris</i> *	--	--	--	--	--	--	--	5.1 (5.1)
<i>Elaeagnus umbellata</i> *	--	--	--	--	--	--	--	10.7 (10.7)
<i>Epigaea repens</i> *	--	--	--	--	--	--	--	36.8 (22.0)
<i>Fagus grandifolia</i> †	0.7 (0.5)	--	--	1.3 (1.3)	0.6 (0.6)	--	--	15.6 (11.2)
Fraxinus	21.4 (3.5)	19.2 (5.2)	22.8 (5.8)	20.6 (6.0)	17.5 (5.1)	--	--	4917.7 (745.5)
<i>Fraxinus americana</i> †	20.2 (3.5)	19.2 (5.2)	22.8 (5.8)	20.6 (6.0)	17.5 (5.1)	--	--	--
<i>Fraxinus nigra</i> †	--	--	--	--	--	--	--	--
<i>Fraxinus pennsylvanica</i> †	1.1 (0.8)	--	--	--	--	--	--	--
<i>Gaultheria procumbens</i> *	--	--	--	--	--	--	--	11857.3 (5138.6)
<i>Gaylussacia baccata</i> *	--	--	--	--	--	--	--	23085.5 (4417.5)
<i>Hamamelis virginiana</i> *	0.1 (0.1)	74.4 (21.3)	125.5 (32.0)	77.7 (21.0)	11.1 (4.6)	--	--	1590.3 (384.9)
<i>Hydrangea arborescens</i> *	--	1.9 (1.4)	--	--	--	--	--	415.3 (140.2)
<i>Ilex montana</i> *	--	13.1 (6.5)	15.0 (7.4)	8.8 (4.3)	--	--	--	479.8 (134.3)

DENSITY Sampling Block 1		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Juglans nigra</i> †	0.6 (0.4)	--	--	--	--	--	--	--
<i>Juniperus virginiana</i> †	0.2 (0.1)	--	--	--	--	--	--	--
<i>Kalmia latifolia</i> *	--	100.0 (23.0)	216.2 (50.3)	187.6 (43.5)	43.0 (15.1)	--	--	5672.3 (983.9)
<i>Lindera benzoin</i> *	--	308.3 (64.4)	247.0 (48.3)	48.8 (15.1)	2.6 (1.3)	--	--	5501.0 (981.2)
<i>Liriodendron tulipifera</i> †	25.7 (4.6)	21.0 (8.6)	15.0 (5.3)	8.5 (4.0)	--	--	--	1634.8 (344.1)
<i>Lonicera japonica</i> §	--	14.2 (9.6)	3.2 (2.6)	1.3 (0.9)	--	--	--	4669.6 (1418.3)
<i>Lyonia ligustrina</i> *	--	3.3 (2.4)	--	--	--	--	--	764.7 (443.0)
Malus	0.9 (0.6)	--	--	1.3 (1.3)	0.6 (0.6)	--	--	5.2 (5.2)
<i>Malus pumila</i> †	0.6 (0.5)	--	--	1.3 (1.3)	0.6 (0.6)	--	--	5.2 (5.2)
<i>Menispermum canadense</i> §	--	0.7 (0.7)	--	--	--	--	--	143.8 (93.1)
<i>Menziesia pilosa</i> *	--	12.0 (12.0)	--	--	--	--	--	1193.4 (490.5)
Morus	--	--	--	--	--	--	--	15.5 (11.5)
<i>Morus alba</i> †	--	--	--	--	--	--	--	--
<i>Morus rubra</i> *	--	--	--	--	--	--	--	15.5 (11.5)
<i>Nyssa sylvatica</i> †	28.2 (4.8)	23.2 (9.1)	52.0 (10.6)	61.2 (13.1)	59.9 (9.8)	--	--	1824.5 (370.0)
<i>Ostrya virginiana</i> †	7.7 (2.0)	33.2 (10.7)	16.3 (7.6)	14.4 (8.1)	12.4 (4.5)	--	--	742.6 (247.8)
<i>Parthenocissus quinquefolia</i> §	--	2.0 (1.1)	--	0.6 (0.6)	--	--	--	9357.1 (1370.5)
Pinus	19.7 (4.2)	4.0 (2.5)	4.6 (2.3)	9.3 (4.6)	9.9 (4.4)	--	--	125.2 (44.7)
<i>Pinus echinata</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Pinus pungens</i> †	1.4 (0.7)	--	0.7 (0.7)	--	1.3 (1.3)	--	--	--
<i>Pinus rigida</i> †	5.0 (2.2)	--	--	0.7 (0.7)	0.7 (0.7)	--	--	41.9 (28.4)
<i>Pinus strobus</i> †	8.9 (2.8)	4.0 (2.5)	3.3 (2.1)	8.6 (4.6)	6.6 (3.5)	--	--	57.0 (27.6)
<i>Pinus virginiana</i> †	4.2 (1.2)	--	0.7 (0.7)	--	1.3 (0.9)	--	--	26.2 (17.3)
<i>Platanus occidentalis</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Populus grandidentata</i> †	--	1.3 (1.3)	0.6 (0.6)	--	--	--	--	5.1 (5.1)
Prunus	8.2 (1.9)	18.8 (9.3)	20.7 (10.2)	9.2 (4.8)	7.0 (2.0)	--	--	1800.9 (410.8)
<i>Prunus avium</i> †	0.5 (0.4)	--	--	--	1.3 (0.8)	--	--	42.3 (23.9)
<i>Prunus serotina</i> †	7.7 (1.8)	10.4 (8.5)	10.5 (7.4)	6.6 (4.0)	5.8 (1.8)	--	--	1014.4 (256.3)
<i>Prunus virginiana</i> †	--	8.3 (4.0)	10.2 (7.1)	2.6 (2.6)	--	--	--	744.3 (340.7)
<i>Ptelea trifoliata</i> †	--	--	--	--	--	--	--	--
Quercus	153.7 (9.6)	53.7 (17.7)	87.0 (27.9)	27.5 (7.2)	25.6 (5.5)	--	--	7138.6 (799.5)

DENSITY Sampling Block 1		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Quercus alba</i> †	14.5 (4.0)	2.0 (1.5)	4.6 (2.9)	2.6 (1.3)	2.6 (1.3)	--	--	406.9 (115.3)
<i>Quercus bicolor</i> †	0.4 (0.4)	--	--	--	--	--	--	--
<i>Quercus coccinea</i> †	16.2 (3.1)	5.3 (4.0)	9.3 (4.1)	2.7 (2.1)	0.7 (0.7)	--	--	--
<i>Quercus ilicifolia</i> *	--	19.0 (12.3)	31.5 (24.5)	2.6 (2.6)	--	--	--	413.9 (257.3)
<i>Quercus marilandica</i> †	5.9 (2.0)	0.7 (0.7)	1.3 (0.9)	4.7 (3.5)	9.9 (4.5)	--	--	90.0 (55.4)
<i>Quercus prinus</i> †	76.5 (7.3)	19.7 (9.7)	18.3 (8.2)	9.1 (3.9)	9.2 (2.4)	--	--	2619.2 (447.8)
<i>Quercus rubra</i> †	35.1 (4.2)	5.9 (2.5)	13.6 (7.5)	3.9 (2.2)	2.0 (1.1)	--	--	--
<i>Quercus velutina</i> †	5.0 (1.1)	1.3 (0.9)	8.5 (4.5)	2.0 (1.2)	1.3 (0.9)	--	--	--
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--	--	--	3582.8 (626.9)
Rhododendron	--	16.4 (7.1)	5.2 (2.2)	--	--	--	--	9871.7 (2121.8)
<i>Rhododendron periclymenoides</i> *	--	6.5 (3.3)	--	--	--	--	--	--
<i>Rhododendron prinophyllum</i> *	--	9.9 (6.3)	5.2 (2.2)	--	--	--	--	--
Rhus	--	0.7 (0.7)	0.6 (0.6)	--	--	--	--	15.4 (15.4)
<i>Rhus glabra</i> *	--	0.7 (0.7)	--	--	--	--	--	--
<i>Rhus hirta</i> *	--	--	0.6 (0.6)	--	--	--	--	15.4 (15.4)
Ribes	--	6.4 (6.4)	0.7 (0.7)	--	--	--	--	593.3 (310.1)
<i>Ribes rotundifolium</i> *	--	6.4 (6.4)	0.7 (0.7)	--	--	--	--	--
<i>Robinia pseudoacacia</i> †	17.8 (4.9)	14.9 (5.2)	32.4 (12.1)	13.9 (5.7)	2.0 (1.1)	--	--	182.1 (63.5)
Rosa	--	7.7 (5.7)	16.9 (16.9)	--	--	--	--	310.0 (140.9)
<i>Rosa carolina</i> *	--	--	--	--	--	--	--	93.2 (70.7)
<i>Rosa multiflora</i> *	--	7.7 (5.7)	16.9 (16.9)	--	--	--	--	216.8 (122.0)
Rubus	--	320.6 (144.0)	21.1 (8.8)	--	--	--	--	7313.6 (1141.8)
<i>Rubus allegheniensis</i> *	--	293.9 (128.1)	21.1 (8.8)	--	--	--	--	--
<i>Rubus occidentalis</i> *	--	22.6 (16.1)	--	--	--	--	--	597.2 (159.2)
<i>Rubus odoratus</i> *	--	--	--	--	--	--	--	71.4 (48.3)
<i>Rubus phoenicolasius</i> *	--	4.0 (2.1)	--	--	--	--	--	709.0 (350.8)
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i>	--	--	--	--	--	--	--	5936.0 (1010.3)
Sambucus	--	3.2 (1.8)	8.3 (6.3)	--	0.6 (0.6)	--	--	148.1 (79.5)

DENSITY Sampling Block 1		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	--	2.5 (1.7)	2.6 (2.6)	--	0.6 (0.6)	--	--	--
<i>Sambucus racemosa</i> *	--	0.7 (0.7)	5.7 (5.7)	--	--	--	--	--
<i>Sassafras albidum</i> †	9.5 (3.3)	110.1 (29.9)	103.6 (28.2)	19.1 (6.0)	10.5 (3.6)	--	--	6357.1 (850.5)
Smilax	--	214.6 (70.9)	--	--	--	--	--	2608.4 (473.3)
<i>Smilax glauca</i> §	--	0.7 (0.7)	--	--	--	--	--	545.5 (205.1)
<i>Smilax rotundifolia</i> §	--	211.6 (70.8)	--	--	--	--	--	1920.1 (397.0)
<i>Smilax tamnoides</i> §	--	2.4 (2.4)	--	--	--	--	--	137.6 (82.4)
<i>Sorbus americana</i> †	--	--	--	--	--	--	--	5.4 (5.4)
<i>Spiraea betulifolia</i> *	--	--	--	--	--	--	--	512.6 (255.2)
<i>Symphoricarpos orbiculatus</i> *	--	10.8 (8.2)	2.0 (1.5)	--	--	--	--	2080.7 (760.9)
<i>Tilia americana</i> †	11.2 (2.7)	1.3 (0.9)	6.6 (3.3)	11.1 (6.3)	4.6 (2.5)	--	--	395.6 (153.9)
<i>Toxicodendron radicans</i> §	--	0.6 (0.6)	1.3 (1.3)	0.7 (0.7)	--	--	--	2763.3 (739.8)
<i>Tsuga canadensis</i> †	1.7 (0.8)	--	1.3 (0.9)	1.3 (0.9)	2.6 (2.6)	--	--	15.7 (11.6)
Ulmus	3.3 (1.0)	0.7 (0.7)	0.7 (0.7)	--	0.6 (0.6)	--	--	1201.4 (326.1)
<i>Ulmus americana</i> †	0.5 (0.5)	--	--	--	--	--	--	335.4 (280.0)
<i>Ulmus rubra</i> †	2.7 (0.9)	0.7 (0.7)	0.7 (0.7)	--	0.6 (0.6)	--	--	866.0 (246.9)
Vaccinium	--	1.3 (0.9)	0.7 (0.7)	--	--	--	--	37063.0 (4288.3)
<i>Vaccinium angustifolium</i> *	--	--	--	--	--	--	--	414.4 (260.8)
<i>Vaccinium pallidum</i> *	--	--	--	--	--	--	--	34914.6 (4231.8)
<i>Vaccinium stamineum</i> *	--	1.3 (0.9)	0.7 (0.7)	--	--	--	--	1634.4 (482.8)
Viburnum	--	14.3 (4.6)	4.6 (2.5)	2.6 (1.8)	2.0 (1.1)	--	--	3732.7 (789.5)
<i>Viburnum acerifolium</i> *	--	9.1 (3.4)	0.7 (0.7)	--	--	--	--	3465.2 (787.4)
<i>Viburnum prunifolium</i> *	--	5.2 (3.2)	3.9 (2.5)	2.6 (1.8)	2.0 (1.1)	--	--	267.5 (96.8)
<i>Vinca minor</i> §	--	--	--	--	--	--	--	--
Vitaceae	--	--	--	--	--	--	--	--
Vitis	--	11.7 (4.4)	11.1 (4.5)	18.3 (5.4)	5.9 (2.1)	--	--	1321.7 (254.9)

Table 6b. Mean density (live stems per ha) for SHEN forest vegetation monitoring sampling block 2 (2007) for each woody vegetation strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

DENSITY Sampling Block 2 Taxa	Trees	Shrubs				Class High	Seedlings	
		Class 1	Class 2	Class 3	Class 4		Class Low	High/Low Combined
All Taxa	434.5 (12.3)	1513.5 (184.7)	1318.3 (110.2)	763.7 (61.5)	370.2 (25.2)	104133.6 (7743.0)	123687.1 (15253.8)	227820.7 (19303.0)
Acer	61.9 (5.3)	127.2 (23.5)	178.5 (27.7)	106.2 (19.0)	69.1 (9.9)	4781.0 (636.6)	17157.2 (2467.3)	21938.2 (2732.5)
<i>Acer negundo</i> †	1.2 (0.5)	0.6 (0.6)	1.3 (1.3)	--	1.9 (1.4)	36.2 (31.2)	5.1 (5.1)	41.3 (36.3)
<i>Acer pensylvanicum</i> †	11.8 (2.3)	44.6 (8.4)	80.5 (17.2)	51.9 (13.9)	33.0 (7.1)	906.8 (259.9)	1661.5 (373.2)	2568.4 (584.4)
<i>Acer rubrum</i> †	45.5 (4.6)	75.5 (18.7)	96.1 (18.5)	50.4 (12.4)	34.1 (6.8)	3568.2 (507.7)	15370.4 (2375.5)	18938.7 (2577.4)
<i>Acer saccharum</i> †	3.3 (1.2)	6.4 (5.8)	--	2.6 (1.6)	--	269.7 (182.7)	120.1 (63.8)	389.8 (226.9)
<i>Acer spicatum</i> †	--	--	0.6 (0.6)	1.3 (1.3)	--	--	--	--
<i>Ailanthus altissima</i> †	2.3 (1.3)	3.2 (1.7)	1.3 (0.9)	0.6 (0.6)	--	163.1 (74.6)	2958.9 (1150.5)	3122.0 (1154.4)
<i>Albizia julibrissin</i> †	--	--	--	--	--	--	--	--
<i>Alnus serrulata</i> *	--	--	--	--	--	--	--	--
Amelanchier	2.9 (1.1)	4.0 (1.6)	7.8 (2.5)	8.5 (3.0)	2.6 (1.3)	264.0 (98.2)	727.6 (301.7)	991.6 (387.8)
<i>Amelanchier arborea</i> †	2.9 (1.1)	4.0 (1.6)	6.6 (2.2)	8.5 (3.0)	2.6 (1.3)	--	--	--
<i>Amelanchier laevis</i> *	--	--	1.2 (1.2)	--	--	--	--	--
<i>Asimina triloba</i> †	--	5.1 (4.5)	7.1 (7.1)	1.3 (0.9)	--	40.9 (32.4)	--	40.9 (32.4)
<i>Berberis thunbergii</i> *	--	--	--	--	--	5.1 (5.1)	10.3 (6.7)	15.4 (10.8)
Betula	33.3 (5.5)	151.9 (46.3)	102.7 (35.8)	44.5 (13.4)	22.8 (5.3)	3839.4 (1617.4)	9329.5 (3468.6)	13168.9 (4862.0)
<i>Betula alleghaniensis</i> †	2.6 (1.0)	16.4 (12.2)	5.8 (2.7)	3.9 (2.8)	3.2 (1.7)	--	--	--
<i>Betula lenta</i> †	30.7 (5.3)	135.5 (42.3)	96.9 (34.5)	40.6 (11.9)	19.6 (5.0)	--	--	--
<i>Broussonetia papyrifera</i> †	--	--	--	--	--	--	--	--
<i>Campsis radicans</i> S	--	--	--	--	--	--	--	--
<i>Carpinus caroliniana</i> †	0.2 (0.2)	0.7 (0.7)	0.7 (0.7)	1.3 (0.9)	1.4 (1.4)	16.0 (12.0)	--	16.0 (12.0)
Carya	25.5 (4.1)	10.4 (4.3)	11.2 (3.6)	11.2 (3.1)	11.8 (3.6)	566.1 (84.6)	240.8 (53.8)	806.9 (104.8)
<i>Carya alba</i> †	2.1 (1.0)	0.7 (0.7)	2.7 (2.1)	2.0 (1.5)	0.7 (0.7)	69.3 (33.8)	5.1 (5.1)	74.4 (34.2)
<i>Carya cordiformis</i> †	0.9 (0.4)	7.1 (4.1)	3.3 (1.5)	2.6 (1.3)	2.0 (1.5)	129.4 (45.2)	73.3 (25.1)	202.7 (56.3)
<i>Carya glabra</i> †	8.2 (1.9)	1.3 (0.9)	1.9 (1.1)	2.6 (1.6)	5.2 (2.4)	--	--	--
<i>Carya ovalis</i> †	11.4 (2.3)	1.3 (1.3)	3.3 (1.7)	4.0 (1.8)	3.3 (1.4)	--	--	--
<i>Carya ovata</i> †	2.8 (1.4)	--	--	--	0.6 (0.6)	15.6 (11.6)	10.3 (7.3)	25.9 (17.3)

DENSITY Sampling Block 2		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--	351.8 (65.9)	152.2 (38.4)	503.9 (81.8)
Castanea	0.2 (0.1)	7.9 (2.7)	22.2 (7.4)	14.3 (4.8)	3.9 (1.5)	158.1 (67.3)	5.2 (5.2)	163.3 (67.4)
<i>Castanea dentata</i> †	0.2 (0.1)	6.6 (2.3)	15.6 (5.6)	12.3 (4.3)	3.9 (1.5)	142.4 (65.8)	5.2 (5.2)	147.5 (65.8)
<i>Castanea pumila</i> †	--	1.3 (1.3)	6.6 (5.0)	2.0 (2.0)	--	15.7 (15.7)	--	15.7 (15.7)
<i>Celastrus orbiculatus</i> §	--	33.1 (31.2)	1.3 (0.9)	--	0.7 (0.7)	558.5 (328.5)	175.4 (89.2)	733.8 (412.8)
<i>Celtis occidentalis</i> *	0.3 (0.2)	1.3 (1.3)	--	2.7 (1.8)	3.7 (2.5)	74.4 (39.2)	5.4 (5.4)	79.8 (44.4)
<i>Cercis canadensis</i> †	2.5 (1.3)	13.0 (9.3)	13.6 (8.3)	4.5 (1.6)	0.6 (0.6)	913.7 (367.8)	628.1 (190.4)	1541.8 (483.4)
<i>Chimaphila maculata</i> *	--	--	--	--	--	--	909.8 (243.9)	909.8 (243.9)
<i>Clematis virginiana</i> §	--	--	--	--	--	10.5 (10.5)	5.2 (5.2)	15.7 (11.3)
Cornus	1.9 (0.7)	2.7 (1.2)	5.3 (2.2)	11.2 (3.6)	10.5 (3.1)	109.0 (43.0)	72.3 (25.3)	181.3 (63.5)
<i>Cornus alternifolia</i> *	--	0.6 (0.6)	0.6 (0.6)	1.3 (1.3)	--	66.8 (38.9)	25.7 (15.6)	92.5 (54.2)
<i>Cornus florida</i> †	1.9 (0.7)	2.0 (1.0)	4.6 (2.1)	9.9 (3.3)	10.5 (3.1)	42.2 (20.9)	46.5 (20.7)	88.7 (37.0)
Corylus	--	0.6 (0.6)	--	--	--	56.2 (36.1)	25.9 (25.9)	82.1 (59.8)
<i>Corylus americana</i> *	--	--	--	--	--	--	--	--
<i>Corylus cornuta</i> *	--	0.6 (0.6)	--	--	--	56.2 (36.1)	25.9 (25.9)	82.1 (59.8)
Crataegus	0.4 (0.3)	1.3 (1.3)	--	3.9 (2.2)	3.2 (2.0)	120.3 (57.2)	132.2 (45.8)	252.5 (85.2)
<i>Diospyros virginiana</i> †	1.5 (0.7)	0.6 (0.6)	0.7 (0.7)	--	0.6 (0.6)	84.3 (52.4)	27.1 (22.4)	111.4 (59.0)
<i>Dirca palustris</i> *	--	--	--	--	--	15.5 (11.6)	--	15.5 (11.6)
<i>Elaeagnus umbellata</i> *	--	--	--	--	--	--	--	--
<i>Epigaea repens</i> *	--	--	--	--	--	--	52.6 (43.3)	52.6 (43.3)
<i>Fagus grandifolia</i> †	0.7 (0.5)	0.6 (0.6)	--	0.6 (0.6)	0.6 (0.6)	26.2 (15.0)	--	26.2 (15.0)
Fraxinus	21.2 (3.5)	13.6 (4.1)	14.2 (3.7)	16.8 (4.7)	24.7 (5.9)	2303.1 (426.3)	3191.7 (920.4)	5494.8 (1041.5)
<i>Fraxinus americana</i> †	19.8 (3.4)	13.6 (4.1)	14.2 (3.7)	16.8 (4.7)	24.0 (5.9)	--	--	--
<i>Fraxinus nigra</i> †	--	--	--	--	0.6 (0.6)	--	--	--
<i>Fraxinus pennsylvanica</i> †	1.3 (0.9)	--	--	--	--	--	--	--
<i>Gaultheria procumbens</i> *	--	--	--	--	--	10.7 (10.7)	12940.6 (7049.0)	12951.3 (7049.4)
<i>Gaylussacia baccata</i> *	--	--	--	--	--	18765.8 (3581.8)	5835.2 (1192.9)	24601.0 (4618.0)
<i>Hamamelis virginiana</i> *	0.1 (0.1)	49.8 (15.8)	105.4 (23.0)	75.2 (18.4)	9.7 (3.8)	517.5 (151.8)	934.0 (288.8)	1451.6 (363.6)
<i>Hydrangea arborescens</i> *	--	2.5 (2.5)	2.5 (2.5)	--	--	130.9 (63.9)	88.4 (48.6)	219.3 (81.2)
<i>Ilex montana</i> *	--	16.9 (7.0)	13.2 (5.8)	7.5 (3.6)	--	148.4 (48.9)	197.0 (98.7)	345.4 (135.5)

DENSITY Sampling Block 2		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Juglans nigra</i> †	0.7 (0.4)	--	--	0.6 (0.6)	--	--	5.1 (5.1)	5.1 (5.1)
<i>Juniperus virginiana</i> †	0.1 (0.1)	--	--	--	--	--	5.4 (5.4)	5.4 (5.4)
<i>Kalmia latifolia</i> *	0.1 (0.1)	86.1 (18.2)	202.9 (49.2)	165.9 (39.7)	44.1 (13.8)	5431.4 (1014.0)	1774.4 (375.1)	7205.8 (1305.2)
<i>Lindera benzoin</i> *	--	283.1 (55.2)	253.7 (46.8)	68.6 (16.3)	3.9 (1.5)	2834.1 (432.1)	2035.2 (339.1)	4869.2 (690.3)
<i>Liriodendron tulipifera</i> †	25.1 (4.4)	28.4 (15.5)	29.6 (14.1)	8.4 (3.8)	2.6 (2.0)	176.2 (63.4)	3378.7 (699.6)	3554.9 (706.2)
<i>Lonicera japonica</i> §	--	7.2 (3.6)	2.6 (2.6)	--	--	2247.0 (705.0)	2431.4 (855.8)	4678.4 (1499.2)
<i>Lyonia ligustrina</i> *	--	2.0 (1.5)	2.0 (1.1)	--	--	703.1 (379.2)	652.6 (411.2)	1355.7 (785.7)
Malus	0.6 (0.5)	--	--	--	0.6 (0.6)	--	--	--
<i>Malus pumila</i> †	0.4 (0.4)	--	--	--	0.6 (0.6)	--	--	--
<i>Menispermum canadense</i> §	--	--	--	--	--	123.2 (123.2)	46.2 (46.2)	169.4 (169.4)
<i>Menziesia pilosa</i> *	--	5.4 (5.4)	1.3 (1.3)	--	--	1077.5 (476.1)	1326.7 (517.5)	2404.2 (910.8)
Morus	--	--	--	--	--	5.4 (5.4)	--	5.4 (5.4)
<i>Morus alba</i> †	--	--	--	--	--	5.4 (5.4)	--	5.4 (5.4)
<i>Morus rubra</i> *	--	--	--	--	--	--	--	--
<i>Nyssa sylvatica</i> †	29.9 (5.0)	20.5 (9.2)	44.7 (9.5)	57.3 (11.5)	59.8 (10.7)	935.4 (253.0)	728.8 (152.9)	1664.2 (387.4)
<i>Ostrya virginiana</i> †	8.5 (2.2)	23.3 (7.4)	13.6 (6.3)	13.7 (6.5)	13.0 (5.3)	277.8 (71.3)	562.9 (166.1)	840.7 (208.8)
<i>Parthenocissus quinquefolia</i> §	--	2.6 (1.3)	--	--	--	4788.3 (774.8)	5545.5 (901.0)	10333.9 (1563.3)
Pinus	19.4 (4.0)	4.6 (2.5)	7.9 (3.6)	11.2 (4.6)	12.5 (5.1)	89.0 (36.5)	134.7 (69.7)	223.7 (79.8)
<i>Pinus echinata</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Pinus pungens</i> †	1.4 (0.7)	--	--	--	2.0 (1.4)	--	--	--
<i>Pinus rigida</i> †	4.8 (2.1)	0.7 (0.7)	1.3 (1.3)	--	0.7 (0.7)	47.2 (34.0)	--	47.2 (34.0)
<i>Pinus strobus</i> †	9.0 (2.8)	4.0 (2.5)	5.3 (2.5)	8.6 (4.3)	7.9 (4.3)	31.3 (12.6)	119.0 (68.1)	150.3 (69.3)
<i>Pinus virginiana</i> †	3.9 (1.2)	--	1.3 (1.3)	2.6 (2.1)	2.0 (1.0)	10.5 (10.5)	10.5 (10.5)	21.0 (21.0)
<i>Platanus occidentalis</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Populus grandidentata</i> †	--	1.3 (1.3)	0.6 (0.6)	--	--	--	--	--
Prunus	7.3 (1.6)	12.3 (4.4)	14.9 (7.6)	10.4 (5.8)	7.2 (2.6)	1293.2 (411.4)	1060.1 (321.6)	2353.4 (642.3)
<i>Prunus avium</i> †	1.0 (0.5)	--	--	--	1.3 (0.8)	26.1 (15.7)	73.0 (57.8)	99.1 (61.2)
<i>Prunus serotina</i> †	6.3 (1.5)	3.9 (2.4)	8.5 (6.1)	7.2 (4.8)	5.9 (2.4)	430.3 (158.9)	620.9 (206.7)	1051.2 (289.8)
<i>Prunus virginiana</i> †	--	8.4 (3.8)	6.4 (4.5)	3.2 (3.2)	--	836.9 (391.9)	366.3 (185.3)	1203.1 (563.6)
<i>Ptelea trifoliata</i> †	--	--	--	--	--	5.1 (5.1)	--	5.1 (5.1)
Quercus	149.3 (9.6)	40.0 (14.0)	68.3 (22.4)	24.9 (6.9)	26.2 (6.2)	3911.1 (532.0)	4027.8 (575.7)	7938.8 (1016.6)

DENSITY Sampling Block 2		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Quercus alba</i> †	14.2 (3.9)	0.6 (0.6)	5.3 (2.8)	1.9 (1.1)	3.3 (1.5)	185.7 (66.6)	369.8 (152.5)	555.5 (172.6)
<i>Quercus bicolor</i> †	0.4 (0.4)	--	--	--	--	--	--	--
<i>Quercus coccinea</i> †	14.9 (3.0)	4.0 (2.5)	6.6 (4.0)	6.0 (3.3)	2.0 (1.1)	--	--	--
<i>Quercus ilicifolia</i> *	--	13.1 (8.7)	24.2 (18.5)	2.6 (2.6)	--	361.0 (242.4)	41.9 (31.9)	402.8 (273.6)
<i>Quercus marilandica</i> †	6.3 (2.3)	2.6 (1.9)	5.3 (3.9)	3.9 (1.8)	11.9 (5.2)	163.4 (98.0)	63.2 (23.5)	226.7 (115.2)
<i>Quercus prinus</i> †	74.8 (7.2)	12.5 (6.8)	15.0 (7.0)	7.2 (3.0)	7.2 (2.5)	1662.0 (390.4)	2082.0 (521.7)	3744.0 (882.6)
<i>Quercus rubra</i> †	34.4 (4.1)	3.2 (2.1)	5.9 (2.5)	2.6 (1.6)	2.0 (1.4)	--	--	--
<i>Quercus velutina</i> †	4.2 (1.0)	3.9 (2.2)	6.0 (2.5)	0.7 (0.7)	--	--	--	--
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--	1539.0 (215.8)	1454.9 (245.4)	2993.9 (389.2)
Rhododendron	--	18.9 (10.1)	7.2 (4.9)	--	--	3013.2 (763.6)	6484.9 (1163.7)	9498.1 (1711.5)
<i>Rhododendron periclymenoides</i> *	--	9.2 (3.1)	5.3 (4.7)	--	--	--	--	--
<i>Rhododendron prinophyllum</i> *	--	9.7 (9.1)	1.9 (1.4)	--	--	--	--	--
Rhus	--	0.7 (0.7)	0.6 (0.6)	--	--	--	--	--
<i>Rhus glabra</i> *	--	0.7 (0.7)	--	--	--	--	--	--
<i>Rhus hirta</i> *	--	--	0.6 (0.6)	--	--	--	--	--
Ribes	--	--	--	--	--	123.9 (74.9)	240.9 (181.8)	364.7 (203.4)
<i>Ribes rotundifolium</i> *	--	--	--	--	--	--	--	--
<i>Robinia pseudoacacia</i> †	15.3 (4.2)	7.2 (2.2)	18.3 (6.9)	21.0 (8.2)	3.3 (1.8)	172.9 (61.7)	78.0 (22.4)	250.9 (64.8)
Rosa	--	11.0 (7.2)	8.4 (6.2)	1.3 (1.3)	--	314.3 (150.3)	201.6 (108.7)	515.9 (239.7)
<i>Rosa carolina</i> *	--	--	--	--	--	108.0 (97.1)	114.1 (87.5)	222.1 (180.9)
<i>Rosa multiflora</i> *	--	11.0 (7.2)	8.4 (6.2)	1.3 (1.3)	--	206.4 (114.7)	87.5 (64.5)	293.8 (157.4)
Rubus	--	236.5 (98.6)	24.8 (11.9)	--	--	4679.6 (760.2)	1849.0 (350.8)	6528.6 (1014.6)
<i>Rubus allegheniensis</i> *	--	227.4 (98.0)	24.8 (11.9)	--	--	--	--	--
<i>Rubus occidentalis</i> *	--	--	--	--	--	370.5 (98.8)	47.0 (16.9)	417.5 (106.8)
<i>Rubus odoratus</i> *	--	0.6 (0.6)	--	--	--	25.5 (21.0)	5.1 (5.1)	30.5 (25.9)
<i>Rubus phoenicolasius</i> *	--	8.4 (5.5)	--	--	--	787.8 (369.1)	120.7 (62.0)	908.6 (413.9)
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i>	--	--	--	--	--	3495.8 (631.4)	1676.2 (318.7)	5172.1 (871.0)
Sambucus	--	--	3.8 (2.8)	0.6 (0.6)	--	127.3 (49.6)	31.6 (19.8)	158.9 (61.7)

DENSITY Sampling Block 2		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	--	--	3.8 (2.8)	0.6 (0.6)	--	--	--	--
<i>Sambucus racemosa</i> *	--	--	--	--	--	--	--	--
<i>Sassafras albidum</i> †	8.4 (2.9)	70.6 (18.6)	94.2 (25.2)	41.7 (11.8)	13.9 (6.2)	3635.6 (524.1)	2302.2 (418.4)	5937.9 (851.7)
Smilax	--	177.3 (49.8)	--	--	--	1716.8 (449.3)	795.1 (170.1)	2511.8 (532.6)
<i>Smilax glauca</i> §	--	13.1 (12.5)	--	--	--	331.8 (140.9)	313.2 (94.6)	645.0 (215.3)
<i>Smilax rotundifolia</i> §	--	164.2 (48.2)	--	--	--	1356.2 (426.4)	471.4 (122.7)	1827.6 (467.2)
<i>Smilax tamnoides</i> §	--	--	--	--	--	28.8 (24.2)	10.4 (7.4)	39.3 (25.3)
<i>Sorbus americana</i> †	--	--	--	--	--	--	--	--
<i>Spiraea betulifolia</i> *	--	--	--	--	--	95.4 (51.0)	282.6 (173.0)	378.0 (220.1)
<i>Symphoricarpos orbiculatus</i> *	--	4.7 (4.7)	10.1 (7.7)	--	--	3147.8 (1104.6)	575.3 (197.6)	3723.1 (1255.5)
<i>Tilia americana</i> †	11.1 (2.6)	1.3 (0.9)	5.3 (2.1)	10.4 (6.7)	6.5 (3.1)	109.5 (43.3)	312.8 (119.6)	422.3 (151.5)
<i>Toxicodendron radicans</i> §	--	0.7 (0.7)	1.9 (1.9)	0.7 (0.7)	--	1412.6 (338.6)	1294.6 (512.6)	2707.2 (787.2)
<i>Tsuga canadensis</i> †	0.6 (0.5)	--	--	--	0.6 (0.6)	--	--	--
Ulmus	3.1 (0.9)	1.9 (1.1)	--	--	1.3 (0.9)	497.7 (171.7)	599.0 (170.7)	1096.7 (290.2)
<i>Ulmus americana</i> †	0.4 (0.4)	1.3 (0.9)	--	--	--	5.4 (5.4)	37.8 (37.8)	43.2 (43.2)
<i>Ulmus rubra</i> †	2.6 (0.9)	0.6 (0.6)	--	--	1.3 (0.9)	492.3 (171.6)	561.2 (166.4)	1053.5 (287.1)
Vaccinium	--	--	--	--	--	25196.1 (3649.8)	14923.8 (2023.6)	40119.9 (5326.3)
<i>Vaccinium angustifolium</i> *	--	--	--	--	--	593.3 (421.6)	409.7 (344.2)	1003.0 (744.8)
<i>Vaccinium pallidum</i> *	--	--	--	--	--	23260.4 (3564.5)	13755.9 (1983.1)	37016.2 (5212.3)
<i>Vaccinium stamineum</i> *	--	--	--	--	--	1342.3 (322.2)	758.3 (213.8)	2100.6 (483.9)
Viburnum	--	9.8 (3.2)	4.6 (2.8)	3.9 (2.8)	2.7 (1.3)	1809.3 (385.2)	1714.6 (370.8)	3523.9 (728.6)
<i>Viburnum acerifolium</i> *	--	5.2 (2.2)	--	--	--	1609.3 (372.4)	1640.3 (367.8)	3249.6 (715.3)
<i>Viburnum prunifolium</i> *	--	4.6 (2.4)	4.6 (2.8)	3.9 (2.8)	2.7 (1.3)	199.9 (96.4)	74.4 (32.5)	274.3 (119.9)
<i>Vinca minor</i> §	--	--	--	--	--	51.9 (51.9)	10675.9 (10675.9)	10727.8 (10727.8)
Vitaceae	--	--	--	--	--	--	--	--
Vitis	--	9.8 (4.2)	9.2 (2.7)	12.5 (3.3)	5.9 (2.1)	433.5 (131.9)	1923.2 (445.5)	2356.7 (506.2)

Table 6c. Mean density (live stems per ha) for SHEN forest vegetation monitoring sampling block 3 (2008-2011) for each woody vegetation strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

DENSITY Sampling Block 3 Taxa	Trees	Shrubs				Class High	Seedlings	
		Class 1	Class 2	Class 3	Class 4		Class Low	High/Low Combined
All Taxa	444.9 (12.2)	1555.7 (148.2)	1330.4 (107.7)	759.5 (66.3)	345.1 (22.4)	109251.5 (7888.1)	153736.2 (14742.6)	262987.7 (19009.4)
Acer	64.8 (5.5)	126.8 (25.5)	186.8 (28.5)	114.8 (21.9)	64.3 (9.0)	4226.0 (545.6)	14817.9 (1884.3)	19043.9 (2129.7)
<i>Acer negundo</i> †	1.3 (0.5)	0.6 (0.6)	0.6 (0.6)	0.6 (0.6)	1.9 (1.4)	25.6 (17.0)	955.3 (726.9)	981.0 (728.9)
<i>Acer pensylvanicum</i> †	12.2 (2.3)	54.3 (11.3)	91.6 (18.9)	54.0 (16.6)	31.7 (7.0)	722.7 (181.6)	1190.5 (218.0)	1913.2 (335.1)
<i>Acer rubrum</i> †	47.7 (4.8)	64.8 (19.5)	92.0 (18.2)	59.6 (13.1)	30.7 (5.7)	3301.9 (486.3)	12594.0 (1714.4)	15895.9 (1962.6)
<i>Acer saccharum</i> †	3.5 (1.3)	7.1 (7.1)	2.6 (2.0)	0.7 (0.7)	--	175.7 (125.5)	78.1 (43.1)	253.8 (165.7)
<i>Acer spicatum</i> †	--	--	--	--	--	--	--	--
<i>Ailanthus altissima</i> †	2.3 (1.3)	4.5 (3.2)	3.8 (2.1)	--	--	62.4 (33.5)	1195.8 (314.5)	1258.1 (332.4)
<i>Albizia julibrissin</i> †	--	--	--	--	--	--	15.6 (15.6)	15.6 (15.6)
<i>Alnus serrulata</i> *	--	--	--	--	--	--	--	--
Amelanchier	3.4 (1.2)	2.0 (1.1)	5.2 (1.8)	7.8 (2.9)	2.6 (1.3)	317.5 (110.8)	915.0 (250.9)	1232.5 (345.7)
<i>Amelanchier arborea</i> †	3.3 (1.2)	2.0 (1.1)	4.6 (1.6)	7.8 (2.9)	2.6 (1.3)	--	--	--
<i>Amelanchier laevis</i> *	--	--	0.6 (0.6)	--	--	--	--	--
<i>Asimina triloba</i> †	--	4.5 (3.4)	8.3 (8.3)	0.6 (0.6)	--	45.9 (30.0)	15.2 (15.2)	61.0 (43.6)
<i>Berberis thunbergii</i> *	--	--	--	--	--	31.2 (23.3)	--	31.2 (23.3)
Betula	33.9 (5.6)	152.7 (58.3)	112.6 (32.0)	70.2 (22.6)	26.2 (6.1)	3669.2 (1661.8)	14775.7 (5857.1)	18445.0 (6358.9)
<i>Betula alleghaniensis</i> †	2.4 (0.9)	--	1.3 (0.9)	0.6 (0.6)	2.6 (1.6)	--	--	--
<i>Betula lenta</i> †	31.5 (5.5)	150.1 (58.1)	111.3 (32.0)	69.5 (22.6)	23.6 (5.8)	--	--	--
<i>Broussonetia papyrifera</i> †	--	--	--	--	--	--	--	--
<i>Campsis radicans</i> S	--	--	--	--	--	5.1 (5.1)	5.1 (5.1)	10.3 (10.3)
<i>Carpinus caroliniana</i> †	0.2 (0.2)	2.7 (2.1)	2.7 (1.8)	2.0 (1.5)	0.7 (0.7)	15.8 (11.7)	59.4 (54.5)	75.2 (61.7)
Carya	26.5 (4.4)	9.1 (3.0)	9.1 (2.9)	13.8 (4.0)	13.8 (3.6)	529.2 (85.6)	468.1 (102.5)	997.3 (147.2)
<i>Carya alba</i> †	2.2 (1.1)	--	2.6 (1.6)	3.3 (2.2)	1.3 (0.9)	68.6 (21.9)	42.1 (16.2)	110.7 (31.2)
<i>Carya cordiformis</i> †	1.0 (0.4)	5.9 (2.6)	2.6 (1.6)	3.2 (1.4)	2.6 (1.6)	140.8 (42.5)	84.6 (30.1)	225.3 (58.1)
<i>Carya glabra</i> †	8.1 (2.0)	1.3 (0.9)	2.6 (1.6)	3.3 (1.7)	5.9 (2.2)	--	--	--
<i>Carya ovalis</i> †	12.2 (2.4)	2.0 (1.5)	1.3 (0.9)	4.0 (1.9)	3.3 (1.7)	--	--	--
<i>Carya ovata</i> †	2.8 (1.5)	--	--	--	--	25.8 (18.6)	10.5 (10.5)	36.3 (26.0)

DENSITY Sampling Block 3		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--	294.0 (58.0)	331.0 (99.9)	624.9 (126.2)
Castanea	0.1 (0.1)	15.0 (4.3)	13.1 (3.9)	13.0 (5.1)	1.9 (1.4)	214.9 (88.4)	10.5 (7.1)	225.4 (88.5)
<i>Castanea dentata</i> †	0.1 (0.1)	13.1 (4.1)	10.5 (3.4)	11.7 (4.9)	1.9 (1.4)	194.0 (85.9)	10.5 (7.1)	204.5 (86.2)
<i>Castanea pumila</i> †	--	2.0 (1.4)	2.6 (2.1)	1.3 (1.3)	--	21.0 (21.0)	--	21.0 (21.0)
<i>Celastrus orbiculatus</i> §	--	58.8 (52.5)	3.3 (2.4)	--	1.3 (1.3)	693.3 (338.1)	816.4 (473.7)	1509.7 (650.5)
<i>Celtis occidentalis</i> *	0.5 (0.4)	--	--	0.7 (0.7)	5.8 (3.3)	107.1 (77.5)	58.5 (32.5)	165.6 (107.2)
<i>Cercis canadensis</i> †	2.4 (1.2)	16.2 (11.8)	14.8 (11.6)	6.4 (3.9)	0.6 (0.6)	859.3 (330.5)	657.1 (180.5)	1516.4 (458.6)
<i>Chimaphila maculata</i> *	--	--	--	--	--	26.4 (15.6)	1114.5 (233.4)	1141.0 (237.5)
<i>Clematis virginiana</i> §	--	9.6 (9.6)	--	--	--	461.9 (425.8)	77.6 (53.6)	539.5 (477.7)
Cornus	1.7 (0.7)	2.0 (1.1)	4.6 (1.6)	7.9 (2.6)	9.9 (3.1)	50.4 (23.6)	73.1 (28.1)	123.5 (40.4)
<i>Cornus alternifolia</i> *	--	0.6 (0.6)	0.6 (0.6)	1.3 (1.3)	--	24.7 (17.9)	5.4 (5.4)	30.1 (18.7)
<i>Cornus florida</i> †	1.7 (0.7)	1.3 (0.9)	4.0 (1.5)	6.6 (2.3)	9.9 (3.1)	25.6 (15.4)	67.7 (27.6)	93.4 (36.1)
Corylus	--	0.6 (0.6)	--	--	--	--	--	--
<i>Corylus americana</i> *	--	--	--	--	--	--	--	--
<i>Corylus cornuta</i> *	--	0.6 (0.6)	--	--	--	--	--	--
Crataegus	0.3 (0.3)	0.6 (0.6)	--	3.9 (2.2)	3.8 (2.3)	136.5 (52.9)	127.5 (50.2)	264.0 (95.3)
<i>Diospyros virginiana</i> †	1.8 (0.8)	0.7 (0.7)	1.3 (1.3)	--	0.6 (0.6)	63.6 (38.6)	15.9 (11.8)	79.4 (50.2)
<i>Dirca palustris</i> *	--	--	--	--	--	--	--	--
<i>Elaeagnus umbellata</i> *	--	--	--	--	--	--	--	--
<i>Epigaea repens</i> *	--	--	--	--	--	--	83.9 (68.6)	83.9 (68.6)
<i>Fagus grandifolia</i> †	0.7 (0.5)	0.6 (0.6)	--	0.6 (0.6)	0.6 (0.6)	15.6 (11.2)	5.4 (5.4)	21.0 (12.4)
Fraxinus	22.4 (3.7)	11.7 (3.8)	16.7 (4.2)	15.5 (3.8)	17.5 (4.5)	2485.8 (405.7)	15687.7 (5423.2)	18173.4 (5460.8)
<i>Fraxinus americana</i> †	21.2 (3.7)	11.0 (3.7)	16.7 (4.2)	13.5 (3.5)	16.2 (4.4)	--	--	--
<i>Fraxinus nigra</i> †	--	--	--	0.6 (0.6)	--	--	--	--
<i>Fraxinus pennsylvanica</i> †	1.2 (0.9)	0.7 (0.7)	--	1.3 (1.3)	0.6 (0.6)	--	--	--
<i>Gaultheria procumbens</i> *	--	--	--	--	--	21.0 (12.9)	14788.8 (7623.4)	14809.8 (7634.2)
<i>Gaylussacia baccata</i> *	--	--	--	--	--	18580.7 (3420.1)	7260.0 (1731.6)	25840.7 (4933.0)
<i>Hamamelis virginiana</i> *	0.3 (0.2)	53.1 (15.5)	84.9 (20.8)	76.6 (20.7)	5.2 (2.0)	507.4 (122.1)	891.2 (210.2)	1398.6 (288.2)
<i>Hydrangea arborescens</i> *	--	4.6 (3.3)	0.6 (0.6)	--	--	67.5 (52.7)	286.5 (128.4)	354.0 (173.9)
<i>Ilex montana</i> *	--	12.4 (5.8)	14.4 (7.1)	8.2 (3.8)	1.3 (1.3)	147.2 (55.0)	201.6 (81.0)	348.8 (108.9)

DENSITY Sampling Block 3		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Juglans nigra</i> †	0.7 (0.4)	--	--	--	--	--	--	--
<i>Juniperus virginiana</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Kalmia latifolia</i> *	0.2 (0.2)	112.4 (21.0)	199.8 (44.3)	128.2 (30.1)	34.0 (12.2)	5894.5 (1181.0)	2604.7 (824.0)	8499.2 (1734.2)
<i>Lindera benzoin</i> *	--	303.5 (55.4)	291.6 (55.7)	69.9 (16.3)	0.6 (0.6)	3614.9 (545.5)	3613.0 (737.3)	7227.9 (1197.6)
<i>Liriodendron tulipifera</i> †	26.2 (4.4)	30.2 (13.1)	29.7 (15.9)	7.8 (3.2)	5.2 (2.6)	155.6 (48.3)	2236.2 (439.7)	2391.8 (445.5)
<i>Lonicera japonica</i> §	--	21.3 (13.3)	3.2 (3.2)	0.6 (0.6)	--	3332.6 (1104.2)	2786.5 (811.7)	6119.1 (1824.9)
<i>Lyonia ligustrina</i> *	--	2.6 (1.3)	0.7 (0.7)	--	--	614.6 (304.2)	513.7 (296.9)	1128.3 (594.5)
Malus	0.6 (0.5)	--	--	--	0.6 (0.6)	--	--	--
<i>Malus pumila</i> †	0.4 (0.4)	--	--	--	0.6 (0.6)	--	--	--
<i>Menispermum canadense</i> §	--	1.3 (0.9)	--	--	--	10.3 (10.3)	--	10.3 (10.3)
<i>Menziesia pilosa</i> *	--	5.4 (5.4)	2.0 (2.0)	--	--	1434.4 (770.9)	1412.2 (592.6)	2846.6 (1316.0)
Morus	--	--	--	--	--	10.3 (7.3)	5.1 (5.1)	15.5 (11.5)
<i>Morus alba</i> †	--	--	--	--	--	--	--	--
<i>Morus rubra</i> *	--	--	--	--	--	10.3 (7.3)	5.1 (5.1)	15.5 (11.5)
<i>Nyssa sylvatica</i> †	32.3 (5.4)	14.5 (8.0)	42.0 (9.5)	61.3 (11.5)	57.3 (10.6)	1022.9 (187.1)	928.0 (166.6)	1950.9 (323.4)
<i>Ostrya virginiana</i> †	9.1 (2.3)	21.3 (7.8)	20.8 (7.1)	17.0 (7.3)	11.0 (4.7)	289.6 (84.2)	540.2 (160.4)	829.8 (217.4)
<i>Parthenocissus quinquefolia</i> §	--	6.6 (2.4)	1.3 (0.9)	--	--	5188.8 (835.8)	7957.9 (1178.9)	13146.7 (1925.6)
Pinus	19.9 (3.9)	7.3 (3.8)	6.6 (3.5)	10.6 (4.5)	10.5 (4.5)	83.8 (35.6)	1328.0 (774.6)	1411.8 (778.4)
<i>Pinus echinata</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Pinus pungens</i> †	1.5 (0.8)	--	--	--	1.3 (1.3)	--	--	--
<i>Pinus rigida</i> †	4.9 (2.1)	0.7 (0.7)	0.7 (0.7)	--	0.7 (0.7)	36.7 (25.1)	5.2 (5.2)	41.9 (28.4)
<i>Pinus strobus</i> †	9.1 (2.7)	4.6 (3.3)	4.7 (2.9)	8.0 (4.1)	7.9 (4.3)	31.4 (14.5)	1302.1 (774.4)	1333.5 (777.3)
<i>Pinus virginiana</i> †	4.2 (1.2)	2.0 (2.0)	1.3 (1.3)	2.6 (2.1)	0.7 (0.7)	15.7 (11.7)	15.5 (8.7)	31.3 (17.7)
<i>Platanus occidentalis</i> †	0.1 (0.1)	--	--	--	--	--	--	--
<i>Populus grandidentata</i> †	--	1.3 (1.3)	0.6 (0.6)	0.6 (0.6)	--	--	--	--
Prunus	7.8 (1.6)	11.1 (4.6)	13.6 (7.4)	6.5 (3.5)	5.2 (2.4)	1135.7 (221.7)	1663.0 (555.5)	2798.7 (641.3)
<i>Prunus avium</i> †	0.8 (0.4)	--	--	--	1.3 (0.8)	5.2 (5.2)	57.3 (52.2)	62.5 (52.0)
<i>Prunus serotina</i> †	7.1 (1.6)	4.6 (1.9)	5.9 (4.7)	3.3 (1.4)	3.9 (2.2)	450.1 (114.5)	1279.0 (539.8)	1729.1 (570.9)
<i>Prunus virginiana</i> †	--	6.5 (4.2)	7.7 (5.7)	3.2 (3.2)	--	610.3 (191.4)	321.2 (123.0)	931.5 (303.2)
<i>Ptelea trifoliata</i> †	--	3.2 (3.2)	1.3 (1.3)	--	--	5.1 (5.1)	--	5.1 (5.1)
Quercus	147.5 (9.3)	40.0 (13.5)	72.2 (27.4)	25.6 (6.6)	24.9 (5.8)	3729.7 (552.0)	3692.7 (456.3)	7422.3 (904.3)

DENSITY Sampling Block 3		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Quercus alba</i> †	14.1 (3.9)	2.0 (1.5)	3.3 (1.7)	1.9 (1.1)	2.6 (1.3)	143.4 (54.4)	226.4 (144.6)	369.8 (163.5)
<i>Quercus bicolor</i> †	0.4 (0.4)	--	--	--	--	--	--	--
<i>Quercus coccinea</i> †	14.9 (2.9)	1.3 (0.9)	7.3 (4.5)	7.3 (3.6)	3.3 (2.2)	--	--	--
<i>Quercus ilicifolia</i> *	--	16.3 (11.1)	30.8 (23.3)	--	--	371.9 (312.8)	141.5 (141.5)	513.5 (453.9)
<i>Quercus marilandica</i> †	6.5 (2.3)	2.6 (1.6)	2.6 (1.9)	2.0 (1.1)	7.9 (3.9)	41.9 (33.2)	5.2 (5.2)	47.2 (35.2)
<i>Quercus prinus</i> †	72.8 (7.2)	10.6 (6.5)	17.1 (10.3)	5.9 (2.4)	6.5 (2.0)	1422.3 (350.7)	1868.4 (421.5)	3290.7 (741.4)
<i>Quercus rubra</i> †	34.7 (4.1)	5.2 (2.0)	5.8 (1.9)	6.5 (2.9)	1.9 (1.1)	--	--	--
<i>Quercus velutina</i> †	4.1 (1.1)	2.0 (1.2)	5.3 (3.1)	2.0 (1.5)	2.6 (1.3)	--	--	--
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--	1724.0 (293.9)	1424.5 (176.5)	3148.5 (381.3)
Rhododendron	--	13.7 (5.9)	6.7 (4.9)	--	--	2823.8 (827.1)	8315.8 (1733.1)	11139.6 (2368.9)
<i>Rhododendron</i> <i>periclymenoides</i> *	--	11.1 (4.8)	5.4 (4.7)	--	--	--	--	--
<i>Rhododendron prinophyllum</i> *	--	2.5 (1.6)	1.3 (1.3)	--	--	--	--	--
Rhus	--	--	0.6 (0.6)	--	0.6 (0.6)	--	--	--
<i>Rhus glabra</i> *	--	--	--	--	--	--	--	--
<i>Rhus hirta</i> *	--	--	0.6 (0.6)	--	0.6 (0.6)	--	--	--
Ribes	--	--	--	--	--	290.0 (185.3)	317.8 (174.7)	607.8 (354.5)
<i>Ribes rotundifolium</i> *	--	--	--	--	--	--	--	--
<i>Robinia pseudoacacia</i> †	14.5 (3.8)	10.4 (3.2)	8.4 (3.6)	17.6 (7.1)	5.3 (2.1)	103.9 (32.5)	107.7 (32.8)	211.6 (45.3)
Rosa	--	18.0 (10.1)	10.3 (6.5)	--	--	389.8 (212.8)	211.6 (103.7)	601.4 (303.6)
<i>Rosa carolina</i> *	--	--	--	--	--	167.4 (167.4)	87.8 (65.8)	255.2 (228.5)
<i>Rosa multiflora</i> *	--	18.0 (10.1)	10.3 (6.5)	--	--	222.5 (132.3)	118.4 (80.2)	340.8 (201.0)
Rubus	--	120.3 (43.6)	18.6 (10.8)	--	--	4633.7 (696.9)	3314.6 (516.2)	7948.3 (1065.0)
<i>Rubus allegheniensis</i> *	--	103.4 (42.7)	18.6 (10.8)	--	--	--	--	--
<i>Rubus occidentalis</i> *	--	1.3 (0.9)	--	--	--	325.4 (83.3)	94.6 (30.4)	420.0 (104.5)
<i>Rubus odoratus</i> *	--	--	--	--	--	--	5.1 (5.1)	5.1 (5.1)
<i>Rubus phoenicolasius</i> *	--	15.6 (9.6)	--	--	--	673.2 (302.3)	326.7 (178.5)	999.9 (465.9)
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R.</i> <i>allegheniensis</i> , <i>R. species</i>	--	--	--	--	--	3635.1 (609.8)	2888.2 (476.7)	6523.3 (940.1)
Sambucus	--	--	1.3 (0.9)	--	0.6 (0.6)	117.4 (51.6)	105.2 (41.7)	222.6 (78.8)

DENSITY Sampling Block 3		Shrubs				Seedlings		
Taxa	Trees	Class 1	Class 2	Class 3	Class 4	Class High	Class Low	High/Low Combined
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	--	--	0.6 (0.6)	--	0.6 (0.6)	--	--	--
<i>Sambucus racemosa</i> *	--	--	--	--	--	--	--	--
<i>Sassafras albidum</i> †	9.0 (3.1)	52.1 (13.6)	84.6 (20.5)	44.2 (13.7)	15.1 (4.8)	3198.9 (483.8)	2674.2 (392.0)	5873.1 (812.6)
Smilax	--	226.9 (54.8)	--	--	--	1762.3 (386.2)	1159.5 (229.4)	2921.8 (565.7)
<i>Smilax glauca</i> §	--	9.8 (7.3)	--	--	--	385.1 (146.0)	433.0 (106.3)	818.1 (232.3)
<i>Smilax rotundifolia</i> §	--	217.1 (54.4)	--	--	--	1357.4 (341.7)	701.7 (171.9)	2059.1 (471.8)
<i>Smilax tamnoides</i> §	--	--	--	--	--	19.7 (14.0)	14.2 (14.2)	33.9 (25.8)
<i>Sorbus americana</i> †	--	--	--	--	--	--	--	--
<i>Spiraea betulifolia</i> *	--	--	--	--	--	219.9 (116.5)	295.0 (154.4)	514.9 (243.7)
<i>Symphoricarpos orbiculatus</i> *	--	19.6 (17.5)	5.4 (4.7)	--	--	4878.0 (1937.0)	1068.8 (404.7)	5946.8 (2333.1)
<i>Tilia americana</i> †	11.5 (2.7)	3.9 (1.5)	1.3 (0.9)	9.9 (5.2)	7.2 (3.2)	167.4 (52.3)	302.4 (134.0)	469.8 (164.2)
<i>Toxicodendron radicans</i> §	--	0.7 (0.7)	2.6 (2.0)	--	--	1662.4 (408.8)	1389.0 (446.2)	3051.4 (812.2)
<i>Tsuga canadensis</i> †	0.6 (0.5)	--	--	--	0.6 (0.6)	--	5.2 (5.2)	5.2 (5.2)
Ulmus	3.6 (1.1)	0.6 (0.6)	0.7 (0.7)	0.7 (0.7)	0.7 (0.7)	547.4 (196.3)	674.3 (189.6)	1221.7 (320.1)
<i>Ulmus americana</i> †	0.4 (0.4)	--	--	--	--	36.7 (26.1)	57.2 (44.1)	94.0 (69.6)
<i>Ulmus rubra</i> †	3.2 (1.0)	0.6 (0.6)	0.7 (0.7)	0.7 (0.7)	0.7 (0.7)	510.7 (193.5)	617.1 (175.4)	1127.7 (302.5)
Vaccinium	--	1.3 (0.9)	--	--	--	26096.3 (3917.7)	18881.0 (2289.1)	44977.3 (5752.2)
<i>Vaccinium angustifolium</i> *	--	--	--	--	--	357.0 (357.0)	554.1 (325.7)	911.1 (660.6)
<i>Vaccinium pallidum</i> *	--	--	--	--	--	24776.1 (3908.5)	17518.4 (2242.0)	42294.6 (5714.8)
<i>Vaccinium stamineum</i> *	--	1.3 (0.9)	--	--	--	963.1 (249.0)	787.5 (237.7)	1750.6 (453.9)
Viburnum	0.1 (0.1)	7.2 (2.4)	7.2 (4.0)	3.2 (1.9)	2.6 (1.3)	2101.3 (550.7)	1874.8 (384.7)	3976.1 (830.3)
<i>Viburnum acerifolium</i> *	--	4.5 (1.8)	--	--	--	1863.6 (546.2)	1717.2 (382.7)	3580.8 (824.5)
<i>Viburnum prunifolium</i> *	0.1 (0.1)	2.7 (1.6)	7.2 (4.0)	3.2 (1.9)	2.6 (1.3)	237.7 (98.1)	157.6 (64.4)	395.2 (153.6)
<i>Vinca minor</i> §	--	--	--	--	--	10.4 (10.4)	7617.5 (7617.5)	7627.8 (7627.8)
Vitaceae	--	--	--	--	--	--	431.6 (118.7)	431.6 (118.7)
Vitis	--	11.1 (4.0)	14.9 (5.0)	13.7 (3.7)	6.6 (2.0)	354.5 (105.4)	1128.5 (217.0)	1483.0 (276.2)

Table 7a. Mean basal area of live stems (m² per ha) for SHEN forest vegetation monitoring sampling block 1 (2003-2005) for tree and shrub strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

BASIL AREA Sampling Block 1 Taxa	Trees	Shrubs			
		Class 1	Class 2	Class 3	Class 4
All Taxa	25.7105 (0.7435)	0.0520 (0.0072)	0.3598 (0.0315)	0.7875 (0.0589)	1.4473 (0.0990)
Acer	1.7445 (0.2405)	0.0046 (0.0008)	0.0504 (0.0085)	0.1022 (0.0154)	0.2873 (0.0380)
<i>Acer negundo</i> †	0.0303 (0.0151)	0.0001 (0.0000)	0.0002 (0.0002)	0.0007 (0.0007)	0.0085 (0.0063)
<i>Acer pensylvanicum</i> †	0.1756 (0.0339)	0.0023 (0.0006)	0.0260 (0.0061)	0.0445 (0.0079)	0.1249 (0.0268)
<i>Acer rubrum</i> †	1.3112 (0.1820)	0.0022 (0.0005)	0.0238 (0.0052)	0.0540 (0.0129)	0.1539 (0.0257)
<i>Acer saccharum</i> †	0.2274 (0.1508)	0.0000 (0.0000)	--	0.0022 (0.0013)	--
<i>Acer spicatum</i> †	--	--	0.0005 (0.0005)	0.0007 (0.0007)	--
<i>Ailanthus altissima</i> †	0.0780 (0.0429)	0.0004 (0.0002)	0.0013 (0.0008)	0.0015 (0.0010)	0.0028 (0.0028)
<i>Albizia julibrissin</i> †	--	--	--	--	--
<i>Alnus serrulata</i> *	--	--	--	--	--
Amelanchier	0.0340 (0.0135)	0.0001 (0.0001)	0.0028 (0.0007)	0.0104 (0.0036)	0.0115 (0.0056)
<i>Amelanchier arborea</i> †	0.0340 (0.0135)	0.0001 (0.0001)	0.0028 (0.0007)	0.0104 (0.0036)	0.0115 (0.0056)
<i>Amelanchier laevis</i> *	--	--	--	--	--
<i>Asimina triloba</i> †	--	0.0002 (0.0001)	0.0018 (0.0018)	--	--
<i>Berberis thunbergii</i> *	--	--	--	--	--
Betula	1.2205 (0.1895)	0.0043 (0.0017)	0.0245 (0.0100)	0.0394 (0.0143)	0.0884 (0.0211)
<i>Betula alleghaniensis</i> †	0.1029 (0.0402)	0.0003 (0.0002)	0.0025 (0.0019)	0.0051 (0.0034)	0.0086 (0.0064)
<i>Betula lenta</i> †	1.1175 (0.1785)	0.0040 (0.0015)	0.0219 (0.0085)	0.0343 (0.0124)	0.0798 (0.0204)
<i>Broussonetia papyrifera</i> †	--	--	--	--	--
<i>Campsis radicans</i> §	--	--	--	--	--
<i>Carpinus caroliniana</i> †	0.0023 (0.0023)	0.0000 (0.0000)	0.0002 (0.0002)	0.0022 (0.0017)	--
Carya	1.0622 (0.1867)	0.0002 (0.0001)	0.0035 (0.0010)	0.0112 (0.0037)	0.0726 (0.0182)
<i>Carya alba</i> †	0.1069 (0.0549)	--	0.0005 (0.0005)	0.0008 (0.0008)	0.0059 (0.0039)
<i>Carya cordiformis</i> †	0.0324 (0.0177)	0.0001 (0.0001)	0.0010 (0.0005)	0.0045 (0.0024)	0.0059 (0.0042)
<i>Carya glabra</i> †	0.3328 (0.0918)	0.0001 (0.0000)	0.0008 (0.0005)	0.0007 (0.0007)	0.0288 (0.0103)
<i>Carya ovalis</i> †	0.4446 (0.1052)	0.0000 (0.0000)	0.0010 (0.0005)	0.0052 (0.0022)	0.0264 (0.0090)
<i>Carya ovata</i> †	0.1324 (0.0581)	--	--	--	0.0056 (0.0038)

BASAL AREA Sampling Block 1		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--
Castanea	0.0051 (0.0036)	0.0004 (0.0001)	0.0055 (0.0017)	0.0134 (0.0047)	0.0202 (0.0091)
<i>Castanea dentata</i> †	0.0051 (0.0036)	0.0003 (0.0001)	0.0040 (0.0012)	0.0119 (0.0044)	0.0202 (0.0091)
<i>Castanea pumila</i> †	--	0.0000 (0.0000)	0.0015 (0.0012)	0.0015 (0.0015)	--
<i>Celastrus orbiculatus</i> §	--	0.0004 (0.0004)	0.0002 (0.0002)	0.0007 (0.0007)	--
<i>Celtis occidentalis</i> *	0.0100 (0.0051)	--	--	0.0038 (0.0027)	0.0089 (0.0066)
<i>Cercis canadensis</i> †	0.0536 (0.0303)	0.0003 (0.0003)	0.0018 (0.0013)	0.0029 (0.0014)	0.0057 (0.0057)
<i>Chimaphila maculata</i> *	--	--	--	--	--
<i>Clematis virginiana</i> §	--	0.0002 (0.0002)	--	--	--
Cornus	0.0217 (0.0088)	0.0001 (0.0001)	0.0022 (0.0008)	0.0141 (0.0036)	0.0581 (0.0146)
<i>Cornus alternifolia</i> *	--	0.0000 (0.0000)	0.0003 (0.0003)	0.0007 (0.0007)	--
<i>Cornus florida</i> †	0.0217 (0.0088)	0.0001 (0.0000)	0.0019 (0.0007)	0.0134 (0.0036)	0.0581 (0.0146)
Corylus	--	0.0001 (0.0000)	0.0002 (0.0002)	--	--
<i>Corylus americana</i> *	--	0.0000 (0.0000)	--	--	--
<i>Corylus cornuta</i> *	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
Crataegus	0.0068 (0.0068)	0.0000 (0.0000)	0.0002 (0.0002)	0.0044 (0.0025)	0.0113 (0.0064)
<i>Diospyros virginiana</i> †	0.0406 (0.0176)	--	--	--	0.0028 (0.0028)
<i>Dirca palustris</i> *	--	--	--	--	--
<i>Elaeagnus umbellata</i> *	--	--	--	--	--
<i>Epigaea repens</i> *	--	--	--	--	--
<i>Fagus grandifolia</i> †	0.0813 (0.0769)	--	--	0.0015 (0.0015)	0.0029 (0.0029)
Fraxinus	1.2952 (0.2546)	0.0005 (0.0001)	0.0058 (0.0015)	0.0233 (0.0069)	0.0732 (0.0207)
<i>Fraxinus americana</i> †	1.1791 (0.2356)	0.0005 (0.0001)	0.0058 (0.0015)	0.0233 (0.0069)	0.0732 (0.0207)
<i>Fraxinus nigra</i> †	--	--	--	--	--
<i>Fraxinus pennsylvanica</i> †	0.1119 (0.1022)	--	--	--	--
<i>Gaultheria procumbens</i> *	--	--	--	--	--
<i>Gaylussacia baccata</i> *	--	--	--	--	--
<i>Hamamelis virginiana</i> *	0.0011 (0.0011)	0.0021 (0.0006)	0.0319 (0.0081)	0.0797 (0.0203)	0.0443 (0.0180)
<i>Hydrangea arborescens</i> *	--	0.0001 (0.0000)	--	--	--
<i>Ilex montana</i> *	--	0.0004 (0.0002)	0.0038 (0.0019)	0.0099 (0.0049)	--

BASAL AREA Sampling Block 1		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Juglans nigra</i> †	0.0560 (0.0352)	--	--	--	--
<i>Juniperus virginiana</i> †	0.0053 (0.0036)	--	--	--	--
<i>Kalmia latifolia</i> *	--	0.0028 (0.0007)	0.0550 (0.0128)	0.1888 (0.0424)	0.1726 (0.0575)
<i>Lindera benzoin</i> *	--	0.0087 (0.0018)	0.0629 (0.0123)	0.0509 (0.0140)	0.0114 (0.0056)
<i>Liriodendron tulipifera</i> †	4.3093 (0.6942)	0.0006 (0.0002)	0.0038 (0.0013)	0.0096 (0.0045)	--
<i>Lonicera japonica</i> §	--	0.0004 (0.0003)	0.0008 (0.0007)	0.0015 (0.0010)	--
<i>Lyonia ligustrina</i> *	--	0.0001 (0.0001)	--	--	--
Malus	0.0309 (0.0242)	--	--	0.0015 (0.0015)	0.0028 (0.0028)
<i>Malus pumila</i> †	0.0244 (0.0233)	--	--	0.0015 (0.0015)	0.0028 (0.0028)
<i>Menispermum canadense</i> §	--	0.0000 (0.0000)	--	--	--
<i>Menziesia pilosa</i> *	--	0.0003 (0.0003)	--	--	--
Morus	--	--	--	--	--
<i>Morus alba</i> †	--	--	--	--	--
<i>Morus rubra</i> *	--	--	--	--	--
<i>Nyssa sylvatica</i> †	0.4635 (0.0753)	0.0007 (0.0003)	0.0132 (0.0027)	0.0694 (0.0148)	0.2269 (0.0337)
<i>Ostrya virginiana</i> †	0.1028 (0.0286)	0.0009 (0.0003)	0.0042 (0.0019)	0.0163 (0.0092)	0.0525 (0.0183)
<i>Parthenocissus quinquefolia</i> §	--	0.0001 (0.0000)	--	0.0007 (0.0007)	--
Pinus	1.1840 (0.3459)	0.0001 (0.0001)	0.0012 (0.0006)	0.0105 (0.0052)	0.0386 (0.0154)
<i>Pinus echinata</i> †	0.0011 (0.0011)	--	--	--	--
<i>Pinus pungens</i> †	0.0448 (0.0195)	--	0.0002 (0.0002)	--	0.0058 (0.0058)
<i>Pinus rigida</i> †	0.2750 (0.1263)	--	--	0.0007 (0.0007)	0.0029 (0.0029)
<i>Pinus strobus</i> †	0.6773 (0.3059)	0.0001 (0.0001)	0.0008 (0.0005)	0.0097 (0.0052)	0.0241 (0.0112)
<i>Pinus virginiana</i> †	0.1826 (0.0523)	--	0.0002 (0.0002)	--	0.0058 (0.0039)
<i>Platanus occidentalis</i> †	0.0235 (0.0235)	--	--	--	--
<i>Populus grandidentata</i> †	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
Prunus	0.3411 (0.0892)	0.0005 (0.0003)	0.0053 (0.0026)	0.0104 (0.0054)	0.0311 (0.0089)
<i>Prunus avium</i> †	0.0357 (0.0233)	--	--	--	0.0056 (0.0037)
<i>Prunus serotina</i> †	0.3054 (0.0865)	0.0003 (0.0002)	0.0027 (0.0019)	0.0075 (0.0046)	0.0255 (0.0081)
<i>Prunus virginiana</i> †	--	0.0002 (0.0001)	0.0026 (0.0018)	0.0029 (0.0029)	--
<i>Ptelea trifoliata</i> †	--	--	--	--	--
Quercus	11.2652 (0.7492)	0.0015 (0.0005)	0.0221 (0.0071)	0.0312 (0.0082)	0.1010 (0.0193)

BASAL AREA Sampling Block 1		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Quercus alba</i> †	0.9692 (0.2354)	0.0001 (0.0000)	0.0012 (0.0007)	0.0029 (0.0015)	0.0116 (0.0058)
<i>Quercus bicolor</i> †	0.0196 (0.0139)	--	--	--	--
<i>Quercus coccinea</i> †	0.7263 (0.1437)	0.0001 (0.0001)	0.0024 (0.0011)	0.0030 (0.0024)	0.0029 (0.0029)
<i>Quercus ilicifolia</i> *	--	0.0005 (0.0003)	0.0080 (0.0062)	0.0030 (0.0030)	--
<i>Quercus marilandica</i> †	0.0711 (0.0243)	0.0000 (0.0000)	0.0003 (0.0002)	0.0053 (0.0039)	0.0314 (0.0138)
<i>Quercus prinus</i> †	5.0311 (0.5774)	0.0006 (0.0003)	0.0047 (0.0021)	0.0103 (0.0045)	0.0405 (0.0105)
<i>Quercus rubra</i> †	4.1758 (0.4811)	0.0002 (0.0001)	0.0035 (0.0019)	0.0044 (0.0025)	0.0088 (0.0049)
<i>Quercus velutina</i> †	0.2721 (0.0609)	0.0000 (0.0000)	0.0022 (0.0011)	0.0023 (0.0013)	0.0058 (0.0041)
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--
Rhododendron	--	0.0005 (0.0002)	0.0013 (0.0006)	--	--
<i>Rhododendron periclymenoides</i> *	--	0.0002 (0.0001)	--	--	--
<i>Rhododendron prinophyllum</i> *	--	0.0003 (0.0002)	0.0013 (0.0006)	--	--
Rhus	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
<i>Rhus glabra</i> *	--	0.0000 (0.0000)	--	--	--
<i>Rhus hirta</i> *	--	--	0.0002 (0.0002)	--	--
Ribes	--	0.0002 (0.0002)	0.0002 (0.0002)	--	--
<i>Ribes rotundifolium</i> *	--	0.0002 (0.0002)	0.0002 (0.0002)	--	--
<i>Robinia pseudoacacia</i> †	1.0013 (0.2188)	0.0004 (0.0001)	0.0082 (0.0031)	0.0157 (0.0064)	0.0087 (0.0050)
Rosa	--	0.0002 (0.0002)	0.0043 (0.0043)	--	--
<i>Rosa carolina</i> *	--	--	--	--	--
<i>Rosa multiflora</i> *	--	0.0002 (0.0002)	0.0043 (0.0043)	--	--
Rubus	--	0.0091 (0.0041)	0.0054 (0.0022)	--	--
<i>Rubus allegheniensis</i> *	--	0.0083 (0.0036)	0.0054 (0.0022)	--	--
<i>Rubus occidentalis</i> *	--	0.0006 (0.0005)	--	--	--
<i>Rubus odoratus</i> *	--	--	--	--	--
<i>Rubus phoenicolasius</i> *	--	0.0001 (0.0001)	--	--	--
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i>	--	--	--	--	--
Sambucus	--	0.0001 (0.0001)	0.0021 (0.0016)	--	0.0029 (0.0029)

BASAL AREA Sampling Block 1		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	--	0.0001 (0.0000)	0.0007 (0.0007)	--	0.0029 (0.0029)
<i>Sambucus racemosa</i> *	--	0.0000 (0.0000)	0.0015 (0.0015)	--	--
<i>Sassafras albidum</i> †	0.4013 (0.1443)	0.0031 (0.0008)	0.0264 (0.0072)	0.0216 (0.0068)	0.0442 (0.0146)
Smilax	--	0.0061 (0.0020)	--	--	--
<i>Smilax glauca</i> §	--	0.0000 (0.0000)	--	--	--
<i>Smilax rotundifolia</i> §	--	0.0060 (0.0020)	--	--	--
<i>Smilax tamnoides</i> §	--	0.0001 (0.0001)	--	--	--
<i>Sorbus americana</i> †	--	--	--	--	--
<i>Spiraea betulifolia</i> *	--	--	--	--	--
<i>Symphoricarpos orbiculatus</i> *	--	0.0003 (0.0002)	0.0005 (0.0004)	--	--
<i>Tilia americana</i> †	0.7178 (0.2013)	0.0000 (0.0000)	0.0017 (0.0008)	0.0126 (0.0072)	0.0181 (0.0096)
<i>Toxicodendron radicans</i> §	--	0.0000 (0.0000)	0.0003 (0.0003)	0.0008 (0.0008)	--
<i>Tsuga canadensis</i> †	0.0591 (0.0240)	--	0.0003 (0.0002)	0.0015 (0.0011)	0.0092 (0.0092)
Ulmus	0.0793 (0.0308)	0.0000 (0.0000)	0.0002 (0.0002)	--	0.0028 (0.0028)
<i>Ulmus americana</i> †	0.0249 (0.0249)	--	--	--	--
<i>Ulmus rubra</i> †	0.0544 (0.0191)	0.0000 (0.0000)	0.0002 (0.0002)	--	0.0028 (0.0028)
Vaccinium	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
<i>Vaccinium angustifolium</i> *	--	--	--	--	--
<i>Vaccinium pallidum</i> *	--	--	--	--	--
<i>Vaccinium stamineum</i> *	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
Viburnum	--	0.0004 (0.0001)	0.0012 (0.0006)	0.0029 (0.0020)	0.0088 (0.0050)
<i>Viburnum acerifolium</i> *	--	0.0003 (0.0001)	0.0002 (0.0002)	--	--
<i>Viburnum prunifolium</i> *	--	0.0001 (0.0001)	0.0010 (0.0006)	0.0029 (0.0020)	0.0088 (0.0050)
<i>Vinca minor</i> §	--	--	--	--	--
Vitaceae	--	--	--	--	--
Vitis	--	0.0003 (0.0001)	0.0028 (0.0011)	0.0208 (0.0061)	0.0259 (0.0091)

Table 7b. Mean basal area of live stems (m² per ha) for SHEN forest vegetation monitoring sampling block 2 (2007) for tree and shrub strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

BASAL AREA Sampling Block 2 Taxa	Trees	Shrubs			
		Class 1	Class 2	Class 3	Class 4
All Taxa	26.0383 (0.7695)	0.0428 (0.0052)	0.3355 (0.0280)	0.8311(0.0631)	1.4951 (0.0987)
Acer	1.7796 (0.2395)	0.0036 (0.0007)	0.0454 (0.0071)	0.1129 (0.0178)	0.2854 (0.0393)
<i>Acer negundo</i> †	0.0427 (0.0219)	0.0000 (0.0000)	0.0003 (0.0003)	--	0.0085 (0.0063)
<i>Acer pensylvanicum</i> †	0.1764 (0.0350)	0.0013 (0.0002)	0.0205 (0.0044)	0.0551 (0.0128)	0.1319 (0.0272)
<i>Acer rubrum</i> †	1.3258 (0.1845)	0.0021 (0.0005)	0.0244 (0.0047)	0.0534 (0.0117)	0.1449 (0.0281)
<i>Acer saccharum</i> †	0.2348 (0.1484)	0.0002 (0.0002)	--	0.0030 (0.0018)	--
<i>Acer spicatum</i> †	--	--	0.0002 (0.0002)	0.0014 (0.0014)	--
<i>Ailanthus altissima</i> †	0.0866 (0.0520)	0.0001 (0.0000)	0.0003 (0.0002)	0.0007 (0.0007)	--
<i>Albizia julibrissin</i> †	--	--	--	--	--
<i>Alnus serrulata</i> *	--	--	--	--	--
Amelanchier	0.0360 (0.0140)	0.0001 (0.0000)	0.0020 (0.0006)	0.0097 (0.0034)	0.0115 (0.0056)
<i>Amelanchier arborea</i> †	0.0360 (0.0140)	0.0001 (0.0000)	0.0017 (0.0006)	0.0097 (0.0034)	0.0115 (0.0056)
<i>Amelanchier laevis</i> *	--	--	0.0003 (0.0003)	--	--
<i>Asimina triloba</i> †	--	0.0001 (0.0001)	0.0018 (0.0018)	0.0014 (0.0010)	--
<i>Berberis thunbergii</i> *	--	--	--	--	--
Betula	1.2990 (0.2026)	0.0043 (0.0013)	0.0261 (0.0091)	0.0505 (0.0152)	0.0967 (0.0212)
<i>Betula alleghaniensis</i> †	0.1040 (0.0420)	0.0005 (0.0003)	0.0015 (0.0007)	0.0044 (0.0031)	0.0143 (0.0074)
<i>Betula lenta</i> †	1.1951 (0.1903)	0.0038 (0.0012)	0.0247 (0.0088)	0.0461 (0.0135)	0.0824 (0.0200)
<i>Broussonetia papyrifera</i> †	--	--	--	--	--
<i>Campsis radicans</i> §	--	--	--	--	--
<i>Carpinus caroliniana</i> †	0.0033 (0.0025)	0.0000 (0.0000)	0.0002 (0.0002)	0.0015 (0.0011)	0.0060 (0.0060)
Carya	1.0749 (0.1865)	0.0003 (0.0001)	0.0028 (0.0009)	0.0127 (0.0036)	0.0523 (0.0161)
<i>Carya alba</i> †	0.1102 (0.0568)	0.0000 (0.0000)	0.0007 (0.0005)	0.0023 (0.0017)	0.0030 (0.0030)
<i>Carya cordiformis</i> †	0.0333 (0.0184)	0.0002 (0.0001)	0.0008 (0.0004)	0.0029 (0.0014)	0.0089 (0.0066)
<i>Carya glabra</i> †	0.3468 (0.0922)	0.0000 (0.0000)	0.0005 (0.0003)	0.0030 (0.0018)	0.0230 (0.0106)
<i>Carya ovalis</i> †	0.4391 (0.1076)	0.0000 (0.0000)	0.0009 (0.0004)	0.0045 (0.0021)	0.0147 (0.0062)
<i>Carya ovata</i> †	0.1325 (0.0536)	--	--	--	0.0028 (0.0028)

BASAL AREA Sampling Block 2		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--
Castanea	0.0049 (0.0040)	0.0002 (0.0001)	0.0056 (0.0019)	0.0162 (0.0054)	0.0173 (0.0067)
<i>Castanea dentata</i> †	0.0049 (0.0040)	0.0002 (0.0001)	0.0040 (0.0014)	0.0140 (0.0049)	0.0173 (0.0067)
<i>Castanea pumila</i> †	--	0.0000 (0.0000)	0.0017 (0.0013)	0.0022 (0.0022)	--
<i>Celastrus orbiculatus</i> §	--	0.0009 (0.0009)	0.0003 (0.0002)	--	0.0029 (0.0029)
<i>Celtis occidentalis</i> *	0.0055 (0.0036)	0.0000 (0.0000)	--	0.0031 (0.0021)	0.0119 (0.0072)
<i>Cercis canadensis</i> †	0.0481 (0.0269)	0.0004 (0.0003)	0.0035 (0.0021)	0.0051 (0.0018)	0.0028 (0.0028)
<i>Chimaphila maculata</i> *	--	--	--	--	--
<i>Clematis virginiana</i> §	--	--	--	--	--
Cornus	0.0227 (0.0086)	0.0001 (0.0000)	0.0013 (0.0006)	0.0127 (0.0041)	0.0463 (0.0136)
<i>Cornus alternifolia</i> *	--	0.0000 (0.0000)	0.0002 (0.0002)	0.0015 (0.0015)	--
<i>Cornus florida</i> †	0.0227 (0.0086)	0.0001 (0.0000)	0.0012 (0.0005)	0.0112 (0.0038)	0.0463 (0.0136)
Corylus	--	0.0000 (0.0000)	--	--	--
<i>Corylus americana</i> *	--	--	--	--	--
<i>Corylus cornuta</i> *	--	0.0000 (0.0000)	--	--	--
Crataegus	0.0098 (0.0088)	0.0000 (0.0000)	--	0.0044 (0.0025)	0.0120 (0.0070)
<i>Diospyros virginiana</i> †	0.0384 (0.0176)	0.0000 (0.0000)	0.0002 (0.0002)	--	0.0028 (0.0028)
<i>Dirca palustris</i> *	--	--	--	--	--
<i>Elaeagnus umbellata</i> *	--	--	--	--	--
<i>Epigaea repens</i> *	--	--	--	--	--
<i>Fagus grandifolia</i> †	0.0565 (0.0512)	0.0000 (0.0000)	--	0.0007 (0.0007)	0.0029 (0.0029)
Fraxinus	1.3367 (0.2580)	0.0004 (0.0001)	0.0036 (0.0010)	0.0190 (0.0053)	0.0998 (0.0224)
<i>Fraxinus americana</i> †	1.2205 (0.2387)	0.0004 (0.0001)	0.0036 (0.0010)	0.0190 (0.0053)	0.0969 (0.0222)
<i>Fraxinus nigra</i> †	--	--	--	--	0.0029 (0.0029)
<i>Fraxinus pennsylvanica</i> †	0.1163 (0.1046)	--	--	--	--
<i>Gaultheria procumbens</i> *	--	--	--	--	--
<i>Gaylussacia baccata</i> *	--	--	--	--	--
<i>Hamamelis virginiana</i> *	0.0011 (0.0011)	0.0014 (0.0004)	0.0268 (0.0059)	0.0822 (0.0197)	0.0359 (0.0131)
<i>Hydrangea arborescens</i> *	--	0.0001 (0.0001)	0.0006 (0.0006)	--	--
<i>Ilex montana</i> *	--	0.0005 (0.0002)	0.0034 (0.0015)	0.0085 (0.0041)	--
<i>Juglans nigra</i> †	0.0584 (0.0355)	--	--	0.0007 (0.0007)	--

BASAL AREA Sampling Block 2		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Juniperus virginiana</i> †	0.0043 (0.0043)	--	--	--	--
<i>Kalmia latifolia</i> *	0.0011 (0.0011)	0.0024 (0.0005)	0.0516 (0.0125)	0.1657 (0.0382)	0.1731 (0.0541)
<i>Lindera benzoin</i> *	--	0.0080 (0.0016)	0.0645 (0.0119)	0.0775 (0.0184)	0.0173 (0.0068)
<i>Liriodendron tulipifera</i> †	4.3625 (0.7077)	0.0008 (0.0004)	0.0075 (0.0036)	0.0096 (0.0043)	0.0093 (0.0070)
<i>Lonicera japonica</i> §	--	0.0002 (0.0001)	0.0007 (0.0007)	--	--
<i>Lyonia ligustrina</i> *	--	0.0001 (0.0000)	0.0005 (0.0003)	--	--
Malus	0.0245 (0.0191)	--	--	--	0.0028 (0.0028)
<i>Malus pumila</i> †	0.0180 (0.0180)	--	--	--	0.0028 (0.0028)
<i>Menispermum canadense</i> §	--	--	--	--	--
<i>Menziesia pilosa</i> *	--	0.0002 (0.0002)	0.0003 (0.0003)	--	--
Morus	--	--	--	--	--
<i>Morus alba</i> †	--	--	--	--	--
<i>Morus rubra</i> *	--	--	--	--	--
<i>Nyssa sylvatica</i> †	0.4963 (0.0766)	0.0006 (0.0003)	0.0114 (0.0024)	0.0649 (0.0130)	0.2215 (0.0366)
<i>Ostrya virginiana</i> †	0.1125 (0.0296)	0.0007 (0.0002)	0.0035 (0.0016)	0.0155 (0.0074)	0.0541 (0.0212)
<i>Parthenocissus quinquefolia</i> §	--	0.0001 (0.0000)	--	--	--
Pinus	1.2236 (0.3615)	0.0001 (0.0001)	0.0020 (0.0009)	0.0127 (0.0052)	0.0539 (0.0212)
<i>Pinus echinata</i> †	0.0011 (0.0011)	--	--	--	--
<i>Pinus pungens</i> †	0.0470 (0.0207)	--	--	--	0.0087 (0.0063)
<i>Pinus rigida</i> †	0.2785 (0.1284)	0.0000 (0.0000)	0.0003 (0.0003)	--	0.0029 (0.0029)
<i>Pinus strobus</i> †	0.7306 (0.3230)	0.0001 (0.0001)	0.0014 (0.0006)	0.0098 (0.0048)	0.0336 (0.0177)
<i>Pinus virginiana</i> †	0.1632 (0.0499)	--	0.0003 (0.0003)	0.0030 (0.0024)	0.0087 (0.0046)
<i>Platanus occidentalis</i> †	0.0246 (0.0246)	--	--	--	--
<i>Populus grandidentata</i> †	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
Prunus	0.2993 (0.0775)	0.0003 (0.0001)	0.0038 (0.0019)	0.0118 (0.0066)	0.0317 (0.0113)
<i>Prunus avium</i> †	0.0533 (0.0290)	--	--	--	0.0056 (0.0037)
<i>Prunus serotina</i> †	0.2459 (0.0722)	0.0001 (0.0001)	0.0022 (0.0016)	0.0082 (0.0055)	0.0261 (0.0107)
<i>Prunus virginiana</i> †	--	0.0002 (0.0001)	0.0016 (0.0011)	0.0036 (0.0036)	--
<i>Ptelea trifoliata</i> †	--	--	--	--	--
Quercus	11.5309 (0.7839)	0.0011 (0.0004)	0.0174 (0.0057)	0.0282 (0.0078)	0.1037 (0.0227)
<i>Quercus alba</i> †	1.0352 (0.2578)	0.0000 (0.0000)	0.0013 (0.0007)	0.0022 (0.0013)	0.0144 (0.0065)
<i>Quercus bicolor</i> †	0.0207 (0.0147)	--	--	--	--

BASAL AREA Sampling Block 2		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Quercus coccinea</i> †	0.7361 (0.1505)	0.0001 (0.0001)	0.0017 (0.0010)	0.0068 (0.0037)	0.0087 (0.0049)
<i>Quercus ilicifolia</i> *	--	0.0004 (0.0002)	0.0062 (0.0047)	0.0030 (0.0030)	--
<i>Quercus marilandica</i> †	0.0766 (0.0276)	0.0001 (0.0001)	0.0014 (0.0010)	0.0045 (0.0020)	0.0402 (0.0171)
<i>Quercus prinus</i> †	5.1538 (0.5973)	0.0004 (0.0002)	0.0038 (0.0018)	0.0082 (0.0034)	0.0318 (0.0109)
<i>Quercus rubra</i> †	4.2482 (0.4970)	0.0001 (0.0001)	0.0015 (0.0006)	0.0029 (0.0018)	0.0086 (0.0064)
<i>Quercus velutina</i> †	0.2603 (0.0604)	0.0001 (0.0001)	0.0015 (0.0006)	0.0007 (0.0007)	--
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--
Rhododendron	--	0.0005 (0.0003)	0.0018 (0.0013)	--	--
<i>Rhododendron periclymenoides</i> *	--	0.0003 (0.0001)	0.0014 (0.0012)	--	--
<i>Rhododendron prinophyllum</i> *	--	0.0003 (0.0003)	0.0005 (0.0004)	--	--
Rhus	--	0.0000 (0.0000)	0.0002 (0.0002)	--	--
<i>Rhus glabra</i> *	--	0.0000 (0.0000)	--	--	--
<i>Rhus hirta</i> *	--	--	0.0002 (0.0002)	--	--
Ribes	--	--	--	--	--
<i>Ribes rotundifolium</i> *	--	--	--	--	--
<i>Robinia pseudoacacia</i> †	0.8948 (0.1999)	0.0002 (0.0001)	0.0047 (0.0018)	0.0239 (0.0093)	0.0145 (0.0078)
Rosa	--	0.0003 (0.0002)	0.0021 (0.0016)	0.0015 (0.0015)	--
<i>Rosa carolina</i> *	--	--	--	--	--
<i>Rosa multiflora</i> *	--	0.0003 (0.0002)	0.0021 (0.0016)	0.0015 (0.0015)	--
Rubus	--	0.0067 (0.0028)	0.0063 (0.0030)	--	--
<i>Rubus allegheniensis</i> *	--	0.0064 (0.0028)	0.0063 (0.0030)	--	--
<i>Rubus occidentalis</i> *	--	--	--	--	--
<i>Rubus odoratus</i> *	--	0.0000 (0.0000)	--	--	--
<i>Rubus phoenicolasius</i> *	--	0.0002 (0.0002)	--	--	--
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i>	--	--	--	--	--
Sambucus	--	--	0.0010 (0.0007)	0.0007 (0.0007)	--
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	--	--	0.0010 (0.0007)	0.0007 (0.0007)	--
<i>Sambucus racemosa</i> *	--	--	--	--	--

BASAL AREA Sampling Block 2		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Sassafras albidum</i> †	0.3889 (0.1368)	0.0020 (0.0005)	0.0240 (0.0064)	0.0457 (0.0125)	0.0558 (0.0245)
Smilax	--	0.0050 (0.0014)	--	--	--
<i>Smilax glauca</i> §	--	0.0004 (0.0004)	--	--	--
<i>Smilax rotundifolia</i> §	--	0.0046 (0.0014)	--	--	--
<i>Smilax tamnoides</i> §	--	--	--	--	--
<i>Sorbus americana</i> †	--	--	--	--	--
<i>Spiraea betulifolia</i> *	--	--	--	--	--
<i>Symphoricarpos orbiculatus</i> *	--	0.0001 (0.0001)	0.0026 (0.0020)	--	--
<i>Tilia americana</i> †	0.7310 (0.2131)	0.0000 (0.0000)	0.0013 (0.0005)	0.0118 (0.0076)	0.0245 (0.0114)
<i>Toxicodendron radicans</i> §	--	0.0000 (0.0000)	0.0005 (0.0005)	0.0008 (0.0008)	--
<i>Tsuga canadensis</i> †	0.0097 (0.0078)	--	--	--	0.0028 (0.0028)
Ulmus	0.0729 (0.0285)	0.0001 (0.0000)	--	--	0.0058 (0.0041)
<i>Ulmus americana</i> †	0.0227 (0.0227)	0.0000 (0.0000)	--	--	--
<i>Ulmus rubra</i> †	0.0501 (0.0182)	0.0000 (0.0000)	--	--	0.0058 (0.0041)
Vaccinium	--	--	--	--	--
<i>Vaccinium angustifolium</i> *	--	--	--	--	--
<i>Vaccinium pallidum</i> *	--	--	--	--	--
<i>Vaccinium stamineum</i> *	--	--	--	--	--
Viburnum	--	0.0003 (0.0001)	0.0012 (0.0007)	0.0044 (0.0032)	0.0118 (0.0056)
<i>Viburnum acerifolium</i> *	--	0.0001 (0.0001)	--	--	--
<i>Viburnum prunifolium</i> *	--	0.0001 (0.0001)	0.0012 (0.0007)	0.0044 (0.0032)	0.0118 (0.0056)
<i>Vinca minor</i> §	--	--	--	--	--
<i>Vitaceae</i>	--	--	--	--	--
Vitis	--	0.0003 (0.0001)	0.0023 (0.0007)	0.0142 (0.0038)	0.0261 (0.0095)

Table 7c. Mean basal area of live stems (m² per ha) for SHEN forest vegetation monitoring sampling block 3 (2008-2011) for tree and shrub strata (n=160). Standard errors are shown in parentheses. Data presented represents an average stratified by ELU.

BASAL AREA Sampling Block 3 Taxa	Trees	Shrubs			
		Class 1	Class 2	Class 3	Class 4
All Taxa	26.9794 (0.7980)	0.0440 (0.0042)	0.3379 (0.0273)	0.8237 (0.0679)	1.4196 (0.0881)
Acer	1.8844 (0.2484)	0.0036 (0.0007)	0.0475 (0.0073)	0.1218 (0.0203)	0.2687 (0.0356)
<i>Acer negundo</i> †	0.0493 (0.0248)	0.0000 (0.0000)	0.0002 (0.0002)	0.0007 (0.0007)	0.0085 (0.0063)
<i>Acer pensylvanicum</i> †	0.1836 (0.0345)	0.0015 (0.0003)	0.0233 (0.0048)	0.0566 (0.0150)	0.1288 (0.0266)
<i>Acer rubrum</i> †	1.3984 (0.1897)	0.0018 (0.0006)	0.0234 (0.0046)	0.0637 (0.0123)	0.1314 (0.0238)
<i>Acer saccharum</i> †	0.2531 (0.1544)	0.0002 (0.0002)	0.0007 (0.0005)	0.0007 (0.0007)	--
<i>Acer spicatum</i> †	--	--	--	--	--
<i>Ailanthus altissima</i> †	0.0866 (0.0512)	0.0001 (0.0001)	0.0010 (0.0005)	--	--
<i>Albizia julibrissin</i> †	--	--	--	--	--
<i>Alnus serrulata</i> *	--	--	--	--	--
Amelanchier	0.0434 (0.0148)	0.0001 (0.0000)	0.0013 (0.0004)	0.0089 (0.0032)	0.0115 (0.0056)
<i>Amelanchier arborea</i> †	0.0425 (0.0148)	0.0001 (0.0000)	0.0012 (0.0004)	0.0089 (0.0032)	0.0115 (0.0056)
<i>Amelanchier laevis</i> *	--	--	0.0002 (0.0002)	--	--
<i>Asimina triloba</i> †	--	0.0001 (0.0001)	0.0021 (0.0021)	0.0007 (0.0007)	--
<i>Berberis thunbergii</i> *	--	--	--	--	--
Betula	1.3140 (0.2059)	0.0043 (0.0016)	0.0287 (0.0081)	0.0746 (0.0231)	0.1065 (0.0237)
<i>Betula alleghaniensis</i> †	0.1018 (0.0418)	--	0.0003 (0.0002)	0.0007 (0.0007)	0.0116 (0.0070)
<i>Betula lenta</i> †	1.2122 (0.1953)	0.0042 (0.0016)	0.0283 (0.0082)	0.0739 (0.0231)	0.0949 (0.0221)
<i>Broussonetia papyrifera</i> †	--	--	--	--	--
<i>Campsis radicans</i> §	--	--	--	--	--
<i>Carpinus caroliniana</i> †	0.0033 (0.0025)	0.0001 (0.0001)	0.0007 (0.0005)	0.0023 (0.0017)	0.0030 (0.0030)
Carya	1.1292 (0.1972)	0.0003 (0.0001)	0.0023 (0.0007)	0.0157 (0.0045)	0.0611 (0.0157)
<i>Carya alba</i> †	0.1124 (0.0569)	--	0.0007 (0.0004)	0.0037 (0.0025)	0.0058 (0.0041)
<i>Carya cordiformis</i> †	0.0344 (0.0184)	0.0002 (0.0001)	0.0007 (0.0004)	0.0037 (0.0016)	0.0117 (0.0072)
<i>Carya glabra</i> †	0.3619 (0.0980)	0.0000 (0.0000)	0.0007 (0.0004)	0.0038 (0.0019)	0.0259 (0.0099)
<i>Carya ovalis</i> †	0.4652 (0.1121)	0.0001 (0.0000)	0.0003 (0.0002)	0.0045 (0.0021)	0.0147 (0.0076)
<i>Carya ovata</i> †	0.1421 (0.0626)	--	--	--	--

BASAL AREA Sampling Block 3		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i>	--	--	--	--	--
Castanea	0.0011 (0.0011)	0.0004 (0.0001)	0.0033 (0.0010)	0.0148 (0.0058)	0.0084 (0.0063)
<i>Castanea dentata</i> †	0.0011 (0.0011)	0.0004 (0.0001)	0.0027 (0.0009)	0.0133 (0.0056)	0.0084 (0.0063)
<i>Castanea pumila</i> †	--	0.0001 (0.0000)	0.0007 (0.0005)	0.0015 (0.0015)	--
<i>Celastrus orbiculatus</i> §	--	0.0017 (0.0015)	0.0008 (0.0006)	--	0.0058 (0.0058)
<i>Celtis occidentalis</i> *	0.0086 (0.0055)	--	--	0.0008 (0.0008)	0.0216 (0.0124)
<i>Cercis canadensis</i> †	0.0492 (0.0256)	0.0005 (0.0003)	0.0038 (0.0029)	0.0073 (0.0045)	0.0028 (0.0028)
<i>Chimaphila maculata</i> *	--	--	--	--	--
<i>Clematis virginiana</i> §	--	0.0003 (0.0003)	--	--	--
Cornus	0.0195 (0.0085)	0.0001 (0.0000)	0.0012 (0.0004)	0.0089 (0.0030)	0.0437 (0.0135)
<i>Cornus alternifolia</i> *	--	0.0000 (0.0000)	0.0002 (0.0002)	0.0015 (0.0015)	--
<i>Cornus florida</i> †	0.0195 (0.0085)	0.0000 (0.0000)	0.0010 (0.0004)	0.0075 (0.0026)	0.0437 (0.0135)
Corylus	--	0.0000 (0.0000)	--	--	--
<i>Corylus americana</i> *	--	--	--	--	--
<i>Corylus cornuta</i> *	--	0.0000 (0.0000)	--	--	--
Crataegus	0.0029 (0.0029)	0.0000 (0.0000)	--	0.0044 (0.0025)	0.0148 (0.0086)
<i>Diospyros virginiana</i> †	0.0472 (0.0209)	0.0000 (0.0000)	0.0003 (0.0003)	--	0.0028 (0.0028)
<i>Dirca palustris</i> *	--	--	--	--	--
<i>Elaeagnus umbellata</i> *	--	--	--	--	--
<i>Epigaea repens</i> *	--	--	--	--	--
<i>Fagus grandifolia</i> †	0.0587 (0.0524)	0.0000 (0.0000)	--	0.0007 (0.0007)	0.0029 (0.0029)
Fraxinus	1.3505 (0.2572)	0.0003 (0.0001)	0.0042 (0.0011)	0.0175 (0.0043)	0.0752 (0.0190)
<i>Fraxinus americana</i> †	1.2429 (0.2412)	0.0003 (0.0001)	0.0042 (0.0011)	0.0153 (0.0040)	0.0695 (0.0186)
<i>Fraxinus nigra</i> †	--	--	--	0.0007 (0.0007)	--
<i>Fraxinus pennsylvanica</i> †	0.1076 (0.0960)	0.0000 (0.0000)	--	0.0015 (0.0015)	0.0029 (0.0029)
<i>Gaultheria procumbens</i> *	--	--	--	--	--
<i>Gaylussacia baccata</i> *	--	--	--	--	--
<i>Hamamelis virginiana</i> *	0.0032 (0.0018)	0.0015 (0.0004)	0.0216 (0.0053)	0.0826 (0.0215)	0.0230 (0.0087)
<i>Hydrangea arborescens</i> *	--	0.0001 (0.0001)	0.0002 (0.0002)	--	--
<i>Ilex montana</i> *	--	0.0003 (0.0002)	0.0037 (0.0018)	0.0093 (0.0043)	0.0057 (0.0057)

BASAL AREA Sampling Block 3		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Juglans nigra</i> †	0.0573 (0.0345)	--	--	--	--
<i>Juniperus virginiana</i> †	0.0043 (0.0043)	--	--	--	--
<i>Kalmia latifolia</i> *	0.0023 (0.0016)	0.0032 (0.0006)	0.0508 (0.0113)	0.1287 (0.0287)	0.1413 (0.0492)
<i>Lindera benzoin</i> *	--	0.0086 (0.0016)	0.0736 (0.0139)	0.0760 (0.0170)	0.0029 (0.0029)
<i>Liriodendron tulipifera</i> †	4.5873 (0.7370)	0.0009 (0.0004)	0.0076 (0.0040)	0.0088 (0.0036)	0.0209 (0.0099)
<i>Lonicera japonica</i> §	--	0.0006 (0.0004)	0.0008 (0.0008)	0.0007 (0.0007)	--
<i>Lyonia ligustrina</i> *	--	0.0001 (0.0000)	0.0002 (0.0002)	--	--
Malus	0.0245 (0.0191)	--	--	--	0.0028 (0.0028)
<i>Malus pumila</i> †	0.0180 (0.0180)	--	--	--	0.0028 (0.0028)
<i>Menispermum canadense</i> §	--	0.0000 (0.0000)	--	--	--
<i>Menziesia pilosa</i> *	--	0.0002 (0.0002)	0.0005 (0.0005)	--	--
Morus	--	--	--	--	--
<i>Morus alba</i> †	--	--	--	--	--
<i>Morus rubra</i> *	--	--	--	--	--
<i>Nyssa sylvatica</i> †	0.5386 (0.0862)	0.0004 (0.0002)	0.0107 (0.0024)	0.0696 (0.0131)	0.2214 (0.0381)
<i>Ostrya virginiana</i> †	0.1177 (0.0302)	0.0006 (0.0002)	0.0053 (0.0018)	0.0193 (0.0083)	0.0413 (0.0162)
<i>Parthenocissus quinquefolia</i> §	--	0.0002 (0.0001)	0.0003 (0.0002)	--	--
Pinus	1.2610 (0.3680)	0.0002 (0.0001)	0.0017 (0.0009)	0.0120 (0.0051)	0.0451 (0.0190)
<i>Pinus echinata</i> †	0.0011 (0.0011)	--	--	--	--
<i>Pinus pungens</i> †	0.0524 (0.0229)	--	--	--	0.0058 (0.0058)
<i>Pinus rigida</i> †	0.2850 (0.1314)	0.0000 (0.0000)	0.0002 (0.0002)	--	0.0029 (0.0029)
<i>Pinus strobus</i> †	0.7483 (0.3298)	0.0001 (0.0001)	0.0012 (0.0007)	0.0090 (0.0047)	0.0335 (0.0178)
<i>Pinus virginiana</i> †	0.1742 (0.0530)	0.0001 (0.0001)	0.0003 (0.0003)	0.0030 (0.0024)	0.0029 (0.0029)
<i>Platanus occidentalis</i> †	0.0256 (0.0256)	--	--	--	--
<i>Populus grandidentata</i> †	--	0.0000 (0.0000)	0.0002 (0.0002)	0.0007 (0.0007)	--
Prunus	0.3336 (0.0802)	0.0003 (0.0001)	0.0035 (0.0019)	0.0074 (0.0040)	0.0230 (0.0105)
<i>Prunus avium</i> †	0.0456 (0.0270)	--	--	--	0.0056 (0.0037)
<i>Prunus serotina</i> †	0.2880 (0.0765)	0.0001 (0.0001)	0.0015 (0.0012)	0.0038 (0.0016)	0.0174 (0.0098)
<i>Prunus virginiana</i> †	--	0.0002 (0.0001)	0.0020 (0.0015)	0.0036 (0.0036)	--
<i>Ptelea trifoliata</i> †	--	0.0001 (0.0001)	0.0003 (0.0003)	--	--
Quercus	11.9120 (0.8149)	0.0011 (0.0004)	0.0184 (0.0070)	0.0290 (0.0075)	0.1008 (0.0219)

BASAL AREA Sampling Block 3		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Quercus alba</i> †	1.0349 (0.2557)	0.0001 (0.0000)	0.0008 (0.0004)	0.0022 (0.0013)	0.0115 (0.0057)
<i>Quercus bicolor</i> †	0.0229 (0.0162)	--	--	--	--
<i>Quercus coccinea</i> †	0.7670 (0.1576)	0.0000 (0.0000)	0.0019 (0.0011)	0.0083 (0.0041)	0.0126 (0.0079)
<i>Quercus ilicifolia</i> *	--	0.0005 (0.0003)	0.0078 (0.0059)	--	--
<i>Quercus marilandica</i> †	0.0788 (0.0279)	0.0001 (0.0000)	0.0007 (0.0005)	0.0022 (0.0013)	0.0277 (0.0132)
<i>Quercus prinus</i> †	5.2508 (0.6302)	0.0003 (0.0002)	0.0043 (0.0026)	0.0067 (0.0027)	0.0289 (0.0087)
<i>Quercus rubra</i> †	4.4806 (0.5183)	0.0001 (0.0001)	0.0015 (0.0005)	0.0074 (0.0033)	0.0085 (0.0049)
<i>Quercus velutina</i> †	0.2544 (0.0635)	0.0001 (0.0000)	0.0014 (0.0008)	0.0023 (0.0017)	0.0116 (0.0057)
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i>	--	--	--	--	--
Rhododendron	--	0.0004 (0.0002)	0.0017 (0.0012)	--	--
<i>Rhododendron periclymenoides</i> *	--	0.0003 (0.0001)	0.0014 (0.0012)	--	--
<i>Rhododendron prinophyllum</i> *	--	0.0001 (0.0000)	0.0003 (0.0003)	--	--
Rhus	--	--	0.0002 (0.0002)	--	0.0028 (0.0028)
<i>Rhus glabra</i> *	--	--	--	--	--
<i>Rhus hirta</i> *	--	--	0.0002 (0.0002)	--	0.0028 (0.0028)
Ribes	--	--	--	--	--
<i>Ribes rotundifolium</i> *	--	--	--	--	--
<i>Robinia pseudoacacia</i> †	0.8544 (0.1892)	0.0003 (0.0001)	0.0021 (0.0009)	0.0199 (0.0080)	0.0232 (0.0091)
Rosa	--	0.0005 (0.0003)	0.0026 (0.0017)	--	--
<i>Rosa carolina</i> *	--	--	--	--	--
<i>Rosa multiflora</i> *	--	0.0005 (0.0003)	0.0026 (0.0017)	--	--
Rubus	--	0.0034 (0.0012)	0.0047 (0.0028)	--	--
<i>Rubus allegheniensis</i> *	--	0.0029 (0.0012)	0.0047 (0.0028)	--	--
<i>Rubus occidentalis</i> *	--	0.0000 (0.0000)	--	--	--
<i>Rubus odoratus</i> *	--	--	--	--	--
<i>Rubus phoenicolasius</i> *	--	0.0004 (0.0003)	--	--	--
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i>	--	--	--	--	--
Sambucus	--	--	0.0003 (0.0002)	--	0.0029 (0.0029)

BASAL AREA Sampling Block 3		Shrubs			
Taxa	Trees	Class 1	Class 2	Class 3	Class 4
<i>Sambucus nigra</i> ssp. canadensis *	--	--	0.0002 (0.0002)	--	0.0029 (0.0029)
<i>Sambucus racemosa</i> *	--	--	--	--	--
<i>Sassafras albidum</i> †	0.4235 (0.1611)	0.0015 (0.0004)	0.0215 (0.0052)	0.0500 (0.0155)	0.0596 (0.0172)
Smilax	--	0.0064 (0.0016)	--	--	--
<i>Smilax glauca</i> §	--	0.0003 (0.0002)	--	--	--
<i>Smilax rotundifolia</i> §	--	0.0061 (0.0015)	--	--	--
<i>Smilax tamnoides</i> §	--	--	--	--	--
<i>Sorbus americana</i> †	--	--	--	--	--
<i>Spiraea betulifolia</i> *	--	--	--	--	--
<i>Symphoricarpos orbiculatus</i> *	--	0.0006 (0.0005)	0.0014 (0.0012)	--	--
<i>Tilia americana</i> †	0.7409 (0.2085)	0.0001 (0.0000)	0.0003 (0.0002)	0.0112 (0.0059)	0.0275 (0.0117)
<i>Toxicodendron radicans</i> §	--	0.0000 (0.0000)	0.0007 (0.0005)	--	--
<i>Tsuga canadensis</i> †	0.0097 (0.0078)	--	--	--	0.0028 (0.0028)
Ulmus	0.0837 (0.0300)	0.0000 (0.0000)	0.0002 (0.0002)	0.0008 (0.0008)	0.0030 (0.0030)
<i>Ulmus americana</i> †	0.0206 (0.0206)	--	--	--	--
<i>Ulmus rubra</i> †	0.0632 (0.0224)	0.0000 (0.0000)	0.0002 (0.0002)	0.0008 (0.0008)	0.0030 (0.0030)
Vaccinium	--	0.0000 (0.0000)	--	--	--
<i>Vaccinium angustifolium</i> *	--	--	--	--	--
<i>Vaccinium pallidum</i> *	--	--	--	--	--
<i>Vaccinium stamineum</i> *	--	0.0000 (0.0000)	--	--	--
Viburnum	0.0011 (0.0011)	0.0002 (0.0001)	0.0018 (0.0010)	0.0037 (0.0021)	0.0117 (0.0056)
<i>Viburnum acerifolium</i> *	--	0.0001 (0.0001)	--	--	--
<i>Viburnum prunifolium</i> *	0.0011 (0.0011)	0.0001 (0.0000)	0.0018 (0.0010)	0.0037 (0.0021)	0.0117 (0.0056)
<i>Vinca minor</i> §	--	--	--	--	--
Vitaceae	--	--	--	--	--
Vitis	--	0.0003 (0.0001)	0.0038 (0.0013)	0.0156 (0.0042)	0.0290 (0.0089)

Table 8a. Mean density (stems per ha) in each tree crown health class for SHEN forest vegetation monitoring sampling block 1 (2003-2005). Data presented represent an average stratified by ELU. For all data presented, n is equal to the number of plots where the species was present, as listed in the **Plots** column. Standard errors are in parentheses, followed by the total number of stems encountered. Classes 1 through 4 refer to the estimated percent of foliage that is intact (Class 1 = 90-100%, Class 2 = 50-89%, Class 3 = 16-49%, and Class 4 = 0.1 – 15%). Class 5 is used to designate standing dead trees. Dead trees are considered standing if they have a lean of 45 degrees or less from vertical, have an overall height greater than 1.37 meters (measured along the length of the bole), and are still rooted to the ground.

Crown Health Sampling Block 1		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
Acer	116	66.15 (5.23) 442	14.67 (2.62) 98	2.39 (0.73) 16	1.50 (0.50) 10	0.75 (0.49) 5
<i>Acer negundo</i>	6	11.57 (5.79) 4	8.68 (3.88) 3	--	--	--
<i>Acer pensylvanicum</i>	37	43.64 (6.37) 93	5.63 (1.79) 12	0.94 (0.65) 2	0.94 (0.65) 2	0.94 (0.94) 2
<i>Acer rubrum</i>	95	58.85 (5.31) 322	14.44 (2.94) 79	2.19 (0.75) 12	1.28 (0.54) 7	0.55 (0.31) 3
<i>Acer saccharum</i>	11	36.30 (11.09) 23	6.31 (4.84) 4	3.16 (2.12) 2	1.58 (1.58) 1	--
<i>Ailanthus altissima</i>	6	17.36 (4.48) 6	23.15 (17.17) 8	8.68 (5.93) 3	2.89 (2.89) 1	--
<i>Amelanchier arborea</i>	11	41.04 (12.67) 26	1.58 (1.58) 1	--	--	--
Betula	61	76.56 (10.58) 269	5.69 (2.14) 20	0.57 (0.40) 2	--	0.57 (0.40) 2
<i>Betula alleghaniensis</i>	11	31.57 (10.68) 20	1.58 (1.58) 1	1.58 (1.58) 1	--	--
<i>Betula lenta</i>	59	73.27 (10.39) 249	5.59 (2.03) 19	0.29 (0.29) 1	--	0.59 (0.41) 2
<i>Carpinus caroliniana</i>	1	17.36 () 1	--	--	--	--
Carya	49	74.76 (10.46) 211	6.73 (2.52) 19	1.77 (1.45) 5	0.71 (0.50) 2	--
<i>Carya alba</i>	6	54.98 (15.15) 19	--	--	--	--
<i>Carya cordiformis</i>	7	19.84 (4.53) 8	--	--	2.48 (2.48) 1	--
<i>Carya glabra</i>	21	48.78 (9.85) 59	8.27 (3.90) 10	4.13 (3.37) 5	0.83 (0.83) 1	--
<i>Carya ovalis</i>	34	51.06 (7.25) 100	3.06 (1.55) 6	--	--	--
<i>Carya ovata</i>	6	66.55 (23.04) 23	8.68 (8.68) 3	--	--	--
<i>Castanea dentata</i>	2	8.68 (8.68) 1	--	8.68 (8.68) 1	--	--
<i>Celtis occidentalis*</i>	4	8.68 (8.68) 2	4.34 (4.34) 1	4.34 (4.34) 1	4.34 (4.34) 1	--
<i>Cercis canadensis</i>	7	32.24 (17.94) 13	14.88 (4.53) 6	14.88 (7.97) 6	2.48 (2.48) 1	--
<i>Cornus florida</i>	8	19.53 (8.32) 9	8.68 (6.56) 4	6.51 (4.57) 3	2.17 (2.17) 1	--
Crataegus	1	86.81 () 5	--	--	--	--

Crown Health Sampling Block 1		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
<i>Diospyros virginiana</i>	7	14.88 (5.90) 6	22.32 (7.30) 9	--	--	--
<i>Fagus grandifolia</i>	2	52.08 (17.36) 6	--	--	--	--
Fraxinus	51	47.66 (7.29) 140	13.28 (2.51) 39	3.74 (1.40) 11	2.38 (0.97) 7	--
<i>Fraxinus americana</i>	49	46.41 (7.53) 131	13.46 (2.49) 38	3.54 (1.43) 10	2.48 (1.01) 7	--
<i>Fraxinus pennsylvanica</i>	2	78.13 (8.68) 9	--	8.68 (8.68) 1	--	--
<i>Hamamelis virginiana*</i>	1	17.36 () 1	--	--	--	--
<i>Juglans nigra</i>	3	17.36 (0.00) 3	17.36 (10.02) 3	--	--	--
<i>Juniperus virginiana</i>	2	8.68 (8.68) 1	--	8.68 (8.68) 1	--	--
<i>Liriodendron tulipifera</i>	50	77.08 (11.80) 222	4.51 (2.21) 13	--	0.35 (0.35) 1	--
Malus	3	17.36 (10.02) 3	28.94 (11.57) 5	--	--	--
<i>Malus pumila</i>	2	17.36 (17.36) 2	34.72 (17.36) 4	--	--	--
<i>Nyssa sylvatica</i>	59	70.03 (12.14) 238	5.59 (1.94) 19	0.59 (0.41) 2	--	0.29 (0.29) 1
<i>Ostrya virginiana</i>	19	53.91 (9.38) 59	8.22 (2.77) 9	2.74 (2.00) 3	--	--
Pinus	40	56.42 (11.69) 130	16.49 (3.83) 38	3.91 (1.91) 9	1.30 (0.73) 3	9.55 (8.70) 22
<i>Pinus echinata</i>	1	--	17.36 () 1	--	--	--
<i>Pinus pungens</i>	6	14.47 (2.89) 5	20.25 (9.42) 7	2.89 (2.89) 1	--	--
<i>Pinus rigida</i>	15	46.30 (20.52) 40	3.47 (2.51) 3	1.16 (1.16) 1	2.31 (1.58) 2	3.47 (2.51) 3
<i>Pinus strobus</i>	24	44.85 (12.14) 62	13.02 (4.34) 18	0.72 (0.72) 1	--	0.72 (0.72) 1
<i>Pinus virginiana</i>	14	28.52 (7.85) 23	9.92 (4.72) 8	7.44 (3.95) 6	1.24 (1.24) 1	22.32 (22.32) 18
<i>Platanus occidentalis</i>	1	17.36 () 1	--	--	--	--
Prunus	28	23.56 (4.11) 38	14.88 (4.26) 24	5.58 (2.37) 9	3.10 (1.80) 5	0.62 (0.62) 1
<i>Prunus avium</i>	3	17.36 (0.00) 3	11.57 (11.57) 2	--	--	--
<i>Prunus serotina</i>	26	23.37 (4.19) 35	14.69 (4.49) 22	6.01 (2.54) 9	3.34 (1.93) 5	0.67 (0.67) 1
Quercus	124	152.89 (12.53) 1092	37.94 (6.43) 271	5.46 (1.25) 39	1.96 (0.64) 14	3.22 (1.44) 23
<i>Quercus alba</i>	32	51.00 (13.59) 94	18.99 (7.93) 35	0.54 (0.54) 1	1.09 (0.75) 2	1.63 (1.63) 3
<i>Quercus bicolor</i>	2	8.68 (8.68) 1	17.36 (17.36) 2	8.68 (8.68) 1	--	--
<i>Quercus coccinea</i>	23	83.79 (16.07) 111	25.66 (9.51) 34	1.51 (1.04) 2	0.75 (0.75) 1	0.75 (0.75) 1

Crown Health Sampling Block 1						
Taxa	Plots	Class 1	Class 2	Health Class Class 3	Class 4	Class 5
<i>Quercus marilandica</i>	8	34.72 (16.40) 16	58.59 (25.61) 27	17.36 (6.56) 8	6.51 (3.18) 3	--
<i>Quercus prinus</i>	82	127.88 (12.28) 604	17.15 (3.99) 81	2.75 (0.93) 13	1.27 (0.50) 6	0.85 (0.85) 4
<i>Quercus rubra</i>	72	56.66 (6.67) 235	19.29 (5.13) 80	2.89 (1.19) 12	0.24 (0.24) 1	3.38 (1.90) 14
<i>Quercus velutina</i>	25	21.53 (4.84) 31	8.33 (2.67) 12	1.39 (1.39) 2	0.69 (0.69) 1	--
<i>Robinia pseudoacacia</i>	48	32.55 (12.40) 90	15.91 (4.16) 44	6.87 (2.35) 19	4.34 (1.75) 12	3.98 (2.21) 11
<i>Sassafras albidum</i>	26	32.05 (8.70) 48	17.36 (7.64) 26	4.67 (2.06) 7	2.67 (2.09) 4	1.34 (1.34) 2
<i>Tilia americana</i>	27	54.01 (10.98) 84	12.22 (7.17) 19	--	0.64 (0.64) 1	--
<i>Tsuga canadensis</i>	9	3.86 (3.86) 2	--	9.65 (5.87) 5	13.50 (8.07) 7	5.79 (2.89) 3
Ulmus	14	19.84 (8.31) 16	8.68 (3.02) 7	4.96 (2.18) 4	2.48 (1.68) 2	--
<i>Ulmus americana</i>	1	69.44 () 4	17.36 () 1	--	--	--
<i>Ulmus rubra</i>	13	16.03 (7.98) 12	8.01 (3.18) 6	5.34 (2.31) 4	2.67 (1.81) 2	--

Table 8b. Mean density (stems per ha) in each tree crown health class for SHEN forest vegetation monitoring sampling block 2 (2007). Data presented represents an average stratified by ELU. For all data presented, n is equal to the number of plots where the species was present, as listed in the **Plots** column. Standard errors are in parentheses, followed by the total number of stems encountered. Classes 1 through 4 refer to the estimated percent of foliage that is intact (Class 1 = 90-100%, Class 2 = 50-89%, Class 3 = 16-49%, and Class 4 = 0.1 – 15%). Class 5 is used to designate standing dead trees. Dead trees are considered standing if they have a lean of 45 degrees or less from vertical, have an overall height greater than 1.37 meters (measured along the length of the bole), and are still rooted to the ground.

Crown Health Sampling Block 2		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
Acer	118	43.26 (3.80) 294	28.40 (3.20) 193	7.65 (1.30) 52	4.56 (1.13) 31	0.29 (0.29) 2
<i>Acer negundo</i>	6	17.36 (7.76) 6	11.57 (3.66) 4	2.89 (2.89) 1	--	--
<i>Acer pensylvanicum</i>	37	34.72 (4.66) 74	7.04 (2.28) 15	4.69 (1.45) 10	5.16 (2.59) 11	0.94 (0.94) 2
<i>Acer rubrum</i>	99	34.02 (3.66) 194	28.76 (3.52) 164	7.01 (1.32) 40	3.51 (0.83) 20	--
<i>Acer saccharum</i>	12	28.94 (9.40) 20	14.47 (5.98) 10	1.45 (1.45) 1	--	--
<i>Ailanthus altissima</i>	7	42.16 (29.31) 17	7.44 (3.51) 3	2.48 (2.48) 1	--	--
<i>Amelanchier arborea</i>	11	15.78 (4.94) 10	17.36 (8.11) 11	1.58 (1.58) 1	7.89 (6.35) 5	--
Betula	62	61.60 (8.22) 220	21.00 (4.68) 75	3.08 (1.17) 11	0.84 (0.48) 3	--
<i>Betula alleghaniensis</i>	10	36.46 (10.50) 21	5.21 (2.65) 3	--	--	--
<i>Betula lenta</i>	60	57.58 (7.69) 199	20.83 (4.83) 72	3.18 (1.20) 11	0.87 (0.49) 3	--
<i>Carpinus caroliniana</i>	2	17.36 (0.00) 2	--	--	--	--
Carya	49	47.83 (7.48) 135	28.34 (5.05) 80	4.25 (2.00) 12	2.83 (1.63) 8	--
<i>Carya alba</i>	6	43.40 (7.43) 15	11.57 (8.58) 4	--	--	--
<i>Carya cordiformis</i>	6	2.89 (2.89) 1	17.36 (4.48) 6	2.89 (2.89) 1	--	--
<i>Carya glabra</i>	22	30.78 (5.35) 39	22.89 (5.76) 29	1.58 (1.58) 2	3.95 (1.96) 5	--
<i>Carya ovalis</i>	33	33.67 (6.84) 64	17.36 (3.78) 33	3.68 (1.25) 7	0.53 (0.53) 1	--
<i>Carya ovata</i>	8	30.38 (13.82) 14	17.36 (8.68) 8	4.34 (4.34) 2	4.34 (2.84) 2	--
<i>Castanea dentata</i>	2	--	8.68 (8.68) 1	--	8.68 (8.68) 1	--
<i>Celtis occidentalis*</i>	3	--	11.57 (5.79) 2	--	5.79 (5.79) 1	--
<i>Cercis canadensis</i>	4	47.74 (23.90) 11	47.74 (19.25) 11	--	--	--
<i>Cornus florida</i>	9	9.65 (5.87) 5	19.29 (1.93) 10	3.86 (2.55) 2	1.93 (1.93) 1	--
Crataegus	2	--	34.72 (17.36) 4	--	--	--
<i>Diospyros virginiana</i>	7	14.88 (5.90) 6	14.88 (7.01) 6	2.48 (2.48) 1	2.48 (2.48) 1	--

Crown Health Sampling Block 2		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
<i>Fagus grandifolia</i>	2	43.40 (8.68) 5	8.68 (8.68) 1	--	--	--
Fraxinus	52	29.38 (4.94) 88	27.04 (5.38) 81	6.01 (1.57) 18	3.00 (0.92) 9	0.33 (0.33) 1
<i>Fraxinus americana</i>	50	28.47 (4.88) 82	26.04 (5.46) 75	6.25 (1.63) 18	3.13 (0.95) 9	0.35 (0.35) 1
<i>Fraxinus pennsylvanica</i>	2	52.08 (52.08) 6	52.08 (34.72) 6	--	--	--
<i>Hamamelis virginiana</i> *	1	--	--	17.36 () 1	--	--
<i>Juglans nigra</i>	3	23.15 (5.79) 4	5.79 (5.79) 1	5.79 (5.79) 1	--	--
<i>Juniperus virginiana</i>	1	17.36 () 1	--	--	--	--
Kalmia	1	17.36 () 1	--	--	--	--
<i>Kalmia latifolia</i> *	1	17.36 () 1	--	--	--	--
<i>Liriodendron tulipifera</i>	51	52.42 (7.89) 154	22.13 (5.24) 65	3.74 (1.22) 11	--	--
Malus	2	34.72 (34.72) 4	8.68 (8.68) 1	8.68 (8.68) 1	--	--
<i>Malus pumila</i>	1	69.44 () 4	--	--	--	--
<i>Nyssa sylvatica</i>	58	51.78 (10.20) 173	24.25 (4.29) 81	4.19 (1.72) 14	1.80 (1.02) 6	--
<i>Ostrya virginiana</i>	21	19.01 (6.10) 23	33.90 (8.43) 41	11.57 (3.66) 14	0.83 (0.83) 1	--
Pinus	40	35.16 (9.17) 81	27.78 (5.38) 64	9.98 (3.16) 23	3.91 (1.70) 9	0.87 (0.61) 2
<i>Pinus echinata</i>	1	17.36 () 1	--	--	--	--
<i>Pinus pungens</i>	6	23.15 (13.20) 8	14.47 (6.97) 5	--	--	--
<i>Pinus rigida</i>	13	30.72 (14.60) 23	25.37 (8.48) 19	2.67 (1.81) 2	--	2.67 (1.81) 2
<i>Pinus strobus</i>	25	26.39 (10.42) 38	18.06 (5.25) 26	9.03 (4.27) 13	3.47 (1.42) 5	--
<i>Pinus virginiana</i>	14	13.64 (5.20) 11	16.12 (4.63) 13	9.92 (3.95) 8	4.96 (3.83) 4	--
<i>Platanus occidentalis</i>	1	--	--	17.36 () 1	--	--
Prunus	28	11.78 (2.97) 19	19.84 (5.26) 32	5.58 (2.01) 9	4.96 (1.75) 8	--
<i>Prunus avium</i>	6	14.47 (5.34) 5	5.79 (5.79) 2	2.89 (2.89) 1	2.89 (2.89) 1	--
<i>Prunus serotina</i>	23	10.57 (3.41) 14	22.64 (6.12) 30	6.04 (2.34) 8	5.28 (2.02) 7	--
Quercus	125	106.94 (8.63) 770	68.33 (7.29) 492	11.67 (2.04) 84	3.61 (0.84) 26	0.69 (0.69) 5
<i>Quercus alba</i>	32	41.23 (10.77) 76	26.04 (8.50) 48	2.71 (1.13) 5	--	0.54 (0.54) 1
<i>Quercus bicolor</i>	2	--	34.72 (17.36) 4	--	--	--
<i>Quercus coccinea</i>	24	52.08 (11.45) 72	42.68 (8.49) 59	2.89 (1.35) 4	0.72 (0.72) 1	1.45 (1.45) 2

Crown Health Sampling Block 2		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
<i>Quercus marilandica</i>	8	26.04 (5.68) 12	71.61 (26.94) 33	21.70 (11.25) 10	6.51 (3.18) 3	--
<i>Quercus prinus</i>	82	88.08 (9.21) 416	45.52 (5.75) 215	8.26 (2.09) 39	3.39 (1.14) 16	0.42 (0.42) 2
<i>Quercus rubra</i>	71	44.50 (5.22) 182	26.41 (4.82) 108	6.11 (1.78) 25	1.22 (0.53) 5	--
<i>Quercus velutina</i>	23	9.06 (2.15) 12	18.87 (5.45) 25	0.75 (0.75) 1	0.75 (0.75) 1	--
<i>Robinia pseudoacacia</i>	43	10.09 (3.84) 25	16.15 (5.64) 40	11.30 (2.30) 28	19.38 (10.19) 48	0.81 (0.56) 2
<i>Sassafras albidum</i>	25	16.67 (5.35) 24	17.36 (5.49) 25	13.19 (6.44) 19	5.56 (2.60) 8	--
<i>Tilia americana</i>	29	34.12 (8.64) 57	16.16 (3.55) 27	8.38 (3.41) 14	2.99 (1.24) 5	--
<i>Tsuga canadensis</i>	2	--	--	17.36 (17.36) 2	34.72 (17.36) 4	--
Ulmus	14	11.16 (4.31) 9	11.16 (3.46) 9	11.16 (4.31) 9	1.24 (1.24) 1	--
<i>Ulmus americana</i>	1	52.08 () 3	17.36 () 1	--	--	--
<i>Ulmus rubra</i>	13	8.01 (3.18) 6	10.68 (3.70) 8	12.02 (4.56) 9	1.34 (1.34) 1	--

Table 8c. Mean density (stems per ha) in each tree crown health class for SHEN forest vegetation monitoring sampling block 3 (2008-2011). Data presented represents an average stratified by ELU. For all data presented, n is equal to the number of plots where the species was present, as listed in the **Sites** column. Standard errors are in parentheses, followed by the total number of stems encountered. Classes 1 through 4 refer to the estimated percent of foliage that is intact (Class 1 = 90-100%, Class 2 = 50-89%, Class 3 = 16-49%, and Class 4 = 0.1 – 15%). Class 5 is used to designate standing dead trees. Dead trees are considered standing if they have a lean of 45 degrees or less from vertical, have an overall height greater than 1.37 meters (measured along the length of the bole), and are still rooted to the ground.

Crown Health Sampling Block 3		Health Class					
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5	
Acer	119	24.80 (2.78) 170	51.06 (4.56) 350	7.29 (1.20) 50	3.79 (0.83) 26	0.73 (0.38) 5	
<i>Acer negundo</i>	6	17.36 (7.76) 6	17.36 (6.34) 6	--	--	--	
<i>Acer pensylvanicum</i>	37	17.36 (3.08) 37	29.56 (5.54) 63	3.75 (1.37) 8	2.82 (1.43) 6	0.47 (0.47) 1	
<i>Acer rubrum</i>	99	19.99 (2.58) 114	45.95 (4.50) 262	7.37 (1.30) 42	3.33 (0.81) 19	0.70 (0.43) 4	
<i>Acer saccharum</i>	13	17.36 (4.82) 13	25.37 (9.14) 19	--	1.34 (1.34) 1	--	
<i>Ailanthus altissima</i>	7	--	52.08 (27.06) 21	--	--	--	
<i>Amelanchier arborea</i>	13	12.02 (4.97) 9	20.03 (6.77) 15	6.68 (5.40) 5	2.67 (1.81) 2	--	
Betula	64	49.10 (5.35) 181	33.91 (10.30) 125	2.44 (0.94) 9	--	0.54 (0.38) 2	
<i>Betula alleghaniensis</i>	10	22.57 (5.82) 13	13.89 (7.23) 8	1.74 (1.74) 1	--	1.74 (1.74) 1	
<i>Betula lenta</i>	62	47.04 (5.32) 168	32.76 (10.37) 117	2.24 (0.85) 8	--	0.28 (0.28) 1	
<i>Carpinus caroliniana</i>	2	17.36 (0.00) 2	--	--	--	--	
Carya	49	41.45 (7.84) 117	41.81 (7.99) 118	2.13 (1.20) 6	1.06 (0.79) 3	--	
<i>Carya alba</i>	6	26.04 (9.77) 9	31.83 (11.35) 11	--	--	--	
<i>Carya cordiformis</i>	6	5.79 (3.66) 2	20.25 (6.97) 7	--	--	--	
<i>Carya glabra</i>	21	33.07 (6.87) 40	27.28 (7.15) 33	0.83 (0.83) 1	0.83 (0.83) 1	--	
<i>Carya ovalis</i>	33	25.25 (5.07) 48	31.04 (7.35) 59	2.10 (1.00) 4	0.53 (0.53) 1	--	
<i>Carya ovata</i>	6	49.19 (32.14) 17	20.25 (6.97) 7	2.89 (2.89) 1	2.89 (2.89) 1	--	
<i>Castanea dentata</i>	1	--	17.36 () 1	--	--	--	
<i>Celtis occidentalis*</i>	4	--	17.36 (7.09) 4	4.34 (4.34) 1	--	4.34 (4.34) 1	
<i>Cercis canadensis</i>	5	--	34.72 (18.21) 10	34.72 (22.64) 10	6.94 (4.25) 2	--	
<i>Cornus florida</i>	8	2.17 (2.17) 1	23.87 (5.62) 11	6.51 (3.18) 3	2.17 (2.17) 1	4.34 (2.84) 2	
Crataegus	1	--	--	52.08 () 3	--	--	
<i>Diospyros virginiana</i>	7	4.96 (3.20) 2	24.80 (11.27) 10	2.48 (2.48) 1	7.44 (5.16) 3	--	

Crown Health Sampling Block 3		Health Class				
Taxa	Plots	Class 1	Class 2	Class 3	Class 4	Class 5
<i>Fagus grandifolia</i>	2	17.36 (0.00) 2	34.72 (17.36) 4	--	--	--
Fraxinus	53	13.43 (3.43) 41	42.91 (6.51) 131	7.86 (1.96) 24	3.60 (1.08) 11	--
<i>Fraxinus americana</i>	51	13.62 (3.55) 40	42.89 (6.73) 126	7.15 (1.83) 21	3.06 (1.05) 9	--
<i>Fraxinus pennsylvanica</i>	2	8.68 (8.68) 1	43.40 (26.04) 5	26.04 (26.04) 3	17.36 (0.00) 2	--
<i>Hamamelis virginiana</i> *	3	11.57 (5.79) 2	5.79 (5.79) 1	--	--	--
<i>Juglans nigra</i>	3	11.57 (11.57) 2	11.57 (5.79) 2	11.57 (5.79) 2	--	--
<i>Juniperus virginiana</i>	1	--	17.36 () 1	--	--	--
Kalmia	2	17.36 (0.00) 2	--	--	--	--
<i>Kalmia latifolia</i> *	2	17.36 (0.00) 2	--	--	--	--
<i>Liriodendron tulipifera</i>	51	51.40 (8.36) 151	28.25 (6.11) 83	1.02 (0.58) 3	1.02 (0.58) 3	--
Malus	2	17.36 (17.36) 2	17.36 (17.36) 2	17.36 (17.36) 2	--	--
<i>Malus pumila</i>	1	34.72 () 2	34.72 () 2	--	--	--
<i>Nyssa sylvatica</i>	58	30.83 (5.21) 103	52.08 (11.18) 174	3.29 (1.38) 11	2.39 (0.90) 8	0.30 (0.30) 1
<i>Ostrya virginiana</i>	21	25.63 (5.94) 31	34.72 (8.72) 42	5.79 (2.49) 7	3.31 (1.94) 4	--
Pinus	42	14.88 (3.81) 36	43.40 (7.61) 105	11.99 (3.47) 29	4.55 (1.46) 11	2.07 (1.69) 5
<i>Pinus echinata</i>	1	--	17.36 () 1	--	--	--
<i>Pinus pungens</i>	6	17.36 (10.98) 6	20.25 (5.34) 7	--	2.89 (2.89) 1	--
<i>Pinus rigida</i>	13	10.68 (4.19) 8	37.39 (14.82) 28	9.35 (6.70) 7	2.67 (1.81) 2	6.68 (5.40) 5
<i>Pinus strobus</i>	26	10.68 (3.35) 16	31.38 (8.56) 47	9.35 (3.88) 14	4.01 (1.46) 6	--
<i>Pinus virginiana</i>	15	6.94 (3.71) 6	25.46 (5.32) 22	9.26 (4.10) 8	2.31 (1.58) 2	--
<i>Platanus occidentalis</i>	1	--	--	17.36 () 1	--	--
Prunus	30	5.21 (1.70) 9	24.31 (5.80) 42	7.52 (1.98) 13	5.21 (3.13) 9	0.58 (0.58) 1
<i>Prunus avium</i>	5	6.94 (4.25) 2	10.42 (4.25) 3	6.94 (6.94) 2	--	--
<i>Prunus serotina</i>	25	4.86 (1.88) 7	27.08 (6.80) 39	7.64 (2.02) 11	6.25 (3.73) 9	0.69 (0.69) 1
Quercus	123	59.85 (6.41) 424	114.61 (10.24) 812	12.70 (1.97) 90	4.38 (0.95) 31	2.12 (0.79) 15
<i>Quercus alba</i>	31	21.28 (6.43) 38	47.60 (15.06) 85	2.80 (1.42) 5	--	1.12 (0.78) 2
<i>Quercus bicolor</i>	2	--	34.72 (17.36) 4	--	--	--

Crown Health Sampling Block 3						
Taxa	Plots	Class 1	Class 2	Health Class Class 3	Class 4	Class 5
<i>Quercus coccinea</i>	23	30.95 (10.18) 41	67.93 (13.93) 90	2.26 (1.25) 3	1.51 (1.04) 2	--
<i>Quercus marilandica</i>	8	19.53 (8.32) 9	71.61 (22.36) 33	26.04 (7.34) 12	10.85 (4.57) 5	--
<i>Quercus prinus</i>	81	50.80 (6.58) 237	78.02 (9.36) 364	10.29 (1.99) 48	4.07 (1.07) 19	1.71 (0.72) 8
<i>Quercus rubra</i>	71	22.50 (3.04) 92	50.62 (7.34) 207	4.89 (1.98) 20	1.22 (0.63) 5	0.98 (0.77) 4
<i>Quercus velutina</i>	20	6.08 (1.90) 7	25.17 (5.97) 29	1.74 (1.19) 2	--	--
<i>Robinia pseudoacacia</i>	47	6.65 (3.64) 18	19.58 (5.43) 53	13.67 (3.34) 37	9.97 (3.16) 27	3.32 (1.46) 9
<i>Sassafras albidum</i>	27	12.86 (9.01) 20	25.72 (5.66) 40	10.93 (4.65) 17	1.93 (1.07) 3	--
<i>Tilia americana</i>	29	34.72 (8.95) 58	26.34 (5.82) 44	2.39 (1.13) 4	--	--
<i>Tsuga canadensis</i>	3	--	--	11.57 (11.57) 2	23.15 (15.31) 4	11.57 (11.57) 2
Ulmus	15	8.10 (2.87) 7	21.99 (3.96) 19	5.79 (3.66) 5	2.31 (1.58) 2	--
<i>Ulmus americana</i>	1	17.36 () 1	52.08 () 3	--	--	--
<i>Ulmus rubra</i>	14	7.44 (3.00) 6	19.84 (3.57) 16	6.20 (3.91) 5	2.48 (1.68) 2	--
Viburnum	1	--	--	17.36 () 1	--	--
<i>Viburnum prunifolium*</i>	1	--	--	17.36 () 1	--	--

Table 9a. Mean density (stems per ha) of live trees in each crown height class for SHEN forest vegetation monitoring sampling block 1 (2003-2005). Data presented represents an average stratified by ELU. For all data presented, n is equal to the number of plots where the species was present, as listed in the **Plots** column. Standard errors are in parentheses, followed by the total number of stems counted. Crown height classes refer to the tree canopy's position in relation to other trees in the plot.

Crown Height Sampling Block 1		Crown Height Classes			
Taxa	Plots	Dominant	Co-dominant	Intermediate	Suppressed
Acer	116	1.5 (0.5) 10	14.4 (2.2) 96	32.2 (3.7) 215	36.7 (3.6) 245
<i>Acer negundo</i>	6	--	5.8 (3.7) 2	8.7 (3.9) 3	5.8 (3.7) 2
<i>Acer pensylvanicum</i>	37	--	1.4 (1.0) 3	10.8 (2.3) 23	38.9 (6.2) 83
<i>Acer rubrum</i>	95	1.6 (0.6) 9	14.6 (2.4) 80	33.1 (4.2) 181	27.4 (2.7) 150
<i>Acer saccharum</i>	11	1.6 (1.6) 1	17.4 (7.8) 11	12.6 (3.4) 8	15.8 (6.4) 10
<i>Ailanthus altissima</i>	6	--	23.1 (16.6) 8	11.6 (5.8) 4	17.4 (9.0) 6
<i>Amelanchier arborea</i>	11	--	12.6 (6.7) 8	18.9 (12.5) 12	11.0 (3.5) 7
Betula	61	6.8 (4.1) 24	30.2 (6.3) 106	26.2 (3.5) 92	19.6 (3.2) 69
<i>Betula alleghaniensis</i>	11	1.6 (1.6) 1	4.7 (3.4) 3	12.6 (4.7) 8	15.8 (7.2) 10
<i>Betula lenta</i>	59	6.8 (4.2) 23	30.3 (6.4) 103	24.7 (3.3) 84	17.4 (2.9) 59
<i>Carpinus caroliniana</i>	1	--	--	--	17.4 () 1
Carya	49	3.2 (1.1) 9	25.5 (4.9) 72	26.9 (4.4) 76	28.3 (4.8) 80
<i>Carya alba</i>	6	2.9 (2.9) 1	20.3 (5.3) 7	17.4 (11.0) 6	14.5 (11.4) 5
<i>Carya cordiformis</i>	7	2.5 (2.5) 1	5.0 (3.2) 2	5.0 (5.0) 2	9.9 (3.5) 4
<i>Carya glabra</i>	21	2.5 (1.4) 3	17.4 (5.6) 21	19.0 (5.7) 23	23.1 (4.7) 28
<i>Carya ovalis</i>	34	0.5 (0.5) 1	16.3 (3.7) 32	18.9 (3.7) 37	18.4 (3.6) 36
<i>Carya ovata</i>	6	8.7 (5.9) 3	26.0 (11.6) 9	20.3 (8.3) 7	20.3 (20.3) 7
<i>Castanea dentata</i>	2	--	--	17.4 (0.0) 2	--
<i>Celtis occidentalis*</i>	4	--	--	4.3 (4.3) 1	17.4 (7.1) 4
<i>Cercis canadensis</i>	7	--	--	17.4 (11.4) 7	47.1 (22.3) 19
<i>Cornus florida</i>	8	--	--	17.4 (8.0) 8	19.5 (6.1) 9
Crataegus	1	--	--	--	86.8 () 5
<i>Diospyros virginiana</i>	7	--	9.9 (5.2) 4	19.8 (7.0) 8	7.4 (5.2) 3
<i>Fagus grandifolia</i>	2	17.4 (17.4) 2	--	--	34.7 (0.0) 4
Fraxinus	51	6.8 (1.5) 20	20.1 (4.2) 59	27.6 (4.4) 81	12.6 (2.8) 37

Crown Height Sampling Block 1					
Taxa	Plots	Dominant	Crown Height Classes		
		Co-dominant	Intermediate	Suppressed	
<i>Fraxinus americana</i>	49	6.4 (1.5) 18	19.8 (4.3) 56	27.3 (4.6) 77	12.4 (2.8) 35
<i>Fraxinus pennsylvanica</i>	2	17.4 (17.4) 2	26.0 (26.0) 3	26.0 (8.7) 3	17.4 (17.4) 2
<i>Hamamelis virginiana</i> *	1	--	--	--	17.4 () 1
<i>Juglans nigra</i>	3	--	17.4 (10.0) 3	17.4 (17.4) 3	--
<i>Juniperus virginiana</i>	2	--	--	--	17.4 (0.0) 2
<i>Kalmia latifolia</i>	0	--	--	--	--
<i>Liriodendron tulipifera</i>	50	21.2 (3.1) 61	39.2 (7.9) 113	11.5 (3.3) 33	10.1 (2.9) 29
Malus	3	--	--	5.8 (5.8) 1	40.5 (15.3) 7
<i>Malus pumila</i>	2	--	--	8.7 (8.7) 1	43.4 (26.0) 5
<i>Nyssa sylvatica</i>	58	2.1 (1.0) 7	12.9 (6.5) 43	35.9 (6.4) 120	26.6 (3.9) 89
<i>Ostrya virginiana</i>	19	--	2.7 (2.0) 3	19.2 (4.9) 21	42.9 (8.4) 47
Pinus	40	18.2 (4.2) 42	23.4 (6.0) 54	18.2 (3.8) 42	18.2 (4.6) 42
<i>Pinus echinata</i>	1	--	--	--	17.4 () 1
<i>Pinus pungens</i>	6	2.9 (2.9) 1	8.7 (3.9) 3	26.0 (14.0) 9	--
<i>Pinus rigida</i>	14	19.8 (7.5) 16	27.3 (10.7) 22	3.7 (2.7) 3	6.2 (3.9) 5
<i>Pinus strobus</i>	24	11.6 (5.0) 16	10.9 (5.3) 15	11.6 (3.4) 16	24.6 (6.8) 34
<i>Pinus virginiana</i>	14	11.2 (3.9) 9	17.4 (6.3) 14	16.1 (5.6) 13	2.5 (1.7) 2
<i>Platanus occidentalis</i>	1	--	--	17.4 () 1	--
Prunus	28	0.6 (0.6) 1	13.0 (3.7) 21	16.7 (3.0) 27	16.7 (3.6) 27
<i>Prunus avium</i>	3	--	23.1 (5.8) 4	5.8 (5.8) 1	--
<i>Prunus serotina</i>	26	0.7 (0.7) 1	11.4 (3.8) 17	17.4 (3.2) 26	18.0 (3.8) 27
Quercus	124	38.5 (3.6) 275	101.5 (9.1) 725	39.1 (4.7) 279	19.2 (2.4) 137
<i>Quercus alba</i>	32	11.4 (2.9) 21	36.9 (14.6) 68	11.9 (3.8) 22	11.4 (3.4) 21
<i>Quercus bicolor</i>	2	8.7 (8.7) 1	--	17.4 (17.4) 2	8.7 (8.7) 1
<i>Quercus coccinea</i>	23	27.2 (5.5) 36	58.9 (13.0) 78	17.4 (4.5) 23	8.3 (3.4) 11
<i>Quercus marilandica</i>	8	--	4.3 (4.3) 2	86.8 (20.2) 40	26.0 (9.3) 12
<i>Quercus prinus</i>	82	22.0 (3.4) 104	85.1 (8.8) 402	28.6 (4.0) 135	13.3 (2.1) 63
<i>Quercus rubra</i>	70	25.8 (3.9) 104	38.4 (6.3) 155	11.7 (2.2) 47	5.5 (1.2) 22

Crown Height Sampling Block 1					
Taxa	Plots	Crown Height Classes			
		Dominant	Co-dominant	Intermediate	Suppressed
<i>Quercus velutina</i>	25	6.3 (2.2) 9	13.9 (4.1) 20	6.9 (2.0) 10	4.9 (2.4) 7
<i>Robinia pseudoacacia</i>	46	7.2 (2.9) 19	31.3 (9.6) 83	17.4 (4.8) 46	6.4 (2.2) 17
<i>Sassafras albidum</i>	26	0.7 (0.7) 1	7.3 (2.6) 11	31.4 (12.3) 47	17.4 (5.1) 26
<i>Tilia americana</i>	27	6.4 (2.5) 10	25.1 (5.5) 39	17.4 (3.2) 27	18.0 (4.7) 28
<i>Tsuga canadensis</i>	6	--	--	5.8 (3.7) 2	34.7 (11.0) 12
<i>Ulmus</i>	14	--	5.0 (3.4) 4	14.9 (5.1) 12	16.1 (2.9) 13
<i>Ulmus americana</i>	1	--	--	69.4 () 4	17.4 () 1
<i>Ulmus rubra</i>	13	--	5.3 (3.6) 4	10.7 (3.1) 8	16.0 (3.1) 12
<i>Viburnum prunifolium</i>	0	--	--	--	--

Table 9b. Mean density (stems per ha) of live trees in each crown height class for SHEN forest vegetation monitoring sampling block 2 (2007). Data presented represents an average stratified by ELU. For all data presented, n is equal to the number of plots where the species was present, as listed in the **Plots** column. Standard errors are in parentheses, followed by the total number of stems counted. Crown height classes refer to the tree canopy's position in relation to other trees in the plot.

Crown Height Sampling Block 2		Crown Height Classes			
Taxa	Plots	Dominant	Co-dominant	Intermediate	Suppressed
Acer	118	6.2 (1.7) 42	16.3 (2.4) 111	36.5 (3.6) 248	24.9 (2.6) 169
<i>Acer negundo</i>	6	2.9 (2.9) 1	8.7 (5.9) 3	14.5 (5.3) 5	5.8 (5.8) 2
<i>Acer pensylvanicum</i>	37	0.5 (0.5) 1	2.3 (1.9) 5	27.2 (4.5) 58	21.6 (4.5) 46
<i>Acer rubrum</i>	99	6.5 (2.0) 37	16.0 (2.6) 91	30.7 (3.5) 175	20.2 (2.3) 115
<i>Acer saccharum</i>	12	4.3 (3.1) 3	17.4 (6.8) 12	14.5 (4.7) 10	8.7 (3.4) 6
<i>Ailanthus altissima</i>	7	9.9 (7.4) 4	24.8 (16.5) 10	9.9 (5.2) 4	7.4 (5.2) 3
<i>Amelanchier arborea</i>	11	--	11.0 (6.7) 7	22.1 (7.1) 14	9.5 (3.6) 6
Betula	62	7.8 (3.1) 28	35.3 (7.4) 126	30.2 (3.7) 108	13.2 (2.4) 47
<i>Betula alleghaniensis</i>	10	1.7 (1.7) 1	15.6 (7.1) 9	20.8 (8.1) 12	3.5 (3.5) 2
<i>Betula lenta</i>	60	7.8 (3.2) 27	33.9 (7.5) 117	27.8 (3.3) 96	13.0 (2.4) 45
<i>Carpinus caroliniana</i>	2	--	--	8.7 (8.7) 1	8.7 (8.7) 1
Carya	49	10.6 (2.3) 30	22.0 (4.3) 62	37.2 (7.1) 105	13.5 (2.7) 38
<i>Carya alba</i>	6	2.9 (2.9) 1	26.0 (11.6) 9	23.1 (5.8) 8	2.9 (2.9) 1
<i>Carya cordiformis</i>	6	5.8 (3.7) 2	8.7 (3.9) 3	5.8 (3.7) 2	2.9 (2.9) 1
<i>Carya glabra</i>	22	6.3 (2.2) 8	15.8 (3.8) 20	25.3 (5.4) 32	11.8 (4.0) 15
<i>Carya ovalis</i>	33	7.9 (2.6) 15	11.0 (3.0) 21	25.8 (6.7) 49	10.5 (2.4) 20
<i>Carya ovata</i>	8	8.7 (4.6) 4	17.4 (10.4) 8	28.2 (13.9) 13	2.2 (2.2) 1
<i>Castanea dentata</i>	2	--	8.7 (8.7) 1	8.7 (8.7) 1	--
<i>Celtis occidentalis*</i>	3	5.8 (5.8) 1	--	11.6 (5.8) 2	--
<i>Cercis canadensis</i>	4	--	--	34.7 (20.0) 8	60.8 (30.5) 14
<i>Cornus florida</i>	9	--	3.9 (3.9) 2	19.3 (5.4) 10	11.6 (5.8) 6
Crataegus	2	--	--	8.7 (8.7) 1	26.0 (26.0) 3
<i>Diospyros virginiana</i>	7	--	17.4 (6.6) 7	9.9 (7.4) 4	7.4 (5.2) 3
<i>Fagus grandifolia</i>	2	8.7 (8.7) 1	8.7 (8.7) 1	34.7 (0.0) 4	--
Fraxinus	52	14.4 (3.0) 43	21.4 (3.9) 64	20.4 (3.2) 61	9.3 (2.0) 28

Crown Height Sampling Block 2					
Taxa	Plots	Dominant	Crown Height Classes		
		Co-dominant	Intermediate	Suppressed	
<i>Fraxinus americana</i>	50	13.2 (2.8) 38	21.5 (4.0) 62	19.4 (3.1) 56	9.7 (2.1) 28
<i>Fraxinus pennsylvanica</i>	2	43.4 (43.4) 5	17.4 (0.0) 2	43.4 (26.0) 5	--
<i>Hamamelis virginiana</i> *	1	--	--	--	17.4 () 1
<i>Juglans nigra</i>	3	11.6 (11.6) 2	--	17.4 (10.0) 3	5.8 (5.8) 1
<i>Juniperus virginiana</i>	1	--	--	--	17.4 () 1
<i>Kalmia latifolia</i>	1	--	--	--	17.4 () 1
<i>Liriodendron tulipifera</i>	51	25.9 (3.8) 76	31.7 (6.2) 93	14.3 (3.3) 42	6.5 (2.1) 19
Malus	2	--	--	34.7 (0.0) 4	17.4 (17.4) 2
<i>Malus pumila</i>	1	--	--	34.7 () 2	34.7 () 2
<i>Nyssa sylvatica</i>	58	6.0 (1.7) 20	21.0 (7.3) 70	34.4 (6.5) 115	20.7 (3.4) 69
<i>Ostrya virginiana</i>	21	--	1.7 (1.1) 2	28.1 (5.6) 34	35.5 (7.5) 43
Pinus	40	29.9 (6.9) 69	19.1 (5.8) 44	13.9 (2.7) 32	13.9 (4.8) 32
<i>Pinus echinata</i>	1	--	--	17.4 () 1	--
<i>Pinus pungens</i>	6	8.7 (3.9) 3	17.4 (6.3) 6	5.8 (5.8) 2	5.8 (3.7) 2
<i>Pinus rigida</i>	12	34.7 (15.3) 24	23.1 (8.1) 16	4.3 (3.1) 3	1.4 (1.4) 1
<i>Pinus strobus</i>	25	14.6 (6.2) 21	11.1 (7.0) 16	11.8 (3.1) 17	19.4 (7.2) 28
<i>Pinus virginiana</i>	14	26.0 (5.7) 21	7.4 (3.0) 6	9.9 (4.4) 8	1.2 (1.2) 1
<i>Platanus occidentalis</i>	1	--	--	17.4 () 1	--
Prunus	28	3.1 (1.3) 5	10.5 (4.5) 17	18.6 (3.2) 30	9.9 (2.3) 16
<i>Prunus avium</i>	6	5.8 (3.7) 2	2.9 (2.9) 1	5.8 (3.7) 2	11.6 (5.8) 4
<i>Prunus serotina</i>	23	2.3 (1.2) 3	12.1 (5.4) 16	21.1 (3.4) 28	9.1 (2.4) 12
Quercus	125	67.5 (5.4) 486	78.6 (7.1) 566	35.7 (4.2) 257	8.7 (1.4) 63
<i>Quercus alba</i>	32	26.6 (6.5) 49	27.7 (9.2) 51	11.9 (3.9) 22	3.8 (1.5) 7
<i>Quercus bicolor</i>	2	17.4 (0.0) 2	--	17.4 (17.4) 2	--
<i>Quercus coccinea</i>	23	55.1 (10.0) 73	30.2 (5.9) 40	15.9 (4.5) 21	1.5 (1.0) 2
<i>Quercus marilandica</i>	8	2.2 (2.2) 1	26.0 (10.9) 12	84.6 (22.4) 39	13.0 (8.5) 6
<i>Quercus prinus</i>	82	44.5 (5.3) 210	69.7 (7.1) 329	24.3 (3.2) 115	6.8 (1.6) 32
<i>Quercus rubra</i>	71	33.3 (4.2) 136	30.3 (5.2) 124	10.8 (2.0) 44	3.9 (0.9) 16

Crown Height Sampling Block 2					
Taxa	Plots	Crown Height Classes			
		Dominant	Co-dominant	Intermediate	Suppressed
<i>Quercus velutina</i>	23	11.3 (2.6) 15	7.5 (3.2) 10	10.6 (2.8) 14	--
<i>Robinia pseudoacacia</i>	42	20.3 (5.5) 49	22.7 (10.9) 55	10.7 (2.4) 26	4.5 (1.5) 11
<i>Sassafras albidum</i>	25	3.5 (1.7) 5	13.2 (5.3) 19	25.0 (9.5) 36	11.1 (4.5) 16
<i>Tilia americana</i>	29	9.6 (2.7) 16	23.3 (5.8) 39	16.8 (4.8) 28	12.0 (3.1) 20
<i>Tsuga canadensis</i>	2	--	--	8.7 (8.7) 1	43.4 (26.0) 5
<i>Ulmus</i>	14	2.5 (1.7) 2	5.0 (2.8) 4	16.1 (3.4) 13	11.2 (3.5) 9
<i>Ulmus americana</i>	1	17.4 () 1	17.4 () 1	34.7 () 2	--
<i>Ulmus rubra</i>	13	1.3 (1.3) 1	4.0 (2.9) 3	14.7 (3.3) 11	12.0 (3.6) 9
<i>Viburnum prunifolium</i>	0	--	--	--	--

Table 9c. Mean density (stems per ha) of live trees in each crown height class for SHEN forest vegetation monitoring sampling block 3 (2008-2011). Data presented represents an average stratified by ELU For all data presented, n is equal to the number of plots where the species was present, as listed in the **Plots** column. Standard errors are in parentheses, followed by the total number of stems counted. Crown height classes refer to the tree canopy's position in relation to other trees in the plot.

Crown Height Sampling Block 3		Crown Height Classes			
Taxa	Plots	Dominant	Co-dominant	Intermediate	Suppressed
Acer	119	2.3 (0.7) 16	17.2 (2.7) 118	30.9 (3.0) 212	36.5 (3.6) 250
<i>Acer negundo</i>	6	--	8.7 (8.7) 3	23.1 (5.8) 8	2.9 (2.9) 1
<i>Acer pensylvanicum</i>	37	--	3.8 (2.0) 8	19.7 (3.9) 42	30.0 (5.7) 64
<i>Acer rubrum</i>	99	2.6 (0.8) 15	16.3 (2.9) 93	26.8 (3.2) 153	30.9 (3.1) 176
<i>Acer saccharum</i>	13	1.3 (1.3) 1	18.7 (7.7) 14	12.0 (4.1) 9	12.0 (3.0) 9
<i>Ailanthus altissima</i>	7	17.4 (14.7) 7	9.9 (3.5) 4	17.4 (7.6) 7	7.4 (5.2) 3
<i>Amelanchier arborea</i>	13	--	2.7 (2.7) 2	21.4 (6.6) 16	17.4 (5.9) 13
Betula	64	3.8 (2.0) 14	32.8 (8.8) 121	30.4 (3.8) 112	18.4 (2.8) 68
<i>Betula alleghaniensis</i>	10	1.7 (1.7) 1	8.7 (5.3) 5	8.7 (3.9) 5	19.1 (9.1) 11
<i>Betula lenta</i>	62	3.6 (1.8) 13	32.5 (9.1) 116	30.0 (3.8) 107	16.0 (2.6) 57
<i>Carpinus caroliniana</i>	2	--	--	8.7 (8.7) 1	8.7 (8.7) 1
Carya	49	7.8 (2.0) 22	22.0 (3.6) 62	37.2 (6.3) 105	19.5 (3.9) 55
<i>Carya alba</i>	6	--	14.5 (5.3) 5	31.8 (15.1) 11	11.6 (7.3) 4
<i>Carya cordiformis</i>	6	--	11.6 (3.7) 4	5.8 (3.7) 2	8.7 (5.9) 3
<i>Carya glabra</i>	21	4.1 (1.7) 5	15.7 (4.1) 19	29.8 (5.2) 36	12.4 (4.2) 15
<i>Carya ovalis</i>	33	6.3 (2.2) 12	14.2 (3.2) 27	24.2 (5.1) 46	14.2 (3.0) 27
<i>Carya ovata</i>	6	11.6 (5.8) 4	20.3 (8.3) 7	26.0 (12.5) 9	17.4 (17.4) 6
<i>Castanea dentata</i>	1	--	--	17.4 () 1	--
<i>Celtis occidentalis*</i>	3	--	5.8 (5.8) 1	--	23.1 (15.3) 4
<i>Cercis canadensis</i>	5	--	3.5 (3.5) 1	24.3 (13.0) 7	48.6 (23.5) 14
<i>Cornus florida</i>	8	--	--	21.7 (7.9) 10	13.0 (2.8) 6
Crataegus	1	--	--	--	52.1 () 3
<i>Diospyros virginiana</i>	7	2.5 (2.5) 1	14.9 (7.0) 6	9.9 (5.2) 4	12.4 (8.2) 5
<i>Fagus grandifolia</i>	2	8.7 (8.7) 1	--	26.0 (8.7) 3	17.4 (17.4) 2
Fraxinus	53	11.5 (2.2) 35	22.3 (4.5) 68	22.6 (3.9) 69	11.5 (2.0) 35

Crown Height Sampling Block 3					
Taxa	Plots	Dominant	Crown Height Classes		
		Co-dominant	Intermediate	Suppressed	
<i>Fraxinus americana</i>	51	11.2 (2.3) 33	21.8 (4.7) 64	22.1 (3.9) 65	11.6 (2.0) 34
<i>Fraxinus pennsylvanica</i>	2	17.4 (17.4) 2	34.7 (17.4) 4	34.7 (34.7) 4	8.7 (8.7) 1
<i>Hamamelis virginiana</i> *	3	--	--	5.8 (5.8) 1	11.6 (5.8) 2
<i>Juglans nigra</i>	3	5.8 (5.8) 1	5.8 (5.8) 1	23.1 (11.6) 4	--
<i>Juniperus virginiana</i>	1	--	--	17.4 () 1	--
<i>Kalmia latifolia</i>	2	--	--	--	17.4 (0.0) 2
<i>Liriodendron tulipifera</i>	51	23.5 (3.0) 69	36.4 (6.6) 107	15.0 (3.2) 44	6.8 (1.9) 20
Malus	2	--	--	17.4 (17.4) 2	34.7 (0.0) 4
<i>Malus pumila</i>	1	--	--	34.7 () 2	34.7 () 2
<i>Nyssa sylvatica</i>	58	1.8 (0.9) 6	14.1 (4.8) 47	40.4 (6.9) 135	32.3 (4.8) 108
<i>Ostrya virginiana</i>	21	--	0.8 (0.8) 1	19.8 (5.3) 24	48.8 (8.9) 59
Pinus	42	19.4 (4.4) 47	24.0 (5.7) 58	13.2 (2.5) 32	18.2 (5.4) 44
<i>Pinus echinata</i>	1	--	--	17.4 () 1	--
<i>Pinus pungens</i>	6	11.6 (5.8) 4	17.4 (9.0) 6	8.7 (5.9) 3	2.9 (2.9) 1
<i>Pinus rigida</i>	12	21.7 (8.3) 15	30.4 (10.5) 21	7.2 (4.0) 5	5.8 (4.4) 4
<i>Pinus strobus</i>	26	12.0 (5.1) 18	8.7 (6.0) 13	10.7 (2.2) 16	24.0 (8.1) 36
<i>Pinus virginiana</i>	15	11.6 (3.7) 10	20.8 (6.8) 18	8.1 (3.3) 7	3.5 (1.9) 3
<i>Platanus occidentalis</i>	1	--	--	17.4 () 1	--
Prunus	30	2.3 (1.4) 4	9.8 (3.6) 17	17.9 (2.9) 31	12.2 (2.9) 21
<i>Prunus avium</i>	5	3.5 (3.5) 1	3.5 (3.5) 1	10.4 (6.9) 3	6.9 (4.3) 2
<i>Prunus serotina</i>	25	2.1 (1.5) 3	11.1 (4.2) 16	19.4 (3.2) 28	13.2 (3.4) 19
Quercus	123	40.7 (4.1) 288	100.8 (8.8) 714	34.7 (3.9) 246	15.4 (2.1) 109
<i>Quercus alba</i>	30	13.3 (3.6) 23	38.8 (12.9) 67	13.3 (4.6) 23	8.7 (3.6) 15
<i>Quercus bicolor</i>	2	--	17.4 (0.0) 2	--	17.4 (17.4) 2
<i>Quercus coccinea</i>	23	37.0 (9.2) 49	49.1 (9.9) 65	14.3 (3.7) 19	2.3 (1.7) 3
<i>Quercus marilandica</i>	8	--	28.2 (10.3) 13	73.8 (16.0) 34	26.0 (8.7) 12
<i>Quercus prinus</i>	81	23.8 (3.9) 111	84.2 (8.7) 393	24.6 (3.1) 115	10.5 (2.2) 49
<i>Quercus rubra</i>	71	23.2 (3.5) 95	37.9 (6.3) 155	11.5 (2.4) 47	6.6 (1.3) 27

Crown Height Sampling Block 3					
Taxa	Plots	Crown Height Classes			
		Dominant	Co-dominant	Intermediate	Suppressed
<i>Quercus velutina</i>	20	8.7 (2.4) 10	16.5 (5.6) 19	6.9 (2.6) 8	0.9 (0.9) 1
<i>Robinia pseudoacacia</i>	45	14.7 (5.9) 38	18.1 (5.1) 47	12.7 (3.5) 33	6.6 (1.8) 17
<i>Sassafras albidum</i>	27	1.9 (1.1) 3	18.0 (9.3) 28	19.3 (5.9) 30	12.2 (3.4) 19
<i>Tilia americana</i>	29	8.4 (2.9) 14	24.5 (5.9) 41	18.0 (4.5) 30	12.6 (2.7) 21
<i>Tsuga canadensis</i>	2	--	--	8.7 (8.7) 1	43.4 (26.0) 5
<i>Ulmus</i>	15	--	4.6 (2.7) 4	13.9 (4.2) 12	19.7 (4.4) 17
<i>Ulmus americana</i>	1	--	17.4 () 1	17.4 () 1	34.7 () 2
<i>Ulmus rubra</i>	14	--	3.7 (2.7) 3	13.6 (4.5) 11	18.6 (4.6) 15
<i>Viburnum</i>	1	--	--	--	17.4 () 1
<i>Viburnum prunifolium</i>	1	--	--	--	17.4 () 1

Table 10a. Frequency of occurrence (%) for live woody taxa within each vegetation strata (n=160) in SHEN forest vegetation monitoring sampling block 1 (2003-2005).

Frequency of Woody Species Sampling Block 1 Taxa	Sampling Strata		
	Seedling	Shrub	Tree
Acer	89.4	63.1	72.5
<i>Acer negundo</i> †	2.5	1.3	3.8
<i>Acer pensylvanicum</i> †	43.1	32.5	23.1
<i>Acer rubrum</i> †	78.8	42.5	59.4
<i>Acer saccharum</i> †	3.8	2.5	6.9
<i>Acer spicatum</i> †	—	0.6	—
<i>Ailanthus altissima</i> †	13.1	5.6	3.8
<i>Albizia julibrissin</i> †	0.6	—	—
<i>Alnus serrulata</i> *	0.6	—	—
Amelanchier	21.3	11.9	6.9
<i>Amelanchier arborea</i> †	—	11.9	6.9
<i>Amelanchier</i> complex: <i>A. arborea</i> , <i>A. laevis</i> , <i>A. species</i> †	21.3	—	—
<i>Asimina triloba</i> †	1.3	1.3	—
Betula	39.4	25.6	38.1
<i>Betula alleghaniensis</i> †	—	3.8	6.9
<i>Betula lenta</i> †	—	23.8	36.9
<i>Betula</i> complex: <i>B. lenta</i> , <i>B. alleghaniensis</i> †	36.3	—	—
<i>Broussonetia papyrifera</i> †	0.6	—	—
<i>Carpinus caroliniana</i> †	1.9	1.3	0.6
Carya	41.3	22.5	30.6
<i>Carya alba</i> †	4.4	1.3	3.8
<i>Carya cordiformis</i> †	14.4	6.3	4.4
<i>Carya glabra</i> †	—	8.8	13.1
<i>Carya ovalis</i> †	—	10.0	21.3
<i>Carya ovata</i> †	6.3	1.3	3.8
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i> †	25.0	—	—
Castanea	6.9	13.8	1.3
<i>Castanea dentata</i> †	6.3	12.5	1.3
<i>Castanea pumila</i> †	1.3	1.3	—
<i>Celastrus orbiculata</i> §	5.6	1.9	—
<i>Celtis occidentalis</i> *	6.3	1.9	2.5
<i>Cercis canadensis</i> †	10.0	5.6	4.4
<i>Chimaphila maculata</i> *	0.6	—	—
<i>Clematis virginiana</i> §	3.8	0.6	—
Cornus	7.5	16.9	5.0
<i>Cornus alternifolia</i> *	1.9	1.3	—
<i>Cornus florida</i> †	5.6	15.6	5.0
Corylus	2.5	1.9	—
<i>Corylus americana</i> *	0.6	0.6	—
<i>Corylus cornuta</i> *	1.9	1.3	—
Crataegus	8.1	3.8	0.6
<i>Diospyros virginiana</i> †	1.3	0.6	4.4
<i>Dirca palustris</i> *	0.6	—	—

Frequency of Woody Species Sampling Block 1		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Elaeagnus umbellata</i> *	0.6	—	—	
<i>Epigaea repens</i> *	1.9	—	—	
<i>Fagus grandifolia</i> †	1.3	0.6	1.3	
Fraxinus	48.8	25.6	31.9	
<i>Fraxinus americana</i> †	—	25.6	30.6	
<i>Fraxinus pennsylvanica</i> †	—	—	1.3	
<i>Gaultheria procumbens</i> *	8.1	—	—	
<i>Gaylussacia baccata</i> *	22.5	—	—	
<i>Hamamelis virginiana</i> *	25.6	26.9	0.6	
<i>Hydrangea arborescens</i> *	8.1	1.3	—	
<i>Ilex montana</i> *	14.4	6.9	—	
<i>Juglans nigra</i> †	—	—	1.9	
<i>Juniperus virginiana</i> †	—	—	1.3	
<i>Kalmia latifolia</i> *	30.0	30.0	—	
<i>Lindera benzoin</i> *	38.1	27.5	—	
<i>Liriodendron tulipifera</i> †	28.1	11.3	31.3	
<i>Lonicera japonica</i> §	10.6	2.5	—	
<i>Lyonia ligustrina</i> *	5.0	1.3	—	
Malus	0.6	1.3	1.9	
<i>Malus pumila</i> †	0.6	1.3	1.3	
<i>Menispermum canadense</i> §	3.8	0.6	—	
<i>Menziesia pilosa</i> *	6.3	0.6	—	
<i>Morus rubra</i> *	1.3	—	—	
<i>Nyssa sylvatica</i> †	36.3	29.4	36.3	
<i>Ostrya virginiana</i> †	11.9	13.1	11.9	
<i>Parthenocissus quinquefolia</i> §	54.4	2.5	—	
Pinus	5.6	7.5	25.0	
<i>Pinus echinata</i> †	—	—	0.6	
<i>Pinus pungens</i> †	—	1.3	3.8	
<i>Pinus rigida</i> †	1.3	1.3	8.8	
<i>Pinus strobus</i> †	3.8	5.0	15.0	
<i>Pinus virginiana</i> †	1.9	1.9	8.8	
<i>Platanus occidentalis</i> †	—	—	0.6	
<i>Populus grandidentata</i> †	0.6	0.6	—	
Prunus	36.9	13.1	17.5	
<i>Prunus avium</i> †	3.1	1.3	1.9	
<i>Prunus serotina</i> †	29.4	8.8	16.3	
<i>Prunus virginiana</i> †	7.5	3.8	—	
Quercus	80.0	31.9	77.5	
<i>Quercus alba</i> †	12.5	6.9	20.0	
<i>Quercus bicolor</i> †	—	—	1.3	
<i>Quercus coccinea</i> †	—	3.8	14.4	
<i>Quercus ilicifolia</i> †	3.1	2.5	—	
<i>Quercus marilandica</i> †	1.9	3.8	5.0	
<i>Quercus prinus</i> †	36.3	14.4	51.3	

Frequency of Woody Species Sampling Block 1		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Quercus rubra</i> †	—	8.8	43.8	
<i>Quercus velutina</i> †	—	6.3	15.6	
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i> †	67.5	—	—	
<i>Rhododendron</i>	26.9	7.5	—	
<i>Rhododendron periclymenoides</i> *	—	3.1	—	
<i>Rhododendron prinophyllum</i> *	—	5.0	—	
<i>Rhododendron</i> complex: <i>R. periclymenoides</i> , <i>R. prinophyllum</i> *	26.9	—	—	
<i>Rhus</i>	0.6	1.3	—	
<i>Rhus glabra</i> *	—	0.6	—	
<i>Rhus hirta</i> *	0.6	0.6	—	
<i>Ribes</i>	5.6	1.3	—	
<i>Ribes rotundifolium</i> *	—	1.3	—	
<i>Robinia pseudoacacia</i> †	9.4	13.8	28.8	
<i>Rosa</i>	5.6	1.9	—	
<i>Rosa carolina</i> *	1.3	—	—	
<i>Rosa multiflora</i> *	4.4	1.9	—	
<i>Rubus</i>	47.5	16.3	—	
<i>Rubus allegheniensis</i> *	—	13.8	—	
<i>Rubus occidentalis</i> *	17.5	3.1	—	
<i>Rubus odoratus</i> *	1.9	—	—	
<i>Rubus phoenicolasius</i> *	7.5	2.5	—	
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i> *	41.9	—	—	
<i>Sambucus</i>	7.5	3.1	—	
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	—	1.9	—	
<i>Sambucus racemosa</i> *	—	1.3	—	
<i>Sassafras albidum</i> †	58.1	35.0	16.3	
<i>Smilax</i>	33.8	20.0	—	
<i>Smilax glauca</i> §	11.3	0.6	—	
<i>Smilax herbacea</i> §	0.6	—	—	
<i>Smilax rotundifolia</i> §	23.8	18.8	—	
<i>Smilax tamnoides</i> §	2.5	0.6	—	
<i>Sorbus americana</i> †	0.6	—	—	
<i>Spiraea betulifolia</i> *	5.6	—	—	
<i>Symphoricarpos orbiculatus</i> *	12.5	1.9	—	
<i>Tilia americana</i> †	10.6	6.9	16.9	
<i>Toxicodendron radicans</i> §	28.1	1.3	—	
<i>Tsuga canadensis</i> †	1.3	1.3	3.8	
<i>Ulmus</i>	14.4	1.9	8.8	
<i>Ulmus americana</i> †	2.5	—	0.6	
<i>Ulmus rubra</i> †	11.9	1.9	8.1	
<i>Vaccinium</i>	38.8	1.9	—	
<i>Vaccinium angustifolium</i> *	1.9	—	—	
<i>Vaccinium pallidum</i> *	36.9	—	—	

Frequency of Woody Species Sampling Block 1		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Vaccinium stamineum</i> *	16.3	1.9	—	
<i>Viburnum</i>	38.1	9.4	—	
<i>Viburnum acerifolium</i> *	31.9	6.3	—	
<i>Viburnum prunifolium</i> *	8.1	3.1	—	
<i>Vitis</i>	31.9	18.8	—	

Table 10b. Frequency of occurrence (%) for live woody taxa within each vegetation strata (n=160) in SHEN forest vegetation monitoring sampling block 2 (2007).

Frequency of Woody Species Sampling Block 2		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
Acer	88.1	63.1	73.8	
<i>Acer negundo</i> †	1.3	1.3	3.8	
<i>Acer pensylvanicum</i> †	38.8	34.4	23.1	
<i>Acer rubrum</i> †	79.4	40.0	61.9	
<i>Acer saccharum</i> †	3.1	2.5	7.5	
<i>Acer spicatum</i> †	—	0.6	—	
<i>Ailanthus altissima</i> †	22.5	3.8	4.4	
Amelanchier	19.4	12.5	6.9	
<i>Amelanchier arborea</i> †	—	11.9	6.9	
<i>Amelanchier laevis</i> *	—	0.6	—	
<i>Amelanchier</i> complex: <i>A. arborea</i> , <i>A. laevis</i> , <i>A. species</i> †	19.4	—	—	
<i>Asimina triloba</i> †	1.3	1.3	—	
<i>Berberis thunbergii</i> *	1.3	—	—	
Betula	38.1	27.5	38.8	
<i>Betula alleghaniensis</i> †	—	6.9	6.3	
<i>Betula lenta</i> †	—	26.3	37.5	
<i>Betula</i> complex: <i>B. lenta</i> , <i>B. alleghaniensis</i> †	35.6	—	—	
<i>Carpinus caroliniana</i> †	1.3	1.3	1.3	
Carya	38.1	19.4	30.6	
<i>Carya alba</i> †	4.4	1.9	3.8	
<i>Carya cordiformis</i> †	10.6	6.3	3.8	
<i>Carya glabra</i> †	—	6.9	13.8	
<i>Carya ovalis</i> †	—	6.9	20.6	
<i>Carya ovata</i> †	1.9	0.6	5.0	
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i> †	27.5	—	—	
Castanea	6.3	14.4	1.3	
<i>Castanea dentata</i> †	5.6	13.1	1.3	
<i>Castanea pumila</i> †	0.6	1.3	—	
<i>Celastrus orbiculata</i> §	6.3	1.3	—	
<i>Celtis occidentalis</i> *	5.0	2.5	1.9	
<i>Cercis canadensis</i> †	11.3	6.9	2.5	
<i>Chimaphila maculata</i> *	18.8	—	—	
<i>Clematis virginiana</i> §	1.3	—	—	
Cornus	7.5	13.8	5.6	
<i>Cornus alternifolia</i> *	2.5	0.6	—	
<i>Cornus florida</i> †	5.0	13.1	5.6	
Corylus	1.9	0.6	—	
<i>Corylus cornuta</i> *	1.9	0.6	—	
Crataegus	8.8	3.8	1.3	
<i>Diospyros virginiana</i> †	3.8	1.9	4.4	
<i>Dirca palustris</i> *	1.3	—	—	
<i>Epigaea repens</i> *	1.3	—	—	
<i>Fagus grandifolia</i> †	1.9	0.6	1.3	

Frequency of Woody Species Sampling Block 2		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
Fraxinus	55.6	25.0	32.5	
<i>Fraxinus americana</i> †	—	24.4	31.3	
<i>Fraxinus nigra</i> †	—	0.6	—	
<i>Fraxinus pennsylvanica</i> †	—	—	1.3	
<i>Gaultheria procumbens</i> *	7.5	—	—	
<i>Gaylussacia baccata</i> *	22.5	—	—	
<i>Hamamelis virginiana</i> *	23.1	26.3	0.6	
<i>Hydrangea arborescens</i> *	6.9	0.6	—	
<i>Ilex montana</i> *	10.0	7.5	—	
<i>Juglans nigra</i> †	0.6	0.6	1.9	
<i>Juniperus virginiana</i> †	0.6	—	0.6	
<i>Kalmia latifolia</i> *	28.8	30.0	0.6	
<i>Lindera benzoin</i> *	36.3	30.0	—	
<i>Liriodendron tulipifera</i> †	34.4	11.3	31.9	
<i>Lonicera japonica</i> §	10.6	3.8	—	
<i>Lyonia ligustrina</i> *	5.6	1.9	—	
Malus	—	0.6	1.3	
<i>Malus pumila</i> †	—	0.6	0.6	
<i>Menispermum canadense</i> §	0.6	—	—	
<i>Menziesia pilosa</i> *	5.6	0.6	—	
<i>Morus alba</i> *	0.6	—	—	
<i>Nyssa sylvatica</i> †	35.0	28.1	36.3	
<i>Ostrya virginiana</i> †	17.5	13.1	13.1	
<i>Parthenocissus quinquefolia</i> §	51.9	2.5	—	
Pinus	8.8	8.8	25.0	
<i>Pinus echinata</i> †	—	—	0.6	
<i>Pinus pungens</i> †	—	1.3	3.8	
<i>Pinus rigida</i> †	1.3	1.3	7.5	
<i>Pinus strobus</i> †	6.9	5.6	15.6	
<i>Pinus virginiana</i> †	0.6	3.1	8.8	
<i>Platanus occidentalis</i> †	—	—	0.6	
<i>Populus grandidentata</i> †	—	0.6	—	
Prunus	38.8	12.5	17.5	
<i>Prunus avium</i> †	3.1	1.3	3.8	
<i>Prunus serotina</i> †	30.6	8.1	14.4	
<i>Prunus virginiana</i> †	8.1	3.8	—	
<i>Ptelea trifoliata</i> †	0.6	—	—	
Quercus	78.1	28.8	78.1	
<i>Quercus alba</i> †	15.0	6.3	20.0	
<i>Quercus bicolor</i> †	—	—	1.3	
<i>Quercus coccinea</i> †	—	4.4	14.4	
<i>Quercus ilicifolia</i> †	3.8	2.5	—	
<i>Quercus marilandica</i> †	6.3	4.4	5.0	
<i>Quercus prinus</i> †	35.6	12.5	51.3	
<i>Quercus rubra</i> †	—	6.3	44.4	

Frequency of Woody Species Sampling Block 2		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Quercus velutina</i> †	—	5.6	14.4	
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i> †	66.9	—	—	
Rhododendron	26.3	6.9	—	
<i>Rhododendron periclymenoides</i> *	—	5.6	—	
<i>Rhododendron prinophyllum</i> *	—	1.9	—	
<i>Rhododendron</i> complex: <i>R. periclymenoides</i> , <i>R. prinophyllum</i> *	26.3	—	—	
Rhus	—	1.3	—	
<i>Rhus glabra</i> *	—	0.6	—	
<i>Rhus hirta</i> *	—	0.6	—	
Ribes	3.8	—	—	
<i>Robinia pseudoacacia</i> †	16.3	13.1	26.3	
Rosa	5.6	1.9	—	
<i>Rosa carolina</i> *	1.9	—	—	
<i>Rosa multiflora</i> *	3.8	1.9	—	
Rubus	45.6	11.3	—	
<i>Rubus allegheniensis</i> *	—	10.0	—	
<i>Rubus occidentalis</i> *	15.6	—	—	
<i>Rubus odoratus</i> *	1.3	0.6	—	
<i>Rubus phoenicolasius</i> *	7.5	1.9	—	
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i> *	37.5	—	—	
Sambucus	6.3	1.3	—	
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	—	1.3	—	
<i>Sassafras albidum</i> †	48.8	29.4	15.6	
Smilax	35.6	16.9	—	
<i>Smilax glauca</i> §	12.5	1.3	—	
<i>Smilax rotundifolia</i> §	26.3	15.6	—	
<i>Smilax tamnoides</i> §	2.5	—	—	
<i>Spiraea betulifolia</i> *	2.5	—	—	
<i>Symphoricarpos orbiculatus</i> *	13.8	1.3	—	
<i>Tilia americana</i> †	10.0	6.9	18.1	
<i>Toxicodendron radicans</i> §	23.8	1.9	—	
<i>Tsuga canadensis</i> †	—	0.6	1.3	
Ulmus	12.5	3.1	8.8	
<i>Ulmus americana</i> †	0.6	1.3	0.6	
<i>Ulmus rubra</i> †	11.9	1.9	8.1	
Vaccinium	37.5	—	—	
<i>Vaccinium angustifolium</i> *	1.3	—	—	
<i>Vaccinium pallidum</i> *	36.9	—	—	
<i>Vaccinium stamineum</i> *	18.1	—	—	

Frequency of Woody Species Sampling Block 2		Sampling Strata	
Taxa	Seedling	Shrub	Tree
<i>Viburnum</i>	37.5	7.5	—
<i>Viburnum acerifolium</i> *	34.4	3.8	—
<i>Viburnum prunifolium</i> *	5.6	3.8	—
<i>Vinca minor</i> §	0.6	—	—
<i>Vitis</i>	27.5	17.5	—

Table 10c. Frequency of occurrence (%) for woody taxa within each vegetation strata (n=160) in SHEN forest vegetation monitoring sampling block 3 (2008-2011).

Frequency of Woody Species Sampling Block 3		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
Acer	88.1	64.4	74.4	
<i>Acer negundo</i> †	5.0	1.3	3.8	
<i>Acer pensylvanicum</i> †	39.4	33.8	23.1	
<i>Acer rubrum</i> †	81.9	43.1	61.9	
<i>Acer saccharum</i> †	3.8	1.9	8.1	
<i>Ailanthus altissima</i> †	21.9	2.5	4.4	
<i>Albizia julibrissin</i> †	0.6	—	—	
Amelanchier	24.4	9.4	8.8	
<i>Amelanchier arborea</i> †	—	8.8	8.1	
<i>Amelanchier canadensis</i> *	0.6	—	—	
<i>Amelanchier laevis</i> *	—	0.6	—	
<i>Amelanchier</i> complex: <i>A. arborea</i> , <i>A. laevis</i> , <i>A. species</i> †	23.8	—	—	
<i>Asimina triloba</i> †	1.9	1.3	—	
<i>Berberis thunbergii</i> *	1.3	—	—	
Betula	40.0	28.1	40.0	
<i>Betula alleghaniensis</i> †	—	3.1	6.3	
<i>Betula lenta</i> †	—	27.5	38.8	
<i>Betula</i> complex: <i>B. lenta</i> , <i>B. alleghaniensis</i> †	33.1	—	—	
Campsis	0.6	—	—	
<i>Campsis radicans</i> §	0.6	—	—	
<i>Carpinus caroliniana</i> †	1.3	1.9	1.3	
Carya	40.6	20.6	30.6	
<i>Carya alba</i> †	8.1	3.8	3.8	
<i>Carya cordiformis</i> †	13.1	6.3	3.8	
<i>Carya glabra</i> †	—	7.5	13.1	
<i>Carya ovalis</i> †	—	6.9	20.6	
<i>Carya ovata</i> †	1.3	—	3.8	
<i>Carya</i> complex: <i>C. glabra</i> , <i>C. ovalis</i> , <i>C. species</i> †	28.1	—	—	
Castanea	6.3	14.4	0.6	
<i>Castanea dentata</i> †	5.6	12.5	0.6	
<i>Castanea pumila</i> †	0.6	1.9	—	
<i>Celastrus orbiculata</i> §	10.0	2.5	—	
<i>Celtis occidentalis</i> *	4.4	2.5	1.9	
<i>Cercis canadensis</i> †	13.8	5.0	3.1	
<i>Chimaphila maculata</i> *	23.8	—	—	
<i>Clematis virginiana</i> §	3.8	0.6	—	
Cornus	7.5	11.3	5.0	
<i>Cornus alternifolia</i> *	1.9	0.6	—	
<i>Cornus florida</i> †	5.6	10.6	5.0	
Corylus	—	0.6	—	
<i>Corylus cornuta</i> *	—	0.6	—	
Crataegus	7.5	3.8	0.6	
<i>Diospyros virginiana</i> †	2.5	1.9	4.4	

Frequency of Woody Species Sampling Block 3		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Epigaea repens</i> *	1.3	—	—	
<i>Fagus grandifolia</i> †	1.9	1.3	1.3	
Fraxinus	55.0	23.1	33.1	
<i>Fraxinus americana</i> †	—	21.3	31.9	
<i>Fraxinus nigra</i> †	—	0.6	—	
<i>Fraxinus pennsylvanica</i> †	—	1.9	1.3	
<i>Gaultheria procumbens</i> *	8.1	—	—	
<i>Gaylussacia baccata</i> *	22.5	—	—	
<i>Hamamelis virginiana</i> *	25.0	26.3	1.9	
<i>Hydrangea arborescens</i> *	5.6	1.3	—	
<i>Ilex montana</i> *	10.6	5.6	—	
<i>Juglans nigra</i> †	—	—	1.9	
<i>Juniperus virginiana</i> †	—	—	0.6	
<i>Kalmia latifolia</i> *	29.4	30.0	1.3	
<i>Lindera benzoin</i> *	36.3	30.0	—	
<i>Liriodendron tulipifera</i> †	32.5	13.1	31.9	
<i>Lonicera japonica</i> §	10.6	3.1	—	
<i>Lyonia ligustrina</i> *	6.9	2.5	—	
Malus	—	0.6	1.3	
<i>Malus pumila</i> †	—	0.6	0.6	
<i>Menispermum canadense</i> §	0.6	1.3	—	
<i>Menziesia pilosa</i> *	6.9	0.6	—	
<i>Morus rubra</i> *	1.3	—	—	
<i>Nyssa sylvatica</i> †	36.3	27.5	36.3	
<i>Ostrya virginiana</i> †	14.4	13.1	13.1	
<i>Parthenocissus quinquefolia</i> §	55.0	5.0	—	
Pinus	10.6	7.5	26.3	
<i>Pinus echinata</i> †	—	—	0.6	
<i>Pinus pungens</i> †	—	0.6	3.8	
<i>Pinus rigida</i> †	1.3	1.3	7.5	
<i>Pinus strobus</i> †	8.1	5.0	16.3	
<i>Pinus virginiana</i> †	2.5	1.9	9.4	
<i>Platanus occidentalis</i> †	—	—	0.6	
<i>Populus grandidentata</i> †	—	0.6	—	
Prunus	43.1	12.5	18.8	
<i>Prunus avium</i> †	1.9	1.3	3.1	
<i>Prunus serotina</i> †	37.5	8.1	15.6	
<i>Prunus virginiana</i> †	7.5	3.8	—	
<i>Ptelea trifoliata</i> †	0.6	0.6	—	
Quercus	73.1	28.1	76.9	
<i>Quercus alba</i> †	10.0	5.6	18.8	
<i>Quercus bicolor</i> †	—	—	1.3	
<i>Quercus coccinea</i> †	—	3.1	14.4	
<i>Quercus ilicifolia</i> †	3.1	1.9	—	
<i>Quercus marilandica</i> †	1.3	3.8	5.0	

Frequency of Woody Species Sampling Block 3		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Quercus prinus</i> †	34.4	10.0	50.6	
<i>Quercus rubra</i> †	—	11.3	44.4	
<i>Quercus velutina</i> †	—	5.6	12.5	
<i>Quercus</i> complex: <i>Q. rubra</i> , <i>Q. coccinea</i> , <i>Q. velutina</i> †	61.9	—	—	
<i>Rhododendron</i>	26.3	6.9	—	
<i>Rhododendron periclymenoides</i> *	—	5.0	—	
<i>Rhododendron prinophyllum</i> *	—	2.5	—	
<i>Rhododendron</i> complex: <i>R. periclymenoides</i> , <i>R. prinophyllum</i> *	26.3	—	—	
<i>Rhus</i>	—	0.6	—	
<i>Rhus hirta</i> *	—	0.6	—	
<i>Ribes</i>	7.5	—	—	
<i>Robinia pseudoacacia</i> †	15.6	15.0	28.1	
<i>Rosa</i>	6.3	3.1	—	
<i>Rosa carolina</i> *	1.3	—	—	
<i>Rosa multiflora</i> *	4.4	3.1	—	
<i>Rubus</i>	50.6	12.5	—	
<i>Rubus allegheniensis</i> *	—	8.1	—	
<i>Rubus occidentalis</i> *	16.3	1.3	—	
<i>Rubus odoratus</i> *	0.6	—	—	
<i>Rubus phoenicolasius</i> *	8.8	3.8	—	
<i>Rubus</i> complex: <i>R. flagellaris</i> , <i>R. hispidus</i> , <i>R. argutus</i> , <i>R. allegheniensis</i> , <i>R. species</i> *	43.8	—	—	
<i>Sambucus</i>	8.1	1.9	—	
<i>Sambucus nigra</i> ssp. <i>canadensis</i> *	—	1.3	—	
<i>Sassafras albidum</i> †	56.3	29.4	16.9	
<i>Smilax</i>	42.5	22.5	—	
<i>Smilax glauca</i> §	17.5	3.1	—	
<i>Smilax rotundifolia</i> §	30.6	20.0	—	
<i>Smilax tamnoides</i> §	1.3	—	—	
<i>Spiraea betulifolia</i> *	5.6	—	—	
<i>Symphoricarpos orbiculatus</i> *	13.1	2.5	—	
<i>Tilia americana</i> †	10.6	6.9	18.1	
<i>Toxicodendron radicans</i> §	26.3	1.9	—	
<i>Tsuga canadensis</i> †	0.6	0.6	1.3	
<i>Ulmus</i>	16.9	1.9	9.4	
<i>Ulmus americana</i> †	1.3	—	0.6	
<i>Ulmus rubra</i> †	16.3	1.9	8.8	
<i>Vaccinium</i>	38.8	1.3	—	
<i>Vaccinium angustifolium</i> *	2.5	—	—	
<i>Vaccinium pallidum</i> *	35.6	—	—	
<i>Vaccinium stamineum</i> *	16.9	1.3	—	

Frequency of Woody Species Sampling Block 3		Sampling Strata		
Taxa	Seedling	Shrub	Tree	
<i>Viburnum</i>	36.3	7.5	0.6	
<i>Viburnum acerifolium</i> *	30.0	3.8	—	
<i>Viburnum prunifolium</i> *	7.5	3.8	0.6	
<i>Vinca minor</i> §	0.6	—	—	
<i>Vitis</i>	33.1	18.8	—	

Table 11a. Frequency of exotic species presence (%) by cover class for SHEN forest vegetation monitoring sampling block 1 (2003-2005). For each species, n is equal to the number of plots surveyed for the species, as listed in the **Total Plots** column, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Exotics Sampling Block 1		Cover Class								
Taxa	Total Plots (n)	1	2	3	4	5	6	7	8	9
<i>Ailanthus altissima</i> †	158	79.7	15.8	1.9	0.6	0.0	1.9	0.0	0.0	0.0
<i>Alliaria petiolata</i> ~	159	57.9	25.8	6.9	4.4	3.1	1.3	0.6	0.0	0.0
<i>Celastrus orbiculata</i> §	159	91.8	6.3	0.6	0.0	0.6	0.6	0.0	0.0	0.0
<i>Lonicera japonica</i> §	160	85.6	8.8	4.4	0.6	0.0	0.6	0.0	0.0	0.0
<i>Microstegium vimineum</i> ~	160	90.0	3.1	1.9	1.9	0.0	0.6	1.3	1.3	0.0
<i>Paulownia tomentosa</i> †	160	98.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Perilla frutescens</i> ~	160	99.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i> ~	160	61.3	21.9	6.3	4.4	1.9	0.6	2.5	0.6	0.6
<i>Polygonum cuspidatum</i> ~	160	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum perfoliatum</i> ~	160	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Pueraria montana</i> var. <i>lobata</i> §	160	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rosa multiflora</i> *	160	94.4	4.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0

Table 11b. Frequency of exotic species presence (%) by cover class for SHEN forest vegetation monitoring sampling block 2 (2007). For each species, n is equal to the number of plots surveyed for the species, as listed in the **Total Plots** column, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Exotics Sampling Block 2		Cover Class								
Taxa	Total Plots (n)	1	2	3	4	5	6	7	8	9
<i>Ailanthus altissima</i> †	160	70.0	21.9	3.1	3.8	0.6	0.0	0.6	0.0	0.0
<i>Alliaria petiolata</i> ~	160	61.3	7.5	11.9	6.3	3.8	4.4	3.8	1.3	0.0
<i>Berberis thunbergii</i> *	160	93.8	5.6	0.0	0.6	0.0	0.0	0.0	0.0	0.0
<i>Celastrus orbiculata</i> §	160	90.0	8.1	0.6	0.0	1.3	0.0	0.0	0.0	0.0
<i>Commelina communis</i> ~	160	96.9	2.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera japonica</i> §	160	86.9	6.3	3.1	1.3	1.3	1.3	0.0	0.0	0.0
<i>Microstegium vimineum</i> ~	160	85.6	6.3	2.5	1.3	1.3	1.3	1.3	0.0	0.6
<i>Paulownia tomentosa</i> †	160	99.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i> ~	160	67.5	8.8	8.1	5.6	2.5	5.0	0.6	1.9	0.0
<i>Polygonum perfoliatum</i> ~	160	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rosa multiflora</i> *	160	93.1	3.8	1.9	1.3	0.0	0.0	0.0	0.0	0.0
<i>Rubus phoenicolasius</i> *	160	83.8	6.9	4.4	3.1	1.3	0.0	0.6	0.0	0.0

Table 11c. Frequency of exotic species presence (%) by cover class for SHEN forest vegetation monitoring sampling block 3 (2008-2011). For each species, n is equal to the number of sites surveyed for the species, as listed in the **Total Plots** column, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Exotics Sampling Block 3		Cover Class								
Taxa	Total Plots (n)	1	2	3	4	5	6	7	8	9
<i>Acer platanoides</i> †	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Actinidia chinensis</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ailanthus altissima</i> †	160	70.0	23.1	4.4	1.9	0.6	0.0	0.0	0.0	0.0
<i>Akebia quinata</i> ~	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Alliaria petiolata</i> ~	160	51.9	30.6	10.0	1.9	2.5	2.5	0.6	0.0	0.0
<i>Arthraxon hispidus</i> ~	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Berberis thunbergii</i> *	160	93.8	5.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Broussonetia papyrifera</i> †	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Celastrus orbiculata</i> §	160	88.8	8.1	0.6	1.9	0.6	0.0	0.0	0.0	0.0
<i>Commelina communis</i> ~	159	96.9	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea oppositifolia</i> ~	116	99.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Elaeagnus umbellata</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Euonymus alata</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Euonymus fortunei</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hedera helix</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligustrum obtusifolium</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligustrum sinense</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligustrum vulgare</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera japonica</i> §	160	88.1	4.4	3.1	3.8	0.0	0.0	0.0	0.6	0.0
<i>Lonicera maackii</i> *	116	99.1	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera morrowii</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera tatarica</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lonicera xylosteum</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Microstegium vimineum</i> ~	160	82.5	8.1	3.1	3.1	0.0	0.6	0.6	0.6	1.3
<i>Oplismenus hirtellus</i> ssp. <i>undulatifolius</i> ~	116	98.3	0.0	0.9	0.9	0.0	0.0	0.0	0.0	0.0

Frequency of Exotics Sampling Block 3		Cover Class								
Taxa	Total Plots (n)	1	2	3	4	5	6	7	8	9
<i>Paulownia tomentosa</i> †	160	99.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phyllostachys aurea</i> ~	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Poa compressa</i> ~	115	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i> ~	160	66.9	17.5	3.8	3.8	3.1	3.1	1.3	0.6	0.0
<i>Polygonum cuspidatum</i> ~	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum perfoliatum</i> ~	160	99.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Pueraria montana</i> var. <i>lobata</i> §	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rhodotypos scandens</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rosa multiflora</i> *	160	92.5	4.4	1.9	0.6	0.0	0.6	0.0	0.0	0.0
<i>Rubus laciniatus</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Rubus phoenicolasius</i> *	160	81.9	12.5	1.9	1.3	1.3	1.3	0.0	0.0	0.0
<i>Rumex acetosella</i> ~	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Spiraea japonica</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viburnum sieboldii</i> *	116	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Vinca major</i> ~	113	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Vinca minor</i> §	116	99.1	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0

Table 12a. Frequency of herb species presence when dominant (%) by cover class for SHEN forest vegetation monitoring sampling block 1 (2003-2005). For each species, n is equal to the number of plots, as listed in the **Total Plots** column, where the species was recorded as one of the five dominant herbs in a plot, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Herbs When Dominant Sampling Block 1		Cover Class							
Taxa	Total Plots	2	3	4	5	6	7	8	9
<i>Actaea pachypoda</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Adiantum pedatum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ageratina altissima</i>	13	46.2	7.7	23.1	15.4	7.7	0.0	0.0	0.0
<i>Agrostis perennans</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Alliaria petiolata</i>	33	27.3	24.2	18.2	21.2	6.1	3.0	0.0	0.0
<i>Ambrosia artemisiifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Amianthium muscitoxicum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Amphicarpaea bracteata</i>	21	23.8	23.8	19.0	14.3	4.8	4.8	4.8	4.8
<i>Angelica triquinata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Antennaria plantaginifolia</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Aquilegia canadensis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Aralia nudicaulis</i>	20	55.0	25.0	15.0	5.0	0.0	0.0	0.0	0.0
<i>Aralia racemosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Arctium minus</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Arisaema triphyllum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asarum canadense</i>	4	50.0	25.0	0.0	25.0	0.0	0.0	0.0	0.0
<i>Asclepias exaltata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asclepias syriaca</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asplenium platyneuron</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Athyrium filix-femina</i>	3	33.3	0.0	0.0	33.3	33.3	0.0	0.0	0.0
<i>Aureolaria flava</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Aureolaria laevigata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Baptisia tinctoria</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Botrychium virginianum</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Brachyelytrum erectum</i>	3	33.3	33.3	0.0	0.0	33.3	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 1									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Calamagrostis porteri</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Carex laxiflora</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex pensylvanica</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex</i> species	14	64.3	35.7	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex swanii</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex virescens</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Caulophyllum thalictroides</i>	5	20.0	40.0	20.0	20.0	0.0	0.0	0.0	0.0
<i>Chimaphila maculata</i>	37	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cimicifuga racemosa</i>	22	13.6	31.8	36.4	18.2	0.0	0.0	0.0	0.0
<i>Circaea lutetiana</i>	14	71.4	28.6	0.0	0.0	0.0	0.0	0.0	0.0
<i>Clematis virginiana</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Collinsonia canadensis</i>	3	0.0	0.0	66.7	0.0	0.0	0.0	33.3	0.0
<i>Comandra umbellata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Conopholis americana</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cryptotaenia canadensis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cunila origanoides</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cynoglossum virginianum</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cypripedium acaule</i>	10	90.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Danthonia spicata</i>	3	66.7	0.0	33.3	0.0	0.0	0.0	0.0	0.0
<i>Dennstaedtia punctilobula</i>	31	32.3	9.7	19.4	12.9	16.1	3.2	3.2	3.2
<i>Deparia acrostichoides</i>	2	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0
<i>Deschampsia flexuosa</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Desmodium nudiflorum</i>	8	50.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium acuminatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium dichotomum</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium</i> species	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea</i> species	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea quaternata</i>	22	95.5	0.0	4.5	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea villosa</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant									
Sampling Block 1									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Dryopteris marginalis</i>	8	50.0	37.5	12.5	0.0	0.0	0.0	0.0	0.0
<i>Duchesnea indica</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Epigaea repens</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Eupatorium rugosum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia divaricata</i>	31	51.6	32.3	12.9	0.0	3.2	0.0	0.0	0.0
<i>Eurybia macrophylla</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Fabaceae</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Festuca subverticillata</i>	2	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Galium</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium aparine</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium circaezans</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium triflorum</i>	12	75.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Geum canadense</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Geum virginianum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Goodyera pubescens</i>	7	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hexastylis virginica</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hieracium paniculatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hieracium venosum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Houstonia caerulea</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hydrophyllum virginianum</i>	11	18.2	54.5	18.2	9.1	0.0	0.0	0.0	0.0
<i>Hypericum punctatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hypoxis hirsuta</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Impatiens capensis</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Impatiens pallida</i>	4	25.0	0.0	0.0	75.0	0.0	0.0	0.0	0.0
<i>Impatiens species</i>	6	50.0	0.0	33.3	0.0	0.0	0.0	16.7	0.0
<i>Ipomoea pandurata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ipomoea purpurea</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Iris verna</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Isoetes virginica</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 1									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Isotria verticillata</i>	6	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Laportea canadensis</i>	26	7.7	19.2	15.4	7.7	26.9	15.4	3.8	3.8
<i>Lespedeza hirta</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lespedeza repens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligusticum canadense</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lycopodium digitatum</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Lysimachia quadrifolia</i>	13	84.6	15.4	0.0	0.0	0.0	0.0	0.0	0.0
<i>Maianthemum canadense</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Medeola virginiana</i>	9	88.9	0.0	11.1	0.0	0.0	0.0	0.0	0.0
<i>Microstegium vimineum</i>	10	10.0	10.0	30.0	0.0	10.0	20.0	20.0	0.0
<i>Mitchella repens</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Monotropa uniflora</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia racemosa</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Oclemena acuminata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza claytonii</i>	23	39.1	56.5	4.3	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza longistylis</i>	3	33.3	0.0	33.3	33.3	0.0	0.0	0.0	0.0
<i>Osmunda cinnamomea</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmunda claytoniana</i>	2	0.0	0.0	50.0	0.0	0.0	50.0	0.0	0.0
<i>Oxalis stricta</i>	3	33.3	33.3	0.0	0.0	0.0	33.3	0.0	0.0
<i>Packera aurea</i>	4	75.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0
<i>Pedicularis canadensis</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Perilla frutescens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phryma leptostachya</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phytolacca americana</i>	2	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0
<i>Pilea pumila</i>	12	16.7	41.7	41.7	0.0	0.0	0.0	0.0	0.0
<i>Poaceae</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Poaceae</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant									
Sampling Block 1									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Podophyllum peltatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonatum biflorum</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i>	26	19.2	15.4	26.9	11.5	3.8	15.4	3.8	3.8
<i>Polygonum convolvulus</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum virginianum</i>	6	0.0	66.7	16.7	0.0	16.7	0.0	0.0	0.0
<i>Polymnia canadensis</i>	6	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polystichum acrostichoides</i>	12	41.7	25.0	33.3	0.0	0.0	0.0	0.0	0.0
<i>Potentilla canadensis</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Potentilla simplex</i>	4	50.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0
<i>Prenanthes</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Prenanthes alba</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Pteridium aquilinum</i>	15	80.0	6.7	6.7	6.7	0.0	0.0	0.0	0.0
<i>Sanicula canadensis</i>	5	40.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0
<i>Schizachyrium scoparium</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Smilacina racemosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solanum nigrum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago</i>	7	71.4	14.3	0.0	14.3	0.0	0.0	0.0	0.0
<i>Solidago caesia</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago flexicaulis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago puberula</i>	2	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago rugosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago ulmifolia</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Stellaria</i>	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Stellaria pubera</i>	2	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Tephrosia virginiana</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Thalictrum dioicum</i>	5	40.0	20.0	40.0	0.0	0.0	0.0	0.0	0.0
<i>Thelypteris noveboracensis</i>	2	0.0	50.0	0.0	0.0	50.0	0.0	0.0	0.0
<i>Trientalis borealis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Unknown monocot</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 1									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Uvularia perfoliata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Uvularia puberula</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Uvularia sessilifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Verbesina alternifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Verbesina occidentalis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Vicia villosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Vinca minor</i>	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Viola</i>	11	72.7	27.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola palmata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola sagittata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola sororia</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Xerophyllum asphodeloides</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 12b. Frequency of herb species presence when dominant (%) by cover class for SHEN forest vegetation monitoring sampling block 2 (2007). For each species, n is equal to the number of plots, as listed in the **Total Plots** column, where the species was recorded as one of the five dominant herbs in a plot, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Herbs When Dominant Sampling Block 2		Cover Class							
Taxa	Total Plots	2	3	4	5	6	7	8	9
<i>Actaea pachypoda</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Adiantum pedatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ageratina altissima</i>	10	60.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
<i>Agrostis perennans</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Alliaria petiolata</i>	37	8.1	16.2	18.9	18.9	16.2	16.2	5.4	0.0
<i>Ambrosia artemisiifolia</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Amianthium muscitoxicum</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Amphicarpaea bracteata</i>	18	11.1	22.2	33.3	0.0	16.7	5.6	11.1	0.0
<i>Angelica triquinata</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Antennaria plantaginifolia</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Aralia hispida</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Aralia nudicaulis</i>	15	60.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Arisaema triphyllum</i>	5	40.0	20.0	40.0	0.0	0.0	0.0	0.0	0.0
<i>Arrhenatherum elatius</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Asarum canadense</i>	2	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0
<i>Asclepias exaltata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asclepias quadrifolia</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Asplenium platyneuron</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Athyrium filix-femina</i>	3	33.3	33.3	0.0	0.0	33.3	0.0	0.0	0.0
<i>Aureolaria laevigata</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Baptisia tinctoria</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Botrychium multifidum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Botrychium virginianum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Brachyelytrum erectum</i>	4	25.0	25.0	25.0	25.0	0.0	0.0	0.0	0.0
<i>Bromus pubescens</i>	2	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant									
Sampling Block 2									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Bromus sterilis</i>	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Calamagrostis porteri</i>	2	0.0	0.0	50.0	0.0	50.0	0.0	0.0	0.0
<i>Campanula divaricata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex digitalis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex laxiculmis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex nigromarginata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex pensylvanica</i>	10	80.0	0.0	10.0	10.0	0.0	0.0	0.0	0.0
<i>Carex species</i>	6	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex swanii</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Caulophyllum thalictroides</i>	5	0.0	40.0	20.0	40.0	0.0	0.0	0.0	0.0
<i>Cimicifuga racemosa</i>	24	12.5	20.8	33.3	20.8	4.2	8.3	0.0	0.0
<i>Circaea alpina</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Circaea lutetiana</i>	11	27.3	18.2	54.5	0.0	0.0	0.0	0.0	0.0
<i>Clematis virginiana</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Collinsonia canadensis</i>	3	0.0	33.3	0.0	0.0	33.3	33.3	0.0	0.0
<i>Comandra umbellata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Commelina communis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coreopsis verticillata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Corydalis flavula</i>	2	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0
<i>Cynoglossum virginianum</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cypripedium acaule</i>	7	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Danthonia spicata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dennstaedtia punctilobula</i>	35	25.7	14.3	14.3	8.6	17.1	11.4	8.6	0.0
<i>Deparia acrostichoides</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Deschampsia flexuosa</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Desmodium nudiflorum</i>	8	50.0	37.5	12.5	0.0	0.0	0.0	0.0	0.0
<i>Dichantherium acuminatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichantherium boscii</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichantherium dichotomum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 2									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Dichanthelium linearifolium</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium</i> species	7	85.7	0.0	14.3	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea quaternata</i>	16	87.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea villosa</i>	17	88.2	5.9	5.9	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris carthusiana</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris intermedia</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris marginalis</i>	11	54.5	27.3	18.2	0.0	0.0	0.0	0.0	0.0
<i>Duchesnea indica</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Elymus hystrix</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Elymus virginicus</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Erechtites hieracifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia divaricata</i>	16	62.5	18.8	12.5	0.0	0.0	6.3	0.0	0.0
<i>Eurybia macrophylla</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia schreberi</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Festuca subverticillata</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium aparine</i>	6	16.7	33.3	33.3	16.7	0.0	0.0	0.0	0.0
<i>Galium asprellum</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium boreale</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium circaezans</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium lanceolatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium latifolium</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium pilosum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium triflorum</i>	10	50.0	10.0	40.0	0.0	0.0	0.0	0.0	0.0
<i>Goodyera pubescens</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hepatica nobilis</i> var. <i>obtusata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hexastylis virginica</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hieracium venosum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hydrophyllum virginianum</i>	12	16.7	41.7	25.0	0.0	0.0	16.7	0.0	0.0
<i>Hypoxis hirsuta</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 2									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Impatiens capensis</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Impatiens pallida</i>	3	0.0	33.3	0.0	66.7	0.0	0.0	0.0	0.0
<i>Impatiens</i> species	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Ipomoea pandurata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Iris verna</i>	5	80.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Isoetes virginica</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Isotria verticillata</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Laportea canadensis</i>	25	8.0	16.0	4.0	16.0	24.0	16.0	4.0	12.0
<i>Lespedeza hirta</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Lespedeza repens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ligusticum canadense</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lilium canadense</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Lycopodium digitatum</i>	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
<i>Lycopodium obscurum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lysimachia quadrifolia</i>	14	92.9	7.1	0.0	0.0	0.0	0.0	0.0	0.0
<i>Maianthemum canadense</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	5	80.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Medeola virginiana</i>	8	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Melilotus officinalis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Microstegium vimineum</i>	10	10.0	20.0	0.0	20.0	20.0	20.0	0.0	10.0
<i>Mitchella repens</i>	6	83.3	0.0	16.7	0.0	0.0	0.0	0.0	0.0
<i>Monotropa uniflora</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia schreberi</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia sobolifera</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia tenuiflora</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Oclemena acuminata</i>	4	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza claytonii</i>	23	30.4	30.4	34.8	4.3	0.0	0.0	0.0	0.0
<i>Osmorhiza longistylis</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmunda cinnamomea</i>	2	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 2									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Osmunda claytoniana</i>	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Oxalis stricta</i>	3	33.3	0.0	66.7	0.0	0.0	0.0	0.0	0.0
<i>Packera aurea</i>	2	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Panax quinquefolius</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Paronychia canadensis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Pilea pumila</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonatum biflorum</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i>	26	3.8	7.7	30.8	15.4	26.9	3.8	11.5	0.0
<i>Polygonum convolvulus</i>	2	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0
<i>Polygonum virginianum</i>	4	25.0	50.0	0.0	25.0	0.0	0.0	0.0	0.0
<i>Polymnia canadensis</i>	3	33.3	66.7	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polystichum acrostichoides</i>	13	15.4	30.8	38.5	15.4	0.0	0.0	0.0	0.0
<i>Potentilla canadensis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Potentilla simplex</i>	9	44.4	0.0	33.3	22.2	0.0	0.0	0.0	0.0
<i>Prenanthes alba</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Pteridium aquilinum</i>	15	66.7	20.0	0.0	6.7	0.0	6.7	0.0	0.0
<i>Ranunculus recurvatus</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Sanicula canadensis</i>	2	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
<i>Sanicula marilandica</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Schizachyrium scoparium</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Smilacina racemosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago</i>	11	63.6	36.4	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago caesia</i>	6	83.3	0.0	16.7	0.0	0.0	0.0	0.0	0.0
<i>Solidago puberula</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Stellaria media</i>	5	0.0	0.0	0.0	20.0	60.0	20.0	0.0	0.0
<i>Stellaria pubera</i>	4	0.0	75.0	25.0	0.0	0.0	0.0	0.0	0.0
<i>Symphyotrichum cordifolium</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Symphyotrichum racemosum</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Tephrosia virginiana</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 2									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Thalictrum coriaceum</i>	8	0.0	50.0	25.0	12.5	12.5	0.0	0.0	0.0
<i>Thalictrum dioicum</i>	2	0.0	50.0	0.0	50.0	0.0	0.0	0.0	0.0
<i>Thalictrum pubescens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Trientalis borealis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Urtica dioica</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Uvularia perfoliata</i>	2	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Uvularia sessilifolia</i>	5	60.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Verbesina alternifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Verbesina occidentalis</i>	2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Vicia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola</i>	5	40.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0
<i>Viola canadensis</i>	6	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola palmata</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola pedata</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola sororia</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Xerophyllum asphodeloides</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 12c. Frequency of herb species presence when dominant (%) by cover class for SHEN forest vegetation monitoring sampling block 3 (2008-2011). For each species, n is equal to the number of plots, as listed in the **Total Plots** column, where the species was recorded as one of the five dominant herbs in a plot, not the total number of plots where present. Classes 1 through 10 refer to percent aerial coverage within the plot (Class 1 = 0%, Class 2 = <1%, Class 3 = 1-2%, Class 4 = 2.1-5%, Class 5 = 5.1-10%, Class 6 = 10.1-25%, Class 7 = 25.1-50%, Class 8 = 50.1-75%, Class 9 = 75.1 – 95%, Class 10 =95.1-100%.

Frequency of Herbs When Dominant Sampling Block 3		Cover Class							
Taxa	Total Plots	2	3	4	5	6	7	8	9
<i>Actaea pachypoda</i>	3	33.3	33.3	0.0	0.0	33.3	0.0	0.0	0.0
<i>Adiantum pedatum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ageratina altissima</i>	10	70.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Agrostis perennans</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Alliaria petiolata</i>	26	15.4	38.5	11.5	15.4	15.4	3.8	0.0	0.0
<i>Amianthium muscitoxicum</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Amphicarpaea bracteata</i>	24	29.2	16.7	12.5	8.3	8.3	16.7	8.3	0.0
<i>Antennaria plantaginifolia</i>	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
<i>Apocynum cannabinum</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Aralia nudicaulis</i>	13	61.5	30.8	7.7	0.0	0.0	0.0	0.0	0.0
<i>Arisaema triphyllum</i>	4	25.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asarum canadense</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Asclepias exaltata</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Athyrium filix-femina</i>	3	0.0	66.7	33.3	0.0	0.0	0.0	0.0	0.0
<i>Aureolaria flava</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Aureolaria laevigata</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Baptisia tinctoria</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Botrychium virginianum</i>	5	60.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
<i>Brachyelytrum erectum</i>	5	80.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Bromus pubescens</i>	2	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
<i>Bromus sterilis</i>	1	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
<i>Calamagrostis porteri</i>	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
<i>Carex laxiflora</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex pensylvanica</i>	10	70.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex</i> species	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 3									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Carex swanii</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex virescens</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Caulophyllum thalictroides</i>	4	25.0	25.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Cimicifuga racemosa</i>	18	38.9	16.7	27.8	5.6	11.1	0.0	0.0	0.0
<i>Circaea lutetiana</i>	19	57.9	15.8	21.1	5.3	0.0	0.0	0.0	0.0
<i>Collinsonia canadensis</i>	2	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Conopholis americana</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Coreopsis verticillata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Corydalis flavula</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cryptotaenia canadensis</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Cunila origanoides</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Cypripedium acaule</i>	10	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Danthonia spicata</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dennstaedtia punctilobula</i>	34	32.4	17.6	14.7	11.8	11.8	5.9	5.9	0.0
<i>Deparia acrostichoides</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Deschampsia flexuosa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Desmodium</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Desmodium nudiflorum</i>	8	75.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium acuminatum</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium boscii</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium dichotomum</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium latifolium</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dichanthelium species</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea</i>	9	88.9	0.0	11.1	0.0	0.0	0.0	0.0	0.0
<i>Dioscorea quaternata</i>	12	83.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris carthusiana</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris intermedia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris marginalis</i>	11	81.8	18.2	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant									
Sampling Block 3									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Duchesnea indica</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Elymus hystrix</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Erechtites hieracifolia</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia</i>	2	50.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia divaricata</i>	23	47.8	21.7	30.4	0.0	0.0	0.0	0.0	0.0
<i>Eurybia macrophylla</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Eurybia schreberi</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Festuca subverticillata</i>	3	33.3	33.3	0.0	0.0	33.3	0.0	0.0	0.0
<i>Galium</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium aparine</i>	4	50.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0
<i>Galium circaezans</i>	5	80.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium latifolium</i>	7	71.4	28.6	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium mollugo</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Galium triflorum</i>	8	25.0	62.5	12.5	0.0	0.0	0.0	0.0	0.0
<i>Glechoma hederacea</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Goodyera pubescens</i>	5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Gymnocarpium dryopteris</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Hepatica nobilis</i> var. <i>obtusa</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hexastylis virginica</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hieracium venosum</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Houstonia longifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Hydrophyllum virginianum</i>	10	10.0	20.0	20.0	50.0	0.0	0.0	0.0	0.0
<i>Hypoxis hirsuta</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Impatiens pallida</i>	2	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Impatiens</i> species	4	50.0	0.0	0.0	0.0	25.0	25.0	0.0	0.0
<i>Ipomea</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Ipomoea pandurata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Iris verna</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Isoetes virginica</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 3									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Isotria medeoloides</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Isotria verticillata</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Laportea canadensis</i>	24	16.7	8.3	20.8	8.3	12.5	16.7	12.5	4.2
<i>Leersia virginica</i>	1	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<i>Lespedeza hirta</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lespedeza procumbens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lespedeza repens</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lycopodium digitatum</i>	1	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
<i>Lycopus virginicus</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Lysimachia quadrifolia</i>	12	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Maianthemum canadense</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Medeola virginiana</i>	9	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Microstegium vimineum</i>	19	31.6	15.8	26.3	0.0	5.3	5.3	5.3	10.5
<i>Mitchella repens</i>	5	80.0	0.0	0.0	0.0	20.0	0.0	0.0	0.0
<i>Monotropa hypopithys</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Monotropa uniflora</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia sobolifera</i>	2	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Muhlenbergia tenuiflora</i>	2	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0
<i>Oclemena acuminata</i>	4	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Opismenus hirtellus</i> ssp. <i>undulatifolius</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza claytonii</i>	16	62.5	12.5	25.0	0.0	0.0	0.0	0.0	0.0
<i>Osmorhiza longistylis</i>	6	16.7	83.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmunda cinnamomea</i>	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Osmunda claytoniana</i>	1	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
<i>Oxalis stricta</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Phryma leptostachya</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 3									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Phytolacca americana</i>	1	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
<i>Pilea pumila</i>	4	0.0	50.0	25.0	25.0	0.0	0.0	0.0	0.0
<i>Poaceae</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonatum biflorum</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum caespitosum</i>	24	4.2	16.7	25.0	20.8	20.8	8.3	4.2	0.0
<i>Polygonum convolvulus</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Polygonum virginianum</i>	6	33.3	33.3	33.3	0.0	0.0	0.0	0.0	0.0
<i>Polystichum acrostichoides</i>	13	38.5	23.1	15.4	15.4	7.7	0.0	0.0	0.0
<i>Potentilla simplex</i>	7	57.1	28.6	14.3	0.0	0.0	0.0	0.0	0.0
<i>Prenanthes</i>	5	60.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0
<i>Prenanthes altissima</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Pteridium aquilinum</i>	15	73.3	13.3	6.7	0.0	0.0	6.7	0.0	0.0
<i>Rumex obtusifolius</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Sanicula canadensis</i>	3	66.7	33.3	0.0	0.0	0.0	0.0	0.0	0.0
<i>Sanicula odorata</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Sanicula odorata</i>	1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
<i>Schizachyrium scoparium</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago</i>	10	70.0	10.0	20.0	0.0	0.0	0.0	0.0	0.0
<i>Solidago caesia</i>	10	60.0	30.0	0.0	10.0	0.0	0.0	0.0	0.0
<i>Stellaria media</i>	2	50.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0
<i>Stellaria pubera</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Tephrosia virginiana</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Thalictrum</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Thalictrum coriaceum</i>	5	20.0	20.0	0.0	20.0	40.0	0.0	0.0	0.0
<i>Thelypteris noveboracensis</i>	1	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0
<i>Trientalis borealis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Uvularia puberula</i>	4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Uvularia sessilifolia</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Verbesina occidentalis</i>	3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Frequency of Herbs When Dominant Sampling Block 3									
Taxa	Total Plots	Cover Class							
		2	3	4	5	6	7	8	9
<i>Viola</i>	20	55.0	35.0	10.0	0.0	0.0	0.0	0.0	0.0
<i>Viola canadensis</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola palmata</i>	4	25.0	50.0	25.0	0.0	0.0	0.0	0.0	0.0
<i>Viola sagittata</i>	1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Viola sororia</i>	2	50.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
<i>Xerophyllum asphodeloides</i>	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 13. Species richness for three SHEN forest vegetation monitoring sampling blocks (1: 2003-2005, 2: 2007, 3: 2008-2011). Species richness means (n=160) are per 0.0576 ha for trees and all woody stems, per 0.0096 ha for shrubs, and per 0.0012 ha for seedlings. Species richness totals are across all 160 sampling plots. Mean woody richness values are stratified by ELU.

Sampling Block	Trees		Shrubs		Seedlings		All Woody Stems	
	Mean (SE)	Total	Mean (SE)	Total	Mean (SE)	Total	Mean (SE)	Total
1	6.1 (0.2)	51	6 (0.2)	85	12.6 (0.3)	104	16.9 (0.3)	112
2	6.1 (0.2)	52	5.7 (0.2)	81	12.6 (0.3)	98	16.1 (0.3)	110
3	6.2 (0.2)	53	5.8 (0.2)	82	13.4 (0.3)	95	16.9 (0.3)	108

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