Identification Data

This report is for the stand '1-1-1' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-1
Date inventory was taken	05/10/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	481.5	Basal area (sq.ft/ac)	118.7
Canopy closure (% closure)	77	Relative density (%)	92.7
Stems per unit area (stems/ac)	224.07	Shrub layer percent cover (% cover)	23
Number of plot size classes	3	Ground layer percent cover (% cover)	37

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	oak northern hardwoods	Size class	small sawtimber
Site index species	sugar maple (*Acer saccharum*)	Year of origin	1922

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent	Old growth	no
Percent open plots (% plots)	0	Rare	absent

Species List

This report is for the stand '1-1-1' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
American chestnut (*Castanea dentata*)		X		
Jack in the pulpit (*Arisaema triphyllum*)			X	
wine raspberry (*Rubus phoenicolasius*)			X	
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
unidentified moss (*unidentified moss*)			X	
hepatica (*Hepatica nobilis*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
Canada mayflower (*Maianthemum canadense*)			X	
witchhazel (*Hamamelis*)	X		X	
hogpeanut (*Amphicarpaea*)			X	
hawthorn (*Crataegus*)		X		
wild sarsaparilla (*Aralia nudicaulis*)			X	
sassafras (*Sassafras albidum*)	X	X	X	
Christmas fern (*Polystichum acrostichoides*)			X	
hayscented fern (*Dennstaedtia*)			X	
white rattlesnakeroot (*Prenanthes alba*)			X	
Indian cucumber (*Medeola virginiana*)			X	
white wood aster (*Eurybia divaricata*)			X	
marginal woodfern (*Dryopteris marginalis*)			X	
common blue violet (*Viola sororia*)			X	
ladyfern (*Athyrium*)			X	
Pennsylvania sedge (*Carex pensylvanica*)			X	
partridgeberry (*Mitchella repens*)			X	
starflower (*Trientalis borealis*)			X	
whorled yellow loosestrife (*Lysimachia quadrifolia*)			X	
coastal sweetpepperbush (*Clethra alnifolia*)			X	
unidentified grass (*unidentified grass*)			X	
interrupted fern (*Osmunda claytoniana*)			X	
wreath goldenrod (*Solidago caesia*)			X	
perfoliate bellwort (*Uvularia perfoliata*)			X	

strawberry (*Fragaria*)			X	
spikenard (*Aralia*)			X	
New York fern (*Thelypteris noveboracensis*)			X	
tuliptree (*Liriodendron tulipifera*)	X	X		
northern spicebush (*Lindera benzoin*)			X	
white ash (*Fraxinus americana*)	X	X	X	
American beech (*Fagus grandifolia*)	X	X	X	
mockernut hickory (*Carya alba*)	X	X	X	
pignut hickory (*Carya glabra*)	X			
hickory (*Carya*)		X	X	
American hornbeam (*Carpinus caroliniana*)		X	X	
sweet birch (*Betula lenta*)	X	X	X	
yellow birch (*Betula alleghaniensis*)	X			
serviceberry (*Amelanchier*)	X	X	X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X	X	X	
eastern hemlock (*Tsuga canadensis*)	X			
shagbark hickory (*Carya ovata*)	X			
blueberry (*Vaccinium*)			X	
American basswood (*Tilia americana*)	X	X		
blackberry (*Rubus*)			X	
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)	X	X		
northern red oak (*Quercus rubra*)	X	X	X	
chestnut oak (*Quercus prinus*)	X	X	X	
white oak (*Quercus alba*)	X	X	X	
hophornbeam (*Ostrya virginiana*)	X		X	
lowbush blueberry (*Vaccinium angustifolium*)			X	
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)	X	X	X	
bigtooth aspen (*Populus grandidentata*)	X	X		
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**22**	**20**	**52**	**0**

Species X Diameter

This report is for the stand '1-1-1' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	red maple	sweet birch	serviceberry
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	55.8	2.8	18.0	5.8	14.7
4.00 - 6.00	50.2	19.9	8.7	5.3	2.2
6.00 - 8.00	24.4	7.8	5.5	1.5	1.8
8.00 - 10.00	20.5	8.2	1.9	2.1	0.0
10.00 - 12.00	20.8	6.4	2.4	2.0	0.0
12.00 - 14.00	19.2	5.9	1.2	2.8	0.0
14.00 - 16.00	16.3	3.0	0.9	0.9	0.0
16.00 - 18.00	9.7	2.3	0.4	0.4	0.0
18.00 - 20.00	6.6	1.4	0.6	0.3	0.0
20.00 - 22.00	2.7	0.7	0.3	0.2	0.0
22.00 - 24.00	1.8	0.4	0.1	0.0	0.0
24.00 - 26.00	0.6	0.1	0.0	0.0	0.0
26.00 - 28.00	0.2	0.1	0.0	0.0	0.0
28.00 - 30.00	0.1	0.0	0.0	0.0	0.0
>= 30.00	0.1	0.0	0.0	0.0	0.0
Sum	229.0	59.0	40.1	21.3	18.7

Species X dbh Table (cont)

dbh range	mockernut hickory	northern red oak	chestnut oak	black oak	white ash
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	4.2	2.4	0.0	2.4	2.4
6.00 - 8.00	2.6	0.0	1.5	0.0	0.6
8.00 - 10.00	1.4	0.0	1.1	1.0	0.0
10.00 - 12.00	2.7	1.0	1.7	0.6	1.1
12.00 - 14.00	2.1	1.8	1.7	1.1	0.5

dbh range					
14.00 - 16.00	1.8	2.6	3.2	1.3	0.5
16.00 - 18.00	0.5	1.8	1.3	0.8	0.5
18.00 - 20.00	0.1	1.8	0.5	0.7	0.1
20.00 - 22.00	0.1	0.9	0.2	0.2	0.0
22.00 - 24.00	0.1	0.7	0.1	0.1	0.0
24.00 - 26.00	0.0	0.1	0.1	0.1	0.1
26.00 - 28.00	0.0	0.0	0.0	0.0	0.1
28.00 - 30.00	0.0	0.1	0.0	0.0	0.0
>= 30.00	0.0	0.0	0.0	0.0	0.0
Sum	15.6	13.3	11.4	8.4	5.9

Species X dbh Table (cont)

dbh range	yellow birch	American beech	witchhazel	white oak	tuliptree
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	2.8	2.8	5.0	0.0	0.0
4.00 - 6.00	1.1	1.3	0.0	0.0	0.0
6.00 - 8.00	1.0	0.0	0.0	0.0	1.4
8.00 - 10.00	0.0	0.0	0.0	0.5	0.4
10.00 - 12.00	0.3	0.3	0.0	0.6	1.3
12.00 - 14.00	0.5	0.2	0.0	0.8	0.0
14.00 - 16.00	0.0	0.2	0.0	1.2	0.0
16.00 - 18.00	0.1	0.3	0.0	0.9	0.1
18.00 - 20.00	0.0	0.1	0.0	0.5	0.3
20.00 - 22.00	0.0	0.0	0.0	0.1	0.2
22.00 - 24.00	0.0	0.0	0.0	0.2	0.1
24.00 - 26.00	0.0	0.0	0.0	0.1	0.1
26.00 - 28.00	0.0	0.0	0.0	0.1	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
>= 30.00	0.0	0.0	0.0	0.0	0.0
Sum	5.9	5.2	5.0	4.9	4.0

Species X dbh Table (cont)

dbh range	hophornbeam	pignut hickory	sassafras	eastern hemlock	American basswood
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	3.8	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0	0.8
8.00 - 10.00	0.0	1.1	1.6	1.3	0.0
10.00 - 12.00	0.0	0.0	0.0	0.0	0.0
12.00 - 14.00	0.0	0.5	0.0	0.0	0.0
14.00 - 16.00	0.0	0.0	0.0	0.2	0.2

dbh range					
16.00 - 18.00	0.0	0.1	0.0	0.0	0.0
18.00 - 20.00	0.0	0.1	0.0	0.0	0.0
20.00 - 22.00	0.0	0.0	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.0	0.0
24.00 - 26.00	0.0	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
>= 30.00	0.0	0.0	0.0	0.0	0.0
Sum	3.8	1.8	1.6	1.5	1.0

Species X dbh Table (cont)

dbh range	shagbark hickory	black cherry
< 2.00	0.0	0.0
2.00 - 4.00	0.0	0.0
4.00 - 6.00	0.0	0.0
6.00 - 8.00	0.0	0.0
8.00 - 10.00	0.0	0.0
10.00 - 12.00	0.3	0.0
12.00 - 14.00	0.2	0.0
14.00 - 16.00	0.2	0.0
16.00 - 18.00	0.0	0.1
18.00 - 20.00	0.0	0.0
20.00 - 22.00	0.0	0.0
22.00 - 24.00	0.0	0.0
24.00 - 26.00	0.0	0.0
26.00 - 28.00	0.0	0.0
28.00 - 30.00	0.0	0.0
>= 30.00	0.0	0.0
Sum	0.7	0.1

Timber Tables

This report is for the stand '1-1-1' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report. The species witchhazel (*Hamamelis*) was found in the overstory observations, but is not included in this report because it does not have a growth form of 'Tree'.

Composition

Overstory only

	All species	sugar maple (*Acer saccharum*)	northern red oak (*Quercus rubra*)	chestnut oak (*Quercus prinus*)	red maple (*Acer rubrum*)
Basal area (square feet)	118.7	31.5	17.0	11.3	10.4
percentage of stand	100.0	26.5	14.3	9.5	8.8
Stems per unit area (stems per acre)	229.0	59.0	13.3	11.4	40.1

Overstory only (cont)

	mockernut hickory (*Carya alba*)	sweet birch (*Betula lenta*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	tuliptree (*Liriodendron tulipifera*)
Basal area (square feet)	9.1	8.9	7.9	6.4	3.6
percentage of stand	7.7	7.5	6.6	5.4	3.0
Stems per unit area (stems per acre)	15.6	21.3	8.4	4.9	4.0

Overstory only (cont)

	white ash (*Fraxinus americana*)	American beech (*Fagus grandifolia*)	yellow birch (*Betula alleghaniensis*)	pignut hickory (*Carya glabra*)	serviceberry (*Amelanchier*)
Basal area (square feet)	3.6	1.7	1.5	1.3	1.3
percentage of stand	3.0	1.4	1.3	1.1	1.1
Stems per unit area (stems per acre)	5.9	5.2	5.9	1.8	18.7

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	sassafras (*Sassafras albidum*)	shagbark hickory (*Carya ovata*)	American basswood (*Tilia americana*)	black cherry (*Prunus serotina*)
Basal area (square feet)	0.9	0.6	0.6	0.4	0.2
percentage of stand	0.7	0.5	0.5	0.4	0.2
Stems per unit area (stems per					

	acre)	1.5	1.6	0.7	1.0	0.1

Overstory only (cont)

	hophornbeam (*Ostrya virginiana*)
Basal area (square feet)	0.2
percentage of stand	0.2
Stems per unit area (stems per acre)	3.8

Diameters

Overstory only

	All species	**sugar maple** (*Acer saccharum*)	**northern red oak** (*Quercus rubra*)	**chestnut oak** (*Quercus prinus*)	**red maple** (*Acer rubrum*)
Medial dbh (inches)	14.2	13.4	18.0	15.1	11.4
Average Merchantable dbh (inches)	14.9	14.0	18.2	15.1	13.1
Quadratic mean dbh (inches)	9.7	9.9	15.3	13.5	6.9
Quadratic Average Merchantable dbh (inches)	12.3	11.5	16.9	13.5	10.4
Average dbh (inches)	8.3	8.8	14.2	12.9	5.8

Overstory only (cont)

	mockernut hickory (*Carya alba*)	**sweet birch** (*Betula lenta*)	**black oak** (*Quercus velutina*)	**white oak** (*Quercus alba*)	**tuliptree** (*Liriodendron tulipifera*)
Medial dbh (inches)	12.7	12.3	16.2	16.8	16.8
Average Merchantable dbh (inches)	13.1	12.9	16.5	16.8	16.8
Quadratic mean dbh (inches)	10.4	8.8	13.1	15.5	12.9
Quadratic Average Merchantable dbh (inches)	11.3	10.9	14.1	15.5	12.9
Average dbh (inches)	9.6	7.5	12.0	15.1	11.8

Overstory only (cont)

	white ash (*Fraxinus americana*)	**American beech** (*Fagus grandifolia*)	**yellow birch** (*Betula alleghaniensis*)	**pignut hickory** (*Carya glabra*)	**serviceberry** (*Amelanchier*)
Medial dbh (inches)	14.9	12.8	9.9	13.3	4.4
Average Merchantable dbh (inches)	15.6	15.5	10.9	13.3	6.7
Quadratic mean dbh (inches)	10.6	7.7	6.8	11.5	3.5
Quadratic Average Merchantable dbh (inches)	13.4	14.9	8.8	11.5	6.6
Average dbh (inches)	9.2	6.3	6.0	11.0	3.3

	eastern hemlock (*Tsuga canadensis*)	sassafras (*Sassafras albidum*)	shagbark hickory (*Carya ovata*)	American basswood (*Tilia americana*)	black cherry (*Prunus serotina*)
Medial dbh (inches)	10.9	8.7	12.8	10.6	16.6
Average Merchantable dbh (inches)	10.9	8.7	12.8	10.6	16.6
Quadratic mean dbh (inches)	10.2	8.7	12.5	9.0	16.6
Quadratic Average Merchantable dbh (inches)	10.2	8.7	12.5	9.0	16.6
Average dbh (inches)	10.1	8.7	12.5	8.5	16.6

Overstory only (cont)

	hophornbeam (*Ostrya virginiana*)
Medial dbh (inches)	3.2
Average Merchantable dbh (inches)	0.0
Quadratic mean dbh (inches)	3.2
Quadratic Average Merchantable dbh (inches)	0.0
Average dbh (inches)	3.2

Structure

Overstory only

	All species	sugar maple (*Acer saccharum*)	northern red oak (*Quercus rubra*)	chestnut oak (*Quercus prinus*)	red maple (*Acer rubrum*)
q factor	1.25	1.24	1.15	1.17	1.27

Overstory only (cont)

	mockernut hickory (*Carya alba*)	sweet birch (*Betula lenta*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	tuliptree (*Liriodendron tulipifera*)
q factor	1.20	1.21	1.16	1.13	1.15

Overstory only (cont)

	white ash (*Fraxinus americana*)	American beech (*Fagus grandifolia*)	yellow birch (*Betula alleghaniensis*)	pignut hickory (*Carya glabra*)	serviceberry (*Amelanchier*)
q factor	1.17	1.16	1.29	1.23	1.97

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	sassafras (*Sassafras albidum*)	shagbark hickory (*Carya ovata*)	American basswood (*Tilia americana*)	black cherry (*Prunus serotina*)
q factor	1.25	0.62	1.15	1.22	0.00

Overstory only (cont)

	hophornbeam (*Ostrya virginiana*)
q factor	0.00

Relative density

Overstory only

	All species	sugar maple (*Acer saccharum*)	northern red oak (*Quercus rubra*)	chestnut oak (*Quercus prinus*)	red maple (*Acer rubrum*)
Relative density (percent)	92.68	25.93	14.80	9.11	7.52
percentage of stand	100.00	27.98	15.97	9.83	8.11

Overstory only (cont)

	mockernut hickory (*Carya alba*)	sweet birch (*Betula lenta*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	tuliptree (*Liriodendron tulipifera*)
Relative density (percent)	7.77	5.86	6.34	5.04	1.42
percentage of stand	8.38	6.32	6.84	5.44	1.53

Overstory only (cont)

	white ash (*Fraxinus americana*)	American beech (*Fagus grandifolia*)	yellow birch (*Betula alleghaniensis*)	pignut hickory (*Carya glabra*)	serviceberry (*Amelanchier*)
Relative density (percent)	1.58	1.45	1.32	1.07	1.40
percentage of stand	1.70	1.56	1.42	1.15	1.51

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	sassafras (*Sassafras albidum*)	shagbark hickory (*Carya ovata*)	American basswood (*Tilia americana*)	black cherry (*Prunus serotina*)
Relative density (percent)	0.38	0.46	0.53	0.22	0.07
percentage of stand	0.41	0.50	0.57	0.23	0.08

Overstory only (cont)

	hophornbeam (*Ostrya virginiana*)
Relative density (percent)	0.26
percentage of stand	0.28

Volumes

Overstory only

	All species	sugar maple (*Acer saccharum*)	northern red oak (*Quercus rubra*)	chestnut oak (*Quercus prinus*)	red maple (*Acer rubrum*)
Sawtimber gross total (board feet/acre)	3,046	698	894	374	0
Sawtimber net total (board feet/acre)	3,046	698	894	374	0

Pulpwood gross total (cords/acre)	25	6	3	3	2
Pulpwood net total (cords/acre)	20	5	3	2	2
Gross total (cords/acre)	34	8	6	4	2
Net total (cords/acre)	27	7	5	3	2

Overstory only (cont)

	mockernut hickory (*Carya alba*)	**sweet birch (*Betula lenta*)**	**black oak (*Quercus velutina*)**	**white oak (*Quercus alba*)**	**tuliptree (*Liriodendron tulipifera*)**
Sawtimber gross total (board feet/acre)	184	19	262	313	211
Sawtimber net total (board feet/acre)	184	19	262	313	211
Pulpwood gross total (cords/acre)	2	2	2	1	1
Pulpwood net total (cords/acre)	2	2	1	1	1
Gross total (cords/acre)	2	2	2	2	1
Net total (cords/acre)	2	2	2	2	1

Overstory only (cont)

	white ash (*Fraxinus americana*)	**American beech (*Fagus grandifolia*)**	**yellow birch (*Betula alleghaniensis*)**	**pignut hickory (*Carya glabra*)**	**serviceberry (*Amelanchier*)**
Sawtimber gross total (board feet/acre)	63	0	0	13	0
Sawtimber net total (board feet/acre)	63	0	0	13	0
Pulpwood gross total (cords/acre)	1	0	0	0	0
Pulpwood net total (cords/acre)	1	0	0	0	0
Gross total (cords/acre)	1	0	0	0	0
Net total (cords/acre)	1	0	0	0	0

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	**sassafras (*Sassafras albidum*)**	**shagbark hickory (*Carya ovata*)**	**American basswood (*Tilia americana*)**	**black cherry (*Prunus serotina*)**
Sawtimber gross total (board feet/acre)	0	0	14	0	0
Sawtimber net total (board feet/acre)	0	0	14	0	0
Pulpwood gross total (cords/acre)	0	0	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0	0
Gross total (cords/acre)	0	0	0	0	0
Net total (cords/acre)	0	0	0	0	0

Overstory only (cont)

	hophornbeam

	(*Ostrya virginiana*)
Sawtimber gross total (board feet/acre)	0
Sawtimber net total (board feet/acre)	0
Pulpwood gross total (cords/acre)	0
Pulpwood net total (cords/acre)	0
Gross total (cords/acre)	0
Net total (cords/acre)	0

Biomass

Overstory only

	All species	**sugar maple** (*Acer saccharum*)	**northern red oak** (*Quercus rubra*)	**chestnut oak** (*Quercus prinus*)	**red maple** (*Acer rubrum*)
Coarse root biomass (tons per acre)	38.32	10.37	6.40	3.94	2.79
Merchantable stem wood biomass (tons per acre)	126.83	33.90	22.20	13.30	8.67
Merchantable stem bark biomass (tons per acre)	25.71	6.93	4.39	2.67	1.82
Foliage biomass (tons per acre)	4.16	1.13	0.66	0.41	0.32
Aboveground biomass (tons per acre)	91.90	24.84	15.47	9.49	6.64
Total biomass (tons per acre)	130.22	35.21	21.87	13.43	9.44

Overstory only (cont)

	mockernut hickory (*Carya alba*)	**sweet birch** (*Betula lenta*)	**black oak** (*Quercus velutina*)	**white oak** (*Quercus alba*)	**tuliptree** (*Liriodendron tulipifera*)
Coarse root biomass (tons per acre)	2.97	2.49	2.82	2.34	0.99
Merchantable stem wood biomass (tons per acre)	9.67	8.00	9.61	8.03	3.36
Merchantable stem bark biomass (tons per acre)	1.98	1.65	1.92	1.59	0.67
Foliage biomass (tons per acre)	0.32	0.28	0.30	0.24	0.10
Aboveground biomass (tons per acre)	7.11	5.95	6.80	5.64	2.38
Total biomass (tons per acre)	10.08	8.44	9.63	7.97	3.36

Overstory only (cont)

	white ash (*Fraxinus americana*)	**American beech** (*Fagus grandifolia*)	**yellow birch** (*Betula alleghaniensis*)	**pignut hickory** (*Carya glabra*)	**serviceberry** (*Amelanchier*)
Coarse root biomass (tons per acre)	0.93	0.55	0.38	0.42	0.19
Merchantable stem wood biomass (tons per acre)	3.12	1.76	1.16	1.39	0.43
Merchantable stem bark biomass (tons					

	per acre)	0.63	0.36	0.25	0.28	0.11
Foliage biomass (tons per acre)		0.10	0.06	0.04	0.05	0.03
Aboveground biomass (tons per acre)		2.24	1.31	0.91	1.01	0.44
Total biomass (tons per acre)		3.17	1.85	1.29	1.44	0.63

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	sassafras (*Sassafras albidum*)	shagbark hickory (*Carya ovata*)	American basswood (*Tilia americana*)	black cherry (*Prunus serotina*)
Coarse root biomass (tons per acre)	0.20	0.13	0.21	0.09	0.06
Merchantable stem wood biomass (tons per acre)	0.61	0.40	0.69	0.30	0.20
Merchantable stem bark biomass (tons per acre)	0.11	0.09	0.14	0.06	0.04
Foliage biomass (tons per acre)	0.06	0.02	0.02	0.01	0.01
Aboveground biomass (tons per acre)	0.43	0.31	0.50	0.23	0.14
Total biomass (tons per acre)	0.64	0.44	0.71	0.32	0.20

Overstory only (cont)

	hophornbeam (*Ostrya virginiana*)
Coarse root biomass (tons per acre)	0.03
Merchantable stem wood biomass (tons per acre)	0.05
Merchantable stem bark biomass (tons per acre)	0.02
Foliage biomass (tons per acre)	0.00
Aboveground biomass (tons per acre)	0.06
Total biomass (tons per acre)	0.09

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Understory Species Composition and Diversity

This report is for the stand '1-1-1' inventory (2012) data.
There are fourty seven plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	2229.79	59.87	87.23	16.53	38.20
chestnut oak (*Quercus prinus*)	587.23	15.77	55.32	10.48	13.13
northern red oak (*Quercus rubra*)	131.91	3.54	61.70	11.69	7.62
white oak (*Quercus alba*)	186.17	5.00	40.43	7.66	6.33
sweet birch (*Betula lenta*)	115.96	3.11	42.55	8.06	5.59
hickory (*Carya*)	60.64	1.63	46.81	8.87	5.25
red maple (*Acer rubrum*)	89.36	2.40	42.55	8.06	5.23
American beech (*Fagus grandifolia*)	88.30	2.37	31.91	6.05	4.21
white ash (*Fraxinus americana*)	46.81	1.26	29.79	5.65	3.45
black oak (*Quercus velutina*)	41.49	1.11	27.66	5.24	3.18
black cherry (*Prunus serotina*)	52.13	1.40	21.28	4.03	2.72
sassafras (*Sassafras albidum*)	57.45	1.54	8.51	1.61	1.58
American hornbeam (*Carpinus caroliniana*)	12.77	0.34	8.51	1.61	0.98
serviceberry (*Amelanchier*)	5.32	0.14	6.38	1.21	0.68
mockernut hickory (*Carya alba*)	12.77	0.34	4.26	0.81	0.57
American chestnut (*Castanea dentata*)	2.13	0.06	4.26	0.81	0.43
tuliptree (*Liriodendron tulipifera*)	1.06	0.03	2.13	0.40	0.22
hawthorn (*Crataegus*)	1.06	0.03	2.13	0.40	0.22
bigtooth aspen (*Populus grandidentata*)	1.06	0.03	2.13	0.40	0.22
American basswood					

(*Tilia americana*)	1.06	0.03	2.13	0.40	0.22

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were twenty species observed, based on a sample of fourty seven plots each 0.020 acres in size, representing 0.195 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.

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Ground Species Composition and Diversity

This report is for the stand '1-1-1' inventory (2012) data.
There are fourty seven plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
sugar maple (*Acer saccharum*)	74.47	10.42	6.53	10.24	10.33
witchhazel (*Hamamelis*)	38.30	5.36	9.68	15.17	10.26
Canada mayflower (*Maianthemum canadense*)	57.45	8.04	5.53	8.67	8.35
mapleleaf viburnum (*Viburnum acerifolium*)	40.43	5.65	4.91	7.70	6.68
Pennsylvania sedge (*Carex pensylvanica*)	34.04	4.76	4.94	7.74	6.25
sweet birch (*Betula lenta*)	17.02	2.38	3.94	6.17	4.27
lowbush blueberry (*Vaccinium angustifolium*)	27.66	3.87	2.85	4.47	4.17
smooth Solomon's seal (*Polygonatum biflorum*)	42.55	5.95	1.02	1.60	3.78
hophornbeam (*Ostrya virginiana*)	10.64	1.49	3.72	5.84	3.66
serviceberry (*Amelanchier*)	21.28	2.98	2.62	4.10	3.54
hayscented fern (*Dennstaedtia*)	8.51	1.19	3.72	5.84	3.51
chestnut oak (*Quercus prinus*)	19.15	2.68	1.62	2.53	2.61
unidentified moss (*unidentified moss*)	19.15	2.68	1.51	2.37	2.52
American hornbeam (*Carpinus caroliniana*)	17.02	2.38	1.06	1.67	2.02
American beech (*Fagus grandifolia*)	10.64	1.49	1.43	2.23	1.86
northern red oak (*Quercus rubra*)	17.02	2.38	0.81	1.27	1.82
wild sarsaparilla (*Aralia nudicaulis*)	19.15	2.68	0.47	0.73	1.71
red maple (*Acer rubrum*)	17.02	2.38	0.62	0.97	1.67

Species					
Virginia creeper (*Parthenocissus quinquefolia*)	12.77	1.79	0.89	1.40	1.59
black cherry (*Prunus serotina*)	14.89	2.08	0.60	0.93	1.51
eastern poison ivy (*Toxicodendron radicans*)	12.77	1.79	0.47	0.73	1.26
white wood aster (*Eurybia divaricata*)	14.89	2.08	0.28	0.43	1.26
hickory (*Carya*)	12.77	1.79	0.23	0.37	1.08
white ash (*Fraxinus americana*)	10.64	1.49	0.21	0.33	0.91
New York fern (*Thelypteris noveboracensis*)	8.51	1.19	0.38	0.60	0.90
white oak (*Quercus alba*)	10.64	1.49	0.19	0.30	0.89
perfoliate bellwort (*Uvularia perfoliata*)	8.51	1.19	0.34	0.53	0.86
Indian cucumber (*Medeola virginiana*)	8.51	1.19	0.26	0.40	0.80
strawberry (*Fragaria*)	8.51	1.19	0.23	0.37	0.78
marginal woodfern (*Dryopteris marginalis*)	8.51	1.19	0.21	0.33	0.76
common blue violet (*Viola sororia*)	8.51	1.19	0.19	0.30	0.75
starflower (*Trientalis borealis*)	8.51	1.19	0.15	0.23	0.71
unidentified grass (*unidentified grass*)	6.38	0.89	0.32	0.50	0.70
whorled yellow loosestrife (*Lysimachia quadrifolia*)	8.51	1.19	0.09	0.13	0.66
Jack in the pulpit (*Arisaema triphyllum*)	8.51	1.19	0.09	0.13	0.66
spikenard (*Aralia*)	2.13	0.30	0.43	0.67	0.48
northern spicebush (*Lindera benzoin*)	4.26	0.60	0.19	0.30	0.45
blackberry (*Rubus*)	4.26	0.60	0.13	0.20	0.40
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	4.26	0.60	0.09	0.13	0.36
partridgeberry (*Mitchella repens*)	4.26	0.60	0.09	0.13	0.36
Christmas fern (*Polystichum acrostichoides*)	4.26	0.60	0.09	0.13	0.36
wreath goldenrod (*Solidago caesia*)	4.26	0.60	0.06	0.10	0.35
sassafras (*Sassafras albidum*)	4.26	0.60	0.04	0.07	0.33
blueberry (*Vaccinium*)	2.13	0.30	0.21	0.33	0.32

ladyfern (*Athyrium*)	2.13	0.30	0.11	0.17	0.23
interrupted fern (*Osmunda claytoniana*)	2.13	0.30	0.06	0.10	0.20
hogpeanut (*Amphicarpaea*)	2.13	0.30	0.06	0.10	0.20
coastal sweetpepperbush (*Clethra alnifolia*)	2.13	0.30	0.06	0.10	0.20
wine raspberry (*Rubus phoenicolasius*)	2.13	0.30	0.02	0.03	0.17
white rattlesnakeroot (*Prenanthes alba*)	2.13	0.30	0.02	0.03	0.17
mockernut hickory (*Carya alba*)	2.13	0.30	0.02	0.03	0.17
hepatica (*Hepatica nobilis*)	2.13	0.30	0.02	0.03	0.17

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were fifty two species observed, based on a sample of fourty seven plots each 0.002 acres in size, representing 0.020 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.2732	0.0000 - 0.7143	Sample comparisons
Jaccard's Similarity Coefficient	0.1669	0.0000 - 0.5556	Sample comparisons
Whittaker's Similarity Coefficient	6.2738	-	Sample comparisons
Renkonen's Index (Percent Similarity)	14.30	0.00 - 90.80	Sample comparisons
Morista-Horn Similarity Index	0.1581	0.0000 - 0.9920	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.
Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.
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Kuchler, A.W. 1964. The potential natural vegetation of the conterminous United States. Am Geogr. Soc., Spec. Publ. No. 36. 154 pp.

Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Overstory Statistics

This report is for the stand '1-1-1' inventory (2012) data.

Name	Value
Date inventory was taken	05/10/2012
Who took inventory	SK, CH, HG
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
65	70.000	3215.62	55.32	61.80
38	120.000	2255.14	90.99	106.87
66	110.000	3767.14	79.85	95.38
13	130.000	3347.16	108.83	416.68
39	150.000	2318.64	118.63	268.76
40	80.000	3195.19	68.02	186.58
91	130.000	2551.16	103.70	308.49
22	160.000	5071.40	133.74	206.46
101	110.000	2799.05	83.17	120.63
162	90.000	1285.48	70.08	75.92
163	70.000	749.45	60.82	257.24
49	120.000	2125.64	94.84	237.60
21	90.000	3578.35	70.93	68.79
8	120.000	1492.38	105.28	344.49
9	120.000	1668.39	103.52	198.36
3	130.000	2500.17	79.82	138.94
7	120.000	4160.43	97.94	204.47
6	150.000	2849.27	116.55	437.78
136	80.000	2034.20	59.51	79.02
137	110.000	2189.78	86.91	398.08
125	120.000	2265.95	104.86	376.46
126	110.000	2752.59	89.47	132.59
121	100.000	1021.22	58.87	110.89
127	120.000	6595.93	91.07	102.80
116	150.000	3861.23	128.15	457.85
117	130.000	2849.70	90.52	417.77

118	120.000	974.61	102.62	387.92
119	130.000	6105.73	109.38	128.53
113	120.000	7074.99	89.63	119.52
130	160.000	5671.52	132.86	245.35
16	110.000	1186.14	77.62	165.18
34	150.000	4114.13	122.40	287.88
35	130.000	2559.39	113.16	280.90
44	110.000	1454.98	82.15	212.20
90	100.000	1765.16	82.60	130.46
17	140.000	4320.05	101.85	176.41
96	80.000	772.75	54.87	118.49
108	120.000	4410.38	98.35	301.32
107	180.000	5693.72	143.85	478.80
1	100.000	1182.61	60.92	248.04
2	120.000	6431.23	93.44	161.22
85	130.000	4633.13	96.50	114.73
92	140.000	3520.02	88.47	333.29
109	110.000	3597.01	89.88	126.37
111	140.000	4058.28	115.03	219.39
112	80.000	0.00	62.06	353.29
144	120.000	1114.24	86.74	365.25

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	70.00	0.00	54.87	61.80
Maximum	180.00	7074.99	143.85	478.80
Mean	118.72	3045.55	92.68	229.05
Variance	593.99	2933451.24	482.11	14313.74
Std dev	24.37	1712.73	21.96	119.64
Std error	3.55	249.83	3.20	17.45

95% confidence interval

degrees of freedom = 46
alpha = 0.050
t-value = 2.013

95% confidence interval

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
95% c.i. mean lower limit	111.6	2542.6	86.2	193.9
95% c.i. mean upper limit	125.9	3548.5	99.1	264.2
95% c.i. # plots for w/in 15%	8	57	11	50
95% c.i. # plots for w/in 10%	18	129	23	111

Interpretation of confidence interval values: Examine the number above for the Basal area at the 95 percent confidence interval. NED extimates with 95% confidence that the true mean lies between 111.6 and 125.9. Under similar conditions, about 95% of repeated samples in this stand (using the same number of plots) will contain the true mean. If the variation between the existing sample plots is representative of the whole stand, eight plots are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Identification Data

This report is for the stand '1-1-2' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-2
Date inventory was taken	05/10/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	516.0	Basal area (sq.ft/ac)	110.0
Canopy closure (% closure)	74	Relative density (%)	90.0
Stems per unit area (stems/ac)	232.24	Shrub layer percent cover (% cover)	0
Number of plot size classes	3	Ground layer percent cover (% cover)	39

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	oak	Size class	small sawtimber
Site index species	northern red oak (*Quercus rubra*)	Year of origin	1926

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent	Old growth	no
Percent open plots (% plots)	0	Rare	absent

Species List

This report is for the stand '1-1-2' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
American chestnut (*Castanea dentata*)		X	X	
Jack in the pulpit (*Arisaema triphyllum*)			X	
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
white baneberry (*Actaea pachypoda*)			X	
blackgum (*Nyssa sylvatica*)	X			
unidentified moss (*unidentified moss*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
dandelion (*Taraxacum*)			X	
common cinquefoil (*Potentilla simplex*)			X	
Canada mayflower (*Maianthemum canadense*)			X	
witchhazel (*Hamamelis*)			X	
wild sarsaparilla (*Aralia nudicaulis*)			X	
sassafras (*Sassafras albidum*)		X		
hayscented fern (*Dennstaedtia*)			X	
striped maple (*Acer pensylvanicum*)		X		
white snakeroot (*Ageratina altissima*)			X	
Indian cucumber (*Medeola virginiana*)			X	
white wood aster (*Eurybia divaricata*)			X	
marginal woodfern (*Dryopteris marginalis*)			X	
common blue violet (*Viola sororia*)			X	
Pennsylvania sedge (*Carex pensylvanica*)			X	
partridgeberry (*Mitchella repens*)			X	
brackenfern (*Pteridium*)			X	
starflower (*Trientalis borealis*)			X	
hairy Solomon's seal (*Polygonatum pubescens*)			X	
whorled yellow loosestrife (*Lysimachia quadrifolia*)			X	
oak (*Quercus*)	X			
unidentified grass (*unidentified grass*)			X	
wreath goldenrod (*Solidago caesia*)			X	
perfoliate bellwort (*Uvularia perfoliata*)			X	

Species				
strawberry (*Fragaria*)			X	
New York fern (*Thelypteris noveboracensis*)			X	
tuliptree (*Liriodendron tulipifera*)	X		X	
northern spicebush (*Lindera benzoin*)			X	
white ash (*Fraxinus americana*)	X	X	X	
American beech (*Fagus grandifolia*)	X	X	X	
mockernut hickory (*Carya alba*)	X			
pignut hickory (*Carya glabra*)	X			
hickory (*Carya*)		X	X	
American hornbeam (*Carpinus caroliniana*)		X	X	
sweet birch (*Betula lenta*)	X	X	X	
yellow birch (*Betula alleghaniensis*)	X	X		
barberry (*Berberis*)			X	
serviceberry (*Amelanchier*)	X	X	X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X	X	X	
eastern hemlock (*Tsuga canadensis*)	X			
shagbark hickory (*Carya ovata*)	X			
blueberry (*Vaccinium*)			X	
American basswood (*Tilia americana*)	X			
blackberry (*Rubus*)			X	
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)	X	X	X	
northern red oak (*Quercus rubra*)	X	X	X	
chestnut oak (*Quercus prinus*)	X	X	X	
scarlet oak (*Quercus coccinea*)	X	X		
white oak (*Quercus alba*)	X	X	X	
hophornbeam (*Ostrya virginiana*)	X	X		
lowbush blueberry (*Vaccinium angustifolium*)			X	
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)	X	X	X	
bigtooth aspen (*Populus grandidentata*)	X			
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**23**	**19**	**50**	**0**

Species X Diameter

This report is for the stand '1-1-2' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	red maple	chestnut oak	sweet birch	mockernut hickory
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	35.8	6.6	0.0	10.7	0.0
4.00 - 6.00	68.3	15.1	2.6	7.1	16.3
6.00 - 8.00	35.8	8.3	3.7	5.9	4.8
8.00 - 10.00	24.2	2.7	5.5	4.1	4.3
10.00 - 12.00	18.6	2.0	5.1	3.6	1.2
12.00 - 14.00	18.6	0.7	7.7	1.2	1.2
14.00 - 16.00	13.3	0.3	4.2	0.9	0.7
16.00 - 18.00	8.7	0.0	3.4	0.3	0.5
18.00 - 20.00	5.3	0.1	1.8	0.1	0.2
20.00 - 22.00	1.7	0.0	0.5	0.1	0.0
22.00 - 24.00	1.0	0.1	0.1	0.1	0.0
24.00 - 26.00	0.5	0.1	0.0	0.1	0.0
26.00 - 28.00	0.3	0.0	0.0	0.0	0.0
28.00 - 30.00	0.1	0.0	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0	0.0
>= 32.00	0.1	0.0	0.0	0.0	0.0
Sum	232.2	36.1	34.6	34.0	29.3

Species X dbh Table (cont)

dbh range	serviceberry	northern red oak	hophornbeam	sugar maple	American beech
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	3.3	0.0	12.4	0.0	2.8
4.00 - 6.00	17.3	1.3	0.0	3.5	3.7
6.00 - 8.00	5.8	0.0	0.0	4.0	0.0
8.00 - 10.00	1.0	1.3	0.0	1.4	0.0
10.00 - 12.00	0.0	1.2	0.0	1.6	0.0

dbh range				
12.00 - 14.00	0.0	2.1	0.0	1.0	0.0
14.00 - 16.00	0.0	4.0	0.0	0.5	0.0
16.00 - 18.00	0.0	2.4	0.0	0.0	0.0
18.00 - 20.00	0.0	2.3	0.0	0.0	0.1
20.00 - 22.00	0.0	0.5	0.0	0.1	0.0
22.00 - 24.00	0.0	0.6	0.0	0.0	0.1
24.00 - 26.00	0.0	0.3	0.0	0.0	0.0
26.00 - 28.00	0.0	0.2	0.0	0.0	0.0
28.00 - 30.00	0.0	0.1	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0	0.0
>= 32.00	0.0	0.0	0.0	0.0	0.0
Sum	27.4	16.2	12.4	12.1	6.6

Species X dbh Table (cont)

dbh range	white oak	black oak	white ash	pignut hickory	black cherry
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	1.5
6.00 - 8.00	0.0	0.7	1.8	0.0	0.0
8.00 - 10.00	1.2	0.9	0.5	0.5	0.0
10.00 - 12.00	1.2	0.6	0.3	0.0	0.0
12.00 - 14.00	2.5	1.0	0.2	0.5	0.0
14.00 - 16.00	0.7	1.4	0.2	0.0	0.0
16.00 - 18.00	1.0	0.5	0.3	0.1	0.0
18.00 - 20.00	0.0	0.2	0.2	0.2	0.0
20.00 - 22.00	0.0	0.1	0.1	0.2	0.0
22.00 - 24.00	0.0	0.1	0.0	0.0	0.0
24.00 - 26.00	0.0	0.1	0.0	0.0	0.0
26.00 - 28.00	0.1	0.1	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0	0.0
>= 32.00	0.0	0.0	0.0	0.0	0.0
Sum	6.6	5.6	3.5	1.5	1.5

Species X dbh Table (cont)

dbh range	American basswood	yellow birch	scarlet oak	shagbark hickory	blackgum
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	0.7	0.0	0.0	0.0	0.0
8.00 - 10.00	0.0	0.5	0.0	0.4	0.0

10.00 - 12.00	0.4	0.4	0.6	0.4	0.0
12.00 - 14.00	0.0	0.0	0.0	0.0	0.3
14.00 - 16.00	0.0	0.2	0.0	0.0	0.0
16.00 - 18.00	0.0	0.0	0.1	0.0	0.1
18.00 - 20.00	0.0	0.0	0.0	0.0	0.0
20.00 - 22.00	0.0	0.0	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.0	0.0
24.00 - 26.00	0.0	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.1	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0	0.0
>= 32.00	0.0	0.0	0.0	0.0	0.0
Sum	1.1	1.0	0.8	0.8	0.4

Species X dbh Table (cont)

dbh range	bigtooth aspen	eastern hemlock	tuliptree
< 2.00	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0
12.00 - 14.00	0.0	0.2	0.0
14.00 - 16.00	0.3	0.0	0.0
16.00 - 18.00	0.0	0.0	0.0
18.00 - 20.00	0.0	0.0	0.1
20.00 - 22.00	0.0	0.0	0.1
22.00 - 24.00	0.0	0.0	0.0
24.00 - 26.00	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0
>= 32.00	0.0	0.0	0.0
Sum	0.3	0.2	0.2

Timber Tables

This report is for the stand '1-1-2' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sweet birch (*Betula lenta*)	mockernut hickory (*Carya alba*)
Basal area (square feet)	109.8	29.2	21.7	10.4	9.2
percentage of stand	100.0	26.6	19.7	9.5	8.3
Stems per unit area (stems per acre)	232.2	34.6	16.2	34.0	29.3

Overstory only (cont)

	red maple (*Acer rubrum*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	sugar maple (*Acer saccharum*)	serviceberry (*Amelanchier*)
Basal area (square feet)	8.8	6.0	6.0	5.0	4.0
percentage of stand	8.0	5.5	5.5	4.6	3.6
Stems per unit area (stems per acre)	36.1	5.6	6.6	12.1	27.4

Overstory only (cont)

	white ash (*Fraxinus americana*)	pignut hickory (*Carya glabra*)	American beech (*Fagus grandifolia*)	scarlet oak (*Quercus coccinea*)	hophornbeam (*Ostrya virginiana*)
Basal area (square feet)	2.3	1.7	1.0	0.8	0.6
percentage of stand	2.1	1.5	0.9	0.8	0.6
Stems per unit area (stems per acre)	3.5	1.5	6.6	0.8	12.4

Overstory only (cont)

	yellow birch (*Betula alleghaniensis*)	American basswood (*Tilia americana*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	tuliptree (*Liriodendron tulipifera*)
Basal area (square feet)	0.6	0.4	0.4	0.4	0.4
percentage of stand	0.6	0.4	0.4	0.4	0.4
Stems per unit area (stems per acre)	1.0	1.1	0.3	0.4	0.2

Overstory only (cont)

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
Basal area (square feet)	0.4	0.2	0.2
percentage of stand	0.4	0.2	0.2
Stems per unit area (stems per acre)	0.8	0.2	1.5

Diameters

Overstory only

	All species	**chestnut oak (*Quercus prinus*)**	**northern red oak (*Quercus rubra*)**	**sweet birch (*Betula lenta*)**	**mockernut hickory (*Carya alba*)**
Medial dbh (inches)	13.4	14.2	17.8	10.6	10.1
Average Merchantable dbh (inches)	14.2	14.4	17.9	11.5	11.2
Quadratic mean dbh (inches)	9.3	12.4	15.7	7.5	7.6
Quadratic Average Merchantable dbh (inches)	11.5	12.8	16.2	9.5	9.3
Average dbh (inches)	8.1	11.8	14.9	6.6	6.9

Overstory only (cont)

	red maple (*Acer rubrum*)	**black oak (*Quercus velutina*)**	**white oak (*Quercus alba*)**	**sugar maple (*Acer saccharum*)**	**serviceberry (*Amelanchier*)**
Medial dbh (inches)	9.1	16.3	14.1	11.6	5.8
Average Merchantable dbh (inches)	10.2	16.3	14.1	11.9	7.3
Quadratic mean dbh (inches)	6.7	14.0	13.0	8.7	5.2
Quadratic Average Merchantable dbh (inches)	8.3	14.0	13.0	9.5	7.1
Average dbh (inches)	6.1	13.3	12.6	8.0	5.0

Overstory only (cont)

	white ash (*Fraxinus americana*)	**pignut hickory (*Carya glabra*)**	**American beech (*Fagus grandifolia*)**	**scarlet oak (*Quercus coccinea*)**	**hophornbeam (*Ostrya virginiana*)**
Medial dbh (inches)	14.1	16.1	11.3	16.5	3.1
Average Merchantable dbh (inches)	14.1	16.1	21.6	16.5	0.0
Quadratic mean dbh (inches)	10.9	14.3	5.4	13.7	3.0
Quadratic Average Merchantable dbh (inches)	10.9	14.3	21.3	13.7	0.0
Average dbh (inches)	10.0	13.7	4.6	13.0	3.0

Overstory only (cont)

	**yellow birch (*Betula*	**American basswood	**bigtooth aspen	**blackgum	**tuliptree**

	alleghaniensis)	(*Tilia americana*)	(*Populus grandidentata*)	(*Nyssa sylvatica*)	(*Liriodendron tulipifera*)
Medial dbh (inches)	11.3	8.7	15.1	14.9	20.7
Average Merchantable dbh (inches)	11.3	8.7	15.1	14.9	20.7
Quadratic mean dbh (inches)	10.6	8.3	15.0	14.2	20.6
Quadratic Average Merchantable dbh (inches)	10.6	8.3	15.0	14.2	20.6
Average dbh (inches)	10.4	8.2	15.0	14.0	20.6

Overstory only (cont)

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
Medial dbh (inches)	10.0	12.4	5.1
Average Merchantable dbh (inches)	10.0	12.4	0.0
Quadratic mean dbh (inches)	9.9	12.4	5.1
Quadratic Average Merchantable dbh (inches)	9.9	12.4	0.0
Average dbh (inches)	9.9	12.4	5.1

Structure

Overstory only

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sweet birch (*Betula lenta*)	mockernut hickory (*Carya alba*)
q factor	1.27	1.12	1.16	1.28	1.32

Overstory only (cont)

	red maple (*Acer rubrum*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	sugar maple (*Acer saccharum*)	serviceberry (*Amelanchier*)
q factor	1.27	1.14	1.20	1.17	1.30

Overstory only (cont)

	white ash (*Fraxinus americana*)	pignut hickory (*Carya glabra*)	American beech (*Fagus grandifolia*)	scarlet oak (*Quercus coccinea*)	hophornbeam (*Ostrya virginiana*)
q factor	1.16	1.10	1.22	1.16	3.70

Overstory only (cont)

	yellow birch (*Betula alleghaniensis*)	American basswood (*Tilia americana*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	tuliptree (*Liriodendron tulipifera*)
q factor	1.17	1.26	0.00	1.13	1.16

Overstory only (cont)

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
q factor	0.00	0.00	0.00

Relative density

<p align="center">Overstory only</p>

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sweet birch (*Betula lenta*)	mockernut hickory (*Carya alba*)
Relative density (percent)	89.88	23.90	18.86	7.48	8.44
percentage of stand	100.00	26.59	20.98	8.32	9.39

<p align="center">Overstory only (cont)</p>

	red maple (*Acer rubrum*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	sugar maple (*Acer saccharum*)	serviceberry (*Amelanchier*)
Relative density (percent)	6.80	4.84	4.93	4.23	3.66
percentage of stand	7.57	5.38	5.49	4.70	4.08

<p align="center">Overstory only (cont)</p>

	white ash (*Fraxinus americana*)	pignut hickory (*Carya glabra*)	American beech (*Fagus grandifolia*)	scarlet oak (*Quercus coccinea*)	hophornbeam (*Ostrya virginiana*)
Relative density (percent)	1.01	1.33	0.98	0.67	0.77
percentage of stand	1.12	1.48	1.09	0.75	0.86

<p align="center">Overstory only (cont)</p>

	yellow birch (*Betula alleghaniensis*)	American basswood (*Tilia americana*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	tuliptree (*Liriodendron tulipifera*)
Relative density (percent)	0.52	0.21	0.25	0.24	0.13
percentage of stand	0.57	0.24	0.27	0.26	0.14

<p align="center">Overstory only (cont)</p>

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
Relative density (percent)	0.36	0.10	0.19
percentage of stand	0.41	0.11	0.21

Volumes

<p align="center">Overstory only</p>

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sweet birch (*Betula lenta*)	mockernut hickory (*Carya alba*)
Sawtimber gross total (board feet/acre)	2,794	970	1,237	13	37
Sawtimber net total (board feet/acre)	2,794	970	1,237	13	37
Pulpwood gross total (cords/acre)	22	6	4	2	2

Pulpwood net total (cords/acre)	18	5	3	2	1
Gross total (cords/acre)	30	9	7	2	2
Net total (cords/acre)	24	7	6	2	2

Overstory only (cont)

	red maple (*Acer rubrum*)	black oak (*Quercus velutina*)	white oak (*Quercus alba*)	sugar maple (*Acer saccharum*)	serviceberry (*Amelanchier*)
Sawtimber gross total (board feet/acre)	0	165	147	29	0
Sawtimber net total (board feet/acre)	0	165	147	29	0
Pulpwood gross total (cords/acre)	2	1	1	1	0
Pulpwood net total (cords/acre)	1	1	1	1	0
Gross total (cords/acre)	2	2	2	1	0
Net total (cords/acre)	1	1	2	1	0

Overstory only (cont)

	white ash (*Fraxinus americana*)	pignut hickory (*Carya glabra*)	American beech (*Fagus grandifolia*)	scarlet oak (*Quercus coccinea*)	hophornbeam (*Ostrya virginiana*)
Sawtimber gross total (board feet/acre)	101	36	0	16	0
Sawtimber net total (board feet/acre)	101	36	0	16	0
Pulpwood gross total (cords/acre)	0	0	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0	0
Gross total (cords/acre)	1	1	0	0	0
Net total (cords/acre)	1	0	0	0	0

Overstory only (cont)

	yellow birch (*Betula alleghaniensis*)	American basswood (*Tilia americana*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	tuliptree (*Liriodendron tulipifera*)
Sawtimber gross total (board feet/acre)	0	0	0	0	43
Sawtimber net total (board feet/acre)	0	0	0	0	43
Pulpwood gross total (cords/acre)	0	0	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0	0
Gross total (cords/acre)	0	0	0	0	0
Net total (cords/acre)	0	0	0	0	0

Overstory only (cont)

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
Sawtimber gross total (board feet/acre)	0	0	0

Sawtimber net total (board feet/acre)	0	0	0
Pulpwood gross total (cords/acre)	0	0	0
Pulpwood net total (cords/acre)	0	0	0
Gross total (cords/acre)	0	0	0
Net total (cords/acre)	0	0	0

Biomass

Overstory only

	All species	**chestnut oak (*Quercus prinus*)**	**northern red oak (*Quercus rubra*)**	**sweet birch (*Betula lenta*)**	**mockernut hickory (*Carya alba*)**
Coarse root biomass (tons per acre)	34.80	9.96	8.10	2.74	2.69
Merchantable stem wood biomass (tons per acre)	113.94	33.25	28.04	8.45	8.25
Merchantable stem bark biomass (tons per acre)	23.26	6.72	5.55	1.79	1.75
Foliage biomass (tons per acre)	3.79	1.06	0.84	0.31	0.31
Aboveground biomass (tons per acre)	83.38	23.93	19.57	6.52	6.39
Total biomass (tons per acre)	118.18	33.89	27.67	9.26	9.09

Overstory only (cont)

	red maple (*Acer rubrum*)	**black oak (*Quercus velutina*)**	**white oak (*Quercus alba*)**	**sugar maple (*Acer saccharum*)**	**serviceberry (*Amelanchier*)**
Coarse root biomass (tons per acre)	2.18	2.17	2.06	1.54	0.67
Merchantable stem wood biomass (tons per acre)	6.43	7.41	6.86	4.88	1.74
Merchantable stem bark biomass (tons per acre)	1.40	1.48	1.39	1.02	0.41
Foliage biomass (tons per acre)	0.26	0.23	0.22	0.17	0.09
Aboveground biomass (tons per acre)	5.16	5.24	4.94	3.68	1.57
Total biomass (tons per acre)	7.35	7.41	7.00	5.23	2.24

Overstory only (cont)

	white ash (*Fraxinus americana*)	**pignut hickory (*Carya glabra*)**	**American beech (*Fagus grandifolia*)**	**scarlet oak (*Quercus coccinea*)**	**hophornbeam (*Ostrya virginiana*)**
Coarse root biomass (tons per acre)	0.58	0.60	0.31	0.30	0.08
Merchantable stem wood biomass (tons per acre)	1.92	2.04	0.91	1.02	0.15
Merchantable stem bark biomass (tons per acre)	0.39	0.41	0.20	0.20	0.04

Foliage biomass (tons per acre)	0.06	0.06	0.04	0.03	0.01
Aboveground biomass (tons per acre)	1.39	1.44	0.72	0.72	0.19
Total biomass (tons per acre)	1.97	2.04	1.03	1.02	0.27

Overstory only (cont)

	yellow birch (*Betula alleghaniensis*)	American basswood (*Tilia americana*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	tuliptree (*Liriodendron tulipifera*)
Coarse root biomass (tons per acre)	0.17	0.09	0.10	0.11	0.13
Merchantable stem wood biomass (tons per acre)	0.54	0.26	0.34	0.37	0.45
Merchantable stem bark biomass (tons per acre)	0.11	0.06	0.07	0.07	0.09
Foliage biomass (tons per acre)	0.02	0.01	0.01	0.01	0.01
Aboveground biomass (tons per acre)	0.41	0.20	0.24	0.26	0.31
Total biomass (tons per acre)	0.58	0.29	0.35	0.37	0.44

Overstory only (cont)

	shagbark hickory (*Carya ovata*)	eastern hemlock (*Tsuga canadensis*)	black cherry (*Prunus serotina*)
Coarse root biomass (tons per acre)	0.12	0.05	0.03
Merchantable stem wood biomass (tons per acre)	0.39	0.16	0.08
Merchantable stem bark biomass (tons per acre)	0.08	0.03	0.02
Foliage biomass (tons per acre)	0.01	0.01	0.00
Aboveground biomass (tons per acre)	0.30	0.11	0.08
Total biomass (tons per acre)	0.42	0.17	0.11

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Understory Species Composition and Diversity

This report is for the stand '1-1-2' inventory (2012) data.
There are fourty eight plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
chestnut oak (*Quercus prinus*)	1555.21	44.79	87.50	13.82	29.31
northern red oak (*Quercus rubra*)	496.87	14.31	83.33	13.16	13.73
sugar maple (*Acer saccharum*)	507.29	14.61	60.42	9.54	12.08
white oak (*Quercus alba*)	220.83	6.36	56.25	8.88	7.62
black oak (*Quercus velutina*)	133.33	3.84	56.25	8.88	6.36
hickory (*Carya*)	98.96	2.85	62.50	9.87	6.36
red maple (*Acer rubrum*)	109.38	3.15	52.08	8.22	5.69
sweet birch (*Betula lenta*)	82.29	2.37	45.83	7.24	4.80
black cherry (*Prunus serotina*)	86.46	2.49	37.50	5.92	4.21
American beech (*Fagus grandifolia*)	96.88	2.79	25.00	3.95	3.37
white ash (*Fraxinus americana*)	23.96	0.69	27.08	4.28	2.48
serviceberry (*Amelanchier*)	17.71	0.51	12.50	1.97	1.24
American hornbeam (*Carpinus caroliniana*)	21.87	0.63	10.42	1.64	1.14
striped maple (*Acer pensylvanicum*)	3.13	0.09	4.17	0.66	0.37
scarlet oak (*Quercus coccinea*)	2.08	0.06	4.17	0.66	0.36
American chestnut (*Castanea dentata*)	8.33	0.24	2.08	0.33	0.28
yellow birch (*Betula alleghaniensis*)	4.17	0.12	2.08	0.33	0.22
hophornbeam (*Ostrya virginiana*)	2.08	0.06	2.08	0.33	0.19
sassafras (*Sassafras albidum*)	1.04	0.03	2.08	0.33	0.18

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were nineteen species observed, based on a sample of fourty eight plots each 0.020 acres in size, representing 0.186 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. *Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.*

Carmean, W. H. 1996. *Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.*

Coile, T.S. 1938. *Forest classification: classification of forest types with special reference to ground vegetation. J. For. 36:1062-1066.*

Daubenmire, R. F. 1976. *The use of vegetation in assessing the productivity of forest lands. Bot. Rev. 42:115-143.*

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Rowe, J. S. 1969. *Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.*

Spies, T.A., and Barnes, B.V. 1985. *Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.*

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Ground Species Composition and Diversity

This report is for the stand '1-1-2' inventory (2012) data.
There are fourty eight plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
lowbush blueberry (*Vaccinium angustifolium*)	56.25	8.46	10.52	19.70	14.08
chestnut oak (*Quercus prinus*)	43.75	6.58	5.92	11.08	8.83
Canada mayflower (*Maianthemum canadense*)	41.67	6.27	4.00	7.49	6.88
mapleleaf viburnum (*Viburnum acerifolium*)	47.92	7.21	3.40	6.36	6.78
Pennsylvania sedge (*Carex pensylvanica*)	31.25	4.70	4.52	8.47	6.58
witchhazel (*Hamamelis*)	25.00	3.76	3.46	6.48	5.12
unidentified moss (*unidentified moss*)	35.42	5.33	2.29	4.29	4.81
northern red oak (*Quercus rubra*)	39.58	5.96	1.33	2.50	4.23
smooth Solomon's seal (*Polygonatum biflorum*)	39.58	5.96	0.90	1.68	3.82
sugar maple (*Acer saccharum*)	31.25	4.70	1.50	2.81	3.76
sweet birch (*Betula lenta*)	14.58	2.19	2.13	3.98	3.09
red maple (*Acer rubrum*)	31.25	4.70	0.56	1.05	2.88
wild sarsaparilla (*Aralia nudicaulis*)	22.92	3.45	1.02	1.91	2.68
American beech (*Fagus grandifolia*)	6.25	0.94	2.31	4.33	2.64
blueberry (*Vaccinium*)	8.33	1.25	1.56	2.93	2.09
Virginia creeper (*Parthenocissus quinquefolia*)	14.58	2.19	0.75	1.40	1.80
black cherry (*Prunus serotina*)	8.33	1.25	0.85	1.60	1.43
serviceberry (*Amelanchier*)	8.33	1.25	0.75	1.40	1.33

hayscented fern (*Dennstaedtia*)	8.33	1.25	0.71	1.33	1.29
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	14.58	2.19	0.15	0.27	1.23
eastern poison ivy (*Toxicodendron radicans*)	12.50	1.88	0.19	0.35	1.12
strawberry (*Fragaria*)	10.42	1.57	0.33	0.62	1.10
whorled yellow loosestrife (*Lysimachia quadrifolia*)	10.42	1.57	0.27	0.51	1.04
white oak (*Quercus alba*)	6.25	0.94	0.48	0.90	0.92
American hornbeam (*Carpinus caroliniana*)	6.25	0.94	0.40	0.74	0.84
starflower (*Trientalis borealis*)	8.33	1.25	0.15	0.27	0.76
American chestnut (*Castanea dentata*)	4.17	0.63	0.38	0.70	0.66
hickory (*Carya*)	6.25	0.94	0.19	0.35	0.65
blackberry (*Rubus*)	6.25	0.94	0.19	0.35	0.65
New York fern (*Thelypteris noveboracensis*)	2.08	0.31	0.42	0.78	0.55
white wood aster (*Eurybia divaricata*)	4.17	0.63	0.23	0.43	0.53
white ash (*Fraxinus americana*)	4.17	0.63	0.23	0.43	0.53
Indian cucumber (*Medeola virginiana*)	4.17	0.63	0.19	0.35	0.49
perfoliate bellwort (*Uvularia perfoliata*)	4.17	0.63	0.13	0.23	0.43
partridgeberry (*Mitchella repens*)	4.17	0.63	0.13	0.23	0.43
wreath goldenrod (*Solidago caesia*)	4.17	0.63	0.08	0.16	0.39
unidentified grass (*unidentified grass*)	4.17	0.63	0.06	0.12	0.37
hairy Solomon's seal (*Polygonatum pubescens*)	4.17	0.63	0.06	0.12	0.37
Jack in the pulpit (*Arisaema triphyllum*)	4.17	0.63	0.04	0.08	0.35
common blue violet (*Viola sororia*)	4.17	0.63	0.04	0.08	0.35
barberry (*Berberis*)	2.08	0.31	0.15	0.27	0.29
white snakeroot (*Ageratina altissima*)	2.08	0.31	0.10	0.20	0.25
marginal woodfern (*Dryopteris marginalis*)	2.08	0.31	0.10	0.20	0.25
white baneberry (*Actaea pachypoda*)	2.08	0.31	0.06	0.12	0.22

northern spicebush (*Lindera benzoin*)	2.08	0.31	0.04	0.08	0.20
common cinquefoil (*Potentilla simplex*)	2.08	0.31	0.04	0.08	0.20
black oak (*Quercus velutina*)	2.08	0.31	0.04	0.08	0.20
tuliptree (*Liriodendron tulipifera*)	2.08	0.31	0.02	0.04	0.18
dandelion (*Taraxacum*)	2.08	0.31	0.02	0.04	0.18
brackenfern (*Pteridium*)	2.08	0.31	0.02	0.04	0.18

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were fifty species observed, based on a sample of fourty eight plots each 0.002 acres in size, representing 0.019 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.2676	0.0000 - 0.8889	Sample comparisons
Jaccard's Similarity Coefficient	0.1665	0.0000 - 0.8000	Sample comparisons
Whittaker's Similarity Coefficient	6.5235	-	Sample comparisons
Renkonen's Index (Percent Similarity)	16.32	0.00 - 84.65	Sample comparisons
Morista-Horn Similarity Index	0.1946	0.0000 - 0.9831	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Overstory Statistics

This report is for the stand '1-1-2' inventory (2012) data.

Name	Value
Date inventory was taken	05/10/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
14	100.000	2107.34	82.10	238.67
37	120.000	1997.72	106.24	226.81
25	100.000	1153.12	88.86	281.27
26	90.000	548.26	68.92	202.26
27	150.000	2832.05	114.98	249.09
52	90.000	5128.77	70.51	85.57
54	110.000	2222.89	90.86	144.02
78	130.000	3202.69	108.18	347.58
79	90.000	1091.22	68.74	104.33
80	160.000	3645.71	130.48	229.78
47	120.000	2395.98	109.41	404.49
48	140.000	3242.91	96.44	253.93
124	90.000	1650.19	77.07	99.29
164	90.000	503.69	84.07	404.88
122	50.000	0.00	44.09	147.35
120	120.000	1738.79	105.45	524.92
102	90.000	1198.87	81.03	199.78
114	50.000	0.00	42.93	175.63
129	90.000	1317.21	77.30	129.05
131	90.000	3714.16	72.04	110.87
132	90.000	2784.03	63.77	102.69
133	160.000	7491.71	131.59	304.95
143	110.000	2245.62	92.70	309.66
145	140.000	5286.21	108.60	283.11
146	140.000	5976.94	107.07	101.75
150	40.000	0.00	35.42	115.94
151	120.000	3850.87	98.41	114.32

152	180.000	11594.61	144.04	132.03
153	150.000	6368.88	120.47	143.27
154	60.000	0.00	58.34	316.63
41	150.000	4062.10	128.00	377.89
42	90.000	2012.46	66.79	105.86
43	110.000	2384.56	73.48	99.81
61	120.000	2651.69	102.27	712.44
63	100.000	2106.74	85.80	173.51
68	90.000	1515.91	78.92	259.53
69	140.000	4215.05	109.79	296.79
12	120.000	3208.00	101.31	302.57
19	150.000	1982.09	126.39	266.48
31	100.000	2435.56	80.11	186.41
33	70.000	1666.03	59.94	134.22
45	140.000	5350.73	102.60	141.10
139	80.000	0.00	80.23	444.28
105	150.000	4268.77	130.99	516.02
60	90.000	1778.76	51.82	85.35
84	100.000	2224.15	85.23	200.79
98	120.000	3450.49	95.71	286.94
15	100.000	3497.48	82.60	103.24

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	40.00	0.00	35.42	85.35
Maximum	180.00	11594.61	144.04	712.44
Mean	110.00	2793.77	90.04	232.86
Variance	978.72	4699130.63	634.03	18094.04
Std dev	31.28	2167.75	25.18	134.51
Std error	4.52	312.89	3.63	19.42

95% confidence interval

degrees of freedom = 47
alpha = 0.050
t-value = 2.012

95% confidence interval

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
95% c.i. mean lower limit	100.9	2164.2	82.7	193.8
95% c.i. mean upper limit	119.1	3423.4	97.4	271.9
95% c.i. # plots for w/in 15%	15	109	15	61
95% c.i. # plots for w/in 10%	33	244	32	136

Interpretation of confidence interval values: Examine the number above for the Basal area at the 95 percent confidence interval. NED extimates with 95% confidence that the true mean lies between 100.9 and 119.1. Under similar conditions, about 95% of repeated samples in this stand (using the same number of plots) will contain the true mean. If the variation between the existing sample plots is representative of the whole stand, fifteen plots are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Identification Data

This report is for the stand '1-1-3' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-3
Date inventory was taken	05/21/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	87.5	Basal area (sq.ft/ac)	130.0
Canopy closure (% closure)	85	Relative density (%)	86.6
Stems per unit area (stems/ac)	171.96	Shrub layer percent cover (% cover)	0
Number of plot size classes	2	Ground layer percent cover (% cover)	63

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	maple	Size class	small sawtimber
Site index species	sugar maple (*Acer saccharum*)	Year of origin	1915

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '1-1-3' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Jack in the pulpit (*Arisaema triphyllum*)			X	
white baneberry (*Actaea pachypoda*)			X	
blackgum (*Nyssa sylvatica*)	X			
unidentified moss (*unidentified moss*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
Canada mayflower (*Maianthemum canadense*)			X	
hogpeanut (*Amphicarpaea*)			X	
wild sarsaparilla (*Aralia nudicaulis*)			X	
sassafras (*Sassafras albidum*)	X	X	X	
hayscented fern (*Dennstaedtia*)			X	
Indian cucumber (*Medeola virginiana*)			X	
spotted geranium (*Geranium maculatum*)			X	
common blue violet (*Viola sororia*)			X	
Pennsylvania sedge (*Carex pensylvanica*)			X	
partridgeberry (*Mitchella repens*)			X	
whorled yellow loosestrife (*Lysimachia quadrifolia*)			X	
perfoliate bellwort (*Uvularia perfoliata*)			X	
northern spicebush (*Lindera benzoin*)			X	
white ash (*Fraxinus americana*)	X	X	X	
American beech (*Fagus grandifolia*)	X			
pignut hickory (*Carya glabra*)	X			
hickory (*Carya*)		X	X	
sweet birch (*Betula lenta*)	X	X		
barberry (*Berberis*)			X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X	X		
shagbark hickory (*Carya ovata*)	X			
blueberry (*Vaccinium*)			X	
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)	X			
northern red oak (*Quercus rubra*)	X	X		

chestnut oak (*Quercus prinus*)		X		
scarlet oak (*Quercus coccinea*)	X			
white oak (*Quercus alba*)		X		
lowbush blueberry (*Vaccinium angustifolium*)			X	
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)	X	X	X	
bigtooth aspen (*Populus grandidentata*)	X			
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**14**	**10**	**27**	**0**

Species X Diameter

This report is for the stand '1-1-3' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	American beech	sweet birch	red maple
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	28.1	0.0	28.1	0.0	0.0
4.00 - 6.00	23.2	0.0	0.0	14.4	0.0
6.00 - 8.00	17.6	17.6	0.0	0.0	0.0
8.00 - 10.00	12.2	8.5	0.0	0.0	0.0
10.00 - 12.00	27.9	5.1	0.0	8.1	2.4
12.00 - 14.00	18.2	5.2	0.0	0.0	3.6
14.00 - 16.00	19.5	6.8	0.0	2.8	4.3
16.00 - 18.00	7.5	1.1	0.0	0.0	1.0
18.00 - 20.00	7.7	6.0	0.0	0.0	0.9
20.00 - 22.00	3.5	0.0	0.0	0.6	0.0
22.00 - 24.00	3.5	1.2	0.0	0.0	0.6
24.00 - 26.00	1.4	1.0	0.0	0.0	0.5
26.00 - 28.00	1.3	1.3	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
>= 30.00	0.3	0.0	0.0	0.0	0.3
Sum	172.0	53.7	28.1	26.0	13.7

Species X dbh Table (cont)

dbh range	black cherry	white ash	blackgum	shagbark hickory	sassafras
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	8.8	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0	0.0
8.00 - 10.00	3.8	0.0	0.0	0.0	0.0
10.00 - 12.00	2.2	2.5	0.0	2.9	0.0
12.00 - 14.00	0.0	3.6	0.0	1.7	4.0

dbh range					
14.00 - 16.00	1.4	1.4	0.0	1.4	0.0
16.00 - 18.00	3.3	2.2	0.0	0.0	0.0
18.00 - 20.00	0.8	0.0	0.0	0.0	0.0
20.00 - 22.00	0.0	0.7	0.0	0.0	0.0
22.00 - 24.00	0.0	0.5	0.0	0.0	0.0
24.00 - 26.00	0.0	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
>= 30.00	0.0	0.0	0.0	0.0	0.0
Sum	11.4	10.9	8.8	6.0	4.0

Species X dbh Table (cont)

dbh range	pignut hickory	northern red oak	scarlet oak	bigtooth aspen	black oak
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0	0.0
10.00 - 12.00	2.4	2.4	0.0	0.0	0.0
12.00 - 14.00	0.0	0.0	0.0	0.0	0.0
14.00 - 16.00	1.5	0.0	0.0	0.0	0.0
16.00 - 18.00	0.0	0.0	0.0	0.0	0.0
18.00 - 20.00	0.0	0.0	0.0	0.0	0.0
20.00 - 22.00	0.0	0.7	0.8	0.7	0.0
22.00 - 24.00	0.0	0.0	0.6	0.0	0.6
24.00 - 26.00	0.0	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
>= 30.00	0.0	0.0	0.0	0.0	0.0
Sum	3.8	3.1	1.3	0.7	0.6

Timber Tables

This report is for the stand '1-1-3' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	black cherry (*Prunus serotina*)
Basal area (square feet)	130.0	50.0	18.3	13.3	11.7
percentage of stand	100.0	38.5	14.1	10.3	9.0
Stems per unit area (stems per acre)	172.0	53.7	13.7	10.9	11.4

Overstory only (cont)

	sweet birch (*Betula lenta*)	shagbark hickory (*Carya ovata*)	sassafras (*Sassafras albidum*)	northern red oak (*Quercus rubra*)	scarlet oak (*Quercus coccinea*)
Basal area (square feet)	11.7	5.0	3.3	3.3	3.3
percentage of stand	9.0	3.8	2.6	2.6	2.6
Stems per unit area (stems per acre)	26.0	6.0	4.0	3.1	1.3

Overstory only (cont)

	pignut hickory (*Carya glabra*)	black oak (*Quercus velutina*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	American beech (*Fagus grandifolia*)
Basal area (square feet)	3.3	1.7	1.7	1.7	1.7
percentage of stand	2.6	1.3	1.3	1.3	1.3
Stems per unit area (stems per acre)	3.8	0.6	0.7	8.8	28.1

Diameters

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	black cherry (*Prunus serotina*)

Medial dbh (inches)	15.9	16.7	17.9	16.4	15.1
Average Merchantable dbh (inches)	16.2	16.7	17.9	16.4	15.1
Quadratic mean dbh (inches)	11.8	13.1	15.7	15.0	13.7
Quadratic Average Merchantable dbh (inches)	13.4	13.1	15.7	15.0	13.7
Average dbh (inches)	10.3	12.0	15.1	14.6	13.2

Overstory only (cont)

	sweet birch (*Betula lenta*)	**shagbark hickory (*Carya ovata*)**	**sassafras (*Sassafras albidum*)**	**northern red oak (*Quercus rubra*)**	**scarlet oak (*Quercus coccinea*)**
Medial dbh (inches)	12.5	12.8	12.4	16.0	21.6
Average Merchantable dbh (inches)	13.9	12.8	12.4	16.0	21.6
Quadratic mean dbh (inches)	9.1	12.4	12.4	14.1	21.5
Quadratic Average Merchantable dbh (inches)	12.6	12.4	12.4	14.1	21.5
Average dbh (inches)	8.0	12.2	12.4	13.5	21.4

Overstory only (cont)

	pignut hickory (*Carya glabra*)	**black oak (*Quercus velutina*)**	**bigtooth aspen (*Populus grandidentata*)**	**blackgum (*Nyssa sylvatica*)**	**American beech (*Fagus grandifolia*)**
Medial dbh (inches)	12.9	23.0	20.3	5.9	3.3
Average Merchantable dbh (inches)	12.9	23.0	20.3	5.9	0.0
Quadratic mean dbh (inches)	12.6	23.0	20.3	5.9	3.3
Quadratic Average Merchantable dbh (inches)	12.6	23.0	20.3	5.9	0.0
Average dbh (inches)	12.6	23.0	20.3	5.9	3.3

Structure

Overstory only

	All species	**sugar maple (*Acer saccharum*)**	**red maple (*Acer rubrum*)**	**white ash (*Fraxinus americana*)**	**black cherry (*Prunus serotina*)**
q factor	1.16	1.14	1.12	1.15	1.15

Overstory only (cont)

	sweet birch (*Betula lenta*)	**shagbark hickory (*Carya ovata*)**	**sassafras (*Sassafras albidum*)**	**northern red oak (*Quercus rubra*)**	**scarlet oak (*Quercus coccinea*)**
q factor	1.19	1.16	1.14	1.12	1.10

Overstory only (cont)

	pignut hickory	**black oak**	**bigtooth aspen**	**blackgum**	**American beech**

	(*Carya glabra*)	(*Quercus velutina*)	(*Populus grandidentata*)	(*Nyssa sylvatica*)	(*Fagus grandifolia*)
q factor	1.17	0.00	0.00	0.00	0.00

Relative density

Overstory only

	All species	**sugar maple** (*Acer saccharum*)	**red maple** (*Acer rubrum*)	**white ash** (*Fraxinus americana*)	**black cherry** (*Prunus serotina*)
Relative density (percent)	86.65	39.71	9.93	4.89	4.51
percentage of stand	100.00	45.83	11.46	5.64	5.20

Overstory only (cont)

	sweet birch (*Betula lenta*)	**shagbark hickory** (*Carya ovata*)	**sassafras** (*Sassafras albidum*)	**northern red oak** (*Quercus rubra*)	**scarlet oak** (*Quercus coccinea*)
Relative density (percent)	7.65	4.14	2.03	2.93	2.51
percentage of stand	8.83	4.78	2.34	3.38	2.89

Overstory only (cont)

	pignut hickory (*Carya glabra*)	**black oak** (*Quercus velutina*)	**bigtooth aspen** (*Populus grandidentata*)	**blackgum** (*Nyssa sylvatica*)	**American beech** (*Fagus grandifolia*)
Relative density (percent)	2.75	1.24	0.92	1.47	1.97
percentage of stand	3.17	1.43	1.06	1.70	2.28

Volumes

Overstory only

	All species	**sugar maple** (*Acer saccharum*)	**red maple** (*Acer rubrum*)	**white ash** (*Fraxinus americana*)	**black cherry** (*Prunus serotina*)
Sawtimber gross total (board feet/acre)	2,699	1,483	85	586	0
Sawtimber net total (board feet/acre)	2,699	1,483	85	586	0
Pulpwood gross total (cords/acre)	32	11	6	3	4
Pulpwood net total (cords/acre)	26	9	5	2	3
Gross total (cords/acre)	40	15	6	4	4
Net total (cords/acre)	32	12	5	4	3

Overstory only (cont)

	sweet birch (*Betula lenta*)	**shagbark hickory** (*Carya ovata*)	**sassafras** (*Sassafras albidum*)	**northern red oak** (*Quercus rubra*)	**scarlet oak** (*Quercus coccinea*)
Sawtimber gross total (board feet/acre)	0	112	0	189	0
Sawtimber net total (board feet/acre)	0	112	0	189	0

Pulpwood gross total (cords/acre)	3	1	1	1	1
Pulpwood net total (cords/acre)	2	1	1	1	1
Gross total (cords/acre)	3	1	1	1	1
Net total (cords/acre)	2	1	1	1	1

Overstory only (cont)

	pignut hickory (*Carya glabra*)	black oak (*Quercus velutina*)	bigtooth aspen (*Populus grandidentata*)	blackgum (*Nyssa sylvatica*)	American beech (*Fagus grandifolia*)
Sawtimber gross total (board feet/acre)	133	0	111	0	0
Sawtimber net total (board feet/acre)	133	0	111	0	0
Pulpwood gross total (cords/acre)	1	1	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0	0
Gross total (cords/acre)	1	1	1	0	0
Net total (cords/acre)	1	0	0	0	0

Biomass

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	black cherry (*Prunus serotina*)
Coarse root biomass (tons per acre)	41.74	18.09	5.82	3.63	3.07
Merchantable stem wood biomass (tons per acre)	141.11	61.67	20.10	12.42	10.36
Merchantable stem bark biomass (tons per acre)	28.28	12.30	3.98	2.47	2.08
Foliage biomass (tons per acre)	4.40	1.89	0.60	0.38	0.32
Aboveground biomass (tons per acre)	100.47	43.60	14.06	8.76	7.38
Total biomass (tons per acre)	142.22	61.69	19.88	12.39	10.45

Overstory only (cont)

	sweet birch (*Betula lenta*)	shagbark hickory (*Carya ovata*)	sassafras (*Sassafras albidum*)	northern red oak (*Quercus rubra*)	scarlet oak (*Quercus coccinea*)
Coarse root biomass (tons per acre)	3.26	1.64	0.80	1.19	1.36
Merchantable stem wood biomass (tons per acre)	10.49	5.40	2.64	4.05	4.86
Merchantable stem bark biomass (tons per acre)	2.17	1.10	0.54	0.81	0.94
Foliage biomass (tons per acre)	0.36	0.18	0.09	0.12	0.14

Aboveground biomass (tons per acre)	7.80	3.94	1.93	2.87	3.31
Total biomass (tons per acre)	11.06	5.58	2.73	4.06	4.67

Overstory only (cont)

	pignut hickory (*Carya glabra*)	**black oak (*Quercus velutina*)**	**bigtooth aspen (*Populus grandidentata*)**	**blackgum (*Nyssa sylvatica*)**	**American beech (*Fagus grandifolia*)**
Coarse root biomass (tons per acre)	1.10	0.70	0.45	0.29	0.33
Merchantable stem wood biomass (tons per acre)	3.62	2.51	1.60	0.76	0.62
Merchantable stem bark biomass (tons per acre)	0.74	0.49	0.31	0.18	0.18
Foliage biomass (tons per acre)	0.12	0.07	0.05	0.04	0.05
Aboveground biomass (tons per acre)	2.64	1.70	1.10	0.67	0.73
Total biomass (tons per acre)	3.74	2.40	1.55	0.96	1.06

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File name: C:\archives\Sussex\Weldon Brook WMA\data.mdb

Understory Species Composition and Diversity

This report is for the stand '1-1-3' inventory (2012) data.
There are six plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	2058.33	59.23	83.33	17.24	38.24
black cherry (*Prunus serotina*)	741.67	21.34	83.33	17.24	19.29
hickory (*Carya*)	150.00	4.32	83.33	17.24	10.78
northern red oak (*Quercus rubra*)	108.33	3.12	50.00	10.34	6.73
white oak (*Quercus alba*)	91.67	2.64	50.00	10.34	6.49
sassafras (*Sassafras albidum*)	183.33	5.28	33.33	6.90	6.09
sweet birch (*Betula lenta*)	75.00	2.16	33.33	6.90	4.53
white ash (*Fraxinus americana*)	33.33	0.96	33.33	6.90	3.93
chestnut oak (*Quercus prinus*)	25.00	0.72	16.67	3.45	2.08
red maple (*Acer rubrum*)	8.33	0.24	16.67	3.45	1.84

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample

size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were ten species observed, based on a sample of six plots each 0.020 acres in size, representing 0.137 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Ground Species Composition and Diversity

This report is for the stand '1-1-3' inventory (2012) data.
There are six plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
northern spicebush (*Lindera benzoin*)	83.33	10.00	16.17	20.00	15.00
Canada mayflower (*Maianthemum canadense*)	50.00	6.00	15.83	19.59	12.79
sugar maple (*Acer saccharum*)	66.67	8.00	9.83	12.16	10.08
common blue violet (*Viola sororia*)	50.00	6.00	10.50	12.99	9.49
Pennsylvania sedge (*Carex pensylvanica*)	33.33	4.00	5.00	6.19	5.09
Virginia creeper (*Parthenocissus quinquefolia*)	66.67	8.00	1.33	1.65	4.82
white baneberry (*Actaea pachypoda*)	50.00	6.00	2.33	2.89	4.44
black cherry (*Prunus serotina*)	50.00	6.00	2.33	2.89	4.44
perfoliate bellwort (*Uvularia perfoliata*)	16.67	2.00	4.17	5.15	3.58
hayscented fern (*Dennstaedtia*)	16.67	2.00	3.33	4.12	3.06
wild sarsaparilla (*Aralia nudicaulis*)	33.33	4.00	1.00	1.24	2.62
smooth Solomon's seal (*Polygonatum biflorum*)	33.33	4.00	0.83	1.03	2.52
sassafras (*Sassafras albidum*)	33.33	4.00	0.50	0.62	2.31
eastern poison ivy (*Toxicodendron radicans*)	33.33	4.00	0.50	0.62	2.31
white ash (*Fraxinus americana*)	16.67	2.00	1.67	2.06	2.03
whorled yellow loosestrife (*Lysimachia quadrifolia*)	16.67	2.00	0.83	1.03	1.52
Indian cucumber (*Medeola virginiana*)	16.67	2.00	0.83	1.03	1.52
spotted geranium (*Geranium maculatum*)	16.67	2.00	0.67	0.82	1.41

mapleleaf viburnum (*Viburnum acerifolium*)	16.67	2.00	0.67	0.82	1.41
hogpeanut (*Amphicarpaea*)	16.67	2.00	0.50	0.62	1.31
hickory (*Carya*)	16.67	2.00	0.50	0.62	1.31
partridgeberry (*Mitchella repens*)	16.67	2.00	0.33	0.41	1.21
blueberry (*Vaccinium*)	16.67	2.00	0.33	0.41	1.21
barberry (*Berberis*)	16.67	2.00	0.33	0.41	1.21
unidentified moss (*unidentified moss*)	16.67	2.00	0.17	0.21	1.10
lowbush blueberry (*Vaccinium angustifolium*)	16.67	2.00	0.17	0.21	1.10
Jack in the pulpit (*Arisaema triphyllum*)	16.67	2.00	0.17	0.21	1.10

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were twenty seven species observed, based on a sample of six plots each 0.002 acres in size, representing 0.014 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The

stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.3110	0.1176 - 0.5556	Sample comparisons
Jaccard's Similarity Coefficient	0.1921	0.0625 - 0.3846	Sample comparisons
Whittaker's Similarity Coefficient	2.2400	-	Sample comparisons
Renkonen's Index (Percent Similarity)	18.44	0.85 - 59.17	Sample comparisons
Morista-Horn Similarity Index	0.2342	0.0017 - 0.8951	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

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Overstory Statistics

This report is for the stand '1-1-3' inventory (2012) data.

Name	Value
Date inventory was taken	05/21/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
58	110.000	1715.26	72.28	82.43
72	150.000	7038.18	113.32	97.39
59	170.000	2732.85	90.23	263.65
70	130.000	799.51	80.62	330.10
73	100.000	1454.07	73.98	106.17
88	120.000	2452.97	89.45	152.02

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	100.00	799.51	72.28	82.43
Maximum	170.00	7038.18	113.32	330.10
Mean	130.00	2698.81	86.65	171.96
Variance	680.00	5003164.87	227.09	10344.02
Std dev	26.08	2236.78	15.07	101.71
Std error	10.65	913.16	6.15	41.52

95% confidence interval

degrees of freedom = 5
alpha = 0.050
t-value = 2.571

95% confidence interval

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
95% c.i. mean lower limit	102.6	350.9	70.8	65.2
95% c.i. mean upper limit	157.4	5046.7	102.5	278.7
95% c.i. # plots for w/in 15%	12	202	9	103

95% c.i. # plots for w/in 10%	27	455	20	232

Interpretation of confidence interval values: Examine the number above for the Basal area at the 95 percent confidence interval. NED extimates with 95% confidence that the true mean lies between 102.6 and 157.4. Under similar conditions, about 95% of repeated samples in this stand (using the same number of plots) will contain the true mean. If the variation between the existing sample plots is representative of the whole stand, twelve plots are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Identification Data

This report is for the stand '1-1-4' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-4
Date inventory was taken	05/07/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	93.0	Basal area (sq.ft/ac)	129.1
Canopy closure (% closure)	87	Relative density (%)	92.9
Stems per unit area (stems/ac)	271.09	Shrub layer percent cover (% cover)	20
Number of plot size classes	1	Ground layer percent cover (% cover)	49

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	maple	Size class	small sawtimber
Site index species	sugar maple (*Acer saccharum*)	Year of origin	1929

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	yes
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '1-1-4' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Jack in the pulpit (*Arisaema triphyllum*)			X	
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
unidentified moss (*unidentified moss*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
butternut (*Juglans cinerea*)	X			
Canada mayflower (*Maianthemum canadense*)			X	
witchhazel (*Hamamelis*)			X	
hogpeanut (*Amphicarpaea*)			X	
hawthorn (*Crataegus*)			X	
upright sedge (*Carex stricta*)			X	
white wood aster (*Eurybia divaricata*)			X	
eastern white pine (*Pinus strobus*)	X			
marginal woodfern (*Dryopteris marginalis*)			X	
common blue violet (*Viola sororia*)			X	
Pennsylvania sedge (*Carex pensylvanica*)			X	
partridgeberry (*Mitchella repens*)			X	
starflower (*Trientalis borealis*)			X	
skunk cabbage (*Symplocarpus foetidus*)			X	
unidentified fern (*unidentified fern*)			X	
interrupted fern (*Osmunda claytoniana*)			X	
perfoliate bellwort (*Uvularia perfoliata*)			X	
strawberry (*Fragaria*)			X	
New York fern (*Thelypteris noveboracensis*)			X	
tuliptree (*Liriodendron tulipifera*)	X			
northern spicebush (*Lindera benzoin*)			X	
white ash (*Fraxinus americana*)	X	X	X	
American beech (*Fagus grandifolia*)	X	X	X	
mockernut hickory (*Carya alba*)	X			
American hornbeam (*Carpinus caroliniana*)		X	X	
sweet birch (*Betula lenta*)	X	X		

yellow birch (*Betula alleghaniensis*)	X	X		
serviceberry (*Amelanchier*)	X		X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X	X	X	
eastern hemlock (*Tsuga canadensis*)	X			
American basswood (*Tilia americana*)	X			
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)	X	X		
northern red oak (*Quercus rubra*)	X	X		
chestnut oak (*Quercus prinus*)	X	X		
white oak (*Quercus alba*)	X	X		
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)		X	X	
Virginia creeper (*Parthenocissus quinquefolia*)			X	
American elm (*Ulmus americana*)	X			
Counts	**18**	**12**	**32**	**0**

Species X Diameter

This report is for the stand '1-1-4' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	yellow birch	red maple	white ash
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	68.6	27.2	41.4	0.0	0.0
4.00 - 6.00	40.7	16.4	0.0	0.0	0.0
6.00 - 8.00	48.3	16.8	0.0	10.2	5.5
8.00 - 10.00	29.9	15.5	2.1	8.8	0.0
10.00 - 12.00	24.0	11.6	1.3	5.4	1.3
12.00 - 14.00	23.8	11.1	0.0	4.9	3.7
14.00 - 16.00	16.3	6.7	0.8	2.2	0.8
16.00 - 18.00	7.0	1.7	0.0	1.3	2.2
18.00 - 20.00	8.0	2.9	0.0	1.8	1.9
20.00 - 22.00	3.0	0.4	0.0	0.4	0.4
22.00 - 24.00	0.9	0.0	0.0	0.3	0.0
>= 24.00	0.5	0.3	0.0	0.0	0.0
Sum	271.1	110.6	45.6	35.2	15.7

Species X dbh Table (cont)

dbh range	sweet birch	American beech	chestnut oak	serviceberry	eastern hemlock
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	9.4	6.7	8.2	0.0
6.00 - 8.00	8.8	0.0	0.0	0.0	3.0
8.00 - 10.00	3.4	0.0	0.0	0.0	0.0
10.00 - 12.00	1.5	0.0	0.0	0.0	1.6
12.00 - 14.00	0.0	1.0	2.1	0.0	0.0
14.00 - 16.00	1.7	0.7	1.4	0.0	0.0
16.00 - 18.00	0.0	0.0	0.0	0.0	0.0
18.00 - 20.00	0.0	0.0	0.0	0.0	0.0

dbh range					
20.00 - 22.00	0.0	0.0	0.4	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.0	0.0
>= 24.00	0.0	0.3	0.0	0.0	0.0
Sum	15.4	11.5	10.6	8.2	4.6

Species X dbh Table (cont)

dbh range	American elm	white oak	northern red oak	butternut	tuliptree
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	3.9	0.0	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0	1.3	0.0
12.00 - 14.00	0.0	1.0	0.0	0.0	0.0
14.00 - 16.00	0.0	0.7	0.7	0.0	0.0
16.00 - 18.00	0.0	1.2	0.7	0.0	0.0
18.00 - 20.00	0.0	0.0	0.5	0.0	0.0
20.00 - 22.00	0.0	0.4	0.4	0.0	0.7
22.00 - 24.00	0.0	0.3	0.0	0.0	0.0
>= 24.00	0.0	0.0	0.0	0.0	0.0
Sum	3.9	3.5	2.2	1.3	0.7

Species X dbh Table (cont)

dbh range	American basswood	black oak	eastern white pine	mockernut hickory
< 2.00	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0	0.0
12.00 - 14.00	0.0	0.0	0.0	0.0
14.00 - 16.00	0.7	0.0	0.0	0.0
16.00 - 18.00	0.0	0.0	0.0	0.0
18.00 - 20.00	0.0	0.5	0.5	0.0
20.00 - 22.00	0.0	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.3
>= 24.00	0.0	0.0	0.0	0.0
Sum	0.7	0.5	0.5	0.3

Timber Tables

This report is for the stand '1-1-4' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)
Basal area (square feet)	129.1	50.0	24.5	15.5	6.4
percentage of stand	100.0	38.7	19.0	12.0	4.9
Stems per unit area (stems per acre)	271.1	110.6	35.2	15.7	15.4

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	white oak (*Quercus alba*)	yellow birch (*Betula alleghaniensis*)	northern red oak (*Quercus rubra*)	American beech (*Fagus grandifolia*)
Basal area (square feet)	5.5	5.5	4.5	3.6	3.6
percentage of stand	4.2	4.2	3.5	2.8	2.8
Stems per unit area (stems per acre)	10.6	3.5	45.6	2.2	11.5

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	tuliptree (*Liriodendron tulipifera*)	American elm (*Ulmus americana*)	American basswood (*Tilia americana*)	black oak (*Quercus velutina*)
Basal area (square feet)	1.8	1.8	0.9	0.9	0.9
percentage of stand	1.4	1.4	0.7	0.7	0.7
Stems per unit area (stems per acre)	4.6	0.7	3.9	0.7	0.5

Overstory only (cont)

	eastern white pine (*Pinus strobus*)	butternut (*Juglans cinerea*)	mockernut hickory (*Carya alba*)	serviceberry (*Amelanchier*)
Basal area (square feet)	0.9	0.9	0.9	0.9
percentage of stand	0.7	0.7	0.7	0.7
Stems per unit area (stems per acre)	0.5	1.3	0.3	8.2

Diameters

Overstory only

	All species	**sugar maple (*Acer saccharum*)**	**red maple (*Acer rubrum*)**	**white ash (*Fraxinus americana*)**	**sweet birch (*Betula lenta*)**
Medial dbh (inches)	13.4	12.4	13.5	15.4	10.1
Average Merchantable dbh (inches)	14.0	13.1	13.5	15.4	10.1
Quadratic mean dbh (inches)	9.3	9.1	11.3	13.5	8.7
Quadratic Average Merchantable dbh (inches)	11.7	11.3	11.3	13.5	8.7
Average dbh (inches)	8.0	8.0	10.6	12.8	8.3

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	**white oak (*Quercus alba*)**	**yellow birch (*Betula alleghaniensis*)**	**northern red oak (*Quercus rubra*)**	**American beech (*Fagus grandifolia*)**
Medial dbh (inches)	13.7	17.6	8.1	17.9	14.2
Average Merchantable dbh (inches)	15.4	17.6	11.7	17.9	17.5
Quadratic mean dbh (inches)	9.7	16.8	4.3	17.5	7.6
Quadratic Average Merchantable dbh (inches)	14.6	16.8	10.9	17.5	15.8
Average dbh (inches)	8.5	16.5	3.6	17.3	6.1

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	**tuliptree (*Liriodendron tulipifera*)**	**American elm (*Ulmus americana*)**	**American basswood (*Tilia americana*)**	**black oak (*Quercus velutina*)**
Medial dbh (inches)	8.9	21.1	6.5	15.8	18.2
Average Merchantable dbh (inches)	8.9	21.1	6.5	15.8	18.2
Quadratic mean dbh (inches)	8.5	21.1	6.5	15.8	18.2
Quadratic Average Merchantable dbh (inches)	8.5	21.1	6.5	15.8	18.2
Average dbh (inches)	8.4	21.1	6.5	15.8	18.2

Overstory only (cont)

	eastern white pine (*Pinus strobus*)	**butternut (*Juglans cinerea*)**	**mockernut hickory (*Carya alba*)**	**serviceberry (*Amelanchier*)**
Medial dbh (inches)	18.6	11.4	23.2	4.5
Average Merchantable dbh (inches)	18.6	11.4	23.2	0.0
Quadratic mean dbh (inches)	18.6	11.4	23.2	4.5
Quadratic Average Merchantable dbh (inches)	18.6	11.4	23.2	0.0
Average dbh (inches)	18.6	11.4	23.2	4.5

Structure

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)
q factor	1.23	1.19	1.16	1.16	1.25

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	white oak (*Quercus alba*)	yellow birch (*Betula alleghaniensis*)	northern red oak (*Quercus rubra*)	American beech (*Fagus grandifolia*)
q factor	1.19	1.14	1.41	1.30	1.19

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	tuliptree (*Liriodendron tulipifera*)	American elm (*Ulmus americana*)	American basswood (*Tilia americana*)	black oak (*Quercus velutina*)
q factor	1.25	1.09	0.00	0.00	0.00

Overstory only (cont)

	eastern white pine (*Pinus strobus*)	butternut (*Juglans cinerea*)	mockernut hickory (*Carya alba*)	serviceberry (*Amelanchier*)
q factor	0.00	0.00	0.00	0.00

Relative density

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)
Relative density (percent)	92.89	41.67	15.10	5.99	4.45
percentage of stand	100.00	44.87	16.25	6.45	4.79

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	white oak (*Quercus alba*)	yellow birch (*Betula alleghaniensis*)	northern red oak (*Quercus rubra*)	American beech (*Fagus grandifolia*)
Relative density (percent)	4.64	4.25	4.57	3.15	3.09
percentage of stand	5.00	4.58	4.92	3.39	3.33

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	tuliptree (*Liriodendron tulipifera*)	American elm (*Ulmus americana*)	American basswood (*Tilia americana*)	black oak (*Quercus velutina*)
Relative density (percent)	0.80	0.55	0.96	0.47	0.70
percentage of stand	0.86	0.60	1.03	0.51	0.75

Overstory only (cont)

	eastern white pine	butternut	mockernut hickory	serviceberry

	(*Pinus strobus*)	(*Juglans cinerea*)	(*Carya alba*)	(*Amelanchier*)
Relative density (percent)	0.30	0.58	0.68	0.93
percentage of stand	0.32	0.62	0.73	1.00

Volumes

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)
Sawtimber gross total (board feet/acre)	2,413	1,031	51	574	0
Sawtimber net total (board feet/acre)	2,413	1,031	51	574	0
Pulpwood gross total (cords/acre)	29	10	7	3	1
Pulpwood net total (cords/acre)	23	8	6	3	1
Gross total (cords/acre)	36	13	7	5	1
Net total (cords/acre)	29	11	6	4	1

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	white oak (*Quercus alba*)	yellow birch (*Betula alleghaniensis*)	northern red oak (*Quercus rubra*)	American beech (*Fagus grandifolia*)
Sawtimber gross total (board feet/acre)	95	257	0	105	0
Sawtimber net total (board feet/acre)	95	257	0	105	0
Pulpwood gross total (cords/acre)	1	1	1	1	1
Pulpwood net total (cords/acre)	1	1	1	1	1
Gross total (cords/acre)	1	2	1	1	1
Net total (cords/acre)	1	1	1	1	1

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	tuliptree (*Liriodendron tulipifera*)	American elm (*Ulmus americana*)	American basswood (*Tilia americana*)	black oak (*Quercus velutina*)
Sawtimber gross total (board feet/acre)	0	104	0	50	56
Sawtimber net total (board feet/acre)	0	104	0	50	56
Pulpwood gross total (cords/acre)	0	0	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0	0
Gross total (cords/acre)	0	1	0	0	0
Net total (cords/acre)	0	1	0	0	0

Overstory only (cont)

	eastern white pine	butternut	mockernut hickory	serviceberry

	(*Pinus strobus*)	(*Juglans cinerea*)	(*Carya alba*)	(*Amelanchier*)
Sawtimber gross total (board feet/acre)	0	0	89	0
Sawtimber net total (board feet/acre)	0	0	89	0
Pulpwood gross total (cords/acre)	0	0	0	0
Pulpwood net total (cords/acre)	0	0	0	0
Gross total (cords/acre)	0	0	0	0
Net total (cords/acre)	0	0	0	0

Biomass

Overstory only

	All species	**sugar maple** (*Acer saccharum*)	**red maple** (*Acer rubrum*)	**white ash** (*Fraxinus americana*)	**sweet birch** (*Betula lenta*)
Coarse root biomass (tons per acre)	39.05	16.01	7.08	4.09	1.67
Merchantable stem wood biomass (tons per acre)	127.44	51.67	23.29	13.85	5.15
Merchantable stem bark biomass (tons per acre)	26.01	10.64	4.75	2.77	1.09
Foliage biomass (tons per acre)	4.36	1.76	0.76	0.43	0.19
Aboveground biomass (tons per acre)	93.37	38.30	16.98	9.85	3.96
Total biomass (tons per acre)	132.42	54.31	24.06	13.94	5.63

Overstory only (cont)

	chestnut oak (*Quercus prinus*)	**white oak** (*Quercus alba*)	**yellow birch** (*Betula alleghaniensis*)	**northern red oak** (*Quercus rubra*)	**American beech** (*Fagus grandifolia*)
Coarse root biomass (tons per acre)	1.81	2.04	1.08	1.37	1.21
Merchantable stem wood biomass (tons per acre)	5.96	7.07	2.98	4.77	3.93
Merchantable stem bark biomass (tons per acre)	1.21	1.40	0.67	0.94	0.80
Foliage biomass (tons per acre)	0.20	0.21	0.14	0.14	0.13
Aboveground biomass (tons per acre)	4.35	4.93	2.52	3.31	2.89
Total biomass (tons per acre)	6.16	6.97	3.60	4.68	4.10

Overstory only (cont)

	eastern hemlock (*Tsuga canadensis*)	**tuliptree** (*Liriodendron tulipifera*)	**American elm** (*Ulmus americana*)	**American basswood** (*Tilia americana*)	**black oak** (*Quercus velutina*)
Coarse root biomass (tons per acre)	0.40	0.56	0.16	0.25	0.35
Merchantable stem wood biomass (tons per acre)	1.17	2.00	0.45	0.84	1.21

Merchantable stem bark biomass (tons per acre)	0.21	0.39	0.10	0.17	0.24
Foliage biomass (tons per acre)	0.12	0.06	0.02	0.03	0.04
Aboveground biomass (tons per acre)	0.84	1.36	0.39	0.59	0.84
Total biomass (tons per acre)	1.23	1.92	0.55	0.84	1.18

Overstory only (cont)

	eastern white pine (*Pinus strobus*)	butternut (*Juglans cinerea*)	mockernut hickory (*Carya alba*)	serviceberry (*Amelanchier*)
Coarse root biomass (tons per acre)	0.24	0.21	0.38	0.14
Merchantable stem wood biomass (tons per acre)	0.73	0.68	1.38	0.33
Merchantable stem bark biomass (tons per acre)	0.13	0.14	0.27	0.08
Foliage biomass (tons per acre)	0.06	0.02	0.04	0.02
Aboveground biomass (tons per acre)	0.50	0.51	0.93	0.32
Total biomass (tons per acre)	0.74	0.72	1.31	0.46

Understory Species Composition and Diversity

This report is for the stand '1-1-4' inventory (2012) data.
There are eleven plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	9277.27	85.83	90.91	27.03	56.43
red maple (*Acer rubrum*)	936.36	8.66	45.45	13.51	11.09
white ash (*Fraxinus americana*)	45.45	0.42	45.45	13.51	6.97
American beech (*Fagus grandifolia*)	272.73	2.52	27.27	8.11	5.32
white oak (*Quercus alba*)	27.27	0.25	27.27	8.11	4.18
American hornbeam (*Carpinus caroliniana*)	22.73	0.21	27.27	8.11	4.16
sweet birch (*Betula lenta*)	18.18	0.17	18.18	5.41	2.79
chestnut oak (*Quercus prinus*)	9.09	0.08	18.18	5.41	2.74
black oak (*Quercus velutina*)	145.45	1.35	9.09	2.70	2.02
black cherry (*Prunus serotina*)	40.91	0.38	9.09	2.70	1.54
northern red oak (*Quercus rubra*)	9.09	0.08	9.09	2.70	1.39
yellow birch (*Betula alleghaniensis*)	4.55	0.04	9.09	2.70	1.37

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were twelve species observed, based on a sample of eleven plots each 0.020 acres in size, representing 0.237 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.
Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.
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Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Ground Species Composition and Diversity

This report is for the stand '1-1-4' inventory (2012) data.
There are eleven plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
Canada mayflower (*Maianthemum canadense*)	63.64	9.72	10.91	15.69	12.70
sugar maple (*Acer saccharum*)	81.82	12.50	7.36	10.59	11.54
unidentified moss (*unidentified moss*)	63.64	9.72	7.73	11.11	10.42
northern spicebush (*Lindera benzoin*)	36.36	5.56	9.18	13.20	9.38
American beech (*Fagus grandifolia*)	27.27	4.17	5.91	8.50	6.33
Jack in the pulpit (*Arisaema triphyllum*)	45.45	6.94	1.64	2.35	4.65
common blue violet (*Viola sororia*)	27.27	4.17	3.45	4.97	4.57
New York fern (*Thelypteris noveboracensis*)	18.18	2.78	3.64	5.23	4.00
interrupted fern (*Osmunda claytoniana*)	9.09	1.39	3.64	5.23	3.31
hogpeanut (*Amphicarpaea*)	9.09	1.39	3.64	5.23	3.31
red maple (*Acer rubrum*)	27.27	4.17	0.55	0.78	2.48
unidentified fern (*unidentified fern*)	9.09	1.39	1.82	2.61	2.00
American hornbeam (*Carpinus caroliniana*)	18.18	2.78	0.82	1.18	1.98
Virginia creeper (*Parthenocissus quinquefolia*)	18.18	2.78	0.64	0.92	1.85
skunk cabbage (*Symplocarpus foetidus*)	18.18	2.78	0.64	0.92	1.85
mapleleaf viburnum (*Viburnum acerifolium*)	18.18	2.78	0.55	0.78	1.78
witchhazel (*Hamamelis*)	9.09	1.39	1.36	1.96	1.67
marginal woodfern (*Dryopteris marginalis*)	9.09	1.39	1.36	1.96	1.67

Species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	18.18	2.78	0.27	0.39	1.58
partridgeberry (*Mitchella repens*)	18.18	2.78	0.18	0.26	1.52
upright sedge (*Carex stricta*)	9.09	1.39	0.91	1.31	1.35
smooth Solomon's seal (*Polygonatum biflorum*)	9.09	1.39	0.91	1.31	1.35
black cherry (*Prunus serotina*)	9.09	1.39	0.91	1.31	1.35
white wood aster (*Eurybia divaricata*)	9.09	1.39	0.45	0.65	1.02
white ash (*Fraxinus americana*)	9.09	1.39	0.27	0.39	0.89
hawthorn (*Crataegus*)	9.09	1.39	0.18	0.26	0.83
eastern poison ivy (*Toxicodendron radicans*)	9.09	1.39	0.18	0.26	0.83
strawberry (*Fragaria*)	9.09	1.39	0.09	0.13	0.76
starflower (*Trientalis borealis*)	9.09	1.39	0.09	0.13	0.76
serviceberry (*Amelanchier*)	9.09	1.39	0.09	0.13	0.76
perfoliate bellwort (*Uvularia perfoliata*)	9.09	1.39	0.09	0.13	0.76
Pennsylvania sedge (*Carex pensylvanica*)	9.09	1.39	0.09	0.13	0.76

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were thirty two species observed, based on a sample of eleven plots each 0.002 acres in size, representing

0.024 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.2924	0.0000 - 0.5882	Sample comparisons
Jaccard's Similarity Coefficient	0.1815	0.0000 - 0.4167	Sample comparisons
Whittaker's Similarity Coefficient	3.8889	-	Sample comparisons
Renkonen's Index (Percent Similarity)	15.10	0.00 - 50.85	Sample comparisons
Morista-Horn Similarity Index	0.1675	0.0000 - 0.7634	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

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Overstory Statistics

This report is for the stand '1-1-4' inventory (2012) data.

Name	Value
Date inventory was taken	05/07/2012
Who took inventory	SK, CH, HG
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
67	120.000	1426.71	68.72	177.19
29	120.000	2396.03	92.08	608.31
20	130.000	3620.76	98.67	142.03
36	130.000	0.00	88.43	231.46
10	100.000	1458.08	82.55	304.14
11	140.000	2819.31	102.51	291.61
18	120.000	2762.38	85.07	240.11
46	150.000	5219.90	107.73	205.12
140	130.000	2135.73	80.29	219.72
86	120.000	2208.76	93.76	170.60
87	160.000	2496.69	121.92	391.65

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	100.00	0.00	68.72	142.03
Maximum	160.00	5219.90	121.92	608.31
Mean	129.09	2413.12	92.89	271.09
Variance	269.09	1745763.90	212.14	17486.23
Std dev	16.40	1321.27	14.57	132.24
Std error	4.95	398.38	4.39	39.87

95% confidence interval

degrees of freedom = 10

alpha = 0.050
t-value = 2.229

95% confidence interval

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
95% c.i. mean lower limit	118.1	1525.2	83.1	182.2
95% c.i. mean upper limit	140.1	3301.0	102.7	359.9
95% c.i. # plots for w/in 15%	4	67	6	53
95% c.i. # plots for w/in 10%	9	149	13	119

Interpretation of confidence interval values: Examine the number above for the Basal area at the 95 percent confidence interval. NED extimates with 95% confidence that the true mean lies between 118.1 and 140.1. Under similar conditions, about 95% of repeated samples in this stand (using the same number of plots) will contain the true mean. If the variation between the existing sample plots is representative of the whole stand, four plots are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Identification Data

This report is for the stand '1-1-7' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-7
Date inventory was taken	05/28/2012

Site Characteristics

Name	Value

Measures

Name	Value		Name	Value
Stand area (ac)	3.3		Basal area (sq.ft/ac)	60.0
Canopy closure (% closure)	70		Relative density (%)	48.0
Stems per unit area (stems/ac)	169.95		Shrub layer percent cover (% cover)	0
Number of plot size classes	1		Ground layer percent cover (% cover)	77

Stand Characteristics

Name	Value		Name	Value
Land cover type	Broadleaf forest		Site index	60
Forest type	maple		Size class	small sawtimber
Site index species	white oak (*Quercus alba*)		Year of origin	1904

Features

Name	Value		Name	Value
Percent area riparian (% cover)	0		Contains a wetland	no
Percent area wetland (% cover)	0		Contains a riparian	no

Stream	absent	Old growth	no
Percent open plots (% plots)	0	Rare	absent

Species List

This report is for the stand '1-1-7' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Canada mayflower (*Maianthemum canadense*)			X	
hayscented fern (*Dennstaedtia*)			X	
starflower (*Trientalis borealis*)			X	
eastern redcedar (*Juniperus virginiana*)		X		
New York fern (*Thelypteris noveboracensis*)			X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X			
northern red oak (*Quercus rubra*)		X		
chestnut oak (*Quercus prinus*)		X		
white oak (*Quercus alba*)	X			
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**3**	**4**	**6**	**0**

Species X Diameter

This report is for the stand '1-1-7' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	red maple	white oak
< 2.00	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0
4.00 - 6.00	86.6	86.6	0.0	0.0
6.00 - 8.00	32.6	32.6	0.0	0.0
8.00 - 10.00	28.6	0.0	28.6	0.0
10.00 - 12.00	18.0	0.0	18.0	0.0
12.00 - 14.00	0.0	0.0	0.0	0.0
14.00 - 16.00	0.0	0.0	0.0	0.0
16.00 - 18.00	0.0	0.0	0.0	0.0
18.00 - 20.00	0.0	0.0	0.0	0.0
20.00 - 22.00	0.0	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.0
24.00 - 26.00	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0	0.0
28.00 - 30.00	2.3	2.3	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0
>= 32.00	1.7	0.0	0.0	1.7
Sum	169.9	121.6	46.6	1.7

Timber Tables

This report is for the stand '1-1-7' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)
Basal area (square feet)	60.0	30.0	20.0	10.0
percentage of stand	100.0	50.0	33.3	16.7
Stems per unit area (stems per acre)	169.9	121.6	46.6	1.7

Diameters

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)
Medial dbh (inches)	15.1	13.4	9.1	32.4
Average Merchantable dbh (inches)	17.2	17.8	9.1	32.4
Quadratic mean dbh (inches)	8.0	6.7	8.9	32.4
Quadratic Average Merchantable dbh (inches)	10.5	10.2	8.9	32.4
Average dbh (inches)	6.9	5.8	8.8	32.4

Structure

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)
q factor	1.15	1.16	1.26	0.00

Relative density

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)

Relative density (percent)	47.95	26.54	14.24	7.18
percentage of stand	100.00	55.34	29.69	14.97

Volumes

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)
Sawtimber gross total (board feet/acre)	0	0	0	0
Sawtimber net total (board feet/acre)	0	0	0	0
Pulpwood gross total (cords/acre)	15	6	5	4
Pulpwood net total (cords/acre)	12	5	4	3
Gross total (cords/acre)	15	6	5	4
Net total (cords/acre)	12	5	4	3

Biomass

Overstory only

	All species	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)	white oak (*Quercus alba*)
Coarse root biomass (tons per acre)	19.37	9.43	5.09	4.85
Merchantable stem wood biomass (tons per acre)	62.92	29.50	15.46	17.96
Merchantable stem bark biomass (tons per acre)	12.89	6.17	3.31	3.41
Foliage biomass (tons per acre)	2.13	1.08	0.58	0.47
Aboveground biomass (tons per acre)	46.34	22.43	12.08	11.82
Total biomass (tons per acre)	65.71	31.86	17.17	16.68

Understory Species Composition and Diversity

This report is for the stand '1-1-7' inventory (2012) data.
There are one plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	1600.00	88.89	100.00	25.00	56.94
northern red oak (*Quercus rubra*)	100.00	5.56	100.00	25.00	15.28
eastern redcedar (*Juniperus virginiana*)	50.00	2.78	100.00	25.00	13.89
chestnut oak (*Quercus prinus*)	50.00	2.78	100.00	25.00	13.89

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were four species observed, based on a sample of one plots each 0.020 acres in size, representing 0.604 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by four species representing 100.0 percent of the total number of species found in all plots. The core flora is listed below.

- sugar maple (*Acer saccharum*)
- northern red oak (*Quercus rubra*)
- eastern redcedar (*Juniperus virginiana*)
- chestnut oak (*Quercus prinus*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.

Coile, T.S. 1938. Forest classification: classification of forest types with special reference to ground vegetation. J. For. 36:1062-1066.

Daubenmire, R. F. 1976. The use of vegetation in assessing the productivity of forest lands. Bot. Rev. 42:115-143.

Monserud, R.A. 1984. Problems with site index: an opinionated review. p. 167-190 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kuchler, A.W. 1964. The potential natural vegetation of the conterminous United States. Am Geogr. Soc., Spec. Publ. No. 36. 154 pp.

Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

NED report for Weldon Brook Wildlife Management Area Generated: 09/07/2012 09:38
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Ground Species Composition and Diversity

This report is for the stand '1-1-7' inventory (2012) data.
There are one plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
New York fern (*Thelypteris noveboracensis*)	100.00	16.67	30.00	38.96	27.81
hayscented fern (*Dennstaedtia*)	100.00	16.67	30.00	38.96	27.81
Canada mayflower (*Maianthemum canadense*)	100.00	16.67	10.00	12.99	14.83
starflower (*Trientalis borealis*)	100.00	16.67	4.00	5.19	10.93
Virginia creeper (*Parthenocissus quinquefolia*)	100.00	16.67	2.00	2.60	9.63
sugar maple (*Acer saccharum*)	100.00	16.67	1.00	1.30	8.98

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the
variety and abundance of species in different areas, and most measures of diversity are related to species
richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of
ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample
size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were six species observed, based on a sample of one plots each 0.002 acres in size, representing 0.060

percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Jaccard's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Whittaker's Similarity Coefficient	0.0000	-	Sample comparisons
Renkonen's Index (Percent Similarity)	0.00	0.00 - 0.00	Sample comparisons
Morista-Horn Similarity Index	0.0000	0.0000 - 0.0000	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Coile, T.S. 1938. Forest classification: classification of forest types with special reference to ground vegetation. J. For. 36:1062-1066.

Daubenmire, R. F. 1976. The use of vegetation in assessing the productivity of forest lands. Bot. Rev. 42:115-143.

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Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kuchler, A.W. 1964. The potential natural vegetation of the conterminous United States. Am Geogr. Soc., Spec. Publ. No. 36. 154 pp.

Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Overstory Statistics

This report is for the stand '1-1-7' inventory (2012) data.

Name	Value
Date inventory was taken	05/28/2012
Who took inventory	SK, HG, DB, CH
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
89	60.000	0.00	47.95	169.95

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	60.00	0.00	47.95	169.95
Maximum	60.00	0.00	47.95	169.95
Mean	60.00	0.00	47.95	169.95
Variance	0.00	0.00	0.00	0.00
Std dev	0.00	0.00	0.00	0.00
Std error	0.00	0.00	0.00	0.00

Confidence interval statistics cannot be computed for a stand with a single plot.

Identification Data

This report is for the stand '1-1-8' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-8
Date inventory was taken	05/28/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	4.0	Basal area (sq.ft/ac)	120.0
Canopy closure (% closure)	90	Relative density (%)	74.4
Stems per unit area (stems/ac)	108.21	Shrub layer percent cover (% cover)	0
Number of plot size classes	1	Ground layer percent cover (% cover)	67

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	other hardwoods	Size class	small sawtimber
Site index species	white ash (*Fraxinus americana*)	Year of origin	1922

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '1-1-8' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Canada mayflower (*Maianthemum canadense*)			X	
witchhazel (*Hamamelis*)			X	
wild sarsaparilla (*Aralia nudicaulis*)			X	
Indian cucumber (*Medeola virginiana*)			X	
perfoliate bellwort (*Uvularia perfoliata*)			X	
white ash (*Fraxinus americana*)	X			
pignut hickory (*Carya glabra*)	X			
hickory (*Carya*)		X		
American hornbeam (*Carpinus caroliniana*)			X	
sweet birch (*Betula lenta*)	X			
barberry (*Berberis*)			X	
sugar maple (*Acer saccharum*)		X	X	
red maple (*Acer rubrum*)		X		
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)		X		
northern red oak (*Quercus rubra*)	X			
white oak (*Quercus alba*)		X		
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)		X		
bigtooth aspen (*Populus grandidentata*)	X			
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**5**	**6**	**11**	**0**

Species X Diameter

This report is for the stand '1-1-8' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sweet birch	white ash	pignut hickory	bigtooth aspen
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0	0.0
8.00 - 10.00	24.2	24.2	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0	0.0	0.0
12.00 - 14.00	10.4	0.0	0.0	10.4	0.0
14.00 - 16.00	43.5	9.0	18.4	8.8	0.0
16.00 - 18.00	25.1	5.7	7.2	0.0	12.3
>= 18.00	5.0	0.0	0.0	0.0	0.0
Sum	108.2	38.9	25.6	19.2	12.3

Species X dbh Table (cont)

dbh range	northern red oak
< 2.00	0.0
2.00 - 4.00	0.0
4.00 - 6.00	0.0
6.00 - 8.00	0.0
8.00 - 10.00	0.0
10.00 - 12.00	0.0
12.00 - 14.00	0.0
14.00 - 16.00	7.3
16.00 - 18.00	0.0
>= 18.00	5.0
Sum	12.2

Timber Tables

This report is for the stand '1-1-8' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)	northern red oak (*Quercus rubra*)	bigtooth aspen (*Populus grandidentata*)
Basal area (square feet)	120.0	30.0	30.0	20.0	20.0
percentage of stand	100.0	25.0	25.0	16.7	16.7
Stems per unit area (stems per acre)	108.2	25.6	38.9	12.2	12.3

Overstory only (cont)

	pignut hickory (*Carya glabra*)
Basal area (square feet)	20.0
percentage of stand	16.7
Stems per unit area (stems per acre)	19.2

Diameters

Overstory only

	All species	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)	northern red oak (*Quercus rubra*)	bigtooth aspen (*Populus grandidentata*)
Medial dbh (inches)	15.2	14.7	13.6	17.6	17.3
Average Merchantable dbh (inches)	15.2	14.7	13.6	17.6	17.3
Quadratic mean dbh (inches)	14.3	14.7	11.9	17.3	17.3
Quadratic Average Merchantable dbh (inches)	14.3	14.7	11.9	17.3	17.3
Average dbh (inches)	13.9	14.6	11.3	17.2	17.3

Overstory only (cont)

	pignut hickory

	(*Carya glabra*)
Medial dbh (inches)	13.9
Average Merchantable dbh (inches)	13.9
Quadratic mean dbh (inches)	13.8
Quadratic Average Merchantable dbh (inches)	13.8
Average dbh (inches)	13.8

Structure

Overstory only

	All species	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)	northern red oak (*Quercus rubra*)	bigtooth aspen (*Populus grandidentata*)
q factor	1.16	1.60	1.18	1.13	0.00

Overstory only (cont)

	pignut hickory (*Carya glabra*)
q factor	1.17

Relative density

Overstory only

	All species	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)	northern red oak (*Quercus rubra*)	bigtooth aspen (*Populus grandidentata*)
Relative density (percent)	74.44	11.30	18.17	17.33	11.44
percentage of stand	100.00	15.17	24.41	23.29	15.36

Overstory only (cont)

	pignut hickory (*Carya glabra*)
Relative density (percent)	16.21
percentage of stand	21.77

Volumes

Overstory only

	All species	white ash (*Fraxinus americana*)	sweet birch (*Betula lenta*)	northern red oak (*Quercus rubra*)	bigtooth aspen (*Populus grandidentata*)
Sawtimber gross total (board feet/acre)	2,945	1,324	0	1,621	0

Sawtimber net total (board feet/acre)	2,945	1,324	0	1,621	0
Pulpwood gross total (cords/acre)	32	7	8	4	7
Pulpwood net total (cords/acre)	25	5	7	3	5
Gross total (cords/acre)	38	10	8	7	7
Net total (cords/acre)	30	8	7	6	5

Overstory only (cont)

	pignut hickory (*Carya glabra*)
Sawtimber gross total (board feet/acre)	0
Sawtimber net total (board feet/acre)	0
Pulpwood gross total (cords/acre)	6
Pulpwood net total (cords/acre)	5
Gross total (cords/acre)	6
Net total (cords/acre)	5

Biomass

Overstory only

	All species	**white ash (*Fraxinus americana*)**	**sweet birch (*Betula lenta*)**	**northern red oak (*Quercus rubra*)**	**bigtooth aspen (*Populus grandidentata*)**
Coarse root biomass (tons per acre)	35.94	7.84	8.70	7.49	5.12
Merchantable stem wood biomass (tons per acre)	121.68	26.48	28.74	25.99	17.73
Merchantable stem bark biomass (tons per acre)	24.38	5.31	5.84	5.13	3.50
Foliage biomass (tons per acre)	3.77	0.82	0.93	0.77	0.53
Aboveground biomass (tons per acre)	86.56	18.87	20.88	18.10	12.36
Total biomass (tons per acre)	122.50	26.70	29.57	25.60	17.48

Overstory only (cont)

	pignut hickory (*Carya glabra*)
Coarse root biomass (tons per acre)	6.80
Merchantable stem wood biomass (tons per acre)	22.73
Merchantable stem bark biomass (tons per acre)	4.59
Foliage biomass (tons per acre)	0.72
Aboveground biomass (tons per acre)	16.35
Total biomass (tons per acre)	23.15

Understory Species Composition and Diversity

This report is for the stand '1-1-8' inventory (2012) data.
There are one plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	1100.00	66.67	100.00	16.67	41.67
hickory (*Carya*)	250.00	15.15	100.00	16.67	15.91
white oak (*Quercus alba*)	100.00	6.06	100.00	16.67	11.36
black cherry (*Prunus serotina*)	100.00	6.06	100.00	16.67	11.36
red maple (*Acer rubrum*)	50.00	3.03	100.00	16.67	9.85
black oak (*Quercus velutina*)	50.00	3.03	100.00	16.67	9.85

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were six species observed, based on a sample of one plots each 0.020 acres in size, representing 0.501 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by six species representing 100.0 percent of the total number of species found in all plots. The core flora is listed below.

- sugar maple (*Acer saccharum*)
- hickory (*Carya*)
- white oak (*Quercus alba*)
- black cherry (*Prunus serotina*)
- red maple (*Acer rubrum*)
- black oak (*Quercus velutina*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.

Coile, T.S. 1938. Forest classification: classification of forest types with special reference to ground vegetation. J. For. 36:1062-1066.

Daubenmire, R. F. 1976. The use of vegetation in assessing the productivity of forest lands. Bot. Rev. 42:115-143.

Monserud, R.A. 1984. Problems with site index: an opinioned review. p. 167-190 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Ground Species Composition and Diversity

This report is for the stand '1-1-8' inventory (2012) data.
There are one plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
American hornbeam (*Carpinus caroliniana*)	100.00	9.09	25.00	27.17	18.13
mapleleaf viburnum (*Viburnum acerifolium*)	100.00	9.09	20.00	21.74	15.42
wild sarsaparilla (*Aralia nudicaulis*)	100.00	9.09	15.00	16.30	12.70
Virginia creeper (*Parthenocissus quinquefolia*)	100.00	9.09	10.00	10.87	9.98
perfoliate bellwort (*Uvularia perfoliata*)	100.00	9.09	5.00	5.43	7.26
Canada mayflower (*Maianthemum canadense*)	100.00	9.09	5.00	5.43	7.26
witchhazel (*Hamamelis*)	100.00	9.09	3.00	3.26	6.18
eastern poison ivy (*Toxicodendron radicans*)	100.00	9.09	3.00	3.26	6.18
sugar maple (*Acer saccharum*)	100.00	9.09	2.00	2.17	5.63
Indian cucumber (*Medeola virginiana*)	100.00	9.09	2.00	2.17	5.63
barberry (*Berberis*)	100.00	9.09	2.00	2.17	5.63

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots
  where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the
  total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical
  projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or
  basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for
  relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were eleven species observed, based on a sample of one plots each 0.002 acres in size, representing 0.050 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Jaccard's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Whittaker's Similarity Coefficient	0.0000	-	Sample comparisons
Renkonen's Index (Percent Similarity)	0.00	0.00 - 0.00	Sample comparisons
Morista-Horn Similarity Index	0.0000	0.0000 - 0.0000	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements

and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kuchler, A.W. 1964. The potential natural vegetation of the conterminous United States. Am Geogr. Soc., Spec. Publ. No. 36. 154 pp.

Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Overstory Statistics

This report is for the stand '1-1-8' inventory (2012) data.

Name	Value
Date inventory was taken	05/28/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
103	120.000	2945.43	74.44	108.21

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	120.00	2945.43	74.44	108.21
Maximum	120.00	2945.43	74.44	108.21
Mean	120.00	2945.43	74.44	108.21
Variance	0.00	0.00	0.00	0.00
Std dev	0.00	0.00	0.00	0.00
Std error	0.00	0.00	0.00	0.00

Confidence interval statistics cannot be computed for a stand with a single plot.

Identification Data

This report is for the stand '1-1-9' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	1-1-9
Date inventory was taken	05/26/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	1.2	Basal area (sq.ft/ac)	210.0
Canopy closure (% closure)	95	Relative density (%)	139.9
Stems per unit area (stems/ac)	337.22	Shrub layer percent cover (% cover)	0
Number of plot size classes	1	Ground layer percent cover (% cover)	57

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	oak northern pine	Size class	small sawtimber
Site index species	eastern white pine (*Pinus strobus*)	Year of origin	1923

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '1-1-9' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
eastern white pine (*Pinus strobus*)	X			
American hornbeam (*Carpinus caroliniana*)		X		
sugar maple (*Acer saccharum*)		X		
red maple (*Acer rubrum*)	X	X		
black oak (*Quercus velutina*)		X		
northern red oak (*Quercus rubra*)		X		
chestnut oak (*Quercus prinus*)	X	X	X	
white oak (*Quercus alba*)		X		
lowbush blueberry (*Vaccinium angustifolium*)			X	
mapleleaf viburnum (*Viburnum acerifolium*)			X	
Counts	**3**	**7**	**3**	**0**

Species X Diameter

This report is for the stand '1-1-9' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	chestnut oak	red maple	eastern white pine
< 2.00	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0
4.00 - 6.00	83.0	0.0	83.0	0.0
6.00 - 8.00	61.1	61.1	0.0	0.0
8.00 - 10.00	19.9	19.9	0.0	0.0
10.00 - 12.00	63.6	33.3	0.0	30.3
12.00 - 14.00	53.1	43.0	0.0	10.1
14.00 - 16.00	35.2	9.2	0.0	26.0
16.00 - 18.00	13.5	7.0	0.0	6.5
18.00 - 20.00	4.9	4.9	0.0	0.0
20.00 - 22.00	0.0	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0	0.0
>= 24.00	3.0	0.0	0.0	3.0
Sum	337.2	178.4	83.0	75.8

Timber Tables

This report is for the stand '1-1-9' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)
Basal area (square feet)	210.0	120.0	80.0	10.0
percentage of stand	100.0	57.1	38.1	4.8
Stems per unit area (stems per acre)	337.2	178.4	75.8	83.0

Diameters

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)
Medial dbh (inches)	13.0	12.4	15.1	4.7
Average Merchantable dbh (inches)	13.5	12.4	15.1	0.0
Quadratic mean dbh (inches)	10.7	11.1	13.9	4.7
Quadratic Average Merchantable dbh (inches)	12.0	11.1	13.9	0.0
Average dbh (inches)	9.9	10.7	13.6	4.7

Structure

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)
q factor	1.21	1.24	1.19	0.00

Relative density

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)

Relative density (percent)	139.88	101.23	28.65	10.00
percentage of stand	100.00	72.37	20.48	7.15

Volumes

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)
Sawtimber gross total (board feet/acre)	0	0	0	0
Sawtimber net total (board feet/acre)	0	0	0	0
Pulpwood gross total (cords/acre)	62	36	26	0
Pulpwood net total (cords/acre)	50	29	21	0
Gross total (cords/acre)	62	36	26	0
Net total (cords/acre)	50	29	21	0

Biomass

Overstory only

	All species	chestnut oak (*Quercus prinus*)	eastern white pine (*Pinus strobus*)	red maple (*Acer rubrum*)
Coarse root biomass (tons per acre)	59.57	38.65	18.85	2.07
Merchantable stem wood biomass (tons per acre)	188.41	125.63	57.88	4.91
Merchantable stem bark biomass (tons per acre)	37.51	25.79	10.50	1.22
Foliage biomass (tons per acre)	9.66	4.19	5.17	0.29
Aboveground biomass (tons per acre)	137.38	92.57	40.05	4.76
Total biomass (tons per acre)	196.96	131.22	58.90	6.84

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Understory Species Composition and Diversity

This report is for the stand '1-1-9' inventory (2012) data.
There are one plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
chestnut oak (*Quercus prinus*)	6950.00	86.34	100.00	14.29	50.31
black oak (*Quercus velutina*)	450.00	5.59	100.00	14.29	9.94
red maple (*Acer rubrum*)	300.00	3.73	100.00	14.29	9.01
American hornbeam (*Carpinus caroliniana*)	200.00	2.48	100.00	14.29	8.39
white oak (*Quercus alba*)	50.00	0.62	100.00	14.29	7.45
sugar maple (*Acer saccharum*)	50.00	0.62	100.00	14.29	7.45
northern red oak (*Quercus rubra*)	50.00	0.62	100.00	14.29	7.45

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were seven species observed, based on a sample of one plots each 0.020 acres in size, representing 1.667 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by seven species representing 100.0 percent of the total number of species found in all plots. The core flora is listed below.

- chestnut oak (*Quercus prinus*)
- black oak (*Quercus velutina*)
- red maple (*Acer rubrum*)
- American hornbeam (*Carpinus caroliniana*)
- white oak (*Quercus alba*)
- sugar maple (*Acer saccharum*)
- northern red oak (*Quercus rubra*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. *Forest Ecology*, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

Carmean, W. H. 1996. *Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario*. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.

Coile, T.S. 1938. *Forest classification: classification of forest types with special reference to ground vegetation*. J. For. 36:1062-1066.

Daubenmire, R. F. 1976. *The use of vegetation in assessing the productivity of forest lands*. Bot. Rev. 42:115-143.

Monserud, R.A. 1984. *Problems with site index: an opinionated review*. p. 167-190 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kotar, J. and Coffman, M. 1984. *Habitat-type classification system in Michigan and Wisconsin*. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Ground Species Composition and Diversity

This report is for the stand '1-1-9' inventory (2012) data.
There are one plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
lowbush blueberry (*Vaccinium angustifolium*)	100.00	33.33	40.00	70.18	51.75
chestnut oak (*Quercus prinus*)	100.00	33.33	15.00	26.32	29.82
mapleleaf viburnum (*Viburnum acerifolium*)	100.00	33.33	2.00	3.51	18.42

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the
variety and abundance of species in different areas, and most measures of diversity are related to species
richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of
ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample
size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were three species observed, based on a sample of one plots each 0.002 acres in size, representing 0.167
percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in
all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Jaccard's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Whittaker's Similarity Coefficient	0.0000	-	Sample comparisons
Renkonen's Index (Percent Similarity)	0.00	0.00 - 0.00	Sample comparisons
Morista-Horn Similarity Index	0.0000	0.0000 - 0.0000	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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File name: C:\archives\Sussex\Weldon Brook WMA\data.mdb

Overstory Statistics

This report is for the stand '1-1-9' inventory (2012) data.

Name	Value
Date inventory was taken	05/26/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
1	210.000	0.00	139.88	337.22

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	210.00	0.00	139.88	337.22
Maximum	210.00	0.00	139.88	337.22
Mean	210.00	0.00	139.88	337.22
Variance	0.00	0.00	0.00	0.00
Std dev	0.00	0.00	0.00	0.00
Std error	0.00	0.00	0.00	0.00

Confidence interval statistics cannot be computed for a stand with a single plot.

Identification Data

This report is for the stand '2-1-1' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	2-1-1
Date inventory was taken	06/04/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	40.5	Basal area (sq.ft/ac)	92.5
Canopy closure (% closure)	68	Relative density (%)	74.4
Stems per unit area (stems/ac)	136.32	Shrub layer percent cover (% cover)	0
Number of plot size classes	2	Ground layer percent cover (% cover)	39

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	oak	Size class	small sawtimber
Site index species	northern red oak (*Quercus rubra*)	Year of origin	1911

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '2-1-1' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
unidentified Tree, broadleaf (*unidentified Tree, broadleaf*)	X			
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
unidentified moss (*unidentified moss*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
wild sarsaparilla (*Aralia nudicaulis*)			X	
Pennsylvania sedge (*Carex pensylvanica*)			X	
white ash (*Fraxinus americana*)		X		
American beech (*Fagus grandifolia*)		X		
hickory (*Carya*)		X	X	
sweet birch (*Betula lenta*)	X	X		
serviceberry (*Amelanchier*)		X	X	
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X	X		
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)	X			
northern red oak (*Quercus rubra*)	X	X	X	
chestnut oak (*Quercus prinus*)	X	X	X	
white oak (*Quercus alba*)	X	X		
hophornbeam (*Ostrya virginiana*)		X	X	
lowbush blueberry (*Vaccinium angustifolium*)			X	
mapleleaf viburnum (*Viburnum acerifolium*)			X	
black cherry (*Prunus serotina*)		X		
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**8**	**12**	**15**	**0**

Species X Diameter

This report is for the stand '2-1-1' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	chestnut oak	northern red oak	black oak
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	37.4	37.4	0.0	0.0	0.0
4.00 - 6.00	17.0	0.0	17.0	0.0	0.0
6.00 - 8.00	19.1	19.1	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0	0.0
10.00 - 12.00	15.8	3.8	12.0	0.0	0.0
12.00 - 14.00	10.8	0.0	8.4	2.4	0.0
14.00 - 16.00	16.6	0.0	8.2	0.0	0.0
16.00 - 18.00	6.3	0.0	1.4	0.0	1.5
18.00 - 20.00	3.9	0.0	2.8	1.2	0.0
20.00 - 22.00	5.1	1.0	0.0	3.1	1.0
22.00 - 24.00	3.6	0.9	0.0	0.9	1.8
>= 24.00	0.8	0.0	0.0	0.8	0.0
Sum	136.3	62.2	49.8	8.3	4.3

Species X dbh Table (cont)

dbh range	white oak	sweet birch	red maple
< 2.00	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0
12.00 - 14.00	0.0	0.0	0.0
14.00 - 16.00	2.3	2.2	3.8
16.00 - 18.00	1.7	1.6	0.0
18.00 - 20.00	0.0	0.0	0.0

20.00 - 22.00	0.0	0.0	0.0
22.00 - 24.00	0.0	0.0	0.0
>= 24.00	0.0	0.0	0.0
Sum	4.0	3.9	3.8

Timber Tables

This report is for the stand '2-1-1' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sugar maple (*Acer saccharum*)	black oak (*Quercus velutina*)
Basal area (square feet)	92.5	35.0	17.5	15.0	10.0
percentage of stand	100.0	37.8	18.9	16.2	10.8
Stems per unit area (stems per acre)	136.3	49.8	8.3	62.2	4.3

Overstory only (cont)

	white oak (*Quercus alba*)	sweet birch (*Betula lenta*)	red maple (*Acer rubrum*)
Basal area (square feet)	5.0	5.0	5.0
percentage of stand	5.4	5.4	5.4
Stems per unit area (stems per acre)	4.0	3.9	3.8

Diameters

Overstory only

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sugar maple (*Acer saccharum*)	black oak (*Quercus velutina*)
Medial dbh (inches)	15.8	13.6	20.6	12.1	20.9
Average Merchantable dbh (inches)	16.4	14.2	20.6	13.8	20.9
Quadratic mean dbh (inches)	11.2	11.4	19.7	6.6	20.5
Quadratic Average Merchantable dbh (inches)	14.0	13.5	19.7	9.6	20.5
Average dbh (inches)	9.5	10.5	19.3	5.6	20.4

Overstory only (cont)

	white oak (*Quercus alba*)	sweet birch (*Betula lenta*)	red maple (*Acer rubrum*)
Medial dbh (inches)	15.2	15.6	15.4

Average Merchantable dbh (inches)	15.2	15.6	15.4
Quadratic mean dbh (inches)	15.1	15.4	15.4
Quadratic Average Merchantable dbh (inches)	15.1	15.4	15.4
Average dbh (inches)	15.1	15.4	15.4

Structure

Overstory only

	All species	**chestnut oak** (*Quercus prinus*)	**northern red oak** (*Quercus rubra*)	**sugar maple** (*Acer saccharum*)	**black oak** (*Quercus velutina*)
q factor	1.15	1.12	1.12	1.18	1.10

Overstory only (cont)

	white oak (*Quercus alba*)	**sweet birch** (*Betula lenta*)	**red maple** (*Acer rubrum*)
q factor	1.16	1.11	1.09

Relative density

Overstory only

	All species	**chestnut oak** (*Quercus prinus*)	**northern red oak** (*Quercus rubra*)	**sugar maple** (*Acer saccharum*)	**black oak** (*Quercus velutina*)
Relative density (percent)	74.42	29.10	15.00	13.23	7.57
percentage of stand	100.00	39.10	20.16	17.78	10.17

Overstory only (cont)

	white oak (*Quercus alba*)	**sweet birch** (*Betula lenta*)	**red maple** (*Acer rubrum*)
Relative density (percent)	3.98	2.77	2.77
percentage of stand	5.35	3.72	3.72

Volumes

Overstory only

	All species	**chestnut oak** (*Quercus prinus*)	**northern red oak** (*Quercus rubra*)	**sugar maple** (*Acer saccharum*)	**black oak** (*Quercus velutina*)
Sawtimber gross total (board feet/acre)	2,995	889	1,127	0	858
Sawtimber net total (board feet/acre)	2,995	889	1,127	0	858
Pulpwood gross total (cords/acre)	20	8	3	3	1
Pulpwood net total (cords/acre)	16	6	3	3	1
Gross total (cords/acre)	28	11	6	3	3

| Net total (cords/acre) | 23 | 8 | 5 | 3 | 3 |

Overstory only (cont)

	white oak (*Quercus alba*)	sweet birch (*Betula lenta*)	red maple (*Acer rubrum*)
Sawtimber gross total (board feet/acre)	122	0	0
Sawtimber net total (board feet/acre)	122	0	0
Pulpwood gross total (cords/acre)	1	2	2
Pulpwood net total (cords/acre)	1	1	1
Gross total (cords/acre)	2	2	2
Net total (cords/acre)	1	1	1

Biomass

Overstory only

	All species	chestnut oak (*Quercus prinus*)	northern red oak (*Quercus rubra*)	sugar maple (*Acer saccharum*)	black oak (*Quercus velutina*)
Coarse root biomass (tons per acre)	32.19	11.71	7.00	4.63	4.03
Merchantable stem wood biomass (tons per acre)	108.65	38.72	24.77	14.45	14.29
Merchantable stem bark biomass (tons per acre)	21.79	7.87	4.83	3.03	2.79
Foliage biomass (tons per acre)	3.40	1.25	0.71	0.53	0.41
Aboveground biomass (tons per acre)	77.45	28.10	16.96	11.01	9.76
Total biomass (tons per acre)	109.64	39.81	23.96	15.64	13.79

Overstory only (cont)

	white oak (*Quercus alba*)	sweet birch (*Betula lenta*)	red maple (*Acer rubrum*)
Coarse root biomass (tons per acre)	1.77	1.53	1.53
Merchantable stem wood biomass (tons per acre)	6.01	5.21	5.20
Merchantable stem bark biomass (tons per acre)	1.20	1.04	1.04
Foliage biomass (tons per acre)	0.18	0.16	0.16
Aboveground biomass (tons per acre)	4.26	3.68	3.68
Total biomass (tons per acre)	6.03	5.21	5.20

Understory Species Composition and Diversity

This report is for the stand '2-1-1' inventory (2012) data.
There are four plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
chestnut oak (*Quercus prinus*)	1400.00	43.08	75.00	11.54	27.31
northern red oak (*Quercus rubra*)	725.00	22.31	100.00	15.38	18.85
sugar maple (*Acer saccharum*)	550.00	16.92	75.00	11.54	14.23
hickory (*Carya*)	162.50	5.00	100.00	15.38	10.19
white oak (*Quercus alba*)	75.00	2.31	75.00	11.54	6.92
white ash (*Fraxinus americana*)	112.50	3.46	50.00	7.69	5.58
black cherry (*Prunus serotina*)	37.50	1.15	50.00	7.69	4.42
hophornbeam (*Ostrya virginiana*)	100.00	3.08	25.00	3.85	3.46
serviceberry (*Amelanchier*)	37.50	1.15	25.00	3.85	2.50
American beech (*Fagus grandifolia*)	25.00	0.77	25.00	3.85	2.31
sweet birch (*Betula lenta*)	12.50	0.38	25.00	3.85	2.12
red maple (*Acer rubrum*)	12.50	0.38	25.00	3.85	2.12

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were twelve species observed, based on a sample of four plots each 0.020 acres in size, representing 0.198 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by two species representing 16.7 percent of the total number of species found in all plots. The core flora is listed below.

- northern red oak (*Quercus rubra*)
- hickory (*Carya*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

Carmean, W. H. 1996. Site-quality evaluation, site-quality maintenance, and site-specific management for forest land in northwest Ontario. Ontario Ministry Nat. Res., Northwest Sci. and Technology Unit, NWST Tech. Report TR-105, Thunder Bay, ON. 121 pp.

Coile, T.S. 1938. Forest classification: classification of forest types with special reference to ground vegetation. J. For. 36:1062-1066.

Daubenmire, R. F. 1976. The use of vegetation in assessing the productivity of forest lands. Bot. Rev. 42:115-143.

Monserud, R.A. 1984. Problems with site index: an opinionated review. p. 167-190 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

Kotar, J. and Coffman, M. 1984. Habitat-type classification system in Michigan and Wisconsin. p. 100-113 in Bockheim, J.G, Ed. Proc. Symposium: Forest Land Classification: Experience, Problems, Perspectives. NCR-102 North Central For. Soils Comm., Soc. Am. For., USDA For. Serv. And USDA Conserv. Serv., Madison, Wisc.

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Rowe, J. S. 1969. Plant community as a landscape feature. In Greenidge, K.N.H., Ed. Essays in Plant Geography and Ecology. Nova Scotia Museum, Halifax.

Spies, T.A., and Barnes, B.V. 1985. Ecological species groups of upland northern hardwood-hemlock forest ecoystems of the Sylvania Recreation Area, Upper Peninsula of Michigan. Can. J. For. Res. 15:961-972.

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Ground Species Composition and Diversity

This report is for the stand '2-1-1' inventory (2012) data.
There are four plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
lowbush blueberry (*Vaccinium angustifolium*)	50.00	9.09	16.25	21.04	15.06
mapleleaf viburnum (*Viburnum acerifolium*)	50.00	9.09	13.75	17.80	13.45
serviceberry (*Amelanchier*)	75.00	13.64	10.00	12.94	13.29
hickory (*Carya*)	50.00	9.09	12.75	16.50	12.80
chestnut oak (*Quercus prinus*)	25.00	4.55	7.00	9.06	6.80
Pennsylvania sedge (*Carex pensylvanica*)	25.00	4.55	6.25	8.09	6.32
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	50.00	9.09	1.50	1.94	5.52
hophornbeam (*Ostrya virginiana*)	25.00	4.55	5.00	6.47	5.51
unidentified moss (*unidentified moss*)	50.00	9.09	1.25	1.62	5.35
Virginia creeper (*Parthenocissus quinquefolia*)	25.00	4.55	1.25	1.62	3.08
eastern poison ivy (*Toxicodendron radicans*)	25.00	4.55	0.75	0.97	2.76
smooth Solomon's seal (*Polygonatum biflorum*)	25.00	4.55	0.50	0.65	2.60
northern red oak (*Quercus rubra*)	25.00	4.55	0.50	0.65	2.60
wild sarsaparilla (*Aralia nudicaulis*)	25.00	4.55	0.25	0.32	2.43
sugar maple (*Acer saccharum*)	25.00	4.55	0.25	0.32	2.43

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots
  where species occurred divided by total number of plots.

- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were fifteen species observed, based on a sample of four plots each 0.002 acres in size, representing 0.020 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.2399	0.0000 - 0.4444	Sample comparisons
Jaccard's Similarity Coefficient	0.1437	0.0000 - 0.2857	Sample comparisons
Whittaker's Similarity Coefficient	1.7273	-	Sample comparisons
Renkonen's Index (Percent Similarity)	14.31	0.00 - 33.77	Sample comparisons
Morista-Horn Similarity Index	0.1426	0.0000 - 0.3756	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate

stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).

- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

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Overstory Statistics

This report is for the stand '2-1-1' inventory (2012) data.

Name	Value
Date inventory was taken	06/04/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
156	80.000	3547.64	63.98	112.79
157	110.000	2849.49	90.31	104.65
158	70.000	815.89	61.75	264.37
161	110.000	4768.79	81.65	63.47

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	70.00	815.89	61.75	63.47
Maximum	110.00	4768.79	90.31	264.37
Mean	92.50	2995.45	74.42	136.32
Variance	425.00	2740485.69	191.45	7753.71
Std dev	20.62	1655.44	13.84	88.06
Std error	10.31	827.72	6.92	44.03

95% confidence interval

degrees of freedom = 3
alpha = 0.050
t-value = 3.180

95% confidence interval

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
95% c.i. mean lower limit	59.7	363.4	52.4	0.0
95% c.i. mean upper limit	125.3	5627.5	96.4	276.3
95% c.i. # plots for w/in 15%	23	138	16	188
95% c.i. # plots for w/in 10%	51	309	35	422

Interpretation of confidence interval values: Examine the number above for the Basal area at the 95 percent confidence interval. NED extimates with 95% confidence that the true mean lies between 59.7 and 125.3. Under similar conditions, about 95% of repeated samples in this stand (using the same number of plots) will contain the true mean. If the variation between the existing sample plots is representative of the whole stand, twenty three plots are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Identification Data

This report is for the stand '2-1-2' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	2-1-2
Date inventory was taken	06/04/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	9.2	Basal area (sq.ft/ac)	160.0
Canopy closure (% closure)	95	Relative density (%)	98.8
Stems per unit area (stems/ac)	466.89	Shrub layer percent cover (% cover)	0
Number of plot size classes	1	Ground layer percent cover (% cover)	37

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	other hardwoods	Size class	large sawtimber
Site index species	sweet birch (*Betula lenta*)	Year of origin	1888

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '2-1-2' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Jack in the pulpit (*Arisaema triphyllum*)			X	
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
smooth Solomon's seal (*Polygonatum biflorum*)			X	
Canada mayflower (*Maianthemum canadense*)			X	
white wood aster (*Eurybia divaricata*)			X	
tuliptree (*Liriodendron tulipifera*)	X			
white ash (*Fraxinus americana*)	X	X	X	
sweet birch (*Betula lenta*)	X			
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)			X	
Counts	**4**	**2**	**8**	**0**

Species X Diameter

This report is for the stand '2-1-2' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	sweet birch	white ash	tuliptree
< 2.00	0.0	0.0	0.0	0.0	0.0
2.00 - 4.00	378.8	378.8	0.0	0.0	0.0
4.00 - 6.00	0.0	0.0	0.0	0.0	0.0
6.00 - 8.00	0.0	0.0	0.0	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0	0.0
10.00 - 12.00	0.0	0.0	0.0	0.0	0.0
12.00 - 14.00	21.4	21.4	0.0	0.0	0.0
14.00 - 16.00	16.1	0.0	16.1	0.0	0.0
16.00 - 18.00	26.0	6.1	20.0	0.0	0.0
18.00 - 20.00	0.0	0.0	0.0	0.0	0.0
20.00 - 22.00	8.3	0.0	8.3	0.0	0.0
22.00 - 24.00	14.8	3.6	3.8	3.8	3.7
24.00 - 26.00	0.0	0.0	0.0	0.0	0.0
26.00 - 28.00	0.0	0.0	0.0	0.0	0.0
28.00 - 30.00	0.0	0.0	0.0	0.0	0.0
30.00 - 32.00	0.0	0.0	0.0	0.0	0.0
32.00 - 34.00	0.0	0.0	0.0	0.0	0.0
>= 34.00	1.5	0.0	1.5	0.0	0.0
Sum	466.9	409.9	49.6	3.8	3.7

Timber Tables

This report is for the stand '2-1-2' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

			Overstory only		
	All species	**sweet birch (*Betula lenta*)**	**sugar maple (*Acer saccharum*)**	**tuliptree (*Liriodendron tulipifera*)**	**white ash (*Fraxinus americana*)**
Basal area (square feet)	160.0	90.0	50.0	10.0	10.0
percentage of stand	100.0	56.3	31.3	6.3	6.3
Stems per unit area (stems per acre)	466.9	49.6	409.9	3.7	3.8

Diameters

			Overstory only		
	All species	**sweet birch (*Betula lenta*)**	**sugar maple (*Acer saccharum*)**	**tuliptree (*Liriodendron tulipifera*)**	**white ash (*Fraxinus americana*)**
Medial dbh (inches)	18.3	20.0	13.7	22.4	22.0
Average Merchantable dbh (inches)	19.4	20.0	16.5	22.4	22.0
Quadratic mean dbh (inches)	7.9	18.2	4.7	22.4	22.0
Quadratic Average Merchantable dbh (inches)	17.7	18.2	15.4	22.4	22.0
Average dbh (inches)	5.0	17.8	3.2	22.4	22.0

Structure

			Overstory only		
	All species	**sweet birch (*Betula lenta*)**	**sugar maple (*Acer saccharum*)**	**tuliptree (*Liriodendron tulipifera*)**	**white ash (*Fraxinus americana*)**
q factor	1.17	1.12	1.26	0.00	0.00

Relative density

	All species	sweet birch (*Betula lenta*)	sugar maple (*Acer saccharum*)	tuliptree (*Liriodendron tulipifera*)	white ash (*Fraxinus americana*)
Relative density (percent)	98.79	46.26	46.57	2.96	2.99
percentage of stand	100.00	46.83	47.14	3.00	3.03

Volumes

Overstory only

	All species	**sweet birch (*Betula lenta*)**	**sugar maple (*Acer saccharum*)**	**tuliptree (*Liriodendron tulipifera*)**	**white ash (*Fraxinus americana*)**
Sawtimber gross total (board feet/acre)	2,646	950	486	1,210	0
Sawtimber net total (board feet/acre)	2,646	950	486	1,210	0
Pulpwood gross total (cords/acre)	43	27	12	1	4
Pulpwood net total (cords/acre)	34	21	9	1	3
Gross total (cords/acre)	49	29	13	4	4
Net total (cords/acre)	39	23	10	3	3

Biomass

Overstory only

	All species	**sweet birch (*Betula lenta*)**	**sugar maple (*Acer saccharum*)**	**tuliptree (*Liriodendron tulipifera*)**	**white ash (*Fraxinus americana*)**
Coarse root biomass (tons per acre)	52.39	29.78	16.28	3.18	3.15
Merchantable stem wood biomass (tons per acre)	179.36	104.60	52.15	11.37	11.25
Merchantable stem bark biomass (tons per acre)	35.61	20.50	10.72	2.20	2.18
Foliage biomass (tons per acre)	5.57	3.03	1.90	0.32	0.32
Aboveground biomass (tons per acre)	126.18	72.06	38.78	7.71	7.64
Total biomass (tons per acre)	178.57	101.84	55.06	10.88	10.79

Understory Species Composition and Diversity

This report is for the stand '2-1-2' inventory (2012) data.
There are one plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	20550.00	96.93	100.00	50.00	73.47
white ash (*Fraxinus americana*)	650.00	3.07	100.00	50.00	26.53

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were two species observed, based on a sample of one plots each 0.020 acres in size, representing 0.217 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by two species representing 100.0 percent of the total number of species found in all plots. The core flora is listed below.

- sugar maple (*Acer saccharum*)
- white ash (*Fraxinus americana*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

Barnes, B.V., Zak, D.R., Denton, S.R., and Spurr, S.H. 1998. Forest Ecology, ed. 4. John Wiley and Sons, Inc., New York. 774 pp.

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Ground Species Composition and Diversity

This report is for the stand '2-1-2' inventory (2012) data.
There are one plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
sugar maple (*Acer saccharum*)	100.00	12.50	32.00	51.61	32.06
Canada mayflower (*Maianthemum canadense*)	100.00	12.50	15.00	24.19	18.35
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	100.00	12.50	4.00	6.45	9.48
white ash (*Fraxinus americana*)	100.00	12.50	3.00	4.84	8.67
smooth Solomon's seal (*Polygonatum biflorum*)	100.00	12.50	3.00	4.84	8.67
white wood aster (*Eurybia divaricata*)	100.00	12.50	2.00	3.23	7.86
Jack in the pulpit (*Arisaema triphyllum*)	100.00	12.50	2.00	3.23	7.86
red maple (*Acer rubrum*)	100.00	12.50	1.00	1.61	7.06

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots
  where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the
  total of all species frequencies.
- **Percent cover** = Mean percent coverage. The mean proportion of area that is covered by a vertical
  projection of the foliage onto the ground surface for all stems or individuals of a given species.
- **Rel Percent cover** = Mean relative percent coverage, based on the individual species percent coverage or
  basal area divided by the total percent coverage or basal area for all species.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for
  relative frequency and relative dominance and dividing by two.
- **Density:** no observations exist where the stem count was entered. Density calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the
variety and abundance of species in different areas, and most measures of diversity are related to species
richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of

ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were eight species observed, based on a sample of one plots each 0.002 acres in size, representing 0.022 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Similarity Indexes

Measure	Index	Range	Table
Sørensen's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Jaccard's Similarity Coefficient	0.0000	0.0000 - 0.0000	Sample comparisons
Whittaker's Similarity Coefficient	0.0000	-	Sample comparisons
Renkonen's Index (Percent Similarity)	0.00	0.00 - 0.00	Sample comparisons
Morista-Horn Similarity Index	0.0000	0.0000 - 0.0000	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant

indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

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NED report for Weldon Brook Wildlife Management Area Generated: 02/26/2013 13:26
File name: C:\archives\Sussex\Weldon Brook WMA\data.mdb

Overstory Statistics

This report is for the stand '2-1-2' inventory (2012) data.

Name	Value
Date inventory was taken	06/04/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
159	160.000	2646.27	98.79	466.89

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	160.00	2646.27	98.79	466.89
Maximum	160.00	2646.27	98.79	466.89
Mean	160.00	2646.27	98.79	466.89
Variance	0.00	0.00	0.00	0.00
Std dev	0.00	0.00	0.00	0.00
Std error	0.00	0.00	0.00	0.00

Confidence interval statistics cannot be computed for a stand with a single plot.

Identification Data

This report is for the stand '2-1-3' inventory (2012) data.

Identification and Location

Name	Value
Stand ID	2-1-3
Date inventory was taken	06/04/2012

Site Characteristics

Name	Value

Measures

Name	Value	Name	Value
Stand area (ac)	6.8	Basal area (sq.ft/ac)	130.0
Canopy closure (% closure)	75	Relative density (%)	78.7
Stems per unit area (stems/ac)	272.25	Shrub layer percent cover (% cover)	0
Number of plot size classes	1	Ground layer percent cover (% cover)	91

Stand Characteristics

Name	Value	Name	Value
Land cover type	Broadleaf forest	Site index	60
Forest type	maple	Size class	small sawtimber
Site index species	white ash (*Fraxinus americana*)	Year of origin	1939

Features

Name	Value	Name	Value
Percent area riparian (% cover)	0	Contains a wetland	no
Percent area wetland (% cover)	0	Contains a riparian	no

Stream	absent		Old growth	no
Percent open plots (% plots)	0		Rare	absent

Species List

This report is for the stand '2-1-3' inventory (2012) data.

Stand species

Species	Overstory	Understory	Ground	Transect
Jack in the pulpit (*Arisaema triphyllum*)			X	
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)			X	
unidentified moss (*unidentified moss*)			X	
hogpeanut (*Amphicarpaea*)			X	
Nepalese browntop (*Microstegium vimineum*)			X	
goldenrod (*Solidago*)			X	
white ash (*Fraxinus americana*)	X	X		
sugar maple (*Acer saccharum*)	X	X	X	
red maple (*Acer rubrum*)	X			
eastern poison ivy (*Toxicodendron radicans*)			X	
black oak (*Quercus velutina*)		X		
northern red oak (*Quercus rubra*)		X		
white oak (*Quercus alba*)		X		
Virginia creeper (*Parthenocissus quinquefolia*)			X	
Counts	**3**	**5**	**9**	**0**

Species X Diameter

This report is for the stand '2-1-3' inventory (2012) data.
Stems (overstory) live trees only, Crop, AGS and UGS

Report options: The cell values are 'Stems' (stems per acre). The values come from tree observations. The tree observations include Crop, AGS and UGS. Only live trees are included. The table rows are 'dbh'. The first row contains dbh's less than 2. The interval between rows is 2. The last row is adjusted to include the maximum dbh found. The diameter display is 'Entire range'. The table columns are 'Species (Common name)'.

Species X dbh Table

dbh range	Sum	sugar maple	white ash	red maple
< 2.00	0.0	0.0	0.0	0.0
2.00 - 4.00	0.0	0.0	0.0	0.0
4.00 - 6.00	114.6	114.6	0.0	0.0
6.00 - 8.00	39.7	39.7	0.0	0.0
8.00 - 10.00	0.0	0.0	0.0	0.0
10.00 - 12.00	88.8	43.6	32.0	13.2
12.00 - 14.00	0.0	0.0	0.0	0.0
14.00 - 16.00	0.0	0.0	0.0	0.0
16.00 - 18.00	19.7	0.0	19.7	0.0
18.00 - 20.00	5.5	0.0	5.5	0.0
>= 20.00	4.0	0.0	0.0	4.0
Sum	272.3	197.8	57.2	17.2

Timber Tables

This report is for the stand '2-1-3' inventory (2012) data.

The threshold between the overstory and understory observations is set at 1.00 inches. Understory observations will not be included in this report. Dead observations were ignored when calculating values in this report.

Composition

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)
Basal area (square feet)	130.0	60.0	50.0	20.0
percentage of stand	100.0	46.2	38.5	15.4
Stems per unit area (stems per acre)	272.3	57.2	197.8	17.2

Diameters

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)
Medial dbh (inches)	12.9	15.0	8.9	16.6
Average Merchantable dbh (inches)	13.6	15.0	10.1	16.6
Quadratic mean dbh (inches)	9.4	13.9	6.8	14.6
Quadratic Average Merchantable dbh (inches)	11.8	13.9	9.4	14.6
Average dbh (inches)	8.2	13.5	6.2	14.0

Structure

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)
q factor	1.21	1.22	1.14	1.14

Relative density

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)

Relative density (percent)	78.67	23.11	44.42	11.13
percentage of stand	100.00	29.38	56.47	14.15

Volumes

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)
Sawtimber gross total (board feet/acre)	1,400	1,400	0	0
Sawtimber net total (board feet/acre)	1,400	1,400	0	0
Pulpwood gross total (cords/acre)	32	15	10	7
Pulpwood net total (cords/acre)	26	12	8	5
Gross total (cords/acre)	36	19	10	7
Net total (cords/acre)	29	15	8	5

Biomass

Overstory only

	All species	white ash (*Fraxinus americana*)	sugar maple (*Acer saccharum*)	red maple (*Acer rubrum*)
Coarse root biomass (tons per acre)	35.94	15.72	14.02	6.20
Merchantable stem wood biomass (tons per acre)	115.98	53.08	41.70	21.19
Merchantable stem bark biomass (tons per acre)	23.89	10.65	9.01	4.22
Foliage biomass (tons per acre)	3.95	1.65	1.66	0.65
Aboveground biomass (tons per acre)	85.96	37.84	33.17	14.95
Total biomass (tons per acre)	121.90	53.56	47.19	21.15

NED report for Weldon Brook Wildlife Management Area Generated: 09/07/2012 09:43
File name: C:\archives\Sussex\Weldon Brook WMA\data.mdb

Understory Species Composition and Diversity

This report is for the stand '2-1-3' inventory (2012) data.
There are one plot clusters in the stand.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the understory, sorted by the Importance Factor.

Understory Species Occurrence and Abundance - Live Stems Only

species	Density	Rel Density	Frequency	Rel Frequency	Importance Value
sugar maple (*Acer saccharum*)	750.00	68.18	100.00	20.00	44.09
northern red oak (*Quercus rubra*)	150.00	13.64	100.00	20.00	16.82
white ash (*Fraxinus americana*)	100.00	9.09	100.00	20.00	14.55
white oak (*Quercus alba*)	50.00	4.55	100.00	20.00	12.27
black oak (*Quercus velutina*)	50.00	4.55	100.00	20.00	12.27

Description of Table Items

- **Density** = Mean number of stems per acre, based on stems counted in each plot.
- **Rel Density** = Mean relative proportion or abundance of stems by species. The mean number of stems of a particular species divided by total number of stems.
- **Frequency** = The percentage of plots where this species was observed, based on the number of plots where species occurred divided by total number of plots.
- **Rel Frequency** = Relative frequency of occurrence, based on individual species frequency divided by the total of all species frequencies.
- **Importance Value** = Importance Value, a value computed by arbitrarily adding together the values for relative abundance and relative frequency and dividing by two.
- **Dominance:** no observations exist where Percent cover is greater than zero. Dominace calculations will not be made..

Species Diversity

Measures of diversity are important in management and in environmental monitoring. Diversity relates to the variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were five species observed, based on a sample of one plots each 0.020 acres in size, representing 0.294 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, the core flora is represented by

five species representing 100.0 percent of the total number of species found in all plots. The core flora is listed below.

- sugar maple (*Acer saccharum*)
- northern red oak (*Quercus rubra*)
- white ash (*Fraxinus americana*)
- white oak (*Quercus alba*)
- black oak (*Quercus velutina*)

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

The following table shows each measure with sample mean, range, and a link to view the table of all sample comparisons.

Error: No values in data (Percent cover)

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

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Ground Species Composition and Diversity

This report is for the stand '2-1-3' inventory (2012) data.
There are one plot clusters in the stand.
The ground cover or ground flora includes plant species in the shrub, herb layer, and moss-lichen layers.
Therefore, this report includes data collected on all herbaceous (non-woody) flora, as well as smaller woody
stems and shrubs.

Species Occurrence and Abundance

This table combines all height classes (if applicable) into a statistical summary for the ground, sorted by the
Importance Factor.

Ground Species Occurrence and Abundance - Live Stems Only

species	Frequency	Rel Frequency	Percent cover	Rel Percent cover	Importance Value
Nepalese browntop (*Microstegium vimineum*)	100.00	11.11	60.00	65.93	38.52
Virginia creeper (*Parthenocissus quinquefolia*)	100.00	11.11	10.00	10.99	11.05
Jack in the pulpit (*Arisaema triphyllum*)	100.00	11.11	5.00	5.49	8.30
hogpeanut (*Amphicarpaea*)	100.00	11.11	5.00	5.49	8.30
eastern poison ivy (*Toxicodendron radicans*)	100.00	11.11	5.00	5.49	8.30
unidentified moss (*unidentified moss*)	100.00	11.11	3.00	3.30	7.20
unidentified Forb (herbaceous, not grass nor grasslike) (*unidentified Forb (herbaceous, not grass nor grasslike)*)	100.00	11.11	1.00	1.10	6.11
sugar maple (*Acer saccharum*)	100.00	11.11	1.00	1.10	6.11
goldenrod (*Solidago*)	100.00	11.11	1.00	1.10	6.11

Description of Table Items

- **Frequency** = The percentage of plots where this species was observed, based on the number of plots
  where species occurred divided by total number of plots.
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Species Diversity

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variety and abundance of species in different areas, and most measures of diversity are related to species richness, species evenness (pattern of distribution of species), or heterogeneity. Hence, there are a variety of ways to measure and interpret diversity. The selection of a particular measure of diversity depends on sample size, availability of abundance data, and whether one is interested in species richness, evenness, or both.

Species Observed in the Stand

There were nine species observed, based on a sample of one plots each 0.002 acres in size, representing 0.029 percent of the total stand area.

Core Flora

The core flora are those species common to every plot cluster. For this stand, none of the species are found in all plot clusters.

Measures of Similarity (Beta-diversity)

These measures provide an idea of stand-level diversity by indicating how the set of samples vary in terms of the variety and/or abundance of species found among them. With the exception of Whittaker's measure, each sample is compared with all other samples, one at a time, until all possible sample-pairs are computed. The stand level value is the mean of all sample-pairs.

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Whittaker's Similarity Coefficient	0.0000	-	Sample comparisons
Renkonen's Index (Percent Similarity)	0.00	0.00 - 0.00	Sample comparisons
Morista-Horn Similarity Index	0.0000	0.0000 - 0.0000	Sample comparisons

*Whittaker's measure is computed on multiple samples simultaneously, and therefore no mean is computed, and no comparison table is produced.

- **Sørensen's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that occur in both samples.
- **Jaccard's Similarity Coefficient** - Based on presence-absence of species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. This measure gives more weight to species that are unique to each sample.
- **Whittaker's Similarity Coefficient** - Based on presence-absence of species. Low values indicate stronger similarity, and higher values indicate little or no similarity. The fewer species that samples share, the higher the value of Whittaker's measure (higher diversity or conversely, lower similarity).
- **Renkonen's Index (Percent Similarity)** - Based on abundance data, specifically, the relative abundance of species. Values range from 0-100, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.
- **Morista-Horn Similarity Index** - Based on abundance data and somewhat sensitive to the most highly abundant species. Values range from 0-1, where low values indicate little or no similarity, and higher values indicate stronger similarity. The variable 'Percent cover' was used in the calculation.

Vegetation and Site Quality

Vegetation is often used as an indicator of site quality. Some tree species have relatively narrow requirements and their presence is indicative of a particular site. Many tree species can occur on a wide variety of sites. Their

presence offers little indicator value, but their relative abundance and size may be important. Herbaceous species often are more restricted in their requirements, and may be more useful than tree species as plant indicators. Care must be taken to account for factors that are unrelated to site quality, such as plant competition, herbivory, and past events in the history of a stand such as drought, insects, and human disturbance. Also, species may be absent purely by chance. In highly disturbed, well-lighted conditions, interpretation of ground-cover species can be problematic, as they may only indicate high light intensity. Furthermore, the indicator value of species can change regionally with changes in climate and physiography.

Suggested Reading

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NED report for Weldon Brook Wildlife Management Area Generated: 02/26/2013 13:27
File name: C:\archives\Sussex\Weldon Brook WMA\data.mdb

Overstory Statistics

This report is for the stand '2-1-3' inventory (2012) data.

Name	Value
Date inventory was taken	06/04/2012
Overstory inventory type	Prism points
Overstory prism BAF (sq.ft/ac)	10.0

Report options: The analysis is on overstory plots. The tree observations include AGS and UGS. Only live trees are included. The variables analyzed are Basal area, Net board-foot volume, Relative density and Stems per unit area. The variables are in columns. The confidence interval is 95.

Cluster values

Cluster values

cluster	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
160	130.000	1400.11	78.67	272.25

Summary statistics

Summary statistics

	Basal area (sq.ft/ac)	Net bdft vol (bd.ft/ac/ac)	Rel. dens. (%/ac)	Stems/area (stems/ac)
Minimum	130.00	1400.11	78.67	272.25
Maximum	130.00	1400.11	78.67	272.25
Mean	130.00	1400.11	78.67	272.25
Variance	0.00	0.00	0.00	0.00
Std dev	0.00	0.00	0.00	0.00
Std error	0.00	0.00	0.00	0.00

Confidence interval statistics cannot be computed for a stand with a single plot.

Physical Soil Properties

Sussex County, New Jersey

[Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated]

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
AhcBc:														
Alden, gneiss till substratum, extremely stony	0-1	0-30	0-55	0-22	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	3	8	0
	1-9	23-30	50-55	18-22	1.10-1.40	4.00-14.00	0.16-0.22	0.0-0.1	10-30	.28	.37			
	9-23	5-71	26-59	2-39	1.29-1.62	1.40-4.00	0.14-0.20	0.0-0.1	0.5-1.0	.37	.37			
	23-35	5-71	26-59	2-39	1.29-1.62	1.40-4.00	0.14-0.20	0.0-0.1	0.5-1.0	.37	.37			
	35-60	5-68	17-59	8-39	1.29-1.62	0.42-4.00	0.08-0.15	0.0-0.1	0.0-0.5	.28	.32			
CatbA:														
Catden	0-2	0-30	0-55	0-22	0.13-0.23	14.00-42.00	0.35-0.45	0.0	70-100	.05	.05	3	2	134
	2-13	0-30	0-55	0-22	0.13-0.23	1.40-42.00	0.35-0.45	0.0	70-100	.05	.05			
	13-20	0-30	0-55	0-22	0.13-0.23	1.40-42.00	0.35-0.45	0.0	70-100	.05	.05			
	20-32	0-30	0-55	0-22	0.13-0.23	1.40-42.00	0.35-0.45	0.0	70-100	.05	.05			
	32-60	0-30	0-55	0-22	0.13-0.23	1.40-42.00	0.35-0.45	0.0	70-100	.05	.05			
ChkC:														
Chatfield	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	2	8	0
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-5	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.14	0.0-0.1	2.0-8.0	.20	.24			
	5-10	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.5-2.0	.20	.24			
	10-24	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	24-30	16-85	12-65	3-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	30-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			
Hollis	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	1	---	---
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-6	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.17	0.0-0.1	2.0-8.0	.20	.24			
	6-8	35-76	15-50	9-18	1.29-1.59	4.00-42.00	0.06-0.18	0.0-0.1	0.3-1.0	.32	.37			
	8-16	35-76	15-50	9-18	1.29-1.59	4.00-42.00	0.06-0.18	0.0-0.1	0.0-0.5	.32	.37			
	16-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			

Physical Soil Properties

Sussex County, New Jersey

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	_In_	_Pct_	_Pct_	_Pct_	_g/cc_	_micro m/sec_	_In/In_	_Pct_	_Pct_					
ChkC:														
Rock outcrop	0-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---	1	---	0
HhmBc:														
Hibernia, extremely stony	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-4	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.10-0.16	0.0-0.1	2.0-5.0	.24	.32			
	4-11	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.10-0.16	0.0-0.1	0.1-2.0	.32	.37			
	11-19	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.10-0.16	0.0-0.1	0.1-2.0	.32	.37			
	19-29	35-76	15-50	9-18	1.64-1.79	0.01-1.40	0.06-0.10	0.0-0.1	0.0-0.5	.24	.28			
	29-35	5-85	12-59	3-39	1.20-1.64	4.00-42.00	0.06-0.09	0.0-0.1	0.0-0.5	.20	.24			
	35-60	5-85	12-59	3-39	1.20-1.64	4.00-42.00	0.06-0.09	0.0-0.1	0.0-0.5	.20	.24			
HncD:														
Hollis	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	1	---	---
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-6	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.17	0.0-0.1	2.0-8.0	.20	.24			
	6-8	35-76	15-50	9-18	1.29-1.59	4.00-42.00	0.06-0.18	0.0-0.1	0.3-1.0	.32	.37			
	8-16	35-76	15-50	9-18	1.29-1.59	4.00-42.00	0.06-0.18	0.0-0.1	0.0-0.5	.32	.37			
	16-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---	1	---	0
Chatfield	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	2	8	0
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-5	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.14	0.0-0.1	2.0-8.0	.20	.24			
	5-10	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.5-2.0	.20	.24			
	10-24	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	24-30	16-85	12-65	3-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	30-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			

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This report shows only the major soils in each map unit. Others may exist.

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Physical Soil Properties

Sussex County, New Jersey

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
RoefBc:														
Rockaway, thin fragipan, extremely stony	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-3	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.08-0.12	0.0-0.1	2.0-10	.28	.37			
	3-6	35-47	35-50	10-18	1.29-1.51	4.00-14.00	0.09-0.14	0.0-0.1	2.0-8.0	.32	.37			
	6-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
RoefCc:														
Rockaway, thin fragipan, extremely stony	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-3	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.08-0.12	0.0-0.1	2.0-10	.28	.37			
	3-6	35-47	35-50	10-18	1.29-1.51	4.00-14.00	0.09-0.14	0.0-0.1	2.0-8.0	.32	.37			
	6-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
RoefDc:														
Rockaway, thin fragipan, extremely stony	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-3	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.08-0.12	0.0-0.1	2.0-10	.28	.37			
	3-6	35-47	35-50	10-18	1.29-1.51	4.00-14.00	0.09-0.14	0.0-0.1	2.0-8.0	.32	.37			
	6-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
RokD:														
Rockaway, thin fragipan	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-3	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.08-0.12	0.0-0.1	2.0-10	.28	.37			
	3-6	35-47	35-50	10-18	1.29-1.51	4.00-14.00	0.09-0.14	0.0-0.1	2.0-8.0	.32	.37			
	6-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			

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USDA Natural Resources Conservation Service

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Physical Soil Properties

Sussex County, New Jersey

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi- bility	Organic matter	Erosion factors			Wind erodi- bility group	Wind erodi- bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
RokD:														
Chatfield	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	2	8	0
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-5	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.14	0.0-0.1	2.0-8.0	.20	.24			
	5-10	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.5-2.0	.20	.24			
	10-24	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	24-30	16-85	12-65	3-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	30-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---	1	---	0
RooC:														
Rockaway, thin fragipan	0-2	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	4	8	0
	2-3	35-47	35-50	10-18	1.17-1.40	4.00-14.00	0.08-0.12	0.0-0.1	2.0-10	.28	.37			
	3-6	35-47	35-50	10-18	1.29-1.51	4.00-14.00	0.09-0.14	0.0-0.1	2.0-8.0	.32	.37			
	6-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
Urban land, Rockaway, thin fragipan substratum	0-12	---	---	---	---	0.00	0.00	0.0	0.0	---	---	---	---	---
	12-23	35-76	15-50	9-18	1.42-1.70	4.00-14.00	0.09-0.14	0.0-0.1	0.5-2.0	.32	.37			
	23-41	42-76	15-45	9-18	1.64-1.79	0.01-1.40	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
	41-60	61-85	12-26	3-14	1.20-1.64	4.00-42.00	0.01-0.02	0.0-0.1	0.0-0.5	.24	.28			
UdaB:														
Udorthents	0-12	35-47	35-50	10-18	1.30-1.52	0.42-1.41	0.00	0.0-0.2	2.0-4.0	---	---	3	3	86
	12-72	35-98	2-50	0-18	0.67-1.58	1.40-141.00	0.08-0.19	0.0-0.1	0.5-1.0	.28	.32			
UdauB:														
Udorthents	0-12	35-47	35-50	10-18	1.30-1.52	0.42-1.41	0.00	0.0-0.2	2.0-4.0	---	---	3	3	86
	12-72	35-98	2-50	0-18	0.67-1.58	1.40-141.00	0.08-0.19	0.0-0.1	0.5-1.0	.28	.32			

USDA **Natural Resources Conservation Service**

This report shows only the major soils in each map unit. Others may exist.

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Physical Soil Properties

Sussex County, New Jersey

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
UdauB:														
Urban land, Udorthents substratum	0-12	---	---	---	---	0.00	0.00	0.0	0.0	---	---	---	---	---
	12-72	35-98	2-50	0-18	0.67-1.58	1.40-141.00	0.08-0.19	0.0-0.1	0.5-1.0	.28	.32			
USCHRC:														
Urban land, Chatfield substratum	0-12	---	---	---	---	0.00	0.00	0.0	0.0	---	---	---	---	---
	12-24	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	24-30	16-85	12-65	3-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	30-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			
Chatfield	0-1	0-47	0-50	0-18	0.13-0.23	42.00-141.00	0.35-0.45	0.0	70-100	.05	.05	2	8	0
	1-3	0-47	0-50	0-18	0.13-0.23	4.00-14.00	0.35-0.45	0.0	20-60	.05	.05			
	3-5	35-47	35-50	10-18	1.17-1.40	4.00-42.00	0.08-0.14	0.0-0.1	2.0-8.0	.20	.24			
	5-10	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.5-2.0	.20	.24			
	10-24	35-76	15-65	9-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	24-30	16-85	12-65	3-18	1.29-1.59	4.00-42.00	0.08-0.18	0.0-0.1	0.0-0.5	.20	.24			
	30-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---			
Rock outcrop	0-60	---	---	---	---	0.07-141.00	0.00	---	---	---	---	1	---	0

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Haul Roads, Log Landings, and Soil Rutting on Forestland

Sussex County, New Jersey

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AhcBc:							
Alden, Gneiss Till Substratum, Extremely Stony	90	Moderate		Poorly suited		Severe	
		Stoniness	0.50	Ponding	1.00	Low strength	1.00
		Low strength	0.50	Rock fragments	0.50		
				Low strength	0.50		
CatbA:							
Catden	85	Slight		Poorly suited		Slight	
				Ponding	1.00		
ChkC:							
Chatfield	45	Severe		Poorly suited		Moderate	
		Stoniness	1.00	Rock fragments	1.00	Low strength	0.50
		Restrictive layer	0.50	Slope	0.50		
Hollis	30	Severe		Poorly suited		Severe	
		Stoniness	1.00	Rock fragments	1.00	Low strength	1.00
		Restrictive layer	1.00	Slope	0.50		
Rock Outcrop	25	Not Rated		Not Rated		Not Rated	
HhmBc:							
Hibernia, Extremely Stony	80	Moderate		Poorly suited		Severe	
		Stoniness	0.50	Wetness	1.00	Low strength	1.00
		Low strength	0.50	Rock fragments	0.50		
				Low strength	0.50		
HncD:							
Hollis	45	Severe		Poorly suited		Severe	
		Stoniness	1.00	Slope	1.00	Low strength	1.00
		Restrictive layer	1.00	Rock fragments	1.00		
		Slope	0.50				
Rock Outcrop	30	Not Rated		Not Rated		Not Rated	
Chatfield	20	Severe		Poorly suited		Moderate	
		Stoniness	1.00	Slope	1.00	Low strength	0.50
		Restrictive layer	1.00	Rock fragments	1.00		
		Slope	0.50				

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Haul Roads, Log Landings, and Soil Rutting on Forestland

Sussex County, New Jersey

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoefBc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Moderate		Moderately suited		Severe	
		Stoniness	0.50	Rock fragments	0.50	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
RoefCc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Moderate		Moderately suited		Severe	
		Stoniness	0.50	Slope	0.50	Low strength	1.00
				Rock fragments	0.50		
				Low strength	0.50		
				Wetness	0.50		
RoefDc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
				Low strength	0.50		
				Wetness	0.50		
RokD:							
Rockaway, Thin Fragipan	45	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
		Stoniness	0.50	Rock fragments	0.50		
				Low strength	0.50		
				Wetness	0.50		
Chatfield	25	Severe		Poorly suited		Moderate	
		Restrictive layer	1.00	Slope	1.00	Low strength	0.50
		Slope	0.50	Rock fragments	0.50		
		Stoniness	0.50				
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
RooC:							
Rockaway, Thin Fragipan	45	Slight		Moderately suited		Severe	
				Slope	0.50	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
Urban Land, Rockaway, Thin Fragipan Substratum	40	Not Rated		Not Rated		Not Rated	

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Haul Roads, Log Landings, and Soil Rutting on Forestland

Sussex County, New Jersey

Map symbol and soil name	Pct. of map unit	Limitations affecting construction of haul roads and log landings		Suitability for log landings		Soil rutting hazard	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
UdaB:							
Udorthents	100	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
UdauB:							
Udorthents	60	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
Urban Land, Udorthents Substratum	40	Not Rated		Not Rated		Not Rated	
USCHRC:							
Urban Land, Chatfield Substratum	40	Not Rated		Not Rated		Not Rated	
Chatfield	25	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	

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This table can help forest owners or managers plan the use of soils for wood crops. Interpretive ratings are given for the soils according to the limitations that affect various aspects of forest management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsuited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.
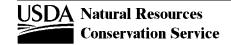
Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

For limitations affecting construction of haul roads and log landings, the ratings are based on slope, flooding, permafrost, plasticity index, the hazard of soil slippage, content of sand, the Unified classification, rock fragments on or below the surface, depth to a restrictive layer that is indurated, depth to a water table, and ponding. The limitations are described as slight, moderate, or severe. A rating of slight indicates that no significant limitations affect construction activities, moderate indicates that one or more limitations can cause some difficulty in construction, and severe indicates that one or more limitations can make construction very difficult or very costly.

The ratings of suitability for log landings are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The soils are described as well suited, moderately suited, or poorly suited to use as log landings.

Ratings in the column soil rutting hazard are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of forest equipment. The hazard is described as slight, moderate, or severe. A rating of slight indicates that the soil is subject to little or no rutting, moderate indicates that rutting is likely, and severe indicates that ruts form readily.
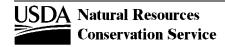
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Hazard of Erosion and Suitability for Roads on Forestland

Sussex County, New Jersey

[The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
AhcBc:							
Alden, Gneiss Till Substratum, Extremely Stony	90	Slight		Slight		Poorly suited	
						Ponding	1.00
						Rock fragments	0.50
						Low strength	0.50
CatbA:							
Catden	85	Very Severe		Very Severe		Poorly suited	
		High organic content	1.00	High organic content	1.00	Ponding	1.00
ChkC:							
Chatfield	45	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Rock fragments	1.00
						Slope	0.50
Hollis	30	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Rock fragments	1.00
						Slope	0.50
Rock Outcrop	25	Not Rated		Not Rated		Not Rated	
HhmBc:							
Hibernia, Extremely Stony	80	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Rock fragments	0.50
						Low strength	0.50
HncD:							
Hollis	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	1.00
Rock Outcrop	30	Not Rated		Not Rated		Not Rated	
Chatfield	20	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	1.00
RoefBc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Rock fragments	0.50
						Low strength	0.50
						Wetness	0.50

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
RoefCc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Rock fragments	0.50
						Low strength	0.50
						Wetness	0.50
RoefDc:							
Rockaway, Thin Fragipan, Extremely Stony	85	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Low strength	0.50
						Wetness	0.50
RokD:							
Rockaway, Thin Fragipan	45	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
						Low strength	0.50
						Wetness	0.50
Chatfield	25	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Rock fragments	0.50
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	
RooC:							
Rockaway, Thin Fragipan	45	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Wetness	0.50
Urban Land, Rockaway, Thin Fragipan Substratum	40	Not Rated		Not Rated		Not Rated	
UdaB:							
Udorthents	100	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
UdauB:							
Udorthents	60	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
Urban Land, Udorthents Substratum	40	Not Rated		Not Rated		Not Rated	

This report shows only the major soils in each map unit. Others may exist.

USDA **Natural Resources Conservation Service**

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Hazard of Erosion and Suitability for Roads on Forestland

Sussex County, New Jersey

Map symbol and soil name	Pct. of map unit	Hazard of off-road or off-trail erosion		Hazard of erosion on roads and trails		Suitability for roads (natural surface)	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
USCHRC:							
Urban Land, Chatfield Substratum	40	Not Rated		Not Rated		Not Rated	
Chatfield	25	Slight		Moderate Slope/erodibility	0.50	Moderately suited Slope	0.50
Rock Outcrop	20	Not Rated		Not Rated		Not Rated	

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This table can help forest owners or managers plan the use of soils for wood crops. Interpretive ratings are given for the soils according to the limitations that affect various aspects of forest management. The ratings are both verbal and numerical.

 Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsuited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified forest management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils for forest management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Ratings in the column hazard of off-road or off-trail erosion are based on slope and on soil erodibility factor K. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of slight indicates that erosion is unlikely under ordinary climatic conditions; moderate indicates that some erosion is likely and that erosion-control measures may be needed; severe indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and very severe indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column hazard of erosion on roads and trails are based on the soil erodibility factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of slight indicates that little or no erosion is likely; moderate indicates that some erosion is likely, that the roads or trails may require occasional maintenance; and that simple erosion-control measures are needed; and severe indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column suitability for roads (natural surface) are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

USDA **Natural Resources Conservation Service**

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Appendix C

This property, known as the Weldon Brook Wildlife Management Area, is identified on the municipal tax map of the Township of Sparta, Sussex County as:

Block 6, Lots 9, 27, 28, 32, 33.01, 34.43, 34.44, 34.47, 34.53, 37, 38, 38.01, 38.02, 38.03, 38.04, 43, 44, 45, 50, 51.01, 51.02, 51.03, 51.04, 51.05, and 111; and

Block 6.22, Lots 34.12, 34.15, 34.16, 34.17, 34.18, 34.19, 34.20, 34.21, 34.22, 34.23, 34.24, 34.25, 34.26, 34.29, 34.30, 34.31, 34.38, 34.39, 34.51, 34.52, 34.56, 34.58, 34.59, 34.60, 34.61, 34.64, 34.66, 34.67, 34.68, 34.71, 34.72, 34.73, 34.74, 34.75, 34.76, 34.77, 34.78, 34.81, 34.82, and 38.05.