Appendices:

Tompkins County Forest Management Plan

October 10, 2007

Appendix 1

Planning Worksheets

ID	FORESTatt.STANDID	COVTYPE	SIZECLASS	PRESCRIPTI	CUT	PERIMETER	AREA	ACRES	HECTARES	Inv_Date	2006Volumebdft	2006VolumeCord	Standnumber	Adjusted Maturity Age	Years to Maturity	Effective Age	AveDia	Merch Dia	SumOfBA	SumOf%RD
27	ND1	Red Pine - Plt	SSt	harvest		2920.727299	515899.6339	11.84342594	4.792864432	041906	3501.6	12.9	1	81.69	34.27	47.42	11.26	11.22	96.00	65.57
29	ND1	Red Pine - Plt	SSt	harvest	Yes	11090.71691	1872906.343	42.99601339	17.39986929	041906			1	81.69	34.27	47.42	11.26	11.22	96.00	65.57
21	ND2	White Pine	SSt	Group Selection	Yes	1863.21738	217646.1852	4.996468897	2.021999225	041906	759.3	5.63	2	80.00	14.77	65.23	15.05	15.05	36.67	21.47
22	ND3	NH	SPt	No Treatment	Yes	4956.965936	406827.8694	9.339482769	3.779554582	041906	3438.97	0	3	84.00	48.89	35.11	9.47	8.47	100.00	85.33
23	ND4	Hem-Hwds	SSt	System	Yes	4630.757688	703374.5253	16.14725724	6.534563166	041906	6669.9	6.7	4	86.15	24.20	61.95	13.35	13.35	130.00	88.95
25	ND5	NH	LSt	Shelterwood	Yes	8518.594264	1492593.47	34.26523118	13.86664709	041906	5098.9	8.9	5	101.18	28.98	72.19	12.97	12.97	102.00	79.18
26	ND6	NH	SSt	System	Yes	3183.33506	624067.9962	14.32662985	5.797781401	041906	5856.5	5.9	6	87.80	28.40	59.41	12.60	12.60	136.67	90.00
24	ND7	NH	SS	No Treatment		2202.289388	231139.118	5.306224014	2.147352673	041906	4405.5	12.45	7	90.00	33.33	56.67	11.75	11.75	160.00	113.80
28	ND8	NH	SPt	Firewood cut		5384.046279	751789.5072	17.25871229	6.984353065	041906	3305.8	15.95	8	81.33	31.67	49.66	11.91	11.72	128.00	87.04
30	ND9	NH-Brush	SPt	No treatment		6469.950625	522767.3345	12.00108665	4.856667458	041906	628.4	6.2	9	85.52	54.64	30.87	8.64	7.45	96.00	84.39
31	ND10	Locust	SPt	Harvest Locust		1504.364967	82015.70156	1.882821432	0.7619508	041906		2.1	10	80.00	29.50	50.50	12.10	12.10	50.00	34.80
1	NA1	Oak	MSt	Shelterwood	Yes	4346.216323	1060628.843	24.34868786	9.853564384	042106	5941.7	3.74	11	80.93	32.34	48.59	11.57	11.57	122.86	82.80
2	NA2	Oak	Pt	Thinning		3772.174933	411854.8195	9.454885664	3.826256477	042106	4060.5	2.7	12	82.50	19.68	62.82	14.13	14.13	106.67	68.40
3	NA3	Pioneer Hwds	Pt	No Treatment		1124.29238	77896.47172	1.788256927	0.723681903	042106	3174.8	6.59	13	80.35	30.58	49.78	11.90	11.90	113.00	74.47
4	NA3	Pioneer Hwds	Pt	No Treatment		7531.090126	1726532.216	39.63572581	16.04000915	042106			13	80.35	30.58	49.78	11.90	11.90	113.00	74.47
5	NA3	Pioneer Hwds	Pt	No Treatment		4943.508889	955579.0137	21.93707561	8.877619533	042106			13	80.35	30.58	49.78	11.90	11.90	113.00	74.47
6	NA4	Locust	Pt	Clearcut		1854.180737	169576.3124	3.892936464	1.575415493	042106	739.8	11.8	14	85.22	42.36	42.86	9.80	9.80	115.00	83.95
9	NB1	Red Pine - Plt	Pt	Row Thinning	Yes	3821.435951	724039.3962	16.6216574	6.726546098		7301.43	0.61	15	80.00	40.64	39.36	9.87	9.87	116.67	83.60
8	NB2	Red Pine - Plt	Pt	Row Thinning	Yes	7288.010707	1177066.208	27.02172195	10.9353029		3790.9	2.16	16	83.75	43.07	40.68	9.76	9.59	97.14	73.31
7	NB3	NH-Oak	MSt	Shelterwood	Yes	2792.79943	467262.0962	10.72686171	4.341006921		6290.8	5.86	17	89.14	31.29	57.85	12.10	12.10	233.33	164.67
10	NB4	NH		No Treatment		5086.568016	295570.1823	6.78535772	2.745936847		2882.2	7.2	18	105.71	43.83	61.88	10.64	10.64	140.00	118.20
12	NC2	Pioneer Hwds	LPT	Firewood cut		3611.299191	361132.0079	8.290450136	3.355026138		3228	18.4	20	82.22	27.89	54.33	12.50	12.50	120.00	76.80
15	NC2	Pioneer Hwds	SSt	Firewood cut		2730.207603	218589.2311	5.018118252	2.030760408				20	82.22	27.89	54.33	12.50	12.50	120.00	76.80
14	NC4	Red Pine - Plt	SPt	Row Thinning	Yes	3274.221201	359982.4399	8.264059686	3.344346302		7776.6	5.42	21	80.00	44.01	35.99	9.63	9.20	182.00	139.72
20	NC4	Red Pine - Plt	SPt	Row Thinning		4574.127153	790114.029	18.13852225	7.340399524				21	80.00	44.01	35.99	9.63	9.20	182.00	139.72
17	NC5	NH	SPt	Firewood cut		1484.384182	131435.9112	3.017353333	1.221079571		4202.5	6.3	22	82.11	36.93	45.17	10.71	10.71	126.67	89.87
19	NC5	NH	LPt	Firewood cut		2687.106188	288839.214	6.630835949	2.683404105				22	82.11	36.93	45.17	10.71	10.71	126.67	89.87
18	NC6	NH	LSt	Firewood cut		1499.561877	135212.7284	3.104057125	1.256167351		1578.8	2.53	23	80.00	37.50	42.50	10.50	10.50	60.00	41.80
32	NE2	Red Pine - Plt	SPt	No treatment		7096.887164	1286202.145	29.52713831	11.94920893		7495.81	8.2	24	80.28	30.22	50.06	12.05	11.97	121.67	80.10
33	NE3	Plt	SPt	No treatment		1818.001024	200740.8399	4.608375572	1.864943428		6570.5	4	25	81.33	24.88	56.45	13.16	13.06	103.33	65.13
36	NE1	Red Pine - Plt	SPt	Row Thinning	Yes	3370.584727	342476.8699	7.862187096	3.181714234		2239.4	2.45	26	87.74	38.81	48.94	10.96	10.61	116.67	85.93
34	NE4	NH	LSt	Shelterwood		1854.336994	138600.108	3.18182066	1.287637137		6433.5	1.3	27	97.65	27.60	70.04	13.09	13.09	113.33	84.30
35	NE5	Norway Spruce	LPt	Row Thinning	Yes	3901.908681	842744.5238	19.34675215	7.82935282		10163	30.7	28	80.00	35.15	44.85	10.97	10.97	226.67	153.93
13	NC3	Hem-Hwds	SSt	thinning		2586.29036	357266.0894	8.201700859	3.31911058		8345.3	22.9	29	88.21	29.80	58.41	12.35	12.35	260.00	170.73
38	CA2	NH	MSt	Shelterwood		3435.647076	258261.9348	5.928878209	2.399331886		5941	1.9	31	82.22	37.27	44.95	10.95	10.65	133.33	95.00
39	CA3	NH	LSt	Selection	Yes	5223.820261	1229904.73	28.2347275	11.42618883		2655.6	8.2	32	100.00	36.22	63.78	11.98	11.66	101.82	83.53
40	CA4	Locust	SPt	Harvest Locust		2952.980915	291338.4879	6.688211385	2.70662312		2176.7	9.7	33	82.11	35.33	46.77	11.03	11.03	126.67	77.27
41	CA5	NH	LSt	Selective		2125.944833	141378.4833	3.245603381	1.313449089		4817.4	10.52	34	80.00	36.67	43.33	10.67	10.67	180.00	100.85

Cutting Cycle Worksheet

				Cut 1					Cut 2					Cut 3			
StandNumber	Stand Name	SumOf%RD	Years to Cut	%RD at Cut	Residual RD	Cut 1	Year	ears to Gro	%RD at cut	Residual 2	Cut2	Year	ears to Gro	%RD at cut	Residual 3	Cut 3	Year
1	ND1	66	7.22	80	60.00	20.00	2013	10	80	60	20	2023	10	80	60	20	2033
2	ND2	21	29.27	80	53.60	26.40	2017	10	74	60	14	2027	10	80	60	20	2037
3	ND3	85	-2.67	85	60.00	25.33	2018	10	80	60	20	2028	10	80	60	20	2038
4	ND4	89	-4.48	89	60.00	28.95	2007	10	80	60	20	2017	10	80	60	20	2027
5	ND5	79	0.41	80	60.00	20.00	2007	10	80	60	20	2017	10	80	60	20	2027
6	ND6	90	-5.00	90	60.00	30.00	2007	10	80	60	20	2017	10	80	60	20	2027
7	ND7	114	-16.90	114	76.25	37.55	2007	10	96	64	32	2017	10	84	60	24	2027
8	ND8	87	-3.52	87	60.00	27.04	2013	10	80	60	20	2023	10	80	60	20	2033
9	ND9	84	-2.20	84	60.00	24.39	2008	10	80	60	20	2018	10	80	60	20	2028
10	ND10	35	22.60	80	60.00	20.00	2030	10	80	60	20	2040	10	80	60	20	2050
11	NA1	83	-1.40	83	60.00	22.80	2008	10	80	60	20	2018	10	80	60	20	2028
12	NA2	68	5.80	80	60.00	20.00	2014	10	80	60	20	2024	10	80	60	20	2034
13	NA3	74	2.77	80	60.00	20.00	2010	10	80	60	20	2020	10	80	60	20	2030
14	NA4	84	-1.98	84	60.00	23.95	2008	10	80	60	20	2018	10	80	60	20	2028
15	NB1	84	-1.80	84	60.00	23.60	2013	10	80	60	20	2023	10	80	60	20	2033
16	NB2	73	3.34	80	60.00	20.00	2013	10	80	60	20	2023	10	80	60	20	2033
17	NB3	165	-42.33	165	110.33	54.34	2008	5	120	81	40	2013	5	91	60	31	2018
18	NB4	118	-19.10	118	79.19	39.01	2017	10	99	66	33	2027	10	86	60	26	2037
20	NC2	77	1.60	80	60.00	20.00	2012	10	80	60	20	2022	10	80	60	20	2032
21	NC4	140	-29.86	140	93.61	46.11	2012	10	114	76	37	2022	10	96	64	32	2032
22	NC5	90	-4.93	90	60.00	29.87	2008	10	80	60	20	2018	10	80	60	20	2028
23	NC6	42	19.10	80	60.00	20.00	2026	10	80	60	20	2036	10	80	60	20	2046
24	NE2	80	-0.05	80	60.00	20.10	2012	10	80	60	20	2022	10	80	60	20	2032
25	NE3	65	7.43	80	60.00	20.00	2017	10	80	60	20	2027	10	80	60	20	2037
26	NE1	86	-2.97	86	60.00	25.93	2012	10	80	60	20	2022	10	80	60	20	2032
27	NE4	84	-2.15	84	60.00	24.30	2008	10	80	60	20	2018	10	80	60	20	2028
28	NE5	154	-36.97	154	103.14	50.80	2008	5	113	76	37	2013	5	86	60	26	2018
29	NC3	171	-45.37	171	114.39	56.34	2008	5	124	83	41	2013	5	93	63	31	2018
31	CA2	95	-7.50	95	63.65	31.35	2018	10	84	60	24	2028	10	80	60	20	2038
32	CA3	84	-1.76	84	60.00	23.53	2018	10	80	60	20	2028	10	80	60	20	2038
33	CA4	77	1.37	80	60.00	20.00	2009	10	80	60	20	2019	10	80	60	20	2029
34	CA5	101	-10.43	101	67.57	33.28	2010	10	88	60	28	2020	10	80	60	20	2030

Stand Number: 1 Area (acres): 43.0

Stand ID: ND1 #Points: 15 4/18/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	79.17	66.45	0.00
Red Maple	6.94	2.95	0.00
Sugar Maple	5.56	28.31	0.00
White Ash	5.56	1.60	0.00
Black Cherry	1.39	0.52	0.00
Northern Red Oak	1.39	0.18	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 2 Area (acres): 5.0

Stand ID: ND2 #Points: 3 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
White Pine	36.36	26.78	30.04
Red Maple	27.27	41.60	29.60
Quaking Aspen	27.27	24.83	1.16
Northern Red Oak	9.09	6.80	39.19
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 3 Area (acres): 9.3

Stand ID: ND3 #Points: 3 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	17.65	25.46	0.00
Red Maple	41.18	58.78	0.00
Black Birch	11.76	0.00	0.00
Beech	11.76	12.47	0.00
Quaking Aspen	11.76	0.00	0.00
Northern Red Oak	5.88	3.30	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 4 Area (acres): 16.1

Stand ID: ND4 #Points: 4 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	73.08	84.41	72.51
Sugar Maple	7.69	3.86	10.38
Black Birch	3.85	2.27	6.51
Hickory	7.69	2.75	10.50
Beech	7.69	6.72	0.09
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 5 Area (acres): 34.3

Stand ID: ND5 #Points: 10 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	13.73	14.10	9.69
Sugar Maple	52.94	49.73	63.84
Black Birch	5.88	7.44	0.04
White Ash	13.73	11.86	19.17
Quaking Aspen	7.84	14.15	0.05
Northern Red Oak	1.96	0.57	2.75
Basswood	3.92	2.16	4.47
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 6 Area (acres): 14.3

Stand ID: ND6 #Points: 6 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Hemlock	2.44	7.03	0.00
Red Maple	34.15	36.50	25.24
Sugar Maple	14.63	21.49	5.25
Black Birch	2.44	3.95	0.00
Beech	4.88	7.81	0.00
White Ash	17.07	12.53	36.25
Quaking Aspen	4.88	3.08	0.06
Black Cherry	7.32	4.37	13.95
White Oak	4.88	1.07	9.57
Northern Red Oak	4.88	1.05	9.64
Basswood	2.44	1.12	0.03
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 7 Area (acres): 5.3

Stand ID: ND7 #Points: 3 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Hemlock	12.50	25.68	0.00
Red Maple	41.67	25.61	66.60
Sugar Maple	8.33	17.38	0.00
Beech	16.67	21.73	0.14
White Ash	8.33	2.52	33.01
Quaking Aspen	8.33	4.11	0.14
Basswood	4.17	2.98	0.12
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 8 Area (acres): 17.3

Stand ID: ND8 #Points: 5 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Pitch Pine	3.13	4.06	0.00
White Pine	34.38	29.72	0.00
Hemlock	18.75	20.69	0.00
Red Maple	37.50	33.23	0.00
Beech	3.13	11.28	0.00
Northern Red Oak	3.13	1.02	0.00
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 9 Area (acres): 12.0

Stand ID: ND9 #Points: 5 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	6.25	12.57	0.00
White Pine	2.08	0.00	0.00
Red Maple	2.08	0.00	0.00
Sugar Maple	27.08	2.05	0.00
White Ash	18.75	52.70	0.00
Quaking Aspen	18.75	21.68	0.00
Black Cherry	10.42	4.09	0.00
Northern Red Oak	2.08	0.52	0.00
Black Locust	8.33	0.00	0.00
Other Non-commercial	2.08	0.00	0.00
Scotch Pine	2.08	6.39	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 10 Area (acres): 1.9

Stand ID: ND10 #Points: 1 4/19/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	80.00	75.33	0.00
Black Locust	20.00	24.67	0.00
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 11 Area (acres): 24.3

Stand ID: NA1 #Points: 7 4/21/2006

Species	% Basal Area	% # Trees	% Volume 2
White Pine	2.33	5.72	0.00
Hemlock	46.51	49.67	50.00
Red Maple	25.58	30.59	6.58
Sugar Maple	2.33	1.05	3.24
Hickory	2.33	5.72	0.00
Quaking Aspen	4.65	1.63	8.68
White Oak	2.33	0.43	3.37
Chestnut Oak	2.33	1.22	3.07
Northern Red Oak	11.63	3.98	25.06
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 12 Area (acres): 9.5

Stand ID: NA2 #Points: 3 4/21/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	25.00	39.05	0.08
Yellow Birch	6.25	14.70	0.00
Beech	6.25	14.70	0.00
Quaking Aspen	6.25	3.67	0.10
White Oak	18.75	3.94	30.76
Chestnut Oak	12.50	3.70	30.42
Northern Red Oak	25.00	20.24	38.63
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 13 Area (acres): 63.4

Stand ID: NA3 #Points: 20 4/21/2006

Species	% Basal Area	% # Trees	% Volume 2
White Pine	30.97	28.95	16.36
Red Maple	17.70	17.31	13.41
Serviceberry	0.88	2.23	0.00
Black Birch	0.88	0.80	0.00
Hickory	0.88	1.25	0.00
Beech	0.88	1.25	0.00
White Ash	3.54	4.57	0.03
Quaking Aspen	24.78	30.90	30.23
Chestnut Oak	0.88	0.66	0.01
Northern Red Oak	18.58	12.06	39.95
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 14 Area (acres): 3.9

Stand ID: NA4 #Points: 4 4/21/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	17.39	16.30	0.33
Sugar Maple	13.04	11.62	48.47
White Ash	4.35	1.11	0.00
Black Cherry	13.04	10.96	51.19
Black Locust	52.17	60.00	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 15 Area (acres): 16.6

Stand ID: NB1 #Points: 6 6/8/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	97.14	97.25	99.98
Red Maple	2.86	2.75	0.02
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 16 Area (acres): 27.0

Stand ID: NB2 #Points: 7 6/8/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	70.59	61.82	88.82
Red Maple	5.88	5.06	0.00
Sugar Maple	8.82	2.39	11.18
Serviceberry	2.94	12.33	0.00
Hickory	2.94	5.48	0.00
White Ash	5.88	7.45	0.00
Black Cherry	2.94	5.48	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 17 Area (acres): 10.7

Stand ID: NB3 #Points: 3 6/8/2006

Species	% Basal Area	% # Trees	% Volume 2
Hemlock	48.57	65.95	40.84
Red Maple	5.71	4.50	0.06
Sugar Maple	2.86	2.66	0.00
Beech	20.00	11.34	11.51
White Ash	11.43	3.81	22.89
Black Cherry	5.71	10.04	0.00
White Oak	5.71	1.70	24.69
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 18 Area (acres): 6.8

Stand ID: NB4 #Points: 2 6/8/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	21.43	26.50	0.00
Sugar Maple	50.00	48.77	36.48
Beech	14.29	19.63	0.11
White Ash	14.29	5.09	63.41
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 20 Area (acres): 13.3

Stand ID: NC2 #Points: 3 6/13/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	55.56	59.79	99.38
White Pine	16.67	6.56	0.33
Red Maple	5.56	4.08	0.12
Sugar Maple	5.56	1.81	0.09
White Ash	16.67	27.76	0.09
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 21 Area (acres): 26.4

Stand ID: NC4 #Points: 10 6/13/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	73.63	23.65	99.97
Red Maple	4.40	2.98	0.01
Sugar Maple	1.10	7.60	0.00
Beech	4.40	24.70	0.00
White Ash	14.29	38.70	0.01
Black Cherry	1.10	1.90	0.00
White Oak	1.10	0.47	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 22 Area (acres): 9.6

Stand ID: NC5 #Points: 3 6/13/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	36.84	38.00	67.08
Red Maple	47.37	54.34	11.46
Sugar Maple	5.26	2.77	0.06
White Oak	10.53	4.89	21.39
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 23 Area (acres): 3.1

Stand ID: NC6 #Points: 1 6/13/2006

Species	% Basal Area	% # Trees	% Volume 2
White Pine	33.33	25.77	99.61
Red Maple	66.67	74.23	0.39
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 24 Area (acres): 29.5

Stand ID: NE2 #Points: 12 06/08/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	85.62	54.80	96.19
Red Maple	4.79	18.29	0.75
Sugar Maple	0.68	1.47	0.00
Black Birch	0.68	1.47	0.00
White Ash	1.37	2.38	0.72
Quaking Aspen	0.68	0.27	0.01
Fire Cherry	1.37	2.29	0.00
Black Cherry	3.42	17.43	1.07
Northern Red Oak	1.37	1.60	1.27
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 25 Area (acres): 4.6

Stand ID: NE3 #Points: 3 06/08/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	35.48	41.16	18.89
Red Maple	3.23	20.66	0.00
Sugar Maple	3.23	0.83	0.00
Yellow Birch	3.23	5.17	0.00
Tamarack	45.16	20.82	77.69
Black Cherry	9.68	11.36	3.42
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 26 Area (acres): 7.9

Stand ID: NE1 #Points: 3 06/08/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	28.57	6.71	51.96
Red Maple	2.86	1.48	0.00
Sugar Maple	25.71	72.37	9.85
White Ash	17.14	2.05	9.80
Ironwood	2.86	13.34	0.00
Tamarack	5.71	2.32	0.00
Black Cherry	2.86	0.11	18.50
Northern Red Oak	11.43	1.25	9.89
Basswood	2.86	0.37	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 27 Area (acres): 3.2

Stand ID: NE4 #Points: 3 06/08/2006

Species	% Basal Area	% # Trees	% Volume 2
Hemlock	8.82	22.43	0.00
Red Maple	2.94	4.21	0.00
Sugar Maple	44.12	23.39	62.89
White Ash	20.59	15.84	22.85
Black Cherry	2.94	1.20	0.00
Northern Red Oak	20.59	32.94	14.26
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 28

Area (acres): 19.3

Stand ID: NE5

#Points: 6

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	5.88	6.85	0.04
White Ash	1.47	0.65	0.01
Quaking Aspen	11.76	12.15	2.68
Northern Red Oak	1.47	0.65	3.35
Red Spruce	79.41	79.71	93.91
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 29

Area (acres): 8.2

Stand ID: NC3

#Points: 3

Species	% Basal Area	% # Trees	% Volume 2
Hemlock	23.08	21.37	0.22
Sugar Maple	20.51	28.99	5.45
White Ash	28.21	30.04	55.53
Quaking Aspen	7.69	2.46	29.69
Chestnut Oak	2.56	1.21	8.88
Basswood	17.95	15.92	0.24
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 30 Area (acres): 53.6

Stand ID: CA1 #Points: 18 6/20/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	4.76	2.44	0.00
Red Maple	25.00	29.27	0.00
Sugar Maple	7.14	14.63	0.00
Black Birch	1.19	2.44	0.00
Beech	2.38	4.88	0.00
White Ash	2.38	4.88	0.00
Quaking Aspen	10.71	2.44	0.00
Fire Cherry	44.05	34.15	0.00
Black Cherry	2.38	4.88	0.00
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 31 Area (acres): 5.9

Stand ID: CA2 #Points: 3 6/20/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	85.00	45.98	84.02
Sugar Maple	5.00	5.34	0.00
Ironwood	5.00	48.09	0.00
Black Cherry	5.00	0.59	15.98
Total			
?Species Class?	100.00	100.00	0.00

Stand Number: 32 Area (acres): 28.2

Stand ID: CA3 #Points: 11 6/20/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	23.21	22.03	0.24
Sugar Maple	44.64	21.78	94.79
Hawthorn	1.79	8.56	0.00
White Ash	8.93	10.76	0.18
Ironwood	7.14	27.83	0.00
Fire Cherry	1.79	0.70	0.00
Black Cherry	5.36	3.54	0.07
Basswood	5.36	2.66	4.71
Other Non-commercial	1.79	2.14	0.00
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 33 Area (acres): 6.7

Stand ID: CA4 #Points: 3 6/20/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Maple	42.11	52.71	28.38
Sugar Maple	5.26	7.21	0.00
White Ash	42.11	36.47	49.85
Black Cherry	5.26	1.80	21.54
Other Non-commercial	5.26	1.80	0.23
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 34 Area (acres): 3.2

Stand ID: CA5 #Points: 4 6/20/2006

Species	% Basal Area	% # Trees	% Volume 2
Red Pine	22.22	24.56	33.94
White Ash	77.78	75.44	66.06
Total			
?Species Class?	100.00	100.00	100.00

Stand Number: 1
Stand ID: ND1

Area (acres): 43.0
4/18/2006
#Points: 15

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	18.7	69.5	0.0	0.00	0	7.0	22.5
Product Group Total	18.7	69.5	0.0	0.00	100	5.4	12.0
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Scrib79	0.7	0.6	74.2	119.00	8	14.0	20.0
White Ash--Scrib80	1.3	0.4	105.3	248.00	12	24.0	10.0
Black Cherry--Scrib80	1.3	1.2	158.6	127.18	17	15.0	20.0
Northern Red Oak--Scrib78	1.3	0.4	136.7	322.00	15	24.0	15.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Scrib80	1.3	1.0	129.9	136.00	14	16.0	15.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs ,Fe*
Red Maple--Scrib79 ,MP-S,,Scrib79	2.7	2.5	209.5	84.00	23	14.0	12.5
Sugar Maple--Scrib79 ,MP-S,,Scrib79	1.3	1.7	100.5	59.22	11	13.0	12.5
Product Group Total	10.0	7.9	914.7	116.27	100	15.7	14.5
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Scrib79	22.7	28.9	2,586.9	89.64	100	12.0	25.9
Product Group Total	22.7	28.9	2,586.9	89.64	100	12.0	25.9
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	34.7	62.4	11.5	0.18	100	10.3	28.7
Product Group Total	34.7	62.4	11.5	0.18	100	10.3	28.7
Premerch/Adv Reg		#			%	*Inches*	***
Sugar Maple--	2.7	64.9	0.0	0.00	0	2.7	1.0
Product Group Total	2.7	64.9	0.0	0.00	100		

Stand Number: 1
Stand ID: ND1

Area (acres): 43.0
4/18/2006
#Points: 15

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Cull							
Cull		#			%	*Inches*	***
Sugar Maple--	0.7	1.2	0.0	0.00	0	10.0	0.0
Product Group Total	0.7	1.2	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs ,Fe*
Red Maple--RGO Cords-Logs ,MP- ,RG	4.0	4.6	0.8	0.17	59	12.8	17.7
White Ash--RGO Cords-Logs ,MP- ,RGO	2.7	2.5	0.5	0.21	41	14.0	17.5
Product Group Total	6.7	7.1	1.3	0.18	100	13.2	17.6
Stand Total	**96.0**	**241.9**					
Stand Means						**8.2**	

Stand Number: 2
Stand ID: ND2

Area (acres): 5.0
4/19/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Pulpwood		#	*Tons ,Cords*	*Tons ,Cords*	*%*	*Inches*	*Logs ,Fe*
White Pine--RGO PTons-Logs ,MP- ,RG	13.3	11.0	4.5	0.41	100	14.9	30.0
Cull		#			*%*	*Inches*	***
White Pine--	6.7	1.6	0.0	0.00	0	28.0	1.0
Product Group Total	20.0	12.6	4.5	0.36	100	11.9	22.6
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Red Maple--Doyle79	6.7	4.8	353.3	74.00	44	16.0	10.0
Northern Red Oak--Doyle 78	6.7	4.8	448.8	94.00	56	16.0	15.0
Product Group Total	13.3	9.5	802.1	84.00	100	16.0	12.5
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
White Pine--Doyle79	6.7	6.2	311.8	50.00	100	14.0	10.0
Product Group Total	6.7	6.2	311.8	50.00	100	14.0	10.0
Premerch/Adv Reg		#			*%*	*Inches*	***
Red Maple--	13.3	24.4	0.0	0.00	0	10.0	24.0
Product Group Total	13.3	24.4	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Quaking Aspen--RGO Cords-Logs	20.0	17.4	6.8	0.39	100	14.5	30.0
Product Group Total	20.0	17.4	6.8	0.39	100	14.5	30.0
Stand Total	**73.3**	**70.2**					
Stand Means						**13.8**	

Stand Number: 3
Stand ID: ND3

Area (acres): 9.3
4/19/2006
#Points: 3

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	20.0	0.0	0.0	0.00	0	0.0	0.0
Black Birch--	13.3	0.0	0.0	0.00	0	0.0	0.0
Cull		#			%	*Inches*	***
Beech--	13.3	9.5	0.0	0.00	0	16.0	10.0
Product Group Total	46.7	9.5	0.0	0.00	100	11.0	14.0
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	13.3	0.0	0.0	0.00	0	0.0	0.0
Northern Red Oak--Doyle 78	6.7	2.5	745.0	295.00	66	22.0	20.0
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	6.7	3.8	392.3	104.00	34	18.0	10.0
Product Group Total	26.7	6.3	1,137.3	180.59	100	19.7	14.0
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	20.0	19.5	1,667.5	85.52	100	13.7	24.0
Product Group Total	20.0	19.5	1,667.5	85.52	100	13.7	24.0
Cull							
Cull		#			%	*Inches*	***
Red Maple--	20.0	41.3	0.0	0.00	0	9.4	15.0
Product Group Total	20.0	41.3	0.0	0.00	100		
Stand Total	**113.3**	**76.6**					
Stand Means						**12.6**	

Stand Number: 4
Stand ID: ND4

Area (acres): 16.1
4/19/2006
#Points: 4

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	25.0	15.4	2,373.5	153.78	53	17.2	17.5
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	10.0	11.8	578.2	49.04	13	12.5	17.3
Sugar Maple--Doyle79	5.0	6.4	191.0	30.00	4	12.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	10.0	7.5	717.7	95.61	16	15.6	13.8
Black Birch--Doyle 78	5.0	4.7	290.0	62.00	6	14.0	15.0
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	5.0	1.6	358.1	225.00	8	24.0	10.0
Product Group Total	60.0	47.4	4,508.5	95.18	100	15.2	15.3
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	15.0	62.9	0.0	0.00	0	6.6	24.0
Product Group Total	15.0	62.9	0.0	0.00	100		
Cull							
Cull		#			%	*Inches*	***
Red Maple--	15.0	49.0	0.0	0.00	0	7.5	0.0
Product Group Total	15.0	49.0	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	20.0	27.4	4.4	0.16	65	11.6	19.1
Beech--RGO Cords-Logs	10.0	13.8	2.3	0.17	35	11.5	21.6
Product Group Total	30.0	41.3	6.7	0.16	100	11.5	20.0
Hardwood Tie							
Ties and Timbers		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Hickory--Doyle79	10.0	5.7	588.5	104.00	100	18.0	10.0
Product Group Total	10.0	5.7	588.5	104.00	100	18.0	10.0
Stand Total	**130.0**	**206.1**					

Stand Means	**10.8**

Stand Number: 5
Stand ID: ND5

Area (acres): 34.3
4/19/2006
#Points: 10

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Quaking Aspen--	4.0	15.9	0.0	0.00	0	6.8	32.0
Cull		#			%	*Inches*	***
Black Birch--	2.0	2.5	0.0	0.00	0	12.0	0.0
Product Group Total	6.0	18.5	0.0	0.00	100	7.8	28.9
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	2.0	2.2	110.7	51.00	3	13.0	15.0
Sugar Maple--Doyle79	20.0	13.2	1,576.7	119.71	42	16.7	16.4
White Ash--Doyle80	2.0	1.9	174.0	93.00	5	14.0	25.0
Northern Red Oak--Doyle 78	2.0	0.8	131.8	174.00	4	22.0	10.0
Basswood--Doyle 78	2.0	1.4	166.2	116.00	4	16.0	20.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	2.0	2.5	76.4	30.00	2	12.0	10.0
Sugar Maple--Doyle79	10.0	8.9	656.5	74.18	18	14.4	14.2
White Ash--Doyle80	4.0	3.7	312.1	84.85	8	14.1	14.6
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	2.0	1.9	119.7	64.00	3	14.0	15.0
Sugar Maple--Scrib79 ,Doyle79	4.0	3.8	217.2	57.16	6	13.9	12.1
White Ash--Doyle80	2.0	1.4	204.8	143.00	5	16.0	25.0
Product Group Total	52.0	41.6	3,746.0	90.09	100	15.1	15.5
Premerch/Adv Reg		#			%	*Inches*	***
Sugar Maple--	4.0	15.9	0.0	0.00	0	6.8	26.9
Product Group Total	4.0	15.9	0.0	0.00	100		
Cull							
Cull		#			%	*Inches*	***
Sugar Maple--	2.0	1.9	0.0	0.00	0	14.0	20.0
Product Group Total	2.0	1.9	0.0	0.00	100		

Stand Number: 5
Stand ID: ND5

Area (acres): 34.3
4/19/2006
#Points: 10

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Hardwood Pulp							
Pulpwood		*#*	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	8.0	12.1	1.8	0.15	20	11.0	17.4
Sugar Maple--RGO Cords-Logs	14.0	22.4	3.0	0.13	33	10.7	18.3
Black Birch--RGO Cords-Logs	4.0	7.3	0.7	0.10	8	10.0	15.0
White Ash--RGO Cords-Logs	6.0	8.8	1.9	0.22	22	11.2	28.5
Quaking Aspen--RGO Cords-Logs	4.0	2.9	0.9	0.32	10	16.0	20.0
Basswood--RGO Cords-Logs	2.0	1.4	0.6	0.39	6	16.0	25.0
Product Group Total	38.0	54.9	8.9	0.16	100	11.3	19.6
Stand Total	**102.0**	**132.8**					
Stand Means						**11.9**	

Stand Number: 6
Stand ID: ND6

Area (acres): 14.3
4/19/2006
#Points: 6

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Hemlock--	3.3	17.0	0.0	0.00	0	6.0	16.0
Sugar Maple--	10.0	36.1	0.0	0.00	0	7.1	26.1
Black Birch--	3.3	9.5	0.0	0.00	0	8.0	24.0
Beech--	3.3	17.0	0.0	0.00	0	6.0	16.0
White Ash--	3.3	17.0	0.0	0.00	0	6.0	1.0
Cull		#			%	*Inches*	***
Beech--	3.3	1.9	0.0	0.00	0	18.0	0.0
Product Group Total	26.7	98.4	0.0	0.00	100	7.5	19.4
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	6.7	4.6	591.5	128.51	13	16.3	20.0
White Ash--Doyle80	6.7	4.2	523.0	123.24	11	17.0	15.0
Black Cherry--Scrib80 ,Doyle80	3.3	1.3	530.3	420.00	12	22.0	30.0
White Oak--Doyle 78	3.3	1.1	310.9	293.00	7	24.0	15.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	3.3	3.6	144.7	40.00	3	13.0	10.0
Sugar Maple--Doyle79	3.3	3.6	184.4	51.00	4	13.0	15.0
White Ash--Doyle80	3.3	2.4	241.1	101.00	5	16.0	15.0
White Oak--Doyle 78	3.3	1.5	206.3	135.00	5	20.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	6.7	6.3	313.1	49.44	7	13.9	10.0
White Ash--Doyle80	6.7	4.3	636.1	148.83	14	16.9	20.0
Black Cherry--Scrib80 ,Doyle80	3.3	5.1	121.2	24.00	3	11.0	10.0
Veneer		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	3.3	2.4	241.1	101.00	5	16.0	15.0
Northern Red Oak--Doyle 78	6.7	2.5	515.2	204.00	11	22.0	12.5
Product Group Total	60.0	42.9	4,558.8	106.30	100	16.0	14.4
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	16.7	47.7	0.0	0.00	0	8.0	24.0
Product Group Total	16.7	47.7	0.0	0.00	100		

Stand Number: 6
Stand ID: ND6

Area (acres): 14.3
4/19/2006
#Points: 6

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Cull							
Cull		#			%	*Inches*	***
Red Maple--	3.3	7.5	0.0	0.00	0	9.0	10.0
Product Group Total	3.3	7.5	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	10.0	18.3	1.8	0.10	31	10.0	15.0
Sugar Maple--RGO Cords-Logs	6.7	12.2	1.6	0.13	27	10.0	20.0
Quaking Aspen--RGO Cords-Logs	6.7	7.4	1.4	0.18	23	12.8	16.6
Black Cherry--RGO Cords-Logs	3.3	4.2	0.6	0.14	10	12.0	15.0
Basswood--RGO Cords-Logs	3.3	2.7	0.6	0.21	10	15.0	15.0
Product Group Total	30.0	45.0	5.9	0.13	100	11.1	16.6
Stand Total	**136.7**	**241.6**					
Stand Means						**10.2**	

Stand Number: 7
Stand ID: ND7

Area (acres): 5.3
4/19/2006
#Points: 3

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Hemlock--	20.0	87.0	0.0	0.00	0	6.5	15.0
Red Maple--	6.7	19.1	0.0	0.00	0	8.0	32.0
Sugar Maple--	13.3	58.9	0.0	0.00	0	6.4	14.3
Product Group Total	40.0	165.0	0.0	0.00	100	6.6	16.7
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	20.0	12.8	1,583.6	123.95	48	16.9	16.9
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	6.7	8.5	254.6	30.00	8	12.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	6.7	6.2	311.8	50.00	9	14.0	10.0
White Ash--Doyle80	13.3	8.5	1,140.1	133.39	35	16.9	17.8
Product Group Total	46.7	36.0	3,290.2	91.27	100	15.4	14.3
Cull							
Cull		#			%	*Inches*	***
Beech--	13.3	58.9	0.0	0.00	0	6.4	0.0
Product Group Total	13.3	58.9	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	26.7	40.2	5.9	0.15	47	11.0	18.5
Beech--RGO Cords-Logs	13.3	14.7	2.3	0.16	19	12.9	15.0
Quaking Aspen--RGO Cords-Logs	13.3	13.9	2.3	0.17	19	13.3	15.0
Basswood--RGO Cords-Logs	6.7	10.1	1.9	0.19	15	11.0	25.0
Product Group Total	60.0	78.9	12.5	0.16	100	11.8	18.1
Stand Total	**160.0**	**338.9**					
Stand Means						**9.3**	

Stand Number: 8
Stand ID: ND8

Area (acres): 17.3
4/19/2006
#Points: 5

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
White Pine--	4.0	11.5	0.0	0.00	0	8.0	32.0
Hemlock--	4.0	11.5	0.0	0.00	0	8.0	1.0
Red Maple--	8.0	0.0	0.0	0.00	0	0.0	0.0
Cull		#			%	*Inches*	***
White Pine--	8.0	11.1	0.0	0.00	0	11.5	1.0
Red Maple--	8.0	22.6	0.0	0.00	0	8.0	0.0
Product Group Total	32.0	56.6	0.0	0.00	100	8.2	11.4
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	4.0	2.9	212.0	74.00	17	16.0	10.0
Northern Red Oak--Doyle 78	4.0	1.8	330.0	180.00	26	20.0	15.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	4.0	2.3	312.4	138.00	25	18.0	15.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Scrib79 ,Doyle79	8.0	8.0	405.5	50.96	32	13.6	13.2
Product Group Total	20.0	14.9	1,259.9	84.45	100	15.7	13.1
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Pine--Doyle79	8.0	8.0	534.4	67.16	47	13.6	16.8
Hemlock--Doyle 78	8.0	7.5	593.5	79.31	53	14.5	20.0
Product Group Total	16.0	15.4	1,128.0	73.05	100	14.0	18.3
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Pitch Pine--RGO Cords-Logs	4.0	7.3	0.7	0.10	6	10.0	15.0
White Pine--RGO Cords-Logs	24.0	23.2	9.1	0.39	72	13.8	33.8
Hemlock--RGO Cords-Logs	12.0	18.4	2.8	0.15	22	11.3	19.0
Product Group Total	40.0	48.9	12.6	0.26	100	12.1	24.0

Stand Number: 8
Stand ID: ND8

Area (acres): 17.3
4/19/2006
#Points: 5

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Cull							
Cull		#			%	*Inches*	***
Beech--	4.0	20.4	0.0	0.00	0	6.0	0.0
Product Group Total	4.0	20.4	0.0	0.00	100		
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	16.0	24.3	3.3	0.14	100	11.0	18.0
Product Group Total	16.0	24.3	3.3	0.14	100	11.0	18.0
Stand Total	**128.0**	**180.5**					
Stand Means						**11.0**	

Stand Number: 9
Stand ID: ND9

Area (acres): 12.0
4/19/2006
#Points: 5

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Posts		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Black Locust--RGO Cords-Logs	8.0	0.0	0.0	0.00	0	0.0	0.0
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	2.0	5.7	0.0	0.00	0	8.0	24.0
White Pine--	2.0	0.0	0.0	0.00	0	0.0	0.0
Red Maple--	2.0	0.0	0.0	0.00	0	0.0	0.0
White Ash--	6.0	30.6	0.0	0.00	0	6.0	16.0
Black Cherry--	8.0	0.0	0.0	0.00	0	0.0	0.0
Scotch Pine--	2.0	5.7	0.0	0.00	0	8.0	24.0
Cull		#			%	*Inches*	***
Quaking Aspen--	4.0	4.4	0.0	0.00	0	12.9	5.0
Product Group Total	34.0	46.4	0.0	0.00	100	8.4	17.7
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Northern Red Oak--Scrib78	2.0	0.5	152.9	327.00	34	28.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Scrib79	2.0	0.9	147.6	161.00	33	20.0	10.0
White Ash--Scrib80	2.0	1.1	148.3	131.00	33	18.0	10.0
Product Group Total	6.0	2.5	448.8	178.36	100	20.9	10.0
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Scrib79	2.0	1.9	179.6	96.00	100	14.0	15.0
Product Group Total	2.0	1.9	179.6	96.00	100	14.0	15.0
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	2.0	3.7	0.4	0.10	100	10.0	15.0
Product Group Total	2.0	3.7	0.4	0.10	100	10.0	15.0

Stand Number: 9
Stand ID: ND9

Area (acres): 12.0
4/19/2006
#Points: 5

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Sugar Maple--	18.0	0.0	0.0	0.00	0	0.0	0.0
Product Group Total	18.0	0.0	0.0	0.00	100		
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	2.0	0.9	0.3	0.37	100	20.0	15.0
Product Group Total	2.0	0.9	0.3	0.37	100	20.0	15.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	4.0	0.0	0.0	0.00	0	0.0	0.0
White Ash--RGO Cords-Logs	10.0	15.5	2.1	0.13	37	10.9	17.0
Quaking Aspen--RGO Cords-Logs	14.0	15.0	2.9	0.19	52	13.1	16.7
Black Cherry--RGO Cords-Logs	2.0	3.7	0.6	0.16	11	10.0	24.0
Other Non-commercial--RGO Cords-Log	2.0	0.0	0.0	0.00	0	0.0	0.0
Product Group Total	32.0	34.2	5.5	0.16	100	12.1	17.9
Stand Total	**96.0**	**89.6**					
Stand Means						**11.3**	

Stand Number: 10
Stand ID: ND10

Area (acres): 1.9
4/19/2006
#Points: 1

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Posts		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Black Locust--RGO Cords-Logs	20.0	101.9	4.2	0.04	100	6.0	15.0
Premerch/Adv Reg		#			*%*	*Inches*	***
Red Maple--	60.0	305.6	0.0	0.00	0	6.0	24.0
Cull		#			*%*	*Inches*	***
Red Maple--	20.0	5.4	0.0	0.00	0	26.0	10.0
Product Group Total	100.0	412.9	4.2	0.01	100	6.7	21.6
Stand Total	**100.0**	**412.9**					
Stand Means						**6.7**	

Stand Number: 11
Stand ID: NA1

Area (acres): 24.3
4/21/2006
#Points: 7

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
White Pine--	2.9	14.6	0.0	0.00	0	6.0	32.0
Hemlock--	20.0	82.8	0.0	0.00	0	6.7	14.5
Red Maple--	14.3	49.8	0.0	0.00	0	7.3	24.4
Hickory--	2.9	14.6	0.0	0.00	0	6.0	24.0
Cull		#			%	*Inches*	***
Hemlock--	2.9	5.2	0.0	0.00	0	10.0	1.0
Red Maple--	2.9	8.2	0.0	0.00	0	8.0	0.0
Product Group Total	45.7	175.1	0.0	0.00	100	6.9	19.4
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	2.9	2.7	133.6	50.00	6	14.0	10.0
Quaking Aspen--Doyle 78	2.9	1.8	253.8	140.00	11	17.0	20.0
White Oak--Doyle 78	2.9	1.1	188.3	174.00	8	22.0	10.0
Northern Red Oak--Doyle 78	11.4	7.8	949.7	121.97	41	16.4	18.3
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	2.9	2.3	139.7	60.00	6	15.0	10.0
Northern Red Oak--Doyle 78	2.9	2.3	181.6	78.00	8	15.0	15.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	2.9	2.3	144.3	62.00	6	15.0	10.0
Sugar Maple--Doyle79	2.9	2.7	133.6	50.00	6	14.0	10.0
Chestnut Oak--Scrib78	2.9	3.1	179.8	58.00	8	13.0	10.0
Product Group Total	34.3	26.1	2,304.5	88.26	100	15.5	13.6
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Hemlock--Doyle 78	25.7	22.6	2,017.0	89.26	100	14.4	20.4
Product Group Total	25.7	22.6	2,017.0	89.26	100	14.4	20.4
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Hemlock--RGO Cords-Logs	8.6	15.7	1.9	0.12	100	10.0	18.3
Product Group Total	8.6	15.7	1.9	0.12	100	10.0	18.3

Stand Number: 11
Stand ID: NA1

Area (acres): 24.3
4/21/2006
#Points: 7

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Hardwood Pulp							
Pulpwood		*#*	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	8.6	14.8	1.9	0.13	100	10.3	18.5
Product Group Total	8.6	14.8	1.9	0.13	100	10.3	18.5
Stand Total	**122.9**	**254.3**					
Stand Means						**9.4**	

Stand Number: 12
Stand ID: NA2

Area (acres): 9.5
4/21/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	20.0	78.0	0.0	0.00	0	6.9	20.6
Yellow Birch--	6.7	34.0	0.0	0.00	0	6.0	16.0
Beech--	6.7	34.0	0.0	0.00	0	6.0	1.0
Northern Red Oak--	6.7	34.0	0.0	0.00	0	6.0	32.0
Cull		#			%	*Inches*	***
White Oak--	6.7	1.8	0.0	0.00	0	26.0	0.0
Product Group Total	46.7	181.7	0.0	0.00	100	6.9	18.2
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Oak--Doyle 78	6.7	4.8	553.9	116.00	16	16.0	20.0
Northern Red Oak--Doyle 78	6.7	2.5	591.0	234.00	17	22.0	15.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Northern Red Oak--Doyle 78	13.3	10.3	727.1	70.62	21	15.4	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Chestnut Oak--Scrib78	13.3	8.5	1,232.6	144.21	35	16.9	15.0
Veneer		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Oak--Doyle 78	6.7	2.5	439.4	174.00	12	22.0	10.0
Product Group Total	46.7	28.7	3,544.0	123.62	100	17.3	13.6
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	6.7	12.2	1.2	0.10	44	10.0	15.0
Quaking Aspen--RGO Cords-Logs	6.7	8.5	1.5	0.18	56	12.0	20.0
Product Group Total	13.3	20.7	2.8	0.13	100	10.9	17.0
Stand Total	**106.7**	**231.0**					
Stand Means						**9.2**	

Stand Number: 13
Stand ID: NA3

Area (acres): 63.4
4/21/2006
#Points: 20

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
White Pine--	9.0	36.9	0.0	0.00	0	6.7	22.2
Red Maple--	7.0	19.9	0.0	0.00	0	8.0	20.4
Hickory--	1.0	2.9	0.0	0.00	0	8.0	24.0
Beech--	1.0	2.9	0.0	0.00	0	8.0	24.0
White Ash--	3.0	8.6	0.0	0.00	0	8.0	26.7
Quaking Aspen--	14.0	55.6	0.0	0.00	0	6.8	26.8
Northern Red Oak--	2.0	10.2	0.0	0.00	0	6.0	25.0
Cull		#			%	*Inches*	***
White Pine--	3.0	2.9	0.0	0.00	0	13.9	1.0
Red Maple--	4.0	9.3	0.0	0.00	0	8.9	5.0
Serviceberry--	1.0	5.1	0.0	0.00	0	6.0	0.0
Black Birch--	1.0	1.8	0.0	0.00	0	10.0	0.0
Product Group Total	46.0	156.1	0.0	0.00	100	7.4	23.6

Hardwood Sawlog

Grade One Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Red Maple--Doyle79	3.0	2.4	168.6	70.88	9	15.2	12.0
Quaking Aspen--Doyle 78	1.0	0.8	63.6	78.00	3	15.0	15.0
Northern Red Oak--Doyle 78	7.0	4.6	506.3	110.88	26	16.8	15.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	4.0	3.8	232.6	61.35	12	13.9	15.0
Northern Red Oak--Doyle 78	4.0	3.6	201.2	56.35	10	14.3	11.8
Grade Three Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Red Maple--Doyle79	3.0	3.6	119.8	32.99	6	12.3	10.0
Quaking Aspen--Doyle 78	4.0	3.5	245.9	70.43	13	14.5	15.0
Northern Red Oak--Doyle 78	2.0	1.8	135.5	76.05	7	14.3	12.9
No clear sides		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	2.0	2.2	107.1	48.48	6	12.9	14.2
Northern Red Oak--Doyle 78	1.0	0.5	61.9	135.00	3	20.0	10.0
Veneer		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Northern Red Oak--Doyle 78	1.0	0.3	98.2	362.00	5	26.0	15.0
Product Group Total	32.0	27.0	1,940.5	71.97	100	14.8	13.3

Stand Number: 13
Stand ID: NA3

Area (acres): 63.4
4/21/2006
#Points: 20

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
White Pine--Doyle79	6.0	3.9	407.2	103.84	100	16.7	13.3
Product Group Total	6.0	3.9	407.2	103.84	100	16.7	13.3
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
White Pine--RGO Cords-Logs	17.0	22.4	3.9	0.17	100	11.8	19.8
Product Group Total	17.0	22.4	3.9	0.17	100	11.8	19.8
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	3.0	4.3	0.6	0.14	22	11.3	17.1
White Ash--RGO Cords-Logs	1.0	1.8	0.3	0.19	13	10.0	30.0
Quaking Aspen--RGO Cords-Logs	3.0	4.6	0.7	0.15	26	10.9	20.0
Chestnut Oak--RGO Cords-Logs	1.0	1.5	0.2	0.12	7	11.0	15.0
Northern Red Oak--RGO Cords-Logs	4.0	6.7	0.9	0.13	33	10.5	18.9
Product Group Total	12.0	18.9	2.7	0.14	100	10.8	19.5
Stand Total	**113.0**	**228.3**					
Stand Means						**9.5**	

Stand Number: 14
Stand ID: NA4

Area (acres): 3.9
4/21/2006
#Points: 4

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Posts		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Black Locust--RGO Cords-Logs	50.0	158.7	9.7	0.06	100	7.6	15.0
Premerch/Adv Reg		#			*%*	*Inches*	***
Red Maple--	10.0	39.8	0.0	0.00	0	6.8	24.0
Sugar Maple--	5.0	25.5	0.0	0.00	0	6.0	16.0
Black Cherry--	5.0	25.5	0.0	0.00	0	6.0	1.0
Cull		#			*%*	*Inches*	***
Red Maple--	5.0	3.6	0.0	0.00	0	16.0	0.0
Sugar Maple--	5.0	9.2	0.0	0.00	0	10.0	0.0
White Ash--	5.0	3.6	0.0	0.00	0	16.0	0.0
Black Locust--	10.0	34.6	0.0	0.00	0	7.3	1.7
Product Group Total	95.0	300.4	9.7	0.03	100	7.6	13.5
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Black Cherry--Doyle80	5.0	2.3	330.0	144.00	53	20.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	*%*	*Inches*	*Logs*10*
Sugar Maple--Doyle79	5.0	2.8	294.3	104.00	47	18.0	10.0
Product Group Total	10.0	5.1	624.3	121.90	100	18.9	10.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	5.0	9.2	0.9	0.10	44	10.0	15.0
Black Cherry--RGO Cords-Logs	5.0	7.6	1.2	0.15	56	11.0	20.0
Product Group Total	10.0	16.7	2.1	0.12	100	10.5	17.3
Stand Total	**115.0**	**322.3**					
Stand Means						**8.1**	

Stand Number: 15
Stand ID: NB1

Area (acres): 16.6
6/8/2006
#Points: 6

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	6.7	19.1	0.0	0.00	0	8.0	20.0
Cull		#			%	*Inches*	***
Red Pine--	10.0	18.3	0.0	0.00	0	10.0	24.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	16.7	48.3	0.0	0.00	0	8.0	21.8
Product Group Total	33.3	85.7	0.0	0.00	100	8.4	21.8
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	80.0	130.6	3,765.3	28.83	100	10.6	21.5
Product Group Total	80.0	130.6	3,765.3	28.83	100	10.6	21.5
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	3.3	6.1	0.6	0.10	100	10.0	15.0
Product Group Total	3.3	6.1	0.6	0.10	100	10.0	15.0
Stand Total	**116.7**	**222.5**					
Stand Means						**9.8**	

Stand Number: 16
Stand ID: NB2

Area (acres): 27.0
6/8/2006
#Points: 7

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	2.9	8.2	0.0	0.00	0	8.0	48.0
Red Maple--	5.7	13.4	0.0	0.00	0	8.8	7.5
Hickory--	2.9	14.6	0.0	0.00	0	6.0	1.0
White Ash--	2.9	5.2	0.0	0.00	0	10.0	24.0
Black Cherry--	2.9	14.6	0.0	0.00	0	6.0	24.0
Cull		#			%	*Inches*	***
Serviceberry--	2.9	32.7	0.0	0.00	0	4.0	0.0
White Ash--	2.9	14.6	0.0	0.00	0	6.0	10.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	25.7	94.1	0.0	0.00	0	7.1	29.2
Product Group Total	48.6	197.4	0.0	0.00	100	6.7	23.5
Hardwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	5.7	3.7	364.6	99.53	100	16.9	12.8
Product Group Total	5.7	3.7	364.6	99.53	100	16.9	12.8
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	34.3	51.3	1,892.0	36.85	100	11.1	19.3
Product Group Total	34.3	51.3	1,892.0	36.85	100	11.1	19.3
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	5.7	10.5	1.8	0.17	100	10.0	27.5
Product Group Total	5.7	10.5	1.8	0.17	100	10.0	27.5
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	2.9	2.7	0.3	0.13	100	14.0	10.0
Product Group Total	2.9	2.7	0.3	0.13	100	14.0	10.0
Stand Total	**97.1**	**265.5**					

Stand Means	**8.2**

Stand Number: 17
Stand ID: NB3

Area (acres): 10.7
6/8/2006
#Points: 3

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Hemlock--	26.7	76.4	0.0	0.00	0	8.0	30.0
Red Maple--	6.7	12.2	0.0	0.00	0	10.0	32.0
Beech--	6.7	19.1	0.0	0.00	0	8.0	32.0
Black Cherry--	13.3	46.2	0.0	0.00	0	7.3	11.6
Cull		#			%	*Inches*	***
Hemlock--	40.0	163.4	0.0	0.00	0	6.7	1.0
Sugar Maple--	6.7	12.2	0.0	0.00	0	10.0	0.0
Class 1 Snag		#			%	*Inches*	***
Hemlock--	6.7	12.2	0.0	0.00	0	10.0	15.0
Beech--	33.3	29.3	0.0	0.00	0	14.4	14.8
Product Group Total	140.0	371.1	0.0	0.00	100	8.3	12.8
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Beech--Doyle84	6.7	3.8	618.7	164.00	20	18.0	15.0
White Oak--Doyle 78	6.7	4.8	553.9	116.00	18	16.0	20.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	20.0	11.3	1,222.3	108.00	40	18.0	10.0
White Oak--Doyle 78	6.7	3.1	687.5	225.00	22	20.0	20.0
Product Group Total	40.0	22.9	3,082.4	134.48	100	17.9	14.2
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Hemlock--Doyle 78	26.7	27.0	1,614.6	59.83	100	13.5	18.1
Product Group Total	26.7	27.0	1,614.6	59.83	100	13.5	18.1
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Hemlock--RGO Cords-Logs	13.3	24.4	2.4	0.10	100	10.0	15.0
Product Group Total	13.3	24.4	2.4	0.10	100	10.0	15.0

Stand Number: 17
Stand ID: NB3

Area (acres): 10.7
6/8/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Firewood							
Firewood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	6.7	8.5	1.5	0.18	45	12.0	20.0
White Ash--RGO Cords-Logs	6.7	6.2	1.9	0.30	55	14.0	25.0
Product Group Total	13.3	14.7	3.4	0.23	100	12.9	22.1
Stand Total	**233.3**	**460.1**					
Stand Means						**9.6**	

Stand Number: 18
Stand ID: NB4

Area (acres): 6.8
6/8/2006
#Points: 2

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	30.0	85.9	0.0	0.00	0	8.0	24.0
Sugar Maple--	20.0	79.6	0.0	0.00	0	6.8	20.0
Beech--	10.0	50.9	0.0	0.00	0	6.0	12.0
Product Group Total	60.0	216.5	0.0	0.00	100	7.1	19.6
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	10.0	10.8	434.0	40.00	22	13.0	10.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	10.0	12.7	229.2	18.00	12	12.0	5.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	20.0	16.5	1,318.5	79.83	67	14.9	15.7
Product Group Total	40.0	40.1	1,981.7	49.42	100	13.5	10.7
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Beech--RGO Cords-Logs	10.0	12.7	1.2	0.10	100	12.0	10.0
Product Group Total	10.0	12.7	1.2	0.10	100	12.0	10.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	30.0	55.0	6.0	0.11	100	10.0	16.7
Product Group Total	30.0	55.0	6.0	0.11	100	10.0	16.7
Stand Total	**140.0**	**324.3**					
Stand Means						**8.9**	

Stand Number: 20
Stand ID: NC2

Area (acres): 13.3
6/13/2006
#Points: 3

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	6.7	34.0	0.0	0.00	0	6.0	30.0
White Ash--	13.3	53.1	0.0	0.00	0	6.8	11.8
Product Group Total	20.0	87.0	0.0	0.00	100	6.5	18.9
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	26.7	29.4	1,998.7	67.87	100	12.9	24.2
Product Group Total	26.7	29.4	1,998.7	67.87	100	12.9	24.2
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	33.3	61.1	9.7	0.16	67	10.0	25.0
White Pine--RGO Cords-Logs	20.0	13.7	4.9	0.36	33	16.4	20.4
Product Group Total	53.3	74.8	14.6	0.20	100	11.4	24.2
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	6.7	3.8	1.1	0.30	50	18.0	15.0
White Ash--RGO Cords-Logs	6.7	4.8	1.1	0.24	50	16.0	15.0
Product Group Total	13.3	8.5	2.3	0.27	100	16.9	15.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	6.7	8.5	1.5	0.18	100	12.0	20.0
Product Group Total	6.7	8.5	1.5	0.18	100	12.0	20.0
Stand Total	**120.0**	**208.3**					
Stand Means						**10.3**	

Stand Number: 21
Stand ID: NC4

Area (acres): 26.4
6/13/2006
#Points: 10

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	26.0	83.4	0.0	0.00	0	7.6	20.1
Red Maple--	6.0	32.3	0.0	0.00	0	5.8	20.7
Sugar Maple--	2.0	91.7	0.0	0.00	0	2.0	16.0
Beech--	6.0	275.0	0.0	0.00	0	2.0	10.0
White Ash--	20.0	453.3	0.0	0.00	0	2.8	14.5
Black Cherry--	2.0	22.9	0.0	0.00	0	4.0	32.0
White Oak--	2.0	5.7	0.0	0.00	0	8.0	20.0
Cull		#			%	*Inches*	***
Red Pine--	4.0	20.4	0.0	0.00	0	6.0	39.5
Beech--	2.0	22.9	0.0	0.00	0	4.0	10.0
White Ash--	2.0	10.2	0.0	0.00	0	6.0	20.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	16.0	50.6	0.0	0.00	0	7.6	25.6
White Ash--	2.0	2.5	0.0	0.00	0	12.0	10.0
Product Group Total	90.0	1,071.0	0.0	0.00	100	3.9	15.4
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	62.0	86.3	3,636.6	42.13	85	11.5	23.9
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	14.0	21.6	656.9	30.37	15	10.9	21.3
Product Group Total	76.0	108.0	4,293.5	39.77	100	11.4	23.4
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	12.0	22.9	4.5	0.20	100	9.8	32.2
Product Group Total	12.0	22.9	4.5	0.20	100	9.8	32.2
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	2.0	3.7	0.5	0.13	51	10.0	20.0
White Ash--RGO Cords-Logs	2.0	0.9	0.4	0.49	49	20.0	20.0
Product Group Total	4.0	4.6	0.9	0.20	100	12.6	20.0

Stand Total	**182.0**	**1,206.5**	
Stand Means			**5.3**

Stand Number: 22
Stand ID: NC5

Area (acres): 9.6
6/13/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	13.3	53.1	0.0	0.00	0	6.8	17.4
Cull		#			%	*Inches*	***
Red Maple--	13.3	13.3	0.0	0.00	0	13.6	10.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	6.7	12.2	0.0	0.00	0	10.0	16.0
Product Group Total	33.3	78.5	0.0	0.00	100	8.8	16.0
Hardwood Sawlog							
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Oak--Doyle 78	13.3	11.0	748.2	67.95	77	14.9	12.2
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	6.7	12.2	220.0	18.00	23	10.0	15.0
Product Group Total	20.0	23.2	968.2	41.67	100	12.6	13.7
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	40.0	73.3	1,320.1	18.00	100	10.0	15.0
Product Group Total	40.0	73.3	1,320.1	18.00	100	10.0	15.0
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	26.7	43.8	5.2	0.12	82	10.6	15.7
Sugar Maple--RGO Cords-Logs	6.7	6.2	1.2	0.19	18	14.0	15.0
Product Group Total	33.3	50.0	6.3	0.13	100	11.1	15.6
Stand Total	**126.7**	**225.1**					
Stand Means						**10.2**	

Stand Number: 23
Stand ID: NC6

Area (acres): 3.1
6/13/2006
#Points: 1

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Cull		#			%	*Inches*	***
Red Maple--	20.0	36.7	0.0	0.00	0	10.0	10.0
Product Group Total	20.0	36.7	0.0	0.00	100	10.0	10.0
Softwood Sawlog							
No clear sides		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Pine--Doyle79	20.0	25.5	967.7	38.00	100	12.0	15.0
Product Group Total	20.0	25.5	967.7	38.00	100	12.0	15.0
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	20.0	36.7	2.5	0.07	100	10.0	10.0
Product Group Total	20.0	36.7	2.5	0.07	100	10.0	10.0
Stand Total	**60.0**	**98.8**					
Stand Means						**10.6**	

Stand Number: 24
Stand ID: NE2

Area (acres): 29.5
06/08/2006
#Points: 12

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	3.3	17.0	0.0	0.00	0	6.0	15.0
Red Maple--	3.3	49.1	0.0	0.00	0	3.5	0.0
Sugar Maple--	0.8	4.2	0.0	0.00	0	6.0	0.0
Black Birch--	0.8	4.2	0.0	0.00	0	6.0	0.0
White Ash--	0.8	6.1	0.0	0.00	0	5.0	0.0
Black Cherry--	2.5	48.6	0.0	0.00	0	3.1	0.0
Northern Red Oak--	0.8	4.2	0.0	0.00	0	6.0	0.0
Cull		#			%	*Inches*	***
Fire Cherry--	1.7	6.6	0.0	0.00	0	6.8	0.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	1.7	3.1	0.0	0.00	0	10.0	12.5
Product Group Total	15.8	143.1	0.0	0.00	100	4.5	14.3
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Northern Red Oak--Doyle 78	0.8	0.4	85.9	225.00	35	20.0	20.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle79	0.8	0.8	39.0	50.00	16	14.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	0.8	0.5	49.0	104.00	20	18.0	10.0
Black Cherry--Doyle80	0.8	0.4	73.7	193.00	30	20.0	15.0
Product Group Total	3.3	2.0	247.7	122.92	100	17.4	12.8
Softwood Sawlog							
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	2.5	2.3	208.1	89.00	5	14.0	25.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	68.3	76.3	4,403.5	57.73	95	12.8	18.1
Product Group Total	70.8	78.6	4,611.6	58.66	100	12.9	18.3

Stand Number: 24
Stand ID: NE2

Area (acres): 29.5
06/08/2006
#Points: 12

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	28.3	60.0	7.6	0.13	100	9.3	21.7
Product Group Total	28.3	60.0	7.6	0.13	100	9.3	21.7
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	1.7	3.4	0.2	0.06	36	9.5	10.0
Quaking Aspen--RGO Cords-Logs	0.8	0.8	0.2	0.24	32	14.0	20.0
Black Cherry--RGO Cords-Logs	0.8	1.5	0.2	0.13	33	10.0	20.0
Product Group Total	3.3	5.7	0.6	0.11	100	10.3	14.0
Stand Total	**121.7**	**289.5**					
Stand Means						**8.8**	

Stand Number: 25
Stand ID: NE3

Area (acres): 4.6
06/08/2006
#Points: 3

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	3.3	17.0	0.0	0.00	0	6.0	0.0
Red Maple--	3.3	38.2	0.0	0.00	0	4.0	0.0
Yellow Birch--	3.3	9.5	0.0	0.00	0	8.0	0.0
Black Cherry--	3.3	17.0	0.0	0.00	0	6.0	0.0
Cull		#			%	*Inches*	***
Sugar Maple--	3.3	1.5	0.0	0.00	0	20.0	0.0
Black Cherry--	3.3	0.9	0.0	0.00	0	26.0	0.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	6.7	8.5	0.0	0.00	0	12.0	15.0
Tamarack--	6.7	6.2	0.0	0.00	0	14.0	20.0
Product Group Total	33.3	98.9	0.0	0.00	100	7.9	18.0
Hardwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Black Cherry--Doyle80	3.3	3.1	162.1	52.00	100	14.0	10.0
Product Group Total	3.3	3.1	162.1	52.00	100	14.0	10.0
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	13.3	15.9	790.0	49.81	13	12.4	14.2
Tamarack--Scrib79	36.7	28.0	5,134.2	183.30	87	15.5	26.2
Product Group Total	50.0	43.9	5,924.2	135.04	100	14.5	21.9
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	13.3	34.8	2.9	0.08	72	8.4	16.3
Tamarack--RGO Cords-Logs	3.3	4.2	1.1	0.27	28	12.0	30.0
Product Group Total	16.7	39.0	4.0	0.10	100	8.9	17.8
Stand Total	**103.3**	**184.8**					
Stand Means						**10.1**	

Stand Number: 26
Stand ID: NE1

Area (acres): 7.9
06/08/2006
#Points: 3

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	3.3	17.0	0.0	0.00	0	6.0	0.0
Sugar Maple--	16.7	814.4	0.0	0.00	0	1.9	0.0
White Ash--	3.3	6.1	0.0	0.00	0	10.0	0.0
Tamarack--	3.3	17.0	0.0	0.00	0	6.0	0.0
Northern Red Oak--	3.3	6.1	0.0	0.00	0	10.0	0.0
Basswood--	3.3	4.2	0.0	0.00	0	12.0	0.0
Cull		#			%	*Inches*	***
Ironwood--	3.3	152.8	0.0	0.00	0	2.0	0.0
Tamarack--	3.3	9.5	0.0	0.00	0	8.0	0.0
Northern Red Oak--	3.3	4.2	0.0	0.00	0	12.0	0.0
Class 1 Snag		#			%	*Inches*	***
Red Pine--	13.3	38.2	0.0	0.00	0	8.0	13.8
Sugar Maple--	3.3	4.2	0.0	0.00	0	12.0	0.0
White Ash--	13.3	14.2	0.0	0.00	0	13.1	0.0
Northern Red Oak--	3.3	2.4	0.0	0.00	0	16.0	0.0
Product Group Total	76.7	1,090.4	0.0	0.00	100	3.6	13.8
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle79	3.3	3.1	155.9	50.00	17	14.0	10.0
Black Cherry--Doyle80	3.3	1.3	397.8	315.00	42	22.0	20.0
Northern Red Oak--Doyle 78	3.3	1.5	206.3	135.00	22	20.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	3.3	2.4	176.7	74.00	19	16.0	10.0
Product Group Total	13.3	8.3	936.6	112.90	100	17.2	11.5
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	13.3	19.6	627.6	32.05	100	11.2	15.8
Product Group Total	13.3	19.6	627.6	32.05	100	11.2	15.8

Stand Number: 26
Stand ID: NE1

Area (acres): 7.9
06/08/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	6.7	19.1	1.6	0.09	100	8.0	20.0
Product Group Total	6.7	19.1	1.6	0.09	100	8.0	20.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	6.7	7.9	0.8	0.10	100	12.5	10.0
Product Group Total	6.7	7.9	0.8	0.10	100	12.5	10.0
Stand Total	**116.7**	**1,145.2**					
Stand Means						**4.3**	

Stand Number: 27
Stand ID: NE4

Area (acres): 3.2
06/08/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Hemlock--	10.0	50.9	0.0	0.00	0	6.0	1.0
Sugar Maple--	3.3	6.1	0.0	0.00	0	10.0	0.0
White Ash--	3.3	17.0	0.0	0.00	0	6.0	0.0
Northern Red Oak--	13.3	67.9	0.0	0.00	0	6.0	0.0
Cull		#			%	*Inches*	***
Red Maple--	3.3	9.5	0.0	0.00	0	8.0	0.0
Black Cherry--	3.3	2.7	0.0	0.00	0	15.0	0.0
Product Group Total	36.7	154.2	0.0	0.00	100	6.6	1.0
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	13.3	7.3	991.4	136.08	21	18.3	14.0
White Ash--Doyle79	6.7	5.5	385.1	69.95	8	14.9	12.2
Northern Red Oak--Doyle 78	6.7	3.8	558.3	148.00	12	18.0	17.5
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	10.0	8.6	721.8	83.71	15	14.6	18.6
White Ash--Doyle79	3.3	3.1	155.9	50.00	3	14.0	10.0
Northern Red Oak--Doyle 78	3.3	3.1	149.7	48.00	3	14.0	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	10.0	9.7	614.2	63.47	13	13.8	13.4
White Ash--Doyle79	10.0	10.4	450.8	43.45	9	13.3	10.0
Veneer		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	6.7	2.3	799.5	346.00	17	23.0	20.0
Product Group Total	70.0	53.8	4,826.8	89.74	100	15.4	13.7
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	6.7	19.1	1.3	0.07	100	8.0	15.0
Product Group Total	6.7	19.1	1.3	0.07	100	8.0	15.0
Stand Total	**113.3**	**227.1**					

Stand Means	**9.6**

Stand Number: 28

Area (acres): 19.3

Stand ID: NE5

#Points: 6

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	3.3	9.5	0.0	0.00	0	8.0	2.0
Red Spruce--	6.7	19.1	0.0	0.00	0	8.0	20.0
Class 1 Snag		#			%	*Inches*	***
Quaking Aspen--	3.3	6.1	0.0	0.00	0	10.0	40.0
Red Spruce--	20.0	70.8	0.0	0.00	0	7.2	25.1
Product Group Total	33.3	105.6	0.0	0.00	100	7.6	22.9
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Northern Red Oak--Doyle 78	3.3	3.1	233.9	75.00	60	14.0	20.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	3.3	4.2	152.8	36.00	40	12.0	15.0
Product Group Total	6.7	7.4	386.6	52.52	100	12.9	17.1
Softwood Sawlog							
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Spruce--Scrib79	10.0	8.6	1,701.6	197.32	18	14.6	40.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Spruce--Scrib79	60.0	64.1	7,847.0	122.42	82	13.1	27.8
Product Group Total	70.0	72.7	9,548.6	131.30	100	13.3	29.2
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Spruce--RGO Cords-Logs	83.3	220.3	23.5	0.11	100	8.3	22.9
Product Group Total	83.3	220.3	23.5	0.11	100	8.3	22.9
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	10.0	23.3	1.7	0.07	23	8.9	14.1
White Ash--RGO Cords-Logs	3.3	3.1	0.6	0.19	8	14.0	15.0
Quaking Aspen--RGO Cords-Logs	20.0	48.0	5.0	0.10	69	8.7	20.3
Product Group Total	33.3	74.5	7.3	0.10	100	9.1	18.1
Stand Total	**226.7**	**480.5**					

Stand Means	**9.3**

Stand Number: 29

Area (acres): 8.2

Stand ID: NC3

#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Sugar Maple--	26.7	97.6	0.0	0.00	0	7.1	14.9
White Ash--	13.3	67.9	0.0	0.00	0	6.0	15.0
Basswood--	6.7	6.2	0.0	0.00	0	14.0	20.0
Cull		#			%	*Inches*	***
Hemlock--	13.3	8.5	0.0	0.00	0	16.9	0.0
Class 1 Snag		#			%	*Inches*	***
Hemlock--	20.0	61.5	0.0	0.00	0	7.7	15.5
Product Group Total	80.0	241.9	0.0	0.00	100	7.8	15.2
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	33.3	31.2	2,369.8	76.00	38	14.0	18.0
Quaking Aspen--Doyle 78	6.7	3.8	618.7	164.00	10	18.0	20.0
Chestnut Oak--Scrib78	6.7	5.4	738.8	136.00	12	15.0	20.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	6.7	4.8	553.9	116.00	9	16.0	20.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	6.7	7.2	289.3	40.00	5	13.0	10.0
White Ash--Doyle80	13.3	11.5	852.9	73.88	14	14.6	11.3
Veneer		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Quaking Aspen--Doyle 78	6.7	2.5	868.7	344.00	14	22.0	25.0
Product Group Total	80.0	66.5	6,292.1	94.67	100	14.9	16.7
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Hemlock--RGO Cords-Logs	26.7	26.0	7.9	0.31	100	13.7	20.9
Product Group Total	26.7	26.0	7.9	0.31	100	13.7	20.9

Stand Number: 29
Stand ID: NC3

Area (acres): 8.2

#Points: 3

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	*%*	*Inches*	*Logs*10*
Sugar Maple--RGO Cords-Logs	20.0	25.5	4.6	0.18	31	12.0	20.0
White Ash--RGO Cords-Logs	13.3	24.4	2.8	0.11	19	10.0	17.5
Basswood--RGO Cords-Logs	40.0	65.3	7.6	0.12	50	10.6	15.3
Product Group Total	73.3	115.3	15.0	0.13	100	10.8	16.8
Stand Total	**260.0**	**449.6**					
Stand Means						**10.3**	

Stand Number: 30
Stand ID: CA1

Area (acres): 53.6

6/20/2006

#Points: 18

Product Group / **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			*%*	*Inches*	***
Red Pine--	1.2	55.6	0.0	0.00	0	2.0	16.0
Red Maple--	6.4	666.7	0.0	0.00	0	1.3	16.0
Sugar Maple--	1.8	333.3	0.0	0.00	0	1.0	14.8
Black Birch--	0.3	55.6	0.0	0.00	0	1.0	0.0
Beech--	0.6	111.1	0.0	0.00	0	1.0	0.0
White Ash--	0.6	111.1	0.0	0.00	0	1.0	0.0
Quaking Aspen--	2.7	55.6	0.0	0.00	0	3.0	16.0
Fire Cherry--	11.2	777.8	0.0	0.00	0	1.6	19.3
Black Cherry--	0.6	111.1	0.0	0.00	0	1.0	16.0
Product Group Total	25.5	2,277.8	0.0	0.00	100	1.4	17.2
Stand Total	**25.5**	**2,277.8**					
Stand Means						**1.4**	

Stand Number: 31
Stand ID: CA2

Area (acres): 5.9
6/20/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	26.7	154.4	0.0	0.00	0	5.6	0.0
Sugar Maple--	6.7	34.0	0.0	0.00	0	6.0	0.0
Cull		#			%	*Inches*	***
Red Maple--	6.7	34.0	0.0	0.00	0	6.0	0.0
Ironwood--	6.7	305.6	0.0	0.00	0	2.0	0.0
Class 1 Snag		#			%	*Inches*	***
Red Maple--	13.3	31.3	0.0	0.00	0	8.8	26.1
Product Group Total	60.0	559.2	0.0	0.00	100	4.4	26.1
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	13.3	10.0	1,044.2	104.33	25	15.6	16.9
Black Cherry--Doyle80	6.7	3.8	777.1	206.00	19	18.0	25.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	13.3	14.7	566.5	38.47	14	12.9	10.0
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	33.3	37.7	1,714.0	45.49	42	12.7	13.9
Product Group Total	66.7	66.2	4,101.9	61.98	100	13.6	14.1
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	6.7	10.1	1.9	0.19	100	11.0	25.0
Product Group Total	6.7	10.1	1.9	0.19	100	11.0	25.0
Stand Total	**133.3**	**635.5**					
Stand Means						**6.2**	

Stand Number: 32
Stand ID: CA3

Area (acres): 28.2
6/20/2006
#Points: 11

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	10.9	39.4	0.0	0.00	0	7.1	22.5
Sugar Maple--	9.1	20.4	0.0	0.00	0	9.0	26.0
White Ash--	1.8	20.8	0.0	0.00	0	4.0	16.0
Cull		#			%	*Inches*	***
Red Maple--	1.8	5.2	0.0	0.00	0	8.0	40.0
Hawthorn--	1.8	20.8	0.0	0.00	0	4.0	16.0
Ironwood--	7.3	67.7	0.0	0.00	0	4.4	0.0
Black Cherry--	1.8	5.2	0.0	0.00	0	8.0	16.0
Other Non-commercial--	1.8	5.2	0.0	0.00	0	8.0	16.0
Class 1 Snag		#			%	*Inches*	***
Fire Cherry--	1.8	1.7	0.0	0.00	0	14.0	32.0
Basswood--	1.8	5.2	0.0	0.00	0	8.0	16.0
Product Group Total	40.0	191.7	0.0	0.00	100	6.2	20.9
Hardwood Sawlog							
Grade One Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	1.8	1.7	85.0	50.00	4	14.0	10.0
Basswood--Doyle 78	1.8	0.8	112.5	135.00	6	20.0	10.0
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	12.7	11.6	871.7	75.10	45	14.2	17.1
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Sugar Maple--Doyle79	10.9	7.4	871.0	117.84	45	16.4	17.5
Product Group Total	27.3	21.5	1,940.3	90.11	100	15.2	16.4
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	10.9	9.0	2.5	0.28	30	14.9	19.8
Sugar Maple--RGO Cords-Logs	10.9	11.9	2.7	0.23	33	13.0	22.4
White Ash--RGO Cords-Logs	7.3	5.3	1.8	0.35	23	15.8	22.9
Black Cherry--RGO Cords-Logs	3.6	3.4	0.7	0.21	9	14.0	17.5
Basswood--RGO Cords-Logs	1.8	0.4	0.4	0.95	5	28.0	20.0
Product Group Total	34.5	30.0	8.2	0.27	100	14.5	21.1
Stand Total	**101.8**	**243.3**					

Stand Means	**8.8**

Stand Number: 33
Stand ID: CA4

Area (acres): 6.7
6/20/2006
#Points: 3

Product Group **Product** Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Maple--	20.0	57.3	0.0	0.00	0	8.0	16.0
Sugar Maple--	6.7	19.1	0.0	0.00	0	8.0	16.0
White Ash--	6.7	12.2	0.0	0.00	0	10.0	15.0
Cull		#			%	*Inches*	***
Red Maple--	6.7	12.2	0.0	0.00	0	10.0	0.0
White Ash--	13.3	53.1	0.0	0.00	0	6.8	42.2
Class 1 Snag		#			%	*Inches*	***
Red Maple--	6.7	34.0	0.0	0.00	0	6.0	32.0
Product Group Total	60.0	187.8	0.0	0.00	100	7.7	27.0
Hardwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Maple--Doyle79	6.7	4.8	458.4	96.00	29	16.0	15.0
White Ash--Doyle80	13.3	13.3	745.4	56.20	47	13.6	11.8
Black Cherry--Doyle80	6.7	4.8	367.6	77.00	23	16.0	10.0
Product Group Total	26.7	22.8	1,571.4	68.88	100	14.6	12.1
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Maple--RGO Cords-Logs	13.3	31.3	2.5	0.08	32	8.8	15.0
White Ash--RGO Cords-Logs	20.0	18.0	5.3	0.29	68	14.3	20.6
Product Group Total	33.3	49.4	7.8	0.16	100	11.1	17.0
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Other Non-commercial--RGO Cords-Log	6.7	4.8	1.9	0.39	100	16.0	25.0
Product Group Total	6.7	4.8	1.9	0.39	100	16.0	25.0
Stand Total	**126.7**	**264.8**					
Stand Means						**9.4**	

Stand Number: 34
Stand ID: CA5

Area (acres): 3.2
6/20/2006
#Points: 4

Product Group / **Product** / Species--Volume Table	BasalArea	# Trees	Volume	Mean Volume/ Tree	% Volume	Quad. Mean DBH	Mean Merch. Height
Premerch/Adv Reg		#			%	*Inches*	***
Red Pine--	20.0	57.3	0.0	0.00	0	8.0	20.0
White Ash--	55.0	185.1	0.0	0.00	0	7.4	25.9
Cull		#			%	*Inches*	***
White Ash--	10.0	17.9	0.0	0.00	0	10.1	24.0
Product Group Total	85.0	260.3	0.0	0.00	100	7.7	23.4
Hardwood Sawlog							
Grade Two Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	15.0	13.1	931.8	71.24	40	14.5	12.9
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
White Ash--Doyle80	25.0	25.7	1,383.1	53.89	60	13.4	12.5
Product Group Total	40.0	38.7	2,314.9	59.74	100	13.8	12.7
Softwood Sawlog							
Grade Three Saw		#	*Board Feet*	*Board Feet*	%	*Inches*	*Logs*10*
Red Pine--Doyle79	15.0	24.7	721.7	29.22	100	10.6	25.0
Product Group Total	15.0	24.7	721.7	29.22	100	10.6	25.0
Softwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
Red Pine--RGO Cords-Logs	5.0	14.3	1.2	0.09	100	8.0	20.0
Product Group Total	5.0	14.3	1.2	0.09	100	8.0	20.0
Firewood							
Firewood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
White Ash--RGO Cords-Logs	15.0	19.1	4.0	0.21	100	12.0	22.6
Product Group Total	15.0	19.1	4.0	0.21	100	12.0	22.6
Hardwood Pulp							
Pulpwood		#	*Cords*	*Cords*	%	*Inches*	*Logs*10*
White Ash--RGO Cords-Logs	20.0	35.1	5.3	0.15	100	10.2	22.9
Product Group Total	20.0	35.1	5.3	0.15	100	10.2	22.9

Stand Total	**180.0**	**392.2**	
Stand Means			**9.2**

Soils Data
For Forested Land in the
Town of Newfield

Hydric Soils

Tompkins County, New York

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Ab:					
Alluvial land	Fluvaquents	40	Flood plains	Yes	2B3, 3, 4

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   B. are poorly drained or very poorly drained and have either:
      1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
      2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
      3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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Hurt, G.W., P.M. Whited, and R.F. Pringle, editors. Version 5.0, 2002. Field indicators of hydric soils in the United States.
National Research Council. 1995. Wetlands: Characteristics and boundaries.
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Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

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
Ab:							
Fluvaquents	40	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	1.00
						Low strength	0.50
Udifluvents	35	Slight		Slight		Poorly suited	
						Flooding	1.00
BaC:							
Bath	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
BaD:							
Bath	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
BgC:							
Bath	40	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
						Low strength	0.50
Valois	35	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
BoE:							
Bath	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Valois	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
BtF:							
Bath	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

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
BtF:							
Valois	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Lansing	20	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
EbB:							
Erie	75	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Low strength	0.50
						Slope	0.50
EbC:							
Erie	75	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Wetness	1.00
						Slope	0.50
						Low strength	0.50
EbC3:							
Erie	75	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Wetness	1.00
						Slope	0.50
						Low strength	0.50
LaC:							
Langford	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Wetness	0.50
LnC:							
Lordstown	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
LnC3:							
Lordstown	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
LnD:							
Lordstown	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

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
LnE:							
Lordstown	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
LoF:							
Lordstown	75	Very severe		Severe		Poorly suited	
		Slope/erodibility	0.95	Slope/erodibility	0.95	Slope	1.00
MaB:							
Mardin	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Low strength	0.50
						Wetness	0.50
MaC:							
Mardin	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Wetness	0.50
MfD:							
Mardin	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Wetness	0.50
Langford	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Wetness	0.50
VbB:							
Volusia	75	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Low strength	0.50
						Slope	0.50
VbC:							
Volusia	75	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Wetness	1.00
						Slope	0.50
						Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

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
VrD:							
Volusia	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Wetness	1.00
						Low strength	0.50
Erie	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Wetness	1.00
						Low strength	0.50

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

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
Ab:							
Fluvaquents	40	Severe		Poorly suited		Severe	
		Flooding	1.00	Ponding	1.00	Low strength	1.00
				Flooding	1.00		
				Wetness	1.00		
				Low strength	0.50		
Udifluvents	35	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
BaC:							
Bath	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
BaD:							
Bath	75	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
BgC:							
Bath	40	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
Valois	35	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
BoE:							
Bath	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
Valois	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
BtF:							
Bath	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

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
BtF:							
Valois	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Lansing	20	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
EbB:							
Erie	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Low strength	0.50		
				Slope	0.50		
EbC:							
Erie	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		
EbC3:							
Erie	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		
LaC:							
Langford	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
LnC:							
Lordstown	75	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
LnC3:							
Lordstown	75	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
LnD:							
Lordstown	75	Moderate		Poorly suited		Moderate	
		Restrictive layer	0.50	Slope	1.00	Low strength	0.50
		Slope	0.50				

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

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
LnE:							
Lordstown	75	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
LoF:							
Lordstown	75	Severe		Poorly suited		Moderate	
		Slope	1.00	Slope	1.00	Low strength	0.50
		Low strength	0.50				
MaB:							
Mardin	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Low strength	0.50	Low strength	1.00
				Wetness	0.50		
MaC:							
Mardin	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
MfD:							
Mardin	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
Langford	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
VbB:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Low strength	0.50		
				Slope	0.50		
VbC:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

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
VrD:							
Volusia	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Wetness	1.00		
				Low strength	0.50		
Erie	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Wetness	1.00		
				Low strength	0.50		

Forestland Productivity

Tompkins County, New York

[This report shows only the major soils in each map unit]

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
Ab:				
Fluvaquents	---	---	---	---
Udifluvents	---	---	---	---
BaC:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
BaD:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
BgC:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
Valois	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
BoE:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
Valois	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
BtF:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
Valois	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	

Forestland Productivity

Tompkins County, New York

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
BtF:				
Lansing	Black cherry	80	57	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	80	57	
	Sugar maple	70	43	
	Tuliptree	85	86	
	White ash	85	57	
EbB:				
Erie	Black cherry	65	43	Eastern white pine, Norway spruce, White spruce
	Northern red oak	70	57	
	Sugar maple	64	43	
	White ash	75	43	
EbC:				
Erie	Black cherry	65	43	Eastern white pine, Norway spruce, White spruce
	Northern red oak	70	57	
	Sugar maple	64	43	
	White ash	75	43	
EbC3:				
Erie	Black cherry	65	43	Eastern white pine, Norway spruce, White spruce
	Northern red oak	70	57	
	Sugar maple	64	43	
	White ash	75	43	
LaC:				
Langford	American beech	---	0	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Black cherry	75	43	
	Eastern hemlock	---	0	
	Eastern white pine	75	143	
	Northern red oak	65	43	
	Sugar maple	60	43	
	White ash	70	43	
LnC:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
LnC3:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	

Forestland Productivity

Tompkins County, New York

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
LnD:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
LnE:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
LoF:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
MaB:				
Mardin	Black cherry	70	43	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	63	43	
	Sugar maple	60	43	
	White ash	70	43	
MaC:				
Mardin	Black cherry	70	43	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	63	43	
	Sugar maple	60	43	
	White ash	70	43	
MfD:				
Mardin	Black cherry	70	43	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	63	43	
	Sugar maple	60	43	
	White ash	70	43	
Langford	American beech	---	0	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Black cherry	75	43	
	Eastern hemlock	---	0	
	Eastern white pine	75	143	
	Northern red oak	65	43	
	Sugar maple	60	43	
	White ash	70	43	
VbB:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	

Forestland Productivity

Tompkins County, New York

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
VbC:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
VrD:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
Erie	Black cherry	65	43	Eastern white pine, Norway spruce, White spruce
	Northern red oak	70	57	
	Sugar maple	64	43	
	White ash	75	43	

Forestland Planting and Harvesting

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:							
Fluvaquents	40	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
Udifluvents	35	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
BaC:							
Bath	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
BaD:							
Bath	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
BgC:							
Bath	40	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
Valois	35	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
BoE:							
Bath	40	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Valois	35	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Low strength	0.50
						Slope	0.50
BtF:							
Bath	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Valois	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50

Forestland Planting and Harvesting

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BtF:							
Lansing	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
EbB:							
Erie	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
EbC:							
Erie	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
EbC3:							
Erie	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
LaC:							
Langford	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
LnC:							
Lordstown	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
LnC3:							
Lordstown	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
LnD:							
Lordstown	75	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
LnE:							
Lordstown	75	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		
LoF:							
Lordstown	75	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50		

Forestland Planting and Harvesting

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MaB:							
Mardin	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
MaC:							
Mardin	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
MfD:							
Mardin	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Langford	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
VbB:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VbC:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VrD:							
Volusia	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Erie	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50

Forestland Site Preparation

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:					
Fluvaquents	40	Well suited		Well suited	
Udifluvents	35	Well suited		Well suited	
BaC:					
Bath	75	Well suited		Well suited	
BaD:					
Bath	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
BgC:					
Bath	40	Well suited		Well suited	
Valois	35	Well suited		Well suited	
BoE:					
Bath	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Valois	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
BtF:					
Bath	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Valois	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Lansing	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
EbB:					
Erie	75	Well suited		Well suited	
EbC:					
Erie	75	Well suited		Well suited	

Forestland Site Preparation

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
EbC3:					
Erie	75	Well suited		Well suited	
LaC:					
Langford	75	Well suited		Well suited	
LnC:					
Lordstown	75	Well suited		Poorly suited	
				Restrictive layer	0.50
LnC3:					
Lordstown	75	Well suited		Poorly suited	
				Restrictive layer	0.50
LnD:					
Lordstown	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
LnE:					
Lordstown	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
LoF:					
Lordstown	75	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
				Restrictive layer	0.50
MaB:					
Mardin	75	Well suited		Well suited	
MaC:					
Mardin	75	Well suited		Well suited	
MfD:					
Mardin	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Langford	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
VbB:					
Volusia	75	Well suited		Well suited	

Forestland Site Preparation

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
VbC:					
Volusia	75	Well suited		Well suited	
VrD:					
Volusia	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Erie	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:					
Fluvaquents	40	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
Udifluvents	35	High		Low	
		Texture/surface depth/rock fragments	1.00		
BaC:					
Bath	75	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
BaD:					
Bath	75	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
BgC:					
Bath	40	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
Valois	35	Moderate		Low	
		Texture/surface depth/rock fragments	0.50		
BoE:					
Bath	40	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
Valois	35	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
BtF:					
Bath	30	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BtF:					
Valois	25	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
Lansing	20	Low		Low	
EbB:					
Erie	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
EbC:					
Erie	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
EbC3:					
Erie	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
LaC:					
Langford	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
LnC:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
LnC3:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
LnD:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
LnE:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
LoF:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
MaB:					
Mardin	75	Moderate		High	
		Texture/surface depth/rock fragments	0.50	Wetness	1.00
				Soil reaction	0.50
MaC:					
Mardin	75	Moderate		High	
		Texture/surface depth/rock fragments	0.50	Wetness	1.00
				Soil reaction	0.50
MfD:					
Mardin	40	Moderate		High	
		Texture/surface depth/rock fragments	0.50	Wetness	1.00
				Soil reaction	0.50
Langford	35	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbB:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbC:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VrD:					
Volusia	40	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
Erie	35	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00

Component Text

Tompkins County, New York

[Only those components that have entries for the selected text kinds and categories are included in this report. This report shows only the major soils in each map unit]

Map unit: Ab - Alluvial land

Componet: Fluvaquents

Text kind/Category: Nontechnical description/GENSOIL

The Fluvaquents component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of alluvium with highly variable texture. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, October, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Componet: Udifluvents

Text kind/Category: Nontechnical description/GENSOIL

The Udifluvents component makes up 35 percent of the map unit. Slopes are 0 to 5 percent. This component is on flood plains. The parent material consists of alluvium with a wide range of texture. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w. This soil does not meet hydric criteria.

Map unit: BaC - Bath channery silt loam, 5 to 15 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 75 percent of the map unit. Slopes are 5 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: BaD - Bath channery silt loam, 15 to 25 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 75 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: BgC - Bath and Valois gravelly silt loams, 5 to 15 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 40 percent of the map unit. Slopes are 5 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Componet: Valois

Text kind/Category: Nontechnical description/GENSOIL

The Valois component makes up 35 percent of the map unit. Slopes are 5 to 15 percent. This component is on end moraines, valley sides, lateral moraines. The parent material consists of loamy till derived mainly from sandstone, siltstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 36 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: BoE - Bath and Valois soils, 25 to 35 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 40 percent of the map unit. Slopes are 25 to 35 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Componet: Valois

Text kind/Category: Nontechnical description/GENSOIL

The Valois component makes up 35 percent of the map unit. Slopes are 25 to 35 percent. This component is on end moraines, valley sides, lateral moraines. The parent material consists of loamy till derived mainly from sandstone, siltstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 36 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: BtF - Bath, Valois, and Lansing soils, 35 to 60 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 30 percent of the map unit. Slopes are 35 to 60 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Componet: Valois

Text kind/Category: Nontechnical description/GENSOIL

The Valois component makes up 25 percent of the map unit. Slopes are 35 to 60 percent. This component is on end moraines, valley sides, lateral moraines. The parent material consists of loamy till derived mainly from sandstone, siltstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 36 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Componet: Lansing

Text kind/Category: Nontechnical description/GENSOIL

The Lansing component makes up 20 percent of the map unit. Slopes are 35 to 60 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from shale, limestone, sandstone, and siltstone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 32 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 9 percent.

Map unit: EbB - Erie channery silt loam, 3 to 8 percent slopes

Componet: Erie

Text kind/Category: Nontechnical description/GENSOIL

The Erie component makes up 75 percent of the map unit. Slopes are 3 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and limestone. Depth to a root restrictive layer, fragipan, is 12 to 18 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: EbC - Erie channery silt loam, 8 to 15 percent slopes

Componet: Erie

Text kind/Category: Nontechnical description/GENSOIL

The Erie component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and limestone. Depth to a root restrictive layer, fragipan, is 12 to 18 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: EbC3 - Erie channery silt loam, 8 to 15 percent slopes, eroded

Componet: Erie

Text kind/Category: Nontechnical description/GENSOIL

The Erie component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and limestone. Depth to a root restrictive layer, fragipan, is 12 to 18 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: LaC - Langford channery silt loam, 8 to 15 percent slopes

Componet: Langford

Text kind/Category: Nontechnical description/GENSOIL

The Langford component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, till plains, drumlinoid ridges. The parent material consists of loamy till derived from siltstone, sandstone, shale, and some limestone. Depth to a root restrictive layer, fragipan, is 15 to 28 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: LnC - Lordstown channery silt loam, 5 to 15 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 5 to 15 percent. This component is on ridges, benches, hills. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: LnC3 - Lordstown channery silt loam, 5 to 15 percent slopes, eroded

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 5 to 15 percent. This component is on hills, ridges, benches. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: LnD - Lordstown channery silt loam, 15 to 25 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 15 to 25 percent. This component is on ridges, benches, hills. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: LnE - Lordstown channery silt loam, 25 to 35 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 25 to 35 percent. This component is on ridges, benches, hills. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: LoF - Lordstown soils, 35 to 70 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 35 to 70 percent. This component is on hills, ridges, benches. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: MaB - Mardin channery silt loam, 2 to 8 percent slopes

Componet: Mardin

Text kind/Category: Nontechnical description/GENSOIL

The Mardin component makes up 75 percent of the map unit. Slopes are 2 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from acid sedimentary rock. Depth to a root restrictive layer, fragipan, is 15 to 26 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map unit: MaC - Mardin channery silt loam, 8 to 15 percent slopes

Componet: Mardin

Text kind/Category: Nontechnical description/GENSOIL

The Mardin component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from acid sedimentary rock. Depth to a root restrictive layer, fragipan, is 15 to 26 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: MfD - Mardin and Langford soils, 15 to 25 percent slopes

Componet: Mardin

Text kind/Category: Nontechnical description/GENSOIL

The Mardin component makes up 40 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from acid sedimentary rock. Depth to a root restrictive layer, fragipan, is 15 to 26 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Componet: Langford

Text kind/Category: Nontechnical description/GENSOIL

The Langford component makes up 35 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and some limestone. Depth to a root restrictive layer, fragipan, is 15 to 28 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: VbB - Volusia channery silt loam, 3 to 8 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 3 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Map unit: VbC - Volusia channery silt loam, 8 to 15 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on till plains, drumlinoid ridges, hills. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: VrD - Volusia and Erie soils, 15 to 25 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 40 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Componet: Erie

Text kind/Category: Nontechnical description/GENSOIL

The Erie component makes up 35 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and limestone. Depth to a root restrictive layer, fragipan, is 12 to 18 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Soils Data
For Forested Lands in the
Town of Caroline

Hydric Soils

Tompkins County, New York

[This report lists only those map unit components that are rated as hydric. Dashes (---) in any column indicate that the data were not included in the database. Definitions of hydric criteria codes are included at the end of the report]

Map symbol and map unit name	Component	Percent of map unit	Landform	Hydric rating	Hydric criteria
Ab:					
Alluvial land	Fluvaquents	40	Flood plains	Yes	2B3, 3, 4
TeA:					
Tuller channery silt loam, 0 to 6 percent slopes	Tuller (greene), moderately deep	75	Benches, Hills, Ridges	Yes	2B3

Hydric Soils

This table lists the map unit components that are rated as hydric soils in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2003) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and others, 2002).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. are somewhat poorly drained and have a water table at the surface (0.0 feet) during the growing season, or
   B. are poorly drained or very poorly drained and have either:
      1) a water table at the surface (0.0 feet) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or
      2) a water table at a depth of 0.5 foot or less during the growing season if permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or
      3) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
3. Soils that are frequently ponded for long or very long duration during the growing season.
4. Soils that are frequently flooded for long or very long duration during the growing season.

References:

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

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
Ab:							
Fluvaquents	40	Slight		Slight		Poorly suited	
						Ponding	1.00
						Flooding	1.00
						Wetness	1.00
						Low strength	0.50
Udifluvents	35	Slight		Slight		Poorly suited	
						Flooding	1.00
BtF:							
Bath	30	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Valois	25	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
Lansing	20	Severe		Severe		Poorly suited	
		Slope/erodibility	0.75	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
LnC:							
Lordstown	75	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
LnE:							
Lordstown	75	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
LtB:							
Lordstown (arnot), Shallow	25	Slight		Moderate		Moderately suited	
				Slope/erodibility	0.50	Slope	0.50
Ovid, Shallow	25	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Slope	0.50
						Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

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
LtB:							
Tuller	25	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Slope	0.50
MaC3:							
Mardin	75	Slight		Severe		Moderately suited	
				Slope/erodibility	0.95	Slope	0.50
						Low strength	0.50
						Wetness	0.50
MfD:							
Mardin	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Wetness	0.50
Langford	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Low strength	0.50
						Wetness	0.50
TeA:							
Tuller (greene), Moderately Deep	75	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Low strength	0.50
VbB:							
Volusia	75	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Low strength	0.50
						Slope	0.50
VbB3:							
Volusia	75	Slight		Moderate		Poorly suited	
				Slope/erodibility	0.50	Wetness	1.00
						Low strength	0.50
						Slope	0.50
VbC:							
Volusia	75	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Wetness	1.00
						Slope	0.50
						Low strength	0.50

Hazard of Erosion and Suitability for Roads on Forestland

Tompkins County, New York

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
VbC3:							
Volusia	75	Slight		Severe		Poorly suited	
				Slope/erodibility	0.95	Wetness	1.00
						Slope	0.50
						Low strength	0.50
VrD:							
Volusia	40	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Wetness	1.00
						Low strength	0.50
Erie	35	Moderate		Severe		Poorly suited	
		Slope/erodibility	0.50	Slope/erodibility	0.95	Slope	1.00
						Wetness	1.00
						Low strength	0.50

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

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
Ab:							
Fluvaquents	40	Severe		Poorly suited		Severe	
		Flooding	1.00	Ponding	1.00	Low strength	1.00
				Flooding	1.00		
				Wetness	1.00		
				Low strength	0.50		
Udifluvents	35	Severe		Poorly suited		Moderate	
		Flooding	1.00	Flooding	1.00	Low strength	0.50
BtF:							
Bath	30	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Valois	25	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
Lansing	20	Severe		Poorly suited		Severe	
		Slope	1.00	Slope	1.00	Low strength	1.00
		Low strength	0.50	Low strength	0.50		
LnC:							
Lordstown	75	Moderate		Moderately suited		Moderate	
		Restrictive layer	0.50	Slope	0.50	Low strength	0.50
LnE:							
Lordstown	75	Moderate		Poorly suited		Moderate	
		Slope	0.50	Slope	1.00	Low strength	0.50
		Restrictive layer	0.50				
LtB:							
Lordstown (arnot), Shallow	25	Severe		Moderately suited		Moderate	
		Restrictive layer	1.00	Slope	0.50	Low strength	0.50
		Low strength	0.50				
Ovid, Shallow	25	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

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
LtB:							
Tuller	25	Severe		Poorly suited		Slight	
		Restrictive layer	1.00	Wetness	1.00	Strength	0.10
				Slope	0.50		
MaC3:							
Mardin	75	Moderate		Moderately suited		Severe	
		Low strength	0.50	Slope	0.50	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
MfD:							
Mardin	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
Langford	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Low strength	0.50		
				Wetness	0.50		
TeA:							
Tuller (greene), Moderately Deep	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
		Restrictive layer	0.50	Low strength	0.50		
VbB:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Low strength	0.50		
				Slope	0.50		
VbB3:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Low strength	0.50		
				Slope	0.50		
VbC:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		

Haul Roads, Log Landings, and Soil Rutting on Forestland

Tompkins County, New York

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
VbC3:							
Volusia	75	Moderate		Poorly suited		Severe	
		Low strength	0.50	Wetness	1.00	Low strength	1.00
				Slope	0.50		
				Low strength	0.50		
VrD:							
Volusia	40	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Wetness	1.00		
				Low strength	0.50		
Erie	35	Moderate		Poorly suited		Severe	
		Slope	0.50	Slope	1.00	Low strength	1.00
				Wetness	1.00		
				Low strength	0.50		

Forestland Productivity

Tompkins County, New York

[This report shows only the major soils in each map unit]

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
Ab:				
Fluvaquents	---	---	---	---
Udifluvents	---	---	---	---
BtF:				
Bath	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
Valois	Black cherry	75	43	Eastern white pine, European larch, Norway spruce, Red pine
	Northern red oak	70	57	
	Sugar maple	65	43	
Lansing	Black cherry	80	57	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	80	57	
	Sugar maple	70	43	
	Tuliptree	85	86	
	White ash	85	57	
LnC:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
LnE:				
Lordstown	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, Red pine
	Sugar maple	73	43	
	White ash	75	43	
LtB:				
Lordstown (arnot), shallow	Eastern white pine	55	86	Eastern white pine, European larch, Red pine
	Northern red oak	55	43	
	Sugar maple	50	29	
	White ash	55	29	
Ovid, shallow	Northern red oak	70	57	Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	60	43	
	White ash	70	43	
Tuller	American beech	---	0	Eastern white pine, Norway spruce, White spruce
	American elm	---	0	
	Eastern hemlock	45	0	
	Red maple	55	29	

Forestland Productivity

Tompkins County, New York

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
MaC3:				
Mardin	Black cherry	70	43	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	63	43	
	Sugar maple	60	43	
	White ash	70	43	
MfD:				
Mardin	Black cherry	70	43	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Northern red oak	63	43	
	Sugar maple	60	43	
	White ash	70	43	
Langford	American beech	---	0	Eastern white pine, European larch, Norway spruce, Red pine, White spruce
	Black cherry	75	43	
	Eastern hemlock	---	0	
	Eastern white pine	75	143	
	Northern red oak	65	43	
	Sugar maple	60	43	
	White ash	70	43	
TeA:				
Tuller (greene), moderately deep	American beech	---	0	Eastern white pine, Norway spruce, White spruce
	American elm	---	0	
	Eastern hemlock	45	0	
	Red maple	55	29	
VbB:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
VbB3:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
VbC:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
VbC3:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	

Forestland Productivity

Tompkins County, New York

Map symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site index	Volume of wood fiber	
			Cu ft/ac	
VrD:				
Volusia	Northern red oak	70	57	Black cherry, Eastern white pine, European larch, Norway spruce, White spruce
	Sugar maple	64	43	
	White ash	75	43	
Erie	Black cherry	65	43	Eastern white pine, Norway spruce, White spruce
	Northern red oak	70	57	
	Sugar maple	64	43	
	White ash	75	43	

Forestland Planting and Harvesting

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:							
Fluvaquents	40	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
Udifluvents	35	Well suited		Moderately suited		Well suited	
				Rock fragments	0.50		
BtF:							
Bath	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
				Rock fragments	0.50	Low strength	0.50
Valois	25	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
Lansing	20	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
						Low strength	0.50
LnC:							
Lordstown	75	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
LnE:							
Lordstown	75	Well suited		Unsuited		Moderately suited	
				Slope	1.00	Slope	0.50
				Rock fragments	0.50		
LtB:							
Lordstown (arnot), Shallow	25	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
Ovid, Shallow	25	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
Tuller	25	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		

Forestland Planting and Harvesting

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
MaC3:							
Mardin	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
MfD:							
Mardin	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
Langford	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50
TeA:							
Tuller (greene), Moderately Deep	75	Well suited		Moderately suited		Moderately suited	
				Rock fragments	0.50	Low strength	0.50
VbB:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VbB3:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VbC:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VbC3:							
Volusia	75	Well suited		Moderately suited		Moderately suited	
				Slope	0.50	Low strength	0.50
				Rock fragments	0.50		
VrD:							
Volusia	40	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50

Forestland Planting and Harvesting

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
VrD:							
Erie	35	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Low strength	0.50
						Slope	0.50

Forestland Site Preparation

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:					
Fluvaquents	40	Well suited		Well suited	
Udifluvents	35	Well suited		Well suited	
BtF:					
Bath	30	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Valois	25	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
Lansing	20	Unsuited		Unsuited	
		Slope	1.00	Slope	1.00
LnC:					
Lordstown	75	Well suited		Poorly suited	
				Restrictive layer	0.50
LnE:					
Lordstown	75	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
				Restrictive layer	0.50
LtB:					
Lordstown (arnot), Shallow	25	Well suited		Unsuited	
				Restrictive layer	1.00
Ovid, Shallow	25	Well suited		Well suited	
Tuller	25	Well suited		Unsuited	
				Restrictive layer	1.00
MaC3:					
Mardin	75	Well suited		Well suited	
MfD:					
Mardin	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Forestland Site Preparation

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Suitability for mechanical site preparation (surface)		Suitability for mechanical site preparation (deep)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MfD:					
Langford	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
TeA:					
Tuller (greene), Moderately Deep	75	Well suited		Poorly suited	
				Restrictive layer	0.50
VbB:					
Volusia	75	Well suited		Well suited	
VbB3:					
Volusia	75	Well suited		Well suited	
VbC:					
Volusia	75	Well suited		Well suited	
VbC3:					
Volusia	75	Well suited		Well suited	
VrD:					
Volusia	40	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50
Erie	35	Poorly suited		Poorly suited	
		Slope	0.50	Slope	0.50

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

[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 columns that identify the rating class and limiting features show no more than five limitations for any given soil. The soil may have additional limitations. This report shows only the major soils in each map unit]

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
Ab:					
Fluvaquents	40	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
Udifluvents	35	High		Low	
		Texture/surface depth/rock fragments	1.00		
BtF:					
Bath	30	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
Valois	25	Moderate		Low	
		Texture/slope/surface depth/rock fragments	0.50		
Lansing	20	Low		Low	
LnC:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
LnE:					
Lordstown	75	Low		Low	
		Texture/rock fragments	0.10		
LtB:					
Lordstown (arnot), Shallow	25	Low		Low	
		Texture/rock fragments	0.10		
Ovid, Shallow	25	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
Tuller	25	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
MaC3:					
Mardin	75	Moderate		High	
		Texture/surface depth/rock fragments	0.50	Wetness	1.00
				Soil reaction	0.50
MfD:					
Mardin	40	Moderate		High	
		Texture/surface depth/rock fragments	0.50	Wetness	1.00
				Soil reaction	0.50
Langford	35	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
TeA:					
Tuller (greene), Moderately Deep	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbB:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbB3:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbC:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VbC3:					
Volusia	75	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00
VrD:					
Volusia	40	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00

Damage by Fire and Seedling Mortality on Forestland

Tompkins County, New York

Map symbol and soil name	Pct. of map unit	Potential for damage to soil by fire		Potential for seedling mortality	
		Rating class and limiting features	Value	Rating class and limiting features	Value
VrD:					
Erie	35	Low		High	
		Texture/rock fragments	0.10	Wetness	1.00

Component Text

Tompkins County, New York

[Only those components that have entries for the selected text kinds and categories are included in this report. This report shows only the major soils in each map unit]

Map unit: Ab - Alluvial land

Componet: Fluvaquents

Text kind/Category: Nontechnical description/GENSOIL

The Fluvaquents component makes up 40 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains. The parent material consists of alluvium with highly variable texture. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, October, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Componet: Udifluvents

Text kind/Category: Nontechnical description/GENSOIL

The Udifluvents component makes up 35 percent of the map unit. Slopes are 0 to 5 percent. This component is on flood plains. The parent material consists of alluvium with a wide range of texture. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 5w. This soil does not meet hydric criteria.

Map unit: BtF - Bath, Valois, and Lansing soils, 35 to 60 percent slopes

Componet: Bath

Text kind/Category: Nontechnical description/GENSOIL

The Bath component makes up 30 percent of the map unit. Slopes are 35 to 60 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from gray and brown siltstone, sandstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 30 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 26 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Componet: Valois

Text kind/Category: Nontechnical description/GENSOIL

The Valois component makes up 25 percent of the map unit. Slopes are 35 to 60 percent. This component is on end moraines, valley sides, lateral moraines. The parent material consists of loamy till derived mainly from sandstone, siltstone, and shale. Depth to a root restrictive layer, fragipan, is 24 to 36 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: BtF - Bath, Valois, and Lansing soils, 35 to 60 percent slopes

Componet: Lansing

Text kind/Category: Nontechnical description/GENSOIL

The Lansing component makes up 20 percent of the map unit. Slopes are 35 to 60 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from shale, limestone, sandstone, and siltstone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 32 inches during March, April, May. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 9 percent.

Map unit: LnC - Lordstown channery silt loam, 5 to 15 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 5 to 15 percent. This component is on ridges, benches, hills. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: LnE - Lordstown channery silt loam, 25 to 35 percent slopes

Componet: Lordstown

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown component makes up 75 percent of the map unit. Slopes are 25 to 35 percent. This component is on ridges, benches, hills. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map unit: LtB - Lordstown, Tuller, and Ovid soils, shallow and very shallow, 0 to 15 percent slopes

Componet: Lordstown (arnot), shallow

Text kind/Category: Nontechnical description/GENSOIL

The Lordstown (arnot), shallow component makes up 25 percent of the map unit. Slopes are 0 to 15 percent. This component is on hills, ridges, benches. The parent material consists of loamy till derived from sandstone and siltstone. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: LtB - Lordstown, Tuller, and Ovid soils, shallow and very shallow, 0 to 15 percent slopes

Componet: Ovid, shallow

Text kind/Category: Nontechnical description/GENSOIL

The Ovid, shallow component makes up 25 percent of the map unit. Slopes are 0 to 15 percent. This component is on till plains, reworked lake plains. The parent material consists of loamy till with a significant component of reddish shale or reddish glaciolacustrine clays, mixed with limestone and some sandstone. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 10 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Componet: Tuller

Text kind/Category: Nontechnical description/GENSOIL

The Tuller component makes up 25 percent of the map unit. Slopes are 0 to 15 percent. This component is on hills, ridges, benches. The parent material consists of loamy till derived mainly from acid sandstone, siltstone, and shale. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, June, November, December. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Map unit: MaC3 - Mardin channery silt loam, 8 to 15 percent slopes, eroded

Componet: Mardin

Text kind/Category: Nontechnical description/GENSOIL

The Mardin component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from acid sedimentary rock. Depth to a root restrictive layer, fragipan, is 15 to 26 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: MfD - Mardin and Langford soils, 15 to 25 percent slopes

Componet: Mardin

Text kind/Category: Nontechnical description/GENSOIL

The Mardin component makes up 40 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from acid sedimentary rock. Depth to a root restrictive layer, fragipan, is 15 to 26 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 16 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: MfD - Mardin and Langford soils, 15 to 25 percent slopes

Componet: Langford

Text kind/Category: Nontechnical description/GENSOIL

The Langford component makes up 35 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and some limestone. Depth to a root restrictive layer, fragipan, is 15 to 28 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during March, April, May. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: TeA - Tuller channery silt loam, 0 to 6 percent slopes

Componet: Tuller (greene), moderately deep

Text kind/Category: Nontechnical description/GENSOIL

The Tuller (greene), moderately deep component makes up 75 percent of the map unit. Slopes are 0 to 6 percent. This component is on benches, hills, ridges. The parent material consists of loamy till derived mainly from acid sandstone, siltstone, and shale. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, June, November, December. Organic matter content in the surface horizon is about 6 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria.

Map unit: VbB - Volusia channery silt loam, 3 to 8 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 3 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Map unit: VbB3 - Volusia channery silt loam, 3 to 8 percent slopes, eroded

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 3 to 8 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component Text

Tompkins County, New York

Map unit: VbC - Volusia channery silt loam, 8 to 15 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on till plains, drumlinoid ridges, hills. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

Map unit: VbC3 - Volusia channery silt loam, 8 to 15 percent slopes, eroded

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 75 percent of the map unit. Slopes are 8 to 15 percent. This component is on till plains, hills, drumlinoid ridges. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Map unit: VrD - Volusia and Erie soils, 15 to 25 percent slopes

Componet: Volusia

Text kind/Category: Nontechnical description/GENSOIL

The Volusia component makes up 40 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived mainly from siltstone, sandstone, and shale or slate. Depth to a root restrictive layer, fragipan, is 10 to 22 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 8 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Componet: Erie

Text kind/Category: Nontechnical description/GENSOIL

The Erie component makes up 35 percent of the map unit. Slopes are 15 to 25 percent. This component is on drumlinoid ridges, hills, till plains. The parent material consists of loamy till derived from siltstone, sandstone, shale, and limestone. Depth to a root restrictive layer, fragipan, is 12 to 18 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Appendix 3

Forest Pests and Diseases

1. Sirex Woodwasp
2. Emerald Ash Borer
3. Gypsy Moth
4. Forest Tent Caterpillar
5. Eastern Tent Caterpillar
6. Peach Bark Beetle
7. Hemlock Wooly Adelgid
8. Beech Bark Disease
9. Garlic Mustard
10. Japanese Honeysuckle
11. Norway Maple

Pest Alert

United States
Department of Agriculture

Forest Service

Northeastern Area
State and Private Forestry

NA-PR-07-05
June 2005

Sirex woodwasp—*Sirex noctilio* F. (Hymenoptera: Siricidae) -

Sirex woodwasp has been the most common species of exotic woodwasp detected at United States ports-of-entry associated with solid wood packing materials. Recent detections of sirex woodwasp outside of port areas in the United States have raised concerns because this insect has the potential to cause significant mortality of pines. Awareness of the symptoms and signs of a sirex woodwasp infestation increases the chance of early detection, and thus, the rapid response needed to contain and manage this exotic forest pest.

Distribution

Sirex woodwasp is native to Europe, Asia, and northern Africa, where it is generally considered to be a secondary pest. In its native range, it attacks pines almost exclusively, e.g., Scotch *(Pinus sylvestris),* Austrian *(P. nigra),* and maritime *(P. pinaster)* pines. This woodwasp was introduced inadvertently into New Zealand, Australia, Uruguay, Argentina, Brazil, Chile, and South Africa. In these Southern Hemisphere countries, sirex woodwasp attacks exotic pine plantations, and it has caused up to 80 percent tree mortality. Most of the plantations are planted with North American pine species, especially Monterey pine *(P. radiata)* and loblolly pine *(P. taeda).* Other known susceptible pines include slash *(P. elliottii),* shortleaf *(P. echinata),* ponderosa *(P. ponderosa),* lodgepole *(P. contorta),* and jack *(P. banksiana).*

Identification

Woodwasps (or horntails) are large, robust insects, usually 1.0 to 1.5 inches long (Figures 1 and 2). Adults have a spear-shaped plate (cornus) at the tail end; in addition females have a long ovipositor under this plate. Larvae are creamy white, legless, and have a distinctive dark spine at the rear of the abdomen (Figure 3). More than a dozen species of native horntails occur in North America. No keys to identify woodwasp larvae to the species level have been developed; however, adult specimens have features to distinguish sirex woodwasp from native horntails. Key characteristics of the sirex woodwasp include these:

- Body dark metallic blue or black; abdomen of males black at base and tail end, with middle segments orange.
- Legs reddish-yellow; feet (tarsi) black; males with black hind legs.
- Antennae entirely black.

Positive identification of *S. noctilio* needs to be confirmed by an insect taxonomist. Therefore, collect and submit any suspect woodwasps to your county extension or state Department of Agriculture office.

Figure 1. *Sirex noctilio*—adult female.

Figure 2. *Sirex noctilio*—adult male.

Figure 3. *Sirex noctilio*—larva and close-up of posterior spine.

Symptoms

Sirex woodwasp can attack living pines, while native woodwasps attack only dead and dying trees. At low populations, sirex woodwasp selects suppressed, stressed, and injured trees for egg laying. Foliage of infested trees

initially wilts (Figure 4), and then changes color from dark green to light green, to yellow, and finally to red (Figure 5), during the 3-6 months following attack. Infested trees may have resin beads or dribbles at the egg laying sites (Figure 6), which are more common at the mid-bole level. Larval galleries are tightly packed with very fine sawdust (Figure 7). As adults emerge, they chew round exit holes that vary from ⅛ to ⅜ inch in diameter (Figure 8).

Biology

Sirex woodwasp is expected to complete one generation per year throughout most of the United States. Adult emergence is likely to occur from July through September, with peak emergence during August. Females are attracted to stressed trees after an initial flight. They drill their ovipositors into the outer sapwood to inject a symbiotic fungus *(Amylostereum areolatum),* toxic mucus, and eggs. The fungus and mucus act together to kill the tree and create a suitable environment for larval development. Females lay from 25 to 450 eggs, depending upon size of the female. Unfertilized eggs develop into males, while fertilized eggs produce females. All larval instars feed on the fungus as they tunnel through the wood. The number of instars varies from 6 to 12, and the larval stage generally takes 10-11 months. Mature larvae pupate close to the bark surface. Adults emerge about 3 weeks later.

Biological Control

Sirex woodwasp has been successfully managed using biological control agents. The key agent is a parasitic nematode, *Deladenus siricidicola,* which infects sirex woodwasp larvae, and ultimately sterilizes the adult females. These infected females emerge and lay infertile eggs that are filled with nematodes, which sustain and spread the nematode population. The nematodes effectively regulate the woodwasp population below damaging levels. As sirex woodwasp establishes in new areas, this nematode can be easily mass-reared in the laboratory and introduced by inoculating it into infested trees. In addition to the nematode, hymenopteran parasitoids have been introduced into sirex woodwasp populations in the Southern Hemisphere, and most of them are native to North America (e.g., *Megarhyssa nortoni, Rhyssa persuasoria, Rhyssa hoferi, Schlettererius cinctipes,* and *Ibalia leucospoides).*

Figure 4. Green needles wilt and point straight down.

Figure 5. Needles eventually turn red.

Figure 6. Resin beads and dribbles at egg-laying site.

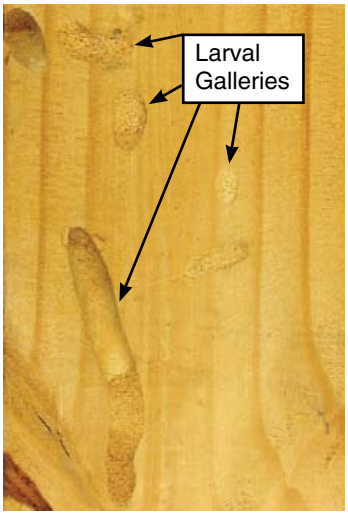

Figure 7. Larval galleries with tightly packed frass.

Figure 8. Round exit holes.

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Northeastern Area
State and Private Forestry

NA-PR-02-04
January 2004

Emerald Ash Borer

An exotic beetle from Asia was discovered in July 2002 feeding on ash (*Fraxinus* spp.) trees in southeastern Michigan. It was identifi ed as *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae). Larvae feed in the cambium between the bark and wood, producing galleries that eventually girdle and kill branches and entire trees. Evidence suggests that *A. planipennis* has been established in Michigan for at least six to ten years. More than 3000 square miles in southeast Michigan are infested and more than 5 million ash trees are dead or dying from this pest. This exotic pest is also established in Windsor, Ontario, Canada. In 2003, newly established populations were detected in other areas of southern Michigan and several locations in Ohio. Infested ash nursery trees were also found in Maryland and Virginia.

Identification

Figure 1. Adult emerald ash borer.

Adult beetles are generally larger and a brighter green than the native North American species of Agrilus (Fig. 1). Adults are slender, elongate and 7.5 to 13.5 mm long. Males are smaller than females and have fine hairs on the ventral side of the thorax, which the females lack. Color varies but adults are usually bronze or golden green overall, with darker, metallic, emerald green wing covers. The top of the abdomen under the wings is metallic purplish red and can be seen when the wings are spread. The prothorax, the segment behind the head to which the first pair of legs is attached, is slightly wider than the head but the same width as the base of the wing covers.

Larvae reach a length of 26 to 32 mm, are white to cream-colored and dorso-ventrally flattened (Fig. 2). The brown head is mostly retracted into the prothorax and only the mouth-parts are visible externally. The 10-segmented abdomen has a pair of brown, pincer-

like appendages on the last segment.

Figure 2. Second, third, and fourth stage larvae.

Biology

The emerald ash borer generally has a one-year life cycle in southern Michigan but could require two years to complete a generation in colder regions. In 2003, adult emergence began in early June, peaked in late June and early July, and continued into late July. Beetles usually live for about 3 weeks and are present into mid-August. Adult beetles are active during the day, particularly when conditions are warm and sunny. Most beetles remain in protected locations in bark crevices or on foliage during rain, heavy cloud cover, high winds, or temperatures above 32oC (90oF). Beetles feed on ash foliage, usually in small, irregularly-shaped patches along the margins of leaves.

Figure 3. Galleries excavated by larvae.

Females can mate multiple times and egg laying begins a few days after the initial mating. Females can lay at least 60 to 90 eggs during their lifetime. Eggs are deposited individually in bark crevices on the trunk or branches. Eggs hatch in 7 to 10 days.

After hatching, first instar larvae chew through the bark and into the cambial region. Larvae feed on phloem and the outer sapwood for several weeks. The S-shaped feeding gallery winds back and forth, becoming progressively wider as the larva grows (Fig. 3). Galleries are packed with fine, sawdust-like frass. Individual galleries often extend over an area that is 20 to 30 cm in length, though the length of the affected area can range from 10 to 50 cm or longer.

Feeding is completed in autumn and pre-pupal larvae overwinter in shallow chambers excavated in the outer sapwood or in the bark on thick-barked trees. Pupation begins in late April or May. Newly eclosed adults often remain in the pupal chamber for 1 to 2 weeks before emerging head-first through a D-shaped exit hole that is 3–4 mm in diameter (Fig. 4).

Distribution and Hosts

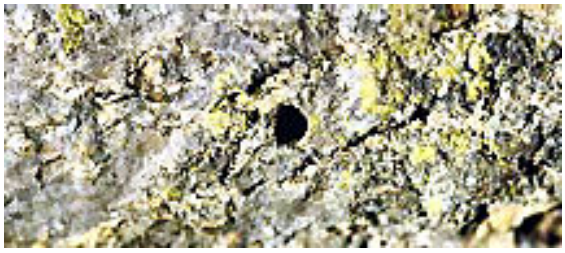

Figure 4. D-shaped exit holes where adult beetles emerged.

The emerald ash borer is native to Asia and is known to occur in China, Korea, Japan, Mongolia, the Russian Far East and Taiwan. A Chinese report indicates high populations of the borer occur primarily in *Fraxinus chinensis* and *F. rhynchophylla* forests. Other reported hosts in Asia include *F. mandshurica* var. *japonica, Ulmus davidiana* var. *japonica*, *Juglans mandshurica* var. *sieboldiana* and *Pterocarya rhoifolia*. In North America, this borer has only attacked ash trees. Green ash (*F. pennsylvanica*), white ash (*F. americana*)

Figure 5. Jagged holes left by woodpeckers

Figure 6. Much of the canopy is dead on a heavily infested ash tree.

and black ash (*F. nigra*), as well as several horticultural varieties of ash have been killed.

Symptoms

It is difficult to detect emerald ash borer in newly infested trees. Jagged holes exca-vated by woodpeckers feeding on pre-pupal larvae may be the first sign that a tree has become infested (Fig. 5). When a tree has been infested for at least one year, the D-shaped exit holes left by emerging adults will be present on the branches and the trunk (Fig 4). Bark may split vertically above larval feeding galleries. When the bark is removed from infested trees, the distinct, frass-filled larval tunnels that etch the outer sapwood and phloem are readily visible on the trunk and branches (Fig. 3). An ellipti-cal area of discolored sapwood, usually a result of secondary infection by fungal patho-gens, sometimes surrounds larval feeding galleries.

Serpentine tunnels excavated by feeding larvae interrupt the transport of nutrients and water within the tree during the summer. Foliage wilts and the tree canopy becomes increasingly thin and sparse as branches die. Many trees appear to lose about 30% to 50% of the canopy after 2 years of infestation and trees often die after 3-4 years of infestation (Fig. 6). Epicormic shoots may arise on the trunk of the tree, often at the margin of live and dead tissue. Dense root sprouting sometimes occurs after trees die.

Emerald ash borer has killed trees of various size and condition in Michigan. Larvae have developed in trees and branches ranging from 2.5 cm (1 inch) to 140 cm (55 inches) in diameter. Stress likely contributes to the vulnerability and rapid decline of infested ash trees. However, emerald ash borer has killed apparently vigorous trees in woodlots and urban trees under regular irrigation and fertilization regimes.

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Jendek, E. 2002. Agrilus planipennis fact sheet. PDF file provided by Eduardo Jendek, Institute of Zoology, Slovak Academy of Sciences, Bratislava, Slovak Republic.

Resources

Visit the following websites for information on emerald ash borer biology, identification, management, quarantines and related topics:

1. Michigan Multi-Agency Emerald Ash Borer Web Site: http://www.emeraldashborer.info
2. USDA Forest Service: http://www.na.fs.fed.us/spfo/eab/
3. Michigan Department of Agriculture: http://www.michigan.gov (keyword emerald ash borer)

Contact your State Department of Agriculture, State Forester, or County Extension Office for more information.

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Photo credits:

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Forest Insect & Disease Leaflet 162

U.S. Department of Agriculture Forest Service

Gypsy Moth

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The gypsy moth, *Lymantria dispar* Linnaeus, is one of the most notorious pests of hardwood trees in the Eastern United States. Since 1980, the gypsy moth has defoliated close to a million or more forested acres each year. In 1981, a record 12.9 million acres were defoliated. This is an area larger than Rhode Island, Massachusetts, and Connecticut combined.

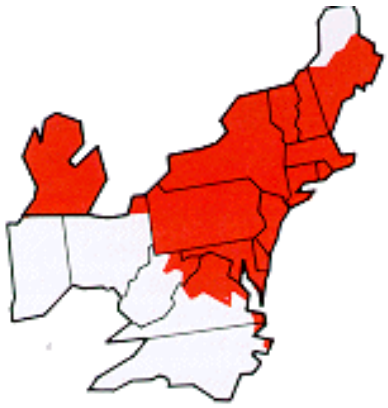

Figure 1 - *Area of general infestation as of 1988.*

In wooded suburban areas, during periods of infestation when trees are visibly defoliated, gypsy moth larvae crawl up and down walls, across roads, over outdoor furniture, and even inside homes. During periods of feeding they leave behind a mixture of small pieces of leaves and frass, or excrement.

Gypsy moth infestations altertnate between years when trees experience little visible defoliation (gypsy moth population numbers are sparse) followed by 2 to 4 years when trees are visibly defoliated (gypsy moth population numbers are dense).

The gypsy moth is not a native insect. It was introduced into the United States in 1869 by a French scientist living in Massachusetts. The first outbreak occurred in 1889. By 1987, the gypsy moth had established itself throughout the Northeast. The insect has spread south into Virginia and West Virginia, and west into Michigan (fig. 1). Infestations have also occurred in Utah, Oregon, Washington, California, and many other

States outside the Northeast.

Life Cycle

The gypsy moth passes through four stages: egg, larva, pupa, and adult (moth stage). Only the larvae damage trees and shrubs.

Figure 2 - *Gypsy moth egg masses on the trunk and branch of a tree.*

Gypsy moth egg masses are laid on branches and trunks of trees (fig. 2), but egg masses may be found in any sheltered location. Egg masses are buff colored when first laid but may bleach out over the winter months when exposed to direct sunlight and weathering.

The hatching of gypsy moth eggs coincides with budding of most hardwood trees. Larvae emerge from egg masses from early spring through mid-May (fig. 3).

Figure 3 - *Gypsy moth larvae emerging from egg mass.*

Larvae are dispersed in two ways. Natural dispersal occurs when newly hatched larvae hanging from host trees on silken threads (fig. 4) are carried by the wind for a distance of about 1 mile. Larvae can be carried for longer distances. Artificial dispersal occurs when people transport gypsy moth eggs thousands of miles from infested areas on cars and recreational vehicles, firewood, household goods, and other personal possessions.

Figure 4 - *Gypsy moth larvae suspended on silken threads.*

Larvae develop into adults by going through a series of progressive molts through which they increase in size. Instars are the stages between each molt. Male larvae normally go through five instars (females, through six) before entering the pupal stage. Older larvae have five pairs of raised blue spots and six pairs of raised brick-red spots along their backs (fig. 5).

During the first three instars, larvae remain in the top branches or crowns of host trees. The first stage or instar chews small holes in the leaves (fig. 6). The second and third instars feed from the outer edge of the leaf toward the center.

Figure 5 - *Older Gypsy moth larvae showing five pairs of raised blue spots and six pairs of raised brick-red spots.*

Figure 6 - *First instar gypsy moth larvae chewing small holes in leaves.*

When population numbers are sparse, the movement of the larvae up and down the tree coincides with light intensity. Larvae in the fourth instar feed in the top branches or crown at night. When the sun comes up, larvae crawl down the trunk of the tree to rest during daylight hours. Larvae hide under flaps of bark, in crevices, or under branches - any place that provides protection. When larvae hide underneath leaf litter, mice, shrews, and *Calosoma* beetles can prey on them. At dusk, when the sun sets, larvae climb back up to the top branches of the host tree to feed.

When population numbers are dense, larvae feed continuously day and night until the foliage of the host tree

is stripped (fig. 7). Then they crawl in search of new sources of food.

Figure 7 - *A tree stripped by gypsy moth larvae*

The larvae reach maturity between mid-June and early July. They enter the pupal stage (fig. 8). This is the stage during which larvae change into adults or moths. Pupation lasts from 7 to 14 days. When population numbers are sparse, pupation can take place under flaps of bark, in crevices, under branches, on the ground, and in other places where larvae rested. During periods when population numbers are dense, pupation is not restricted to locations where larvae rested. Pupation will take place in sheltered and non-sheltered locations, even exposed on the trunks of trees or on foliage of nonhost trees.

Figure 8 - *Gypsy moth pupa.*

The male gypsy moth emerges first, flying in rapid zigzag patterns searching for females. When heavy, egg-laden females emerge, they emit a chemical substance called a pheromone that attracts the males (fig. 9). The female lays her eggs in July and August close to the spot where she pupated (fig. 10). Then, both adult gypsy moths die.

Four to six weeks later, embryos develop into larvae. The larvae remain in the eggs during the winter. The eggs hatch the following spring.

Figure 9 - *Male gypsy moth.*

Figure 10 - *Female gypsy moth laying eggs.*

Hosts

Gypsy moth larvae prefer hardwoods, but may feed on several hundred different species of trees and shrubs. In the East the gypsy moth prefers oaks, apple, sweetgum, speckled alder, basswood, gray and white birch, poplar, willow, and hawthorn, although other species are also affected. The list of hosts will undoubtedly expand as the insect spreads south and west.

Older larvae feed on several species of hardwood that younger larvae avoid, including cottonwood, hemlock, southern white cedar, and the pines and spruces native to the East. During periods when gypsy moth populations are dense, larvae feed on almost all vegetation: To date, the gypsy moth has avoided ash, yellow-poplar, sycamore, butternut, black walnut, catalpa, flowering dogwood, balsam fir, red cedar, American holly, and shrubs such as mountain laurel, rhododendron, and arborvitae.

Effects of Defoliation on Trees

The effects of defoliation depend primarily on the amount of foliage that is removed, the condition of the tree at the time it is defoliated, the number of consecutive defoliations, available soil moisture, and the species of host.

If less than 50 percent of their crown is defoliated, most hardwoods will experience only a slight reduction (or loss) in radial growth.

If more than 50 percent of their crown is defoliated, most hardwoods will refoliate or produce a second flush of foliage by midsummer (figs. 11, 12). Healthy trees can usually withstand one or two consecutive defoliations of greater than 50 percent. Trees that have been weakened by previous defoliation or been subjected to other stresses such as drought are frequently killed after a single defoliation of more than 50 percent.

Figure 11 - *Tree before defoliation.*

Figure 12 - *Tree after refoliation.*

Trees use energy reserves during refoliation and are eventually weakened. Weakened trees exhibit symptoms such as dying back of twigs and branches in the upper crown and sprouting of old buds on the trunk and larger branches. Weakened trees experience radial growth reduction of approximately 30 to 50 percent.

Trees weakened by consecutive defoliations are also vulnerable to attack by disease organisms and other insects. For example, the *Armillaria* fungus attacks the roots, and the two-lined chestnut borer attacks the trunk and branches. Affected trees will eventually die 2 or 3 years after they are attacked.

Although not preferred by the larvae, pines and hemlocks are subject to heavy defoliation during gypsy moth outbreaks and are more likely to be killed than hardwoods. A single, complete defoliation can kill approximately 50 percent of the pines and 90 percent of the mature hemlocks.

Factors That Affect Gypsy Moth Populations

Natural enemies play an important role during periods when gypsy moth populations are sparse. Natural enemies include parasitic and predatory insects such as wasps, flies, ground beetles, and ants; many species of spider; several species of birds such as chickadees, bluejays, nuthatches, towhees, and robins; and approximately 15 species of common woodland mammals, such as the white-footed mouse, shrews, chipmunks, squirrels, and raccoons.

The *Calosoma* beetle, a ground beetle of European origin, cuckoos, and flocking birds, such as starling, grackles, and red-winged blackbirds, are attracted to infested areas in years when gypsy moth populations are dense.

Diseases caused by bacteria, fungi, or viruses contribute to the decline of gypsy moth populations, especially during periods when gypsy moth populations are

dense and are stressed by lack of preferred foliage.

Figure 13 - *Larvae infected by the nucleo polyhedrosis virus (NPV) hanging in an inverted "V" position.*

Wilt disease caused by the nucleopolyhedrosis virus (NPV) is specific to the gypsy moth and is the most devastating of the natural diseases. NPV causes a dramatic collapse of outbreak populations by killing both the larvae and pupae. Larvae infected with wilt disease are shiny and hang limply in an inverted "V" position (fig. 13).

Weather affects the survival and development of gypsy moth life stages regardless of population density. For example, temperatures of -20°F. (-29°C.) lasting from 48 to 72 hours can kill exposed eggs; alternate periods of freezing and thawing in late winter and early spring may prevent the overwintering eggs from hatching; and cold, rainy weather inhibits dispersal and feeding of the newly hatched larvae and slows their growth.

Managing the Gypsy Moth

A number of tactics have the potential to minimize damage from gypsy moth infestations and to contain or maintain gypsy moth populations at levels considered tolerable. These tactics include monitoring gypsy moth populations, malntaining the health and vigor of trees, discouraging gypsy moth survival, and treating with insecticides to kill larvae and protect tree foliage. The tactic or combination of tactics used will depend on the condition of the site and of the tree or stand and the level of the gypsy moth population. Tactics suggested for homeowners are probably too costly and too labor intensive for managers to use in forest stands.

Tactics Suggested for Homeowners

Homeowners might want to consider one or more of the following tactics when gypsy moth populations are sparse. These activities do not guarantee a reduction or elimination of gypsy moth populations, nor will the activities guarantee to reverse the trend of an infestation of the gypsy moth. These activities are more practical for homeowners to use on individual yard trees than for land managers to use in forest stands.

Tactics Directed Against the Gypsy Moth

- Remove objects around the outside of the home that provide shelter for gypsy moth larvae and pupae, such as flaps of bark, dead tree branches, dead trees, boxes, cans, or old tires.
- Diversify the composition of trees and plants on your property to include species not preferred by the gypsy moth, such as tulip or yellow poplar, honeylocust, ash, hickory, dogwood, mountain ash, and many conifers.

- Destroy egg masses found on outbuildings, on fencing, and in woodpiles. Simply scraping egg masses onto the ground will not destroy them. Burn them or soak them in kerosene or soapy water. Caution is urged because the hairs that coat the egg masses can cause allergic reactions. Egg masses can also be destroyed by palnting them with commercially available products, such as liquid detergents.
- Place burlap on trees, especially oaks, to provide shade and shelter for older larvae when they seek out protected resting places during the day. The number of larvae and pupae that rest under the burlap provides valuable information about the severity of infestation on your property. When populations are sparse, larvae and pupae beneath burlap can be manually destroyed (fig. 14).
- Use barrier bands, consisting of commercially available double-sided sticky tapes, or sticky material such as Tanglefoot, petroleum jelly, or grease, to prevent larvae from crawling up the trunks of susceptible trees. These products should be applied to the surface of an impermeable material, such as duct tape or tar paper, and not applied directly to the bark. Petroleum-based products can cause injury (swelling and cankering) on thin-barked trees.

Figure 14 - *Gypsy moth larvae and pupae under burlap*

Maintaining and Enhancing the Health of Trees

- Enhance growth conditions for isolated trees by encircling them with mulch or ground cover plants that do not compete for moisture and nutrients the way dense grass layers do.
- Water shade and ornamental trees in periods. of drought to maximize recovery during refoliation.
- Fertilize shade trees.
- Avoid stressing trees. For example, construction projects tend to compact soil and prevent moisture from penetrating to small feeder roots.
- Avoid applying lime or weed killers around trees. These chemicals can seriously damage shallow tree roots.
- Thin woodlot trees and groups of shade trees between outbreaks to reduce competition.

The Use of Pesticides Against the Gypsy Moth

The decision to use pesticides is influenced by a number of factors:

- The number of visible egg masses.
- The percentage of preferred hosts in a mixed stand of trees (50 percent or more of oak).
- Whether trees already have dead or dying branches, especially near the top branches or crown.
- Whether the property is located adjacent to wooded areas heavily infested with gypsy moths.

During periods when numbers of gypsy moth larvae are dense, pesticides may be the most effective method of reducing the number of larvae and protecting the foliage of host trees. Application of pesticides should be done by a certified applicator, because special equipment is required. Large acreages, such as wooded residential areas and forests, should be treated by aircraft.

Available pesticides fall into two broad groups: microbial or biological and chemical (table 1).

Microbial and biological pesticides contain living organisms that must be consumed by the pest. Microbials include bacteria, viruses, and other naturally occurring organisms; biologicals include manmade synthetics of naturally occurring organisms. These pesticides should be applied before the larvae reach the third stage or instar of development. As they mature, larvae become more resistant to microbial pesticides and are, therefore, more difficult to kill.

Nucleopolyhedrosis virus (NPV), a naturally occurring organism, has been developed as a microbial pesticide. It is presently registered under the name "Gypchek" and is available for use in USDA Forest Service sponsored suppression programs. NPV and Gypcheck are specific to the gypsy moth.

Bacillus thuringiensis (Bt) is microbial and biological. It is the most commonly used pesticide. In addition to being used against the gypsy moth, *Bt* is used against a number of other pests, including the western spruce budworm, spruce budworm, and tent caterpillar. When *Bt* is taken internally, the insect becomes paralyzed, stops feeding, and dies of starvation or disease.

Chemical pesticides are contact poisons in addition to being stomach poisons. The timing of the chemical application is less critical to the successful population reduction of the pest than the timing of the application of the microbials and biologicals. Chemical pesticides can affect non-target organisms and may be haz-ardous to human health.

Table 1 - *Microbial and chemical pesticides commonly used for gypsy moth control*

Active ingredient	Representative trade names	Remarks
Bacillus thuringiensis	Dipel Thuricide	Registered for aerial and ground application. Available under a variety of trade names. Toxic to other moth and butterfly larvae. Can be used safely near water.
Acephate	Orthene	Registered for aerial and ground application. Available under a variety of trade names. Toxic to bees and some gypsy moth parasites. Commonly used from the ground to treat individual trees.
Carbaryl	Sevin	Registered for aerial and ground application. Available under a variety of trade names. Toxic to bees and gypsy moth parasites. At one time, the most widely used chemical in gypsy moth control programs.
Diflubenzuron	Dimilin	A restricted-use pesticide that can be applied only by certified applicators.

The most commonly used chemical pesticides currently registered by the U.S. Environmental Protection Agency (EPA) for use against the gypsy moth contain carbaryl, diflubenzuron, and acephate. Malathion,,

methoxychlor, phosmet, trichlorfon, and synthetic pyrethroids have also been registered by EPA for control of gypsy moth, but are used infrequently.

Diflubenzuron represents a new class of pesticides called insect growth regulators. It kills gypsy moth larvae by interfering with the normal molting process. Diflubenzuron has no effect on adult insects. Aquatic crustaceans and other immature insects that go through a series of molting stages are often sensitive to this pesticide.

Silvicultural Guidelines for Forest Stands and Woodlots

Several interrelated factors determine the vulnerability of forest stands and woodlots to gypsy moth defoliation. An awareness of these factors will enable land managers and woodlot owners to prescribe silvicultural actions that will minimize the impact caused by gypsy moth defoliation. Three of these factors include the abundance of favored food species (mainly oaks), site and stand factors, and tree conditions.

Stands of trees that are predominately oak and grow on poor, dry sites (such as sand flats or rock ridges) are frequently stressed and often incur repeated, severe defoliations. Trees growing under these conditions frequently possess an abundance of structural features such as holes, wounds, and deep bark fissures that provide shelter and habitats for gypsy moth larvae and aid their survival.

Stands of trees that are predominantly oak but grow on protected slopes or on sites with adequate moisture and organic matter are more resistant to defoliation by the gypsy moth.

Slow-growing trees on poor sites frequently survive a single, severe defoliation better than fast-growing trees typically found on well-stocked better sites.

More trees are killed in stands that contain mainly oak species than in oak-pine or mixed hardwood stands.

Subdominant trees are killed more rapidly and more often than dominant trees.

Silvicultural Treatment-What and When?

Appropriate silvicultural treatment will be determined by an anticipated occurrence of gypsy moth defoliation, by characteristics of the stand, and by the economic maturity of the stand. Foresters refer to treatments discussed here as "thinmings." Thinnings are cuttings made in forest stands to remove surplus trees (usually dominant and subdominant size classes) in order to stimulate the growth of trees that remain.

Predefollation treatments: When gypsy moth defoliation is anticipated, but not within the next 5 years, **predefoliation thinning** to selectively remove preferred-host trees can reduce the severity of defoliation, increase the vigor of residual trees, and encourage seed production and stump sprouting. Thinnings should not be conducted in fully stocked stands that will reach maturity within the next 6 to 15 years. Thinning results in a short-term "shock effect" to residual trees. This shock effect, coupled with defoliation-caused stress, renders trees vulnerable to attack by disease organisms such as *Armillaria*.

In fully stocked stands that will reach maturity within the next 16 or more years, two kinds of thinning can be applied. The method of thinning should depend on the proportion of preferred host species present.

If more than 50 percent of the basal area in a stand is preferred host species (mainly oaks), **presalvage thinning** should be applied. Presalvage thinning is designed to remove the trees most likely to die (trees with poor crown condition) from stress caused by gypsy moth defoliation.

If less than 50 percent of the basal area in a stand is in preferred host species, **sanitation thinning** can be applied to reduce further the number of preferred host trees. This will result in fewer refuges for gypsy moth larvae and in improved habitats for the natural enemies of the gypsy moth.

Treatment during outbreaks: If defoliation is current or is expected within the next 5 years, thinnings should be delayed because of potential "shock effect." High-value stands can be protected by applying pesticides. In low-value stands or those that are at low risk (less than 50 percent basal area in preferred host species), protective treatments are optional.

Post-outbreak treatments: After a defoliation episode, the land manager or woodlot owner should pursue efficient salvage of dead trees, but should delay decisions about additional salvage, regeneration, or other treatments for up to 3 years. At the end of 3 years, most defoliation-caused mortality will be complete and the need for treatments can be assessed on the basis of damage level, current stocking conditions, and stand maturity.

Assistance

Homeowners can get advice about identifying and controlling the gypsy moth through the County Cooperative Extension Service, the State Entomologist or State Forester, or from specialists at the State University or Agricultural Experiment Station.

Some communities may qualify for State or Federal cooperative treatment programs. These programs are usually administered through local county or designated State agencies.

Information about regulations concerning the interstate movement of outdoor household articles from areas infested by gypsy moth can be obtained by contacting one of the following:

- The Plant Protection or Regulatory Division of the State Department of Agriculture.
- The Plant Protection and Quarantine Division of the Animal and Plant Health Inspection Service, U.S. Department of Agriculture.
- The County Extension Agent listed in the local telephone directory.

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Pesticides used improperly can be injurious to human beings, animals, and plants. Follow the directions and heed all precautions on labels. Store pesticides in original containers under lock and key - out of the reach of children and animals - and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides where there is danger of drift when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts, wear protective clothing and equipment, if specified on the label.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing remove clothing immediately and wash skin thoroughly.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the U.S. Environmental Protection Agency, consult your local forest pathologist, county agriculture agent, or State extension specialist to be sure the intended use is still registered.

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Pest Alert

United States
Department of
Agriculture

Forest Service

Northeastern Area
Region 8

NA-PR-02-96

Forest Tent Caterpillar

The forest tent caterpillar, *Malacosoma disstria*, is an important defoliator of North American hardwoods including sugar maple, oak, black gum, and aspen. Despite its name, the forest tent caterpillar does not build tents but spins silken mats on tree trunks and large branches.

New caterpillars (larvae) hatch in the early spring when leaves begin to grow. The caterpillars eat foliage, and when they are numerous, tree crowns may appear thinner or in the worst situations, they may eat all the leaves on a tree.

1. Oak leaf fed on by caterpillars.

Fully grown caterpillars are about two inches long and have a row of 10-12 footprint-shaped markings down the middle of their backs. After feeding on foliage for several weeks, the caterpillar spins a cocoon on leaves or bark. Light brown moths emerge from the cocoon and mate. Females lay up to 200 eggs in "egg bands" that encircle small twigs. The insect overwinters in the egg stage.

When enormous numbers of caterpillars are present, the situation is referred to as an outbreak. These outbreaks typically occur every 6-16 years. An outbreak may last up to 6 years depending on weather conditions, food (leaves) supply, and natural enemies such as parasites, predators, and diseases. The effect of forest tent caterpillar feeding on trees is usually some dead branches and growth loss. However, when feeding is combined with other factors like drought or disease, a tree may die.

2. The forest tent caterpillar larvae.

3. Heavy defoliation by caterpillars.

4. Egg band on twig.

5. Cocoon on leaf.

Photo Credits: Photo 4: Doug Allen, State University of New York, Photos 1-3 and 5: USDA Forest Service.

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Pest Alert

United States Department of Agriculture | Forest Service | Northeastern Area | NA-FB-37-February 1990

The Eastern Tent Caterpillar

The eastern tent caterpillar is often mistaken for the gypsy moth. Though they are similar in appearance, they differ in habits.

The fully grown eastern tent caterpillar is about 2 inches long, black with a white stripe along the middle of the back and a row of pale blue oval spots on each side. It is sparsely covered with fine light brown hairs.

The gypsy moth caterpillar, when fully grown, is also about 2 inches long, but it has pairs of blue and red spots on its back. Compare the photos in Figures 1 and 2 to see the difference.

Figure 1. Eastern Tent Caterpillar.

Figure 2. Gypsy Moth Caterpillar.

Unlike the gypsy moth, the eastern tent caterpillar can be readily identified by the tent it constructs in the forks of tree branches (see Figure 3).

Tent caterpillars spend the winter in egg masses that are in shiny brown bands around twigs (see Figure 4).

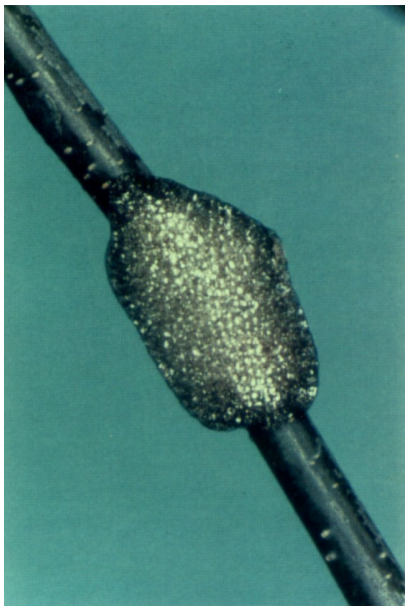

Figure 3.

Figure 4.

Figure 5.

The gregarious caterpillars hatch in the earlly spring about the time tree buds start to open, and soon they begin to spin their silken tents in the branch forks (see Figure 5). The tent protects them from predators, such as birds, and from temperature extremes. Enlarging the tent as they grown, the caterpillars leave only to feed, usually at night.

The eastern tent caterpillar is found most often on apple and wild or ornamental cherry, and occassionally on pecan, hawthorne, beech and willow. When abundant, caterpillars will eat all the leaves, weakening, though seldom killing a tree.

Leaf-feeding can be prevented on small trees by destroying tents with a stick or pole, exposing the caterpillars to birds. Another preventive method is to prune the egg masses from twigs before the early spring hatch.

For more information, contact your county extension agent or the State Forester.

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Forest Health Fact Sheet

Peach Bark Beetle

Phloeotribus liminaris **(Harris) Coleoptera: Scolytidae**

The genus Phloeotribus is represented by a number of eastern species. The adults are distinguished from other bark beetles by the loosely jointed antennal club, all three parts of which extend into a leaflike structure. Localized outbreaks of the peach bark beetle in black cherry are usually found after periods of drought or where site disturbances, such as logging or thinning, have weakened residual trees.

Description - The adult peach bark beetle is light brown to nearly black. The elytra are somewhat shiny and sparsely covered with long, fine, whitish hairs. The adults range from 1.5 mm to 2.2 mm in length.


Adult Beetle

Distribution and Host Plants - The peach bark beetle is found in southern Canada and from New Hampshire to Michigan and south to the Gulf Coast. In Pennsylvania, the preferred host of the peach bark beetle is black cherry. This beetle occasionally damages other stone fruit trees such as peach and plum.

Damage - Individual or groups of adults burrow into the bark of weakened or damaged trees. Their burrows often extend into the living tissue beneath the bark causing an external flow of resin that is readily visible. Damage to the cambial layer and outer cortex often causes gummosis and localized growth abnormalities. Trees are rarely killed but are usually weakened which may predispose the tree to other diseases or insects. Veneer quality of attacked trees is often diminished.


Resin flow on bark

Life History - The peach bark beetle spends the winter as young adults in galleries beneath the bark. These overwintering adults emerge in May and remain active until late August. Mating occurs soon after the spring emergence. Female beetles deposit eggs in niches along the sides of nuptial galleries constructed by the adults. The newly hatched larvae begin to feed along the inner bark of the host tree. This feeding results in the development of short, deeply engraved tunnels that extend transversely from the egg niches. Adults may reemerge and construct several additional galleries during the season. There are normally two generations per year.

Control - Natural enemies, such as birds, and predaceous and parasitic insects, play an important role in reducing beetle populations. Chemical insecticides are effective in protecting high-value trees. For information concerning registered chemicals and formulations, see the current Pennsylvania Department of Agriculture recommendations or contact your county Penn State Extension Office.

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Pest Alert

United States Department of Agriculture

Forest Service

Northeastern Area
NA-PR-03-94

Hemlock Woolly Adelgid

The hemlock woolly adelgid, *Adelges tsugae,* has been in the United States since 1924. This introduced insect, believed to be a native of Asia, is a serious pest of eastern hemlock and Carolina hemlock. In the eastern United States, it is present from the Smoky Mountains, north to the mid-Hudson River Valley and southern New England.

White cottony sacs of the base of the needles are good evidence of a hemlock woolly adelgid infestation. These sacs resemble the tips of cotton swabs. They are present throughout the year, but are most prominent in early spring.

The hemlock woolly adelgid feeds during all seasons with the greatest damage occurring in the spring. It is dispersed by wind, birds and mammals.

By sucking sap from the young twigs, the insect retards or prevents tree growth causing needles to discolor from deep green to grayish green, and to drop prematurely. The loss of new shoots and needles seriously impairs tree health. Defoliation and tree death can occur within several years.

Photo 1. Egg masses produced by overwintering adults.

Photo 2. Discolored foliage and twig dieback caused by feeding nymphs.

Photo 3. He damaged by adelgid.

Technical Advisor, photo credits: Mark McClure, Connecticut Agricultural Experiment Station

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Forest Insect & Disease Leaflet 75

U.S. Department of Agriculture Forest Service

Beech Bark Disease

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Beech bark disease causes significant mortality and defect in American beech, *Fagus grandifolia* (Ehrh.). The disease results when bark, attacked and altered by the beech scale, *Cryptococcus fagisuga* Lind., is invaded and killed by fungi, primarily *Nectria coccinea* var. *faginata* Lohman, Watson, and Ayers, and sometimes *N. galligena* Bres.

History and Distribution

Accounts from Europe indicate that the disease was killing beech (*Fagus sylvatica*) before 1849. The scale insect, readily visible on the trees, was considered the cause of death until 1914, when it was learned, that a fungus, then identified as *Nectria ditissima* Tul., infected trees infested by the scale.

Around 1890, the scale was accidentally brought to Nova Scotia. By 1932, the scale and an associated nectria fungus were killing trees throughout the mature beech areas of the Maritime Provinces and in localized areas of eastern and southcentral Maine. In addition, isolated infestations of scale were occurring in southwestern Maine

and eastern Massachusetts. The scale insect has continued to spread to the north into Quebec and to the west and south throughout New England, New York, New Jersey, and northern and eastern Pennsylvania. In 1981, a 70,000-acre area was found infested in northeastern West Virginia.

Disease Pattern

The pattern of insect spread and the subsequent occurrence of nectria infection and tree death have led to an arbitrary classification of disease development over time and space:

- The advancing front - areas recently invaded by the beech scale that are characterized by forests with many large, old trees supporting scattered, sparse, building populations of beech scale.

- The killing front - areas that are characterized by high populations of beech scale, severe nectria attacks, and heavy tree mortality.

- The aftermath zone - areas where heavy mortality occurred at some time in the past and that are now characterized by some residual big trees and many stands of small trees, often of root-sprout origin. In the aftermath zone, young stems are often rendered highly defective through the interactions of established populations of beech scale, nectria fungus, and another scale insect, *Xylococculus betulae* (Perg.) Morrison.

  Large trees, over about 8 inches (20.3 cm) in diameter, succumb more readily than small ones. Recent data from plots in Vermont, New Hampshire, and Maine show that about 28 percent of the large beech had died, another 22 percent were dying, and many of the surviving trees were so severely injured that they offer little hope as a source of quality material.

The Causal Complex

The scale - *C. Fagisuga* is a soft-bodied scale insect. At maturity, it is yellow, elliptical, and 0.5 to 1.0 millimeter[3] long (fig. 1). It has reddish-brown eyes, a 2-millimeter stylet, rudimentary antennae and legs, and numerous minute glands that secrete a white "woollike" wax.

Figure 1. *Mature beech scale insects (about 1 mm long). The wax was removed before the photograph was taken.*

[3] 0ne millimeter = 0.04 inch.

There are no male scales; reproduction is parthenogenetic. Beginning in midsummer, the insects deposit pale yellow eggs on the bark in strings of four to eight, attached end to end. The eggs usually begin to hatch in late summer and continue hatching until early winter.

Figure 2. *Beech scale nymph (about 0.3 mm long).*

The wingless larvae (also called crawlers or nymphs) emerge from the eggs with well-developed legs and antennae (fig. 2). Some larvae remain under the females, which die after the eggs are deposited. Some migrate to cracks and other protected areas; others are washed down or fall to the ground where most of them die; and still others are carried, usually by wind, to other beech trees. If a suitable location is found, the insect forces its tubular stylet into the bark and begins to feed. It then transforms into a second-stage nymph, without legs and covered with woollike wax. The insect overwinters in this stage and, in the spring, molts to become an adult female.

The fungus **-** In North America, two species of the nectria fungi are associated with beech bark disease. The principal one, *N. coccinea* var. *faginata*, is considered a weak parasite; the second species, *N. galligena*, is a common pathogen inciting perennial cankers of many hardwood species. In some areas, for example in West Virginia, *N. galligena* appears to be the major species involved. Both organisms produce several types of spores.

One type of spore is produced in fruiting bodies called perithecia that occur in clusters on the bark. The perithecia, are tiny, bright red, and lemon shaped (fig. 3). Each perithecium is filled with elongated sacs, each containing eight spores. The production of these spores constitutes the sexual or perfect stage of the fungus.

Figure 3. *Sexual fruiting bodies (perithecia) of* N. coccinea *var.* faginata *(about 0.3 mm in diameter).*

The perithecia mature in the fall. Spores are forced out when the perithecia have been sufficiently moistened; when dry, they appear as white dots on the tips of the perithecia. Perithecia on the dead bark continue to produce viable spores the next year.

Other spores are formed by an asexual or vegetative process. Frequently, small white cushions of spores burst through the bark before the perithecia appear (fig. 4). These asexual spores range from single-celled, oval spores to eight-celled, sickle-shaped spores and are produced in a dry head, well suited for dissemination by wind. The asexual spores can be found from mid-summer until fall, and can easily be mistaken for small isolated colonies

of the scale insect.

Figure 4. *The asexual stage of* Nectria. *The white tufts of spore-bearing branches can be mistaken for isolated colonies of the scale. The asexual stage of* N. coccinea *var.* faginata *is called* Cylindrocarpon faginaturn; *of* N. galligena, C. mali.

Symptoms and Course of the Disease

The white wax secreted by the beech scale is the first sign of the disease. Isolated dots of white "wool" appear on the bole of the tree on roughened areas of bark, beneath mosses and lichens, and below large branches. Eventually the entire bole of the tree may be covered by the waxy secretion as the insect population increases (fig. 5). It is probable that great numbers of scales feeding on the liquids of bark cells can materially weaken a tree. But serious damage results only after the later invasion of the bark by *Nectria*, presumably through injuries made by scale feeding activity.

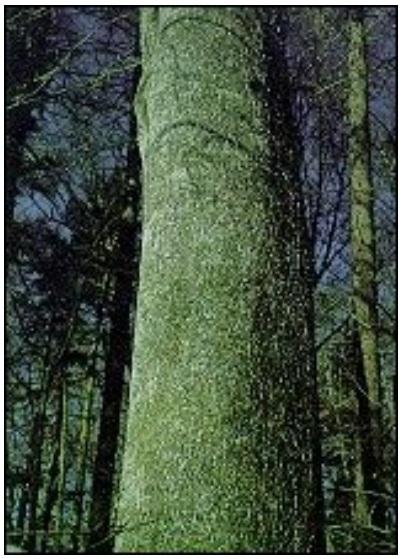

Figure 5. Heavy infestations of beech scale can cover tree boles with white wax.

On some trees, a red-brown exudate called a slime flux or "tarry spot" oozes from dead spots (fig. 6).

Figure 6. *A slit flux or tarry spot exudate on a tree that also bears isolated colonies of beech scale covered with woollike wax.*

These dead spots are often the first symptom of nectria infection, and frequently perithecia of *Nectria* later appear around them. The dead areas may extend into the sapwood.

Bark infected by *Nectria* becomes inhospitable for the beech scale. If the outer bark is cut away, a distinct orange color may be seen where *Nectria* is actively

invading the bark. The fungi may infect large areas on some trees, completely girdling them. On such trees, the perithecia that often form can redden large areas of the bark (fig. 7). On dying trees, leaves that emerge in the spring do not mature, giving the crowns a thin, open appearance. Later, the leaves turn yellow and usually remain on the tree during the summer. (See cover.)

Frequently the fungus infects only narrow strips on the bole, and the subsequent symptoms differ from those of trees that have been girdled. Callus tissue forms around these strips, and the bark becomes roughened (fig. 8). Small nectria cankers may be walled off from the sapwood by callus tissue (fig. 9).

igure 7. *Large areas of bark eddened by nectria fruiting odies.*

Figure 8. *The death of long strips of bark results in serious defect when underlying wood is invaded by insects and decay fungi.*

Figure 9. *The crater-like scars indicate where small, isolated nectria cankers were walled off by callus tissue. Since most of the cankers did not penetrate to the sapwood, little damage has occurred.*

Associated Organisms

Other insects and wood-rooting fungi quickly invade the wood beneath bark killed by beech bark disease. Species of *Hypoxylon* that decay sapwood are among the first to invade. Ambrosia beetles make holes that allow other fungi to enter. The shoestring root rot fungus, *Armillariella mellea,* sometimes invades weakened trees and hastens their death. Attacks by these organisms make it difficult to judge when trees will succumb to beech bark disease. Many trees that are partially girdled remain alive, in a weakened state, for years. Many are broken by the wind - a condition termed "beech snap" (fig. 10).

In the aftermath zone, attacks of a second scale insect, *Xylococculus betulae,* create severe defects on young beech stems. Roughened areas resulting from *X. betulae* attack are, in turn, infested by beech scale and then by *Nectria*.

Figure 10. *Beech snap occurs when wind breaks of trees where wood borers and decay fungi weaken the wood beneath scale*-Nectria-*killed bark.*

Control

The fact that marked declines in beech scale populations occasionally occur over large areas suggests that general environmental factors may affect the insect. Air temperatures of -37° C (-35° F) are lethal to those insects not protected by snow. But whether episodes of such temperature extremes are the only events responsible for population crashes is not known.

A ladybird beetle, *Chilocorus stigma*, feeds on the scale; and a fungus, *Nematogonum ferrugineum* (*Gonatorrhodiella highlei*), parasitizes the nectria fungi. The effects of these organisms on the disease agents and on the course of the disease have not been critically evaluated.

Scales on high-value ornamental trees can be controlled with insecticides. Consult your local forest pest management specialist or county agricultural agent to obtain current information on chemicals registered for beech scale control.

The disease in forest stands cannot be controlled at a reasonable cost, and a program of timely salvage cuttings is the only way presently know to reduce disease losses.

Vigorous trees free of the disease are often found in heavily affected areas (fig. 11). Recent trials with some of these trees have shown them to be resistant to the scale. This offers hope that methods can be developed to increase the levels of resistance in affected forests.

Figure 11. *The beech tree with the ribbon is free of beech scale and* Nectria; *the tree on the right is severely diseased. Recent trials have shown such clean trees to be resistant to the beech scale.*

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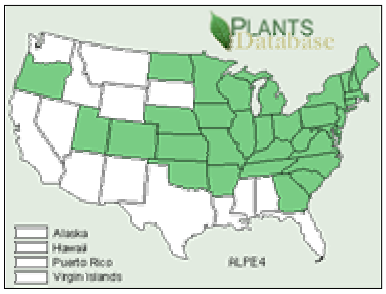
Garlic Mustard *Alliaria petiolata* [Bieb] Cavara & Grande

Native Origin: Europe

Description: Garlic mustard is a cool season biennial herb in the mustard family (Brassicaceae) with stalked, triangular to heart-shaped, coarsely toothed leaves that give off an odor of garlic when crushed. First-year plants appear as a rosette of green leaves close to the ground. Rosettes remain green through the winter and develop into mature flowering plants the following spring. Flowering plants of garlic mustard reach from 2 to 3-1/2 feet in height and produce buttonlike clusters of small white flowers, each with four petals in the shape of a cross. Beginning in May (in the mid-Atlantic Coast Plain region), seeds are produced in erect, slender pods and become shiny black when mature. By late June, when most garlic mustard plants have died, they can be recognized only by the erect stalks of dry, pale brown seedpods that remain, and may hold viable seed, through the summer.

Habitat: Garlic mustard frequently occurs in moist, shaded soil of river floodplains, forests, and roadsides, edges of woods and trails edges and forest openings. Disturbed areas are most susceptible to rapid invasion and dominance. Though invasive under a wide range of light and soil conditions, garlic mustard is associated with calcareous soils and does not tolerate high acidity. Growing season inundation may limit invasion of garlic mustard to some extent.



Distribution: Garlic mustard is located from eastern Canada, south to Virginia and as far west as Kansas and Nebraska. See shaded areas on the distribution map.

Ecological Impacts: Garlic mustard poses a severe threat to native plants and animals in forest communities. Once introduced to an area, garlic mustard out-competes native plants by aggressively monopolizing light, moisture, nutrients, soil and space.

Control and Management:

Mechanical- Hand removal of entire root system of plant is practical for light infestations. For larger infestations cut stems at ground level or within several inches of the ground, to prevent seed production.
Chemical- Herbicide (e.g., Roundup) may be applied for very heavy infestations. Fire can be used but can encourage germination of stored seeds and promote growth of emerging garlic mustard seedlings.
Biocontrol- Five weevils and one flea beetle feed on garlic mustard

References: http://plants.usda.gov, www.nps.gov/plants/alien/fact/alpe1.htm
Biological Control of Invasive Plants in the Eastern United States p. 365-369

Produced by the USDA Forest Service, Forest Health Staff, Newtown Square, PA. WOW 08-01-05
Invasive Plants website: http://www.na.fs.fed.us/fhp/invasive_plants

Japanese Honeysuckle

Lonicera japonica Thunb.
Honeysuckle family (Caprifoliaceae)

NATIVE RANGE: Japan and Korea

DESCRIPTION: Japanese honeysuckle is a perennial vine that climbs by twisting its stems around vertical structures, including limbs and trunks of shrubs and small trees. Leaves are oblong to oval, sometimes lobed, have short stalks, and occur in pairs along the stem. In southern and mid-Atlantic states, Japanese honeysuckle often remains evergreen – its leaves remain attached through the winter. In colder northern climates, the leaves may fall off after exposure to prolonged winter temperatures. Flowers are tubular, with five fused petals, white to pink, turning yellow with age, very fragrant, and occur in pairs along the stem at leaf junctures. Stems and leaves are sometimes covered with fine, soft hairs. Japanese honeysuckle blooms from late April through July and sometimes into October. Small black fruits are produced in autumn, each containing 2-3 oval to oblong, dark brown seeds about 1/4 inch across.

ECOLOGICAL THREAT: In North America, Japanese honeysuckle has few natural enemies which allows it to spread widely and out-compete native plant species. Its evergreen to semi-evergreen nature gives it an added advantage over native species in many areas. Shrubs and young trees can be killed by girdling when vines twist tightly around stems and trunks, cutting off the flow of water through the plant. Dense growths of honeysuckle covering vegetation can gradually kill plants by blocking sunlight from reaching their leaves. Vigorous root competition also helps Japanese honeysuckle spread and displace neighboring native vegetation.

DISTRIBUTION IN THE UNITED STATES: Japanese honeysuckle occurs across the southern U.S. from California to New England and the Great Lakes region. Escaped populations also occur in Hawaii. Severe winter temperatures and low precipitation may limit its distribution in northern latitudes and in the West, respectively.

HABITAT IN THE UNITED STATES: A ubiquitous invader, Japanese honeysuckle thrives in a wide variety of habitats including fields, forests, wetlands, barrens, and all types of disturbed lands.

BACKGROUND: Japanese honeysuckle was introduced to the U.S. in the early to mid-1800's as an ornamental plant, for erosion control, and for wildlife forage and cover. Its highly fragrant flowers provide a tiny drop of honey-flavored nectar enjoyed by children.

BIOLOGY & SPREAD: Growth and spread of Japanese honeysuckle is through vegetative (plant growth) and sexual (seed) means. It produces long vegetative runners that develop roots where stem and leaf junctions (nodes) come in contact with moist soil. Underground stems (rhizomes) help to establish and spread the plant locally. Long distance dispersal is by birds and other wildlife that readily consume the fruits and defecate the seeds at various distances from the parent plant.

MANAGEMENT OPTIONS: Several effective methods of control are available for Japanese honeysuckle, including chemical and non-chemical, depending on the extent of the infestation and available time and labor.

Manual and mechanical. For small patches, repeated pulling of entire vines and root systems may be effective. Hand pull seedlings and young plants when the soil is moist, holding low on the stem to remove the whole plant along with its roots. Monitor frequently and remove any new plants. Cut and remove twining vines to prevent them from girdling and killing shrubs and other plants. An effective method for removal of patches of honeysuckle covering the ground is to lift up and hold a portion of the vine mass with a rake and have a chain saw operator cut the stems low to the ground. Mowing large patches of honeysuckle may be useful if repeated regularly but is most effective when combined with herbicide application (see below). Mow at twice a year, first in mid-July and again in mid-September. Plants can also be grubbed out using a pulaski or similar digging tool, taking care to remove all roots and runners. Burning removes above ground vegetation but does not kill the underground rhizomes, which will continue to sprout. In certain situations, tethered goats have been used to remove honeysuckle growth, but must be monitored to prevent their escape to the wild where they would become an added ecological threat.

Chemical. In moderate cold climates, Japanese honeysuckle leaves continue to photosynthesize long after most other plants have lost their leaves. This allows for application of herbicides when many native species are dormant. However, for effective control with herbicides, healthy green leaves must be present at application time and temperatures must be sufficient for plant activity. Several systemic herbicides (e.g., glyphosate and triclopyr) move through the plant to the roots when applied to the leaves or stems and have been used effectively on Japanese honeysuckle.

Following label guidelines, apply a 2.5% rate of glyphosate (e.g., Rodeo for wetlands; Roundup for uplands) mixed with water and an appropriate surfactant, to foliage from spring through fall. Alternatively, apply a 2% concentration of triclopyr (e.g., Garlon 3A) plus water to foliage, thoroughly wetting the leaves but not to the point of drip-off. A coarse, low-pressure spray should be used. Repeat applications may be needed. Treatment in the fall, when many non-target plants are going dormant, is best. Also, a 25% glyphosate or triclopyr solution mixed with water can be applied to cut stem surfaces any time of year as long as the ground is not frozen.

Biological control. No biological control agents are currently available for Japanese honeysuckle.

USE PESTICIDES WISELY: ALWAYS READ THE ENTIRE PESTICIDE LABEL CAREFULLY, FOLLOW ALL MIXING AND APPLICATION INSTRUCTIONS AND WEAR ALL RECOMMENDED PERSONAL PROTECTIVE GEAR AND CLOTHING. CONTACT YOUR STATE DEPARTMENT OF AGRICULTURE FOR ANY ADDITIONAL PESTICIDE USE

REQUIREMENTS, RESTRICTIONS OR RECOMMENDATIONS.

NOTICE: MENTION OF PESTICIDE PRODUCTS ON THIS WEB SITE DOES NOT CONSTITUTE ENDORSEMENT OF ANY MATERIAL.

For more information on the management of Japanese honeysuckle, please contact:

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SUGGESTED ALTERNATIVE PLANTS: Vines that make good substitutes for Japanese honeysuckle include false jasmine (*Gelsemium sempervirens*), trumpet honeysuckle (*Lonicera sempervirens*), trumpet creeper (*Campsis radicans*), crossvine (*Bignonia capreolata*), native wisteria (*Wisteria frutescens*), jackman clematis (*Clematis jackmanii*), and others. Check with your state native plant society, a reputable native plant nursery, for recommendations for plants that are appropriate for your area and conditions.

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FACT SHEET LIST | APWG HOME PAGE

Comments, suggestions, and questions about the website should be directed to the webmaster.

http://www.nps.gov/plants/alien/fact/loja1.htm
Last updated: 20-May-2005

Norway Maple (Acer platanoides)

The Norway maple is a common tree throughout much of Europe, including (not surprisingly) Norway. An important commercial species in European timber markets, the Norway maple has similar uses in Europe as our sugar maple does here. Furniture and flooring are often made from the sawlogs, and the density of the wood makes it an excellent material for musical instrument soundboards. In fact, the fiddlebacks of the famous and unrivaled Stradivarius violins built by Antonio Stradivarius(1644-1737) are rumored to be made of Norway Maple.

Norway maples never grew in North America until they became recognized for two important landscaping attributes. The first is plasticity, for Norway maples have lent themselves to foliage color manipulations. The most popular variety has been the "Crimson King", a Norway maple with very dark red (nearly black) foliage. Other common cultivars include "Harlequin"(green and white variegated leaves) and "Emerald Jade"(leaves of jade green). The second desirable quality has been the species' ability to withstand poor growing conditions, including infertile and compacted soils and atmospheric pollution. These two qualities quickly promoted the Norway maple to become overplanted in New England, and today numerous trees can be found in virtually every town in this region.

But plasticity and aggressiveness are not without ecological short-comings, particularly when a plant is non-native. Norway maples have "escaped" cultivation, which means that they successfully germinate from seed. In fact, Norway maples have become so good at establishing themselves, the outskirts of many New England cities and large towns have stands of this species and little else. Norway maples are better competitors for light and nutrients than many of our native species, particularly in disturbed areas.

The fact that Norway maples outcompete native species puts increasing pressure on native species to find somewhere to live. By planting this species, not only do we effectively replace that growing space with an exotic, but we also introduce a formidable future loss of growing space as new exotic seeds are produced and germinate. The solution is not to cease planting all foreign species (that would be an overly radical step, like botanical isolationism), but rather to become more informed about the invasiveness of the species that we plant.

the prolific Norway Maple

[more Norway Maple photos]

[back to James Hall]

[about the New England Ecological Garden]

Appendix 4
FSC Principals

FOREST STEWARDSHIP COUNCIL
PRINCIPLES AND CRITERIA FOR FOREST MANAGEMENT
Revised Version: January 1999

INTRODUCTION

It is widely accepted that forest resources and associated lands should be managed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations. Furthermore, growing public awareness of forest destruction and degradation has led consumers to demand that their purchases of wood and other forest products will not contribute to this destruction but rather help to secure forest resources for the future. In response to these demands, certification and self-certification programs of wood products have proliferated in the marketplace.

The Forest Stewardship Council (FSC) is an international body which accredits certification organizations in order to guarantee the authenticity of their claims. In all cases the process of certification will be initiated voluntarily by forest owners and managers who request the services of a certification organization. The goal of the FSC is to promote environmentally responsible, socially beneficial and economically viable management of the world's forests, by establishing a worldwide standard of recognized and respected Principles of Forest Stewardship.

The FSC's Principles and Criteria (P&C) apply to all tropical, temperate and boreal forests, as addressed in Principle #9 and the accompanying glossary. Many of these P&C apply also to plantations and partially replanted forests. More detailed standards for these and other vegetation types may be prepared at national and local levels. The P&C are to be incorporated into the evaluation systems and standards of all certification organizations seeking accreditation by the FSC. While the P&C are mainly designed for forests managed for the production of wood products, they are also relevant, to varying degrees, to forests managed for non-timber products and other services. The P&C are a complete package to be considered as a whole, and their sequence does not represent an ordering of priority. This document shall be used in conjunction with the FSC's Statutes, Procedures for Accreditation and Guidelines for Certifiers.

FSC and FSC-accredited certification organizations will not insist on perfection in satisfying the P&C. However, major failures in any individual Principles will normally disqualify a candidate from certification, or will lead to decertification. These decisions will be taken by individual certifiers, and guided by the extent to which each Criterion is satisfied and by the importance and consequences of failures. Some flexibility will be allowed to cope with local circumstances.

The scale and intensity of forest management operations, the uniqueness of the affected resources, and the relative ecological fragility of the forest will be considered in all certification assessments. Differences and difficulties of interpretation of the P&C will be addressed in national and local forest stewardship standards. These standards are to be developed in each country or region involved, and will be evaluated for purposes of certification, by certifiers and other involved and affected parties on a case by case basis. If necessary, FSC dispute resolution mechanisms may also be called upon during the course of assessment. More information and guidance about the certification and accreditation process is included in the FSC Statutes, Accreditation Procedures, and Guidelines for Certifiers.

The FSC P&C should be used in conjunction with national and international laws and regulations. FSC intends to complement, not supplant other initiatives that support responsible forest management worldwide.

The FSC will conduct educational activities to increase public awareness of the importance of the following: 1) improving forest management; 2) incorporating the full costs of management and production into the price of forest products; 3) promoting the highest and best use of forest resources; 4) reducing damage and waste; and 5) avoiding over-consumption and over-harvesting. The FSC will also provide guidance to policy makers on these issues, including improving forest management legislation and policies.

PRINCIPLE #1: COMPLIANCE WITH LAWS AND FSC PRINCIPLES
Forest management shall respect all applicable laws of the country in which they occur, and international treaties and agreements to which the country is a signatory, and comply with all FSC Principles and Criteria.

1.1 Forest management shall respect all national and local laws and administrative requirements.
1.2 All applicable and legally prescribed fees, royalties, taxes and other charges shall be paid.
1.3 In signatory countries, the provisions of all binding international agreements such as CITES, ILO Conventions, ITTA, and Convention on Biological Diversity, shall be respected.
1.4 Conflicts between laws, regulations and the FSC Principles and Criteria shall be evaluated for the purposes of certification, on a case by case basis, by the certifiers and the involved or affected parties.
1.5 Forest management areas should be protected from illegal harvesting, settlement and other unauthorized activities.
1.6 Forest managers shall demonstrate a long-term commitment to adhere to the FSC Principles and Criteria.

PRINCIPLE #2: TENURE AND USE RIGHTS AND RESPONSIBILITIES
Long-term tenure and use rights to the land and forest resources shall be clearly defined, documented and legally established.

2.1 Clear evidence of long-term forest use rights to the land (e.g. land title, customary rights, or lease agreements) shall be demonstrated.
2.2 Local communities with legal or customary tenure or use rights shall maintain control, to the extent necessary to protect their rights or resources, over forest operations unless they delegate control with free and informed consent to other agencies.
2.3 Appropriate mechanisms shall be employed to resolve disputes over tenure claims and use rights. The circumstances and status of any outstanding disputes will be explicitly considered in the certification evaluation. Disputes of substantial magnitude involving a significant number of interests will normally disqualify an operation from being certified.

PRINCIPLE #3: INDIGENOUS PEOPLES' RIGHTS
The legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected.

3.1 Indigenous peoples shall control forest management on their lands and territories unless they delegate control with free and informed consent to other agencies.
3.2 Forest management shall not threaten or diminish, either directly or indirectly, the resources or tenure rights of indigenous peoples.
3.3 Sites of special cultural, ecological, economic or religious significance to indigenous peoples shall be clearly identified in cooperation with such peoples, and recognized and protected by forest managers.
3.4 Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations commence.

PRINCIPLE #4: COMMUNITY RELATIONS AND WORKER'S RIGHTS
Forest management operations shall maintain or enhance the long-term social and economic well being of forest workers and local communities.

4.1 The communities within, or adjacent to, the forest management area should be given opportunities for employment, training, and other services.
4.2 Forest management should meet or exceed all applicable laws and/or regulations covering health and safety of employees and their families.
4.3 The rights of workers to organize and voluntarily negotiate with their employers shall be guaranteed as outlined in Conventions 87 and 98 of the International Labour Organisation (ILO).
4.4 Management planning and operations shall incorporate the results of evaluations of social impact. Consultations shall be maintained with people and groups directly affected by management operations.
4.5 Appropriate mechanisms shall be employed for resolving grievances and for providing fair compensation in the case of loss or damage affecting the legal or customary rights, property, resources, or livelihoods of local peoples. Measures shall be taken to avoid such loss or damage.

PRINCIPLE # 5: BENEFITS FROM THE FOREST
Forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefits.

5.1 Forest management should strive toward economic viability, while taking into account the full environmental, social, and operational costs of production, and ensuring the investments necessary to maintain the ecological productivity of the forest.
5.2 Forest management and marketing operations should encourage the optimal use and local processing of the forest's diversity of products.
5.3 Forest management should minimize waste associated with harvesting and on-site processing operations and avoid damage to other forest resources.
5.4 Forest management should strive to strengthen and diversify the local economy, avoiding dependence on a single forest product.
5.5 Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries.
5.6 The rate of harvest of forest products shall not exceed levels which can be permanently sustained.

PRINCIPLE #6: ENVIRONMENTAL IMPACT
Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by so doing, maintain the ecological functions and the integrity of the forest.

6.1 Assessment of environmental impacts shall be completed -- appropriate to the scale, intensity of forest management and the uniqueness of the affected resources -- and adequately integrated into management systems. Assessments shall include landscape level considerations as well as the impacts of on-site processing facilities. Environmental impacts shall be assessed prior to commencement of site-disturbing operations.
6.2 Safeguards shall exist which protect rare, threatened and endangered species and their habitats (e.g., nesting and feeding areas). Conservation zones and protection areas shall be established, appropriate to the scale and intensity of forest management and the uniqueness of the affected resources. Inappropriate hunting, fishing, trapping and collecting shall be controlled.
6.3 Ecological functions and values shall be maintained intact, enhanced, or restored, including:
a) Forest regeneration and succession.
b) Genetic, species, and ecosystem diversity.
c) Natural cycles that affect the productivity of the forest ecosystem.
6.4 Representative samples of existing ecosystems within the landscape shall be protected in their natural state and recorded on maps, appropriate to the scale and intensity of operations and the uniqueness of the affected resources.
6.5 Written guidelines shall be prepared and implemented to: control erosion; minimize forest damage during harvesting, road construction, and all other mechanical disturbances; and protect water resources.
6.6 Management systems shall promote the development and adoption of environmentally friendly non-chemical methods of pest management and strive to avoid the use of chemical pesticides. World Health Organization Type 1A and 1B and chlorinated hydrocarbon pesticides; pesticides that are persistent, toxic or whose derivatives remain biologically active and accumulate in the food chain beyond their intended use; as well as any pesticides banned by international agreement, shall be prohibited. If chemicals are used, proper equipment and training shall be provided to minimize health and environmental risks.
6.7 Chemicals, containers, liquid and solid non-organic wastes including fuel and oil shall be disposed of in an environmentally appropriate manner at off-site locations.
6.8 Use of biological control agents shall be documented, minimized, monitored and strictly controlled in accordance with national laws and internationally accepted scientific protocols. Use of genetically modified organisms shall be prohibited.
6.9 The use of exotic species shall be carefully controlled and actively monitored to avoid adverse ecological impacts.
6.10 Forest conversion to plantations or non-forest land uses shall not occur, except in circumstances where conversion:
a) entails a very limited portion of the forest management unit; and
b) does not occur on high conservation value forest areas; and
c) will enable clear, substantial, additional, secure long term conservation benefits across the forest
management unit.

PRINCIPLE #7: MANAGEMENT PLAN
A management plan -- appropriate to the scale and intensity of the operations -- shall be written, implemented, and kept up to date. The long-term objectives of management, and the means of achieving them, shall be clearly stated.

7.1 The management plan and supporting documents shall provide:
   a) Management objectives.
   b) Description of the forest resources to be managed, environmental limitations, land use and ownership status, socio-economic conditions, and a profile of adjacent lands.
   c) Description of silvicultural and/or other management system, based on the ecology of the forest in question and information gathered through resource inventories.
   d) Rationale for rate of annual harvest and species selection.
   e) Provisions for monitoring of forest growth and dynamics.
   f) Environmental safeguards based on environmental assessments.
   g) Plans for the identification and protection of rare, threatened and endangered species.
   h) Maps describing the forest resource base including protected areas, planned management activities and land ownership.
   i) Description and justification of harvesting techniques and equipment to be used.

7.2 The management plan shall be periodically revised to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

7.3 Forest workers shall receive adequate training and supervision to ensure proper implementation of the management plan.

7.4 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the primary elements of the management plan, including those listed in Criterion 7.1.

PRINCIPLE #8: MONITORING AND ASSESSMENT
Monitoring shall be conducted -- appropriate to the scale and intensity of forest management -- to assess the condition of the forest, yields of forest products, chain of custody, management activities and their social and environmental impacts.

8.1 The frequency and intensity of monitoring should be determined by the scale and intensity of forest management operations as well as the relative complexity and fragility of the affected environment. Monitoring procedures should be consistent and replicable over time to allow comparison of results and assessment of change.

8.2 Forest management should include the research and data collection needed to monitor, at a minimum, the following indicators:
   a) Yield of all forest products harvested.
   b) Growth rates, regeneration and condition of the forest.
   c) Composition and observed changes in the flora and fauna.
   d) Environmental and social impacts of harvesting and other operations.
   e) Costs, productivity, and efficiency of forest management.

8.3 Documentation shall be provided by the forest manager to enable monitoring and certifying organizations to trace each forest product from its origin, a process known as the "chain of custody."

8.4 The results of monitoring shall be incorporated into the implementation and revision of the management plan.

8.5 While respecting the confidentiality of information, forest managers shall make publicly available a summary of the results of monitoring indicators, including those listed in Criterion 8.2.

PRINCIPLE # 9: MAINTENANCE OF HIGH CONSERVATION VALUE FORESTS
Management activities in high conservation value forests shall maintain or enhance the attributes which define such forests. Decisions regarding high conservation value forests shall always be considered in the context of a precautionary approach.

9.1 Assessment to determine the presence of the attributes consistent with High Conservation Value Forests will be completed, appropriate to scale and intensity of forest management.

9.2 The consultative portion of the certification process must place emphasis on the identified conservation attributes, and options for the maintenance thereof.

9.3 The management plan shall include and implement specific measures that ensure the maintenance and/or enhancement of the applicable conservation attributes consistent with the precautionary approach. These measures shall be specifically included in the publicly available management plan summary.

9.4 Annual monitoring shall be conducted to assess the effectiveness of the measures employed to

maintain or enhance the applicable conservation attributes.

PRINCIPLE # 10: PLANTATIONS

Plantations shall be planned and managed in accordance with Principles and Criteria 1 - 9, and Principle 10 and its Criteria. While plantations can provide an array of social and economic benefits, and can contribute to satisfying the world's needs for forest products, they should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

10.1 The management objectives of the plantation, including natural forest conservation and restoration objectives, shall be explicitly stated in the management plan, and clearly demonstrated in the implementation of the plan.

10.2 The design and layout of plantations should promote the protection, restoration and conservation of natural forests, and not increase pressures on natural forests. Wildlife corridors, streamside zones and a mosaic of stands of different ages and rotation periods, shall be used in the layout of the plantation, consistent with the scale of the operation. The scale and layout of plantation blocks shall be consistent with the patterns of forest stands found within the natural landscape.

10.3 Diversity in the composition of plantations is preferred, so as to enhance economic, ecological and social stability. Such diversity may include the size and spatial distribution of management units within the landscape, number and genetic composition of species, age classes and structures.

10.4 The selection of species for planting shall be based on their overall suitability for the site and their appropriateness to the management objectives. In order to enhance the conservation of biological diversity, native species are preferred over exotic species in the establishment of plantations and the restoration of degraded ecosystems. Exotic species, which shall be used only when their performance is greater than that of native species, shall be carefully monitored to detect unusual mortality, disease, or insect outbreaks and adverse ecological impacts.

10.5 A proportion of the overall forest management area, appropriate to the scale of the plantation and to be determined in regional standards, shall be managed so as to restore the site to a natural forest cover.

10.6 Measures shall be taken to maintain or improve soil structure, fertility, and biological activity. The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns.

10.7 Measures shall be taken to prevent and minimize outbreaks of pests, diseases, fire and invasive plant introductions. Integrated pest management shall form an essential part of the management plan, with primary reliance on prevention and biological control methods rather than chemical pesticides and fertilizers. Plantation management should make every effort to move away from chemical pesticides and fertilizers, including their use in nurseries. The use of chemicals is also covered in Criteria 6.6 and 6.7.

10.8 Appropriate to the scale and diversity of the operation, monitoring of plantations shall include regular assessment of potential on-site and off-site ecological and social impacts, (e.g. natural regeneration, effects on water resources and soil fertility, and impacts on local welfare and social well-being), in addition to those elements addressed in principles 8, 6 and 4. No species should be planted on a large scale until local trials and/or experience have shown that they are ecologically well adapted to the site, are not invasive, and do not have significant negative ecological impacts on other ecosystems. Special attention will be paid to social issues of land acquisition for plantations, especially the protection of local rights of ownership, use or access.

10.9 Plantations established in areas converted from natural forests after November 1994 normally shall not qualify for certification. Certification may be allowed in circumstances where sufficient evidence is submitted to the certification body that the manager/owner is not responsible directly or indirectly of such conversion.

Principles 1-9 were ratified by the FSC Founding Members and Board of Directors in September 1994.
Principle 10 was ratified by the FSC Members and Board of Directors in February 1996.
The revision of Principle 9 and the addition of Criteria 6.10 and 10.9 were ratified by the FSC Members and Board of Directors in January 1999.

GLOSSARY

Words in this document are used as defined in most standard English language dictionaries. The precise meaning and local interpretation of certain phrases (such as local communities) should be decided in the local context by forest managers and certifiers. In this document, the words below are understood as follows:

Biological diversity: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems. (see Convention on Biological Diversity, 1992)

Biological diversity values: The intrinsic, ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components. (see Convention on Biological Diversity, 1992)

Biological control agents: Living organisms used to eliminate or regulate the population of other living organisms.

Chain of custody: The channel through which products are distributed from their origin in the forest to their end-use.

Chemicals: The range of fertilizers, insecticides, fungicides, and hormones which are used in forest management.

Criterion (pl. Criteria): A means of judging whether or not a Principle (of Forest Management) has been fulfilled.

Customary rights: Rights which result from a long series of habitual or customary actions, constantly repeated, which have, by such repetition and by uninterrupted acquiescence, acquired the force of a law within a geographical or sociological unit.

Ecosystem: A community of all plants and animals and their physical environment, functioning together as an interdependent unit.

Endangered species: Any species which is in danger of extinction throughout all or a significant portion of its range.

Exotic species: An introduced species not native or endemic to the area in question.

Forest integrity: The composition, dynamics, functions and structural attributes of a natural forest.

Forest management/manager: The people responsible for the operational management of the forest resource and of the enterprise, as well as the management system and structure, and the planning and field operations.

Genetically modified organisms: Biological organisms which have been induced by various means to consist of genetic structural changes.

High Conservation Value Forest: High Conservation Value Forests are those that possess one or more of the following attributes:

a) forest areas containing globally, regionally or nationally significant:
   -concentrations of biodiversity values (e.g. endemism, endangered species, refugia); and/or
   -large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patters of distribution and abundance
b) forest areas that are in or contain rare, threatened or endangered ecosystems
c) forest areas that provide basic services of nature in critical situations (e.g. watershed protection, erosion control)
d) forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health) and/or critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

Indigenous lands and territories: The total environment of the lands, air, water, sea, sea-ice, flora and fauna, and other resources which indigenous peoples have traditionally owned or otherwise occupied or used. (Draft Declaration of the Rights of Indigenous Peoples: Part VI)

Indigenous peoples: The existing descendants of the peoples who inhabited the present territory of a country wholly or partially at the time when persons of a different culture or ethnic origin arrived there from other parts of the world, overcame them and, by conquest, settlement, or other means reduced them to a non-dominant or colonial situation; who today live more in conformity with their particular social, economic and cultural customs and traditions than with the institutions of the country of which they now form a part, under State structure which incorporates mainly the national, social and cultural characteristics of other segments of the population which are predominant." (Working definition adopted by the UN Working Group on Indigenous Peoples).

Landscape: A geographical mosaic composed of interacting ecosystems resulting from the influence of geological, topographical, soil, climatic, biotic and human interactions in a given area.

Local laws: Includes all legal norms given by organisms of government whose jurisdiction is less than the national level, such as departmental, municipal and customary norms.

Long term: The time-scale of the forest owner or manager as manifested by the objectives of the management plan, the rate of harvesting, and the commitment to maintain permanent forest cover. The length of time involved will vary according to the context and ecological conditions, and will be a function of how long it takes a given ecosystem to recover its natural structure and composition following harvesting or disturbance, or to produce mature or primary conditions.

Native species: A species that occurs naturally in the region; endemic to the area.

Natural cycles: Nutrient and mineral cycling as a result of interactions between soils, water, plants, and animals in forest environments that affect the ecological productivity of a given site.

Natural forest: Forest areas where most of the principal characteristics and key elements of native ecosystems such as complexity, structure and diversity are present, as defined by FSC- approved national and regional standards of forest management.

Nontimber forest products: All forest products except timber, including other materials obtained from trees such as resins and leaves, as well as any other plant and animal products.

Other forest types: Forest areas that do not fit the criteria for plantation or natural forests and which are defined more specifically by FSC-approved national and regional standards of forest management.

Plantation: Forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing or intensive silvicultural treatments.

Principle: An essential rule or element; in the FSC's case, of forest management.

Silviculture: The art of producing and tending a forest by manipulating its establishment, composition and growth to best fulfill the objectives of the owner. This may, or may not, include timber production.

Succession: Progressive changes in species composition and forest community structure caused by natural processes (nonhuman) over time.

Tenure: Socially defined agreements held by individuals or groups, recognized by legal statutes or customary practice, regarding the "bundle of rights and duties" of ownership, holding, access and/or usage of a particular land unit or the associated resources there within (such as individual trees, plant species, water, minerals, etc).

Threatened species: Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Use Rights: Rights for the use of forest resources that can be defined by local custom, mutual agreements, or prescribed by other entities holding access rights. These rights may restrict the use of particular resources to specific levels of consumption or particular harvesting techniques.

Appendix 5

Glossary

Glossary

Acre – A unit of land containing 43,560 square feet.

All-aged stand – see uneven-aged stand.

Apron of rip-rap - A layer of rock used for stabilizing soil that is subject to erosion.

Artificial regeneration - The establishment of a forest by planting seedlings or by seeding an area.

Basal area - A measure of the cross-sectional area taken up by trees at 4.5 feet above ground level. Normally referred to as Basal Area per acre.

Bedding - A site preparation technique, usually in wet areas, whereby a small ridge of soil is formed as an elevated planting or seedbed.

Best Management Practices (BMPs) - Forest management practices, developed pursuant to federal water quality legislation, to minimize or prevent non-point source water pollution. Often in more general usage referring to any good forest stewardship practices.

Bladed skid trail - A path most frequently traveled by harvesting equipment, normally leading to a landing for processing, that has been intentionally cleared down to the soil layer by a machine.

Boardfoot – a unit of wood volume in a tree, log or board. A boardfoot measures 1’x1’x 1".

Borrow pit - An area that has been excavated for earthen material .

Broad-based dip - A surface drainage structure designed to convey surface runoff off of a road while allowing vehicles to maintain normal speeds.

Buffer strip - A relatively undisturbed section of forest adjacent to an area requiring special attention or protection such as a stream, lake, or road.

Channel - A natural stream which conveys surface runoff water within well-defined banks.

Chemical site preparation - The use of herbicides to control plant competition to prepare an area for the establishment of a future forest either by artificial or natural means.

Clearcutting - The total removal of a merchantable tree crop from an area.

Commercial treatment(s) – a forest treatment that generates income for a landowner.

Contour - An imaginary line on the land surface that is at a constant elevation.

Codominate tree – a tree that extend to the same height as surrounding individuals trees and capture sunlight from around the crown. It is over topped by a dominate tree.

Crop tree – a young tree of a desirable species with certain characteristics desired for timber value.

Crown – the uppermost branches and foliage of a tree.

Crown classes – see codominate, dominate, intermediate and suppressed.

Culvert - A metal, concrete, or plastic pipe through which water is carried.

DBH – Diameter at breast height—4.5' above ground level.

Directional felling - Felling trees so that they fall in a predetermined direction which will cause the least damage to the site.

Disking - Tilling soil to reduce competing vegetation.

Dominate tree – trees that extend above surrounding individuals and capture sunlight from above and around the crown.

Drainage structure - A man-made structure that facilitates the move ment of water off an area.

Dredge material - Material unearthed when a ditch is excavated.

Drought index - A measure of soil or vegetation dryness.

Duff - The partially decayed organic matter on the forest floor.

Edge - An area where two or more vegetation types converge.

Ephemeral stream - A watercourse generally without a well-defined channel which flows only in response to rainfall or snowmelt. Ephemeral streams flow for less than 20% of the year during normal rainfall conditions.

Erosion - The detachment and transportation of soil particles.

Even age – a stand or grouping of trees all with not more than 2 age class, with each age class having no more than 20% variance in age.

Excessive rutting - The determination of excessive rutting is highly subjective and must be made by a licensed forester or other qualified professional experienced in local logging operations, soil types, and site conditions (see definition of *licensed forester* and *qualified professional*). The determination must consider rutting extent and depth, soil type, slope, position on slope, management prescription, and any other pertinent factors.

Filter strip - A vegetated area of land separating a water body from forest management activities.

Flood attenuation - Forest management activities that lessen the severity of potential flooding.

Ford - A natural or paved stream crossing suitable for shallow streams with stable bottoms.

Forest practice - An activity related to the growing, protecting, harvesting, or processing of forest tree species.

Forest types – association of tree species that have similar ecological requirements.

Forester – A degreed professional trained in forestry and forest management.

Forestry – the science (and art) of tending woodlands.

Grade - The slope of a road, usually expressed as a percent.

Girdling – a method of killing trees by cutting through the stem and interrupting the flow of nutrients and water.

Gully - An eroded channel (generally at least 12 inches deep) which has deepened to the point that it cannot be removed by tillage.

Harvesting - The removal of merchantable tree crops from an area.

Herbicide - Any chemical or mixture of chemicals intended to prevent the growth of or promote the removal of targeted trees, bushes, and/or herbaceous vegetation.

High Grading – To remove all trees of value from a stand and leave inferior species and individuals.

High flotation equipment - Machinery that exerts low ground pressure.

Humus layer - The organic layer of the soil formed by the decay of organic matter.

Intermittent stream - A watercourse that flows in a well-defined channel for 20 - 90% of the year during normal rainfall conditions.

Industrial forester – a professional forester employed by a wood using industry—typically a sawmill or pulpmill.

Intermediate crown class – trees with crowns that extend into the canopy with dominate and codominate trees. These trees receive little direct sunlight from above and none from the sides. Their crowns are generally small and crowded on all sides.

Intolerance - a characteristic of certain trees that does not permit them to survive in the shade of other trees.

Federal wetlands - Areas subject to the regulations of Section 404 of the Clean Water Act of 1987; generally concave or low-lying topographic forms that collect, store, or flow water frequently enough to favor a majority of plants that are adapted to saturated soil conditions.
Individual Tree Selection – also known as *selection harvest*; the harvest of all individual trees at regular intervals to maintain an uneven-aged forest.

Litter - The uppermost, slightly decayed layer of organic matter on the forest floor.
Log landing - A place where logs or tree-length material is processed for loading and transporting.

Logging debris - The unutilized and generally unmarketable accumulation of woody material, such as limbs, tops, and stumps, that remains after timber removal (also termed slash).

Lopping - The flattening of vegetation remaining after harvest in order to concentrate it near the ground.

Low impact harvesting system - A system of logging equipment that has minimal residual impact on an area or the land.

Mast-producing tree - A tree that produces nuts, such as oak or walnut.

Material Safety Data Sheet (MSDS) - The basic hazard communication tool that gives details on chemical and physical dangers, safety procedures, and emergency responses for chemicals.

Mechanical site preparation - The cutting of all standing material with blades or choppers to prepare an area for the establishment of a future forest either by artificial or natural means. Other practices include disking, bedding, and raking.

Mineral soil - The inorganic layer of earth composed of sand, silt, and clay, in varying amounts, with less than 20 percent organic matter in the surface layer.

Muck swamp - A very poorly drained area, usually with standing water, characterized by heavy organic matter accumulation.

Mulching - Covering an area loosely with some material to hold soil in place and facilitate revegetation. Straw and bark are common mulches.

Natural channel - A watercourse created by the erosive forces of water moving over land. Drainage ditches are not considered natural channels.

Natural drain - A naturally occurring conduit for the flow of water.

Natural regeneration - The planned regeneration of a forest that either uses existing trees as a source of seed or encourages sprouting from stumps or roots.

Natural Resource Conservation Service – the branch of the USDA that coordinates and implements conservation practices on private land.

Nonpoint source (NPS) pollution - Pollution which is (1) induced by natural processes, including precipitation, seepage, percolation, and runoff; (2) not traceable to any discrete or identifiable facility; and (3) controllable through the utilization of wise management practices.

Overmature – a tree, usually large in diameter, that is declining in growth rate due to age and/or loss of vigor.

Outsloped roadbed - A roadbed along a hill constructed so that water will flow across the road toward its downhill side.

Patch clearcut - A tree regeneration method whereby all of the merchantable trees in a relatively small area are removed.

Peat swamp - A poorly drained area with heavy accumulations of raw organic matter, resembling muck swamps but in general heavier and of better site quality.

Perennial stream - A watercourse that flows continuously (at least 90% of the year) in a well-defined channel.

Permanent main access road (MA) - A road normally constructed on a ridge or higher ground that tends to parallel the general flow of water, except when it crosses from one drainage system to another.

Pesticide - Any chemical substance that is used to control undesirable insects, diseases, vegetation, animals, or other forms of life.

Poletimber – trees 5.5 to 11.5 inches DBH.

Prescribed burning - The controlled use of fire to reduce or eliminate the unincorporated organic matter of the forest floor, or low, undesirable vegetation.

Primary (or Main) skid trail - The path most frequently traveled by harvesting equipment, normally leading to a landing for processing.

Qualified professional - A person whose training and experience qualifies him/her to make forestry and water quality recommendations. Examples of qualified professionals include: hydrologists, soil scientists, forest engineers, or technically trained individuals functioning under the direct supervision of a qualified professional.

Regeneration - Renewal of a forest (ie establishing seedlings/saplings) by either natural or artificial means.

Rotation - The planned number of years between the establishment of a crop of trees and its final cutting at a specified stage of maturity.

Rutting - Tracks in the soil resulting from the passage of heavy equipment.
Sapling – A tree 4.5’ tall but less than 4" DBH

Sapling- A tree that is at least 4.5 feet tall with a DBH not to exceed 5.5 inches at DBH.

Saw Timber – Normally refers to a classification of stand size where all merchantable trees have an average diameter equal or greater to 11.5 inches at DBH. This term can also be used to refer to a tree of 11.5 inches at DBH or larger.

Sediment - Eroded soil particles that are deposited downhill or downstream by surface runoff.

Seedling – A tree less than 4.5’ in height.

Seep - A place where groundwater flows slowly to the surface and often forms a pool; a small spring.

Sensitive site - An area that may have the following traits: highly erosive soils, steep slopes, excessively wet soils, connected aquatic systems, endangered species habitat, or other unique traits.

Shearing - The cutting of merchantable residual trees and stumps close to the ground after harvest.

Shelterwood harvest - A method for regenerating a site that involves the gradual removal of the residual stand in a series of partial cuts. A fundamental characteristic of the shelterwood method is the establishment of a new forest stand before complete removal of the parent stand.

Silviculture - The science and art of cultivating forests based on the knowledge of the life history and general characteristics of forest trees; the principles, theories, and practices for protecting and enhancing the establishment, growth, development, and utilization of forests for multiple benefits.

Single-tree selection - A regeneration method adapted for shade tolerant species whereby each small even-aged component of an uneven-aged stand occupies the space created by the removal of a single mature individual or small clumps of several such trees.

Site productivity (site) - An expression of an area's natural fertility or capacity to grow vegetation, especially trees.

Site Index – a measure of the quality of a site based on the height of dominate trees at a specified age. Generically we translate this to site index 1-3; 1=excellent, 2=moderate, 3=poor.

Site preparation - A forest activity to remove unwanted vegetation and other material to cultivate or prepare the soil for reforestation.

Skid trail - A temporary, non-structural pathway over forest soil for dragging felled trees or logs to a landing for processing.

Skidding - Moving logs or felled trees from the stump to a landing, usually with the forward end supported off the ground.

Snag - A standing dead tree from which the leaves and most of the branches have fallen.

Stand – a group of forest trees of sufficiently uniform species composition, age and condition to be considered a homogeneous unit for management purposes.

Stocking – the number and density of trees in a forest stand. Stands are often classified as understocked, well stocked or overstocked.

Streamside management zone (*SMZ*) - An area adjacent to the bank of a stream or body of open water where extra precaution is necessary to carry out forest practices in order to protect bank edges and water quality.

Suppressed – a tree condition characterized by low growth rate and low vigor as a result of competition with over topping trees.

Timber Stand Improvement (TSI) – any practice that increases the value or rate of growth of value growth in a stand of potential sawtimber trees.

Tolerance – a tree species capacity to grow in shade.

Temporary limited use road (LU) - A road constructed into an area to gain access for a specific operation such as harvesting that will be abandoned and allowed to revert to natural vegetation once the operation is complete.

Toe of the fill - The base of the fill surrounding a culvert, etc.

Transpiration - The vaporization of water from the living cells of plant tissues.

Understory – the level of forest vegetation beneath the canopy.

Uneven-aged Stand – A group of trees of a variety of ages and sizes growing on a uniform site.

Water bar - A mound or ridge of soil formed across a road or trail for the purpose of deflecting water onto the adjacent area, usually into the forest litter.

Watershed – A region defined by patterns of stream drainage. A watershed includes all the lands that contributes water to a particular stream or river.

Water yield - A drainage basin's total yield of liquid water during some period of time.

Water turnout - The extension of an access road's drainage ditch into a vegetated area to provide dispersion and filtration of rain-event runoff.

Watershed - All land and water within the confines of a drainage basin.

Windthrow – a tree felled by wind (also known as blowdown).

Wing ditches - Drainage structures that divert water flow from along a downward-sloping roadside, dispersing the water into a vegetated area to minimize erosion.

Winter Yard – a stand or area that is comprised mostly of conifer, or has an canopy comprised mostly of conifer. These areas tend to accumulate less snow fall on the ground during winter months, creating conditions favorable for wildlife to exist in during the months of greatest snow depth.

Wolf Tree – a larger older tree with a spreading crown and little or no timber value.