

APPENDIX II

DIMENSION ANALYSIS OF WOODY PLANTS DATA

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**Mean Twig, Leaf, Stem Wood, and Stem
Bark Data for Harvested Fire Island Trees**

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
<u>Current twigs plus leaves</u>							
Number of twigs averaged	46	37	59	20	29	18	14
Twig diameter (mm)	2.31	3.31	1.97	1.60	1.73	1.92	1.94
Twig length (cm)	2.61	5.45	3.24	7.75	9.90	6.71	9.61
Twig dry weight (g)	0.04	0.15	0.06	0.07	0.20	0.09	0.14
Leaves dry weight (g)	0.34	1.70	0.31	0.28	0.65	0.52	0.28
Number of leaves per twig	4.30	12.76	4.98	7.85	7.14	6.28	3.86
Leaf area per leaf (cm ²)	5.76	22.07	7.90	7.29	13.99	12.23	15.49
Insect consumption (%)	0.33	1.19	0.51	1.55	3.00	1.50	2.00
<u>Stem wood and bark</u>							
Number of logs averaged	45	43	29	12	8	9	7
Whole stem specific gravity (g/cm ³)	0.350	0.264	0.439				
Stem wood specific gravity (g/cm ³)	0.348	0.277	0.478	0.406	0.271	0.704	0.481
Stem bark specific gravity (g/cm ³)	0.364	0.228	0.312	0.418	0.275	0.523	0.481
<u>Stem bark volume</u>							
Stem wood + bark volume	0.141	0.267	0.234	0.082	0.119	0.246	0.182

Sunken Forest Dimension Analysis Regressions

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
A. Branch Regressions on Ln branch basal diameter (mm) (x)							
Ln, branch surface area (cm ²) (y)							
A	0.5108	1.2590	0.5525	1.4472	3.2285	0.3105	0.2373
B	2.5854	2.1132	2.8222	2.5765	1.6719	3.1222	2.9426
r	0.983	0.952	0.993	0.971	0.833	0.960	0.952
Ln, branch wood plus bark dry weight (g)							
A	-3.9083	-3.5838	-3.6028	-4.1486	-1.3851	-2.0228	-4.8462
B	2.9724	2.7335	2.9907	3.2657	1.7109	2.2403	3.4970
r	0.994	0.980	0.993	0.988	0.701	0.884	0.990
Ln, current twig plus leaf weight (g)							
A	-2.8327	-1.2993	-1.9079	-1.8597	0.1333	-1.7582	-0.9791
B	2.0014	1.8261	2.0086	1.9214	1.1120	1.7220	1.7334
r	0.975	0.939	0.964	0.923	0.599	0.884	0.985
Ln, branch dead wood dry weight (g)							
A	-4.9636	-7.3306	-4.8575	-4.2001	-1.3840	-2.0768	-5.0375
B	2.3490	3.3807	2.1567	3.3025	1.7331	2.2945	3.7316
r	0.970	0.947	0.878	0.989	0.703	0.883	0.995
Ln, old leaf dry weight (g)							
A	-3.5964						
B	1.8863						
r	0.839						
Ln, fruit dry weight (g)							
A	-1.9900	-4.6952					
B	0.7672	1.6949					
r	0.424	0.737					

Sunken Forest Dimension Analysis Regressions (continued)

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
Ln, current twig number							
A	-1.7224	-2.5759	-0.6602	-0.5709	1.1456	-1.2793	2.8580
B	2.1091	2.0592	2.0852	2.1843	1.1111	2.1579	1.0653
r	0.976	0.9555	0.972	0.942	0.604	0.881	0.816
Ln, current leaf number							
A	-0.4724	0.6249	0.9779				
B	2.0886	1.8929	2.0242				
r	0.969	0.942	0.971				
Ln, old leaf number							
A	-1.0295						
B	1.8250						
r	0.854						
B. Branch regressions on branch basal diameter (mm) (x)							
Linear, branch age (y)							
B	1.0323	0.4810	0.6728				
r	0.986	0.960	0.948				
C. Branch regressions on Ln branch age (x)							
Ln, branch wood plus bark weight (g) (y)							
A	-3.1561	2.1432	-5.3862				
B	2.7559	2.7650	3.8390				
r	0.966	0.924	0.905				

Sunken Forest Dimension Analysis Regressions (continued)

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
D. Whole stem segment regressions on Ln stem segment diameter (mm) (x)							
Ln, stem segment volume (cm ³) (y)							
A	-3.4380	0.0421	-1.0997				
B	2.8102	1.9235	2.2998				
r	0.956	0.963	0.939				
Ln, stem segment surface area (cm ²)							
A	0.6444	3.8511	2.5405				
B	1.7825	0.9833	1.3874				
r	0.939	0.910	0.875				
Ln, stem segment branch surface area (cm ²)							
A	0.9707	6.7398	2.4130				
B	2.3947	0.4566	2.1922				
r	0.931	0.342	0.955				
Ln, stem segment branch wood plus bark dry weight (g)							
A	-3.2232	3.3259	-1.7543				
B	2.6463	0.5025	2.3301				
r	0.935	0.316	0.956				
Ln, stem segment current twig plus leaf dry weight (g)							
A	-2.6704	3.5581	-0.0264				
B	2.0153	0.4299	1.5460				
r	0.920	0.351	0.941				
Ln, stem segment branch dead wood dry weight (g)							
A	-4.6505	1.2342	-3.0683				
B	2.2450	0.5213	1.6815				
r	0.926	0.280	0.945				

Sunken Forest Dimension Analysis Regressions (continued)

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
Ln, stem segment fruit dry weight (g)							
A	-2.1646	-0.0275					
B	1.2086	0.3944					
r	0.874	0.346					
Ln, stem segment old leaf weight							
A	-3.4900						
B	1.9418						
r	0.919						
Ln, stem segment branch production (g/yr)							
A	-2.1919	2.0404	-3.6706				
B	1.8836	0.4470	2.2721				
r	0.916	0.354	0.956				
Ln, stem segment current twig number							
A	-1.5072	2.8005	1.2142				
B	2.0847	0.4487	1.6068				
r	0.923	0.343	0.944				
Ln, stem segment current leaf number							
A	-0.2674	5.6227	2.8535				
B	2.0715	0.4370	1.5594				
r	0.923	0.350	0.942				
Ln, stem segment old leaf number							
A	-0.9375						
B	1.8995						
r	0.917						

Sunken Forest Dimension Analysis Regressions (continued)

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
E. Whole-shoot regressions on Ln shoot basal diameter above basal swell (mm) (x)							
Ln, root dry weight (g)							
A	-2.7264	-3.0082	-1.2551	-1.1047	-2.1572	-2.2139	-1.7562
B	2.5585	2.2731	2.1699	1.5321	2.3780	2.2120	1.9252
r	0.990	0.983	0.969	0.997	0.991	0.990	0.995
F. Uncorrected tree whole-shoot regressions on Ln diameter at breast height (cm) (x)							
Ln, uncorrected stem weight (gm) (y)							
A	4.3286	4.0701	4.6577				
B	1.9891	1.3868	1.4269				
r	0.918	0.995	0.962				
Ln, uncorrected stem bark production (g/yr)							
A	-0.9344	0.1185	0.4766				
B	1.6242	0.7384	0.7285				
r	0.824	0.964	0.633				
Ln, uncorrected stem wood production (g/yr)							
A	1.0160	1.6983	1.2132				
B	2.0039	0.6884	1.3893				
r	0.842	0.854	0.707				
G. Shrub whole-shoot regressions on Ln shoot ground-level diameter (mm) (x)							
Ln, stem volume (cm ³) (y)							
A	-1.4253	-1.1966	-1.7731	-3.7591	-2.4749	-1.8860	-1.0775
B	1.2592	2.2686	2.5068	3.0074	2.6563	2.5542	2.2756
r	0.969	0.995	0.999	0.992	0.999	0.999	0.991

Sunken Forest Dimension Analysis Regressions (continued)

	<i>Ilex opaca</i>	<i>Sassafras albidum</i>	<i>Amelanchier canadensis</i>	<i>Vaccinium corymbosum</i>	<i>Prunus serotina</i>	<i>Pyrus arbutifolia</i>	<i>Viburnum dentatum</i>
Ln, stem surface (cm ²)							
A	2.6438	2.8888	2.2889	0.1446	1.8454	2.1603	2.9431
B	1.2659	1.2708	1.5158	2.0842	1.5724	1.5687	1.3037
r	0.908	0.986	0.996	0.981	0.999	0.999	0.973
Ln, branch surface area (cm ²)							
A	-1.8268	4.9959	-1.2361	2.6318	4.0688	-1.7919	-1.0776
B	2.8899	0.5828	2.9362	1.9210	1.4777	3.1273	3.0057
r	0.990	0.948	0.984	0.982	0.966	0.911	0.988
Ln, branch wood plus bark dry weight (g)							
A	-6.2411	0.0615	-5.5690	-2.6970	-0.5503	-3.7533	-6.4999
B	3.1449	0.9968	3.1067	2.2740	1.5041	2.4905	3.4768
r	0.994	0.990	0.983	0.970	0.969	0.898	0.999
Ln, current twig plus leaf dry weight (g)							
A	-5.2990	2.5048	-2.3370	-0.9077	1.0341	-2.6670	-1.2912
B	2.5443	0.3866	1.9910	1.5949	1.1169	1.9438	1.9379
r	0.978	0.866	0.979	0.993	0.965	0.891	0.985
Ln, current twig number							
A	-4.1956	1.2770	-1.2361	0.4761	2.0461	-2.5729	3.0018
B	2.6159	0.5155	2.0827	1.7231	1.1159	2.3074	1.4224
r	0.982	0.933	0.980	0.989	0.964	0.905	0.963