

Ecological Archives A/E/M000-000-A#

Jeremy W. Lichstein, Jonathan Dushoff, Kiona Ogle, Anping Chen, Drew W. Purves, John P. Caspersen, and Stephen W. Pacala. 2009. Unlocking the forest inventory data: relating individual-tree performance to unmeasured environmental factors. *Ecological Applications* VOL:pp–pp.

Appendix A. Description of study sites.

Study sites and sample sizes by stand for overtopped (OT) and sun-exposed (SE) saplings with light data (N_L) and both growth and light data (N_G). A subplot was mapped around each focal sapling according to FIA protocols (Appendix C). Subplots were calculated from mapped stands (method *i* in Appendix C) except where noted (stands HI1-24 and HA2-5; method *ii* in Appendix C). Stands were classified as having continuous (<20% of area in gaps) or discontinuous canopies (>20% in gaps). Discontinuous stands have subscripts 'D1-3' to indicate the type of canopy disturbance (see notes below table).

stand	dominant species in decreasing order of importance	stand age ^a	basal area (m ² ha ⁻¹)	sapling density (ha ⁻¹)	N_L^b		N_G^c	
					OT	SE	OT	SE
Eastern North America (ENA)								
Duke Forest, Durham, North Carolina (35°52'N, 79°59'W)								
DU1	<i>Pinus taeda</i> , <i>Quercus falcata</i>	7	12.6	3893	1	40	0	9
DU2	<i>Pinus taeda</i>	16	37.2	9165	37	40	18	23
DU3	<i>Pinus taeda</i>	25	40.1	3793	37	7	15	7
DU4	<i>Pinus taeda</i> , <i>Liquidambar styraciflua</i> , <i>Acer rubrum</i>	50	44.1	2292	76	0	36	0
DU5	<i>Pinus taeda</i> , <i>Acer rubrum</i>	80	44.4	1320	25	0	18	0
DU6	<i>Pinus taeda</i> , <i>Quercus</i> spp., <i>Liquidambar styraciflua</i>	100	42.6	973	24	0	14	0
Highlands Biological Station, Highlands, North Carolina (35°05'N, 83°11'W)								
HI1-24 ^d	<i>Quercus</i> spp., <i>Acer rubrum</i> , <i>Liriodendron tulipifera</i> , <i>Tsuga canadensis</i> , <i>Robinia pseudoacacia</i> , <i>Pinus strobus</i>	10-200	15.8- 61.8	740- 3700	96	14	25	1

stand	dominant species in decreasing order of importance	stand age ^a	basal area (m ² ha ⁻¹)	sapling density (ha ⁻¹)	N_L^b		N_G^c	
					OT	SE	OT	SE
Bent Creek Experimental Forest, Asheville, North Carolina (35°29'N, 82°38'W)								
BC1	<i>Liriodendron tulipifera</i> , <i>Betula lenta</i>	13	15.9	8075	44	42	13	10
BC2	<i>Liriodendron tulipifera</i> , <i>Robinia pseudoacacia</i>	13 ^{D1}	17.8	1961	29	39	12	21
BC3	<i>Quercus</i> spp., <i>Liriodendron tulipifera</i> , <i>Pinus strobus</i>	13 ^{D1}	21.0	5301	24	26	16	15
BC4	<i>Liriodendron tulipifera</i> , <i>Robinia pseudoacacia</i> , <i>Betula lenta</i>	14	16.3	4749	26	23	11	10
BC5	<i>Liriodendron tulipifera</i> , <i>Betula lenta</i>	25	47.8	1974	52	0	31	0
BC6	<i>Liriodendron tulipifera</i> , <i>Acer rubrum</i>	70	39.0	1521	122	0	45	0
Haliburton Forest and Wildlife Reserve, Haliburton, Ontario (45°13'N, 78°35'W)								
HA1	<i>Tsuga canadensis</i> , <i>Fagus grandifolia</i> , <i>Acer pensylvanicum</i>	14 ^{D1}	30.3	5575	15	6	0	0
HA2-3 ^e	<i>Populus tremuloides</i> , <i>Prunus pensylvanica</i> , <i>Abies balsamea</i>	14	6.9-7.7	4440-8880	1	23	0	0
HA4-5 ^f	<i>Acer saccharum</i> , <i>Populus tremuloides</i> , <i>Abies balsamea</i>	20	22.0-36.0	3330-6660	13	5	0	0
HA6	<i>Acer saccharum</i> , <i>Fagus grandifolia</i> , <i>Fraxinus nigra</i>	70	26.1	700	65	11	0	0
HA7	<i>Acer saccharum</i> , <i>Fagus grandifolia</i>	80 ^{D1}	26.4	1450	31	1	0	0
HA8	<i>Acer saccharum</i> , <i>Betula alleghaniensis</i>	80 ^{D1}	20.6	3058	43	5	0	0
HA9	<i>Tsuga canadensis</i> , <i>Acer saccharum</i> , <i>Fagus grandifolia</i>	100	31.3	900	12	0	0	0
HA10	<i>Tsuga canadensis</i> , <i>Acer saccharum</i> , <i>Fagus grandifolia</i>	100	35.9	870	68	0	0	0
HA11	<i>Acer saccharum</i> , <i>Tilia americana</i> , <i>Acer pensylvanicum</i>	200	28.5	892	59	1	0	0

stand	dominant species in decreasing order of importance	stand age ^a	basal area (m ² ha ⁻¹)	sapling density (ha ⁻¹)	N_L^b		N_G^c	
					OT	SE	OT	SE
Western Oregon, USA (WOR)								
Western Cascades Mountains, Oregon								
H.J. Andrews Experimental Forest (44°12'N, 122°12'W)								
AN1	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	15	23.3	3895	37	31	4	7
AN2	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	20	41.5	6913	30	23	12	19
AN3	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	20	17.1	1999	12	33	4	27
AN4	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	40 ^{D1}	60.1	1555	52	8	38	5
AN5	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	50	44.6	286	30	0	13	0
AN6	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	50	46.0	739	37	3	25	2
AN7	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	130	80.3	304	74	0	0	0
AN8	<i>Abies amabilis</i> , <i>Tsuga mertensiana</i> , <i>Abies procera</i>	300 ^{D2}	39.3	1720	54	35	0	0
AN9	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i> , <i>Thuja plicata</i>	400	140.0	275	90	0	0	0
Eastern Cascades Mountains, Oregon								
Metolius Research Natural Area, Deschutes National Forest (44°29'N, 121°36'W)								
ME1 ^g	<i>Pinus ponderosa</i>	17	6.7	1133	1	67	0	15
ME2	<i>Pinus ponderosa</i>	300 ^{D3}	43.3	850	193	135	27	31
				totals:	1510	618	377	202

Notes:

^a Approximate age of trees in dominant size class.

^b Number of focal saplings with observed light.

^c Number of focal saplings with observed growth and light; these are a subset of the light focal-saplings.

^d The Highlands data are from 52 individually mapped subplots (method *ii* in Appendix C), which were aggregated into 24 ‘stands’ based on spatial proximity and similarity of disturbance history and edaphic conditions. Three of these stands had discontinuous canopies due to recent selective logging. Ranges are given for stand age, basal area, and sapling density of the 24 stands.

^e Stands HA2-3 represent three individually mapped subplots (method *ii* in Appendix C), two of which were combined into a single ‘stand’ as in note ‘d’ above.

^f Stands HA4-5 represent four individually mapped subplots (method *ii* in Appendix C), which were combined into two ‘stands’ as in note ‘d’ above. Both stands had the same stand age. Ranges are given for basal area and sapling density.

^g ME1 is located ~ 4k southeast of the Metolius Research Natural Area.

^{D1} Discontinuous canopy due to recent, heavy selective logging.

^{D2} Discontinuous canopy due to insect outbreak.

^{D3} Discontinuous canopy due to large, natural canopy gaps.