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One large tree crown can be defined as a local hotspot for plant species diversity in a forest ecosystem: a case study in temperate old-growth forest

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**Online Resource 1** List of species used to measure the ecophysiological characteristics of canopy plants, ground plants, and the host tree. In order of the height at which the leaves were collected (H).

	H (m)	Families	Species	Life-form	Threatened species	Accidental epiphytes	Deer preferences
Canopy plant	1.4	Oxalidaceae	<i>Oxalis griffithii</i> Edgew. et Hook.f.	Herbs		✓	✓
	1.8	Celastraceae	<i>Euonymus macropterus</i> Rupr.	Shrubs		✓	
	2	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
	3	Celastraceae	<i>Euonymus alatus</i> (Thunb.) Siebold var. <i>alatus</i> f. <i>striatus</i> (Thunb.) Makino	Shrubs		✓	✓
	6.1	Araliaceae	<i>Aralia elata</i> (Miq.) Seem.	Trees		✓	✓
	6.3	Araliaceae	<i>Chengiopanax sciadophylloides</i> (Franch. et Sav.) C.B.Shang et J.Y.Huang	Trees		✓	
	6.6	Rosaceae	<i>Aria alnifolia</i> (Siebold & Zucc.) Decne.	Trees		✓	
	7.3	Anacardiaceae	<i>Toxicodendron trichocarpum</i> (Miq.) Kuntze	Trees		✓	
	7.6	Helwingiaceae	<i>Helwingia japonica</i> (Thunb.) F.Dietr.	Shrubs		✓	
	7.7	Aquifoliaceae	<i>Ilex macropoda</i> Miq.	Trees		✓	✓
	7.7	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
	7.8	Anacardiaceae	<i>Toxicodendron trichocarpum</i> (Miq.) Kuntze	Trees		✓	
	8	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
	8.4	Trochodendraceae	<i>Trochodendron aralioides</i> Siebold et Zucc.	Trees		✓	
	8.4	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
	8.4	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
	9.5	Rosaceae	<i>Padus grayana</i> (Maxim.) C.K.Schneid.	Trees		✓	

9.5	Rosaceae	<i>Sorbus commixta</i> Hedl.	Trees		✓	
9.5	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
15.6	Rosaceae	<i>Aria alnifolia</i> (Siebold & Zucc.) Decne.	Trees		✓	
15.6	Trochodendraceae	<i>Trochodendron aralioides</i> Siebold et Zucc.	Trees		✓	
16.8	Rosaceae	<i>Aria alnifolia</i> (Siebold & Zucc.) Decne.	Trees		✓	
19.8	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
19.8	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
21	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
21.5	Rosaceae	<i>Aria alnifolia</i> (Siebold & Zucc.) Decne.	Trees		✓	
22.45	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
22.5	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
22.5	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
22.5	Polypodiaceae	<i>Lepisorus annuifrons</i> (Makino) Ching	Herbs	✓		
23.4	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
23.4	Polypodiaceae	<i>Lepisorus annuifrons</i> (Makino) Ching	Herbs	✓		
23.6	Sapindaceae	<i>Acer rufinerve</i> Siebold et Zucc.	Trees		✓	✓
23.9	Rosaceae	<i>Padus grayana</i> (Maxim.) C.K.Schneid.	Trees		✓	
24.5	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
25.2	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
26.4	Polypodiaceae	<i>Lepisorus annuifrons</i> (Makino) Ching	Herbs	✓		
27	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs			
27.5	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas		✓	
27.6	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas		✓	

	27.8	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas	✓	
	28	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs		
	28.4	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	✓	
	30	Davalliaceae	<i>Davallia mariesii</i> T.Moore ex Baker	Herbs		
Ground plant	1	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea hydrangeoides</i> (Siebold et Zucc.) B.Schulz	Lianas	-	
	1	Celastraceae	<i>Celastrus orbiculatus</i> Thunb. var. <i>strigillosus</i> (Nakai) H.Hara	Lianas	-	
	1	Hydrangeaceae	<i>Hydrangea petiolaris</i> Siebold et Zucc.	Lianas	-	
Host tree	3	Rosaceae	<i>Padus grayana</i> (Maxim.) C.K.Schneid.	Trees	-	
	5	Sapindaceae	<i>Acer rufinerve</i> Siebold et Zucc.	Trees	-	
	5	Rosaceae	<i>Sorbus commixta</i> Hedl.	Trees	-	
	1.2	Cercidiphyllaceae	<i>Cercidiphyllum japonicum</i> Sieb. & Zucc.	Trees	-	✓
	3	Cercidiphyllaceae	<i>Cercidiphyllum japonicum</i> Sieb. & Zucc.	Trees	-	

20.7	Cercidiphyllaceae	<i>Cercidiphyllum japonicum</i> Sieb. & Zucc.	Trees	-
26	Cercidiphyllaceae	<i>Cercidiphyllum japonicum</i> Sieb. & Zucc.	Trees	-
29.2	Cercidiphyllaceae	<i>Cercidiphyllum japonicum</i> Sieb. & Zucc.	Trees	-

**Online Resource 2** Results of ANCOVA for leaf ecophysiological characteristics with leaf height and leaf  $\delta^{13}\text{C}$  as the main effect and growing habitat (canopy or ground) and life-form (trees, shrubs, lianas, and herbs) as covariates. See Online Resource 1 for list of species used here.

Response	effect	DF	growing habitat			DF	Life-form		
			SSE	F	P		SSE	F	P
$\delta^{13}\text{C}$	leaf height	1	98.9	33.49	< 0.001	1	1.17	0.61	ns
	covariable	1	0.08	0.029	ns	4	44.77	5.88	<0.001
	interaction	1	0.27	0.093	ns	4	11.31	1.49	ns
	error	57	168.32			51	97.02		
	total	60	328.78			60	328.78		
Nitrogen content	leaf height	1	0.48	2.53	ns	1	0.22		ns
	covariable	1	1.21	6.36	0.01	4	3.54		< 0.01
	interaction	1	2.53	13.3	< 0.001	4	1.37		ns
	error	57	10.83			51	10.99		
	total	60	17.48			60	17.48		
C:N ratio	leaf height	1	54.71	1.6	ns	1	11.84	0.28	ns
	covariable	1	310.31	9.07	< 0.01	4	528.89	3.17	0.02
	interaction	1	390.42	11.41	0.001	4	264.31	1.58	ns
	error	57	1949.78			51	2129.99		

	total	60	3144.32			60	3144.32		
$\delta^{15}\text{N}$	leaf height	1	2.5	1.82	ns	1	1.06	0.76	ns
	covariable	1	0.64	0.47	ns	4	7.09	1.27	ns
	interaction	1	9.91	7.21	< 0.01	4	3.31	0.59	ns
	error	57	78.38			51	71.07		
	total	60	99.92			60	99.92		
Nitrogen content	$\delta^{13}\text{C}$	1	0.33	1.89	ns	1	0.006	0.037	ns
	covariable	1	1.27	7.26	< 0.01	4	1.26	1.95	ns
	interaction	1	4.98	28.38	< 0.001	4	4.18	6.46	< 0.001
	error	57	10			51	8.26		
	total	60	17.48			60	17.48		
C:N ratio	$\delta^{13}\text{C}$	1	1.03	0.038	ns	1	16.43	0.57	ns
	covariable	1	273.18	10.02	< 0.01	4	166.7	1.44	ns
	interaction	1	1070.81	39.26	< 0.001	4	955.21	8.25	< 0.001
	error	57	1554.78			51	1476.3		
	total	60	3144.32			60	3144.32		
$\delta^{15}\text{N}$	$\delta^{13}\text{C}$	1	9.96	8.22	< 0.01	1	0.85	0.68	ns
	covariable	1	0.34	0.28	ns	4	1.52	0.3	ns
	interaction	1	16.59	13.69	< 0.001	4	6.96	1.38	ns
	error	57	69.04			51	64.11		
	total	60	99.92			60	99.92		