

Table S1: Abundance, wood density, adult stature and light requirement of the 139 studied species in this subtropical forest. SpCode is the abbreviation of species code for each studied species. ‘Abun’ is the total number of stems in the two subplots. ‘GF’ is growth form. ‘EbrT’ and ‘EbrS’ mean evergreen broadleaf tree and shrub species, respectively; ‘DbrT’ and ‘DbrS’ mean deciduous broadleaf tree and shrub species. DBH range means DBH ranges for the species in the two subplots. ‘WD’ means wood density and with a unit of $\text{g}\cdot\text{cm}^{-3}$, ‘d95k’ means adult stature, and ‘L’ means light requirement.

Name	SpCode	Abun.	GF	DBH range	WD	d95k	L
<i>Acer amplum</i>	ACEAMP	3	DbrT	[1.2,34.88]	0.66	41.535	6
<i>Acer davidii</i>	ACEDAV	13	DbrT	[1.25,23.5]	0.57	46.782	7
<i>Acer flabellatum</i>	ACEFLA	6	DbrT	[2.31,14.1]	0.55	27.9	6
<i>Acer oliverianum</i>	ACEOLI	10	DbrT	[1.4,20]	0.60	28.961	6
<i>Acer pictum</i>	ACEPIC	1	DbrT	[30.89,30.89]	0.60	38.115	6
<i>Acer sinense</i>	ACESIN	8	DbrT	[1.09,22.28]	0.60	43.11	6
<i>Alangium kurzii</i>	ALAKUR	5	DbrT	[1.09,32.8]	0.47	47.745	7
<i>Aralia elata</i>	ARAELA	2	DbrS	[4.25,5.41]	0.45	13.941	7
<i>Aucuba chinensis</i>	AUCCHI	1	EbrS	[1.36,1.36]	0.57	3.465	5
<i>Berberis julianae</i>	BERJUL	1	EbrS	[1.2,1.2]	0.57	2.016	6
<i>Betula insignis</i>	BETINS	56	DbrT	[7.12,46.68]	0.64	51.198	6
<i>Bretschneidera sinensis</i>	BRESIN	1	DbrT	[1.98,1.98]	0.57	49.95	7
<i>Callicarpa giraldii</i>	CALGIR	3	DbrS	[1.2,3.1]	0.57	21.42	6
<i>Camellia cuspidata</i>	CAMCUS	41	EbrS	[1,4.9]	0.49	8.062	6
<i>Camellia pitardii</i>	CAMPIT	926	EbrS	[1,21.5]	0.49	12.7975	6

<i>Carpinus viminea</i>	CARVIM	143	DbrT	[1,60.52]	0.64	32.105	6
<i>Castanea seguinii</i>	CASSEG	35	DbrT	[10.09,54.7]	0.49	46.8	7
<i>Celtis sinensis</i>	CELSIN	1	DbrT	[9.9,9.9]	0.65	13.725	6
<i>Cephalotaxus fortunei</i>	CEPFOR	2	EneT	[5.7,7.3]	0.70	6.606	4
<i>Cerasus yunnanensis</i>	CERCLA	3	DbrT	[1.2,19.25]	0.65	27.739	6
<i>Cerasus conradinae</i>	CERCON	1	DbrT	[16.1,16.1]	0.57	27.739	6
<i>Cerasus dielsiana</i>	CERDIE	14	DbrT	[1.2,17.51]	0.70	23.4	6
<i>Chengiopanax fargesii</i>	CHEFAR	10	DbrS	[1.22,42.5]	0.45	35.8455	5
<i>Cinnamomum wilsonii</i>	CINWIL	1	EbrT	[2.35,2.35]	0.55	12.375	4
<i>Cladrastis delavayi</i>	CLADEL	1	DbrT	[19.09,19.09]	0.57	45.045	7
<i>Clethra fargesii</i>	CLEFAR	12	DbrS	[1.36,10.05]	0.56	12.285	6
<i>Cleyera japonica</i>	CLEJAP	10	EbrS	[2.8,24.18]	0.62	22.074	6
<i>Cornus controversa</i>	CORCON	6	DbrT	[3.2,19.15]	0.50	25.373	7
<i>Cornus elliptica</i>	CORELL	27	EbrT	[1.15,14.95]	0.70	17.284	5
<i>Cornus kousa</i>	CORKOU	134	DbrT	[1.1,22.45]	0.67	17.38661	6
<i>Corylopsis multiflora</i>	CORMUL	2	DbrS	[5.49,5.75]	0.57	1.458	7
<i>Cyclobalanopsis gracilis</i>	CYCGRA	141	EbrT	[1.12,47.85]	0.84	39.4215	7
<i>Cyclobalanopsis multinervis</i>	CYCMUL	780	EbrT	[1,44.1]	0.66	27.915	7
<i>Daphniphyllum</i>	DAPMAC	273	EbrT	[1,11.3]	0.52	10.178	6

<i>macropodum</i>							
<i>Decaisnea insignis</i>	DECINS	1	DbrS	[2.65,2.65]	0.57	15.138	5
<i>Dendropanax dentiger</i>	DENDEN	33	EbrT	[1.25,20.1]	0.45	19.651	5
<i>Deutzia discolor</i>	DEUDIS	2	DbrS	[1.95,2.2]	0.57	4.95	6
<i>Diospyros japonica</i>	DIOJAP	1	DbrT	[8.69,8.69]	0.73	34.02	7
<i>Diospyros lotus</i>	DIOLOT	2	DbrT	[3.8,22.96]	0.73	31.518	6
<i>Elaeagnus pungens</i>	ELAPUN	2	EbrS	[1.5,2]	0.57	3.78	6
<i>Enkianthus chinensis</i>	ENKCHI	31	DbrS	[1.3,16.59]	0.55	13.0585	6
<i>Enkianthus serrulatus</i>	ENKSER	506	DbrS	[1.05,16.8]	0.53	26.658	6
<i>Euonymus alatus</i>	EUOALA	1	DbrS	[1.15,1.15]	0.57	6.237	7
<i>Euonymus</i>	EUOHAM	1	EbrS	[8.35,8.35]	0.57	8.145	5
<i>hamiltonianus</i>							
<i>Euonymus myrianthus</i>	EUOMYR	91	EbrS	[1,17.97]	0.57	16.3225	6
<i>Eurya brevistyla</i>	EURBRE	676	EbrS	[1,8.89]	0.55	8.428771	6
<i>Euscaphis japonica</i>	EUSJAP	11	DbrS	[1.05,12.7]	0.57	17.63	7
<i>Fagus longipetiolata</i>	FAGLON	2	DbrT	[3.84,6.75]	0.79	34.821	7
<i>Fagus lucida</i>	FAGLUC	271	DbrT	[1,55.76]	0.63	47.024	6
<i>Ficus heteromorpha</i>	FICHET	61	DbrS	[1,7.22]	0.51	15.948	7
<i>Fraxinus insularis</i>	FRAINS	3	DbrT	[1.75,13.62]	0.67	30.96	6
<i>Gamblea ciliate</i>	GAMCIL	40	DbrS	[1,18.35]	0.45	21.239	6

<i>var. evodiifolia</i>							
<i>Helwingia japonica</i>	HELJAP	4	DbrS	[1.05,1.8]	0.57	1.782	5
<i>Hovenia acerba</i>	HOVACE	4	DbrT	[1.25,40.2]	0.63	53.901	7
<i>Hydrangea strigosa</i>	HYDSTR	16	DbrS	[1.1,7.82]	0.57	9.272	7
<i>Idesia polycarpa</i>	IDEPOL	3	DbrT	[6.62,15.91]	0.48	46.395	7
<i>Ilex ficoidea</i>	ILEFIC	21	EbrS	[1.18,24.1]	0.74	19.445	5
<i>Ilex integra</i>	ILEINT	11	EbrS	[1.3,14.3]	0.74	13.752	5
<i>Ilex pernyi</i>	ILEPER	71	EbrS	[1.03,7.3]	0.74	6.318	7
<i>Ilex rotunda</i>	ILEROT	20	EbrS	[1.14,4.2]	0.74	24.615	5
<i>Ilex suaveolens</i>	ILESUA	69	EbrT	[1.1,36.9]	0.74	23.9355	6
<i>Laurocerasus spinulosa</i>	LAUSPI	14	EbrT	[1,4.03]	0.57	12.384	7
<i>Lindera communis</i>	LINCOM	28	EbrT	[1.15,2.3]	0.65	5.22	6
<i>Lindera erythrocarpa</i>	LINERY	5	DbrS	[2.22,18.15]	0.57	25.5995	7
<i>Lindera fragrans</i>	LINFRA	8	EbrT	[1.1,2.1]	0.66	4.41	6
<i>Lindera glauca</i>	LINGLA	7	DbrS	[1.7,6.5]	0.66	8.73	7
<i>Lindera neesiana</i>	LINNEE	23	DbrS	[1,3.12]	0.66	24.21	7
<i>Lindera obtusiloba</i>	LINOBT	31	DbrS	[2.17,23.85]	0.58	21.658	6
<i>Lindera pulcherrima</i>	LINPUL	54	EbrS	[1,3.59]	0.66	9.036	7
<i>var. attenuata</i>							
<i>Liquidambar acalycina</i>	LIQACA	8	DbrT	[1.1,43.18]	0.53	52.616	7

<i>Litsea elongata</i>	LITELO	1533	EbrT	[1,14.52]	0.44	12.448	6
<i>Lithocarpus henryi</i>	LITHEN	12	EbrT	[1.58,12.03]	0.83	2.07	7
<i>Litsea mollis</i>	LITMOL	1	EbrS	[1.54,1.54]	0.54	11.232	6
<i>Litsea pungens</i>	LITPUN	3	EbrT	[2.12,2.52]	0.54	11.232	7
<i>Litsea veitchiana</i>	LITVEI	16	DbrS	[1.3,23.49]	0.52	23.94	6
<i>Lonicera gynochlamydea</i>	LONGYN	3	DbrS	[1.2,5.7]	0.57	7.434	6
<i>Lyonia ovalifolia</i> <i>var. elliptica</i>	LYOOVA	99	DbrS	[1.52,17.05]	0.55	15.078	7
<i>Machilus ichangensis</i>	MACICH	371	EbrT	[1.09,21]	0.58	19.507	6
<i>Machilus lichuanensis</i>	MACLIC	1	EbrT	[4.52,4.52]	0.59	19.507	6
<i>Meliosma flexuosa</i>	MELFLE	1	DbrT	[1.5,1.5]	0.60	22.329	6
<i>Meliosma oldhamii</i>	MELOLD	39	DbrT	[1.1,30.9]	0.46	23.845	6
<i>Meliosma veitchiorum</i>	MELVEI	5	DbrT	[1.15,40.4]	0.60	42.669	6
<i>Michelia floribunda</i>	MICFLO	1	EbrT	[8.77,8.77]	0.62	9.405	6
<i>Neolitsea confertifolia</i>	NEOCON	4	EbrT	[1.85,2.05]	0.56	7.569	6
<i>Neolitsea wushanica</i>	NEOWUS	58	EbrS	[1,10.75]	0.56	23.58	6
<i>Nyssa sinensis</i>	NYSSIN	78	DbrT	[1,34.6]	0.55	36.985	7
<i>Osmanthus fragrans</i>	OSMFRA	5	EbrT	[2.1,7.1]	0.97	10.809	7
<i>Padus grayana</i>	PADGRA	16	DbrT	[3.4,52.8]	0.65	65.925	6
<i>Photinia beauverdiana</i>	PHOBEA	55	DbrT	[1.15,16.19]	0.65	16.083	7

<i>Photinia schneideriana</i>	PHOSCH	1	DbrS	[8.71,8.71]	0.57	22.77	6
<i>Rhus chinensis</i>	PHUCHI	1	DbrT	[4.71,4.71]	0.54	12.87	7
<i>Picrasma quassioides</i>	PICQUA	2	DbrT	[1.3,19.6]	0.56	30.978	7
<i>Pittosporum podocarpum</i> <i>var. angustatum</i>	PITANG	12	EbrS	[1,2.22]	0.57	8.019	5
<i>Pittosporum illicioides</i>	PITILL	7	EbrS	[1.1,2.83]	0.57	4.185	5
<i>Pittosporum podocarpum</i>	PITPOD	1	EbrS	[1.95,1.95]	0.57	1.845	5
<i>Pittosporum</i> <i>rehderianum</i>	PITREH	1	EbrS	[1.15,1.15]	0.57	2.268	5
<i>Pittosporum</i> <i>trigonocarpum</i>	PITTRI	39	EbrS	[1,3]	0.57	17.847	7
<i>Pittosporum truncatum</i>	PITTRU	3	EbrS	[1.48,2.2]	0.57	3.6	5
<i>Quercus engleriana</i>	QUEENG	78	EbrT	[0.59,76.8]	0.70	26.774	7
<i>Quercus serrata</i>	QUESER	35	DbrT	[5.01,40.5]	0.65	35.0175	7
<i>Rhamnus crenata</i>	RHACRE	1	DbrS	[3.39,3.39]	0.57	6.525	8
<i>Rhamnus leptophylla</i>	RHALEP	11	DbrS	[1.4,4.7]	0.64	8.208	6
<i>Rhododendron fortunei</i>	RHOFOR	224	EbrS	[1.05,25.1]	0.56	18.0955	6
<i>Rhododendron mariesii</i>	RHOMAR	341	DbrS	[1.1,8.75]	0.55	16.497	8
<i>Rhododendron simsii</i>	RHOSIM	56	DbrS	[1.1,7.45]	0.57	12.915	8
<i>Rhododendron</i>	RHOSTA	792	EbrS	[1.07,27.6]	0.57	18.07	5

<i>stamineum</i>								
<i>Sassafras tzumu</i>	SASTZU	31	DbrT	[3.05,62.02]	0.43	56.103	8	
<i>Schoepfia jasminodora</i>	SCHJAS	9	DbrS	[1.4,12.7]	0.57	23.392	6	
<i>Schima parviflora</i>	SCHPAR	265	EbrT	[1.1,56.74]	0.64	47.103	6	
<i>Skimmia reevesiana</i>	SKIREE	1	EbrS	[1.4,1.4]	0.57	1.602	5	
<i>Sorbus folgneri</i>	SORFOL	59	DbrT	[1.1,32.7]	0.64	24.291	7	
<i>Sorbus wilsoniana</i>	SORWIL	27	DbrT	[1.75,19.69]	0.61	22.6135	6	
<i>Stachyurus himalaicus</i>	STAHIM	9	DbrS	[1.5,6.35]	0.57	14.58	6	
<i>Stranvaesia amphidoxa</i>	STRAMP	92	EbrS	[1,7.3]	0.57	23.13	6	
<i>Stranvaesia davidiana</i>	STRDAV	1	EbrS	[1.26,1.26]	0.57	5.985	6	
<i>var. undulata</i>								
<i>Sycopsis sinensis</i>	SYCSIN	10	EbrT	[1.2,3.75]	0.57	15.174	5	
<i>Symplocos anomala</i>	SYMANO	207	EbrT	[1.05,10.39]	0.57	8.5	6	
<i>Symplocos groffii</i>	SYMGRO	336	EbrT	[1,9.65]	0.52	12.8285	5	
<i>Symplocos lucida</i>	SYMLUC	217	EbrT	[1,13.03]	0.57	14.1425	6	
<i>Symplocos glauca</i>	SYMMAC	351	EbrT	[1,17.82]	0.58	12.944	5	
<i>Symplocos paniculata</i>	SYMPAN	20	EbrS	[1,6.69]	0.60	6.324	6	
<i>Symplocos</i>	SYMPSE	214	EbrT	[1,12.74]	0.56	12.195	5	
<i>pseudobarberina</i>								
<i>Symplocos stellaris</i>	SYMSTE	138	EbrT	[1.15,13.19]	0.57	8.378	6	

<i>Symplocos sumuntia</i>	SYMSUM	285	EbrS	[0.83,7.9]	0.57	6.791	6
<i>Tetradium glabrifolium</i>	TETGLA	2	DbrT	[1.2,1.6]	0.57	20.268	6
<i>Tetradium ruticarpum</i>	TETRUT	1	DbrT	[3.15,3.15]	0.57	3.618	6
<i>Tilia oliveri</i>	TILOLI	5	DbrT	[1.12,39.8]	0.53	40.5	7
<i>Toona sinensis</i>	TOOSIN	5	DbrT	[10.2,62.8]	0.59	63.47	6
<i>Styrax odoratissimus</i>	TOXSUC	54	DbrT	[1.25,35.75]	0.53	34.406	7
<i>Toxicodendron</i> <i>trichocarpum</i>	TOXTRI	2	DbrT	[1.21,1.8]	0.42	12.105	7
<i>Vaccinium</i> <i>mandarinorum</i>	VACMAN	157	EbrS	[1.01,11.9]	0.62	9.2	8
<i>Viburnum betulifolium</i>	VIBBET	20	DbrS	[1.3,3.85]	0.57	25.74	6
<i>Viburnum dilatatum</i>	VIBDIL	4	DbrS	[1.05,2.26]	0.57	3.438	6
<i>Viburnum erosum</i>	VIBERO	24	DbrS	[1,2.7]	0.57	32.85	6
<i>Viburnum henryi</i>	VIBHEN	6	EbrT	[1.12,7.8]	0.57	19.206	7
<i>Viburnum setigerum</i>	VIBSET	46	DbrS	[1,3.9]	0.57	16.614	6
<i>Viburnum sympodiale</i>	VIBSYM	16	DbrS	[1.62,4.5]	0.57	34.938	6
<i>Weigela japonica</i>	WEIJAP	2	DbrS	[1.15,1.54]	0.57	15.975	6
<i>Yulania sprengeri</i>	YULSPR	1	DbrT	[1.45,1.45]	0.57	39.852	7

Table S2: Summary information of a linear mixed-effect model on predictors on local crown complementarity (CCI) in this study. ‘Estimate’ means standardized regression coefficient for each predictor, ‘SE’ is standard error.

Crown complementarity	Estimate	SE	<i>t</i> -value	<i>p</i> -value
<i>Fixed effects</i>				
Intercept	0.623	0.086	7.283	0.000
Variation in tree height	0.148	0.263	0.564	0.576
Variations in crown size	0.052	0.054	0.957	0.345
Variations in crown shape	-0.089	0.137	-0.644	0.523
BA	0.032	0.013	2.395	0.022
SR	0.002	0.001	2.370	0.023
<i>Random effects</i>				
Site	0.000	0.005		
Residual	0.001	0.036		
Model fit				
Conditional r^2	0.367			
Marginal r^2	0.355			
RMSE	0.034			
n quadrat	44			

Table S3: Factor-loading matrix for the soil variables identified by principal component analysis. BD means total bulk density, and TOC, TN and TP mean total organic carbon, nitrogen, phosphorus in the top soil (0-10cm) in the subtropical forest, respectively.

	PC1	PC2	PC3	PC4
BD	0.53	-0.32	-0.74	-0.26
TOC	-0.58	-0.18	-0.55	0.58
TN	-0.61	-0.04	-0.15	-0.77
TP	-0.04	-0.93	0.36	0.01

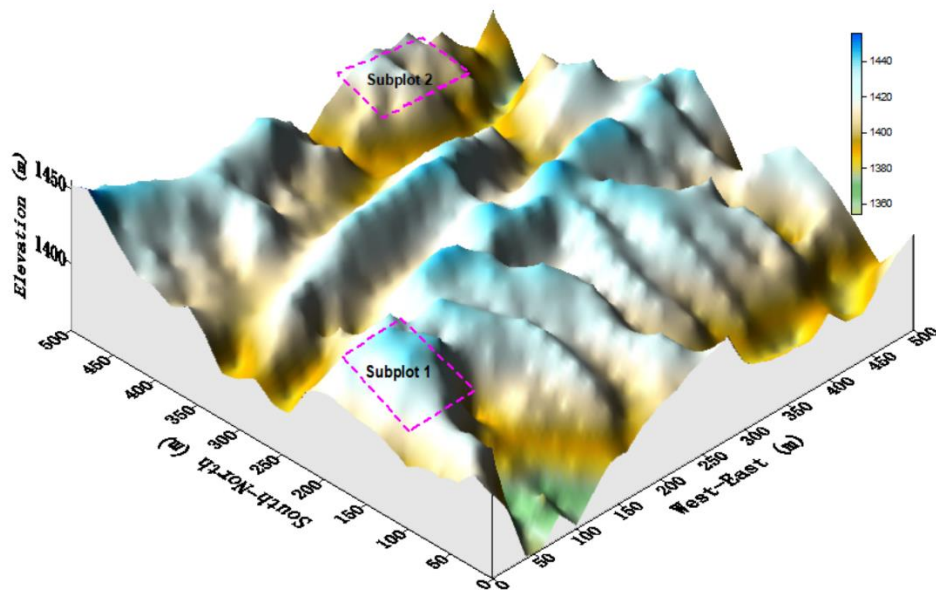


Figure S1. The purple dashed rectangle boxes in the figure means two subplots in the BDGS 25 ha plot.

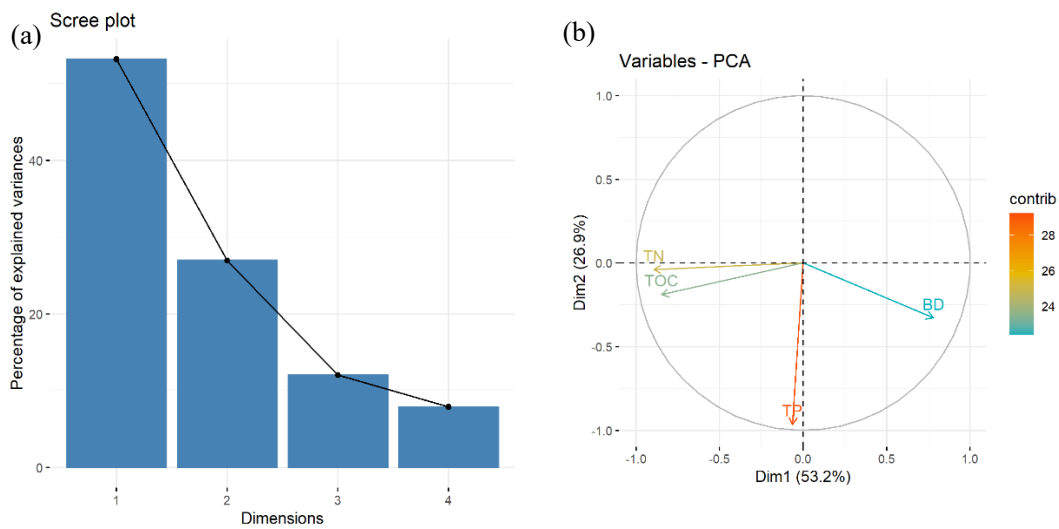


Figure S2. The results of the principal component analysis (PCA) for the four soil variables in this study. **(a)** scree plot; and **(b)** variances explained for each variable on the first and second principle component axis.