

The effect of belowground resources on light-affected allometry in six
Bornean tree species: Supplementary materials.

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Fig SM1. Spatial distributions of six tree species on a 52-ha forest dynamics plot at Lambir Hills National Park, Sarawak, Borneo. Colors represent soil-types defined in Davies *et al.* 2005 listed here in order of increasing soil fertility: grey = sandy loam, light green = loam, green = fine loam, and dark green = clay.

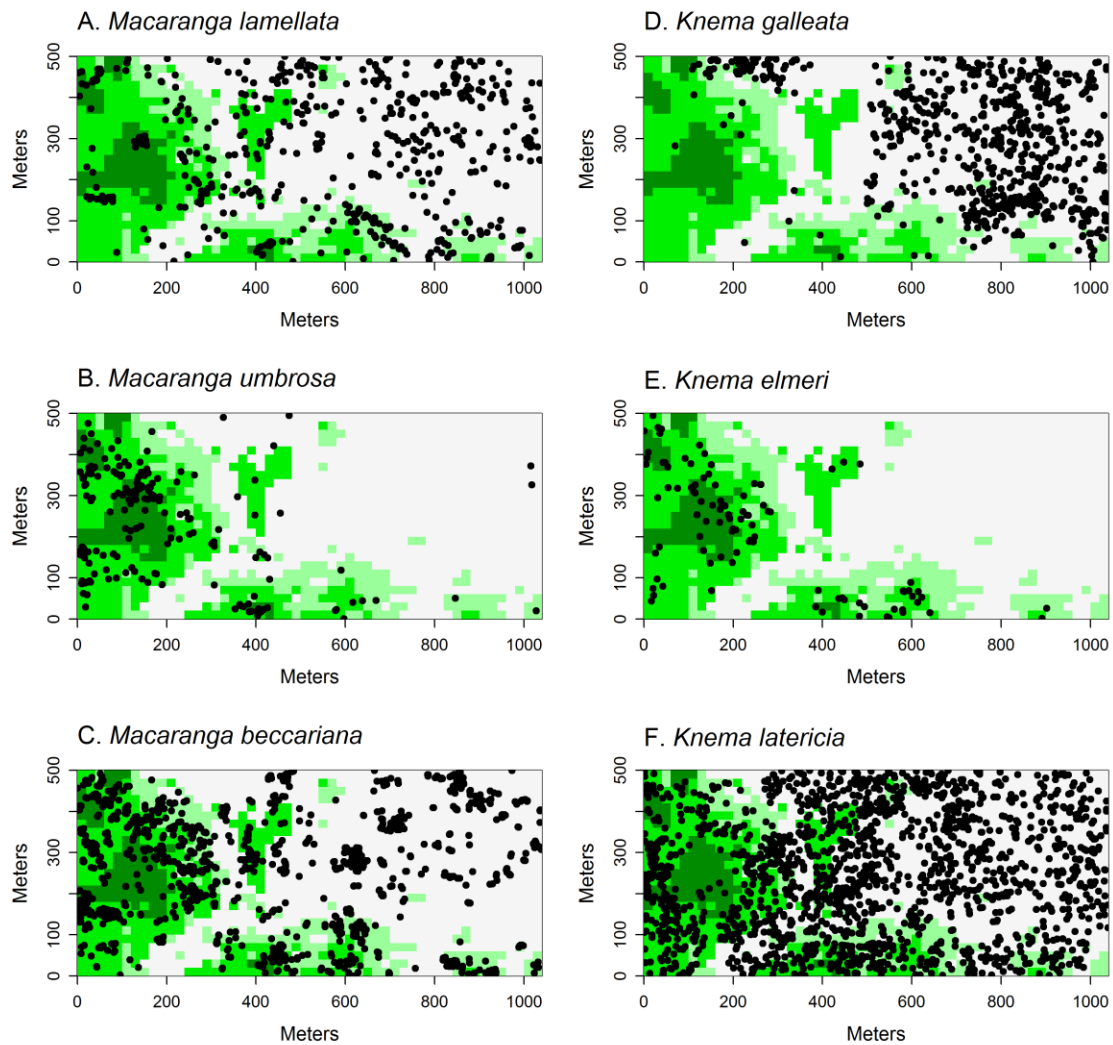


Table SM2. For models of height-diameter (DBH), crown area-DBH, and crown depth-height allometry in six Bornean tree species, AIC values were compared between log-transformed data fitted in ordinary least squares regression (OLS) and for non-log transformed data fitted in nonlinear least squares regression (NLS). See methods section in main text for details.

Species	Height-DBH AIC		Crown Area-DBH AIC		Crown Depth-Height AIC	
	OLS	NLS	OLS	NLS	OLS	NLS
<i>K. galeata</i>	129.8	150.7	144.3	190.2	109.4	116.2
<i>K. elmeri</i>	109.0	119.2	172.7	225	97.5	113.3
<i>M. lamellata</i>	140.5	165.8	168.5	195	100.9	129
<i>M. umbrosa</i>	170.2	169.6	179	284.4	113.8	147.8
<i>K. latericia</i>	260.4	270	273.5	384.8	215.1	215
sandy loam	146.7	137.3	139.1	191.3	115.6	97.3
clay-fine loam	111.9	131.4	135.5	196.2	105.2	118.8
<i>M. beccariana</i>	363.0	386.2	442.6	542.7	274.1	281.5
sandy loam	185.6	190.5	233.5	261.5	158.1	149.3
clay-fine loam	199.5	197.5	214.1	282.7	118.2	133.7

Table SM3. For allometric relationships modeled in the form $\ln(X) = b*\ln(Y) + \ln(a)$, we present parameters (intercept = $\ln(a)$; slope = b) with 95% confidence intervals fitted in major-axis regression for six Bornean tree species. For soil generalists, *K. latericia* and *M. beccariana*, we list overall species parameters followed by parameters fitted for conspecific populations sampled on sandy loam and clay-fine loam, respectively.

Species	Height-DBH						Crown Area-DBH					
	intercept			slope			intercept			slope		
	mean	lower	upper	mean	lower	upper	mean	lower	upper	mean	lower	upper
<i>K. galeata</i>	0.87	0.71	1.03	0.83	0.74	0.92	-0.6	-1.13	-0.06	1.24	0.97	1.61
<i>K. elmeri</i>	0.62	0.46	0.79	0.76	0.68	0.84	-0.67	-1.15	-0.2	1.55	1.34	1.81
<i>M. lamellata</i>	0.85	0.69	1.02	0.89	0.78	1.03	-1.05	-1.62	-0.48	1.94	1.56	2.49
<i>M. umbrosa</i>	0.72	0.52	0.92	0.9	0.75	1.07	-2.27	-3.07	-1.47	2.55	2.03	3.36
<i>K. latericia</i>	0.49	0.45	0.73	0.89	0.79	1.00	-1.30	-1.64	-0.96	1.83	1.61	2.10
sandy loam	0.7	0.49	0.9	0.86	0.73	1.00	-1.43	-1.88	-0.99	1.81	1.55	2.14
clay-fine loam	0.51	0.32	0.71	0.89	0.75	1.06	-1.2	-1.75	-0.65	1.89	1.52	2.42
<i>M. beccariana</i>	1.17	1.00	1.34	0.66	0.58	0.75	-1.95	-2.47	-1.44	2.05	1.81	2.34
sandy loam	1.3	1.02	1.57	0.61	0.49	0.75	-1.91	-2.81	-1.01	2.01	1.64	2.53
clay-fine loam	1.14	0.92	1.37	0.66	0.54	0.79	-2.02	-2.72	-1.32	2.12	1.79	2.57

Table SM3. (Continued).

Species	Crown Depth-Height					
	<u>intercept</u>			<u>slope</u>		
	mean	lower	upper	mean	lower	upper
<i>K. galleata</i>	-5.35	-8.04	-2.65	2.53	1.76	4.73
<i>K. elmeri</i>	-1	-1.52	-0.5	1.05	0.83	1.33
<i>M. lamellata</i>	-3.91	-6.83	-0.98	2.15	1.14	6.73
<i>M. umbrosa</i>	-5.04	-7.05	-3.02	2.82	1.99	4.55
<i>K. latericia</i>	-1.56	-2.06	-1.08	1.28	1.04	1.60
sandy loam	-1.66	-2.28	-1.04	1.25	0.97	1.63
clay-fine loam	-1.88	-2.82	-0.94	1.58	1.11	2.4
<i>M. beccariana</i>	-5.53	-7.05	-4.02	2.60	2.08	3.38
sandy loam	-8.29	-11.8	-4.76	3.59	2.57	5.75
clay-fine loam	-4.44	-6.25	-2.64	2.19	1.58	3.32

Table SM4. Parameters for allometric power function models of diameter growth rate, height, and crown area allometry fit using nonlinear least squares regression used to predict height and crown area growth in six Bornean tree species. The longevity of each tree species was estimate to provide reasonable axes for growth projections.

Species	Growth Rate-DBH		Height-DBH		Crown Area-DBH		Estimated Longevity (years)
	α	β	a	b	a	b	
<i>K. galeata</i>	0.04	0.06	3.05	0.71	1.42	0.80	300
<i>K. elmeri</i>	0.33	0.07	1.76	0.78	2.18	0.96	165
<i>M. lamellata</i>	0.15	-0.20	2.79	0.78	0.94	1.26	105
<i>M. umbrosa</i>	0.09	0.32	2.53	0.76	0.83	1.24	128
<i>K. latericia</i>							360
sandy loam	0.02	0.28	2.20	0.81	0.36	1.55	-
clay-fine loam	0.04	0.06	1.83	0.83	0.57	1.44	-
<i>M. beccariana</i>							28
sandy loam	0.38	-0.09	5.0	0.48	0.55	1.43	-
clay	1.26	-0.26	3.3	0.64	0.25	1.83	-

Table SM5. Parameters of allometric relationships ($\ln(X) = b*\ln(Y) + \ln(a)$) fit using ordinary least squares regression with 95% upper and lower confidence limits for six Bornean tree species (intercept = $\ln(a)$; slope = b). For generalists we list overall species parameters followed by parameters fitted for conspecific populations on sandy loam and clay-fine loam.

Species	Height-DBH						Crown Area-DBH					
	intercept			slope			intercept			slope		
	mean	lower	upper	mean	lower	upper	mean	lower	upper	mean	lower	upper
<i>K. galeata</i>	0.95	0.80	1.10	0.79	0.70	0.87	-0.16	-0.62	0.29	0.98	0.72	1.23
<i>K. elmeri</i>	0.66	0.49	0.83	0.74	0.66	0.82	-0.40	-0.84	0.05	1.40	1.17	1.62
<i>M. lamellata</i>	0.92	0.77	1.07	0.83	0.72	0.95	-0.49	-0.94	-0.05	1.46	1.13	1.80
<i>M. umbrosa</i>	0.85	0.67	1.03	0.79	0.66	0.93	-1.22	-1.77	-0.66	1.68	1.26	2.10
<i>K. latericia</i>	0.68	0.55	0.82	0.81	0.72	0.91	-0.87	-1.16	-0.58	1.49	1.29	1.69
sandy loam	0.78	0.59	0.98	0.79	0.67	0.92	-1.09	-1.49	-0.70	1.56	1.31	1.81
clay-fine loam	0.62	0.44	0.80	0.81	0.67	0.95	-0.68	-1.13	-0.24	1.44	1.11	1.78
<i>M. beccariana</i>	1.28	1.12	1.44	0.60	0.52	0.68	-1.19	-1.60	-0.77	1.65	1.44	1.86
sandy loam	1.41	1.15	1.67	0.55	0.43	0.68	-1.02	-1.72	-0.33	1.57	1.23	1.89
clay-fine loam	1.24	1.03	1.45	0.60	0.49	0.72	-1.29	-1.86	-0.72	1.71	1.40	2.01

Table SM5 (Continued).

Species	Crown Depth-Height						Safety Factor-DBH					
	<u>intercept</u>			<u>slope</u>			<u>intercept</u>			<u>slope</u>		
	mean	lower	upper	mean	lower	upper	mean	lower	upper	mean	lower	upper
<i>K. galleata</i>	-1.46	-2.41	-0.51	0.93	0.52	1.33	0.42	0.27	0.58	-0.12	-0.20	-0.04
<i>K. elmeri</i>	-0.7	-1.15	-0.24	0.89	0.68	1.10	0.71	0.54	0.87	-0.07	-0.16	0.01
<i>M. lamellata</i>	-1.01	-1.89	-0.13	0.62	0.18	1.07	0.47	0.31	0.62	-0.17	-0.29	-0.06
<i>M. umbrosa</i>	-1.99	-2.73	-1.25	1.17	0.78	1.57	0.52	0.34	0.71	-0.13	-0.26	0.01
<i>K. latericia</i>	-0.91	-1.26	-0.56	0.9	0.71	1.09	0.68	0.55	0.82	-0.15	-0.24	-0.06
sandy loam	-1.12	-1.61	-0.64	0.97	0.72	1.21	0.58	0.39	0.78	-0.13	-0.25	-0.01
clay-fine loam	-0.81	-1.37	-0.25	0.89	0.54	1.22	0.75	0.57	0.93	-0.14	-0.28	0.00
<i>M. beccariana</i>	-2.6	-3.42	-1.78	1.39	1.06	1.72	0.12	-0.03	0.28	0.07	-0.01	0.14
sandy loam	-3.5	-5.1	-1.91	1.74	1.12	2.36	-0.01	-0.27	0.25	0.11	-0.01	0.23
clay-fine loam	-2.11	-3.08	-1.13	1.18	0.76	1.59	0.16	-0.05	0.37	0.06	-0.05	0.17