

Supporting Information

Table S1 Linear models of single and multiple environmental parameters' fit of leaf and fine root dry matter content of three sub-canopy tree species

	Leaf dry matter content (mg g ⁻¹)									Root dry matter content (mg g ⁻¹)								
	<i>Pittosporum</i>			<i>Coprosma</i>			<i>Melicytus</i>			<i>Pittosporum</i>			<i>Coprosma</i>			<i>Melicytus</i>		
	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC
Burrow density	+	0.13	89.2	+	0.43	90.6	+	0.59	77.1	-	0.27	97.2	-	0.13	93.5	-	0.50	81.1
Soil Nutrient availability	+	0.11	89.7	+	0.10	97.0	+	0.09	86.8	-	0.64	86.9	-	0.63	81.7	-	0.58	78.8
Soil Water content	-	0.22	87.7	-	0.17	95.8	-	0.13	86.2	+	0.04	101.4	+	0.26	91.4	+	0.10	88.1
Light availability	+	0.13	89.3	+	0.35	92.5	+	0.41	81.7	+	0.01	101.9	-	0.06	94.6	-	0.02	89.1
Burrow + Nutrient	+, +	0.14	91.0	+, -	0.45	92.0	+, -	0.63	78.1	+, -	0.64	88.8	+, -	0.67	82.0	-, -	0.69	77.5
Burrow + Water	+, -	0.26	88.8	+, -	0.49	91.2	+, -	0.60	79.0	-, +	0.28	99.2	-, +	0.30	92.4	-, +	0.50	83.0
Burrow + Light	+, +	0.18	90.4	+, +	0.54	89.6	+, +	0.66	77.1	-, +	0.40	96.3	-, -	0.14	95.4	-, +	0.58	81.0
Nutrient + Water	+, -	0.23	89.5	+, -	0.19	97.5	+, -	0.15	88.0	-, -	0.68	86.8	-, +	0.65	82.8	-, -	0.60	80.4
Nutrient + Light	+, +	0.18	90.4	+, +	0.37	94.1	+, +	0.41	83.6	-, +	0.77	82.0	-, +	0.63	83.7	-, +	0.60	80.3
Water + Light	-, +	0.25	89.1	-, +	0.38	93.7	-, +	0.42	83.3	+, +	0.08	102.8	+, -	0.26	93.3	+, -	0.10	90.1
Burrow + Nutrient + Water	+, -, -	0.27	90.7	+, -, +	0.55	91.2	+, -, -	0.65	79.2	+, -, -	0.68	88.8	+, -, +	0.69	83.1	-, -, -	0.71	78.5
Burrow + Nutrient + Light	+, +, +	0.19	92.2	+, -, +	0.57	90.7	+, -, +	0.70	77.6	-, -, +	0.78	83.2	+, -, -	0.67	83.8	-, -, +	0.78	75.0
Burrow + Water + Light	+, -, +	0.28	90.5	+, -, +	0.56	91.1	+, -, +	0.66	79.1	-, +, +	0.43	97.6	-, +, +	0.31	94.4	-, +, +	0.59	82.6
Nutrient + Water + Light	+, -, +	0.25	91.0	+, -, +	0.39	95.6	+, -, +	0.42	85.3	-, -, +	0.78	83.2	-, +, +	0.65	84.7	-, -, +	0.61	82.1

Signs of model parameters are displayed for each model. The fraction of total trait variation explained by each model is represented by regression coefficients R². Models with Akaike's information criterion (AIC) ≤ (low est AIC + 1) were considered of high likelihood and indicated in bold. The number of tree populations is 15 for *Pittosporum crassifolium*, 14 for *Coprosma macrocarpa* and 12 for *Melicytus ramiflorus*.

Table S2 Linear models of single and multiple environmental parameters' fit of leaf and fine root phosphorus concentration of three sub-canopy tree species

	Leaf phosphorus content (%)									Root phosphorus content (%)								
	<i>Pittosporum</i>			<i>Coprosma</i>			<i>Melicytus</i>			<i>Pittosporum</i>			<i>Coprosma</i>			<i>Melicytus</i>		
	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC	Sign	R ²	AIC
<i>Burrow</i> density	-	0.02	-75.7	-	0.00	-86.3	+	0.03	-47.2	-	0.28	-90.9	-	0.11	-96.1	-	0.10	-80.3
Soil <i>Nutrient</i> availability	-	0.02	-75.8	-	0.00	-86.3	+	0.33	-51.6	-	0.01	-86.1	+	0.04	-95.1	+	0.02	-79.3
Soil <i>Water</i> content	+	0.04	-76.0	+	0.07	-87.3	+	0.00	-46.8	+	0.03	-86.5	+	0.04	-95.1	+	0.02	-79.3
<i>Light</i> availability	-	0.00	-75.5	-	0.02	-86.5	-	0.04	-47.3	-	0.12	-87.9	-	0.10	-96.0	-	0.19	-81.6
<i>Burrow</i> + <i>Nutrient</i>	-, -	0.02	-73.8	-, -	0.00	-84.3	-, +	0.37	-50.4	-, +	0.40	-91.6	-, +	0.40	-99.7	-, +	0.26	-80.7
<i>Burrow</i> + <i>Water</i>	-, +	0.04	-74.1	+, +	0.08	-85.4	+, +	0.03	-45.2	-, +	0.28	-88.9	-, +	0.12	-94.3	-, +	0.10	-78.3
<i>Burrow</i> + <i>Light</i>	-, +	0.02	-73.7	+, -	0.02	-84.5	+, -	0.14	-46.7	-, -	0.29	-89.2	-, -	0.14	-94.7	-, -	0.20	-79.7
<i>Nutrient</i> + <i>Water</i>	-, +	0.04	-74.0	+, +	0.08	-85.5	+, +	0.47	-52.4	-, +	0.03	-84.5	+, +	0.15	-94.8	+, +	0.09	-78.2
<i>Nutrient</i> + <i>Light</i>	-, +	0.02	-73.8	+, -	0.02	-84.5	+, -	0.51	-53.5	+, -	0.12	-85.9	+, -	0.20	-95.7	+, -	0.30	-81.3
<i>Water</i> + <i>Light</i>	+, +	0.04	-74.0	+, -	0.07	-85.3	-, -	0.04	-45.4	+, -	0.12	-85.9	+, -	0.11	-94.1	-, -	0.19	-79.6
<i>Burrow</i> + <i>Nutrient</i> + <i>Water</i>	-, -, +	0.04	-72.1	-, +, +	0.08	-83.5	-, +, +	0.50	-51.0	-, +, +	0.42	-90.2	-, +, +	0.52	-100.7	-, +, +	0.30	-79.4
<i>Burrow</i> + <i>Nutrient</i> + <i>Light</i>	-, -, +	0.02	-71.8	+, -, -	0.02	-82.5	-, +, -	0.51	-51.5	-, +, -	0.42	-90.1	-, +, -	0.45	-98.8	-, +, -	0.38	-80.8
<i>Burrow</i> + <i>Water</i> + <i>Light</i>	-, +, +	0.04	-72.1	+, +, -	0.08	-83.4	+, -, -	0.14	-44.7	-, -, -	0.29	-87.2	-, +, -	0.14	-92.7	-, -, -	0.20	-77.8
<i>Nutrient</i> + <i>Water</i> + <i>Light</i>	-, +, +	0.04	-72.1	+, +, -	0.09	-83.5	+, +, -	0.59	-53.6	+, +, -	0.12	-83.9	+, +, -	0.25	-94.5	+, +, -	0.32	-79.7

Signs of model parameters are displayed for each model. The fraction of total trait variation explained by each model is represented by regression coefficients R². Models with Akaike's information criterion (AIC) ≤ (low est AIC + 1) were considered of high likelihood and indicated in bold. The number of tree populations is 15 for *Pittosporum crassifolium*, 14 for *Coprosma macrocarpa* and 12 for *Melicytus ramiflorus*.