

Appendix S1

Table S1. Generalized linear mixed models fit by the Laplace approximation used to test the differences of total ant foraging activity. Fixed effects: N, P, K and temperature (T); random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC (difference between the *i*th model and the model with the lowest AIC), and AIC weights are listed. Model terms include all the terms present in a particular model. Bold are models within 2AIC from the optimal model with the lowest AIC value.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	16	99.5	14.6	0.00
T, N, P, K, TP, TK, NP, NK, PK, TNP, TNK, TPK	15	97.5	12.6	0.00
T, P, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	15	97.5	12.6	0.00
T, P, K, TP, TK, NP, NK, PK, TNP, TNK, TPK	14	96.9	12.0	0.00
T, P, K, TP, TK, NP, NK, PK, TNP, TNK	13	95.1	10.2	0.00
T, P, K, TP, TK, NP, NK, PK, TNP, TPK	13	96.8	11.9	0.00
T, P, K, TP, TK, NP, NK, PK, TNK, TPK	13	100.4	15.5	0.00
T, P, K, TP, TK, NP, NK, PK, TNP	12	94.9	9.9	0.00
T, P, K, TP, TK, NP, NK, PK, TNK	12	99.0	14.1	0.00
T, P, K, TP, TK, NP, NK, PK, TPK	12	98.5	13.6	0.00
T, P, K, TP, TK, NP, NK, PK	11	97.4	12.5	0.00
T, P, K, TP, TK, NP, NK	10	95.4	10.5	0.00
T, P, K, TP, TK, NP, PK	10	95.7	10.7	0.00
T, P, K, TP, TK, NK, PK	10	95.9	10.9	0.00
T, P, K, TP, TK, NK	9	93.9	8.9	0.00
T, P, K, TP, TK, PK	9	93.9	9.0	0.00
T, P, K, TP, TK, NP	9	93.7	8.8	0.00
T, P, K, TP, TK	8	91.9	7.0	0.01
T, P, K, TP	7	89.9	5.0	0.03
T, P, K, TK	7	89.9	5.0	0.03
T, P, K	6	87.9	3.0	0.08
T, P	5	86.0	1.1	0.21
T, K	5	89.9	5.0	0.03
P, K	5	86.9	2.0	0.13
T	4	88.0	3.1	0.08
P	4	84.9	0.0	0.35
K	4	89.5	4.6	0.04

Table S2. Generalized linear mixed models fit by the Laplace approximation used to test the differences of *Azteca* foraging activity. Fixed effects: N, P, K and temperature (T); random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC (difference between the *i*th model and the model with the lowest AIC), and AIC weights are listed. Model terms include all the terms present in a particular model. Bold are models within 2AIC from the optimal model with the lowest AIC value.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	16	130.6	10.7	0.00
T, N, P, K, TP, TK, NP, NK, PK, TNP, TNK, TPK	15	128.8	8.9	0.00
T, P, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	15	128.8	8.9	0.00
T, P, K, TP, TK, NP, NK, PK, TNP, TNK, TPK	14	127.0	7.1	0.01
T, P, K, TP, TK, NP, NK, PK, TNP, TNK	13	127.5	7.6	0.01
T, P, K, TP, TK, NP, NK, PK, TNP, TPK	13	128.8	8.9	0.00
T, P, K, TP, TK, NP, NK, PK, TNK, TPK	13	130.2	10.3	0.00
T, P, K, TP, TK, NP, NK, PK, TNP	12	127.4	7.5	0.01
T, P, K, TP, TK, NP, NK, PK, TNK	12	128.6	8.6	0.00
T, P, K, TP, TK, NP, NK, PK, TPK	12	129.2	9.3	0.00
T, P, K, TP, TK, NP, NK, PK	11	127.3	7.4	0.01
T, P, K, TP, TK, NP, NK	10	125.4	5.4	0.02
T, P, K, TP, TK, NP, PK	10	127.0	7.1	0.01
T, P, K, TP, TK, NK, PK	10	126.6	6.7	0.01
T, P, K, TP, TK, NK	9	124.8	4.9	0.02
T, P, K, TP, TK, PK	9	125.3	5.4	0.02
T, P, K, TP, TK, NP	9	125.0	5.1	0.02
T, P, K, TP, TK	8	123.4	3.5	0.05
T, P, K, TP	7	122.6	2.7	0.07
T, P, K, TK	7	123.8	3.8	0.04
T, P, K	6	123.0	3.1	0.06
T, P	5	121.0	1.1	0.15
T, K	5	124.9	5.0	0.02
P, K	5	121.7	1.8	0.11
T	4	122.9	3.0	0.06
P	4	119.9	0.0	0.27
K	4	124.0	4.1	0.03

Table S3. Generalized linear mixed models fit by the Laplace approximation used to test the differences of *Dolichoderus* foraging activity. Fixed effects: N, P, K and temperature (T); random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC (difference between the *i*th model and the model with the lowest AIC), and AIC weights are listed. Model terms include all the terms present in a particular model. Bold are models within 2AIC from the optimal model with the lowest AIC value.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	16	123.0	5.0	0.02
T, N, K, TN, TP, TK, NP, NK, PK, TNP, TNK, TPK	15	121.3	3.3	0.05
T, N, P, K, TN, TK, NP, NK, PK, TNP, TNK, TPK	15	121.3	3.3	0.05
T, N, K, TN, TK, NP, NK, PK, TNP, TNK, TPK	14	119.4	1.4	0.12
T, N, K, TN, TK, NP, NK, PK, TNK, TPK	13	121.5	3.5	0.04
T, N, K, TN, TK, NK, PK, TNP, TNK, TPK	13	121.5	3.5	0.04
T, N, K, TN, TK, NK, PK, TNK, TPK	12	119.6	1.6	0.11
T, N, K, TN, TK, NK, TNK, TPK	11	119.9	1.9	0.09
T, N, K, TN, TK, NK, PK, TNK	11	119.9	1.9	0.09
T, N, K, TN, TK, NK, TNK	10	118.0	0.0	0.23
T, N, K, TN, NK, TNK	9	120.8	2.8	0.06
T, N, TN, TK, NK, TNK	9	120.9	2.9	0.05
T, N, TN, NK, TNK	8	120.9	2.9	0.05
N, TN, NK, TNK	7	125.0	7.0	0.01
TN, NK, TNK	6	127.6	9.6	0.00
N, NK, TNK	6	127.6	9.6	0.00
NK, TNK	5	125.6	7.6	0.01
N, TN, TNK	6	131.5	13.5	0.00
N, TN, NK	6	131.4	13.4	0.00
TNK	4	127.5	9.5	0.00
NK	4	127.4	9.4	0.00
N	4	129.4	11.4	0.00

Table S5. List of ant species and their accompanying subfamilies, from two studied habitats attracted to baits across fertilization plots.

SUBFAMILY	SPECIES	HABITAT
Myrmicinae	<i>Acromyrmex octospinosus</i>	canopy
Myrmicinae	<i>Acromyrmex volcanus</i>	canopy
Myrmicinae	<i>Apterostigma dentigerum</i>	understory
Dolichoderinae	<i>Azteca _sp.3_ (Azteca cf. instabilis)</i>	canopy
Dolichoderinae	<i>Azteca brevis</i>	canopy
Dolichoderinae	<i>Azteca cf charitfex</i>	canopy
Dolichoderinae	<i>Azteca flavigaster</i>	canopy
Dolichoderinae	<i>Azteca gnava</i>	canopy
Dolichoderinae	<i>Azteca instabilis</i>	canopy
Dolichoderinae	<i>Azteca nigra</i>	canopy
Dolichoderinae	<i>Azteca pilosa</i>	canopy
Dolichoderinae	<i>Azteca tonduzi</i>	canopy
Formicinae	<i>Brachimyrmex longicornis</i>	canopy
Formicinae	<i>Brachimyrmex _JTL007_</i>	understory
Formicinae	<i>Brachimyrmex coactus</i>	understory
Formicinae	<i>Brachimyrmex heerii</i>	understory
Formicinae	<i>Brachymyrmex _JTL002_</i>	canopy
Formicinae	<i>Camponotus _JTL056_</i>	canopy
Formicinae	<i>Camponotus brevis</i>	canopy
Formicinae	<i>Camponotus cuneidorsus</i>	canopy
Formicinae	<i>Camponotus excisus</i>	canopy
Formicinae	<i>Camponotus linnaei</i>	canopy
Formicinae	<i>Camponotus nitidor</i>	canopy
Formicinae	<i>Camponotus novogranadensis</i>	canopy
Formicinae	<i>Camponotus sanctaefidei</i>	canopy
Myrmicinae	<i>Cephalotes atratus</i>	canopy
Myrmicinae	<i>Cephalotes basalis</i>	canopy
Myrmicinae	<i>Cephalotes minutus</i>	canopy
Myrmicinae	<i>Cephalotes umbraculatus</i>	canopy
Myrmicinae	<i>Crematogaster _sp4_</i>	.
Myrmicinae	<i>Crematogaster acuta</i>	understory
Myrmicinae	<i>Crematogaster brasiliensis</i>	canopy
Myrmicinae	<i>Crematogaster carinata</i>	canopy
Myrmicinae	<i>Crematogaster flavosensitiva</i>	understory
Myrmicinae	<i>Crematogaster limata</i>	canopy
Myrmicinae	<i>Crematogaster sumichrasti</i>	canopy
Myrmicinae	<i>Crematogaster tenuicula</i>	canopy
Dolichoderinae	<i>Dolichoderus bispinosus</i>	canopy
Dolichoderinae	<i>Dolichoderus debilis</i>	canopy

SUBFAMILY	SPECIES	HABITAT
Dolichoderinae	<i>Dolichoderus laminatus</i>	canopy
Ectatomminae	<i>Ectatomma ruidum</i>	understory
Ectatomminae	<i>Ectatomma tuberculatum</i>	understory
Ponerinae	<i>Hypoponera</i> _sp._	understory
Ponerinae	<i>Neoponera carinulata</i>	canopy
Ponerinae	<i>Neoponera striatinodis</i>	canopy
Ponerinae	<i>Neoponera unidentata</i>	canopy
Ponerinae	<i>Neoponera villosa</i>	understory
Formicinae	<i>Nylanderia</i> _JTL006_	understory
Formicinae	<i>Nylanderia steinheili</i>	understory
Ponerinae	<i>Odontomachus bauri</i>	understory
Ponerinae	<i>Pachycondyla harpax</i>	understory
Paraponerinae	<i>Paraponera clavata</i>	understory
Myrmicinae	<i>Pheidole</i> _sp1_	understory
Myrmicinae	<i>Pheidole</i> _cnp_	understory
Myrmicinae	<i>Pheidole</i> _dasybrown_	understory
Myrmicinae	<i>Pheidole</i> _lash4_	understory
Myrmicinae	<i>Pheidole</i> _lash9_	understory
Myrmicinae	<i>Pheidole</i> _shikii_	understory
Myrmicinae	<i>Pheidole</i> _sp._	understory
Myrmicinae	<i>Pheidole</i> _sp2_	understory
Myrmicinae	<i>Pheidole caltrop</i>	understory
Myrmicinae	<i>Pheidole cocciphaga</i>	understory
Myrmicinae	<i>Pheidole dasypyx</i>	understory
Myrmicinae	<i>Pheidole harrisonfordi</i>	understory
Myrmicinae	<i>Pheidole rugiceps</i>	understory
Myrmicinae	<i>Pheidole sensitiva</i>	understory
Myrmicinae	<i>Procryptocerus belti</i>	canopy
Pseudomyrmecinae	<i>Pseudomyrmex</i> _black_	canopy
Pseudomyrmecinae	<i>Pseudomyrmex boopis</i>	understory
Pseudomyrmecinae	<i>Pseudomyrmex gracilis</i>	canopy
Pseudomyrmecinae	<i>Pseudomyrmex oki</i>	canopy
Myrmicinae	<i>Rogeria</i> _sp._	understory
Myrmicinae	<i>Rogeria blanda</i>	understory
Myrmicinae	<i>Sericomyrmex amabilis</i>	understory
Myrmicinae	<i>Solenopsis</i> _sp._	understory
Myrmicinae	<i>Solenopsis</i> _sp.1_	understory
Myrmicinae	<i>Solenopsis</i> _sp.2_	understory
Myrmicinae	<i>Solenopsis</i> _sp.3_	understory
Myrmicinae	<i>Solenopsis geminata</i>	understory
Myrmicinae	<i>Solenopsis terricola</i>	understory
Dolichoderinae	<i>Tapinoma melanocephalum</i>	understory
Myrmicinae	<i>Wasmannia auropunctata</i>	understory

Table S6. Linear mixed-effects models used to test the differences in genus diversity across treatments were fitted by the restricted maximum likelihood. Fixed effects: N, P, K and temperature (T), random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC and AIC weights are listed. Model terms include all the terms present in the model in question. Bold are models within 2AIC from the optimal model with the lowest AIC value.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K	7	109.7	4.5	0.05
T, P, K	6	107.7	2.5	0.12
P, K	5	105.2	0.0	0.45
P	4	106.3	1.2	0.25
Null	3	107.6	2.4	0.13

Table S7. Linear mixed-effects models used to test the differences in species diversity across treatments were fitted by the restricted maximum likelihood. Fixed effects: N, P, K and temperature (T), random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC and AIC weights are listed. Model terms include all the terms present in the model in question.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K	7	131.7	3.2	0.07
T, P, K	6	130.5	2.0	0.13
P, K	5	129.1	0.5	0.26
K	4	128.5	0.0	0.34
Null	3	129.5	0.9	0.21

Table S8. Linear mixed-effects models used to test the differences in genus richness across treatments were fitted by the restricted maximum likelihood. Fixed effects: N, P, K and temperature (T), random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC and AIC weights are listed. Model terms include all the terms present in the model in question.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K	7	138.1	3.2	0.09
T, P, K	6	136.9	2.0	0.16
T, P	5	136.1	0.5	0.33
P	4	135.0	0.0	0.43
Null	3	1.95	2.0	0.15

Table S9. Linear mixed-effects models fit by the restricted maximum likelihood used to test the differences in species richness across treatments. Fixed effects: N, P, K and temperature (T); random effect is block, an 8 level categorical variable. For each model degrees of freedom, AIC values, Δ AIC and AIC weights are listed. Model terms include all the terms present in the model in question.

MODEL TERMS	Df	AIC	Δ AIC	AIC Weights
T, N, P, K	7	168.2	0.2	0.23
T, P, K	6	168.2	0.2	0.22
P, K	5	167.9	0.0	0.25
K	4	168.5	0.5	0.19
Null	3	169.7	1.8	0.11

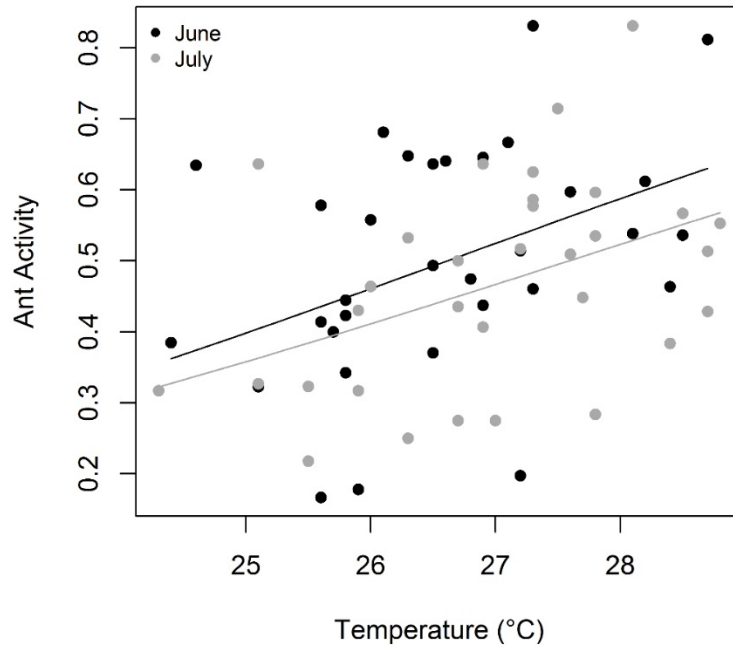


Figure S1. The relationship between temperature and the ant activity – proportion of baits visited by ants. Data for both June (black dots) and July (gray dots) are shown. GLMs show a significant effect of temperature on proportion of foraging activity in both months ($p < 0.001$).

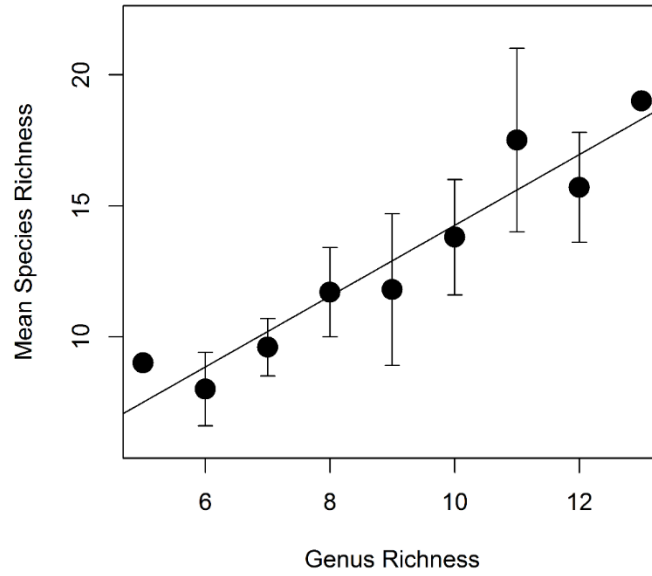


Figure S2. The relationship between genus richness and mean species richness across all genera collected on fertilization plots. Error bars represent standard deviation from the mean.

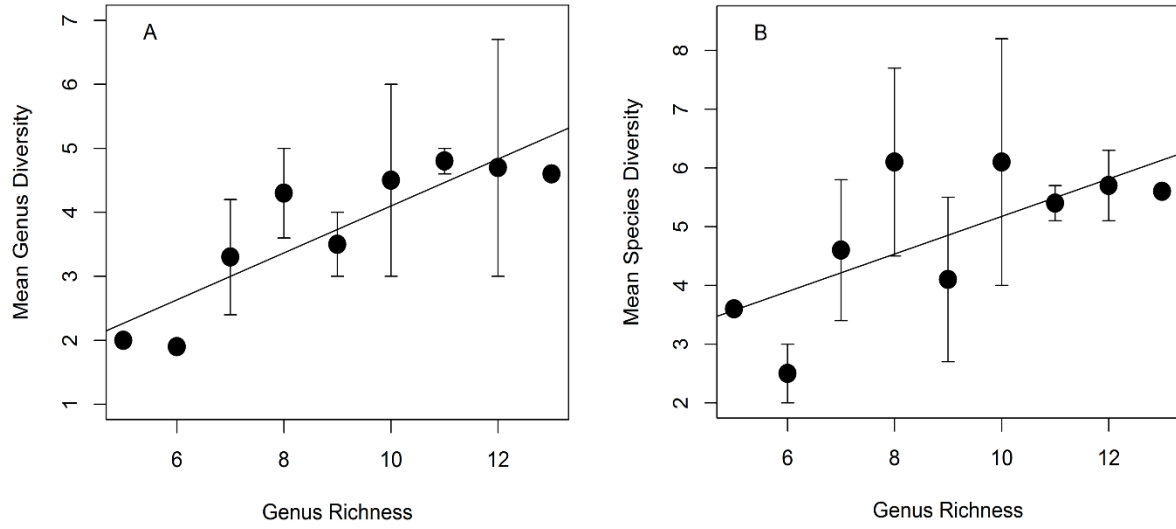


Figure S3. The relationship between genus richness and mean inverse Simpson diversity index for genera (A), and species (B). Error bars represent standard deviation from the mean.