

Supporting Information

Appendix S1. Life-cycle of an *Atta laevigata* leaf-cutter ant colony.

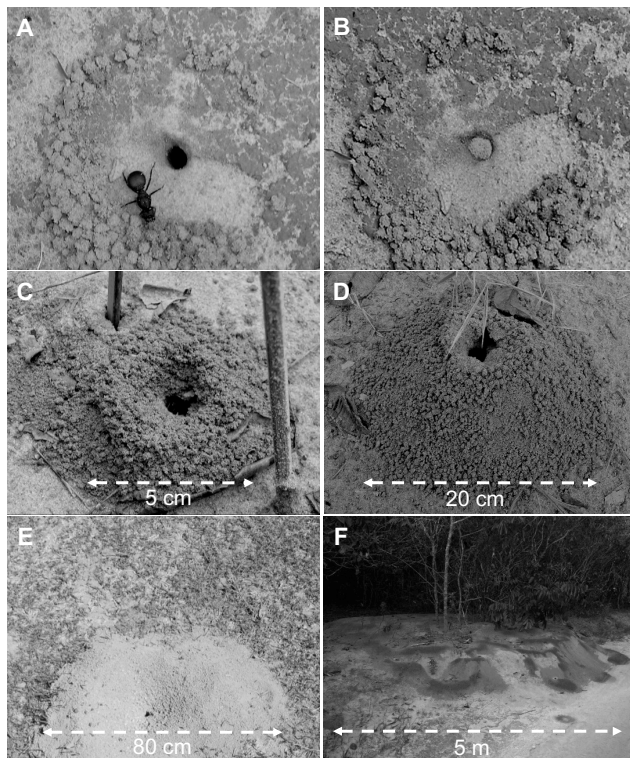


Fig. S1. Life stages of a leaf-cutter ant (*Atta laevigata*) colony. (a) Recently landed founding queen excavating a new nest. (b) A new nest with its entrance sealed with soil removed during nest building (i.e., a colony that initiated the claustral phase). (c) Stage 1: An incipient (ca. 3-month old) colony (i.e., a colony that survived the claustral phase and just emerged to forage for fungal substrates). (d) Stage 2: A small, young (ca. 15-month old) colony. (e) Stage 3: A medium colony. (f) Stages 4-5: A large, adult colony. Photo credits: Fabiane M. Mundim (a-d) and Ernane H. M. Vieira-Neto (e-f).

Appendix S2. Parameters used in the construction of matrix models for *Atta laevigata*.

Table S1. The 33 lower-level vital rates (LLVR) calculated from three census years used to parameterize matrix population models of *A. laevigata* leaf-cutter ants near and far from roads in the Brazilian Cerrado savannahs. LLVR are as follows: s_i = survival, p_i = persistence, g_i = growth (1 stage), fg_{ij} = fast growth (2 or more stages), r_i = regression (1 stage), fr_{ij} = fast regression (2 or more stages), Nq_i = number of queens produced by each colony at stages 4-5, and Q_{suc} = queen performance. Underscored letter i represents stages 1 to 5 while letter j is the total stage change during fast growth or regression. Vital rate elasticities for each habitat and their LTRE contributions to observed λ differences are also shown. In bold are habitat-specific rates.

Vital rate	Near roads		Far from roads		Contribution to $\Delta\lambda$
	Value	Elasticity	Value	Elasticity	
s_1	0.360	0.323	0.323	0.315	0.089
s_2	0.537	0.145	0.650	0.208	-0.086
s_3	0.650	0.108	0.230	0.018	0.122
s_4	0.696	0.102	0.550	0.096	0.056
s_5	0.600	0.010	0.737	0.060	-0.011
p_1	0.259	-0.098	0.226	-0.077	-0.030
p_2	0.182	-0.026	0	0	-0.068
p_3	0.462	-0.070	0.500	-0.016	0.008
p_4	0.875	-0.043	0.873	-0.082	-0.0004
p_5	0.800	0.009	0.929	0.058	-0.008

g_1	0.767	0.140	0.750	0.208	0.010
g_2	0.611	0.067	0.385	0.011	0.009
g_3	0.857	0.104	1	0.085	-0.152
g_4	0.833	0	1	0	0
fg_{12}	0.186	0.028	0.167	0.006	0.017
fg_{13}	0.047	0.112	0.083	0.118	-0.051
fg_{14}	0	0	0	0.083	-0.208
fg_{22}	0.389	0.074	0.462	0.017	-0.016
fg_{23}	0	0.022	0.154	0	0.030
fg_{32}	0.143	0.018	0	0.023	-0.009
r_2	0	0	0	0	0
r_3	0	0	0	0	0
r_4	0.021	0	0	0	0
r_5	0.200	0.0003	0.071	0	0.001
fr_{32}	0	0	0	0	0
fr_{42}	0	0	0	0	0
fr_{43}	0	0.001	0	0.002	0.004
fr_{52}	0	0	0	0	0
fr_{53}	0	0	0	0	0
fr_{54}	0	0	0	0	0
N_{q4}	1498.768	0.272	1504.960	0.199	-0.003
N_{q5}	3014.280	0.039	2985.210	0.104	0.002
Q_{suc}	0.093	0.312	0.022	0.303	0.978

Table S2. Parameters used to calculate fertility rates for *A. laevigata* populations near (NR) and far (FR) from roads. N_{qi} is the mean number of queens produced by adult colonies. This value was obtained from a randomly generated Poisson distribution. For very large colonies this distribution had mean = 3000 based on literature reviews. For large colonies we assumed that their reproductive output was 50% lower and thus assigned a mean = 1500. Remaining parameters were based on experimental tests of colonization and pre-establishment performance previously conducted in both habitats. P_{sp} is the probability of a queen surviving pre-foundation predation, S_{cf} is the probability of a queen successfully founding the colony, C_s is the probability of a colony surviving the claustral phase, and queen success (Q_{suc}) = $P_{sp} \times S_{cf} \times C_s$.

	NR	FR
Mean number of alates produced by large and very large colonies (N_{qi}) ¹	Obtained from Poisson distribution of mean 1500 and 3000, respectively	
Queen surviving pre-foundation predation (P_{sp}) ²	0.400	0.600
Probability of queen founding the colony (S_{cf}) ^{2,3}	0.406	0.145
Probability of colony surviving the claustral phase (C_s) ³	0.574	0.249
Queen success in founding a new colony (Q_{suc})	0.093	0.022

1. Mean based on Autuori (1950) and Mariconi (1970)

2. Based on Vasconcelos et al. (2006)

3. Based on Vieira-Neto and Vasconcelos (2010)

Table S3. Results of a two-way ANOVA comparing the mean distance to the nearest road of adult field colonies of *A. laevigata* observed (O) in three subsequent years to that of randomly generated locations (R) for each year within the study site.

Source of variation	SS	df	F	<i>P</i>
Data type (O vs. R)	46,601	1	38.479	<0.001
Years (1-3)	742	2	0.306	0.736
Data type*Years	2,128	2	0.878	0.416
Error	632,180	522		

Appendix S3. Initial distribution of adult (i.e., area > 2 m²) *Atta laevigata* leaf-cutter ant colonies in a 19 ha Cerrado site at the Panga Ecological Station in Uberlândia (MG), Brazil.

