



RESEARCH ARTICLE - ANTS

Effects of Habitat Amount and Configuration on Ant Functional Traits in a Neotropical Rainforest

BIANCA CAITANO^{1,2,3}, PAVEL DODONOV^{1,2}, ICARO MENEZES¹, DEBORAH FARIA¹, JACQUES HUBERT CHARLES DELABIE^{3,4}

1 - Applied Ecology and Conservation Laboratory (LEAC), State University of Santa Cruz (UESC), Ilhéus-BA, Brazil

2 - Spatial Ecology Laboratory, Federal University of Bahia (UFBA), Salvador-BA, Brazil

3 - Myrmecology Laboratory (Mirmecolab), Cocoa Research Center (CEPEC/CEPLAC), Ilhéus-BA, Brazil

4 - Department of Agricultural and Environmental Science, State University of Santa Cruz (UESC), Ilhéus-BA, Brazil

SUPPLEMENTARY MATERIAL

Table 1. List of ant species collected during the study in 20 Atlantic forest landscapes located in Southern Bahia State, Brazil. HFC: High Forest Cover; LFC: Low Forest Cover. Values represent the number of landscapes in which each species was recorded.

Subfamily/species	HFC	LFC	Frequency
Subfamily Ambypoaninae			
<i>Prionopelta</i> sp		1	1
Subfamily Dolichoderinae			
<i>Dolichoderus imitator</i>	5	7	12
<i>Dolichoderus lutosus</i>	1	1	2
Subfamily Dorylinae			
<i>Eciton burchellii</i>		2	2
<i>Labidus praedator</i>		5	5
<i>Neivamyrmex gibbatus</i>		1	1
Subfamily Ectatomminae			
<i>Gnamptogenys</i> sp		1	1
<i>Ectatomma edentatum</i>		1	1
<i>Ectatomma permagnum</i>	2	7	9
<i>Ectatomma tuberculatum</i>	10	8	18
<i>Gnamptogenys acuminata</i>	1		1
<i>Gnamptogenys horni</i>	1	1	2
<i>Gnamptogenys moelleri</i>	1	5	6
<i>Gnamptogenys regularis</i>	1		1
<i>Gnamptogenys striatula</i>	1		1
Subfamily Formicinae			
<i>Azteca</i> sp	2	5	7
<i>Brachymyrmex heeri</i>	1	1	2

<i>Camponotus agra</i>		1	1
<i>Camponotus atriceps</i>	2		2
<i>Camponotus bidens</i>	2		2
<i>Camponotus canescens</i>	1		1
<i>Camponotus cingulatus</i>	4	6	10
<i>Camponotus crassus</i>		1	1
<i>Camponotus egregius</i>	1	3	4
<i>Camponotus fastigatus</i>	2		2
<i>Camponotus latangulus</i>	2	2	4
<i>Camponotus melanoticus</i>		1	1
<i>Camponotus myrma</i> sp		1	1
<i>Camponotus novogranadensis</i>	2	1	3
<i>Camponotus punctulatus andigenus</i>	1		1
<i>Camponotus rectangularis</i>	3	2	5
<i>Camponotus renggeri</i>		1	1
<i>Camponotus scissus</i>		2	2
<i>Camponotus trapezoideus</i>	1	1	2
<i>Linepithema neotropicum</i>		2	2
<i>Nylanderia fulva</i>	1	2	3
<i>Nylanderia guatemalensis</i>	4	1	5
<i>Nylanderia</i> sp		3	3
<i>Paratrechina longicornis</i>		1	1
Subfamily Myrmicinae			
<i>Acromyrmex subterraneus</i>		1	1
<i>Apterostigma</i> sp1		1	1
<i>Apterostigma</i> sp2		1	1
<i>Apterostigma</i> sp3	1	3	4
<i>Apterostigma</i> sp4		1	1
<i>Apterostigma</i> sp5	1		1
<i>Atta sexdens</i>		4	4
<i>Cephalotes atratus</i>	4		4
<i>Cephalotes grandinosus</i>	1		1
<i>Cephalotes minutus</i>		1	1
<i>Cephalotes opacus</i>	2	2	4
<i>Cephalotes pavonii</i>		1	1
<i>Cephalotes pinelii</i>		1	1
<i>Crematogaster acuta</i>	1	1	2
<i>Crematogaster erecta</i>		2	2
<i>Crematogaster limata</i>	10	9	19
<i>Crematogaster longispina</i>	1	1	2
<i>Crematogaster nigropilosa</i>		1	1
<i>Crematogaster tenuicula</i>	4	2	6
<i>Cyphomyrmex transversus</i>		3	3
<i>Hylomyrma balzani</i>		1	1
<i>Hylomyrma immanis</i>	1	1	2
<i>Megalomyrmex drifti</i>	3	3	6

<i>Mycocepurus goeldii</i>	1	6	7
<i>Ochetomyrmex semipolitus</i>	2		2
<i>Pheidole diligens</i> sp.1	3		3
<i>Pheidole diligens</i> sp.2		1	1
<i>Pheidole fallax</i> sp.1	1	2	3
<i>Pheidole fallax</i> sp.2		1	1
<i>Pheidole fallax</i> sp.3	1	1	2
<i>Pheidole fallax</i> sp.4	5	4	9
<i>Pheidole fallax</i> sp.5		1	1
<i>Pheidole fallax</i> sp.6	1	1	2
<i>Pheidole fimbriata</i>		1	1
<i>Pheidole flavens</i> sp.1	3	1	4
<i>Pheidole flavens</i> sp.2	5	3	8
<i>Pheidole flavens</i> sp.3		1	1
<i>Pheidole flavens</i> sp.4	4	1	5
<i>Pheidole radoszkowskii</i>	3	7	10
<i>Pheidole tristis</i> sp.1	7	6	13
<i>Pheidole tristis</i> sp.2		1	1
<i>Pheidole tristis</i> sp.3	1		1
<i>Pheidole tristis</i> sp.4	2	1	3
<i>Procryptocerus pictipes</i>	1		1
<i>Rogeria subarmata</i>		1	1
<i>Sericomyrmex</i> sp	1	1	2
<i>Sericomyrmex bondari</i>	5	6	11
<i>Sericomyrmex mayri</i>	2	3	5
<i>Sericomyrmex saussurei</i>	9	5	14
<i>Solenopsis</i> sp	2	1	3
<i>Solenopsis geminata</i>	1	1	2
<i>Solenopsis saevissima</i>	1		1
<i>Solenopsis</i> sp.2		1	1
<i>Solenopsis</i> sp.3		1	1
<i>Solenopsis</i> sp.4	2	2	4
<i>Solenopsis</i> sp.5	1		1
<i>Solenopsis virulens</i>	3	1	4
<i>Trachymyrmex pruinosus</i>	3	1	4
<i>Trachymyrmex relictus</i>	1	2	3
<i>Trachymyrmex</i> sp.1	3	1	4
<i>Trachymyrmex</i> sp.2	1	1	2
<i>Trachymyrmex</i> sp.3		1	1
<i>Wasmannia auropunctata</i>	8	7	15
Subfamilia Ponerinae			
<i>Anochetus</i> sp		2	2
<i>Hypoponera</i> sp1	1		1
<i>Hypoponera</i> sp2		1	1
<i>Hypoponera</i> sp3		1	1
<i>Leptogenys luederwaldti</i>	2		2

<i>Mayaponera constricta</i>	2	2	4
<i>Neoponera apicalis</i>	1	2	3
<i>Neoponera cavinodis</i>	1		1
<i>Neoponera concava</i>	8	2	10
<i>Neoponera inversa</i>	3		3
<i>Neoponera striatinodis</i>		1	1
<i>Neoponera unidentata</i>		1	1
<i>Neoponera verenae</i>	3	5	8
<i>Neoponera villosa</i>		1	1
<i>Odontomachus chelifer</i>		2	2
<i>Odontomachus haematodus</i>	3	10	13
<i>Odontomachus meinerti</i>	3	5	8
<i>Pachycondyla crassinoda</i>	7	5	12
<i>Pachycondyla harpax</i>	2	6	8
<i>Rasopone ahuacan</i>		1	1
Subfamily Pseudomyrmicinae			
<i>Pseudomyrmex filiformis</i>		1	1
<i>Pseudomyrmex oculatus</i>	7	4	11
<i>Pseudomyrmex pallidus</i>	1	2	3
<i>Pseudomyrmex stigma</i>	1		1
<i>Pseudomyrmex tenuis</i>	3	8	11
<i>Pseudomyrmex venustus</i>		2	2

8

9

10 **Table2- Scale Selection**

Femur		
Forest Cover		
Buffer	dAICc	df
1000	0.0	3.00000001801206
900	0.2	3.00000001822172
800	0.6	3.00000001822868
700	1.0	3.00000001812865
600	1.4	3.00000001917503
500	1.9	3.00000000723682
400	2.5	3.00000001457121
300	2.6	3.00000002104858
200	2.9	3.47052969306593
100	3.6	3.33971005405842

11

Edge Density		
Buffer	dAICc	df
300	0.0	4.50060732058313
200	3.3	3.00000002619175
400	3.7	3.0000000347933
600	4.6	3.00000002909299
500	4.8	3.00000003122609
100	5.2	3.00000001771517
700	5.6	3.00000005017543
1000	5.8	3.0000000222135
900	5.9	3.00000001460818
800	6.2	3.00000001631988

12

13

Antennal Scape		
Forest Cover		
Buffer	dAICc	df
1000	0.0	3.76373244146238

900	0.2	3.78727022233583
800	0.5	3.77176560791019
200	0.9	4.34407559628423
700	0.9	3.74575096202479
600	1.2	3.71186824009724
500	1.9	3.64018165948509
300	2.4	3.49834302970698
400	2.7	3.38501795262763
100	3.2	4.47195535352515

14

Edge Density		
Buffer	dAICc	df
600	0.0	3.0000000210753
200	0.3	3.00000001760657
700	0.8	3.00000002062939
300	1.1	3.04624772194162
500	1.7	3.00000002508567
400	1.7	3.00000001375396
800	2.2	3.00000001821346
100	3.5	3.10051154990544
900	3.6	3.0000000206449
1000	3.7	3.00000001849707

15

Mandible		
Forest Cover		
Buffer	dAICc	df
200	0.0	3.07740955507147
100	0.1	3.00000003779298
300	2.0	3.31057837201751
400	2.5	3.00000003009381
1000	2.8	3.00000002723939
700	2.8	3.00000003168204
800	2.8	3.00000001910209

900	2.8	3.00000000777253
500	3.3	4.6825403875315
600	3.6	4.2666853770204

16

Edge Density			17
---------------------	--	--	----

			18
--	--	--	----

Buffer	dAICc	df
200	0.0	3.00000001617407
300	0.2	3.00000002280098
400	0.3	3.00000002105962
500	0.6	3.00000001831419
800	0.7	3.0000000176932
700	0.8	3.00000001689207
600	0.9	3.00000001563635
100	0.9	3.0000000226439
900	1.0	3.00000002015212
1000	1.4	3.00000002337781

Clypeus

Forest Cover

Buffer	dAICc	df
1000	0.0	4.3089929752173
900	0.5	4.0037539512755
600	0.8	3.86249686153823
800	1.0	3.83836094576172
500	1.0	4.11144356476965
700	1.0	3.79720237596654
400	2.4	4.55711783800178
200	2.5	3.00000013650161
300	2.6	3.00000012215563
100	2.7	3.00000015400653

19

Edge Density		
---------------------	--	--

Buffer	dAICc	df
900	0.0	3.00000015003246

1000	0.1	3.00000012708615
800	1.2	3.00000013954238
700	3.6	3.00000015958558
600	4.8	3.00000157463665
300	5.2	3.78894798807893
500	5.4	3.08252581018644
100	5.9	3.00000013116837
200	6.0	3.00000025438852
400	6.2	3.3263703669074

20

21

22 **Table3 - Concurvity values for each response variable.**

	Forest Cover	Edge Density
FEMUR		
worst	0.7043467	0.61170210
observed	0.7029846	0.06780361
estimate	0.6590410	0.54980052
CLYPEUS		
worst	0.5231116	0.5231116
observed	0.1416139	0.4696113
estimate	0.1532955	0.4455453
MANDIBLE		
worst	0.8873386	0.8914399
observed	0.6296270	0.8875560
estimate	0.6379214	0.8505867
ANTENNAL SCAPE		
worst	0.6539911	0.6485848
observed	0.6016601	0.5110871
estimate	0.5460723	0.5003518

