Digital supplementary material to

OHYAMA, L., KING, J.R. & JENKINS, D.G. 2018: Diversity and distribution of *Solenopsis* (Hymenoptera: Formicidae) thief ants belowground. – Myrmecological News 27: 47-57.

1   Appendix/Digital Supplementary Material

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3   *S1*: Chao1 species estimators per site from each habitat type (sandhill and flatwood) with

4   observed number of species and chao1 standard errors.

Sandhill Habitat							
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Observed Species Richness	7	6	9	7	7	6	5	6
Chao1 Estimator	7.5	6	12	13	7	6.5	5	6
Chao1 Std. Error	1.27	0	4.12	7.08	0.15	1.27	0.22	0.23
	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16
Observed Species Richness	7	7	7	6	5	7	8	4
Chao1 Estimator	7.33	13	7	7	5	10	8.5	4
Chao1 Std. Error	0.91	7.08	0.23	2.22	0.22	4.44	1.27	0
Flatwood Habitat							
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Observed Species Richness	1	2	2	2	5	4	3	7
Chao1 Estimator	1	2	2	2	8	5	3	13
Chao1 Std. Error	0	0	0	0	4.38	2.17	0	7.08
	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16
Observed Species Richness	4	4	5	5	3	3	3	2
Chao1 Estimator	4.5	4	5	6	3	3	3	2
Chao1 Std. Error	1.25	0.43	0	2.20	0	0.41	0.41	0

6   *S2*: Residuals of the most plausible linear regression model used in verifying model assumptions.
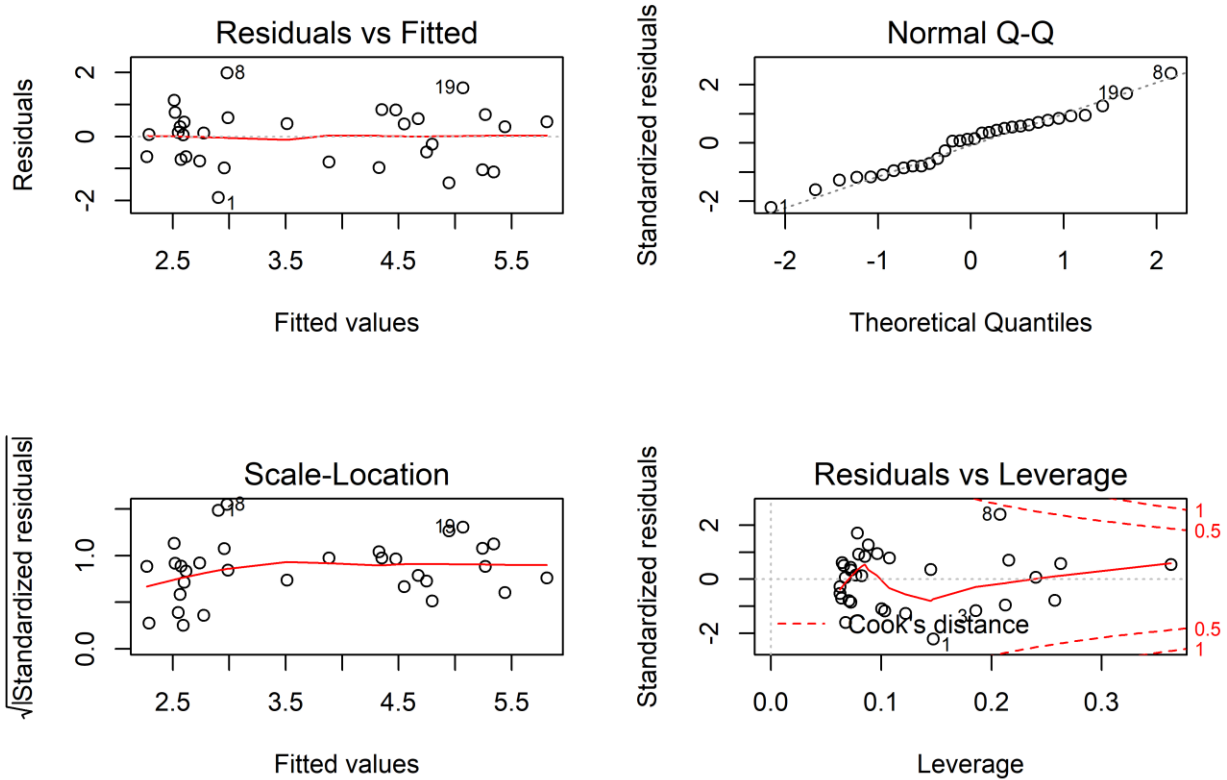
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9   *S3*: Species occurrence at baits from subterranean sampling. A total of 15 species from 6 genera

10   are represented in this table. Two habitat types (sandhills and flatwoods) were sampled at 2

11   different depths below the soil surface (10 cm and 20 cm). Occurrences represent the number of

12   times a member of the species one found in a trap at a specific depth within a particular habitat

13   type.

	Habitats				
	Pine Flatwoods		High Pine Sandhill		
Species	Depth 10cm	Depth 20cm	Depth 10cm	Depth 20cm	Total(s)

Brachymyrmex depilis	42	21	1	0	64
Forelius pruinosus	1	0	0	0	1
Hypoponera opacior	1	0	0	0	1
Nylanderia wojciki	0	1	0	0	1
Pheidole adrianoi	0	0	9	9	18
Pheidole dentata	0	1	0	0	1
Pheidole floridana	2	1	48	18	69
Pheidole metallescens	4	0	22	10	36
Pheidole morrisii	20	10	4	5	39
Solenopsis carolinensis*	2	4	60	32	98
Solenopsis invicta	12	4	10	14	40
Solenopsis nickersoni*	50	36	3	4	93
Solenopsis pergandei*	11	45	64	89	209
Solenopsis tennesseensis*	1	3	24	22	50
Solenopsis tonsa*	1	0	10	27	38

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16   *S4*: Top 5 logistic regression models based on *AICc* ranking in predicting occurrence for thief ant

17   species. Model predictor variables are listed. *AICc* scores, difference in *AICc* from the top model

18   (*ΔAICc*), and *AICc* weight are also shown. Note: *S. nickersoni* is not listed due to absence of any

19   statistically significant models.

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Model (*Solenopsis carolinensis*)	AICc	ΔAICc	Weight
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	43.7	0	0.25
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp.	45.9	2.1	0.08
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp. + Soil Depth	46.3	2.6	0.07
Occurrence ~ 1 (Null Model)	46.5	2.7	0.06
Occurrence ~ Avg. Soil Moisture + Avg. Minimum Soil Temp.	46.5	2.8	0.06
Model (*Solenopsis pergandei*)	**AICc**	**ΔAICc**	**Weight**
Occurrence ~ Avg. Soil Moisture * Avg. Minimum Soil Temp.	27.0	0	0.47
Occurrence ~ Avg. Soil Moisture * Avg. Minimum Soil Temp. + Soil Depth	27.7	0.7	0.34
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp.	29.7	2.7	0.12
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp. + Soil Depth	32.1	5.0	0.04
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	34.7	7.7	0.01
Model (*Solenopsis tennesseensis*)	**AICc**	**ΔAICc**	**Weight**
Occurrence ~ Avg. Soil Temp.	38.2	0	0.36
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	38.9	0.7	0.26
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp. * Soil Depth	40.6	2.4	0.10
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp.	41.0	2.8	0.09
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp. + Soil Depth	41.6	3.3	0.07
Model (*Solenopsis tonsa*)	**AICc**	**ΔAICc**	**Weight**
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	35.9	0	0.40

Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp. + Soil Depth	37.3	1.4	0.19
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp.	37.7	1.8	0.16
Occurrence ~ Avg. Soil Moisture * Avg. Soil Temp. + Soil Depth	38.8	3.0	0.09
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp. * Soil Depth	39.2	3.3	0.07

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22 *S5*: Top 5 logistic regression models based on *AICc* ranking in predicting occurrence for non-

23 thief ant species. Model predictor variables are listed. *AICc* scores, difference in *AICc* from the

24 top model (*ΔAICc*), and *AICc* weight are also shown. Note: *F. pruinosus, H. opacior, N. wojciki*

25 were not possible to model due to low occurrence data. Also *P. dentata* and *S. invicta* are absent

26 from this table because their most plausible models were both null models.

Model (*Brachymyrmex depilis*)	AICc	ΔAICc	Weight
Occurrence ~ Avg. Soil Moisture * Avg. Soil Minimum Temp.	21.0	0	0.78
Occurrence ~ Avg. Soil Moisture * Avg. Soil Minimum Temp. + Soil Depth	23.9	2.8	0.19
Occurrence ~ Avg. Soil Moisture * Avg. Soil Minimum Temp. * Soil Depth	28.9	7.9	0.02
Occurrence ~ Avg. Soil Moisture + Avg. Soil Minimum Temp.	31.6	10.6	<0.01
Occurrence ~ Avg. Soil Moisture + Avg. Soil Minimum Temp. + Soil Depth	33.6	12.6	<0.01
Model (*Pheidole floridana*)	**AICc**	**ΔAICc**	**Weight**
Occurrence ~ Avg. Soil Maximum Temp.	43.5	0	0.14
Occurrence ~ Avg. Soil Maximum Temp. + Soil Depth	44.5	1.0	0.09
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	44.9	1.4	0.07
Occurrence ~ Avg. Soil Moisture + Avg. Soil Maximum Temp.	45.0	1.5	0.07
Occurrence ~ Avg. Soil Temp.	45.3	1.8	0.06
Model (*Pheidole metallescens*)	**AICc**	**ΔAICc**	**Weight**
Occurrence ~ Avg. Soil Moisture + Avg. Soil Minimum Temp.	43.1	0.0	0.12
Occurrence ~ 1 (Null Model)	43.3	0.2	0.11
Occurrence ~ Avg. Soil Moisture + Avg. Soil Temp.	43.8	0.7	0.08
Occurrence ~ Avg. Soil Moisture	43.8	0.7	0.08
Occurrence ~ Avg. Soil Temp.	44.8	1.6	0.05

Model (*Pheidole morrisii*)	AICc	ΔAICc	Weight
Occurrence ~ Avg. Soil Minimum Temp.	38.0	0	0.24
Occurrence ~ Avg. Soil Minimum Temp. * Soil Depth	38.3	0.3	0.21
Occurrence ~ Avg. Soil Moisture + Avg. Soil Minimum Temp. * Soil Depth	39.4	1.4	0.12
Occurrence ~ Avg. Soil Moisture + Avg. Soil Minimum Temp.	40.2	2.2	0.08
Occurrence ~ Avg. Soil Temp. * Soil Depth	40.3	2.3	0.08

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