

Ecography

E5590

Cornelissen, T. and Stiling, P. 2009. Spatial, bottom-up, and top-down effects on the abundance of a leaf miner. – *Ecography* 32: 459–467.

Supplementary material

Table S1. List of sites where *Cameraria* sp. nova mines were collected in Florida (St= State).

Site number	Site name	County
1	Fort Cooper St Park	Citrus
2	Withlacoochee St Forest	Citrus
3	Oscar Scherer St Park	Sarasota
4	Little Manatee River St Park	Hillsborough/Manatee
5	Paines Creek Historic St Park	Hardee
6	Silver River St Park	Marion
7	Alligator Creek Preserve	Charlotte
8	UCF Arboretum	Orange
9	Archbold Biological Station	Highlands
10	Lake June-in-winter St Park	Polk
11	Lake Wales Ridge St Forest	Polk
12	Hobart Park	Indian River
13	Bluefield Ranch	St Lucie
14	Jonathan Dickson St Park	Martin
15	Yamato Scrub	Palm Beach
16	Crystal Lake Sand Scrub Nature Reserve	Palm Beach
17	Rookery Bay Preserve	Collier
18	Estero Scrub Preserve	Lee
19	Lake Manatee St Park	Manatee
20	Blue Springs St Park	Osceola
21	Washington Oaks St Park	St Johns
22	UNF Scrub	Duval
23	Etoniah Creek St Forest	Putnam
24	Jay B. Starkey Wilderness Park	Hernando
25	Enchanted Forest	Brevard
26	Big Lagoon St Park	Escambia
27	Naval Live Oaks Nature Trail	Santa Rosa
28	Top Sail St Park	Walton
29	St Andrews St Park	Bay
30	St Joseph Peninsula St Park	Gulf
31	Tate's Hell St Forest	Franklin
32	Route 51 Scrub Steinhatchee	Taylor
33	Cedar Key Scrub St Preserve	Levy
34	Swift Creek Conservation Area	Columbia
35	Arcadia Scrub	DeSoto
36	Ridge Manor Scrub County Park	Hernando
37	USF Ecoarea	Hillsborough
38	Paynes Prairie St Park	Alachua
39	Tenoroc Fish management Area	Polk
40	Boyd Hill Preserve	Pinellas

Table S2. Summary statistics for each of the 40 sites where *Cameraria* mines were sampled in FL. Data shown for plant quality are means for a variable number of leaves collected per site (see text for number of leaves used for each analysis) and data for soil nutrients are means for 3 samples collected on each site (PR= plant resistance, N= nitrogen content, C = carbon content).

Site number	<i>Cameraria</i> abundance		<i>Cameraria</i> survivorship (%)	<i>Cameraria</i> mortality factors (%)				<i>Quercus myrtilifolia</i>			Soil	
	Total	Average/site		Predation	Parasitism	Plant resistance	Other	Tannins (mg g ⁻¹)	Leaf N (%)	Leaf area (cm ²)	%N	%C
1	35	2.33	25.00	18.75	6.25	18.75	31.25	0.129	1.412	69.87	0.395	47.41
2	16	1.07	37.93	31.03	3.4	17.24	10.2	0.116	1.121	76.17	0.262	47.45
3	126	8.4	44.90	30.20	6.25	17.70	13.54	0.127	1.383	76.27	0.352	47.49
4	38	2.53	37.50	32.50	12.50	15.00	2.50	0.142	1.373	65.94	0.289	47.30
5	40	2.67	32.50	26.90	11.23	20.20	8.90	0.152	1.273	81.74	0.270	47.64
6	18	1.2	35.60	13.60	20.50	20.50	9.58	0.153	1.326	74.81	0.240	47.54
7	66	4.4	42.30	26.90	7.69	15.38	7.69	0.163	1.483	79.84	0.269	45.42
8	40	2.67	26.47	32.35	10.78	18.62	11.76	0.145	1.430	60.77	0.299	47.46
9	29	1.93	26.21	30.09	14.56	19.41	9.70	0.120	1.120	55.57	0.255	47.14
10	27	1.8	32.05	29.48	16.60	16.60	5.12	0.169	1.187	77.00	0.145	47.51
11	23	1.53	36.50	19.04	23.80	14.28	6.30	0.159	1.287	57.23	0.284	47.64
12	184	12.27	26.26	42.42	10.10	20.20	1.00	0.124	1.543	68.92	0.232	47.19
13	49	3.27	26.54	21.23	25.66	21.23	5.30	0.177	1.265	66.47	0.187	48.13
14	65	4.33	31.70	34.14	14.63	7.31	1.21	0.169	1.142	73.25	0.218	47.26
15	69	4.6	21.97	25.27	24.17	28.88	0	0.146	1.240	84.37	0.254	46.81
16	95	6.33	20.65	17.39	28.26	13.04	20.65	0.131	1.352	77.39	0.232	47.08
17	67	4.47	26.58	21.51	24.05	22.78	5.00	0.141	1.165	48.79	0.238	47.47
18	75	5.0	23.07	35.89	15.38	20.50	5.10	0.180	1.046	60.36	0.240	47.40
19	38	2.53	42.55	21.12	14.08	15.49	7.04	0.104	1.293	63.95	0.247	47.44
20	16	1.07	31.42	31.42	25.71	8.57	3.25	0.120	1.179	73.76	0.234	47.34
21	145	9.67	25.55	45.55	8.80	13.33	6.66	0.166	1.491	66.30	0.200	46.23
22	34	2.27	21.27	21.27	19.14	36.17	2.15	0.177	1.262	76.88	0.294	47.79
23	10	0.67	28.00	28.00	40.00	4.00	0	0.149	1.240	76.96	0.269	47.57
24	91	6.07	34.48	18.96	12.06	11.20	23.27	0.163	1.256	62.89	0.206	47.47
25	120	8.0	21.05	51.75	4.38	13.15	9.64	0.139	1.265	68.20	0.194	47.30
26	158	10.53	79.16	19.85	22.79	13.97	5.88	0.121	1.120	58.30	0.210	47.04
27	132	8.8	54.05	20.27	16.21	4.05	5.40	0.138	1.314	69.69	0.320	47.50
28	90	6.0	54.90	27.45	11.76	1.90	3.92	0.121	1.053	58.62	0.205	47.28
29	91	6.07	54.67	15.82	17.98	6.47	5.03	0.100	1.105	73.04	0.282	47.22
30	111	7.4	46.47	30.28	12.67	7.40	3.52	0.144	1.365	64.55	0.184	46.76
31	91	6.07	25.53	27.65	23.40	19.14	4.25	0.107	1.043	51.51	0.168	46.85
32	91	6.07	37.03	20.37	29.62	5.55	7.40	0.157	1.054	45.04	0.254	47.34
33	73	4.87	20.98	23.45	27.16	14.81	13.58	0.146	1.108	43.48	0.246	47.53
34	28	1.87	59.09	27.27	13.63	0	0	0.177	1.130	62.67	0.517	47.15
35	23	1.53	24.00	24.00	52.00	0	0	0.174	1.269	47.16	0.126	47.89
36	16	1.07	43.47	26.02	21.73	2.17	6.52	0.148	1.286	70.65	0.313	47.31
37	17	1.13	37.5	20.83	0	0	0	0.151	1.009	60.26	0.486	49.43
38	12	0.80	28.70	22.20	27.77	9.25	1.20	0.150	1.006	73.42	0.264	49.21
39	34	2.27	30.00	28.00	30.00	6.00	6.00	0.178	1.123	55.38	0.279	48.56
40	108	7.20	42.65	13.98	15.38	20.97	6.99	0.123	1.473	58.16	0.237	48.87

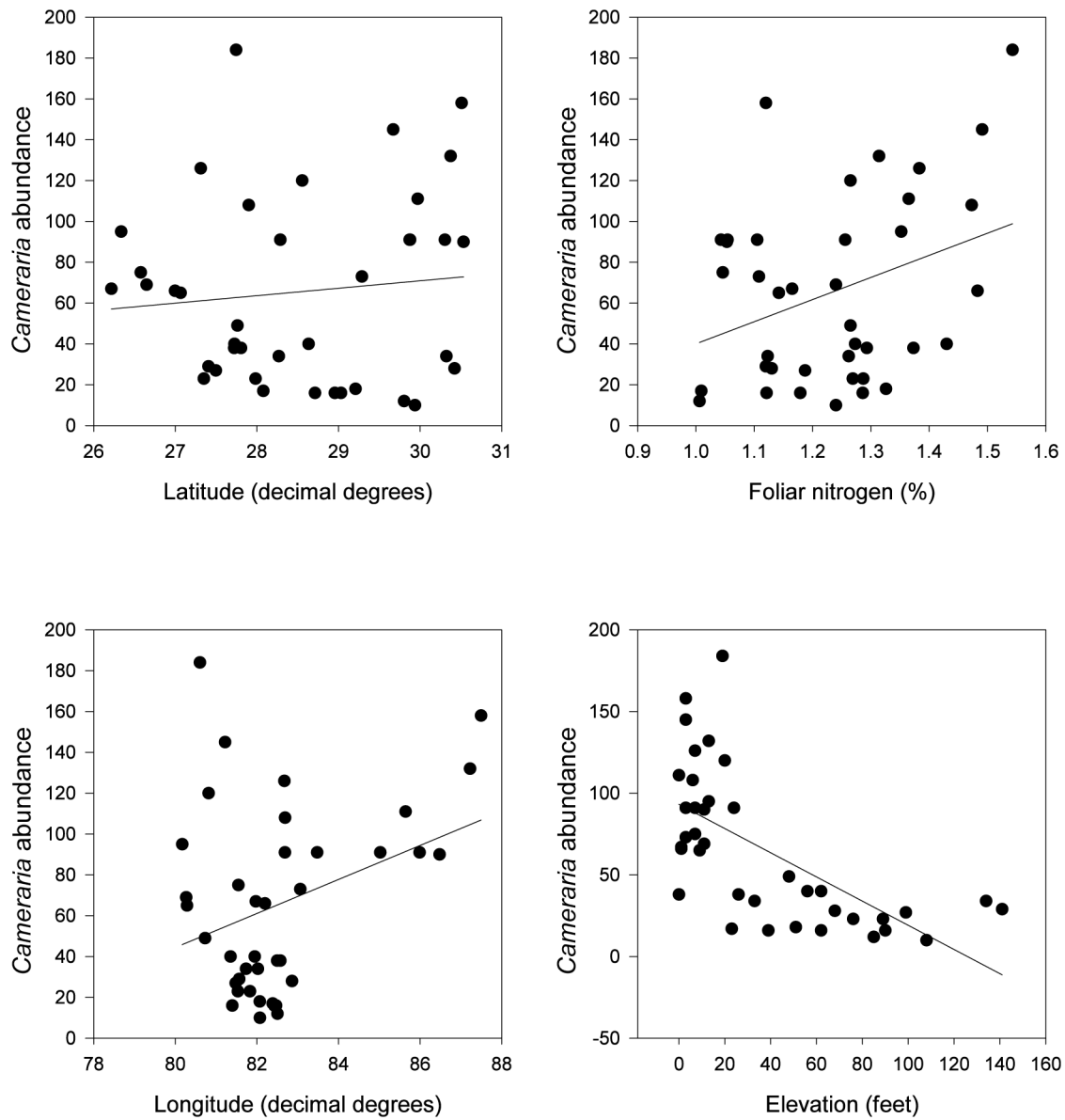


Figure S1. Relationship between biotic and abiotic variables and the abundance of *Cameraria* mines over the range of its host *Quercus myrtifolia* in Florida.

Table S3. Results of partial regression analyses for *Cameraria* densities and the combined effects of biotic and spatial variables. (* indicates statistically significant differences at $p=0.001$ after F-tests).

Dependent variable	% Variation in mine density explained by				
	Total	a (env)	b (env × space)	c (space)	d (residual)
<i>Cameraria</i> abundance	68.5	6.8	24.9	36.8**	31.5

Table S4. Summary statistics (mean \pm SE) of *Cameraria* and plant variables collected on edge vs interior sites in Florida.

Variable	Site type	
	Edge/coastal	Center/inland
<i>Cameraria</i>		
Abundance	95.9 \pm 8.07	26.23 \pm 2.84
Survivorship (%)	36.8 \pm 3.7	33.6 \pm 1.9
Predation (%)	27.9 \pm 2.4	25.2 \pm 1.2
Parasitism (%)	15.3 \pm 1.9	21.2 \pm 2.5
Killed by plant resistance (%)	13.7 \pm 1.8	13.1 \pm 2.0
Killed by other unknown factors (%)	0.1 \pm 0.001	0.6 \pm 0.04
<i>Q. myrtifolia</i>		
Tannins (mg g ⁻¹)	0.140 \pm 0.03	0.151 \pm 0.003
Leaf Nitrogen (%)	1.274 \pm 0.018	1.186 \pm 0.025
Leaf Area (cm ²)	65.33 \pm 2.50	66.28 \pm 2.33
Soil		
Nitrogen (%)	0.251 \pm 0.017	0.297 \pm 0.032
Carbon (%)	1.592 \pm 0.409	2.58 \pm 0.983
Elevation (m)	8.21 \pm 1.57	64.9 \pm 8.63