Table S4. The values for the centroids for each species and community type along CAP axes 1 and 2.

Species & Community Type	CAP axis 1	CAP axis 2
C. cylindrica		
Single-species communities	-1.006	0.137
Two-species communities	-0.678	0.196
Four-species communities	-0.547	-0.391
C. unguiculata		
Single-species communities	0.676	-1.212
Two-species communities	0.857	-0.061
Four-species communities	0.698	1.330

Table S5. Tukey's Honest Significant Difference post-hoc tests on the differences between *C. cylindrica* and *C. unguiculata* in the given compound or compound class at each site type. The type of data transformation (log or square root) is indicated in the trait column. Compounds and compound classes are abbreviated as follows: SES: sesquiterpenoids; GLV: "green leafy volatiles;" AROM: aromatics; 2-APE: 2-amino phenyl ethanone; α-P: α-pinene; β-P: β-pinene; γ-T: γ-terpinene; SH: sabinene hydrate; MN: methyl nicotinate; (*E*)-C A: (*E*)-cinnamic aldehyde; V: veratrole; (*Z*)-3-H A: (*Z*)-3-hexenyl acetate. For log-transformed traits, tests are performed on the log odds scale such that ratios greater than one indicate that *C. cylindrica* has a higher emission rate than *C. unguiculata,* and ratios lower than one indicate that *C. unguiculata* has a higher emission rate. For square root-transformed traits, estimates are back-transformed from the square-root scale such that positive estimates indicate that *C. cylindrica* has a higher emission rate than *C. unguiculata*. General linear hypothesis tests determine the differences between the differences at a pair of site types. Positive estimates indicate the first site type in the hypothesis has a larger difference in the trait relative to the second site type in the hypothesis. All tests were corrected for multiple comparisons.

Tukey's Honest Significant Difference tests *Testing differences between species at each site*					**General linear hypothesis tests** *Testing differences of the differences*			
Trait	Site Type	Estimate or ratio ± 1 SE	*t* ratio	*P*	H	Estimate ± 1 SE	Z value	*P*
log SES	One	57.430 ± 21.44	10.85	<**0.001**	Δ One = Δ Two	2.1868 ± 0.5229	4.18	< **0.001**
	Two	6.450 ± 2.36	5.090	<**0.001**	Δ One = Δ Four	1.0727 ± 0.5229	2.05	0.1001
	Four	19.650 ± 7.19	8.132	<**0.001**	Δ Two = Δ Four	-1.1141 ± 0.5179	-2.15	0.0797
log GLV	One	0.070 ± 0.043	-4.269	**0.001**	Δ One = Δ Two	1.043 ± 0.802	1.30	0.3935
	Two	0.025 ± 0.012	-7.370	< **0.001**	Δ One = Δ Four	-3.029 ± 0.802	-3.78	<**0.001**
	Four	1.439 ± 0.724	0.723	0.4704	Δ Two = Δ Four	-4.073 ± 0.712	-5.72	< **0.001**
sqrt AROM	One	-0.004 ± 0.011	-0.374	0.713	Δ One = Δ Two	-0.041 ± 0.015	2.760	**0.016**
	Two	0.036 ± 0.010	3.662	<**0.001**	Δ One = Δ Four	-0.005 ± 0.015	-0.35	0.934
	Four	0.001 ± 0.010	0.115	0.909	Δ Two = Δ Four	0.035 ± 0.014	-2.51	**0.032**
sqrt 2-APE	One	-0.009 ± 0.005	-1.855	0.0954	Δ One = Δ Two	0.017 ± 0.006	2.918	0.009
	Two	-0.026 ± 0.003	-9.870	< **0.001**	Δ One = Δ Four	0.021 ± 0.006	3.731	<**0.001**
	Four	-0.031 ± 0.003	-11.63	< **0.001**	Δ Two = Δ Four	0.005 ± 0.004	1.243	0.421

log α-P	One	0.213 ± 0.061	-5.406	< **0.001**	Δ One = Δ Two	-0.347 ± 0.341	-1.02	0.562
	Two	0.301 ± 0.056	-6.514	< **0.001**	Δ One = Δ Four	-1.002 ± 0.341	-2.94	**0.009**
	Four	0.580 ± 0.107	-2.958	**0.0034**	Δ Two = Δ Four	-0.656 ± 0.261	-2.51	**0.031**
log β-P	One	0.627 ± 0.051	-5.765	< **0.001**	Δ One = Δ Two	-0.105 ± 0.107	-0.97	0.595
	Two	0.696 ± 0.049	-5.150	< **0.001**	Δ One = Δ Four	-0.358 ± 0.107	-3.34	**0.002**
	Four	0.897 ± 0.063	-1.538	0.125	Δ Two = Δ Four	-0.254 ± 0.099	-2.55	**0.029**
log γ-T	One	0.579 ± 0.072	-4.390	< **0.001**	Δ One = Δ Two	0.044 ± 0.176	0.248	0.967
	Two	0.554 ± 0.069	-4.742	< **0.001**	Δ One = Δ Four	-0.495 ± 0.176	-2.81	**0.014**
	Four	0.949 ± 0.118	-0.420	0.675	Δ Two = Δ Four	-0.538 ± 0.176	-3.06	**0.006**
log SH	One	0.759 ± 0.055	-3.821	**0.002**	Δ One = Δ Two	-0.029 ± 0.096	-0.31	0.950
	Two	0.782 ± 0.050	-3.880	< **0.001**	Δ One = Δ Four	-0.276 ± 0.096	-2.87	**0.011**
	Four	1.000 ± 0.064	0	1	Δ Two = Δ Four	-0.246 ± 0.090	-2.74	**0.017**
log MN	One	0.783 ± 0.146	-1.313	0.216	Δ One = Δ Two	0.684 ± 0.228	2.999	**0.008**
	Two	0.395 ± 0.051	-7.086	< **0.001**	Δ One = Δ Four	0.494 ± 0.228	2.168	0.076
	Four	0.477 ± 0.063	-5.639	< **0.001**	Δ Two = Δ Four	-0.190 ± 0.185	-1.02	0.5603
sqrt (*E*)-C A	One	0.008 ± 0.003	2.525	0.021	Δ One = Δ Two	-0.013 ± 0.004	-2.95	**0.009**
	Two	0.021 ± 0.003	6.859	< **0.001**	Δ One = Δ Four	-0.009 ± 0.004	-2.04	0.1033
	Four	0.016 ± 0.003	5.540	< **0.001**	Δ Two = Δ Four	0.004 ± 0.004	0.932	0.6199
sqrt V	One	0.007 ± 0.003	2.175	0.042	Δ One = Δ Two	-0.041± 0.004	-9.26	< **0.001**
	Two	0.047 ± 0.003	15.28	< **0.001**	Δ One = Δ Four	-0.023 ± 0.004	-5.22	< **0.001**
	Four	0.030 ± 0.003	9.567	< **0.001**	Δ Two = Δ Four	0.018 ± 0.004	4.036	< **0.001**
log (*Z*)-3-H A	One	0.015 ± 0.009	-7.054	< **0.001**	Δ One = Δ Two	-0.198 ± 0.697	-0.28	0.956

	Two	0.019 ± 0.007	-10.80	< **0.001**		Δ One = Δ Four	-4.520 ± 0.697	-6.48	< **0.001**
	Four	1.411 ± 0.520	0.935	0.351		Δ Two = Δ Four	-4.322 ± 0.521	-8.30	< **0.001**

Table S6. Outputs of ANOVAs for the nine compounds that had significant community type x species interactions. The trait column indicates the type of data transformation applied to the compound. Compounds are abbreviated as follows: 2-APE: 2-amino phenyl ethanone; α-P: α-pinene; β-P: β-pinene; γ-T: γ-terpinene; SH: sabinene hydrate; MN: methyl nicotinate; (*E*)-C A: (*E*)-cinnamic aldehyde; V: veratrole; (*Z*)-3-H A: (*Z*)-3-hexenyl acetate. *P* values for the community type x species interactions are adjusted for performing 23 tests (e.g. univariate analyses on all compounds that were significantly correlated with one or both of the first two CAP axes).

Trait	Term	MS	NDF	DDF	*F*	*P*
sqrt 2-APE	Type	0.001	2	7.287	3.450	0.088
	Species	0.017	1	21.403	110.540	6.51 E-10
	Type x Species	0.001	2	20.725	6.960	0.022
log α-P	Type	1.709	2	6.219	2.236	0.186
	Species	55.313	1	29.081	72.358	2.21 E-09
	Type x Species	4.175	2	22.979	5.461	0.038
log β-P	Type	0.348	2	5.690	3.127	0.121
	Species	5.942	1	67.701	53.379	4.06 E-10
	Type x Species	0.693	2	40.299	6.225	0.022
log γ-T	Type	1.270	2	264	3.640	0.028
	Species	10.614	1	264	30.410	8.33 E-08
	Type x Species	2.011	2	264	5.761	0.022
log SH	Type	0.385	2	7.247	4.245	0.060
	Species	1.862	1	83.568	20.537	1.93 E-05
	Type x Species	0.487	2	51.073	5.374	0.029
log MN	Type	1.262	2	6.647	3.263	0.103
	Species	20.454	1	38.803	52.900	9.33E-09
	Type x Species	1.748	2	28.389	4.521	0.050
sqrt (*E*)-C A	Type	0.001	2	8.737	5.371	0.030
	Species	0.015	1	128.528	73.419	2.82E-14
	Type x Species	0.001	2	78.526	4.543	0.039
sqrt V	Type	0.009	2	264	43.138	< 2.2E-16
	Species	0.053	1	264	243.318	< 2.2E-16
	Type x Species	0.009	2	264	43.138	5.06 E-15
log (*Z*)-3-H A	Type	5.014	2	8.530	1.642	0.249
	Species	299.506	1	35.599	98.049	9.12 E-12
	Type x Species	125.399	2	29.843	41.052	3.12 E-08