Ecography

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Supplementary material

Appendix 1

Methods

Plant tissue chemistry

A novel element of this study was to understand whether genetic variation in plant traits influenced soil invertebrate communities. The detailed methods for chemical analyses were initially performed and reported in Anstett et al. (2015). Here we provide a concise description of those methods.

On July 8 2014 we collected two fully expanded leaves from each plant. We placed collections from the common garden into a chilled cooler, transferred samples into a -80^{o}C freezer, and then freeze-dried all tissue. Individual samples were pooled to create one sample for each *O. biennis* genotype. We ground samples to a fine powder in microcentrifuge tubes with 2mm stainless steal beads using a cryomill (Retsch, Newtown, PA, USA) for 1 min. We transferred 20 mg ± 0.5 mg of each sample to a new microcentrifuge tube and added 1.4 ml of acetone/water (80:20 V/V). We vortexed samples for 5 mins and macerated samples at 4^{o}C overnight. Tubes were then placed on a plenary shaker for 3 h (280 rotations/min) and then centrifuged at 16000 *g* for 10 min. We transferred the supernatant to a new tube and removed acetone using an Eppendorf concentrator (5301, Eppendorf AG). We re-extracted the pellet of plant tissue with 1.4 ml of acetone/water solution (80:20, V/V). We repeated the previous steps once (minus overnight maceration) and combined both samples. We then froze samples at -20^{o}C and freeze-dried them so that only the precipitate remained. We re-suspended the freeze-dried extract in 1 ml of distilled water, vortexed them for 5 min, and all samples at 16000 *g* for 10 min. We then transferred the supernatant to a new microcentrifuge tube. We quantified total phenolics spectrophotometrically using a modified protocol of Salminen and Karonen (2011). In 96-well plates we used 20 µl of extract from each sample, with all measurements performed in triplicate and averaged. Calibration was performed using gallic acid standards of 0, 10, 25, and 100 µg/ml.

We measured concentrations of the elagitannin compounds oenothein A, oenothein B and the oxidized form of oenothein A, using UPLC-DAD (Waters Acquity UPLC; Waters Corporation, Milford, MA, USA) as per Johnson *et al.* (2014). Oenothein B is a dimer of two tellimagrandin I subunits and oenothein A is the corresponding trimer. We thawed acetone extracted samples for 1-2 hours and vortexed for 5 min. We diluted 40 µl of each extract in 450 µl of water:acetonitrile (8:1, v/v), and filtered the dilution through a 0.20 µm polytetrafluoroethylene (PTFE) filter. As eluents we used a Waters Acquity UPLC BEH Phenyl (1.7 µm, 2.1 x 100 mm) column with Acetonitrile (CH_3CN) (A) and 0.1% aq. HCOOH (B). The gradient was: 0–0.5 min, 0.1% A (isocratic); 0.5–5 min, 0.1–30% A in B (linear gradient); the flow rate was 0.5 ml min^{-1}. We recorded UV spectra for each peak between 195 and 500 nm. To facilitate quantitative analysis, we injected 5 µl of the dilute extract into the UPLC column and quantified compounds as oenothein B equivalents.

References

Anstett, D. N. et al. 2015. Can genetically based clines in plant defence explain greater herbivory at higher latitudes? -*Ecol Lett* **18**: 1376–1386.

Johsnon, M. T. J. et al. 2014. Macroevolution of plant defenses against herbivores in the evening primroses. -*New Phytol*. **203**: 267-279.

Salminen, J. P., and M. Karonen. 2011. Chemical ecology of tannins and other phenolics: we need a change in approach. –*Funct. Ecol*. **25**: 325–338.

Figures

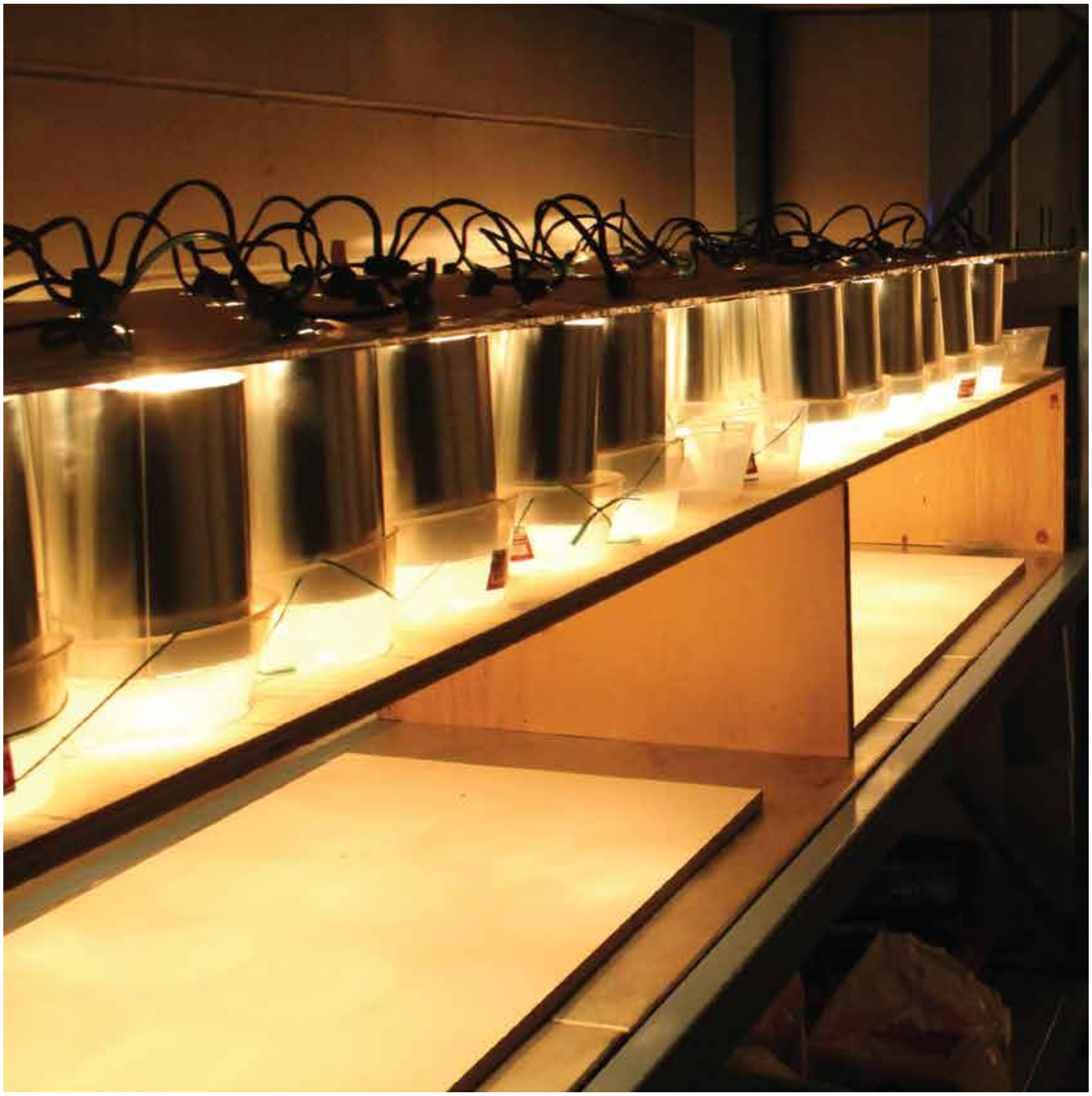

Figure A1. The Berlese-Tullgren funnel system used to extract soil invertebrates from soil cores. We used 5 W clear incandescent light bulbs in each funnel for 3 days to extract soil invertebrates. Day light intensity was kept at 50% with a dimmer switch and increased to 100% for days 2 and 3.

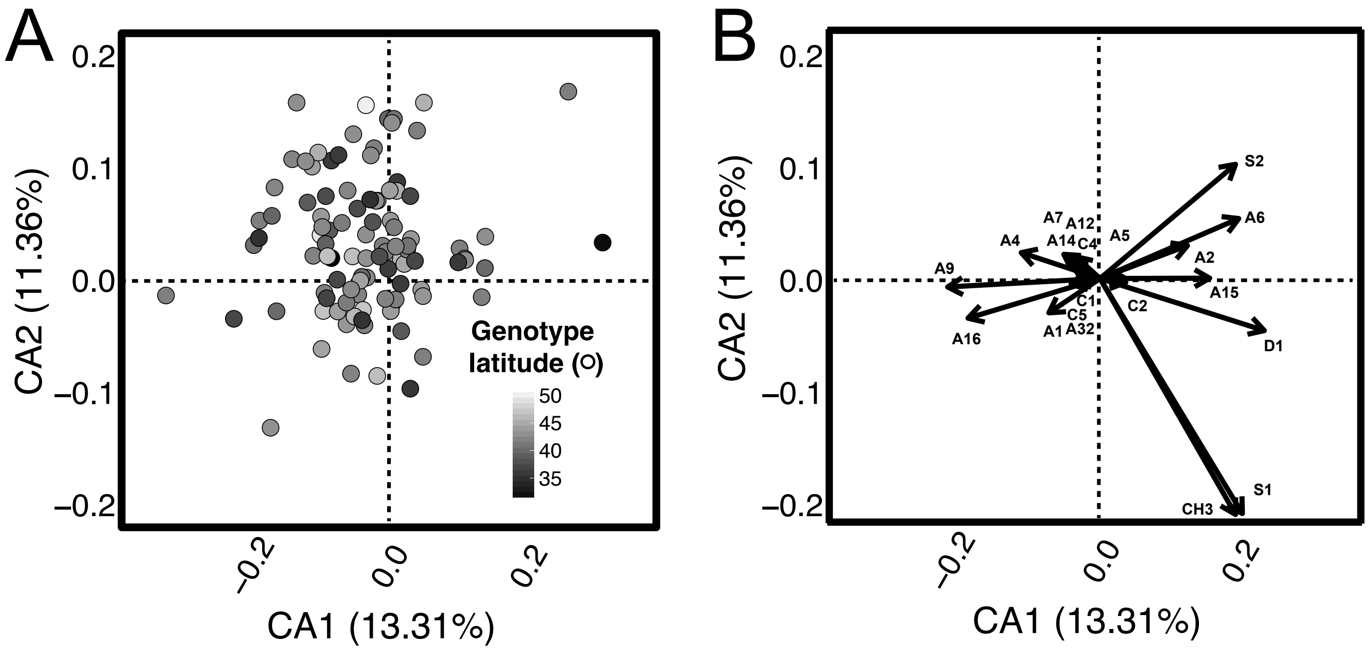

Figure A2. Ordination plots from correspondence analysis depicting (A) soil invertebrate community composition occurring with *O. biennis* genotypes, and (B) the covariation among common soil invertebrates. A) Each point represents the mean genotype score along each CA axis (calculated from individual plant scores). Genotypes significantly differed in the composition of their soil invertebrate communities (Table A4). Plant genotype latitudinal origin had no effect on community composition. B) Vectors represent how the abundance of invertebrate morphospecies are associated with CA axes. The text refers to the specific morphospecies ID (A = acari; C = collembola; CH = chilopod; D = diplopod; S = symphylid; Table A2).

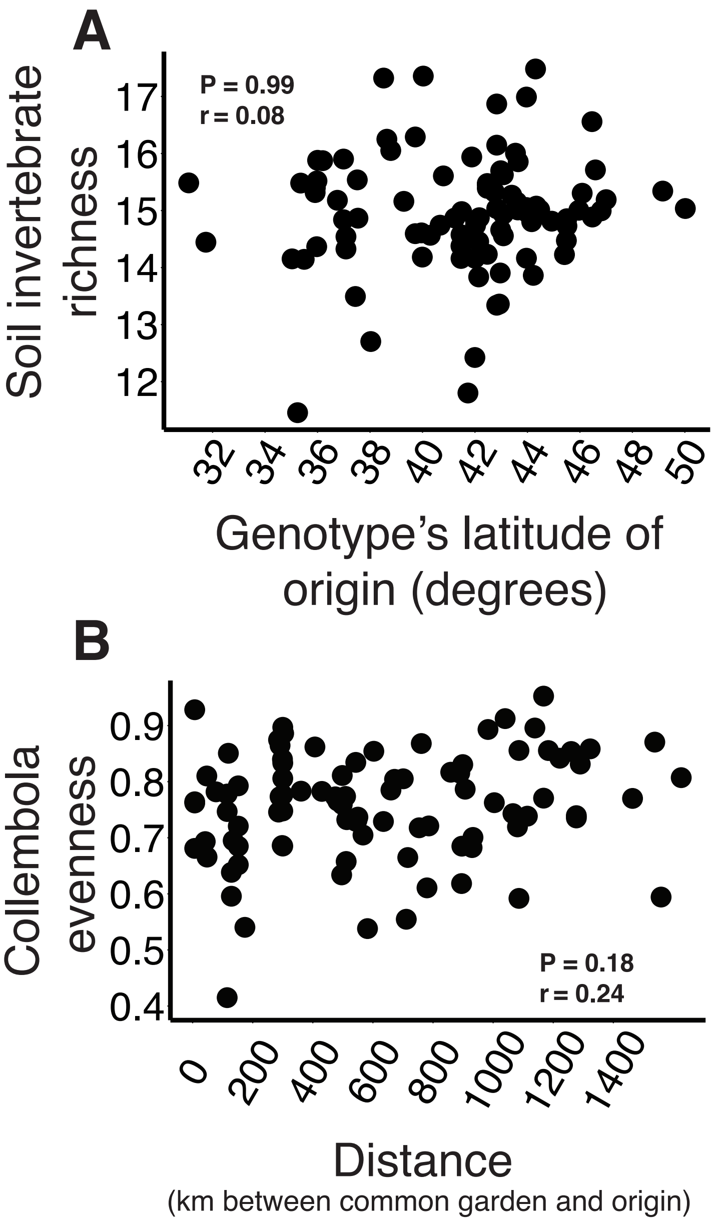

Figure A3. The effect of geographic attributes of plant genotypes on soil invertebrate communities (P values adjusted for multiple hypothesis testing). A) Soil invertebrate richness associated with *O. biennis* genotypes was unrelated to a plant genotype's latitude of origin. B) Soil Collembola community evenness increases with distance between the common garden and the geographic origin of *O. biennis* genotypes but the result is no longer significant after correcting for multiple hypothesis testing.

Tables

Table A1| The effects of genetic variation and population origin on phenotypic traits of *O. biennis*. These analyses used a subset (103 of the original 137 genotypes) of the data from Anstett et al. (2015). For each trait we tested for the effect of plant genotype, latitude and longitude of origin, and the distance between the original population and the common garden. Significant effects of plant genotype signify traits that vary among *Oenothera biennis* genotypes. We also provide the broad-sense heritability (H^2) and coefficient of genetic variation (CV) of each trait ($\sqrt{\text{genetic}}$ variance/mean). Tissue chemistry was measured on pooled samples and as a result we are unable to estimate whether they significantly vary among plant genotypes. For latitude and longitude of origin, and the distance between the original population and the common garden we provide the Pearson product moment correlation coefficient with each trait.

Table A2| The phylum, class, and order assigned to each of our 190 morphospecies.

Table A3 | The effect of genotype and spatial block on the abundance of the most common soil invertebrate taxa. Model refers to the error distribution (negative binomial or Poisson) used to model morphospecies abundance. Common taxa were defined as those that occurred in 25% of samples and had a total relative abundance > 1%. Starred results indicate significance after adjusting for multiple testing using the false discovery rate.

Table A4 | The effect of genotype and spatial block on soil invertebrate community composition. We performed linear mixed effect models with plant genotype and experimental block as random effects. Scores of individual communities along each of the first 4 correspondence analysis axes were used as response variables. Starred results indicate significance after adjusting for multiple testing using the false discovery rate.

Table A5 | Multiple regression results for the effect of plant phenotypic traits and geographic traits on soil invertebrate community diversity and abundance. We identified the best fitting model using Akaike information criterion (AIC) scores and report trait coefficients averaged across the best fitting models (ΔAIC <2) and weighted by each model's AIC score. Starred results indicate significance after adjusting for multiple testing using the false discovery rate.

Table A6 | Multiple regression results for the effect of plant phenotypic traits and geographic traits on soil invertebrate community composition (CA axes). We identified the best fitting model using Akaike information criterion (AIC) scores and report trait coefficients averaged across the best fitting models (ΔAIC <2) and weighted by each model's AIC score. Note that no results are significant after adjusting for multiple testing using the false discovery rate.

Table A7 | Multiple regression results for the effect of plant phenotypic traits and geographic traits on individual morphospecies. We identified the best fitting model using Akaike information criterion (AIC) scores and report trait coefficients averaged across the best fitting models (ΔAIC <2) and weighted by each model's AIC score. Starred results indicate significance after adjusting for multiple testing using the false discovery rate.

Table A1

	Latitude		Longitude		Distance		Genotype			
Trait	r	P value	r	P value	r	P value	χ^2	P value	H^2	CV
Aboveground biomass	-0.19	0.097	0.09	0.62	-0.13	0.29	26.29	**<0.001**	0.18	0.40
Belowground biomass	-0.26	**0.025**	0.03	0.89	-0.04	0.72	22.29	**<0.001**	0.21	0.45
Bolting date	0.10	0.377	0.10	0.61	-0.03	0.79	127.15	**<0.001**	0.67	0.04
Flowering date	-0.57	**<0.001**	-0.22	0.12	0.28	**0.02**	91.29	**<0.001**	0.4	0.08
Growth rate	-0.04	0.740	0.03	0.89	0.09	0.43	8.08	**0.005**	0.12	0.07
Final height	-0.33	**0.003**	-0.06	0.82	0.09	0.43	21.27	**<0.001**	0.21	0.61
Leaf herbivory	0.30	**0.001**	-0.05	0.82	-0.20	0.12	19.72	**<0.001**	0.16	0.17
Specific leaf area	-0.16	0.158	-0.01	0.94	0.13	0.29	13.57	**<0.001**	0.14	0.09
Leaf toughness	-0.24	0.036	-0.01	0.94	0.22	0.08	3.33	0.070	0.06	0.08
Leaf trichome number	-0.16	0.158	-0.04	0.85	0.12	0.31	6.47	**0.01**	0.09	0.13
Leaf water content	-0.05	0.686	0.06	0.82	-0.10	0.43	5.06	**0.02**	0.06	0.03
Leaf total phenolics	-0.10	0.390	0.01	0.94	0.08	0.51	NA	NA	NA	NA
Leaf oenothein B	0.61	**<0.001**	0.31	**0.02**	-0.42	**0.001**	NA	NA	NA	NA
Leaf oenothein A	-0.53	**<0.001**	-0.25	0.06	0.30	**0.01**	NA	NA	NA	NA

Table A2

Phylum	Class	Order	Morphospecies
Arthropoda			
	Arachnida		
		Araneae	Araneae 1
		Araneae	Araneae 2
		Araneae	Araneae 3
		Araneae	Araneae 4
		Araneae	Araneae 5
		Araneae	Araneae 6
		Araneae	Araneae 7
		Araneae	Araneae 8
		Araneae	Araneae 9
		Oribatida	Acari 1
		Mesostigmata	Acari 2
		Mesostigmata	Acari 3
		Unknown	Acari 4
		Unknown	Acari 5
		Mesostigmata	Acari 6
		Oribatida	Acari 7
		Oribatida	Acari 8
		Oribatida	Acari 9
		Mesostigmata	Acari 10
		Oribatida	Acari 11
		Mesostigmata	Acari 12
		Oribatida	Acari 13
		Oribatida	Acari 14
		Oribatida	Acari 15
		Mesostigmata	Acari 16
		Mesostigmata	Acari 17
		Oribatida	Acari 18
		Mesostigmata	Acari 19
		Oribatida	Acari 20
		Mesostigmata	Acari 21
		Mesostigmata	Acari 22
		Mesostigmata	Acari 23
		Unknown	Acari 24
		Mesostigmata	Acari 25
		Mesostigmata	Acari 26
		Mesostigmata	Acari 27
		Mesostigmata	Acari 28
		Oribatida	Acari 29
		Mesostigmata	Acari 30

Phylum	**Class**	**Order**	**Morphospecies**
		Mesostigmata	Acari 31
		Mesostigmata	Acari 32
		Oribatida	Acari 33
		Mesostigmata	Acari 34
		Mesostigmata	Acari 35
		Mesostigmata	Acari 36
		Prostigmata	Acari 37
		Oribatida	Acari 38
		Prostigmata	Acari 39
		Oribatida	Acari 40
		Oribatida	Acari 41
		Oribatida	Acari 42
		Oribatida	Acari 43
		Mesostigmata	Acari 44
		Mesostigmata	Acari 45
		Mesostigmata	Acari 46
		Oribatida	Acari 47
		Oribatida	Acari 48
		Oribatida	Acari 49
		Mesostigmata	Acari 50
		Mesostigmata	Acari 51
		Pseudoscorpionida	Pseudoscorpion 1
	Chilopoda		
		Geophilomorpha	Chilopod 1
		Geophilomorpha	Chilopod 2
		Geophilomorpha	Chilopod 3
		Geophilomorpha	Chilopod 4
		Geophilomorpha	Chilopod 5
		Geophilomorpha	Chilopod 6
	Crustacea		
		Isopoda	Isopod 1
	Entognatha		
		Symphypleona	Collembola 1
		Symphypleona	Collembola 2
		Entomobryomorpha	Collembola 3
		Entomobryomorpha	Collembola 4
		Entomobryomorpha	Collembola 5
		Entomobryomorpha	Collembola 6
		Entomobryomorpha	Collembola 7
		Symphypleona	Collembola 8
		Entomobryomorpha	Collembola 9

Phylum	Class	Order	Morphospecies
		Entomobryomorpha	Collembola 10
		Entomobryomorpha	Collembola 11
		Entomobryomorpha	Collembola 12
		Entomobryomorpha	Collembola 13
		Poduromorpha	Collembola 14
		Entomobryomorpha	Collembola 15
		Poduromorpha	Collembola 16
		Symphypleona	Collembola 17
	Diplopoda		
		Julida	Diplopod 1
		Julida	Diplopod 2
	Hexapoda		
		Coleoptera	Insect 1
		Coleoptera	Insect 2
		Hymenoptera	Insect 3
		Dermaptera	Insect 4
		Dermaptera	Insect 5
		Coleoptera	Insect 6
		Coleoptera	Insect 7
		Coleoptera	Insect 8
		Hymenoptera	Insect 9
		Hemiptera	Insect 10
		Hymenoptera	Insect 11
		Hymenoptera	Insect 12
		Hemiptera	Insect 13
		Coleoptera	Insect 14
		Coleoptera	Insect 15
		Diptera	Insect 16
		Hymenoptera	Insect 17
		Coleoptera	Insect 18
		Dermaptera	Insect 19
		Coleoptera	Insect 20
		Coleoptera	Insect 21
		Dermaptera	Insect 22
		Coleoptera	Insect 23
		Coleoptera	Insect 24
		Coleoptera	Insect 25
		Dermaptera	Insect 26
		Hemiptera	Insect 27
		Hemiptera	Insect 28
		Coleoptera	Insect 29
		Hemiptera	Insect 30

Phylum	Class	Order	Morphospecies
		Hemiptera	Insect 31
		Coleoptera	Insect 32
		Coleoptera	Insect 33
		Coleoptera	Insect 34
		Hymenoptera	Insect 35
		Hymenoptera	Insect 36
		Hymenoptera	Insect 37
		Hymenoptera	Insect 38
		Hemiptera	Insect 39
		Coleoptera	Insect 40
		Coleoptera	Insect 41
		Hymenoptera	Insect 42
		Hemiptera	Insect 43
		Diptera	Insect 44
		Diptera	Insect 45
		Diptera	Insect 46
		Coleoptera	Insect 47
		Coleoptera	Insect 48
		Hymenoptera	Insect 49
		Coleoptera	Insect 50
		Hemiptera	Insect 51
		Coleoptera	Insect 52
		Coleoptera	Insect 53
		Hymenoptera	Insect 54
		Hymenoptera	Insect 55
		Coleoptera	Insect 56
		Coleoptera	Insect 57
		Coleoptera	Insect 58
		Hymenoptera	Insect 59
		Coleoptera	Insect 60
		Coleoptera	Insect 61
		Hymenoptera	Insect 62
		Hymenoptera	Insect 63
		Coleoptera	Insect 64
		Coleoptera	Insect 65
		Coleoptera	Insect 66
		Hemiptera	Insect 67
		Hemiptera	Insect 68
		Hemiptera	Insect 69
		Diptera	Insect 70
		Coleoptera	Insect 71

Phylum	**Class**	**Order**	**Morphospecies**
		Hemiptera	Insect 72
		Hymenoptera	Insect 73
		Hemiptera	Insect 74
		Coleoptera	Insect 75
		Coleoptera	Insect 76
		Coleoptera	Insect 77
		Diptera	Insect 78
		Coleoptera	Insect 79
		Hemiptera	Insect 80
		Hymenoptera	Insect 81
		Coleoptera	Insect 82
		Coleoptera	Insect 83
		Coleoptera	Insect 84
		Coleoptera	Insect 85
		Hemiptera	Insect 86
		Coleoptera	Insect 87
		Hemiptera	Insect 88
		Hemiptera	Insect 89
		Hemiptera	Insect 90
		Hemiptera	Insect 91
		Coleoptera	Insect 92
	Symphyla		
		Scolopendrellidae (Family)	Symphylid 1
		Scolopendrellidae (Family)	Symphylid 2
Mollusca			
	Gastropoda		
		Unknown	Gastropod 1
		Unknown	Gastropod 2
		Unknown	Gastropod 3
		Unknown	Gastropod 4
		Unknown	Gastropod 5
		Unknown	Gastropod 6
		Unknown	Gastropod 7
		Unknown	Gastropod 8
		Unknown	Gastropod 9

Table A3

	Genotype		Block		Model
Morphospecies	$\chi 2$	P value	$\chi 2$	P value	
C1	0.9	0.36	123.0	**2.20E-16**	Negative binomial
C2	56.7	**5.00E-14***	189.0	**2.20E-16**	Poisson
C4	64.1	**1.20E-15***	21.1	**4.31E-06**	Poisson
C5	0.5	0.5	104.0	**2.20E-16**	Negative binomial
CH1	9.3	**0.002***	7.0	**8.00E-03**	Poisson
CH2	0.0	1	0.1	7.20E-01	Negative binomial
CH3	3.8	**0.05**	7.2	**7.00E-03**	Poisson
D1	1.0	0.33	28.7	**8.49E-08**	Negative binomial
M1	27.0	**2.60E-07***	9.4	**2.00E-03**	Negative binomial
M12	7.7	**0.006**	23.2	**1.48E-06**	Poisson
M14	18.5	**1.68E-05***	65.2	**6.96E-16**	Poisson
M16	3.8	**0.05**	46.6	**8.70E-12**	Negative binomial
M2	0.0	1	12.0	**5.00E-04**	Negative binomial
M4	6.5	**0.011**	24.3	**8.11E-07**	Poisson
M5	0.0	1	70.3	**2.20E-16**	Negative binomial
M6	0.0	1	30.6	**3.10E-08**	Negative binomial
M7	20.8	**5.20E-06***	37.3	**1.04E-09**	Poisson
M9	1.3	0.25	43.4	**4.41E-11**	Negative binomial
MW	0.0	0.88	54.8	**1.36E-13**	Poisson

Table A4

	Axis 1		Axis 2		Axis 3		Axis 4	
	$\chi 2$	P value	$\chi 2$	P value	$\chi 2$	P value	$\chi 2$	P value
Block	0.77	0.38	17.42	**<0.001**	37.21	**<0.001**	6.09	**0.014**
Genotype	89.13	**<0.001***	36.86	**<0.001***	23.14	**<0.001***	11.25	**<0.001***

Table A5

	Total community							
	Species richness		Simpson's Diversity		Evenness		Total abundance	
Trait	Estimate	P value	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.344	**0.052**	-0.031	0.650	0.000	0.961	-0.003	0.533
Bolting date	-0.011	0.832	-0.143	**0.042**	-0.006	0.113	0.000	0.814
Flowering date	0.010	0.847	0.001	0.960	0.000	0.848	0.000	0.858
Specific leaf area	0.000	0.991	0.001	0.942	0.000	0.949	-0.001	0.806
Trichome density	0.056	0.591	0.024	0.662	0.000	0.858	0.000	0.955
Leaf water content	0.277	**0.024**	0.000	0.982	-0.004	0.322	0.007	0.162
Herbivory	-0.031	0.682	0.000	0.975	0.000	0.785	-0.001	0.788
Chemistry PC 1	0.015	0.803	0.001	0.947	0.000	0.962	0.000	0.963
Leaf total phenolics	0.054	0.602	0.024	0.668	0.000	0.913	0.000	0.866
Latitude	0.009	0.611	0.081	0.242	0.003	0.361	-0.004	0.383
Longitude	0.005	0.725	-0.029	0.677	-0.004	0.287	0.004	0.309
Distance	0.021	0.185	-0.017	0.808	-0.001	0.822	0.002	0.617
	Collembola community							
	Species richness		Simpson's Diversity		Evenness		Total abundance	
Trait	Estimate	P value	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.006	0.754	-0.001	0.912	0.005	0.592	0.000	0.986
Bolting date	0.024	0.424	0.006	0.659	-0.004	0.589	0.002	0.776
Flowering date	-0.001	0.894	0.000	0.979	0.000	0.899	0.000	0.995
Specific leaf area	0.004	0.784	0.000	0.957	0.000	0.931	-0.002	0.792
Trichome density	-0.062	**0.054**	-0.005	0.724	0.007	0.446	-0.001	0.857
Leaf water content	0.016	0.543	0.001	0.919	0.000	0.881	0.005	0.665
Herbivory	-0.090	**0.002***	-0.007	0.627	0.003	0.627	-0.014	0.369
Chemistry PC 1	-0.014	0.601	-0.003	0.781	0.000	0.962	0.000	0.948
Leaf total phenolics	0.028	0.388	0.000	0.935	-0.005	0.544	0.002	0.783
Latitude	-0.007	0.804	-0.007	0.804	0.009	0.292	0.005	0.725
Longitude	0.020	0.516	0.020	0.516	-0.010	0.234	0.021	0.185
Distance	-0.002	0.945	-0.002	0.945	0.017	**0.033**	0.009	0.611

Table A5 continued

	Insect community							
	Species richness		Simpson's Diversity		Evenness		Total abundance	
Trait	Estimate	P value	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.007	0.781	-0.025	0.569	0.000	0.380	-0.001	0.822
Bolting date	-0.001	0.958	0.000	0.976	0.000	0.905	0.000	0.984
Flowering date	-0.001	0.921	0.009	0.745	0.000	0.514	0.000	0.966
Specific leaf area	-0.001	0.946	0.000	0.965	0.000	0.906	0.000	0.976
Trichome density	0.083	0.129	0.058	0.292	0.000	0.847	0.002	0.808
Leaf water content	0.000	0.977	0.001	0.921	0.000	0.791	0.000	1.000
Herbivory	-0.002	0.882	-0.002	0.866	0.000	0.970	-0.001	0.881
Chemistry PC 1	0.000	0.976	0.011	0.731	0.000	0.771	0.000	0.949
Leaf total phenolics	-0.005	0.816	-0.003	0.856	0.000	0.946	-0.001	0.842
Latitude	-0.004	0.931	-0.004	0.931	0.000	0.544	0.011	0.455
Longitude	0.028	0.547	0.028	0.547	0.000	0.781	0.021	0.126
Distance	0.028	0.537	0.028	0.537	0.000	0.178	0.021	0.154

	Acari community							
	Species richness		Simpson's Diversity		Evenness		Total abundance	
Trait	Estimate	P value	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.031	0.545	0.000	0.997	-0.012	**0.045**	-0.025	0.087
Bolting date	-0.014	0.686	-0.015	0.607	-0.006	**0.023**	-0.004	0.803
Flowering date	0.000	0.976	0.004	0.835	0.000	0.933	-0.006	0.702
Specific leaf area	0.001	0.934	-0.001	0.951	0.000	0.963	0.020	0.172
Trichome density	0.000	0.977	-0.003	0.857	0.000	0.946	0.001	0.946
Leaf water content	0.110	**0.014**	-0.001	0.918	-0.002	0.708	0.027	**0.048**
Herbivory	-0.002	0.900	0.008	0.716	0.008	**0.032**	-0.003	0.812
Chemistry PC 1	-0.002	0.869	-0.020	0.575	-0.001	0.835	-0.001	0.938
Leaf total phenolics	0.010	0.741	0.003	0.845	0.000	0.958	0.001	0.945
Latitude	0.084	0.103	0.007	0.830	-0.004	0.582	0.023	0.098
Longitude	0.017	0.725	-0.001	0.982	0.001	0.917	-0.006	0.640
Distance	0.075	0.164	0.028	0.425	0.005	0.494	0.010	0.509

Table A6

	Community Composition							
	CA1		CA2		CA3		CA4	
Trait	Estimate	P value	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	0.001	0.678	-0.001	0.794	-0.002	0.751	0.000	0.825
Bolting date	-0.004	0.352	-0.009	0.346	-0.013	**0.034**	0.012	**0.019**
Flowering date	0.002	0.540	-0.014	0.116	-0.002	0.744	0.003	0.512
Specific leaf area	0.000	0.908	0.000	0.963	0.002	0.715	0.000	0.878
Trichome density	0.000	0.931	0.000	0.967	0.000	0.934	0.000	0.947
Leaf water content	0.000	0.965	0.000	0.996	0.000	0.988	0.000	0.961
Herbivory	0.001	0.726	0.001	0.824	0.000	0.850	-0.001	0.804
Chemistry PC 1	-0.004	0.269	0.009	0.303	0.017	**0.013**	-0.006	0.330
Leaf total phenolics	0.000	0.810	0.001	0.844	0.000	0.867	0.000	0.883
Latitude	0.002	0.507	0.000	0.975	0.001	0.874	0.000	0.930
Longitude	0.001	0.863	-0.003	0.640	0.003	0.593	-0.007	0.248
Distance	0.001	0.643	0.001	0.871	0.016	**0.035**	0.007	0.262

Table A7

	Collembola 2		Collembola 4		Chilopod 1	
Trait	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.041	0.710	0.004	0.867	0.000	0.986
Bolting date	0.216	0.100	0.000	0.994	0.054	0.220
Flowering date	-0.050	0.644	0.025	0.648	-0.001	0.922
Specific leaf area	-0.038	0.674	-0.001	0.978	0.001	0.956
Trichome density	0.002	0.939	-0.002	0.937	0.009	0.738
Leaf water content	0.005	0.897	0.077	0.312	0.001	0.959
Herbivory	-0.117	0.346	-0.178	**0.006***	-0.003	0.854
Chemistry PC 1	-0.221	0.169	0.010	0.781	-0.001	0.957
Leaf total phenolics	0.175	0.256	0.000	0.986	-0.070	0.111
Latitude	0.054	0.658	-0.072	0.347	0.085	0.061
Longitude	0.211	0.095	0.126	0.105	-0.011	0.801
Distance	0.021	0.876	0.119	0.145	0.085	0.085

	Acari 1		Acari 7		Acari 14	
Trait	Estimate	P value	Estimate	P value	Estimate	P value
Growth PC 1	-0.106	0.800	-0.181	**0.031**	0.001	0.974
Bolting date	0.019	0.921	-0.001	0.972	0.187	**0.044**
Flowering date	0.007	0.966	-0.003	0.905	-0.003	0.923
Specific leaf area	-0.090	0.787	0.082	0.321	0.001	0.979
Trichome density	-0.002	0.990	-0.003	0.899	-0.008	0.839
Leaf water content	-0.019	0.917	0.037	0.581	0.002	0.951
Herbivory	0.020	0.912	-0.011	0.768	0.012	0.781
Chemistry PC 1	0.019	0.918	-0.008	0.819	-0.004	0.909
Leaf total phenolics	0.236	0.662	0.002	0.938	-0.189	**0.048**
Latitude	-0.099	0.882	0.063	0.376	0.117	0.241
Longitude	-0.753	0.260	0.026	0.724	-0.088	0.395
Distance	0.680	0.311	-0.068	0.349	-0.123	0.253