ARCTIC, ANTARCTIC, AND ALPINE RESEARCH

Online Supplemental Material

Article title: Side by side? Vascular plant, invertebrate and microorganism distribution patterns along an alpine to nival elevation gradient

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Supplemental figures

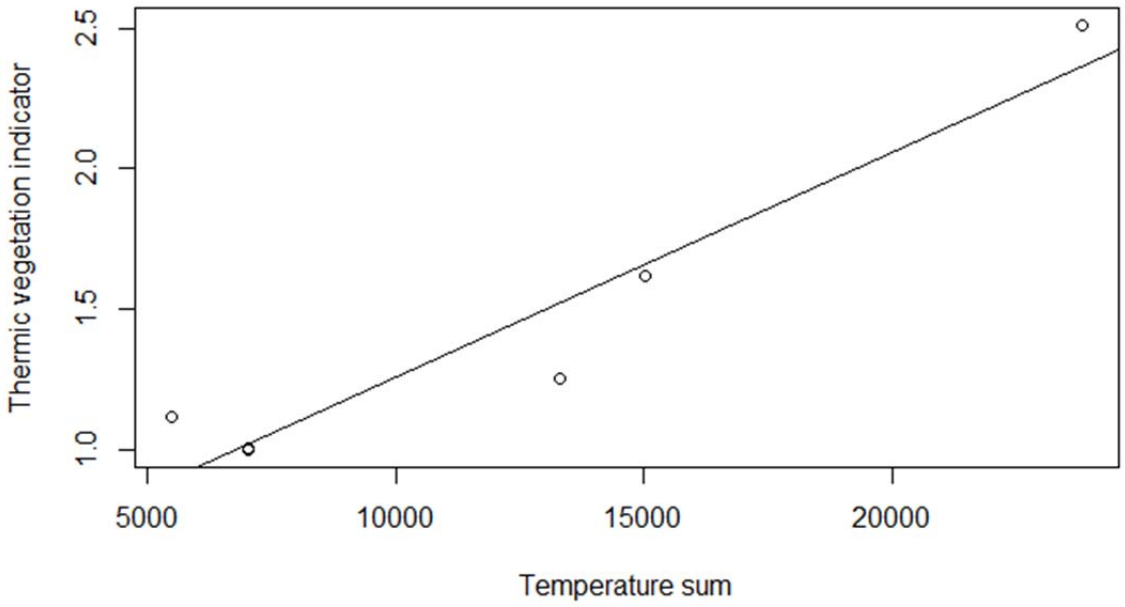

Fig. S1 Correlation between thermic vegetation indicator and temperature sum on Mount Schrankogel. The thermic indicator per plot was calculated as the mean altitudinal rank (1 = subnival-nival, 2 = alpine-subnival, 3 = alpine, 4 = treeline-alpine species) weighted with the respective species' cover (after Gottfried et al. 2012). The shown thermic vegetation indicator values are means from five plots in the vicinity of each logger. Temperature sums represent annual mean values of hourly measurements from soil temperature loggers (n=6) summed up above a threshold of 3 °C in the period 01.08.2013 – 31.07.2014. The correlation was significant (linear model; $p = 0.003$; $R^2 = 0.915$).

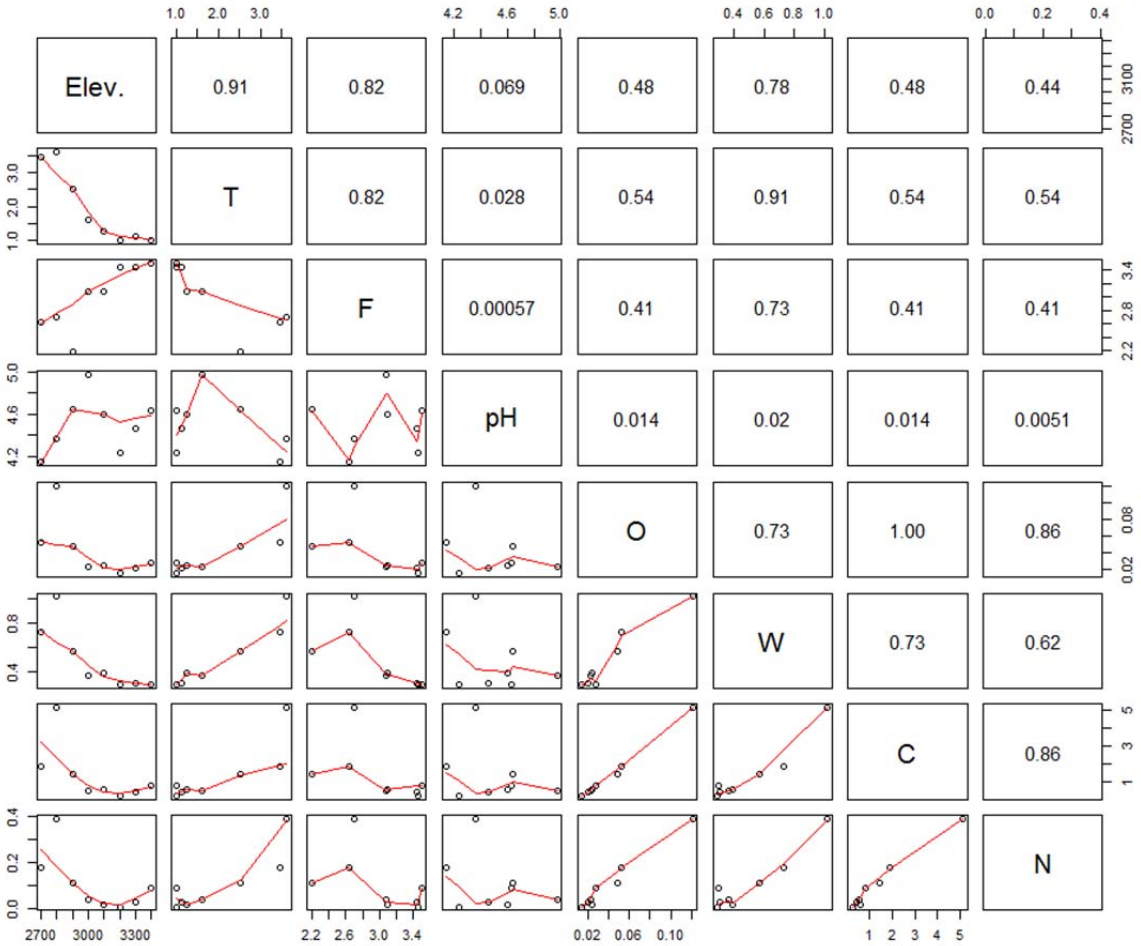

Fig. S2 Pairplot of correlations between elevation and ecological variables thermic vegetation indicator (T), soil moisture indicator (F), maximum water holding capacity (W), organic matter (O), C content (C), and N content (N). In the upper panel R^2 of Spearman correlations and in the lower panel scatterplots with a Lowess smooth are shown.

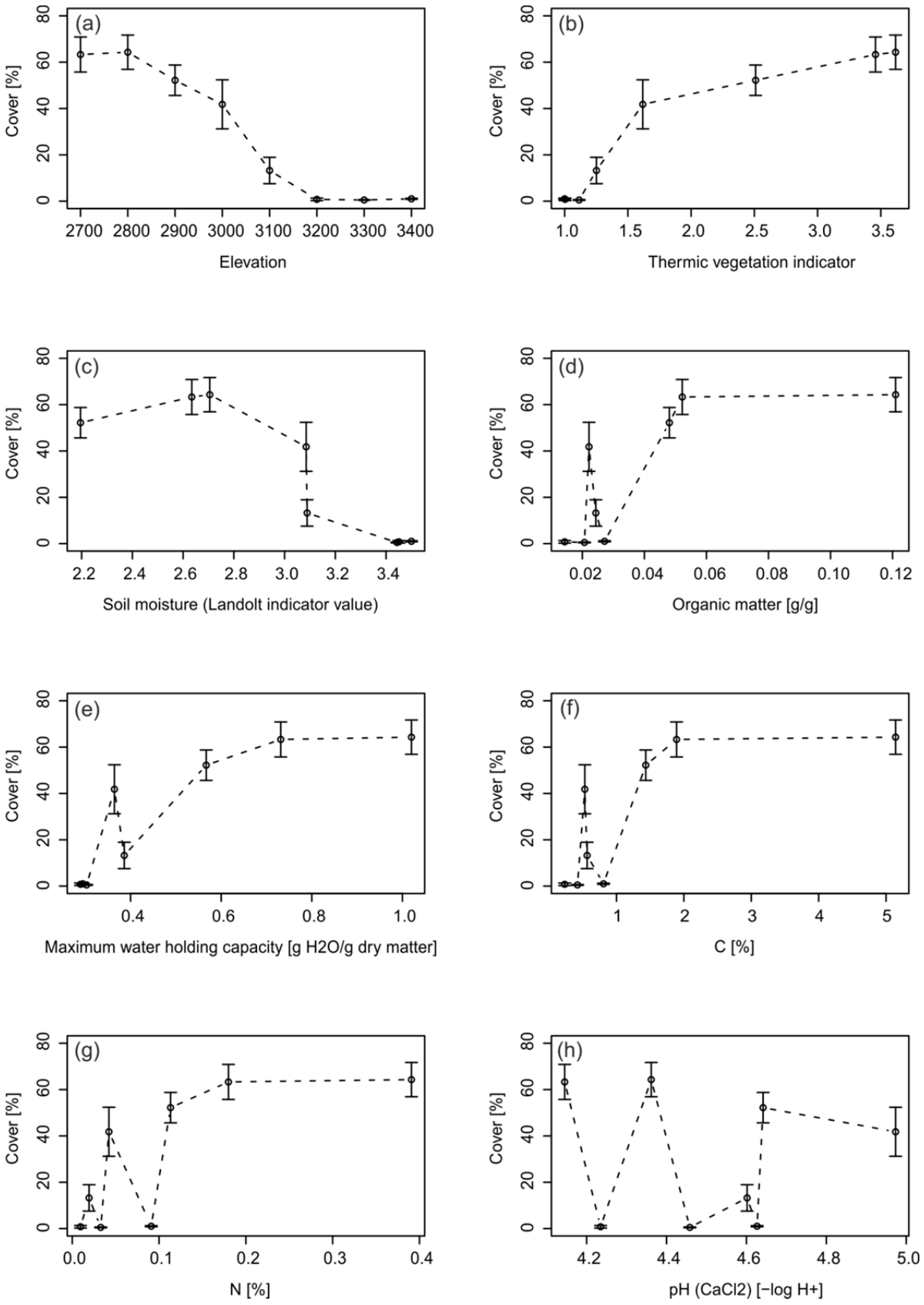

Fig. S3: Abundance of vascular plants along the (**a**) elevational, (**b**) thermic vegetation indicator, (**c**) soil moisture Landolt indicator value, (**d**) maximum water holding capacity, (**e**) soil organic matter content, (**f**) soil C content, (**g**) soil N content, and (**h**) soil pH gradient. Values are means ± standard error of raw data.

Fig. S4 Abundance of animal and microbial group compared to vascular plant abundance along the

(**a**) soil moisture Landolt indicator value,

(**b**) maximum water holding capacity,

(**c**) soil organic matter content,

(**d**) soil C content,

(**e**) soil N content, and

(**f**) soil pH gradients.

Values are means ± standard error of raw data. Vascular plant abundance (percent cover) is illustrated in each subplot in grey. Significant deviations of the abundance patterns of animal and microbial groups from that of plants are indicated with asterisks (significance levels: *p<0.05, **p<0.01, ***p<0.001; penalized quasi-likelihood models with a Poisson distribution; main text, Table 2).

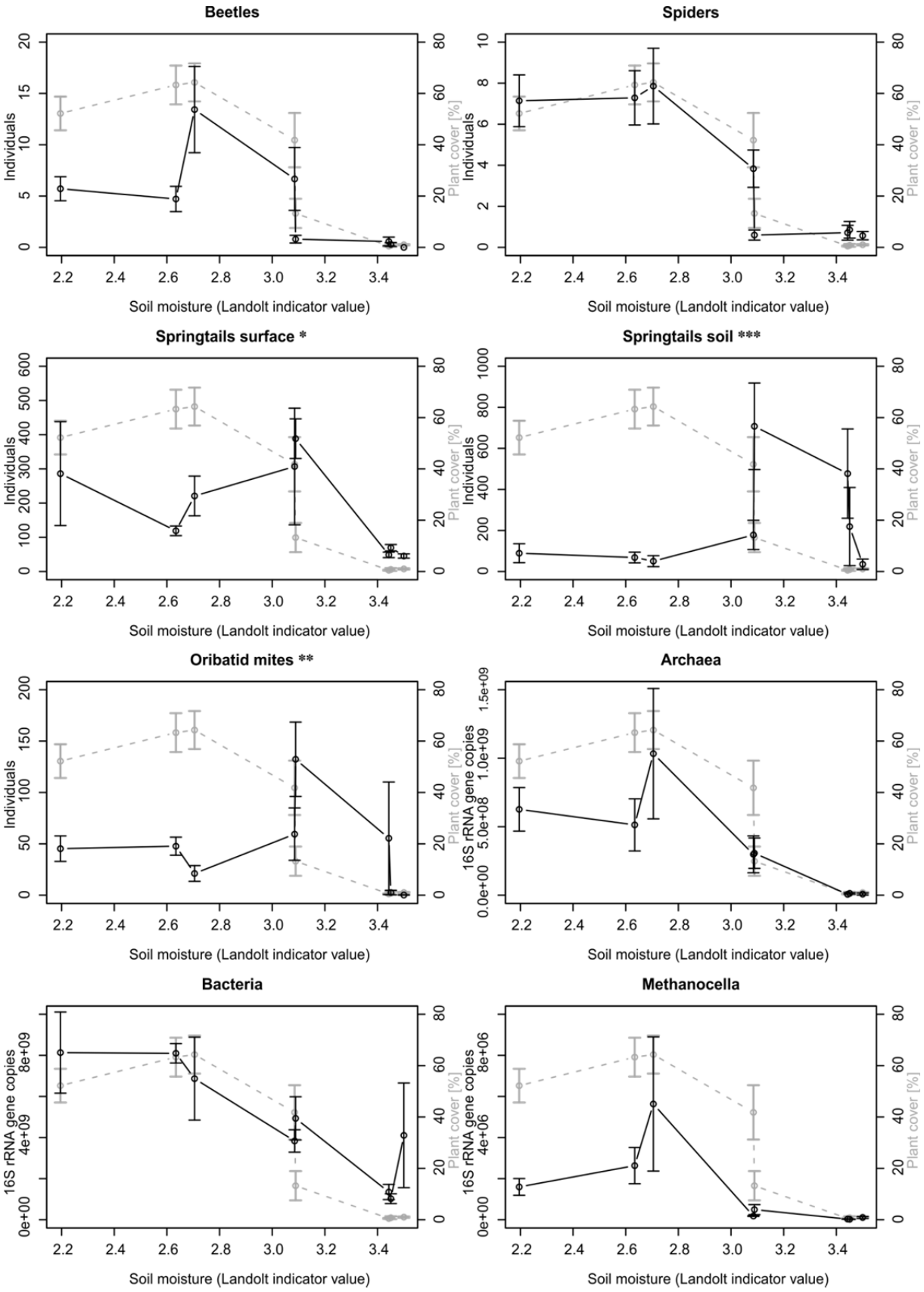
Beetles
Individuals
Plant cover [%]
Soil moisture (Landolt indicator value)
Spiders
Springtails surface *
Springtails soil ***
Oribatid mites **
Archaea
16S rRNA gene copies
Bacteria
Methanocella

Fig. S4a

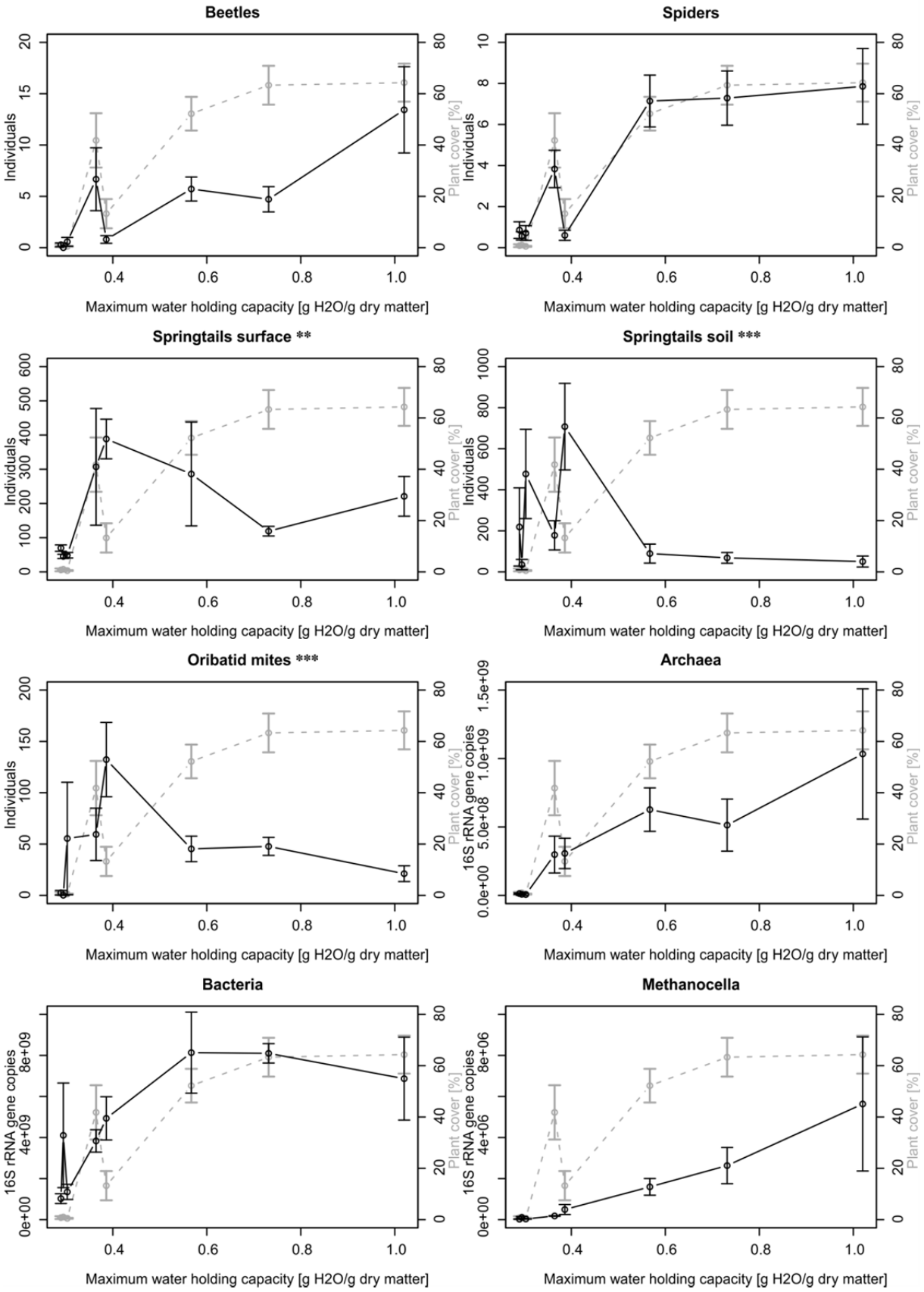
Beetles
Individuals
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Spiders
Individuals
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Springtails surface **
Individuals
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Springtails soil ***
Individuals
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Oribatid mites ***
Individuals
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Archaea
16S rRNA gene copies
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Bacteria
16S rRNA gene copies
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]
Methanocella
16S rRNA gene copies
Plant cover [%]
Maximum water holding capacity [g H2O/g dry matter]

Fig. S4b

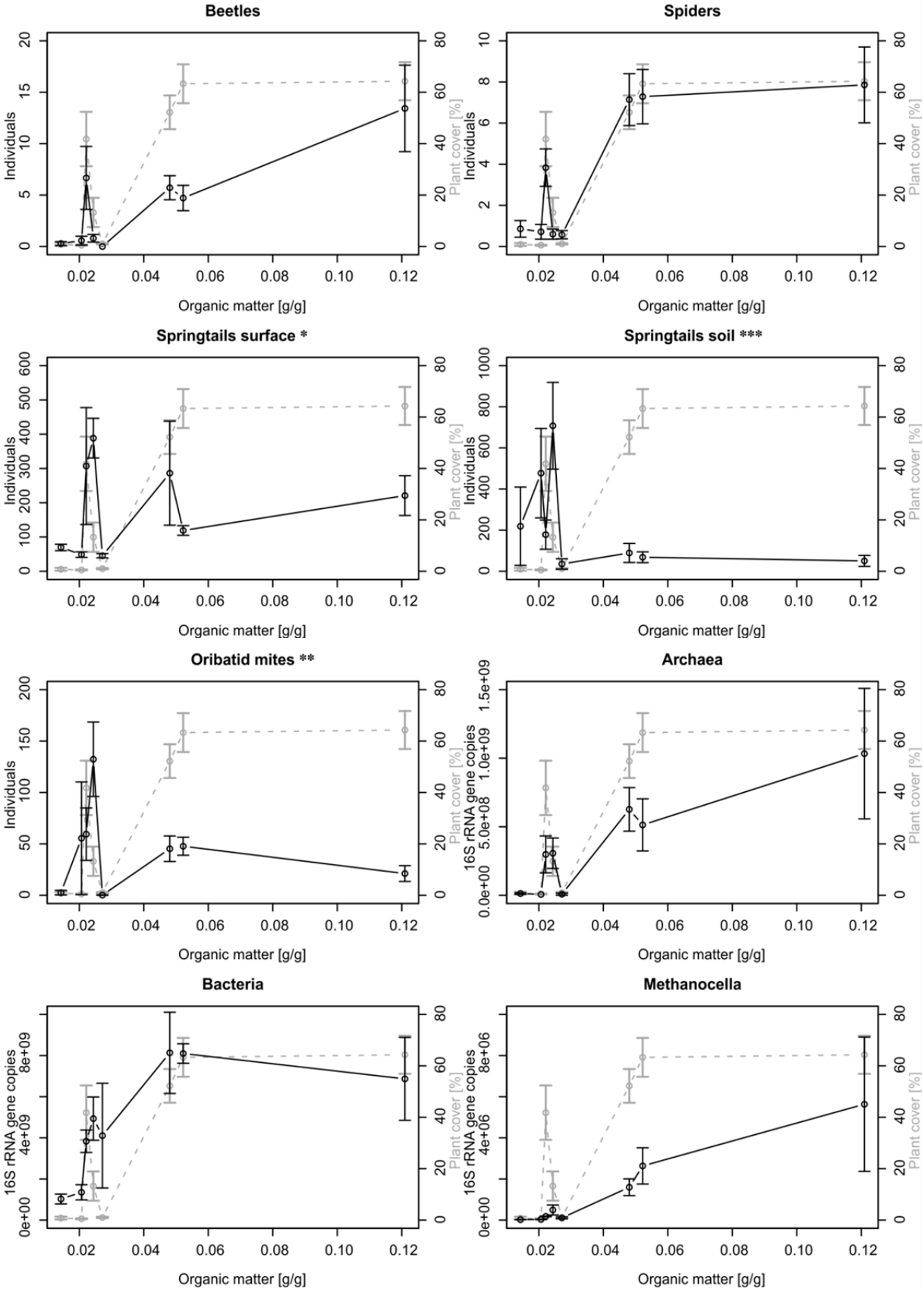
Beetles
Individuals
Plant cover [%]
Organic matter [g/g]
Spiders
Springtails surface *
Springtails soil ***
Oribatid mites **
Archaea
16S rRNA gene copies
Bacteria
Methanocella

Fig. S4c

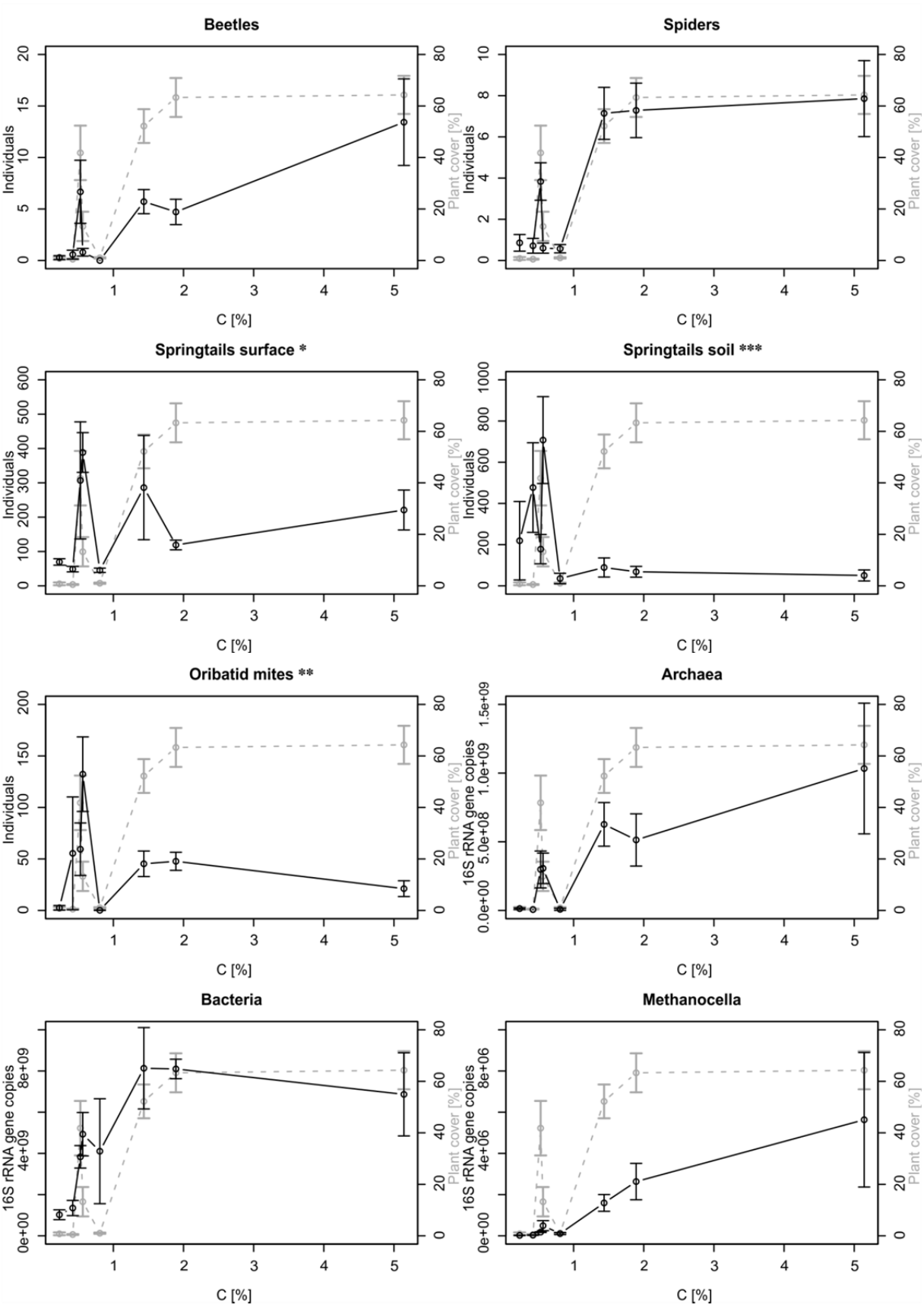
Beetles
Individuals
Plant cover [%]
C [%]
Spiders
Springtails surface *
Springtails soil ***
Oribatid mites **
Archaea
16S rRNA gene copies
Bacteria
Methanocella

Fig. S4d

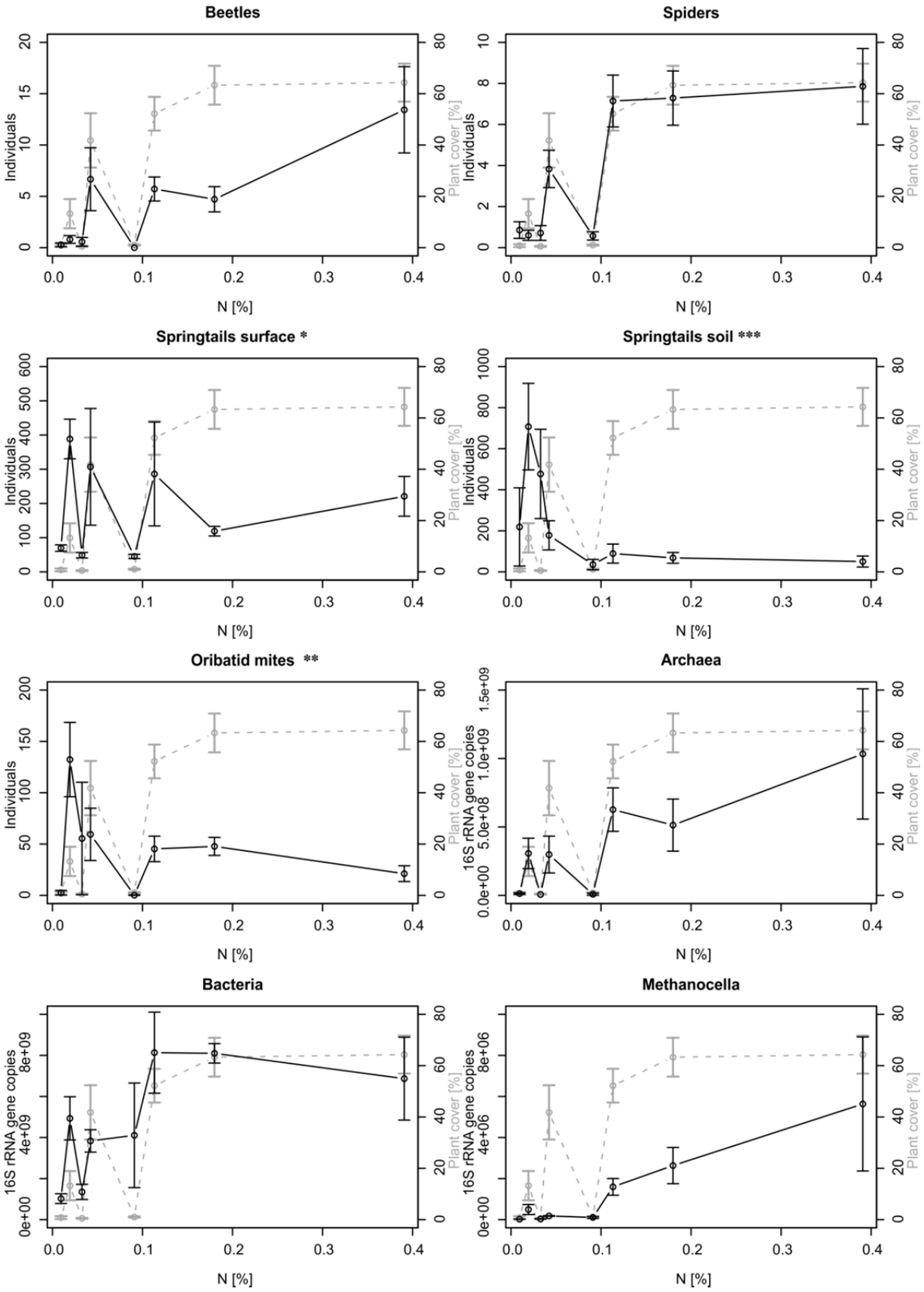
Beetles
Spiders
Springtails surface *
Springtails soil ***
Oribatid mites **
Archaea
Bacteria
Methanocella
Individuals
16S rRNA gene copies
Plant cover [%]
N [%]

Fig. S4e

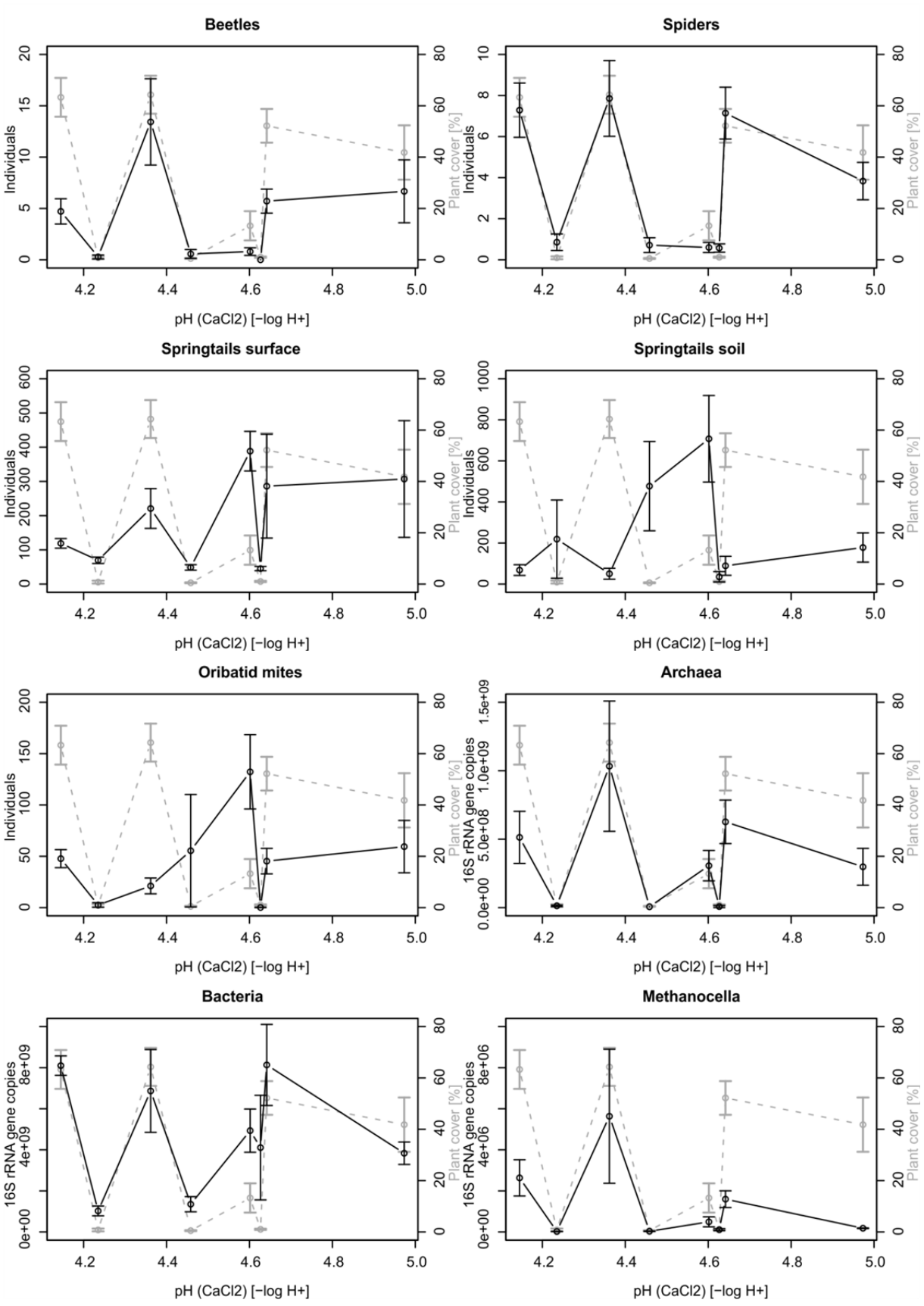
Beetles
Individuals
Plant cover [%]
pH (CaCl2) [−log H+]
Spiders
Springtails surface
Springtails soil
Oribatid mites
Archaea
16S rRNA gene copies
Bacteria
Methanocella

Fig. S4f

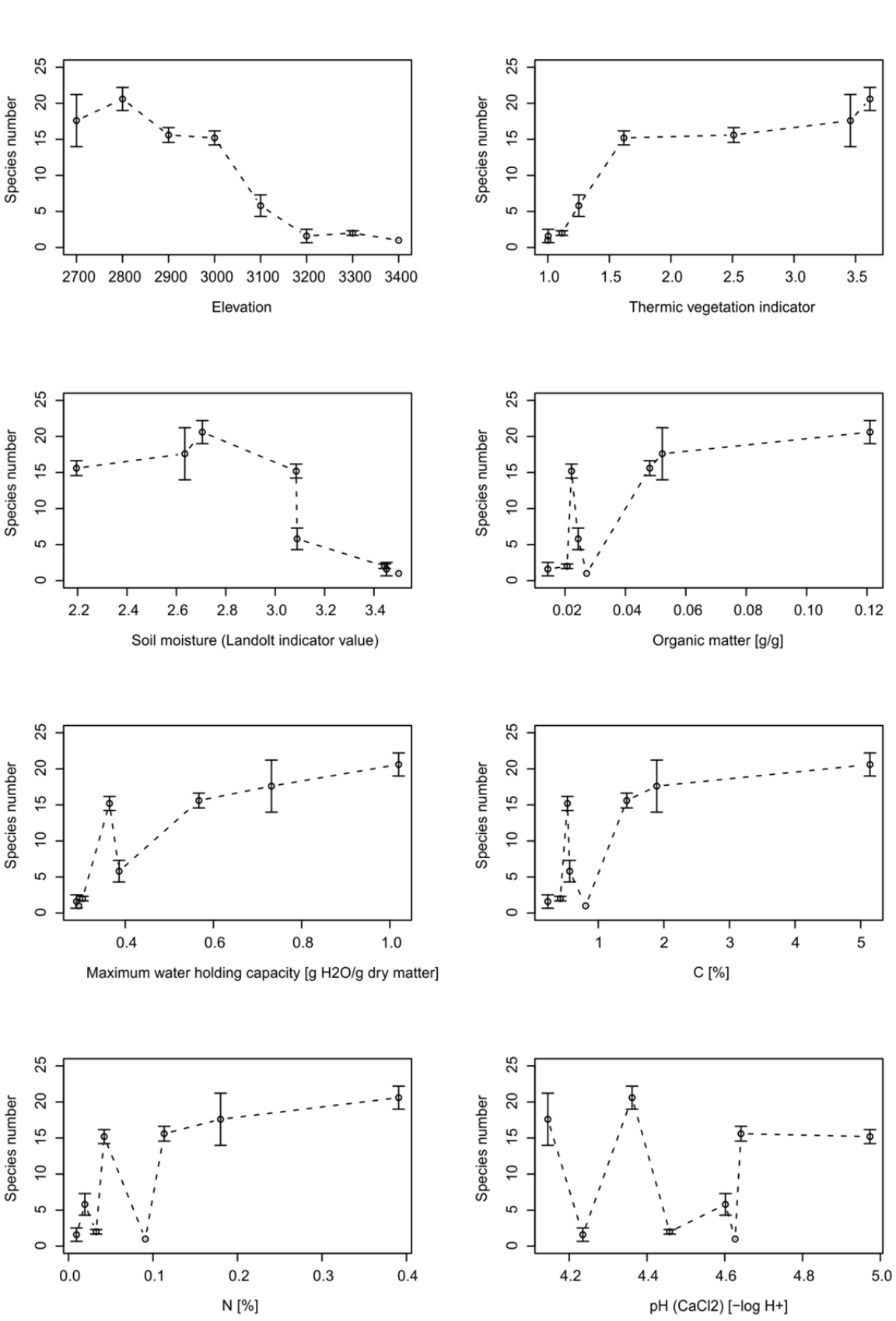

Fig. S5 Diversity of vascular plants along the (**a**) elevational, (**b**) thermic vegetation indicator, (**c**) soil moisture Landolt indicator value, (**d**) maximum water holding capacity, (**e**) soil organic matter content, (**f**) soil C content, (**g**) soil N content, and (**h**) soil pH gradient. Values are means ± standard error of raw data.

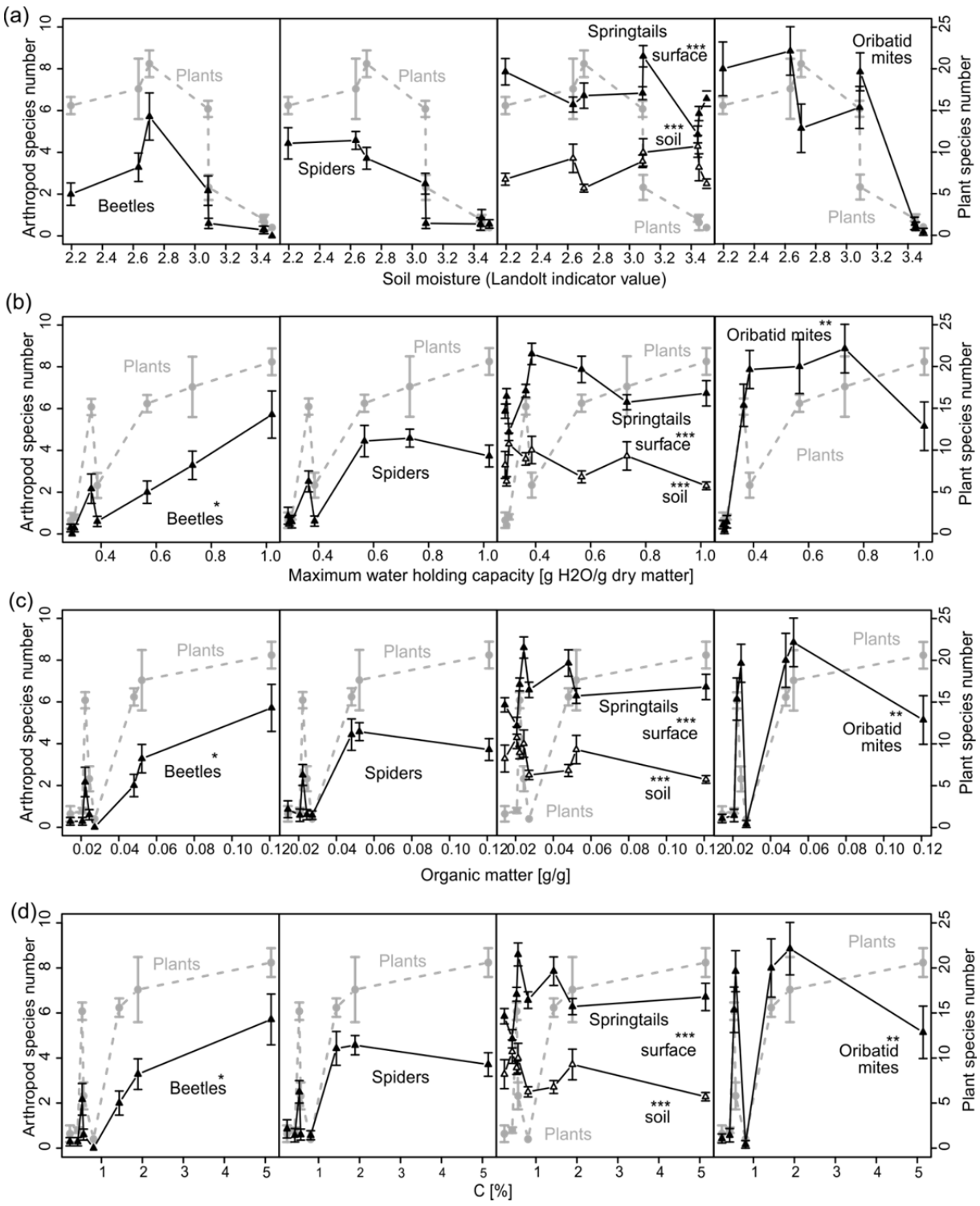

Fig. S6a-d Diversity of animal groups compared to vascular plant species richness along the (**a**) soil moisture Landolt indicator value, (**b**) maximum water holding capacity, (**c**) soil organic matter content, and (**d**) soil C content gradients. Values are means ± standard error of raw data. Vascular plant species richness is illustrated in each subplot in grey. Significant deviations of the diversity patterns of animal groups from that of plants are indicated with asterisks (significance levels: *p<0.05, **p<0.01, ***p<0.001; penalized quasi-likelihood models with a Poisson distribution; main text, Table 3).

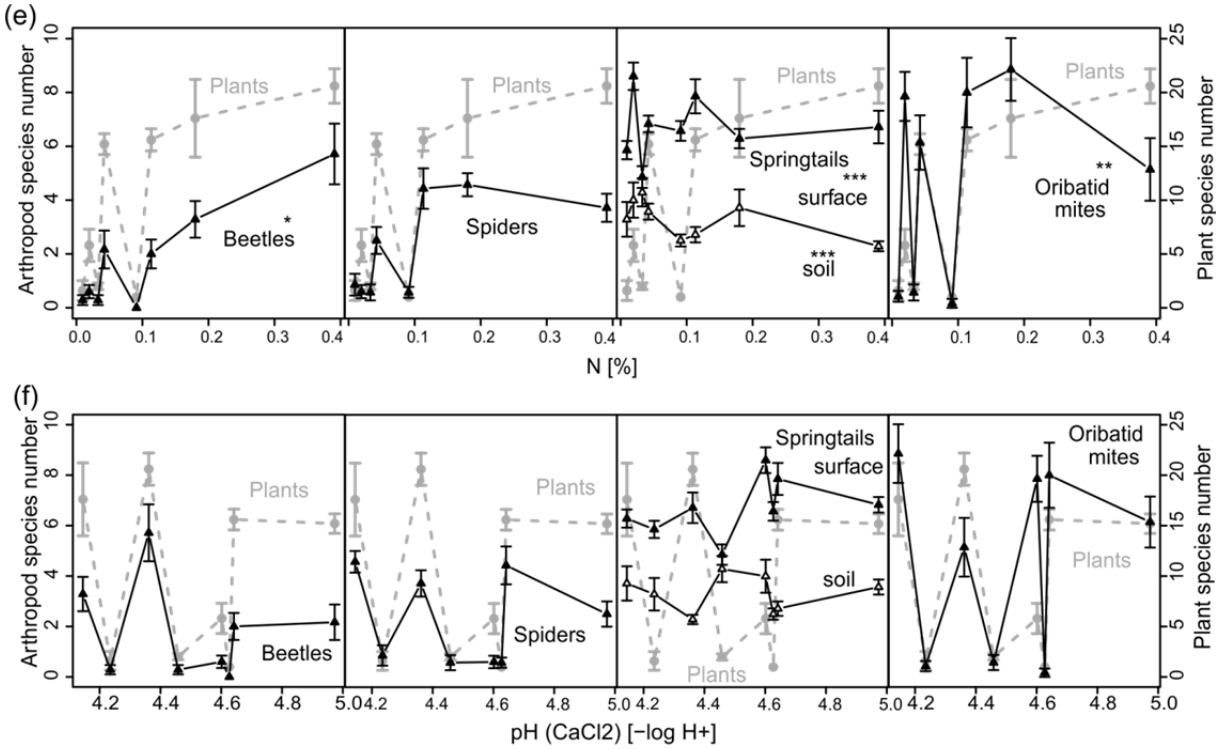

Fig. S6e,f Diversity of animal groups compared to vascular plant species richness along the (**e**) soil N content and (**f**) soil pH gradients. Values are means ± standard error of raw data. Vascular plant species richness is illustrated in each subplot in grey. Significant deviations of the diversity patterns of animal groups from that of plants are indicated with asterisks (significance levels: *p<0.05, **p<0.01, ***p<0.001; penalized quasi-likelihood models with a Poisson distribution; main text, Table 3).

Supplemental tables

Table S1 Raw data of (**a**) species richness (**b**) abundance and (c) species list of vascular plants (abundance measure = plant cover in %), beetles, spiders, springtails on the surface, springtails in the soil, oribatid mites (abundance measure for arthropods = number of individuals), bacteria, archaea and Methanocella (abundance measure for prokaryota = number of 16S rRNA copies; species richness not available) along an altitudinal gradient (2700-3400 m) on Mt. Schrankogel, Tyrol, Austria.

(**Table S1a**)		Species richness						
Group	Elevation	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Plants	2700	23	29	12	14	10	*n.a.*	*n.a.*
	2800	20	17	18	22	26	*n.a.*	*n.a.*
	2900	18	14	13	18	15	*n.a.*	*n.a.*
	3000	17	18	14	13	14	*n.a.*	*n.a.*
	3100	10	6	8	3	2	*n.a.*	*n.a.*
	3200	5	2	0	1	0	*n.a.*	*n.a.*
	3300	2	3	1	2	2	*n.a.*	*n.a.*
	3400	1	1	1	1	1	*n.a.*	*n.a.*
Beetles	2700	0	4	5	4	3	2	5
	2800	6	2	2	8	7	5	10
	2900	2	1	2	2	1	5	1
	3000	3	4	0	3	3	0	*n.a.*
	3100	0	1	0	1	1	*n.a.*	*n.a.*
	3200	0	1	0	1	0	0	0
	3300	0	1	0	0	0	1	0
	3400	0	0	0	0	0	0	0
Spiders	2700	3	4	5	6	6	4	4
	2800	5	2	2	5	5	4	3
	2900	2	3	5	3	5	8	5
	3000	2	2	1	2	4	4	*n.a.*
	3100	1	1	1	0	0	*n.a.*	*n.a.*
	3200	0	1	3	1	0	1	0
	3300	0	0	0	1	0	2	1
	3400	0	1	1	1	1	0	0

(Table S1a) cont.		Species richness						
Group	Elevation	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Springtails surface	2700	6	6	7	8	6	5	6
	2800	8	8	7	8	4	5	7
	2900	9	7	10	8	9	7	5
	3000	7	6	7	6	8	7	*n.a.*
	3100	9	8	9	7	10	*n.a.*	*n.a.*
	3200	7	7	5	5	5	6	6
	3300	6	3	5	5	4	5	6
	3400	7	7	8	7	5	6	6
Springtails soil	2700	2	4	7	5	3	3	2
	2800	2	2	2	2	3	3	2
	2900	2	2	4	3	3	3	2
	3000	3	4	4	3	3	3	5
	3100	6	3	6	2	2	5	4
	3200	1	3	1	4	5	5	4
	3300	4	6	3	5	2	5	5
	3400	3	2	3	2	3	2	*n.a.*
Oribatid mites	2700	12	14	8	6	7	6	9
	2800	4	1	4	8	3	10	6
	2900	5	4	9	5	11	13	9
	3000	11	6	7	6	6	2	5
	3100	10	10	9	8	9	5	4
	3200	0	0	0	1	1	1	0
	3300	0	0	1	2	0	1	0
	3400	0	0	0	0	1	0	*n.a.*

(**Table S1b**)		Abundance						
Group	Elevation	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Plants	2700	82.9	80.6	50	53	50	*n.a.*	*n.a.*
	2800	81	64	71.2	68.4	36.9	*n.a.*	*n.a.*
	2900	30	50	67	50	64	*n.a.*	*n.a.*
	3000	10	23	61	55	60	*n.a.*	*n.a.*
	3100	11	4.5	34	15	1.7	*n.a.*	*n.a.*
	3200	2.8	1.1	0	0.005	0	*n.a.*	*n.a.*
	3300	0.6	0.7	0.25	0	1	*n.a.*	*n.a.*
	3400	1.18	1	0.3	0.8	1.8	*n.a.*	*n.a.*
Beetles	2700	0	5	7	5	4	2	10
	2800	32	3	2	10	11	11	25
	2900	9	2	6	8	4	9	2
	3000	3	5	0	15	17	0	*n.a.*
	3100	0	2	0	1	1	*n.a.*	*n.a.*
	3200	0	1	0	1	0	0	0
	3300	0	3	0	0	0	1	0
	3400	0	0	0	0	0	0	0
Spiders	2700	3	6	7	14	9	7	5
	2800	17	5	2	6	6	11	8
	2900	4	4	10	5	7	13	7
	3000	3	5	1	2	7	5	*n.a.*
	3100	1	1	1	0	0	*n.a.*	*n.a.*
	3200	0	1	3	1	0	1	0
	3300	0	0	0	1	0	2	2
	3400	0	1	1	1	1	0	0

(Table S1b) cont.		Abundance						
Group	Elevation	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Springtails surface	2700	96	143	123	140	81	74	176
	2800	25	204	51	289	207	297	473
	2900	73	159	408	1150	125	69	19
	3000	70	306	161	101	1140	64	*n.a.*
	3100	416	509	501	208	308	*n.a.*	*n.a.*
	3200	103	65	29	85	85	49	71
	3300	44	27	25	68	36	80	61
	3400	38	28	56	66	38	64	27
Springtails soil	2700	45	47	75	216	8	21	66
	2800	16	3	65	201	5	52	11
	2900	12	6	101	158	332	12	3
	3000	10	13	135	463	405	28	193
	3100	649	911	893	46	7	1628	819
	3200	6	14	1	73	1359	61	19
	3300	117	32	90	1462	203	301	1135
	3400	161	4	18	7	10	13	*n.a.*
Oribatid mites	2700	77	84	36	44	26	30	37
	2800	14	2	5	54	4	40	29
	2900	19	14	50	33	94	86	21
	3000	206	37	39	67	22	4	41
	3100	113	47	186	159	307	88	26
	3200	0	0	0	16	1	1	0
	3300	0	0	2	2	0	384	0
	3400	0	0	0	0	1	0	*n.a.*

(Table S1b) cont.		Abundance						
Group	Elevation	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7
Bacteria	2700	7.40E+09	7.90E+09	9.00E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2800	7.50E+09	3.10E+09	1.00E+10	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2900	1.20E+10	5.50E+09	6.90E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3000	3.10E+09	4.90E+09	3.50E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3100	3.30E+09	6.90E+09	4.60E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3200	1.50E+09	7.70E+08	8.00E+08	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3300	6.50E+08	1.50E+09	1.90E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3400	3.20E+09	2.20E+08	8.90E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
Archaea	2700	4.50E+08	2.20E+08	8.70E+08	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2800	9.40E+08	2.60E+08	1.90E+09	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2900	6.10E+08	3.60E+08	9.10E+08	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3000	7.50E+07	5.40E+08	2.80E+08	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3100	1.00E+08	3.40E+08	4.80E+08	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3200	1.10E+07	5.30E+06	2.30E+07	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3300	6.40E+06	6.40E+06	6.00E+06	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3400	2.30E+07	6.20E+05	2.10E+03	*n.a.*	*n.a.*	*n.a.*	*n.a.*
Methanocella	2700	2.30E+06	1.30E+06	4.30E+06	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2800	3.70E+06	1.20E+06	1.20E+07	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	2900	2.30E+06	1.60E+06	8.90E+05	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3000	1.50E+05	1.80E+05	2.10E+05	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3100	6.80E+04	5.00E+05	9.10E+05	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3200	3.60E+04	1.60E+04	1.30E+04	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3300	1.40E+04	4.40E+04	3.80E+04	*n.a.*	*n.a.*	*n.a.*	*n.a.*
	3400	1.10E+05	2.10E+04	1.90E+05	*n.a.*	*n.a.*	*n.a.*	*n.a.*

Table S1c Species list of vascular plants, beetles, spiders, springtails and oribatid mites and occurrence over the elevation gradient 2007-3400 m asl.

			Elevation							
Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Vascular plants	Apiaceae	Ligusticum mutellina (L.) Crantz	x	x						
	Asteraceae	Erigeron uniflorus L.				x	x			
	Asteraceae	Gnaphalium supinum L.	x	x	x	x	x			
	Asteraceae	Hieracium alpinum L.	x							
	Asteraceae	Hieracium sp.	x							
	Asteraceae	Homogyne alpina (L.) Cass.	x							
	Asteraceae	Leucanthemopsis alpina (L.) Heywood s.str.	x	x	x	x	x		x	
	Asteraceae	Scorzoneroides helvetica (Mérat) Holub	x	x						
	Asteraceae	Senecio carniolicus Willd. s.lat.		x						
	Brassicaceae	Cardamine resedifolia L.				x				
	Campanulaceae	Campanula barbata L.	x	x						
	Campanulaceae	Campanula scheuchzeri Vill.	x	x						
	Campanulaceae	Phyteuma hemisphaericum L.	x	x	x					
	Caryophyllaceae	Cerastium uniflorum Clairv.			x	x	x	x		
	Caryophyllaceae	Minuartia sedoides (L.) Hiern	x		x	x				
	Caryophyllaceae	Sagina saginoides (L.) H.Karst. s.str.				x				
	Caryophyllaceae	Silene acaulis (L.) Jacq. subsp. exscapa (All.) Br-Bl.	x		x	x	x			
	Crassulaceae	Sedum alpestre Vill.			x	x				
	Crassulaceae	Sempervivum montanum L.		x						
	Cyperaceae	Carex curvula All. s.str.	x	x	x					
	Cyperaceae	Carex sempervirens Vill.	x							
	Ericaceae	Loiseleuria procumbens (L.) Desv.	x							
	Fabaceae	Lotus corniculatus L. var. alpicola Beck	x							
	Gentianaceae	Gentiana acaulis L.	x							
	Gentianaceae	Gentiana bavarica L.				x				
	Gentianaceae	Gentiana verna L. s.str.		x						

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Vascular plants (cont.)	Juncaceae	Juncus trifidus L. s.str.		x						
	Juncaceae	Luzula alpinopilosa (Chaix) Breistr. s.str.		x						
	Juncaceae	Luzula lutea (All.) DC.		x						
	Juncaceae	Luzula multiflora (Retz.) Lej.	x	x						
	Juncaceae	Luzula spicata (L.) DC.	x		x	x	x			
	Orobanchaceae	Euphrasia minima Jacq. ex DC. s.str.	x	x	x	x	x			
	Orobanchaceae	Pedicularis aspleniifolia Flörke ex Willd.			x					
	Orobanchaceae	Pedicularis kerneri Dalla Torre				x				
	Plantaginaceae	Linaria alpina (L.) Mill.				x				
	Plantaginaceae	Veronica alpina L.		x		x				
	Plantaginaceae	Veronica bellidioides L.	x	x	x					
	Poaceae	Agrostis agrostiflora (Beck) Rauschert	x	x						
	Poaceae	Agrostis alpina Scop.	x	x						
	Poaceae	Agrostis rupestris All.	x	x						
	Poaceae	Anthoxanthum alpinum Schur	x	x	x					
	Poaceae	Avenula versicolor (Vill.) M.Laínz s.str.	x	x	x					
	Poaceae	Deschampsia cespitosa (L.) P.Beauv. s.str.	x							
	Poaceae	Festuca halleri All. s.str.	x	x				x		
	Poaceae	Festuca intercedens (Hack.) Lüdi ex Bech.	x		x	x	x			
	Poaceae	Festuca melanopsis Foggi, Rossi & Signorini	x							
	Poaceae	Nardus stricta L.	x							
	Poaceae	Oreochloa disticha (Wulfen) Link	x	x	x					
	Poaceae	Poa alpina L.	x	x	x	x				
	Poaceae	Poa laxa Haenke	x		x	x	x	x	x	
	Poaceae	Trisetum spicatum (L.)K.Richter s.str.			x	x				
	Polygonaceae	Persicaria vivipara (L.) Ronse Decr.	x	x						
	Primulaceae	Androsace alpina (L.) Lam.				x	x			
	Primulaceae	Androsace obtusifolia All.		x						

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Vascular plants (cont.)	Primulaceae	Primula glutinosa Wulfen	x		x					
	Primulaceae	Primula hirsuta All.		x						
	Primulaceae	Primula minima L.	x							
	Primulaceae	Soldanella pusilla Baumg.		x						
	Ranunculaceae	Ranunculus glacialis L.			x	x	x	x	x	x
	Ranunculaceae	Ranunculus grenieranus Jord.	x							
	Rosaceae	Alchemilla vulgaris agg.	x							
	Rosaceae	Geum montanum L.	x	x	x					
	Rosaceae	Potentilla aurea L. s.str.	x	x	x					
	Rosaceae	Sibbaldia procumbens L.	x		x	x				
	Salicaceae	Salix herbacea L.	x	x						
	Salicaceae	Salix serpillifolia Scop.		x						
	Saxifragaceae	Saxifraga androsacea L.				x				
	Saxifragaceae	Saxifraga bryoides L.	x		x	x	x	x		
	Saxifragaceae	Saxifraga exarata Vill. s.str.					x			
	Saxifragaceae	Saxifraga oppositifolia L. s.str.					x			
Beetles (Coleoptera)	Byrrhidae	Byrrhus fasciatus (Forster, 1771)			x					
	Cantharidae	Rhagonycha maculicollis (Maerkel, 1852)			x					
	Carabidae	Amara praetermissa (Sahlberg, 1827)	x	x						
	Carabidae	Amara quenseli (Schönherr, 1806)			x	x				
	Carabidae	Bembidion magellense (Schauberger, 1922)				x	x			
	Carabidae	Carabus alpestris (Sturm, 1815)			x					
	Carabidae	Carabus depressus (Bonelli, 1810)	x	x						
	Carabidae	Cymindis vaporariorum (Linné, 1758)	x	x						
	Carabidae	Nebria germari (Heer, 1837)				x	x	x	x	
	Carabidae	Nebria rufescens (Stroem, 1768)		x						
	Carabidae	Oreonebria castanea (Bonelli, 1810)	x	x						
	Carabidae	Pterostichus jurinei (Panzer, 1803)	x	x						

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Beetles (cont.)	Carabidae	Dichotrachelus stierlini (Gredler 1856)	x		x	x				
	Curculionidae	Otiorhynchus nodosus (Müller, O.F., 1764)			x					
	Dasytidae	Dasytes alpigradus (Kiesenwetter, 1863)	x							
	Leiodidae	Catops nigricans (Spence 1815) cf.		x						
	Leiodidae	Leiodes rhaetica (Erichson, 1845)	x	x						
	Scarabaeidae	Aphodius abdominalis (Bonelli, 1812)	x	x						
	Scarabaeidae	Aphodius gibbus (Germar, 1817)	x	x						
	Scarabaeidae	Aphodius obscurus (Fabricius, 1792)		x						
	Staphylinidae	Anthophagus alpinus (Paykull, 1790)	x	x						
	Staphylinidae	Arpedium brachypterum (Gravenhorst, 1802)				x				
	Staphylinidae	Atheta leonhardi (Bernhauer, 1911)	x							
	Staphylinidae	Eusphalerum anale (Erichson, 1840)	x	x	x					
	Staphylinidae	Ocypus ophthalmicus (Scopoli, 1763)		x						
	Staphylinidae	Oxypoda longipes (Mulsant & Rey, 1861)		x						
	Staphylinidae	Oxypoda nimbicola (Fauvel, 1900)				x				
	Staphylinidae	Oxypoda soror (Thomson, 1855)	x	x						
	Staphylinidae	Quedius alpestris (Heer, 1839)	x	x						
Spiders (Araneae)	Gnaphosidae	Drassodes cupreus (Blackwall, 1834)	x	x	x	x		x		
	Gnaphosidae	Gnaphosa leporina (L. Koch, 1866)	x							
	Gnaphosidae	Gnaphosa petrobia (L. Koch, 1872)			x	x	x			
	Gnaphosidae	Haplodrassus sp.		x						
	Gnaphosidae	Micaria alpina (L. Koch, 1872)	x	x						
	Gnaphosidae	Zelotes devotus (Grimm, 1982)	x	x	x					
	Linyphiidae	Agyneta gulosa (C.L. Koch, 1869)	x							
	Linyphiidae	Anguliphantes monticola (Kulczyński, 1881)	x							
	Linyphiidae	Araeoncus anguineus (L. Koch, 1869)		x						
	Linyphiidae	Ceratinella brevipes (Westring, 1851)	x							
	Linyphiidae	Diplocephalus helleri (L. Koch, 1869)			x					

S1c (cont.)

Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Spiders (cont.)	Linyphiidae	Erigonella subelevata (L. Koch, 1869)	x	x	x	x	x		x	x
	Linyphiidae	Linyphiinae sp.	x							x
	Linyphiidae	Mughiphantes armatus (Kulczyński, 1905)						x	x	x
	Linyphiidae	Mughiphantes variabilis (Kulczyński, 1887)				x				
	Linyphiidae	Pelecopsis parallela (Wider, 1834)			x					
	Linyphiidae	Styloctetor austerus (L. Koch, 1884)			x	x				
	Lycosidae	Pardosa blanda (C.L. Koch, 1833)	x	x						
	Lycosidae	Pardosa giebeli (Pavesi, 1873)			x					
	Lycosidae	Pardosa nigra (C.L. Koch, 1834)	x		x	x	x	x		x
	Lycosidae	Pardosa riparia (C.L. Koch, 1833)		x						
	Lycosidae	Pardosa oreophila (Simon, 1937)		x	x					
	Salticidae	Talavera sp.	x							
	Thomisidae	Xysticus desiduosus (Simon, 1875)	x	x	x					
Springtails surface (Collembola)	Arrhopalitidae	Arrhopalites caecus (Tullberg, 1871)		x						
	Bourletiellidae	Bourletiella pistillum (Gisin, 1946)	x	x	x	x	x	x	x	x
	Bourletiellidae	Heterosminthurus nonlineatus (Gisin, 1946)		x	x	x	x	x	x	x
	Entomobryidae	Lepidocyrtus lanuginosus (Gmelin, 1788)	x	x	x	x	x	x	x	x
	Entomobryidae	Lepidocyrtus violaceus (Geoffroy, 1762) cf.				x	x	x	x	x
	Entomobryidae	Orchesella alticola (Uzel, 1891)	x	x	x	x	x	x	x	x
	Entomobryidae	Tomocerus minor (Lubbock, 1862)			x					
	Hypogastruridae	Hypogastrura parvula (Haybach, 1971)	x	x		x	x	x		
	Hypogastruridae	Hypogastrura sahlbergi (Reuter, 1895)	x	x	x	x	x	x	x	x
	Isotomidae	Anurophorus konseli (Kseneman, 1938)	x	x	x		x	x	x	
	Isotomidae	Isotoma riparia (Nicolet, 1842) cf	x	x	x	x	x			x
	Isotomidae	Pseudanurophorus binoculatus (Kseneman, 1934) cf.			x					
	Isotomidae	Pseudisotoma sensibilis (Tullberg, 1876)	x	x	x	x	x	x	x	x
	Isotomidae	Tetracanthella hystrix (Cassagnau, 1959)	x		x					
	Neanuridae	Frisea albida (Stach, 1949)	x	x	x					

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Springtails surf. (cont.)	Neanuridae	Neanura muscorum (Templeton, 1835)		x						
	Tullbergiidae	Protaphorura parallata (Gisin, 1952)			x				x	
Springtails soil (Collembola)	Bourletiellidae	Bourletiella pistillum (Gisin, 1946)	x	x			x			x
	Bourletiellidae	Heterosminthurus nonlineatus (Gisin, 1946)		x						
	Entomobryidae	Entomobrya sp.					x			
	Entomobryidae	Lepidocyrtus lanuginosus (Gmelin, 1788)			x			x		
	Entomobryidae	Lepidocyrtus violaceus (Geoffroy, 1762) cf.					x		x	x
	Entomobryidae	Orchesella alticola (Uzel, 1891)	x			x		x	x	
	Hypogastruridae	Hypogastrura parvula (Haybach, 1971)	x	x	x	x				
	Hypogastruridae	Hypogastrura sahlbergi (Reuter, 1895)	x				x	x	x	x
	Isotomidae	Anurophorus konseli (Kseneman, 1938)		x						x
	Isotomidae	Folsomia binoculata (Wahlgren, 1899)							x	x
	Isotomidae	Pachyotoma curva (Gisin, 1949)	x							
	Isotomidae	Pseudisotoma sensibilis (Tullberg, 1876)	x	x	x	x	x	x	x	x
	Isotomidae	Scutisotoma variabilis (Gisin, 1949)	x							
	Isotomidae	Tetracanthella afurcata (Handschin, 1919)	x	x	x	x	x	x	x	
	Neanuridae	Anurida pygmaea (Börner, 1901)	x							
	Neanuridae	Frisea albida (Stach, 1949)	x	x			x			
	Odontellidae	Superodontella empodialis (Stach, 1934)	x							
	Onychiuridae	Argonychiurus fistulosus (Gisin, 1956)				x	x	x	x	
	Onychiuridae	Hymenaphorura alticola (Bagnall, 1935)				x	x	x	x	x
	Onychiuridae	Protaphorura parallata (Gisin, 1952)							x	x
	Tullbergiidae	Mesaphorura sp1					x			
	Tullbergiidae	Mesaphorura sp2	x							
	Tullbergiidae	Metaphorura sp3	x							
Oribatid mites (Oribatida)	Achipteriidae	Anachipteria shtanchaevae (Subias, 2009)	x	x	x	x				
	Brachychthoniidae	Brachychthonius pius (Moritz, 1976)			x	x	x			
	Brachychthoniidae	Eobrachychthonius oudemansi (v d Hammen, 1952)					x			

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Oribatid mites (cont.)	Brachychthoniidae	Liochthonius strenzkei (Forsslund, 1963)	x	x		x	x			
	Brachychthoniidae	Verachthonius laticeps (Strenzke, 1951)				x				
	Caleremaeidae	Caleremaeus monilipes (Michael, 1882)	x							
	Camisiidae	Platynothrus peltifer (C.L. Koch, 1839)		x						
	Carabodidae	Carabodes labyrinthicus (Michael, 1879)	x							
	Carabodidae	Carabodes marginatus (Michael, 1884)		x						
	Carabodidae	Carabodes schatzi (Bernini, 1976)	x	x						
	Ceratozetidae	Ceratozetes spitsbergensis (Thor, 1934)							x	
	Ceratozetidae	Edwardzetes edwardsi (Nicolet, 1855)				x				
	Ceratozetidae	Fuscozetes intermedius (Caroli et Maffia, 1934)	x	x	x	x	x			x
	Ceratozetidae	Melanozetes meridianus (Sellnick, 1929)		x	x					
	Ceratozetidae	Melanozetes mollicomus (C.L. Koch, 1839)				x	x			
	Ceratozetidae	Trichoribates scilierensis (Bayartogtokh & Schatz, 2008)	x	x	x	x	x			
	Ceratozetidae	Trichoribates trimaculatus (C.L. Koch, 1835)	x		x	x	x			
	Damaeidae	Kunstidamaeus diversipilis (Willmann, 1951)	x	x	x	x	x			
	Damaeidae	Metabelba pulverulenta (C.L. Koch, 1839) pulverosa				x				
	Eremaeidae	Eueremaeus valkanovi (Kunst, 1957)	x							
	Malaconothridae	Malaconothrus monodactylus (Michael, 1888)		x						
	Metrioppiidae	Metrioppia helvetica (Grandjean, 1931)			x					
	Mycobatidae	Jugatala cribelliger (Berlese, 1904)					x			
	Niphocepheidae	Niphocepheus nivalis (Schweizer, 1922)			x					
	Nothridae	Nothrus borussicus (Sellnick, 1929)	x							
	Oppiidae	Berniniella bicarinata (Paoli, 1908)		x						
	Oppiidae	Dissorhina ornata (Oudemans, 1900)					x			
	Oppiidae	Moritzoppia unicarinata (Paoli, 1908)					x	x	x	
	Oppiidae	Oppiella nova (Oudemans, 1902)					x			
	Oppiidae	Oppiella obscura (Mahunka, Mahunka-Papp, 2000)	x		x	x	x	x		

S1c (cont.) Group	Family	Species	2700	2800	2900	3000	3100	3200	3300	3400
Oribatid mites (cont.)	Oribatellidae	Oribatella longispina (Berlese, 1915)	x		x		x			
	Oribatulidae	Oribatula interrupta (Willmann, 1939)	x		x	x	x			
	Oribatulidae	Oribatula longelamellata (Schweizer, 1956)	x	x	x					
	Oribatulidae	Oribatula tibialis (Nicolet, 1855)	x							
	Phenopelopidae	Eupelops strenzkei (Knulle, 1954)			x		x			
	Punctoribatidae	Mycobates alpinus (Willmann, 1951)	x	x	x	x				
	Punctoribatidae	Mycobates carli (Schweizer, 1922)	x	x	x	x	x			
	Quadroppiidae	Quadroppia maritalis (Lions, 1982)	x							
	Scheloribatidae	Scheloribates (Topobates) holsaticus (Weigmann, 1969)			x					
	Scheloribatidae	Scheloribates (Topobates) umbraili (Schweizer, 1956)				x				
	Scutoverticidae	Scutovertex alpinus (Willmann, 1953)	x							
	Suctobelbidae	Suctobelbella acutidens (Forsslund, 1941)	x		x	x	x			
	Suctobelbidae	Suctobelbella similis (Forsslund, 1941)		x						
	Tectocepheidae	Tectocepheus sp.	x		x	x				
	Tectocepheidae	Tectocepheus velatus sarekensis (Tragardh, 1910)	x	x			x			
	Tectocepheidae	Tectocepheus velatus velatus (Michael, 1880)	x	x	x		x			
	Thyrisomidae	Pantelozetes alpestris (Willmann, 1929)	x				x			
	Thyrisomidae	Pantelozetes paolii (Oudemans, 1913)	x	x						
	Thyrisomidae	Passalozetes intermedius (Mihelcic, 1954)			x	x	x			
	Trhypochthoniidae	Trhypochthonius tectorum (Berlese, 1896)	x							
	Unduloribatidae	Unduloribates undulatus (Berlese, 1914)			x					

Table S2 Predictors of generalized linear models (**a**) and fixed effects of generalized linear mixed-effects models (**b-h**) with a quasipoisson distribution and log-link comparing patterns of abundance of plant, animal and microbial groups along (**a**) elevational, (**b**) thermic vegetation indicator (TVI), (**c**) soil moisture Landolt indicator value (F), (**d**) maximum water holding capacity (MWHC), (**e**) soil organic matter content (OM), (**f**) soil C content (C), (**g**) soil N content (N), and (**h**) soil pH gradients on Mt. Schrankogel, Tyrol, Austria. Abundance data were re-scaled to values between 0 and 100. The baseline level of the fixed effect organism group is vascular plants. A significant ecological factor:group interaction means that abundance patterns of the respective group along the respective gradient are significantly deviating from that of vascular plants. P-values significant at the 0.05 level are printed in bold.

(**Table S2a**)	Value	SE	df	t-value	p-value
(Intercept)	3.09	0.19		16.30	**<0.001**
Elevation	-1.06	0.17		-6.29	**<0.001**
Archaea	-0.60	0.38		-1.60	0.111
Bacteria	0.50	0.25		1.99	**0.048**
Springtails surface	-0.42	0.26		-1.61	0.107
Springtails soil	-0.50	0.26		-1.91	0.056
Beetles	-0.97	0.33		-2.98	**0.003**
Methanocella	-1.47	0.57		-2.57	**0.011**
Oribatid mites	-0.61	0.26		-2.29	**0.023**
Spiders	-0.39	0.27		-1.43	0.155
Elevation: Archaea	0.07	0.34		0.21	0.834
Elevation: Bacteria	0.60	0.23		2.57	**0.011**
Elevation: Springtails surface	0.74	0.24		3.09	**0.002**
Elevation: Springtails soil	1.44	0.25		5.86	**<0.001**
Elevation: Beetles	0.10	0.29		0.34	0.733
Elevation: Methanocella	-0.33	0.48		-0.68	0.494
Elevation: Oribatid mites	0.95	0.25		3.76	**<0.001**
Elevation: Spiders	0.15	0.24		0.62	0.537

(**Table S2b**)	Value	SE	df	t-value	p-value
(Intercept)	1.03	0.58	357	1.77	0.077
TVI	1.02	0.24	6	4.30	**0.005**
Archaea	-0.75	0.75	357	-1.00	0.317
Bacteria	1.29	0.51	357	2.53	**0.012**
Springtails surface	1.10	0.51	357	2.15	**0.032**
Springtails soil	2.94	0.58	357	5.08	**<0.001**
Beetles	-1.16	0.67	357	-1.73	0.085
Methanocella	-3.15	1.35	357	-2.34	**0.020**
Oribatid mites	1.34	0.53	357	2.52	**0.012**
Spiders	-0.31	0.54	357	-0.58	0.563
TVI: Archaea	0.03	0.25	357	0.13	0.896
TVI: Bacteria	-0.45	0.18	357	-2.45	**0.015**
TVI: Springtails surface	-0.78	0.20	357	-3.97	**<0.001**
TVI: Springtails soil	-1.93	0.32	357	-6.11	**<0.001**
TVI: Beetles	0.04	0.22	357	0.17	0.869
TVI: Methanocella	0.65	0.41	357	1.58	0.114
TVI: Oribatid mites	-1.04	0.22	357	-4.64	**<0.001**
TVI: Spiders	-0.07	0.18	357	-0.37	0.710

(**Table S2c**)	Value	SE	df	t-value	p-value
(Intercept)	11.34	1.92	333	5.92	**<0.001**
F	-2.81	0.67	6	-4.22	**0.006**
Archaea	-1.86	2.42	333	-0.77	0.443
Bacteria	-3.74	2.15	333	-1.74	0.083
Springtails surface	-5.37	2.20	333	-2.44	**0.015**
Springtails soil	-12.53	2.54	333	-4.93	**<0.001**
Beetles	-2.79	2.25	333	-1.24	0.217
Methanocella	-2.01	2.69	333	-0.75	0.456
Oribatid mites	-7.14	2.28	333	-3.14	**0.002**
Spiders	-1.63	2.13	333	-0.76	0.446
F: Archaea	0.46	0.86	333	0.53	0.597
F: Bacteria	1.43	0.75	333	1.91	0.057
F: Springtails surface	1.66	0.76	333	2.17	**0.031**
F: Springtails soil	3.97	0.85	333	4.69	**<0.001**
F: Beetles	0.66	0.80	333	0.83	0.405
F: Methanocella	0.32	0.97	333	0.33	0.739
F: Oribatid mites	2.16	0.78	333	2.76	**0.006**
F: Spiders	0.43	0.75	333	0.58	0.566

(**Table S2d**)	Value	SE	df	t-value	p-value
(Intercept)	1.37	0.61	357	2.26	**0.025**
MWHC	3.55	1.02	6	3.49	**0.013**
Archaea	-1.02	0.69	357	-1.48	0.139
Bacteria	1.01	0.49	357	2.06	**0.040**
Springtails surface	0.69	0.51	357	1.34	0.182
Springtails soil	2.89	0.67	357	4.30	**<0.001**
Beetles	-1.47	0.61	357	-2.42	**0.016**
Methanocella	-2.88	1.03	357	-2.79	**0.006**
Oribatid mites	1.10	0.57	357	1.95	0.052
Spiders	-0.37	0.49	357	-0.76	0.450
MWHC: Archaea	0.51	0.91	357	0.56	0.572
MWHC: Bacteria	-1.40	0.72	357	-1.95	0.052
MWHC: Springtails surface	-2.50	0.81	357	-3.09	**0.002**
MWHC: Springtails soil	-7.72	1.51	357	-5.12	**<0.001**
MWHC: Beetles	0.59	0.79	357	0.75	0.453
MWHC: Methanocella	2.25	1.21	357	1.85	0.065
MWHC: Oribatid mites	-3.87	1.01	357	-3.84	**<0.001**
W: Spiders	-0.19	0.66	357	-0.29	0.776

(**Table S2e**)	Value	SE	df	t-value	p-value
(Intercept)	2.37	0.46	357	5.09	**<0.001**
OM	20.48	8.16	6	2.51	**0.046**
Archaea	-0.95	0.50	357	-1.90	0.058
Bacteria	0.54	0.36	357	1.51	0.133
Springtails surface	-0.09	0.38	357	-0.23	0.819
Springtails soil	1.53	0.52	357	2.94	**0.004**
Beetles	-1.43	0.44	357	-3.24	**0.001**
Methanocella	-2.16	0.71	357	-3.04	**0.003**
Oribatid mites	0.23	0.44	357	0.53	0.596
Spiders	-0.45	0.35	357	-1.28	0.200
OM: Archaea	4.39	6.27	357	0.70	0.485
OM: Bacteria	-7.52	5.36	357	-1.40	0.162
OM: Springtails surface	-13.95	6.23	357	-2.24	**0.026**
OM: Springtails soil	-66.09	15.94	357	-4.15	**0.000**
OM: Beetles	5.66	5.42	357	1.04	0.297
OM: Methanocella	13.37	7.74	357	1.73	0.085
OM: Oribatid mites	-28.62	9.39	357	-3.05	**0.003**
OM: Spiders	-0.66	4.71	357	-0.14	0.889

(**Table S2f**)	Value	SE	df	t-value	p-value
(Intercept)	2.66	0.40	357	6.66	**<0.001**
C	0.41	0.18	6	2.32	0.060
Archaea	-0.89	0.46	357	-1.94	0.053
Bacteria	0.43	0.32	357	1.34	0.181
Springtails surface	-0.28	0.34	357	-0.83	0.407
Springtails soil	0.81	0.41	357	1.96	0.051
Beetles	-1.36	0.40	357	-3.35	**0.001**
Methanocella	-1.97	0.66	357	-3.00	**0.003**
Oribatid mites	-0.13	0.37	357	-0.36	0.717
Spiders	-0.46	0.32	357	-1.44	0.152
C: Archaea	0.09	0.14	357	0.64	0.523
C: Bacteria	-0.15	0.12	357	-1.28	0.201
C: Springtails surface	-0.29	0.14	357	-2.05	0.041
C: Springtails soil	-1.54	0.42	357	-3.66	**<0.001**
C: Beetles	0.12	0.12	357	1.00	0.320
C: Methanocella	0.28	0.17	357	1.62	0.106
C: Oribatid mites	-0.61	0.22	357	-2.75	**0.006**
C: Spiders	-0.01	0.11	357	-0.14	0.889

(**Table S2g**)	Value	SE	df	t-value	p-value
(Intercept)	2.63	0.40	357	6.66	**<0.001**
N	5.36	2.24	6	2.39	0.054
Archaea	-0.86	0.44	357	-1.98	**0.049**
Bacteria	0.45	0.31	357	1.48	0.140
Springtails surface	-0.18	0.32	357	-0.55	0.580
Springtails soil	0.68	0.33	357	2.05	**0.041**
Beetles	-1.35	0.39	357	-3.48	**0.001**
Methanocella	-2.04	0.64	357	-3.18	**0.002**
Oribatid mites	-0.06	0.33	357	-0.20	0.845
Spiders	-0.47	0.31	357	-1.52	0.129
N: Archaea	1.00	1.73	357	0.58	0.563
N: Bacteria	-2.03	1.44	357	-1.41	0.159
N: Springtails surface	-4.40	1.71	357	-2.58	**0.010**
N: Springtails soil	-18.22	4.15	357	-4.39	**<0.001**
N: Beetles	1.46	1.50	357	0.98	0.329
N: Methanocella	3.81	2.17	357	1.75	0.080
N: Oribatid mites	-8.36	2.48	357	-3.38	**0.001**
N: Spiders	-0.17	1.29	357	-0.13	0.894

(**Table S2h**)	Value	SE	df	t-value	p-value
(Intercept)	3.50	5.62	357	0.62	0.534
pH	-0.03	1.25	6	-0.03	0.981
Archaea	0.21	5.34	357	0.04	0.969
Bacteria	-0.48	4.07	357	-0.12	0.907
Springtails surface	-8.14	4.26	357	-1.91	0.057
Springtails soil	-4.30	4.30	357	-1.00	0.318
Beetles	-2.77	4.54	357	-0.61	0.542
Methanocella	7.64	7.16	357	1.07	0.286
Oribatid mites	-6.70	4.54	357	-1.48	0.141
Spiders	0.81	3.90	357	0.21	0.836
pH: Archaea	-0.19	1.19	357	-0.16	0.871
pH: Bacteria	0.13	0.90	357	0.14	0.885
pH: Springtails surface	1.61	0.94	357	1.72	0.086
pH: Springtails soil	0.75	0.95	357	0.79	0.433
pH: Beetles	0.39	1.01	357	0.39	0.700
pH: Methanocella	-1.99	1.63	357	-1.22	0.223
pH: Oribatid mites	1.24	1.00	357	1.24	0.216
pH: Spiders	-0.29	0.87	357	-0.33	0.741

Table S3 Predictors of (**a**) generalized linear models and (**b-h**) fixed effects of generalized linear mixed-effects models with a quasipoisson distribution and log-link comparing diversity patterns of plant and animal groups along (**a**) elevational, (**b**) thermic vegetation indicator (TVI), (**c**) soil moisture Landolt indicator value (F), (**d**) maximum water holding capacity (MWHC), (**e**) soil organic matter content (OM), (**f**) soil C content (C), (**g**) soil N content (N), and (**h**) soil pH gradients on Mt. Schrankogel, Tyrol, Austria. The baseline level of the fixed effect organism group is vascular plants. A significant ecological factor:group interaction means that diversity patterns of the respective group along the respective gradient are significantly deviating from that of vascular plants. P-values significant at the 0.05 level are printed in bold.

(**Table S3a**)	Value	SE	df	t-value	p-value
(Intercept)	2.00	0.07		26.99	**<0.001**
Elevation	-0.82	0.07		-11.91	**<0.001**
Springtails surface	-0.11	0.10		-1.14	0.257
Springtails soil	-0.80	0.11		-7.18	**<0.001**
Beetles	-1.90	0.19		-9.89	**<0.001**
Oribatid mites	-0.66	0.11		-5.82	**<0.001**
Spiders	-1.45	0.15		-9.56	**<0.001**
Elevation: Springtails surface	0.77	0.09		8.45	**<0.001**
Elevation: Springtails soil	0.86	0.11		7.80	**<0.001**
Elevation: Beetles	-0.24	0.17		-1.40	0.161
Elevation: Oribatid mites	0.15	0.11		1.44	0.151
Elevation: Spiders	0.05	0.14		0.38	0.707

(**Table S3b**)	Value	SE	df	t-value	p-value
(Intercept)	0.57	0.30	291	1.87	0.063
TVI	0.73	0.13	6	5.64	**0.001**
Springtails surface	1.22	0.20	291	5.98	**<0.001**
Springtails soil	0.70	0.24	291	2.90	**0.004**
Beetles	-2.58	0.42	291	-6.11	**0.000**
Oribatid mites	-0.15	0.23	291	-0.67	0.504
Spiders	-1.40	0.32	291	-4.34	**<0.001**
TVI: Springtails surface	-0.69	0.08	291	-8.59	**<0.001**
TVI: Springtails soil	-0.80	0.10	291	-7.75	**<0.001**
TVI: Beetles	0.31	0.14	291	2.22	**0.027**
TVI: Oribatid mites	-0.24	0.09	291	-2.77	**0.006**
TVI: Spiders	-0.03	0.11	291	-0.26	0.795

(**Table S3c**)	Value	SE	df	t-value	p-value
(Intercept)	8.00	1.11	275	7.22	**<0.001**
F	-2.03	0.37	6	-5.45	**0.002**
Springtails surface	-5.56	1.09	275	-5.10	**<0.001**
Springtails soil	-7.47	1.20	275	-6.22	**<0.001**
Beetles	-2.66	1.23	275	-2.16	**0.032**
Oribatid mites	-1.63	1.12	275	-1.45	0.147
Spiders	-2.31	1.20	275	-1.93	0.054
F: Springtails surface	1.84	0.37	275	5.02	**<0.001**
F: Springtails soil	2.23	0.40	275	5.55	**<0.001**
F: Beetles	0.37	0.43	275	0.87	0.386
F: Oribatid mites	0.33	0.38	275	0.87	0.384
F: Spiders	0.32	0.41	275	0.78	0.435

(**Table S3d**)	Value	SE	df	t-value	p-value
(Intercept)	0.71	0.35	291	2.03	**0.043**
MWHC	2.67	0.61	6	4.41	**0.005**
Springtails surface	1.06	0.21	291	5.05	**<0.001**
Springtails soil	0.64	0.26	291	2.48	**0.014**
Beetles	-2.54	0.37	291	-6.85	**0.000**
Oribatid mites	-0.15	0.23	291	-0.65	0.514
Spiders	-1.30	0.30	291	-4.29	**<0.001**
MWHC: Springtails surface	-2.52	0.34	291	-7.43	**<0.001**
MWHC: Springtails soil	-3.15	0.46	291	-6.85	**<0.001**
MWHC: Beetles	1.18	0.48	291	2.48	**0.014**
MWHC: Oribatid mites	-0.98	0.34	291	-2.87	**0.004**
MWHC: Spiders	-0.28	0.43	291	-0.64	0.521

(**Table S3e**)	Value	SE	df	t-value	p-value
(Intercept)	1.42	0.28	291	5.09	**<0.001**
OM	15.98	5.11	6	3.13	**0.020**
Springtails surface	0.35	0.15	291	2.30	**0.022**
Springtails soil	-0.13	0.19	291	-0.68	0.496
Beetles	-2.19	0.26	291	-8.52	**<0.001**
Oribatid mites	-0.33	0.16	291	-2.05	**0.041**
Spiders	-1.34	0.21	291	-6.24	**<0.001**
OM: Springtails surface	-14.78	2.54	291	-5.81	**<0.001**
OM: Springtails soil	-20.97	3.77	291	-5.57	**<0.001**
OM: Beetles	7.25	3.13	291	2.32	**0.021**
OM: Oribatid mites	-7.80	2.52	291	-3.09	**0.002**
OM: Spiders	-2.33	3.07	291	-0.76	0.448

(**Table S3f**)	Value	SE	df	t-value	p-value
(Intercept)	1.64	0.24	291	6.87	**<0.001**
C	0.33	0.11	6	2.92	**0.027**
Springtails surface	0.14	0.13	291	1.12	0.264
Springtails soil	-0.41	0.15	291	-2.68	**0.008**
Beetles	-2.09	0.22	291	-9.38	**<0.001**
Oribatid mites	-0.42	0.14	291	-3.09	**0.002**
Spiders	-1.36	0.18	291	-7.41	**<0.001**
C: Springtails surface	-0.30	0.05	291	-5.56	**<0.001**
C: Springtails soil	-0.43	0.08	291	-5.30	**<0.001**
C: Beetles	0.15	0.07	291	2.34	**0.020**
C: Oribatid mites	-0.17	0.05	291	-3.13	**0.002**
C: Spiders	-0.05	0.07	291	-0.81	0.421

(**Table S3g**)	Value	SE	df	t-value	p-value
(Intercept)	1.62	0.24	291	6.72	**<0.001**
N	4.23	1.43	6	2.96	**0.025**
Springtails surface	0.18	0.13	291	1.38	0.168
Springtails soil	-0.40	0.15	291	-2.63	**0.009**
Beetles	-2.13	0.23	291	-9.18	**<0.001**
Oribatid mites	-0.39	0.14	291	-2.83	**0.005**
Spiders	-1.38	0.19	291	-7.29	**<0.001**
N: Springtails surface	-4.03	0.69	291	-5.83	**<0.001**
N: Springtails soil	-5.47	0.98	291	-5.60	**<0.001**
N: Beetles	2.13	0.89	291	2.40	**0.017**
N: Oribatid mites	-2.34	0.70	291	-3.34	**0.001**
N: Spiders	-0.57	0.85	291	-0.67	0.505

(**Table S3h**)	Value	SE	df	t-value	p-value
(Intercept)	1.51	3.62	291	0.42	0.677
pH	0.15	0.80	6	0.18	0.860
Springtails surface	-1.45	1.62	291	-0.90	0.371
Springtails soil	-0.93	1.97	291	-0.47	0.639
Beetles	1.79	2.58	291	0.69	0.488
Oribatid mites	-1.85	1.75	291	-1.06	0.291
Spiders	0.38	2.33	291	0.16	0.869
pH: Springtails surface	0.23	0.36	291	0.65	0.516
pH: Springtails soil	-0.04	0.44	291	-0.09	0.927
pH: Beetles	-0.78	0.58	291	-1.34	0.180
pH: Oribatid mites	0.24	0.39	291	0.63	0.529
pH: Spiders	-0.41	0.52	291	-0.79	0.428

Table S4 Predictors of (**a**) linear models and (**b**) fixed effects of linear mixed-effects models comparing the Shannon index of plant and animal groups along (**a**) elevational and (**b**) thermic vegetation indicator (TVI) gradients on Mt. Schrankogel, Tyrol, Austria. The baseline level of the fixed effect organism group is vascular plants. A significant ecological factor:group interaction means that patterns of the Shannon index of the respective group along the respective gradient are significantly deviating from that of vascular plants. P-values significant at the 0.05 level are printed in bold.

(**Table S4a**)	Value	SE	df	t-value	p-value
(Intercept)	11.23	0.87		12.87	**<0.001**
Elevation	0.00	0.00		-11.43	**<0.001**
Springtails surface	-11.85	1.14		-10.41	**<0.001**
Springtails soil	-10.30	1.15		-8.97	**<0.001**
Beetles	-5.10	1.14		-4.48	**<0.001**
Oribatid mites	-2.68	1.15		-2.33	**0.020**
Spiders	-3.82	1.14		-3.36	**0.001**
Elevation: Springtails surface	0.004	0.0004		10.42	**<0.001**
Elevation: Springtails soil	0.003	0.0004		8.47	**<0.001**
Elevation: Beetles	0.001	0.0004		3.76	**<0.001**
Elevation: Oribatid mites	0.001	0.0004		1.99	**0.048**
Elevation: Spiders	0.001	0.0004		2.79	**0.006**

(**Table S4b**)	Value	SE	df	t-value	p-value
(Intercept)	-0.02	0.19	27	-0.12	0.908
TVI	0.66	0.09	26	7.61	**<0.001**
Springtails surface	1.61	0.19	289	8.27	**<0.001**
Springtails soil	0.60	0.19	289	3.08	**0.002**
Beetles	-0.42	0.19	289	-2.14	**0.033**
Oribatid mites	0.02	0.19	289	0.08	0.935
Spiders	-0.32	0.19	289	-1.62	0.107
TVI: Springtails surface	-0.82	0.09	289	-9.41	**<0.001**
TVI: Springtails soil	-0.60	0.09	289	-6.94	**<0.001**
TVI: Beetles	-0.21	0.09	289	-2.41	**0.017**
TVI: Oribatid mites	-0.20	0.09	289	-2.33	**0.020**
TVI: Spiders	-0.17	0.09	289	-1.94	0.054

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