Spatial variability in the soil macroinvertebrate food web of an agroecosystem: a stable isotope analysis

Supplemental material

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Electronic Supplementary Material (ESM)

Table S1 Complete list of plant species with their corresponding aerial biomass ($g \cdot m^{-2}$) in each sample. Key: Samples ending in: T, Citrus:Trunk; M, Citrus:Middle; R, Citrus:Row; A, Abandoned.

Family	Species	22T	23T	24T	32T	33T	34T	42T	43T	44T	22M	23M	24M	32M	33M	34M	42M	43M	44M	22R	23R	24R	32R	33R	34R	42R	43R	44R	4AA	4BA	4CA	5AA	5BA	5CA	6AA	6BA	6CA
Gramineae	*Avena barbata* Pott ex Link, 1800		59.4									80.3	155.2	81.8	91.5	236.3	45.3	197.0		26.4	162.7	123.7	54.9	26.2	137.0	45.8	95.8	221.8	5.9	65.0	53.6	9.6	98.9		176.8	189.3	93.3
Gramineae	*Hordeum murinum* L., 1753		83.0	79.0				78.1			36.6	12.2	110.9	1.6	41.9	52.3	5.1	60.8	146.9	9.4	1.5	37.1		50.9	1.9	145.1	15.7	20.6		5.3	5.6	2.6	24.3	17.3	19.0	19.0	63.8
Gramineae	*Bromus madritensis* L.,1755			26.1	29.6			1.1			10.1			3.7	60.8	0.8	48.0	11.8	97.3					1.8	5.4		58.9	19.0	0.6	22.9	6.1	10.6	1.2	1.4		21.8	88.0
Gramineae	*Bromus hordeaceus* L., 1753																3.8	1.9				2.6					32.6			2.4		2.3			6.2	2.2
Gramineae	*Lolium rigidum* Gaudin, 1811											5.8															2.2	1.1		6.1	20.6			5.1			
Gramineae	*Piptatherum miliaceum* (L.) Coss., 1851							0.3			0.2		0.3				0.1							14.6						1.1	102.1						
Gramineae	*Lophochloa cristata* (L.) Hyl., 1953																																		0.1		
Gramineae, C_4	*Hyparrhenia hirta* (L.) Stapf, 1919																												5.0								
Gramineae, C_4	*Cynodon dactylon* (L.) Pers., 1805			5.1								9.0	11.0	142.4		5.8		0.6					37.6	69.1	174.7		4.0										
Leguminosae	*Medicago* sp. L., 1753																										12.8		140.5	93.6	301.3	42.1	446.2	54.1	14.6	73.4	191.8
Leguminosae	*Trifolium campestre* Schreb., 1804																												17.0	1.4	3.8	10.6			66.2	2.3	
Leguminosae	*Trifolium glomeratum* L., 1753																												18.7				2.6	17.3	2.1		
Compositae	*Sonchus oleraceus* L., 1753							28.2			23.0									16.2										21.3	29.4			3.5		2.7	
Compositae	*Sonchus tenerrimus* L., 1753																													40.0							
Compositae	*Dittrichia viscosa* (L.) Greuter, 1973																													481.3		412.5				655.0	
Compositae	*Carduus pycnocephalus* L., 1763																													38.7	4.0	10.2	16.5	117.3	195.2		244.0
Compositae	*Reichardia picroides* (L.) Roth, 1787																																	47.0		46.9	56.5
Compositae	*Crepis* sp. L., 1753																																29.0				
Compositae	*Leontodon taraxacoides* (Vill.) Mérat, 1831																			16.0																0.5	
Compositae	*Conyza bonariensis* (L.) Cronquist, 1943		302.9																																		
Compositae	*Anacyclus valentinus* L., 1753																				1.3																
Convolvulaceae	*Convolvulus arvensis* L., 1753			5.8	0.6			4.2				22.4	25.4	0.9		19.7	45.4	6.2			4.6	84.6	14.4	57.3	1.7		9.1	3.2			33.4				52.5		21.4
Convolvulaceae	*Convolvulus althaeoides* L., 1753																									19.2											
Caryophyllaceae	*Silene* sp. L., 1753																												124.3					28.6	1.7		
Caryophyllaceae	*Spergularia rubra* (L.) J.Presl & C.Presl, 1819										20.5																										
Rubiaceae	*Rubia peregrina* L., 1753	1.1		33.4		3.7																															
Rubiaceae	*Galium parisiense* L., 1753																																		0.5	0.4	1.4
Geraniaceae	*Geranium molle* L., 1753																					33.3															
Geraniaceae	*Geranium* sp. L., 1753																																	1.0	0.1		1.2
Urticaceae	*Parietaria officinalis* L., 1753	418.9			243.2	52.2	88.3		168.8	150.9	5.1								7.0																		
Cruciferae	*Hirschfeldia incana* (L.) Lagr.-Foss., 1847																			78.6		12.5							3.2					1.3	115.4	4.9	
Umbelliferae	*Daucus carota* L., 1753											217.1									27.4																
Plantaginaceae	*Plantago lagopus* L., 1753																			189.3		47.2							1.9	13.9	1.3		15.8	11.2	79.5	0.8	3.5
Cyperaceae, C_4	*Cyperus rotundus* L., 1753				0.2										3.0	2.2	4.8	2.0	2.9							11.8	2.2										
Liliaceae	*Asparagus officinalis* L., 1753		0.9	0.3																																	
Oleaceae	*Phillyrea angustifolia* L., 1753		0.7	1.6																																	
Euphorbiaceae	*Euphorbia* sp. L., 1753																										0.2										
Oxalidaceae	*Oxalis* sp. L., 1753				0.4						1.4											0.9	1.1			23.8												
Chenopodiaceae	*Chenopodium opulifolium* Schrad. ex W.D.J.Koch & Ziz, 1814											1.9																									
Amaranthaceae	*Amaranthus deflexus* L., 1771																																				3.7
Boraginaceae	*Cynoglossum creticum* Mill., 1768																															52.2					

Table S2 Complete list of macroinvertebrate species with their corresponding abundances (individuals·m^{-2}) in each sample. Key: Samples ending in: T, Citrus:Trunk; M, Citrus:Middle; R, Citrus:Row; A, Abandoned. For Coleoptera (Col) and Araneae (Ara) family is also given. Col: Sta: Staphylinidae, Ten: Tenebrionidae, Car: Carabidae, Sil: Silphidae, His: Histeridae, Cry: Cryptophagidae, Nit: Nitidulidae, Lat: Lathridiidae; Ara: Lyn: Linyphiidae, Gna: Gnaphosidae, Lyc: Lycosidae, Sal: Salticidae, Nem: Nemesiidae, The: Theridiidae, Tho: Thomisidae, Zod: Zodariidae, Cor: Corinnidae, Dic: Dictynidae, Dys: Dysderidae, Tit: Titanoecidae.

Taxonomic level	Species	22T	23T	24T	32T	33T	34T	42T	43T	44T	22M	23M	24M	32M	33M	34M	42M	43M	44M	22R	23R	24R	32R	33R	34R	42R	43R	44R	4AA	4BA	4CA	5AA	5BA	5CA	6AA	6BA	6CA
Col: Sta	Aleocharinae Fleming, 1881	1936	96	320	576	752	880	144	144	848	16	48							32		64				32		48		96	160	208	352	96	48	336	304	288
Col: Sta	*Medon* sp. Stephens, 1883			32		16		32		16	16								16			16									16	16			16		16
Col: Sta	Tachyporinae sp. 1 MacLeay, 1825	32	80	96	272	96	64	32	48	32		16						16	32			16									32					32	16
Col: Sta	Tachyporinae sp. 2 MacLeay, 1825	16	32	16		48	32			16											16							16									
Col: Sta	*Xantholinus* sp. 1 Dejean, 1821	48		16	16	48	32	16		32																											16
Col: Sta	*Xantholinus* sp. 2 Dejean, 1821	64		16	32		32			16		16																									
Col: Sta	*Philonthus* sp. Stephens, 1821		16							16																					32		16				
Col: Sta	*Astenus* sp. Dejean, 1833									16																											
Col: Sta	*Rugilus* sp. Leach, 1819				16																																
Col: Sta	*Ocypus olens* (O. Muller, 1764)																		16																		
Col: Sta	Oxytelinae Fleming, 1821								16										16																		
Col: Sta	Pselaphinae Raffray, 1903																													32							
Col: Ten	*Oochrotus unicolor* Lucas, 1852										48			16			48		64									16		32					32		16
Col: Ten	Tenebrionidae (larvae) Latreille, 1802																												32				16	16			
Col: Ten	*Gonocephalum rusticum* (Olivier, 1811)																																		16		
Col: Car	*Amara* sp. Bonelli, 1810	16										32								16	16																
Col: Car	*Microlestes* sp. Schmidt-Goebel, 1846													16								16															
Col: Car	*Calathus melanocephalus* (L., 1758)									32																											
Col: Sil	*Silpha puncticollis* Lucas, 1846																														16			16			
Col: His	*Kissister minimus* (Laporte de Castelnau, 1840)	16		48	16			16			16			16					16	16	64	32		32					48	16	32		16			16	
Col: Cry	*Ephistemus globulus* (Paycull, 1798)	16			16		16																														
Col: Nit	*Carpophilus* sp. Stephens, 1829	16																																			
Col: Scy	Scydmaeninae Leach, 1815			16													16										16									16	
Col: Lat	Lathridiidae (larvae) Fleischer, 1890		16				16																														
Col: others	Coleoptera (larvae), sp. 1 L., 1758									16																											
Col: others	Coleoptera (larvae), sp. 2 L., 1758	16					16																														
Col: others	Coleoptera (larvae), sp. 3 L., 1758																													16							
Col: others	Coleoptera (larvae), sp. 4 L., 1758																													16							
Ara: Lyn	*Meioneta rurestris* (C.L.Koch, 1836)	608				16	208	32		32	16	16						32							16						16						16
Ara: Lyn	*Pelecopsis inedita* (O. P.-Cambridge, 1875)	64			256		64				80									16																16	
Ara: Lyn	*Pelecopsis parallela* (Wider, 1834)											32									32																
Ara: Lyn	*Ostearius melanopygius* (O. P.-Cambridge, 1879)							16												16																	
Ara: Lyn	*Walckenaeria stylifrons* (O. P.-Cambridge, 1875)	16																																			

Table S2 (continued)

Taxonomic level	Species	22T	23T	24T	32T	33T	34T	42T	43T	44T	22M	23M	24M	32M	33M	34M	42M	43M	44M	22R	23R	24R	32R	33R	34R	42R	43R	44R	4AA	4BA	4CA	5AA	5BA	5CA	6AA	6BA	6CA
Ara: Gna	*Gnaphosa lucifuga* (Walkenaer, 1802)														32			16					16	16		48	16	32						16	48		16
Ara: Gna	*Heser nilicola* (O. P.-Cambridge, 1874)											32		16			48					64				16											
Ara: Gna	*Setaphis carmeli* (O. P.-Cambridge, 1872)																16	16						16													
Ara: Gna	*Zelotes civicus* (Simon, 1878)			16			16																		16						16				16		
Ara: Sal	*Euophrys sulfurea* (L. Koch, 1867)																16																				
Ara: Sal	*Talavera aequipes* (O. P.-Cambridge, 1871)																32																				
Ara: Sal	*Talavera petrensis* (C.L.Koch, 1837)																								16		16										
Ara: Lyc	*Trabaea cazorla* Snazell, 1983										48	32					16	16				16			16												
Ara: Lyc	*Pardosa proxima* (C.L.Koch, 1847)																	16									16										
Ara: Nem	*Nemesia* sp. Audouin, 1826	16					16				16																										
Ara: The	*Asagena phalerata* (Panzer, 1801)														16								16	16			16			32	16	16	16	16			
Ara: Tho	*Ozyptila pauxilla* (Simon, 1870)							16			16		16											16												32	
Ara: Zod	*Zodarion styliferum* (Simon, 1870)												32	32	16	16	16		32		16							32			16				144		
Ara: Cor	*Trachelas minor* L. Koch, 1872																			16											16						
Ara: Dic	*Dictyna pusilla* Thorell, 1856																														16						
Ara: Dys	*Dysdera crocata* C.L. Koch, 1838	16	48	80	96		64	16		16	32		16	16			32		32		16		16	16													
Ara: Tit	*Titanoeca praefica* Simon, 1870															16																					
Acari	Erythraeidae Robineau-Desvoidy 1828											32	96	160	48	96	16	16	16	16	16	32	32	32	48	80	48	32	32	32	48			16		80	48
Acari	Acari, sp. 1 Leach, 1817			16																																	
Acari	Acari, sp. 2 Leach, 1817												16																								
Chilopoda	*Geophilus* sp. Leach, 1814	128	96	176	112	64	192	80	32	48	16	80	16		16		16	16			80			16	32	48	64	16		32	64	32	16	48	32	32	32
Chilopoda	*Lithobius* sp. Leach, 1814	16	320	144	16			48		80	32	16		32					16	80		32		16	48	16	16				64	96	80	64	64	32	32
Diplopoda	*Polydesmus* sp. Latreille, 1803	16			64	32		32	16	32																											
Isopoda	*Armadillidium vulgare* Latreille, 1804	32	208	256	320	160	352	480	64	304	112	432	48	32		64	32	144	128		112	160	32	32	96	64	32			112	32		16	32			16
Isopoda	*Porcellio* sp. Latreille, 1804	128	112		128	48	32			96											16						16			96							32
Blattodea	*Loboptera decipiens* Germar, 1817		16	16			16				64	128	32	96	32		16	48			32	96		16	16	16		16		32		16	16	112			32
Embioptera	*Haploembia solieri* Rambur, 1842					16																								16					16	32	16
Embioptera	*Embia* sp. Latreille, 1825																																	16			
Lepidoptera	Pyralidae (larvae) Latreille, 1809						16							16								16							16	16	32	16		48	48	32	160
Lepidoptera	Noctuidae (larvae) Latreille, 1809	32	16	32	16		16							32									16		16												
Lepidoptera	Geometridae (larvae) Leach, 1815																			16										16	16						
Lepidoptera	Arctiidae (larvae) Leach, 1815																												32				16				
Lepidoptera	Lepidoptera (larvae) L., 1758												16								16											16					

Table S2 (continued)

Taxonomic level	Species	22T	23T	24T	32T	33T	34T	42T	43T	44T	22M	23M	24M	32M	33M	34M	42M	43M	44M	22R	23R	24R	32R	33R	34R	42R	43R	44R	4AA	4BA	4CA	5AA	5BA	5CA	6AA	6BA	6CA
Dermaptera	*Euborellia annulipes* Dohrn, 1864	16	64	32	16		48	144		16	32	16		16	16		32				16			80		16							16		16		
Dermaptera	*Forficula pubescens* (Gene, 1837)		32																											16							
Formicidae	*Formica rufibarbis* Fabricius, 1793		32				16					16	1088		3216				48						16											
Formicidae	*Lasius grandis* Forel, 1909	96	192	64	2000	32	16		16	112	16	3968	16		4672			3072	112	16	128	464					48									
Formicidae	*Messor barbarus* (L., 1767)	288		48	560		16				1712		928	720	48	768	1040		1888	64		48	64	176	96	32	48	1184	2336	1536	80	16	112	144	960	64	2768
Formicidae	*Plagiolepis pygmaea* (Latreille, 1798)		16		16	16	48				32	320	288	32	592	352			16	160	192					1584	16	16	32	2576		240	32		848		
Formicidae	*Camponotus aethiops* (Latreille, 1798)					16							32			16									16	16											
Formicidae	*Hypoponera eduardi* (Forel, 1894)		208	112		16	16	48		96					32		80	32							64	64											
Formicidae	*Pheidole pallidula* (Nylander, 1849)	48			32	256				16		16				240	352	48	16	176	64			384	224	784	384	352				160	192		528		
Formicidae	*Solenopsis* sp. Westwood, 1840	16				32		16					16	16	160						16			16	16										16		
Formicidae	*Tetramorium semilaeve* Andre, 1883		96	160	48	16				48	32		96	528	48				192				64					864		1520				336	96	208	
Oligochaeta	*Aporrectodea trapezoides* (Dugès, 1828)					16		16	48												32									16				16	32	32	
Oligochaeta	*Aporrectodea rosea* (Savigny 1826)																				16										48		16			16	
Oligochaeta	*Dendrobaena* sp. Eisen, 1874				32			80	80																												
Oligochaeta	*Octodrilus complanatus* (Dugès, 1828)						16	16													16																
Oligochaeta	*Scherotheca* sp. Bouché, 1972																								16												
Oligochaeta	*Amynthas corticis* (Kinberg, 1867)			112	16	16		112		16														32													
Gastropoda	*Cornu aspersum* (O.F. Muller, 1774)	16			16																																16
Gastropoda	*Rumina decollata* (L., 1758)			16		16	16		16		16								16																		
Gastropoda	*Euomphalia strigella* (Draparnaud, 1801)																																		16		
Gastropoda	*Milax* sp. J.E. Gray, 1855																																				16
Gastropoda	*Deroceras* sp. Rafinesque, 1820																																		16		
Gastropoda	Helicidae Rafinesque, 1815		16			48								16																							
Opiliones	Opiliones Sundevall, 1833														16																						
Mutillidae	Mutillidae Latreille, 1802																						16														
Zygentoma	Zygentoma Börner, 1904																											16									
Neuroptera	Myrmeleontidae (larvae) Latreille, 1802		16																																		
Diptera	Stratiomyidae (larvae) Latreille, 1802					16											32					32															

Table S3 δ^{13}C and δ^{15}N values (mean ± SE) of the environmental items at the studied area (plants, soil, citrus leaves and fertilizer) for each treatment.

	Treatment	Family	Species	N	δ^{13}C (‰)		δ^{15}N (‰)	
					mean	SE	mean	SE
Plants	Citrus:Trunk	Urticaceae	*Parietaria officinalis*	6	-31.40	0.08	7.52	0.26
		Gramineae	*Hordeum murinum*	3	-30.27	0.86	5.37	0.59
			Avena barbata	1	-29.79		7.66	
			Bromus madritensis	2	-31.83	0.70	6.27	0.64
		Compositae	*Conyza bonariensis*	1	-29.77		8.48	
			Sonchus oleraceus	1	-30.68		11.82	
		Rubiaceae	*Rubia pergrina*	1	-32.74		3.83	
		δ-value weighted by biomass		15	-31.07	0.29	7.16	0.30
	Citrus:Middle	Gramineae	*Hordeum murinum*	6	-29.31	0.13	4.78	0.36
			Avena barbata	7	-29.01	0.15	4.67	0.47
			Bromus madritensis	4	-29.43	0.18	4.56	0.65
		Gramineae C_4	*Cynodon dactylon*	1	-14.78		3.40	
		Compositae	*Sonchus oleraceus*	1	-29.70		6.89	
		Convolvulaceae	*Convolvulus arvensis*	3	-27.96	0.26	5.02	0.30
		Umbelliferae	*Daucus carota*	1	-29.66		4.23	
		Caryophyllaceae	*Spergularia rubra*	1	-30.93		6.55	
		δ-value weighted by biomass		24	-28.20	1.04	4.72	0.31
		δ-value weighted by biomass (without C_4)		23	-29.20	0.14	4.86	0.31
	Citrus:Row	Gramineae	*Hordeum murinum*	5	-28.76	0.19	4.20	0.39
			Avena barbata	9	-29.40	0.19	4.05	0.54
			Bromus madritensis	1	-28.68		3.84	
			Bromus hordeaceus	1	-29.72		3.27	
		Gramineae C_4	*Cynodon dactylon*	3	-14.76	0.11	4.27	0.18
		Compositae	*Sonchus oleraceus*	1	-30.25		3.35	
		Convolvulaceae	*Convolvulus arvensis*	4	-28.66	0.11	4.76	0.27
		Umbelliferae	*Daucus carota*	1	-29.19		3.28	
		Plantaginaceae	*Plantago lagopus*	2	-30.26	0.35	3.40	1.79
		Cruciferae	*Hirschfeldia incana*	1	-30.16		8.16	
		Geraniaceae	*Geranium molle*	1	-29.93		5.19	
		Oxalidaceae	*Oxalis* sp.	1	-30.95		5.74	
		Leguminosae	*Medicago* sp.	1	-27.79		-1.27	
		δ-value weighted by biomass		31	-27.37	1.12	4.00	0.33
		δ-value weighted by biomass (without C_4)		28	-29.38	0.19	4.13	0.38
	Abandoned	Compositae	*Dittrichia viscosa*	3	-28.44	0.35	2.78	0.97
			Sonchus tenerrimus	1	-31.07		0.11	
			Carduus pycnocephalus	4	-30.31	0.13	1.08	0.59
			Sonchus oleraceus	1	-28.38		-4.01	
			Reichardia picroides	3	-29.37	0.08	2.87	1.19
			Crepis sp.	1	-28.62		-0.72	

Table S3 (continued)

	Treatment	Family	Species	N	δ^{13}C (‰)		δ^{15}N (‰)	
					mean	SE	mean	SE
		Leguminosae	*Medicago* sp.	8	-28.27	0.26	-0.25	0.22
			Trifolium glomeratum	2	-29.16	0.09	-0.26	0.31
			Trifolium campestre	2	-29.52	0.03	-1.53	0.18
		Gramineae	*Hordeum murinum*	2	-28.86	0.29	1.48	0.23
			Avena barbata	6	-29.19	0.14	1.28	0.75
			Bromus madritensis	2	-28.78	0.03	0.32	0.11
			Piptatherum miliacea	1	-28.73		-0.22	
		Convolvulaceace	*Convolvulus arvensis*	2	-27.58	0.55	0.21	1.44
		Caryophyllaceae	*Silene vulgaris*	2	-28.49	0.16	2.18	0.51
		Plantaginaceae	*Plantago lagopus*	1	-30.87		0.98	
		Cruciferae	*Hirschfeldia incana*	1	-27.04		4.12	
		Boraginaceae	*Cynoglossum creticum*	1	-28.83		1.72	
		δ-value weighted by biomass		43	-28.71	0.21	1.26	0.45
Soil	Citrus:Trunk			9	-25.30	0.12	8.31	0.09
	Citrus:Middle			9	-25.60	0.24	6.81	0.14
	Citrus:Row			9	-25.22	0.19	6.01	0.15
	Abandoned			9	-27.52	0.12	3.83	0.22
Citrus leaves				9	-26.27	0.19	9.97	0.32
Fertilizer	2011			3	-24.84	0.19	16.14	0.50
	2012			3	-24.81	0.16	15.04	0.15
	2013			3	-25.08	0.14	9.09	0.04

Table S4 δ^{13}C and δ^{15}N values (mean ± SE) of the macroinvertebrate species at the studied area for each treatment. For Coleoptera (Col) and Araneae (Ara) family is also given. Col: Ten: Tenebrionidae, Car: Carabidae, Hist: Histeridae, Sil: Silphidae; Ara: Lyn: Lyniphiidae, Gna: Gnaphosidae, Sal: Salticidae, Lyc: Lycosidae, Nem: Nemesiidae, The: Theridiidae, Tho: Thomisidae, Zod: Zodariidae, Dys: Dysderidae.

Taxonomic level	Species	Trophic guild	Treatment	N	δ^{13}C (‰)		δ^{15}N (‰)	
					mean	SE	mean	SE
Staphylinidae	Aleocharinae	Detritivore	Citrus:Trunk	9	-26.62	0.28	11.31	0.72
			Citrus:Middle	2	-26.45	0.86	8.60	1.77
			Citrus:Row	2	-27.06	0.29	10.22	1.11
			Abandoned	9	-27.71	0.13	7.04	0.39
	Medon sp.	Detritivore	Citrus:Trunk	3	-25.84	0.55	10.39	2.08
			Abandoned	3	-26.26	0.16	9.55	0.50
	Tachyporinae (sp.1)	Detritivore	Citrus:Trunk	9	-27.75	0.18	9.81	0.57
			Citrus:Middle	3	-26.88	0.15	8.91	2.31
			Abandoned	3	-27.93	0.31	7.36	0.51
	Tachyporinae (sp.2)	Detritivore	Citrus:Trunk	6	-27.01	0.47	10.82	1.61
	Xantholinus (sp.1)	Predator	Citrus:Trunk	7	-26.80	0.22	11.78	1.01
	Xantholinus (sp.2)	Predator	Citrus:Trunk	5	-26.85	0.50	10.12	1.24
	Philonthus sp.	Predator	Citrus:Trunk	2	-27.00	0.08	13.52	2.91
			Abandoned	2	-26.43	0.02	6.60	0.15
Col: Ten	*Oochrotus unicolor*	Detritivore	Citrus:Middle	4	-24.48	0.69	10.57	0.95
			Abandoned	3	-24.97	0.50	5.11	0.72
	Tenebrionidae (larva)	Detritivore	Abandoned	3	-25.76	0.44	4.58	0.75
Col: Car	*Amara* sp.	Herbivore	Citrus:Row	2	-28.46	0.21	7.14	0.45
Col: Hist	*Kissister minimus*	Predator	Citrus:Middle	3	-26.59	0.81	14.83	0.44
			Citrus:Row	3	-26.80	0.85	14.81	1.16
			Abandoned	4	-26.96	0.23	10.32	0.42
Col: Sil	*Silpha puncticollis*	Predator	Abandoned	2	-26.89	0.39	5.20	0.15
Ara: Lyn	*Meioneta rurestris*	Predator	Citrus:Trunk	3	-26.41	0.17	9.95	0.32
	Pelecopsis inedita	Predator	Citrus:Trunk	3	-26.83	0.31	12.63	0.58
Ara: Gna	*Gnaphosa lucifuga*	Predator	Citrus:Middle	2	-23.63	0.22	13.72	0.06
			Citrus:Row	4	-23.93	0.91	13.58	1.03
			Abandoned	2	-25.31	0.28	8.96	0.38
	Heser nilicola	Predator	Citrus:Middle	3	-25.76	0.12	11.82	0.23
	Setaphis carmeli	Predator	Citrus:Middle	2	-24.05	0.69	12.38	1.22
	Zelotes civicus	Predator	Citrus:Trunk	2	-24.74	0.05	14.84	0.22
Ara: Sal	*Talavera petrensis*	Predator	Citrus:Row		-25.33	1.73	11.35	0.53
Ara: Lyc	*Trabaea cazorla*	Predator	Citrus:Middle	4	-25.13	0.35	12.06	0.23
			Citrus:Row	2	-23.61	1.76	11.69	0.01
Ara: Nem	*Nemesia* sp.	Predator	Citrus:Trunk	2	-24.45	0.46	16.46	0.42
Ara: The	*Asagena phalerata*	Predator	Citrus:Row	2	-24.20	0.60	11.82	0.25
			Abandoned	2	-25.94	0.10	8.31	0.92

Table S4 (continued)

Taxonomic level	Species	Trophic guild	Treatment	N	δ^{13}C (‰)		δ^{15}N (‰)	
					mean	SE	mean	SE
Ara: Tho	*Ozyptila pauxilla*	Predator	Citrus:Middle	2	*-24.75*	0.19	13.60	1.46
Ara: Zod	*Zodarion styliferum*	Predator	Citrus:Middle	6	-23.71	0.42	12.97	0.29
			Citrus:Row	2	-24.41	0.47	11.98	0.95
Ara: Dys	*Dysdera crocata*	Predator	Citrus:Trunk	7	-24.31	0.14	14.63	0.30
			Citrus:Middle	5	-24.03	0.42	13.93	0.32
			Citrus:Row	3	-24.13	0.19	14.64	0.64
Acari	Erythraeidae	Predator	Citrus:Middle	5	-23.72	0.43	12.97	0.37
			Citrus:Row	8	-24.04	0.45	12.12	0.36
			Abandoned	5	-25.11	0.38	7.57	0.66
Chilopoda	*Geophilus* sp.	Predator	Citrus:Trunk	8	-24.99	0.47	14.24	0.54
			Citrus:Middle	6	-24.38	0.74	14.27	1.03
			Citrus:Row	6	-25.48	0.68	13.52	0.36
			Abandoned	8	-26.48	0.42	7.92	0.42
	Lithobius sp.	Predator	Citrus:Trunk	6	-25.81	0.21	13.81	1.02
			Citrus:Middle	3	-25.61	0.74	11.79	0.73
			Citrus:Row	6	-25.45	0.50	12.98	1.55
			Abandoned	7	-26.45	0.10	8.22	0.41
Diplopoda	*Polydesmus* sp.	Herbivore	Citrus:Trunk	5	-23.25	0.13	9.83	0.37
Isopoda	*Armadillidium vulgare*	Detritivore	Citrus:Trunk	9	-23.00	0.26	10.15	0.33
			Citrus:Middle	8	-23.36	0.19	9.49	0.48
			Citrus:Row	7	-23.07	0.21	10.11	0.23
			Abandoned	4	-24.17	0.68	4.58	0.80
	Porcellio sp.	Detritivore	Citrus:Trunk	6	-24.07	0.71	12.42	0.41
			Citrus:Row	2	-23.91	1.34	11.88	0.99
			Abandoned	2	-25.58	0.55	5.83	0.22
Blattodea	*Loboptera decipiens*	Detritivore	Citrus:Trunk	3	-24.43	0.52	7.64	0.84
			Citrus:Middle	7	-24.94	0.36	6.83	0.43
			Citrus:Row	6	-25.03	0.35	7.42	0.53
			Abandoned	5	-24.90	1.05	3.53	1.29
Embioptera	*Haploembia solieri*	Herbivore	Abandoned	4	-26.68	0.29	3.81	0.41
Lepidoptera	Pyralidae	Herbivore	Abandoned	8	-28.66	0.28	5.38	0.15
Dermaptera	*Euborellia annulipes*	Omnivore	Citrus:Trunk	7	-25.08	0.48	12.32	0.38
			Citrus:Middle	4	-25.74	0.44	12.54	0.55
			Citrus:Row	3	-23.91	0.76	12.16	0.90
			Abandoned	2	-25.99	0.03	7.04	0.22
Formicidae	*Formica rufibarbis*	Omnivore	Citrus:Middle	2	-23.92	1.44	12.39	0.11
	Lasius grandis	Omnivore	Citrus:Middle	3	-24.14	0.55	12.33	0.17
	Messor barbarus	Herbivore	Citrus:Middle	6	-24.57	0.54	9.86	0.19
			Abandoned	4	-25.97	0.38	5.17	0.39
	Plagiolepis pygmaea	Omnivore	Abandoned	2	-28.21	0.62	6.06	0.78

Table S4 (continued)

Taxonomic level	Species	Trophic guild	Treatment	N	δ^{13}C (‰)		δ^{15}N (‰)	
					mean	SE	mean	SE
Oligochaeta	*Aporrectodea trapezoides*	Detritivore	Citrus:Trunk	3	-25.07	0.21	12.17	0.53
			Abandoned	4	-26.11	0.20	4.96	0.38
	Aporrectodea rosea	Detritivore	Abandoned	3	-25.90	0.13	6.39	1.11
	Dendrobaena sp.	Detritivore	Citrus:Trunk	3	-24.42	0.26	12.71	0.61
	Amynthas corticis	Detritivore	Citrus:Trunk	5	-25.13	0.47	11.66	0.29
Gastropoda	*Cornu aspersum*	Herbivore	Citrus:Trunk	2	-27.39	0.20	7.69	1.60
	Rumina decollata	Predator	Citrus:Trunk	4	-25.17	0.34	9.68	0.12
			Citrus:Middle	2	-25.85	0.65	10.46	0.16

Table S5 PERMANOVA table of the pairwise comparisons of stable isotope signatures (δ^{13}C and δ^{15}N) between macroinvertebrate species within trophic guilds for each food web. (In bold: $P < 0.01$).

Treatment	Trophic guild	Species	t	*P*(MC)
Citrus:Trunk	Detritivores	*Armadillidium vulgare* vs *Porcellio* sp.	2.98	**0.0022**
		Armadillidium vulgare vs Aleocharinae	4.29	**0.0001**
		Armadillidium vulgare vs Tachyporinae sp. 1	6.49	**0.0001**
		Armadillidium vulgare vs Tachyporinae sp. 2	2.82	**0.0026**
		Armadillidium vulgare vs *Amynthas corticis*	3.70	**0.0006**
		Porcellio sp. vs Aleocharinae	2.39	0.013
		Porcellio sp. vs Tachyporinae sp. 1	4.56	**0.0001**
		Porcellio sp. vs Tachyporinae sp. 2	1.80	0.075
		Porcellio sp. vs *Amynthas corticis*	1.26	0.23
		Aleocharinae vs Tachyporinae sp. 1	1.92	0.067
		Aleocharinae vs Tachyporinae sp. 2	0.38	0.76
		Aleocharinae vs *Amynthas corticis*	1.35	0.18
		Tachyporinae sp. 1 vs Tachyporinae sp. 2	0.82	0.45
		Tachyporinae sp. 1 vs *Amynthas corticis*	3.53	**0.0012**
		Tachyporinae sp. 2 vs *Amynthas corticis*	1.08	0.32
	Predators	*Geophilus* sp. vs *Lithobius* sp.	0.76	0.54
		Geophilus sp. vs *Rumina decollata*	4.09	**0.0007**
		Geophilus sp. vs *Xantholinus* sp. 1	2.51	0.012
		Geophilus sp. vs *Xantholinus* sp. 2	3.30	**0.002**
		Geophilus sp. vs *Dysdera crocata*	0.91	0.43
		Lithobius sp. vs *Rumina decollata*	3.15	0.010
		Lithobius sp. vs *Xantholinus* sp. 1	1.53	0.15
		Lithobius sp. vs *Xantholinus* sp. 2	2.30	0.043
		Lithobius sp. vs *Dysdera crocata*	1.67	0.10
		Rumina decollata vs *Xantholinus* sp. 1	1.86	0.079
		*Rumina decollata*vs *Xantholinus* sp. 2	1.12	0.30
		*Rumina decollata*vs *Dysdera crocata*	9.58	**0.0001**
		Xantholinus sp. 1 vs *Xantholinus* sp. 2	0.99	0.35
		Xantholinus sp. 1 vs *Dysdera crocata*	3.47	**0.0014**
		Xantholinus sp. 2 vs *Dysdera crocata*	4.38	**0.001**
Citrus:Middle+Row	Detritivores	*Loboptera decipiens* vs *Armadillidium vulgare*	6.25	**0.0001**
		Loboptera decipiens vs Aleocharinae	3.12	**0.0019**
		Loboptera decipiens vs *Oochrotus unicolor*	3.62	**0.0006**
		Armadillidium vulgare vs Aleocharinae	4.44	**0.0001**
		Armadillidium vulgare vs *Oochrotus unicolor*	1.77	0.066
		Aleocharinae vs *Oochrotus unicolor*	1.62	0.12
	Predators	*Geophilus* sp. vs *Lithobius* sp.	1.11	0.28
		Geophilus sp. vs *Dysdera crocata*	0.95	0.40
		Geophilus sp. vs *Trabaea cazorla*	1.74	0.065
		Geophilus sp. vs *Zodarion styliferum*	1.59	0.096

Table S5 (continued)

Treatment	Trophic guild	Species	t	*P*(MC)
		Geophilus sp. vs *Gnaphosa lucifuga*	1.03	0.35
		Geophilus sp. vs *Kissister minimus*	1.77	0.062
		Geophilus sp. vs Erythraeidae	2.12	0.019
		Lithobius sp. vs *Dysdera crocata*	1.74	0.079
		Lithobius sp. vs *Trabaea cazorla*	0.74	0.54
		Lithobius sp. vs *Zodarion styliferum*	1.28	0.21
		Lithobius sp. vs *Gnaphosa lucifuga*	1.38	0.17
		Lithobius sp. vs *Kissister minimus*	1.74	0.085
		Lithobius sp. vs Erythraeidae	1.52	0.11
		Dysdera crocata vs *Trabaea cazorla*	3.28	**0.0004**
		Dysdera crocata vs *Zodarion styliferum*	2.41	0.011
		Dysdera crocata vs *Gnaphosa lucifuga*	1.02	0.35
		Dysdera crocata vs *Kissister minimus*	3.96	**0.0005**
		Dysdera crocata vs Erythraeidae	2.81	**0.002**
		Trabaea cazorla vs *Zodarion styliferum*	1.42	0.16
		Trabaea cazorla vs *Gnaphosa lucifuga*	2.45	**0.0098**
		Trabaea cazorla vs *Kissister minimus*	4.19	**0.0002**
		Trabaea cazorla vs Erythraeidae	1.17	0.26
		Zodarion styliferum vs *Gnaphosa lucifuga*	1.37	0.18
		Zodarion styliferum vs *Kissister minimus*	4.79	**0.0003**
		Zodarion styliferum vs Erythraeidae	0.42	0.83
		Gnaphosa lucifuga vs *Kissister minimus*	4.27	**0.0007**
		Gnaphosa lucifuga vs Erythraeidae	1.70	0.073
		Kissister minimus vs Erythraeidae	4.98	**0.0001**
Abandoned	Detritivores	*Armadillidium vulgare* vs *Loboptera decipiens*	1.03	0.37
		Armadillidium vulgare vs *Aporrectodea trapezoides*	1.75	0.090
		Armadillidium vulgare vs Aleocharinae	4.75	**0.0001**
		Loboptera decipiens vs *Aporrectodea trapezoides*	2.03	0.049
		Loboptera decipiens vs Aleocharinae	5.82	**0.0001**
		Aporrectodea trapezoides vs Aleocharinae	3.84	**0.001**
	Herbivores	*Messor barbarus* vs *Haploembia solieri*	2.08	0.047
		Messor barbarus vs Pyralidae	4.58	**0.0003**
		Haploembia solieri vs Pyralidae	4.41	**0.0004**
	Predators	*Geophilus* sp. vs *Lithobius* sp.	0.42	0.83
		Geophilus sp. vs Erythraeidae	1.76	0.082
		Geophilus sp. vs *Kissister minimus*	2.68	**0.011**
		Lithobius sp. vs Erythraeidae	2.56	0.010
		Lithobius sp. vs *Kissister minimus*	3.22	**0.0073**
		Erythraeidae vs *Kissister minimus*	5.83	**0.0003**
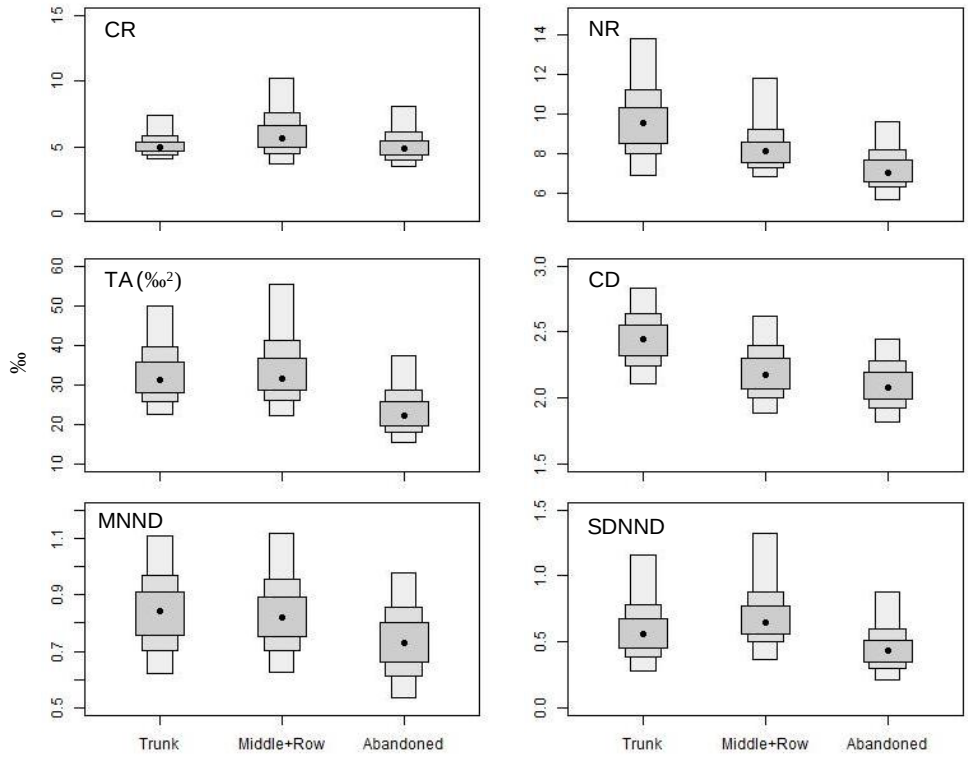
Fig. S1 Bayesian results for the community-wide metrics of trophic diversity and trophic redundancy in each food web. CR: δ^{13}C range; NR: δ^{15}N; TA: Total area; CD: Mean distance to centroid; MNND: Mean nearest neighbour distance; SDNND: Standard deviation of nearest neighbour distance. Black dots are the mode (‰; ‰^{2} for TA), and boxes indicate the 50%, 75% and 95% credibility intervals.