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*Marine and Freshwater Research*

### Supplementary Material

#### **DNA barcoding and metabarcoding of highly diverse aquatic mites (Acarina) can improve their use in routine biological monitoring**

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**Table S1. The location, sampling date and sorting method used on macroinvertebrate samples containing water mites used in this study.**

Site	Stream	Location	Latitude	Longitude	Collection date	Sorting method	Number of individual mites processed
Samples used for DNA metabarcoding barcoding and DNA barcoding							
ALD0026	Aldermans Creek	At Track 32, Upper Yarra Reservoir catchment	-37.721476	145.940322	9/11/18	Laboratory sort	5
ANS0009	Andersons Creek	Gold Memorial Road, upstream of ford to fire access track	-37.749892	145.21859	31/10/18	Laboratory sort	3
ARE0015	Armstrong Creek East	Downstream of track number 6 off East Armstrong Road, Armstrong Creek catchment	-37.636969	145.867461	9/11/18	Laboratory sort	4
BAS0059	Bass River	Downstream of Railway line downstream of Ferriers Road, Loch	-38.35905	145.702729	1/11/18	Laboratory sort	1
BCB0043	Balcombe Creek	Upstream of footbridge on Balcombe Ck Walkway, off Uralla Road, Mount Martha	-38.066971	145.742431	14/11/18	Laboratory sort	2
CMT0003	Cement Creek	Upstream of Acheron Way, Yarra Ranges National Park	-37.710675	145.707816	9/11/18	Laboratory sort	7
CNB0047	Cannibal Creek	400 m downstream of Wimpole Road, Bunyip (in Cannibal Creek Reserve)	-37.844812	145.333897	2/11/18	Laboratory sort	6
DNG0003	Dandenong Creek	Upstream of Edgars Track, Dandenong Ranges National Park	-37.762756	145.027951	31/10/18	Laboratory sort	7
DRB0114	Darebin Creek	Opposite end of Ford Street, Darebin	-37.915528	145.325525	30/10/18	Laboratory sort	3
EAT0018	East Creek	Upstream of private road into Point Leo estate off Point Leo Road, Point Leo	-37.473236	144.525074	24/10/18	Laboratory sort	3
EUM0051	Eumemmerring Creek	100 m upstream of South Gippsland Highway	-37.73779	145.242685	15/10/18	Laboratory sort	2
FER0006	Ferny Creek	Upstream of Morris Road Upwey	-38.144706	145.773548	15/10/18	Laboratory sort	3
JKN0045	Jacksons Creek	Off Waterloo Road, Bullengarook, upstream of tributary from south	-37.513321	144.224226	23/10/18	Laboratory sort	11
JKS0006	Jacks Creek	US Track 54, near junction with Track 10	-37.464492	144.307317	8/11/18	Laboratory sort	1
JMP0013	Jumping Creek	Downstream of Jumping Creek Road, Warrandyte	-38.442656	144.929761	31/10/18	Laboratory sort	4
KPR0050	King Parrot Creek	Upstream of Edgar Road, Longwarry	-37.817292	145.505916	2/11/18	Laboratory sort	8
KWG0017	Korweinguboorra Creek	Upstream Binks Road, Blakeville (Formerly Pykes Creek)	-37.894656	145.440145	22/10/18	Laboratory sort	4
LER0061	Lerderderg River	Downstream of Old Blackwood Road	-37.719465	145.360554	25/10/18	Laboratory sort	2
LNG0259	Lang Lang River	Off Lyons Road, Heath Hill (where road is nearest the stream)	-37.46578	145.157149	1/11/18	Laboratory sort	2
LTL0368	Little River	Upstream Geelong-Bacchus Marsh Road	-37.663469	145.090096	22/10/18	Laboratory sort	3
LTW0002	Lightwood Creek	Upstream of Two Bays walking track, Peninsula National Park	-37.464216	144.671869	24/10/18	Laboratory sort	5
MCR0043	McCrae Creek	Foy Lane, Yellingbo	-37.617655	145.373784	14/11/18	Laboratory sort	12
MNZ0011	Menzies Creek	Upstream Monbulk-Emerald Road	-37.939953	145.867713	14/11/18	Laboratory sort	6
MRI0193	Merri Creek	Upstream Summerhill Road, Craigieburn	-37.70304	144.578173	8/11/18	Laboratory sort	1
OLN0057	Olinda Creek	Upstream of Coldstream West Road	-37.47854	144.158255	31/10/18	Laboratory sort	2
PLE0015	Plenty River	Access Track (Road 54) 200 m north Toorourong Reservoir, Whittlesea	-38.26625	145.033897	8/11/18	Laboratory sort	1
PLE0320	Plenty River	End of track branching west from River Avenue, Plenty, in Plenty Gorge Park	-38.160026	145.110667	30/10/18	Laboratory sort	3
RID0080	Riddells Creek	150 m upstream of Gisborne-Kilmore Road, Riddells Creek	-38.016622	145.234899	23/10/18	Laboratory sort	1
STL0044	Steeles Creek	Upstream of driveway of 326 Steeles Creek Road, Steeles Creek	-37.464735	145.176882	15/11/18	Laboratory sort	3
SWW0008	Sweetwater Creek	Footbridge opposite end Grange Road	-37.899711	144.481576	1/11/18	Laboratory sort	7
TAR0029	Tarago River	Upstream Spion Kopje Track, Gentle Annie	-37.571936	144.965426	2/11/18	Laboratory sort	3
TLN0082	Toolern Creek	Upstream of Brooklyn Road, Toolern	-37.721384	145.942096	25/10/18	Laboratory sort	4
UYT0002	Unnamed trib of Alderman Ck	at Road 14, Upper Yarra Reservoir catchment	-38.253363	145.705511	9/11/18	Laboratory sort	1
WER0038	Werribee River	Upstream of Spargo-Blakeville Road, Spargo Creek	-38.160026	145.110667	25/10/18	Laboratory sort	2
Samples used for DNA barcoding only							
ARU1 US	Arundel Creek	Upstream of Industrial Outfall, Keilor	-37.6968	144.8363	8/10/13	Live pick	1
BAR00011	Barringo Creek	downstream of Barringo rd	-37.42256	144.61606	2/7/18	Laboratory sort	1

Site	Stream	Location	Latitude	Longitude	Collection date	Sorting method	Number of individual mites processed
BIT1340 <sup>A</sup>	Bittern Reservoir	Hodgkins Road; Tuerong	-38.302213	145.11637	7/11/16	Live pick	2
BOY00134	Boyd Creek	upstream of Romsey Road	-37.388841	144.89518	3/7/18	Laboratory sort	2
EMU00018	Emu Creek	downstream of Heaths Lane	-37.457702	144.76153	2/11/18	Laboratory sort	1
EMU00067	Emu Creek	at Gellies Road	-37.584189	144.76795	2/11/18	Laboratory sort	1
LYR00007	Lyrebird Creek	d/s Olinda Creek Road	-37.828908	145.39722	14/11/17	Laboratory sort	1
LTL01382	Little River	downstream gauging station access off McNaughton Reserve, You Yangs Road; Little River	-37.961003	144.491	9/11/16	Live pick	2
MAR7 BP	Maribyrnong River	Brimbank Park, downstream of Bluestone Weir, Keilor East	-37.7343	144.8357	10/10/13	Laboratory sort	1
OLN0009	Olinda Creek	near Olinda Creek Track- ~50 m upstream Lyrebird	-37.828245	145.39839	14/11/17	Laboratory sort	2
SAS00002	Sassafras Creek	The Crescent u/s Nobles Lane (and upstream small tributary)- Sassafras	-37.873086	145.36144	15/11/17	Laboratory sort	1
WOY01381	Woori Yallock Creek	Creek off Healesville-Koo Wee Rup Road; Woori Yallock	-37.79278	145.52054	4/11/16	Live pick	1
WTN01138	Watsons Creek	upstream Lower Somerville Road	-38.218118	145.19534	8/11/16	Live pick	1
DPW00269	Deep Creek	Woodend Wallan Road, Daley Bridge; Romsey	-37.49286	144.36179	10/11/17	Laboratory sort	1
LER00150	Lerderderg River	O'Briens crossing	-37.49287	144.36179	4/12/14	Laboratory sort	1
GSLP <sup>A</sup>	Greenslopes wetland	Greenslopes reserve; Mooroolbark	-37.77728	145.32834	1/9/14	Live pick	1

The number of individual mites processed for DNA barcoding is also given.

<sup>A</sup> These sites were not streams or rivers.

**Table S2. Information on individual mite specimens examined including taxonomic identification, GMYC groupings, GenBank accession, BOLD BIN, sample and site codes.**

Minor taxonomic group	Family	Lowest ID	Sample code	Site code	GenBank Accession number	BOLD ID	BOLD BIN	GMYC (full DNA barcode) group	GMYC (truncated DNA barcode) group
Bdelloidea	Bdellidae	NA	Acar6	GSLP	MG976102	NA	BOLD:ADX6309	37	67
Bdelloidea	Bdellidae	NA	CMT3Acar5	CMT0003	OK042128	AFWM015-21	NA	NA	68
Halacaroida	Pezidae	<i>Peza</i>	KWG17Acar1	KWG0017	OK042193	AFWM062-21	BOLD:AEI1648	38	69
Hydracarina	Arrenuridae	<i>Arrenurus</i>	MRI193Acar1	MRI0193	OK042113	AFWM093-21	BOLD:AEI6275	55	63
Hydracarina	Aturidae	<i>Austraturus</i>	MCR43Acar5	MCR0043	OK042125	AFWM084-21	BOLD:AEI4537	52	50
Hydracarina	Aturidae	NA	BAR11Acar1	BAR00011	MW051403	AFWM006-21	BOLD:AEH7912	51	49
Hydracarina	Hydrachnidae	<i>Hydrachna</i>	BIT1340Acar1	BIT1340	OK042145	AFWM008-21	BOLD:AEI1014	16	20
Hydracarina	Hydrachnidae	<i>Hydrachna</i>	BIT1340Acar2	BIT1340	OK042146	AFWM009-21	BOLD:AEI1014	16	21
Hydracarina	Hydrodromidae	<i>Hydrodroma</i>	LTL1382Acar1	LTL01382	OK042147	AFWM070-21	BOLD:AEI9063	58	61
Hydracarina	Hydryphantidae	<i>Diplodontus</i>	ARI5Acar2	ARI5	KX198766	NA	NA	NA	57
Hydracarina	Hydryphantidae	<i>Diplodontus</i>	STL44Acar2	STL0044	OK042143	AFWM105-21	BOLD:AEI1951	60	58
Hydracarina	Hygrobatidae	<i>Aspidiobates</i>	LTL368Acar1K	LTL01382	OK042154	AFWM072-21	BOLD:AEI5130	2	4
Hydracarina	Hygrobatidae	<i>Aspidiobates</i>	LTW2Acar1K	LTW0002	OK042114	AFWM075-21	BOLD:AEI7396	14	15
Hydracarina	Hygrobatidae	<i>Aspidiobates</i>	LTW2Acar3	LTW0002	OK042115	AFWM078-21	BOLD:AEI7396	14	16
Hydracarina	Hygrobatidae	<i>Australiobates</i>	ALD26Acar3	ALD0026	OK042116	AFWM002-21	BOLD:AEI7948	7	8
Hydracarina	Hygrobatidae	<i>Australiobates</i>	ALD26Acar4	ALD0026	OK042118	AFWM003-21	BOLD:AEI7948	7	8
Hydracarina	Hygrobatidae	<i>Australiobates</i>	CMT3Acar4	CMT0003	OK042123	AFWM014-21	BOLD:AEI7949	8	9
Hydracarina	Hygrobatidae	<i>Australiobates</i>	CNB47Acar1	CNB0047	OK042120	AFWM018-21	BOLD:AEI7950	46	48
Hydracarina	Hygrobatidae	<i>Australiobates</i>	LC16ASAcar2	LYR00007	OK042119	AFWM066-21	BOLD:AEI7951	10	9
Hydracarina	Hygrobatidae	<i>Australiobates</i>	MCR43Acar1K	MCR0043	OK042122	AFWM081-21	BOLD:AEI7947	9	10
Hydracarina	Hygrobatidae	<i>Australiobates</i>	MCR43Acar9	MCR0043	OK042117	AFWM088-21	BOLD:AEI7947	9	11
Hydracarina	Hygrobatidae	<i>Australiobates</i>	SC16ASAcar2	SAS00002	OK042121	AFWM103-21	BOLD:AEI7951	10	10
Hydracarina	Hygrobatidae	<i>Australorivacarus</i>	TAR29Acar1	TAR0029	OK042124	AFWM113-21	BOLD:AEI9531	53	52
Hydracarina	Hygrobatidae	<i>Caenobates</i>	CNB47Acar1K	CNB0047	OK042131	AFWM019-21	BOLD:ACG1897	22	16
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar1	KPR0050	OK042135	AFWM054-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar1K	KPR0050	OK042136	AFWM055-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar2	KPR0050	OK042137	AFWM056-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar3	KPR0050	OK042139	AFWM057-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar4	KPR0050	OK042142	AFWM058-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar5	KPR0050	OK042129	AFWM059-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar6	KPR0050	OK042141	AFWM060-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KPR50Acar7	KPR0050	OK042140	AFWM061-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	MCR43Acar11	MCR0043	OK042134	AFWM080-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	MCR43Acar2	MCR0043	OK042133	AFWM082-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	MCR43Acar8	MCR0043	OK042132	AFWM087-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	WOY1381Acar1	WOY01381	OK042130	AFWM117-21	BOLD:ACG1897	22	17
Hydracarina	Hygrobatidae	<i>Caenobates</i>	KWG17Acar2	KWG0017	OK042138	AFWM063-21	BOLD:AEI4004	50	56
Hydracarina	Hygrobatidae	<i>Hygrobat</i>	DNG3Acar6	DNG0003	OK042159	AFWM027-21	BOLD:AEI2831	48	54
Hydracarina	Hygrobatidae	<i>Procorticacarus</i>	Acar4	LER00150	MG976100	NA	BOLD:ADX3757	11	12
Hydracarina	Hygrobatidae	<i>Procorticacarus</i>	KWG17Acar4	KWG0017	OK042199	AFWM065-21	BOLD:ADX3757	11	13
Hydracarina	Hygrobatidae	<i>Procorticacarus</i>	MNZ11Acar6	MNZ0011	OK042198	AFWM092-21	BOLD:AEI0789	12	14
Hydracarina	Hygrobatidae	<i>Procorticacarus</i>	TAR29Acar2	TAR0029	OK042197	AFWM114-21	BOLD:AEI0789	12	15
Hydracarina	Hygrobatidae	<i>Rhynchaustrobates</i>	MCR43Acar4	MCR0043	OK042202	AFWM083-21	BOLD:AEI3232	13	13
Hydracarina	Hygrobatidae	<i>Rhynchaustrobates</i>	MCR43Acar6	MCR0043	OK042201	AFWM085-21	BOLD:AEI3232	13	14

Minor taxonomic group	Family	Lowest ID	Sample code	Site code	GenBank Accession number	BOLD ID	BOLD BIN	GMYC (full DNA barcode) group	GMYC (truncated DNA barcode) group
Hydracarina	Hygrobatidae	<i>Rhynchaustrobates</i>	MCR43Acar7	MCR0043	OK042203	AFWM086-21	BOLD:AEI3233	49	55
Hydracarina	Hygrobatidae	<i>Rhynchaustrobates</i>	MNZ11Acar5	MNZ0011	OK042200	AFWM091-21	BOLD:AEI3232	13	14
Hydracarina	Limnesiidae	<i>Limnesia</i>	BY34HYA1	BOY00134	OK042160	AFWM012-21	BOLD:AEH9065	19	17
Hydracarina	Limnesiidae	<i>Limnesia</i>	BY34HYA2	BOY00134	OK042161	AFWM013-21	BOLD:AEH9065	19	18
Hydracarina	Limnesiidae	<i>Limnesia</i>	JKN45Acar2K	JKN0045	OK042169	AFWM044-21	BOLD:AEI4326	21	19
Hydracarina	Limnesiidae	<i>Limnesia</i>	JKN45Acar3K	JKN0045	OK042163	AFWM046-21	BOLD:AEI4326	21	20
Hydracarina	Limnesiidae	<i>Limnesia</i>	JKN45Acar5	JKN0045	OK042165	AFWM048-21	BOLD:AEI4326	21	20
Hydracarina	Limnesiidae	<i>Limnesia</i>	KWG17Acar3	KWG0017	OK042166	AFWM064-21	BOLD:AEI3198	20	18
Hydracarina	Limnesiidae	<i>Limnesia</i>	MNZ11Acar1	MNZ0011	OK042162	AFWM089-21	BOLD:AEI3790	59	59
Hydracarina	Limnesiidae	<i>Limnesia</i>	SWW8Acar1	SWW0008	OK042170	AFWM106-21	BOLD:AEI3198	20	19
Hydracarina	Limnesiidae	<i>Limnesia</i>	SWW8Acar2	SWW0008	OK042171	AFWM107-21	BOLD:AEI3198	20	19
Hydracarina	Limnesiidae	<i>Limnesia</i>	SWW8Acar5	SWW0008	OK042168	AFWM109-21	BOLD:AEI3198	20	19
Hydracarina	Limnesiidae	<i>Limnesia</i>	SWW8Acar6	SWW0008	OK042164	AFWM110-21	BOLD:AEI3198	20	19
Hydracarina	Limnesiidae	<i>Limnesia</i>	SWW8Acar7	SWW0008	OK042167	AFWM111-21	BOLD:AEI3198	20	19
Hydracarina	Limocharidae	<i>Austrolimnochares</i>	ARE15Acar1	ARE0015	OK042127	AFWM005-21	BOLD:AEH9938	24	11
Hydracarina	Limocharidae	<i>Austrolimnochares</i>	OC17ASAcar1	OLN0009	OK042126	AFWM095-21	BOLD:AEH9938	24	12
Hydracarina	Oxidae	<i>Oxus</i>	JKN45Acar1	JKN0045	OK042191	AFWM041-21	BOLD:ADL7794	15	23
Hydracarina	Oxidae	<i>Oxus</i>	JKN45Acar1K	JKN0045	OK042190	AFWM042-21	BOLD:ADL7794	15	24
Hydracarina	Oxidae	<i>Oxus</i>	JKN45Acar2	JKN0045	OK042189	AFWM043-21	BOLD:ADL7794	15	24
Hydracarina	Oxidae	<i>Oxus</i>	JKN45Acar3	JKN0045	OK042188	AFWM045-21	BOLD:ADL7794	15	15
Hydracarina	Oxidae	<i>Oxus</i>	JKN45Acar4	JKN0045	OK042187	AFWM047-21	BOLD:ADL7794	15	24
Hydracarina	Pionidae	<i>Acercella</i>	WER38Acar2	WER0038	OK042112	AFWM116-21	BOLD:AEI2768	57	62
Hydracarina	Pionidae	<i>Piona</i>	JMP13Acar3	JMP0013	OK042195	AFWM053-21	BOLD:ACW8775	18	22
Hydracarina	Pionidae	<i>Piona</i>	STL44Acar1	STL0044	OK042194	AFWM104-21	BOLD:ACW8775	18	22
Hydracarina	Pionidae	NA	WTN1138Acar1	WTN01138	OK042196	AFWM118-21	BOLD:AEI7143	56	60
Hydracarina	Unionicolidae	<i>Neumania</i>	JKN45Acar6	JKN0045	OK042185	AFWM049-21	BOLD:AEH8867	17	22
Hydracarina	Unionicolidae	<i>Neumania</i>	JKN45Acar8	JKN0045	OK042186	AFWM050-21	BOLD:AEH8867	17	23
Hydracarina	Mideopsidae	NA	EAT8Acar1	EAT0018	OK042182	AFWM031-21	BOLD:AEI5647	54	51
Mesostigmata	Macrochelidae	NA	FC15ASAcar1	FER0006	OK042173	AFWM038-21	BOLD:AEI6423	39	39
Mesostigmata	Parasitidae	<i>Pergamasus crassipes</i>	DRB114Acar1	DRB0114	OK042192	AFWM028-21	BOLD:AAF9231	6	7
Mesostigmata	Parasitidae	<i>Pergamasus quisquiliarum</i>	Acar2	DPW0023	MG976203	NA	BOLD:ACQ8500	5	6
Mesostigmata	NA	NA	DNG3Acar4	DNG0003	OK042180	AFWM025-21	BOLD:AEI5486	44	41
Mesostigmata	NA	NA	EAT8Acar2	EAT0018	OK042176	AFWM032-21	BOLD:AEI0861	41	44
Mesostigmata	NA	NA	EAT8Acar3	EAT0018	OK042175	AFWM033-21	BOLD:AEI1796	43	46
Mesostigmata	NA	NA	LER61Acar1	LER0061	OK042177	AFWM067-21	BOLD:AEI0863	42	45
Mesostigmata	NA	NA	OC16ASAcar2	OLN0009	OK042181	AFWM094-21	NA	NA	NA
Mesostigmata	NA	NA	PLE320Acar1	PLE0320	OK042174	AFWM099-21	NA	NA	47
Mesostigmata	NA	NA	SWW8Acar4	SWW0008	OK042179	AFWM108-21	BOLD:AEI0862	40	42
Mesostigmata	NA	NA	SWW8Acar8	SWW0008	OK042178	AFWM112-21	BOLD:AEI0498	45	43
Oribatida	Humerobatidae	NA	ANS9Acar1K	ANS0009	OK042144	AFWM004-21	BOLD:ACP5818	28	2
Oribatida	Hydrozetidae	NA	BLC97Acar1	BLC0097	OK042157	AFWM010-21	BOLD:ACX8442	NA	3
Oribatida	Hydrozetidae	NA	BLC97Acar1K	BLC0097	OK042156	AFWM011-21	BOLD:ACX8442	1	3
Oribatida	Hydrozetidae	NA	FC15ASAcar2	FER0006	OK042149	AFWM039-21	BOLD:ACX8442	1	3
Oribatida	Hydrozetidae	NA	FER6Acar1	FER0006	OK042150	AFWM040-21	BOLD:ACX8442	NA	4
Oribatida	Hydrozetidae	NA	CNB47Acar3	CNB0047	OK042158	AFWM021-21	BOLD:AEI5130	2	4

Minor taxonomic group	Family	Lowest ID	Sample code	Site code	GenBank Accession number	BOLD ID	BOLD BIN	GMYC (full DNA barcode) group	GMYC (truncated DNA barcode) group
Oribatida	Hydrozetidae	NA	LTL368Acar1	LTL0368	OK042155	AFWM071-21	BOLD:AEI5130	2	4
Oribatida	Hydrozetidae	NA	LTL368Acar3	LTL0368	OK042152	AFWM074-21	BOLD:AEI5130	NA	4
Oribatida	Hydrozetidae	NA	LTW2Acar2	LTW0002	OK042151	AFWM076-21	BOLD:AEI5130	2	4
Oribatida	Hydrozetidae	NA	LTL368Acar2	LTL0368	OK042153	AFWM073-21	BOLD:AEI5130	2	4
Oribatida	Oribatulidae	<i>Zygoribatula undulata</i>	JMP13Acar2	JMP0013	OK042228	AFWM052-21	BOLD:ACQ9638	29	34
Oribatida	NA	NA	ALD26Acar2	ALD0026	OK042207	AFWM001-21	BOLD:AEI4206	25	26
Oribatida	NA	NA	BAS59Acar3	BAS0059	OK042217	AFWM007-21	BOLD:AEI2280	26	27
Oribatida	NA	NA	CMT3Acar6	CMT0003	OK042212	AFWM016-21	NA	NA	29
Oribatida	NA	NA	CMT3Acar7	CMT0003	OK042211	AFWM017-21	NA	NA	30
Oribatida	NA	NA	DNG3Acar1	DNG0003	OK042210	AFWM022-21	BOLD:AEI9190	34	33
Oribatida	NA	NA	DNG3Acar2	DNG0003	OK042209	AFWM023-21	NA	NA	40
Oribatida	NA	NA	DNG3Acar3	DNG0003	OK042208	AFWM024-21	BOLD:AEI8970	27	28
Oribatida	NA	NA	DNG3Acar5	DNG0003	OK042206	AFWM026-21	BOLD:AEI5376	36	31
Oribatida	NA	NA	MCR43Acar10	MCR0043	OK042218	AFWM079-21	BOLD:AEI8152	30	37
Oribatida	NA	NA	MNZ11Acar2	MNZ0011	OK042205	AFWM090-21	BOLD:AEI3761	33	35
Oribatida	NA	NA	OLN57Acar2	OLN0057	OK042213	AFWM097-21	BOLD:AEI9487	35	32
Oribatida	NA	NA	PLE320Acar2	PLE0320	OK042214	AFWM100-21	BOLD:AEH9080	4	5
Oribatida	NA	NA	PLE320Acar3	PLE0320	OK042215	AFWM101-21	BOLD:AEH9080	4	5
Oribatida	NA	NA	RID80Acar1	RID0080	OK042216	AFWM102-21	BOLD:AEI1687	31	38
Oribatida	Neotrichozetidae	NA	CNB47Acar2	CNB0047	OK042184	AFWM020-21	BOLD:AEI7863	3	1
Oribatida	Neotrichozetidae	NA	LTW2Acar2K	LTW0002	OK042183	AFWM077-21	BOLD:AEI7863	3	1
Trombidioidea	NA	NA	DRB114Acar3	DRB0114	OK042227	AFWM030-21	NA	NA	64
Trombidioidea	NA	NA	EU18Tro1K	EMU00018	OK042225	AFWM034-21	BOLD:AEI3803	NA	24
Trombidioidea	NA	NA	EU67Tro1K	EMU00067	OK042220	AFWM035-21	BOLD:AEI0931	61	65
Trombidioidea	NA	NA	EUM51Acar1	EUM0051	OK042222	AFWM036-21	BOLD:ADW1334	23	26
Trombidioidea	NA	NA	EUM51Acar1K	EUM0051	OK042221	AFWM037-21	BOLD:ADW1334	23	26
Trombidioidea	NA	NA	JMP13Acar1	JMP0013	OK042219	AFWM051-21	BOLD:ADW1334	23	26
Trombidioidea	NA	NA	MDS7Acar1	MAR7 BP	KX198767	NA	BOLD:ADW1334	23	26
Trombidioidea	NA	NA	OLN57Acar1	OLN0057	OK042224	AFWM096-21	BOLD:AEI3803	62	25
Trombidioidea	NA	NA	WER38Acar1	WER0038	OK042223	AFWM115-21	BOLD:AEI6567	63	66

Samples with NA were not included in the analysis as they represented they contained a truncated DNA barcode sequence.

**Table S3. Macroinvertebrate diversity of sites where species (based on GYMC/BIN groups for mites) were identified with DNA metabarcoding.**

Sites	Total macroinvertebrate families	Total macroinvertebrate species found	Percentage of species that were mites	Total mite species DNA barcoded	DNA barcoded mite species recovered with metabarcoding per site	Total mite species found	Aquatic species not detected (terrestrial species)	Remaining mite OTU's not in the final DNA barcoded library	Sequence read archive accession number for technical replicate 1 and 2
ALD0026	20	51	6%	2	0	3	1(1)	1	SAMN21466113, SAMN21466114
ANS0009	12	29	3%	1	0	1	(1)	0	SAMN21466117, SAMN21466118
ARE0015	21	53	2%	2	1	1	(1)	0	SAMN21466121, SAMN21466122
BAS0059	21	39	3%	1	0	1	(1)	0	SAMN21466125, SAMN21466126
BLC0097	20	41	10%	1	1	1	0	2	SAMN21466133, SAMN21466134
CMT0003	25	54	4%	2	1	2	(1)	0	SAMN21466141, SAMN21466142
CNB0047	20	57	9%	4	3	4	(1)	1	SAMN21466145, SAMN21466146
DNG0003	20	57	14%	6	3	8	(5)	1	SAMN21466149, SAMN21466150
DRB0114	15	41	2%	2	1	1	1	0	SAMN21466153, SAMN21466154
EAT0018	23	50	6%	3	0	3	1(2)	1	SAMN21466157, SAMN21466158
EUM0051	12	36	3%	1	1	1	0	0	SAMN21466161, SAMN21466162
FER0006	22	42	7%	1	3	3	0	0	SAMN21466165, SAMN21466166
JKN0045	20	35	20%	3	2	7	0	1	SAMN21466169, SAMN21466170
JKS0006	20	55	2%	0	0	1	0	0	SAMN21466173, SAMN21466174
JMP0013	18	32	9%	3	2	3	(1)	0	SAMN21466177, SAMN21466178
KPR0050	16	42	5%	1	1	2	0	1	SAMN21466181, SAMN21466182
KWG0017	16	39	10%	4	0	4	4	0	SAMN21466197, SAMN21466198
LER0061	22	39	3%	1	0	1	(1)	0	SAMN21466201, SAMN21466202
LNG0259	16	51	4%	2	0	2	(2)	0	SAMN21466209, SAMN21466210
LTL0368	15	23	13%	1	2	3	0	1	SAMN21466213, SAMN21466214
LTW0002	23	43	7%	2	1	2	(1)	0	SAMN21466217, SAMN21466218

Sites	Total macroinvertebrate families	Total macroinvertebrate species found	Percentage of species that were mites	Total mite species DNA barcoded	DNA barcoded mite species recovered with metabarcoding per site	Total mite species found	Aquatic species not detected (terrestrial species)	Remaining mite OTU's not in the final DNA barcoded library	Sequence read archive accession number for technical replicate 1 and 2
MCR0043	18	49	12%	6	3	6	2(1)	0	SAMN21466221, SAMN21466222
MNZ0011	26	65	8%	5	2	5	2(1)	0	SAMN21466225, SAMN21466226
MRI0193	22	53	2%	1	1	1	0	0	SAMN21466231, SAMN21466232
OLN0057	14	31	6%	2	2	2	0	0	SAMN21466237, SAMN21466238
PLE0015	21	62	2%	2	2	1	0	0	SAMN21466241, SAMN21466242
PLE0320	18	56	5%	1	2	3	0	0	SAMN21466245, SAMN21466246
RID0080	22	59	2%	1	0	1	(1)	0	SAMN21466247, SAMN21466248
STL0044	24	56	4%	0	2	2	0	0	SAMN21466265, SAMN21466266
SWW0008	25	51	12%	3	3	5	0	0	SAMN21466269, SAMN21466270
TAR0029	22	61	5%	2	3	3	0	0	SAMN21466273, SAMN21466274
TLN0082	15	47	2%	1	1	1	0	0	SAMN21466281, SAMN21466282
UYT0002	22	59	2%	0	1	1	0	0	SAMN21466285, SAMN21466286
WER0038	22	38	8%	2	1	2	1	0	SAMN21466293, SAMN21466294