

Supplementary Material

Closing a biogeographic gap: a new pettalid genus from South Australia (Arachnida : Opiliones : Cyphophthalmi : Pettalidae) with a UCE-based phylogeny of Cyphophthalmi

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Table S1. DNA sequence data used for the concatenated analyses of the Sanger-sequenced genes with Museum voucher codes.

Taxon	Voucher	Country	16S rRNA	18S rRNA	28S rRNA	COI
<i>Limulus polyphemus</i>	GenBank		U09397	U91490	AF212167	NC_003057
<i>Cyphophthalmus duricorius</i>	MCZ-135009	Slovenia	AY639526	AY639461	DQ513120	AY639556
<i>Metasiro savannahensis</i>	GenBank	USA	DQ825616	DQ825542	DQ825595	JF786394
<i>Paramiopsalis ramulosus</i>	MCZ-135006	Portugal	AY639550	AY639489	DQ513121	DQ825641
<i>Parasiro coiffaiti</i>	MCZ-132372	Spain	AY918877	AY918872	DQ513122	DQ825642
<i>Parasiro minor</i>	MCZ-132374	Italy	JF935025	KY352078	JF934992	JF786391
<i>Siro exilis</i>	MCZ-134551	USA	---	AY639491	DQ513124	AY639579
<i>Siro rubens</i>	MCZ-132391	France	---	AY428818	DQ825584	DQ513111
<i>Suzukielus sauteri</i>	MCZ-132256	Japan	DQ518086	DQ513138	DQ513116	DQ513108
<i>Aoraki crypta</i>	MCZ-134654	New Zealand, NI	DQ518068	DQ518000	DQ518043	DQ518120
<i>Aoraki denticulata denticulata</i>	MCZ-134639	New Zealand, SI	KF822798	EU673615	EU673653	---
<i>Aoraki denticulata denticulata</i>	MCZ-134642	New Zealand, SI	EU673584	EU673618	EU673654	DQ992309
<i>Aoraki denticulata denticulata</i>	MCZ-134646	New Zealand, SI	KF822778	DQ518001	DQ518040	---
<i>Aoraki denticulata denticulata</i>	MCZ-134647	New Zealand, SI	KF822850	EU673616	---	---
<i>Aoraki denticulata denticulata</i>	MCZ-134659	New Zealand, SI	KF822746	---	KU207279	KU207376
<i>Aoraki denticulata major</i>	MCZ-134644	New Zealand, SI	EU673585	EU673620	EU673656	DQ992203
<i>Aoraki denticulata major</i>	MCZ-35669	New Zealand, SI	KU207333	KU207229	KU207281	KU207378
<i>Aoraki grandis</i>	MCZ-134652	New Zealand, SI	---	EU673624	EU673659	---
<i>Aoraki granulosa</i>	MCZ-134675	New Zealand, NI	DQ518071	DQ517999	DQ518039	---
<i>Aoraki granulosa</i>	MCZ-134684	New Zealand, NI	KU207334	KU214865	KU207282	KU207379
<i>Aoraki healyi</i>	MCZ-134638	New Zealand, SI	DQ518067	DQ518002	DQ518042	DQ518122
<i>Aoraki inerma</i>	MCZ-134648	New Zealand, NI	---	EU673622	EU673658	---
<i>Aoraki longitarsa</i>	CMNZ	New Zealand, SI	---	KU207231	KU207284	KU207381
<i>Aoraki longitarsa</i>	MCZ-134656 1	New Zealand, SI	---	EU673613	EU673652	DQ992313
<i>Aoraki longitarsa</i>	MCZ-134656 2	New Zealand, SI	---	KU207230	KU207283	KU207380
<i>Aoraki longitarsa</i>	MCZ-35659	New Zealand, SI	KU207335	KU207231	KU207285	KU207382

Taxon	Voucher	Country	16S rRNA	18S rRNA	28S rRNA	COI
<i>Aoraki longitarsa</i>	MCZ-35660	New Zealand, SI	---	KU207383	KU207286	KU207383
<i>Aoraki tumidata</i>	MCZ-133838	New Zealand, NI	KU207336	KU207232	KU207287	KU207384
<i>Aoraki westlandica</i>	MCZ-134653	New Zealand, SI	DQ518070	EU673626	DQ518038	EU673667
<i>Archaeopurcellia eureka</i>	MCZ-162243	Australia, SA	ON790664	ON790667	---	SAMN29868468
<i>Archaeopurcellia eureka</i>	MCZ-162249	Australia, SA	ON790665	ON790668	ON790666	---
<i>Austropurcellia acuta</i>	MCZ-134701	Australia, QLD	KU207337	KU207233	KU207288	KU207385
<i>Austropurcellia arctica</i>	MCZ-132325	Australia, QLD	KU214866	KJ767458	KJ796908	KJ796942
<i>Austropurcellia cadens</i>	CASENT-9035046	Australia, QLD	---	KJ767465	KJ767411	KJ796951
<i>Austropurcellia clousei</i>	MCZ-132339	Australia, QLD	KU207338	KJ767459	KJ767415	KU207386
<i>Austropurcellia culminis</i>	MCZ-132322	Australia, QLD	KU207339	KJ767469	KJ796919	KJ796957
<i>Austropurcellia daviesae</i>	MCZ-132323	Australia, QLD	---	KJ767470	KJ796920	KU207387
<i>Austropurcellia despectata</i>	MCZ-132324	Australia, QLD	KU207340	KJ767474	KJ796924	KJ796973
<i>Austropurcellia giribeti</i>	MCZ-132337	Australia, QLD	KU207341	KJ767474	KJ796925	KJ796975
<i>Austropurcellia giribeti</i>	MCZ-134696	Australia, QLD	---	DQ517984	DQ518023	DQ518111
<i>Austropurcellia scoparia</i>	MCZ-134700	Australia, QLD	DQ518065	DQ517982	DQ518021	DQ518108
<i>Austropurcellia sharmai</i>	MCZ-134698	Australia, QLD	DQ518064	DQ517983	DQ518022	DQ518110
<i>Austropurcellia tholei</i>	MCZ-134697	Australia, QLD	---	DQ517985	DQ518024	DQ518112
<i>Austropurcellia vicina</i>	MCZ-132318	Australia, QLD	KU207342	KJ767484	KJ796934	KJ797000
<i>Austropurcellia vicina</i>	MCZ-132334	Australia, QLD	---	KJ767483	KJ796933	KJ767447
<i>Chileogovea jocasta</i>	MCZ-134713	Chile	DQ518054	DQ133722	DQ133734	DQ133746
<i>Chileogovea jocasta</i>	MCZ-134714	Chile	KU207346	KU207234	KU207292	KU207391
<i>Chileogovea jocasta</i>	MCZ-134715	Chile	KU207347	KU207235	KU207293	KU207392
<i>Chileogovea oedipus</i>	MCZ-134709	Chile	DQ518055	DQ133721	DQ133733	DQ133745
<i>Chileogovea oedipus</i>	MCZ-134710	Chile	KU207343	KU207236	KU207289	KU207389
<i>Chileogovea oedipus</i>	MCZ-134711	Chile	KU207344	KU207237	KU207290	KU207388
<i>Chileogovea oedipus</i>	MCZ-134712	Chile	KU207345	KU207238	KU207291	KU207390
<i>Karripurcellia harveyi</i>	MCZ-132345	Australia, WA	DQ518062	DQ517980	DQ518019	DQ518106
<i>Karripurcellia peckorum</i>	MCZ-134719	Australia, WA	KU207348	KU207239	KU207294	KU207393

Taxon	Voucher	Country	16S rRNA	18S rRNA	28S rRNA	COI
<i>Karripurcellia peckorum</i>	MCZ-134720	Australia, WA	KU207349	KU207240	KU207295	KU207394
<i>Karripurcellia peckorum</i>	MCZ-134721	Australia, WA	KU207350	KU207241	KU207296	KU207395
<i>Karripurcellia peckorum</i>	MCZ-134725	Australia, WA	---	KU207242	KU207297	KU207396
<i>Karripurcellia peckorum</i>	MCZ-134726	Australia, WA	---	KU207243	KU207298	KU207397
<i>Neopurcellia salmoni</i>	MCZ-133839	New Zealand, SI	---	---	DQ518037	DQ518109
<i>Neopurcellia salmoni</i>	MCZ-134739	New Zealand, SI	DQ518066	DQ517998	EU673650	DQ825638
<i>Neopurcellia salmoni</i>	MCZ-134741	New Zealand, SI	KU207351	KU207244	KU207299	KU207398
<i>Neopurcellia salmoni</i>	MCZ-29317	New Zealand, SI	KU207352	KU207245	KU207300	KU207399
<i>Parapurcellia amatola</i>	MCZ-133841	South Africa	KU207353	KU207246	KU207301	---
<i>Parapurcellia convexa</i>	MCZ-128902	South Africa	KU207355	KU207248	KU207303	KU207401
<i>Parapurcellia convexa</i>	MCZ-134744	South Africa	KU207354	KU207247	KU207302	KU207400
<i>Parapurcellia fissa</i>	MCZ-134745	South Africa	KU207356	KU207249	KU207304	KU207402
<i>Parapurcellia minuta</i>	MCZ-134747	South Africa	KU207357	KU207250	KU207305	KU207402
<i>Parapurcellia monticola</i>	MCZ-134751	South Africa	---	KU207252	KU207307	---
<i>Parapurcellia monticola</i>	MCZ-60357 1	South Africa	---	DQ518973	DQ518009	DQ518098
<i>Parapurcellia monticola</i>	MCZ-60357 2	South Africa	---	KU207251	KU207306	KU207404
<i>Parapurcellia sp.</i>	MCZ-128900	South Africa	---	KU207257	KU207312	KU207409
<i>Parapurcellia peregrinator</i>	MCZ-128901	South Africa	---	KU207256	KU207311	KU207408
<i>Parapurcellia rumpiana</i>	MCZ-134748	South Africa	KU207360	KU207255	KU207310	KU207407
<i>Parapurcellia silvicola</i>	MCZ-134742 1	South Africa	DQ518053	AY639494	DQ518008	AY639582
<i>Parapurcellia silvicola</i>	MCZ-134742 2	South Africa	KU207358	KU207253	KU207308	KU207405
<i>Parapurcellia staregai</i>	MCZ-134746	South Africa	KU207359	KU207254	KU207309	KU207406
<i>Pettalus sp.</i>	MCZ-132353	Sri Lanka	DQ518058	DQ517976	DQ518017	DQ518102
<i>Pettalus sp.</i>	MCZ-132354	Sri Lanka	DQ518059	DQ517977	DQ518013	DQ518103
<i>Pettalus sp.</i>	MCZ-132356	Sri Lanka	---	DQ825537	EU673632	DQ825636
<i>Pettalus sp.</i>	MCZ-132357	Sri Lanka	DQ518056	DQ517974	DQ518016	DQ518100
<i>Pettalus sp.</i>	MCZ-132359	Sri Lanka	DQ518060	DQ517978	DQ518014	DQ518104
<i>Pettalus sp.</i>	MCZ-132360	Sri Lanka	DQ518061	DQ517979	DQ518015	DQ518105

Taxon	Voucher	Country	16S rRNA	18S rRNA	28S rRNA	COI
<i>Pettalus</i> sp.	MCZ-134967	Sri Lanka	DQ825614	DQ825538	DQ825577	DQ825637
<i>Pettalus thwaitesi</i>	MCZ-132348	Sri Lanka	EU673569	EU673592	EU673633	EU673666
<i>Purcellia argasiformis</i>	MCZ-134759	South Africa	KU207365	KU207266	KU207321	KU207418
<i>Purcellia argasiformis</i>	MCZ-134762	South Africa	KU207366	KU207267	KU207322	KU207419
<i>Purcellia griswoldi</i>	MCZ-128898	South Africa	---	KU207262	KU207317	KU207414
<i>Purcellia griswoldi</i>	MCZ-134756	South Africa	KU207362	KU207263	KU207318	KU207415
<i>Purcellia illustrans</i>	MCZ-128896	South Africa	---	KU207260	KU207315	KU207414
<i>Purcellia illustrans</i>	MCZ-134753	South Africa	---	KU207258	KU207313	KU207410
<i>Purcellia illustrans</i>	MCZ-134754	South Africa	---	KU207259	KU207314	KU207411
<i>Purcellia illustrans</i>	MCZ-60635	South Africa	AY639554	AY639495	DQ518010	DQ518099
<i>Purcellia leleupi</i>	MCZ-129098	South Africa	KU207363	KU207264	KU207319	KU207416
<i>Purcellia</i> sp.	MCZ-128897	South Africa	KU207364	KU207265	KU207320	KU207417
<i>Purcellia</i> sp.	MCZ-129493	South Africa	KU207361	KU207261	KU207316	KU207413
<i>Purcellia</i> sp.	MCZ-129494	South Africa	KU207367	KU207268	KU207323	KU207420
<i>Rakaia antipodiana</i>	MCZ-134580	New Zealand, SI	DQ518072	DQ517988	DQ518031	DQ518115
<i>Rakaia australis</i>	MCZ-134592	New Zealand, SI	EU673575	EU673601	EU673640	DQ992333
<i>Rakaia collaris</i>	MCZ-134574	New Zealand, SI	EU673573	EU673597	EU673637	DQ992349
<i>Rakaia digitata</i>	MCZ-134571	New Zealand, SI	DQ518078	DQ517989	DQ518035	DQ518123
<i>Rakaia dorothea</i>	MCZ-134577	New Zealand, NI	DQ518077	DQ517990	DQ518033	DQ992331
<i>Rakaia florensis</i>	MCZ-134588	New Zealand, SI	DQ518083	DQ517986	DQ518025	DQ518113
<i>Rakaia lindsayi</i>	MCZ-134598	New Zealand, SI	DQ518081	DQ517995	DQ518027	---
<i>Rakaia macra</i>	MCZ-134582	New Zealand, SI	EU673571	EU673596	EU673636	EU673668
<i>Rakaia media</i>	MCZ-134581	New Zealand, NI	DQ518074	DQ517996	DQ518030	DQ518125
<i>Rakaia media</i>	MCZ-134605	New Zealand, NI	KU207368	KU207269	KU207324	KU207421
<i>Rakaia minutissima</i>	MCZ-134591	New Zealand, NI	DQ518082	DQ517987	DQ518026	DQ518114
<i>Rakaia minutissima</i>	MCZ-29280	New Zealand, SI	KU207371	KU207272	KU207327	KU207424
<i>Rakaia pauli</i>	MCZ-134576	New Zealand, SI	DQ518073	DQ517992	DQ518032	EU673670
<i>Rakaia solitaria</i>	MCZ-134585	New Zealand, NI	DQ518075	DQ517997	DQ518029	DQ518119

Taxon	Voucher	Country	16S rRNA	18S rRNA	28S rRNA	COI
<i>Rakaia sorenseni</i>	MCZ-134567	New Zealand, SI	DQ518079	DQ517993	DQ518036	DQ518116
<i>Rakaia</i> sp.	MCZ-100753	New Zealand, NI	KU207369	KU207270	KU207325	KU207422
<i>Rakaia</i> sp.	MCZ-129612	New Zealand, NI	KU207372	KU207273	KU207328	KU207425
<i>Rakaia</i> sp.	MCZ-129614	New Zealand, NI	KU207373	KU207274	KU207329	KU207426
<i>Rakaia</i> sp.	MCZ-133847	New Zealand, NI	EU673579	EU673608	EU673647	DQ992344
<i>Rakaia</i> sp.	MCZ-133849	New Zealand, NI	KU207370	KU207271	KU207326	KU207423
<i>Rakaia</i> sp.	MCZ-134568	New Zealand, SI	---	EU673606	EU673645	---
<i>Rakaia</i> sp.	MCZ-134575	New Zealand, NI	EU673581	EU673610	EU673649	DQ992322
<i>Rakaia</i> sp.	MCZ-134584	New Zealand, NI	EU673576	EU673603	EU673642	DQ992348
<i>Rakaia</i> sp.	MCZ-35662	New Zealand, SI	KU207375	KU207277	KU207332	KU207428
<i>Rakaia</i> sp.	MCZ-35668	New Zealand, SI	KU207374	KU207276	KU207331	KU207427
<i>Rakaia stewartiensis</i>	MCZ-134599	New Zealand, SI	DQ518080	DQ517994	DQ518028	DQ518117
<i>Rakaia uniloca</i>	MCZ-134583	New Zealand, SI	---	EU673599	EU673638	EU673671
<i>Rakaia uniloca</i>	MCZ-134600	New Zealand, SI	---	KU207275	KU207330	---

MCZ, Museum of Comparative Zoology, Cambridge, MA, USA; CAsENT, California Academy of Sciences, Entomology, San Francisco, CA, USA;

CMNZ, Canterbury Museum, Christchurch, New Zealand.

Table S2. List of taxa used for the UCE analysis.

Name	Family	Specimen codes	Country	BioSample	SRA	MCZ record
<i>Leiobunum calcar</i>	Sclerosomatidae	SDSU OP1089		SAMN05388875	SRX1962121	Published in Starrett <i>et al.</i> (2017)
<i>Sabacon cavicolens</i>	Sabaconidae	SDSU OP1518		SAMN05388877	SRX1962123	Published in Starrett <i>et al.</i> (2017)
<i>Sclerobunus robustus</i>	Paranonychidae	SDSU OP1167		SAMN08970458	SRX3992153	Published in Derkarabetian <i>et al.</i> (2018)
<i>Ogovea cameroonensis</i>	Ogoveidae	MCZ-132315	Cameroon	SAMN29868452	SRX17306072	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132315
<i>Troglosiro aelleni</i>	Troglosironidae	MCZ-134764	New Caledonia	SAMN29868453	SRX17306073	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134764
<i>Metasiro sassafrasensis</i>	Neogoveidae	SDSU OP4472	USA	SAMN29868454	SRX17306084	–
<i>Neogovea enigmatica</i>	Neogoveidae	MCZ-132313	Brazil	SAMN29868455	SRX17306095	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132313
<i>Parogovia sironoides</i>	Neogoveidae	MCZ-132304	Equatorial Guinea	SAMN29868456	SRX17306100	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132304
<i>Suzukiellus sauteri</i>	Sironidae	MCZ-132261	Japan	SAMN29868457	SRX17306101	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132261
<i>Parasiro coiffaiti</i>	Sironidae	MCZ-132372	Spain	SAMN29868458	SRX17306102	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132372
<i>Siro acaroides</i>	Sironidae	MCZ-132378	USA	SAMN29868459	SRX17306103	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132378
<i>Cyphophthalmus duricorius</i>	Sironidae	MCZ-135009	Slovenia	SAMN29868460	SRX17306104	https://mczbase.mcz.harvard.edu/guid/MCZ:I:135009
<i>Paramiopsalis ramulosus</i>	Sironidae	MCZ-132364	Portugal	SAMN29868461	SRX17306105	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132364
<i>Fangensis leclerci</i>	Stylocellidae	MCZ-134244	Thailand	SAMN29868462	SRX17306074	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134244
<i>Giribetia insulana</i>	Stylocellidae	MCZ-134247	Thailand	SAMN29868463	SRX17306075	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134247
<i>Miopsalis</i> sp.	Stylocellidae	MCZ-124721	Malaysia	SAMN29868464	SRX17306076	https://mczbase.mcz.harvard.edu/guid/MCZ:I:124721
<i>Leptopsalis dumoga</i>	Stylocellidae	MCZ-70610	Indonesia	SAMN29868465	SRX17306077	https://mczbase.mcz.harvard.edu/guid/MCZ:I:70610
<i>Aoraki denticulata denticulata</i>	Pettalidae	MCZ-134639	New Zealand	SAMN29868466	SRX17306078	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134639
<i>Aoraki healyi</i>	Pettalidae	MCZ-134658	New Zealand	SAMN29868467	SRX17306079	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134658
<i>Archaeopurcellia eureka</i>	Pettalidae	MCZ-162243	Australia	SAMN29868468	SRX17306080	https://mczbase.mcz.harvard.edu/guid/MCZ:I:162243
<i>Austropurcellia</i> cf. <i>giribeti</i>	Pettalidae	MCZ-154152	Australia	SAMN29868469	SRX17306081	https://mczbase.mcz.harvard.edu/guid/MCZ:I:154152
<i>Austropurcellia</i> sp.	Pettalidae	MCZ-154151	Australia	SAMN29868470	SRX17306082	https://mczbase.mcz.harvard.edu/guid/MCZ:I:154151
<i>Chileogovea jocasta</i>	Pettalidae	MCZ-134713	Chile	SAMN29868471	SRX17306083	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134713
<i>Chileogovea oedipus</i>	Pettalidae	MCZ-134712	Chile	SAMN29868472	SRX17306085	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134712
<i>Karripurcellia</i> sp.	Pettalidae	MCZ-134726	Australia	SAMN29868473	SRX17306086	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134726
<i>Karripurcellia sierwaldae</i>	Pettalidae	FMNH	Australia	SAMN29868474	SRX17306087	–
<i>Neopurcellia salmoni</i>	Pettalidae	MCZ-152168	New Zealand	SAMN29868475	SRX17306088	https://mczbase.mcz.harvard.edu/guid/MCZ:I:152168
<i>Neopurcellia salmoni</i>	Pettalidae	MCZ-152129	New Zealand	SAMN29868476	SRX17306089	https://mczbase.mcz.harvard.edu/guid/MCZ:I:152129
<i>Parapurcellia fissa</i>	Pettalidae	MCZ-134745	South Africa	SAMN29868477	SRX17306090	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134745
<i>Parapurcellia silvicola</i>	Pettalidae	MCZ-134749	South Africa	SAMN29868478	SRX17306091	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134749
<i>Pettalus</i> sp.	Pettalidae	MCZ-132354	Sri Lanka	SAMN29868479	SRX17306092	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132354
<i>Pettalus</i> sp.	Pettalidae	MCZ-132357	Sri Lanka	SAMN29868480	SRX17306093	https://mczbase.mcz.harvard.edu/guid/MCZ:I:132357
<i>Pettalus thwaitesi</i>	Pettalidae	MCZ-78880	Sri Lanka	SAMN29868481	SRX17306094	https://mczbase.mcz.harvard.edu/guid/MCZ:I:78880
<i>Purcellia argasiformis</i>	Pettalidae	MCZ-134762	South Africa	SAMN29868482	SRX17306096	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134762
<i>Purcellia illustrans</i>	Pettalidae	MCZ-134753	South Africa	SAMN29868483	SRX17306097	https://mczbase.mcz.harvard.edu/guid/MCZ:I:134753

Name	Family	Specimen codes	Country	BioSample	SRA	MCZ record
<i>Rakaia media</i>	Pettalidae	MCZ-163054	New Zealand	SAMN29868484	SRX17306098	https://mczbase.mcz.harvard.edu/guid/MCZ:IZ:163054
<i>Rakaia antipodiana</i>	Pettalidae	MCZ-152061	New Zealand	SAMN29868485	SRX17306099	https://mczbase.mcz.harvard.edu/guid/MCZ:IZ:152061

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