

## Supplementary material

### **Phylogenomics and biogeography of leptonetid spiders (Araneae: Leptonetidae)**

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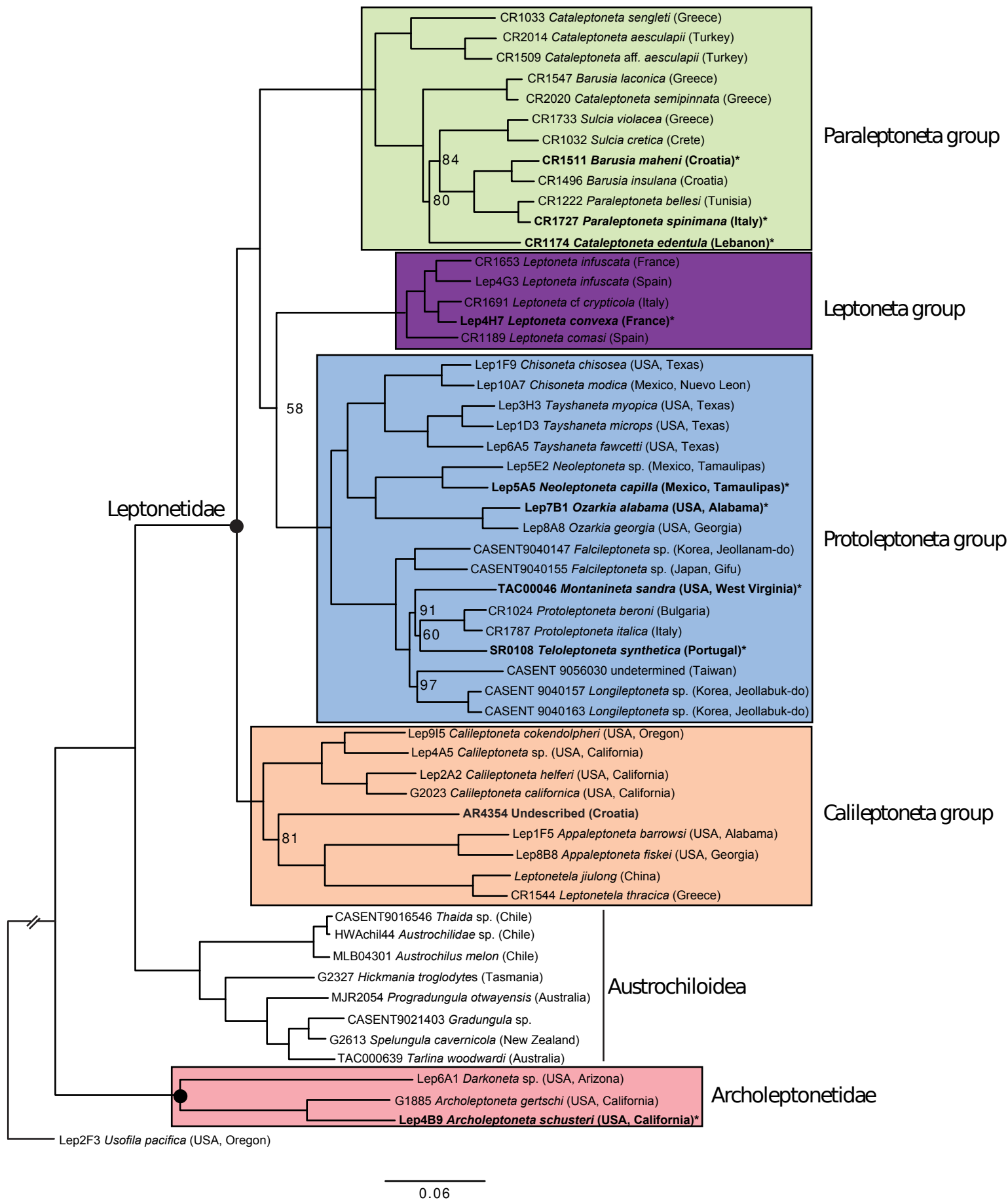
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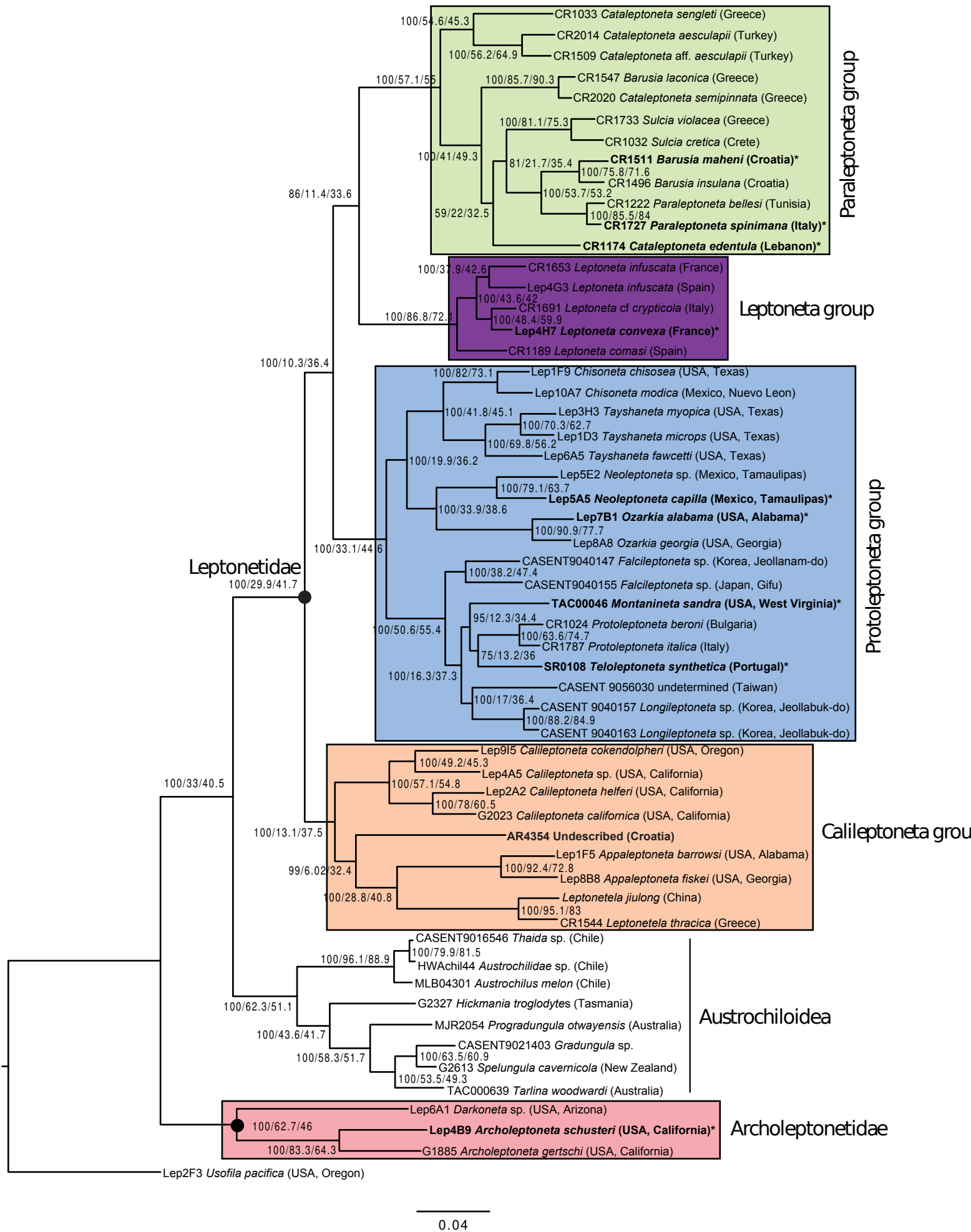
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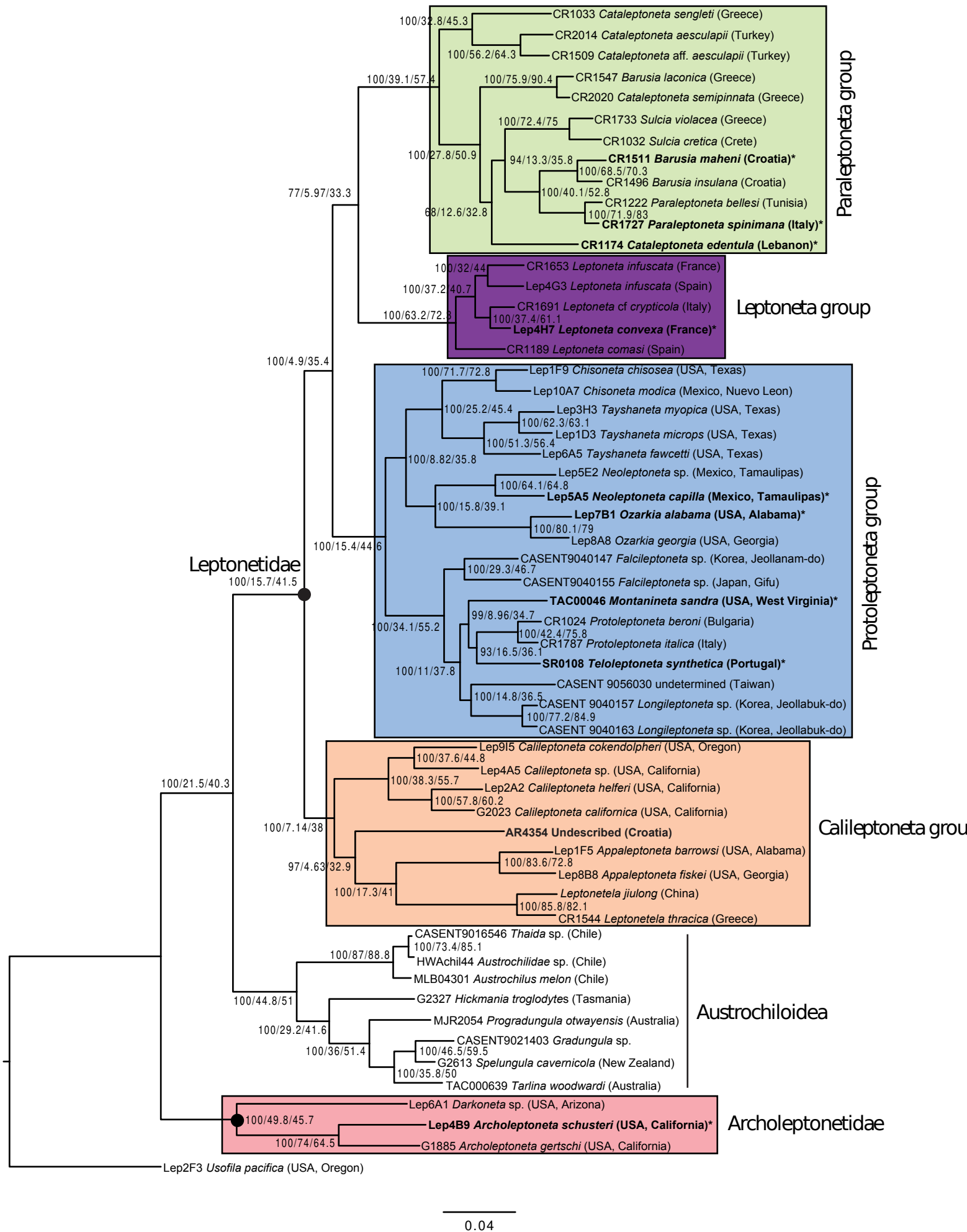
<sup>G</sup>Corresponding author. Email: [jmledford@ucdavis.edu](mailto:jmledford@ucdavis.edu)



**Fig. S1.** Concatenated RAxML results for the strict data matrix. Unless otherwise indicated, bootstrap support for all nodes is 100%. Taxa indicated in bold represent the type species for that genus.



**Fig. S2.** IQTREE results for relaxed data matrix showing bootstrap, gCF, and sCF values (bootstrap / gCF / sCF).



**Fig. S3.** IQTREE results for strict data matrix showing bootstrap, gCF, and sCF values (bootstrap / gCF / sCF).

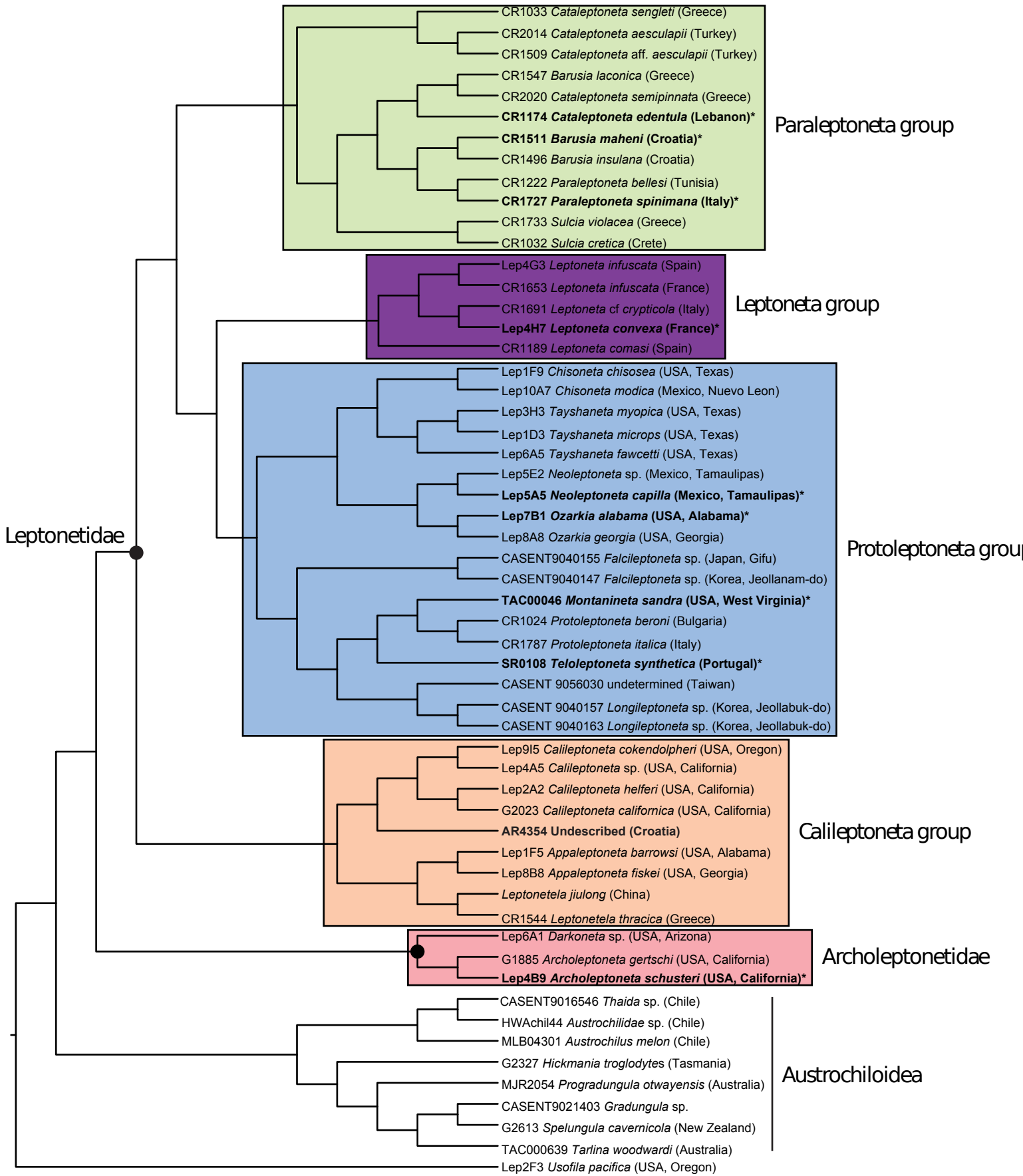
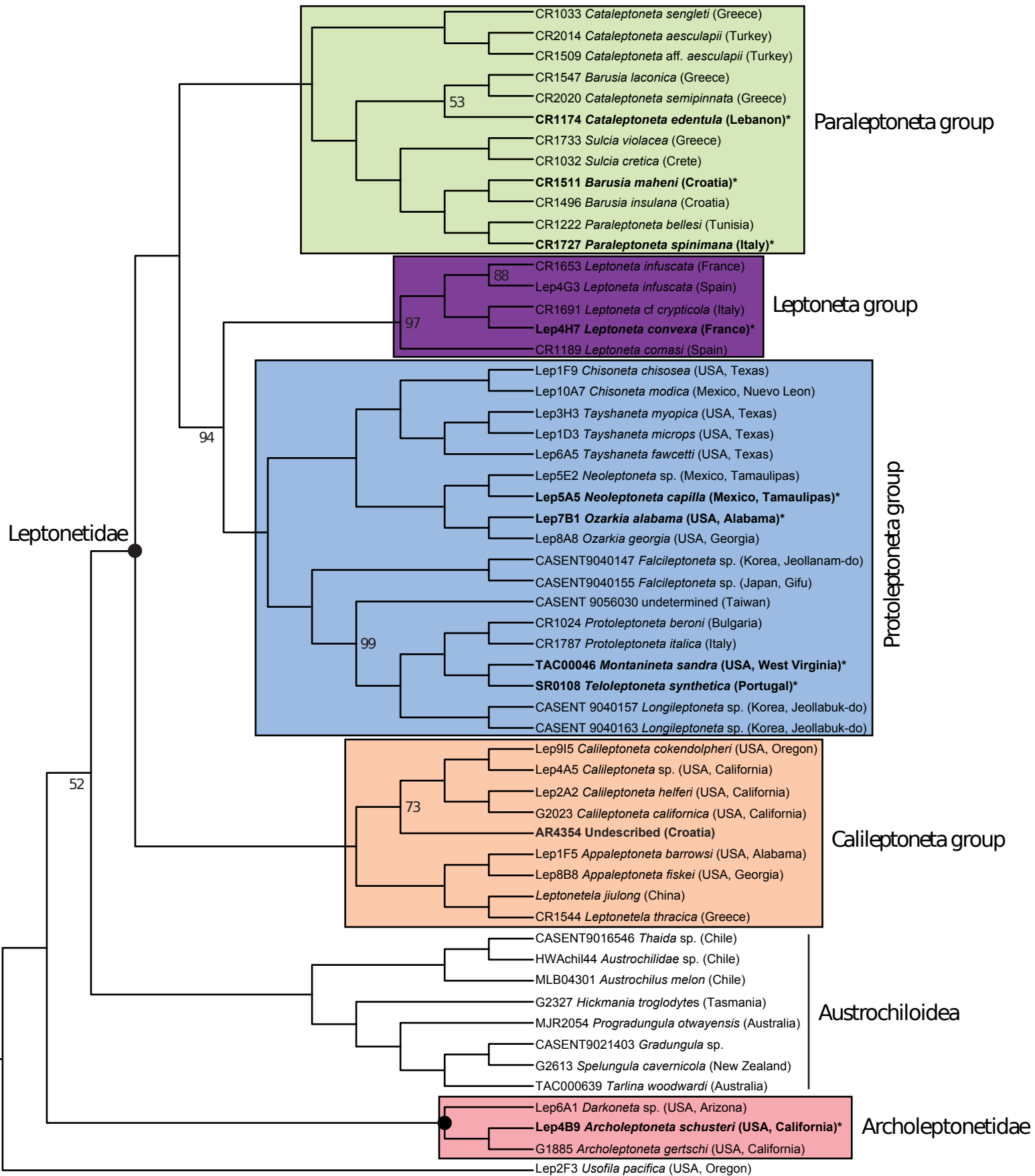
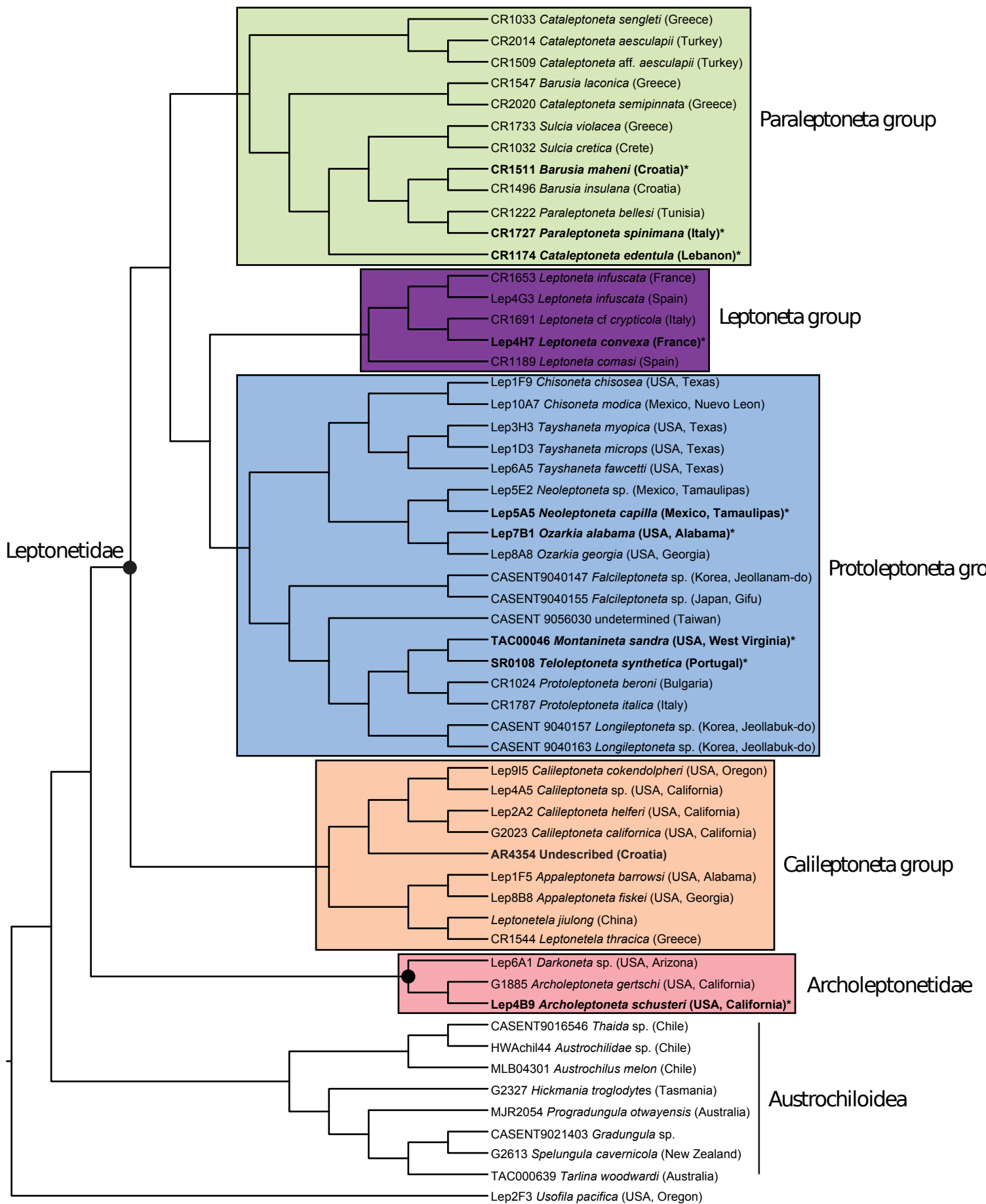


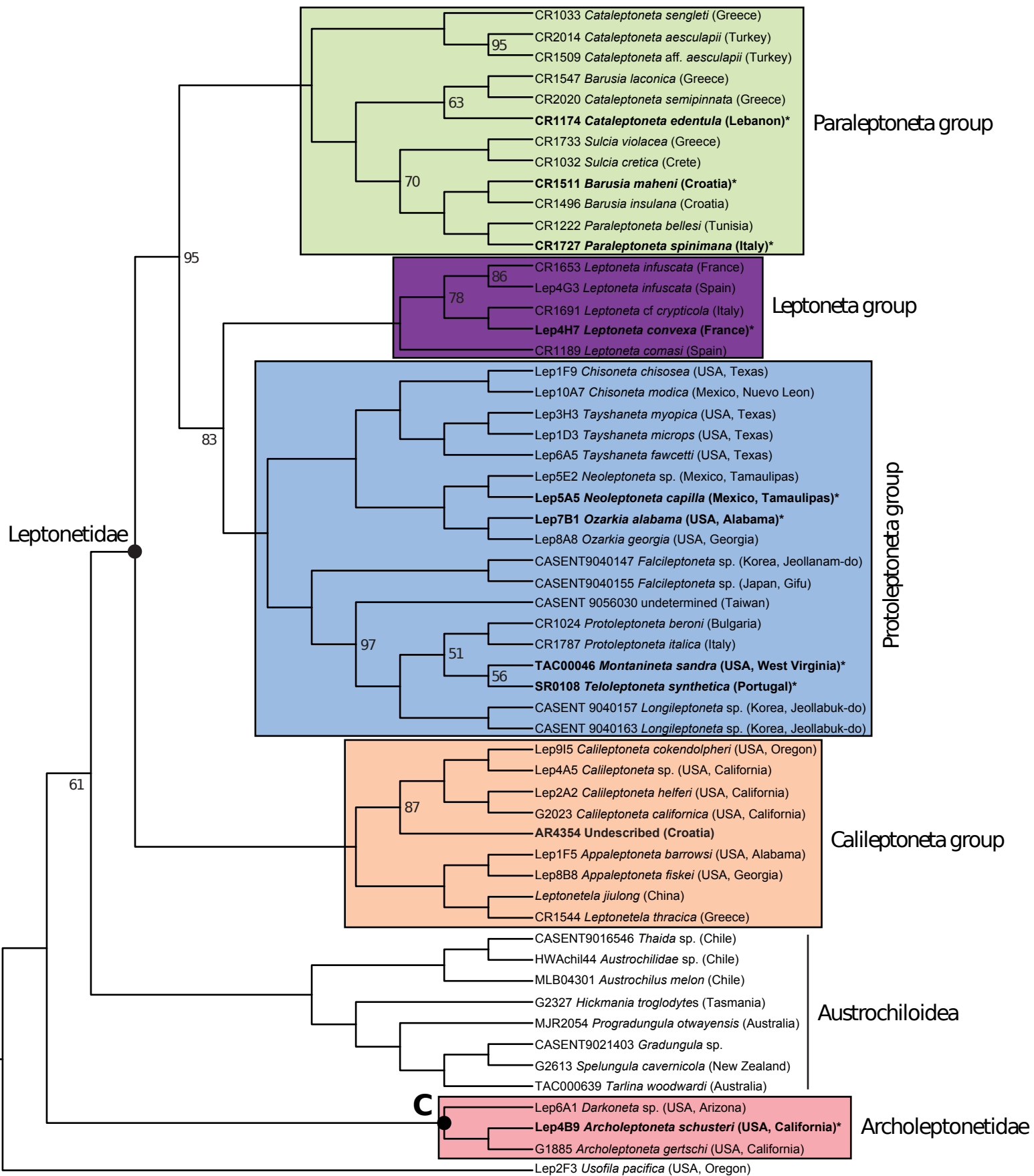
Fig. S4. SVDQuartets optimal tree for relaxed data matrix.



**Fig. S5.** SVDQuartets 50% majority rule consensus tree for relaxed data matrix. Unless otherwise indicated, bootstrap support for all nodes is 100%.



**Fig. S6.** SVDQuartets optimal tree for strict data matrix.



**Fig. S7.** SVDQuartets 50% majority rule consensus tree for strict data matrix. Unless otherwise indicated, bootstrap support for all nodes is 100%.



**Table S1. Voucher specimen and UCE information**

Voucher number	Infraorder	Superfamily	Family	Scientific name	ReadsPassQC	Contigs	UCE loci (408)	SRA number	Published previously	Country	State	County	Specific locality	Decimal latitude	Decimal longitude	Collection date	Hedin plate name
AR4354	Araneomorphae		Leptonetidae	New genus	252096	62665	217			Croatia	Trsteno		Jama pod Sinji kuk	42.710000	17.989000		
CASENT9016546	Araneomorphae	Austrochiloidea	Austrochilidae	<i>Thaida</i> genus	^	129982	399	SAMN14317107	^	Chile	Region de Los Rios		Flor de Lago, ranch on Lago Villarica	-39.250000	-72.080000		2017_Oct_HiSeq
CASENT9024013	Araneomorphae	Austrochiloidea	Gradungulidae	<i>Gradungula</i> sp.	738081	174612	330										
CASENT9040147	Araneomorphae		Leptonetidae	<i>Falcileptoneta</i> sp.	239787	80363	370			South Korea	Jeollanam-do		Jirisan National Park, Route 861, 2.7 km north-east of Cheoneunsa Temple	35.292500	127.493889	21/06/2010	
CASENT9040155	Araneomorphae		Leptonetidae	<i>Falcileptoneta</i> sp.	81117	35006	373			Japan	Gifu	Fuwa District	Trail above Fuwa no Taki	35.413889	136.518056	3/06/2010	
CASENT9040157	Araneomorphae		Leptonetidae	<i>Longileptoneta</i> sp.	108317	47454	384			South Korea	Jeollabuk-do		Pihak-san via Guam-ri	35.471944	126.585278	20/06/2010	
CASENT9040163	Araneomorphae		Leptonetidae	<i>Longileptoneta</i> sp.	297305	105810	400			South Korea	Jeollabuk-do	Eunsa-ri off Route 14 (near Gochang)	35.383056	126.715278	20/06/2010		
CASENT9056030	Araneomorphae		Leptonetidae	<i>Leptoneta</i> sp.	1333448	302445	377			Taiwan	Nantou		Beidongyianshan, 19.96 km east-north-east of Puli	24.076183	121.134633	4/07/2013	
CR1024	Araneomorphae		Leptonetidae	<i>Protopleptoneta</i> <i>beroni</i>	^	22512	137		^	Bulgaria	Mihailovgrad	Beli Mel Crete	Beli Mel Cave	43.433074	22.974389	21/08/2005	
CR1032	Araneomorphae		Leptonetidae	<i>Sulcia</i> <i>cretica</i>	288342	88526	359			Greece			Spilaio tis Milatov, Milatos, Nomos, Lassithi	35.3071	25.5666	25/09/2005	
CR1033	Araneomorphae		Leptonetidae	<i>Cataleptoneta</i> <i>sengleti</i>	101207	34866	183			Greece	Creta	Melidoni, Perama, Nomos Rethymon	Spilaio tou Melidoniou	35.384324	24.729848	24/09/2005	
CR1174	Araneomorphae		Leptonetidae	<i>Cataleptoneta</i> <i>edenula</i>	^	6165	247		^	Lebanon	Lebanon	Beruit	Jeita Grotto, Mount Lebanon, Nahrel Kalb Valley, 18 km north from Beruit	33.943366	35.641392	1/11/2005	
CR1189	Araneomorphae		Leptonetidae	<i>Leptoneta</i> <i>comasi</i>	76066	20004	205			Spain		Jaen	Cueva de la Morciguilla, Villacarrillo	38.089779	-3.002872		
CR1222	Araneomorphae		Leptonetidae	<i>Paraleptoneta</i> <i>bellesi</i>	^	64755	388		^	Tunisia		Ousseltia (Ouslatia)	Cv. Sidi Bou Zouitine, Ousseltia (Ouslatia)	35.916551	9.558838	21/03/2006	
CR1496	Araneomorphae		Leptonetidae	<i>Barusia</i> <i>insulana</i>	^	17503	152		^	Croatia	Hvar Island	Humac Vill.	Cv. Grabcina Spilja	43.134167	16.753700	18/08/2006	
CR1509	Araneomorphae		Leptonetidae	<i>Cataleptoneta</i> <i>aff. aesculapii</i>	135098	38066	196			Turkey	Anamur Distr.		Astim Magarasi Cave	36.127300	32.759933	16/07/2006	
CR1511	Araneomorphae		Leptonetidae	<i>Barusia</i> <i>maheni</i>	187196	60026	329			Croatia	Mijet Island		Spilja Cave, Velika, Blato Village	42.752419	17.475444	13/08/2006	
CR1544	Araneomorphae		Leptonetidae	<i>Leptonetela</i> <i>thracia</i>	^	119322	372		^	Greece		Maronia	Maronia Cave	40.931756	25.503617	23/09/2006	
CR1547	Araneomorphae		Leptonetidae	<i>Barusia</i> <i>laconica</i>	70995	25039	210			Greece	Peloponnese	Pirgus Diru	Diros Cave	36.637475	22.376287	22/09/2006	
CR1653	Araneomorphae		Leptonetidae	<i>Leptoneta</i> <i>infusata</i>	112268	29051	200			France	Ariège	Tourtouse (15 km near St. Giron)	Gr. de Tourtouse	43.090730	1.125470	19/05/2007	
CR1691	Araneomorphae		Leptonetidae	<i>Leptoneta</i> <i>cf. crypticola</i>	31476	12502	99			Italy	Cuneo	Roaschia	Gr. del Bandito	44.290080	7.427738	19/09/2007	
CR1727	Araneomorphae		Leptonetidae	<i>Paraleptoneta</i> <i>sp. inimana</i>	106695	42438	254			Italy	Lazio	San Felice Circeo	Gr. della Capre	41.231825	13.080235	4/05/2008	
CR1733	Araneomorphae		Leptonetidae	<i>Sulcia</i> <i>violacea</i>	^	496043	348		^	Greece	Cefalonia	Sami	Spilaio Drogarati	38.226991	20.628376	31/08/2007	
CR1787	Araneomorphae		Leptonetidae	<i>Protopleptoneta</i> <i>italica</i>	69788	23455	101			Italy		Prov. Pordenone	near Chauzetto	46.234700	12.935700	1/05/2011	
CR2014	Araneomorphae		Leptonetidae	<i>Cataleptoneta</i> <i>aesculapii</i>	124156	24127	31			Turkey		Antalya	Dim Cave	36.540083	32.110055	3/12/2013	
CR2020	Araneomorphae		Leptonetidae	<i>Cataleptoneta</i> <i>sempinnata</i>	^	22565	209		^	Greece	Kythera island	Potamos	Cave near Diakofiti	36.258150	23.079150	7/06/2012	
G2327	Araneomorphae	Austrochiloidea	Austrochilidae	<i>Hickmania</i> <i>troglodytes</i>	^	1152126	385	SAMN14317151	^	Australia	Tasmania		Bub's Hill Karst Area	-42.111900	145.767600		2017_Oct_HiSeq
G2613	Araneomorphae	Austrochiloidea	Gradungulidae	<i>Spelungula</i> <i>cavernicola</i>	^	780616	392	SAMN14317153	^	New Zealand			Pahara Valley				HUPlate_1
HWAchil44	Araneomorphae	Austrochiloidea	Austrochilidae	Austrochilidae sp.	^	248628	340		^								H Wood
Lep1D3	Araneomorphae		Leptonetidae	<i>Tayshaneta</i> <i>microps</i>	^	89979	387		^	USA	Texas	Bexar	Government Canyon Bat Cave	29.565450	-98.767520	12/03/2005	
Lep1F5	Araneomorphae		Leptonetidae	<i>Appaleptoneta</i> <i>barrowsi</i>	^	127265	389		^	USA	Alabama	Blount	Bangor Cave	33.983610	-86.733540	3/09/2004	

Voucher number	Infraorder	Superfamily	Family	Scientific name	ReadsPassQC	Contigs	UCE loci (408)	SRA number	Published previously	Country	State	County	Specific locality	Decimal latitude	Decimal longitude	Collection date	Hedin plate name
Lep1F9	Araneomorphae		Leptonetidae	<i>Chisoneta chisosea</i>	<sup>A</sup>	263092	387		<sup>A</sup>	USA	Texas	Brewster	Big Bend National Park, near parking lot of Casa gravier trail	29.274470	-103.286450	18/11/2004	
Lep10A7	Araneomorphae		Leptonetidae	<i>Chisoneta modica</i>	507597	129213	366			Mexico	Nuevo Leon	Nuevo Leon	Laguna de Sanchez, Cueva Martiniano	25.300000	-100.200000	25/11/2009	
Lep2A2	Araneomorphae		Leptonetidae	<i>Calileptoneta helferi</i>	557655	129696	389			USA	California	Contra Costa	Mount Diablo State Park	37.850000	-121.917000	18/12/2006	
Lep2F3	Araneomorphae	Synspermiata	Telemidae	<i>Usofila pacifica</i>	<sup>A</sup>	219188	300	SAMN14317127	<sup>A</sup>	USA	Oregon	Lane	McKenzie Ridge, Willamette National Forest, off 126 East Road	44.181500	-122.114400		2017_Oct_HiSeq
Lep3H3	Araneomorphae		Leptonetidae	<i>Tayshaneta myopica</i>	66233	17754	397			USA	Texas	Travis	Tooth Cave	30.406880	-97.853400	1/09/2008	
Lep4A5	Araneomorphae		Leptonetidae	<i>Calileptoneta</i> sp.	4762769	1280561	315			USA	California	Kern	Packsaddle Cave, 1.4 miles east of Fairview	35.939600	-118.461000	22/03/2008	
Lep4B9	Araneomorphae		Archoleptonetidae	<i>Archoleptoneta schusteri</i>	<sup>A</sup>	135868	313		<sup>A</sup>	USA	California	Marin	Mount Burdell, 0.85 miles west of Highway 101	38.128400	-122.578000	15/03/2008	
Lep4G3	Araneomorphae		Leptonetidae	<i>Leptoneta infuscata</i>	166526	63342	399			Spain			Catalonia Vallirana, Cova de l'avenc del Pla de Comes	41.398200	1.911098	9/06/2006	
Lep4H7	Araneomorphae		Leptonetidae	<i>Leptoneta convexa</i>	<sup>A</sup>	96653	388		<sup>A</sup>	France			Grotte de Lique, Lique (pres de St Girons), Ariege	42.963683	1.074830	18/05/2007	
Lep5A5	Araneomorphae		Leptonetidae	<i>Neoleptoneta capilla</i>	<sup>A</sup>	171502	403		<sup>A</sup>	Mexico	Tamaulipas		Cueva de la Capilla	23.108103	-99.249064	2/01/2009	
Lep5E2	Araneomorphae		Leptonetidae	<i>Neoleptoneta</i> sp.	569471	134830	372			Mexico	Tamaulipas		Gruta de Quintero	22.648176	-99.041537	30/12/2009	
Lep6A1	Araneomorphae		Archoleptonetidae	<i>Darkoneta</i> sp.	3846406	179917	387			USA	Arizona	Pima	Bill's Cave, Vail	29.909300	-100.911400	10/11/2009	
Lep6A5	Araneomorphae		Leptonetidae	<i>Tayshaneta Fawcetti</i>	657514	148227	398			USA	Texas	Valverde	Fawcett's Cave, Devil's River State Natural Area	29.909300	-100.911400	10/11/2009	
Lep7B1	Araneomorphae		Leptonetidae	<i>Ozarkia alabama</i>	<sup>A</sup>	176086	394		<sup>A</sup>	USA	Alabama	Calhoun	Lady Cave	33.738713	-85.810096	11/12/2009	
Lep8A8	Araneomorphae		Leptonetidae	<i>Ozarkia georgia</i>	631501	142828	383			USA	Georgia	Dade	Kilpatrick Cave	34.746215	-85.542404	3/12/2009	
Lep8B8	Araneomorphae		Leptonetidae	<i>Appaleptoneta fiskei</i>	370159	103990	377			USA	Georgia	Walker	Pettijohn's Cave	34.669304	-85.366080	22/10/2009	
Lep9i5	Araneomorphae		Leptonetidae	<i>Calileptoneta cokendolpheri</i>	757994	13727	323			USA	Oregon	Lane	H.J. Andrews Experimental Forest	39.740830	-124.363100	30/06/2009	
MJR2054	Araneomorphae	Austrochiloidea	Gradungulidae	<i>Progradungula otwayensis</i>	<sup>A</sup>	884167	386	SAMN14317134	<sup>A</sup>	Australia	Victoria		Great Otway National Park, Triplet Falls	-38.671880	143.496730		2018_Jan_HiSeq
MLB04301 <sup>C</sup>	Araneomorphae	Austrochiloidea	Austrochilidae	<i>Austrochilus melon</i>	<sup>A</sup>	127955	158	SAMN14317136	<sup>A</sup>	Chile	Valparaíso	Quillota	Parque Nacional La Campana, Palma de Ocoa	-32.964037	-71.081761		2018_Jan_HiSeq
G1885	Araneomorphae		Archoleptonetidae	<i>Archoleptoneta</i>	<sup>A</sup>	143474	370		<sup>A</sup>	USA	California	Calaveras	E White Pines	38.270000	-120.340000	18/05/2011	
G2023	Araneomorphae		Leptonetidae	<i>Calileptoneta californica</i>	<sup>A</sup>	899659	370		<sup>A</sup>	USA	California	Del Norte	South Fork Smith River, south-east of Hiouchi	41.769400	-124.011800	9/08/2014	
TAC000464	Araneomorphae		Leptonetidae	<i>Montanineta sandra</i>	<sup>A</sup>	285903	264		<sup>A</sup>	USA	West Virginia	Mercer	Camp Creek State Forest	37.513700	-81.130900	25/06/2014	
TAC000639	Araneomorphae	Austrochiloidea	Gradungulidae	<i>Tarlina woodwardi</i>	<sup>A</sup>	100651	396	SAMN14317157	<sup>A</sup>	Australia	Queensland		Lamington NP, vic Mount Bithongabel	-28.260000	153.170000		2017_Oct_HiSeq
SR0108	Araneomorphae		Leptonetidae	<i>Teloleptoneta synthetica</i>	<sup>A</sup>	10491	222		<sup>A</sup>	Portugal	Algarve	Loulé	Gruta do Vale Telheiro	37.170556	-8.035000	29/12/2009	
CR	Araneomorphae		Leptonetidae	<i>Leptonetela julong</i>	218208	60803	363			China	Guizhou	Tongree City	Julong Cave, Malongxi Brook, Maopo Village, Yangtou Town	27.707361	109.328830	18/05/2007	

<sup>A</sup>Data from Ramírez *et al.* (2020).

<sup>B</sup>Data from Wood *et al.* (2018).

<sup>C</sup>Museum number MACN-Ar 33650.

**Table S2. Divergence time estimates, refer to Fig. 6 for node numbers**

Node number	Taxon or group	Posterior mean (Ma)	95% HPD CI lower bound (Ma)	95% HPD CI upper bound (Ma)	Calibration
56	Root node	189.72	139.76	243.7	<240.0
57	Archoleptonetidae	112.17	75.3	151.52	
58		46.29	27.7	66.6	
59	Austrochiloidea + Leptonetidae	163.57	118.65	213.41	
60	Austrochiloidea	85.52	57.87	116.69	
61		10.33	6.39	14.93	
62		2.2	1.25	3.26	
63		68.23	45.42	94.38	
64		40.75	27.21	55.84	
65		26.89	17.64	37.77	
66		14.26	8.41	20.95	
67	Leptonetidae	126.32	93.55	164.94	>98.19
68	<i>Calileptoneta</i> group	110.86	80.24	144.66	
69	<i>Calileptoneta</i>	57.52	37.94	79.35	
70		41.95	26.45	59.93	
71		28.15	16.87	41.41	
72	AR4354	103.81	75.35	136.27	
73	<i>Appaleptoneta</i> + <i>Leptonetela</i>	83.57	59.82	111.86	
74		29.82	17.95	42.85	
75	<i>Leptonetela</i>	19.68	11.39	29	
76	<i>Paraleptoneta</i> + <i>Leptoneta</i> + <i>Protoleptoneta</i> groups	114.74	84.78	150.39	
77	<i>Leptoneta</i> + <i>Paraleptoneta</i> groups	105.61	76.97	138.21	
78	<i>Leptoneta</i> group	33.62	22.4	45.71	
79		24.5	16.43	33.84	
80		18.48	11.8	26.41	
81		14.31	8.35	20.72	
82	<i>Paraleptoneta</i> group	71.83	51.33	95.34	
83	<i>Cataleptoneta</i> (part)	49.25	33.27	67.32	>12.0
84		15.53	8.16	23.8	
85		53.1	36.75	70.51	
86		8.15	4.55	12.03	
87		49.36	34.69	66.39	
88		44.59	30.58	59.48	
89		12.82	7.75	18.58	>5.33
90		29.92	20.12	40.78	
91		12.31	7.41	17.83	
92		7.83	5.2	10.92	>5.33
93	<i>Protoleptoneta</i> group	87.57	62.76	114.98	
94		77.78	55.9	102.99	
95		64.68	45.13	86.45	
96		31.35	19.28	44.94	
97		21.12	12.32	30.5	
98		58.16	40.39	78.76	
99		19.04	10.86	27.95	
100		35.14	22.84	48.13	
101		17.82	10.43	25.73	
102		49.75	34.65	66.22	
103		36.89	24.15	50.88	
104		42.34	29.55	56.55	
105		37.85	26.2	51.2	
106		8.68	5.18	12.64	
107		39.2	27.44	53.01	
108		36.27	24.83	48.99	
109		12	6.85	17.79	

**Table S3. Dispersal–extinction–cladogenesis (DEC) output**

<b>NODE56:</b>	<b>NODE57:</b>	<b>NODE58:</b>
EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: B->B^B->B B PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: B->B^B->B B PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: C->C^C->C C PROBABILITY:
1	1	1

<b>NODE59:</b>	<b>NODE60:</b>	<b>NODE61:</b>
EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: C->C^C->C C PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: E->E^E->E E PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: E->E^E->E E PROBABILITY:
1	1	1

<b>NODE62:</b>	<b>NODE63:</b>	<b>NODE64:</b>
EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: E->E^E->E E PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: E->E^E->E E PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:1 Extinction:0 Event Route: CE->E C PROBABILITY:
1	1	1

<b>NODE65:</b>	<b>NODE66:</b>	<b>NODE67:</b>
EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY:	EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY:
1	1	1

<b>NODE68:</b>	<b>NODE69:</b>	<b>NODE70:</b>
EVENT MATRIX:	EVENT MATRIX:	EVENT MATRIX:
Dispersal:0	Dispersal:0	Dispersal:0
Vicariance:0	Vicariance:0	Vicariance:0
Extinction:0	Extinction:0	Extinction:0
Event Route:	Event Route:	Event Route:
D->D^D->D D	D->D^D->D D	D->D^D->D D
PROBABILITY:	PROBABILITY:	PROBABILITY:
1	1	1

<b>NODE71:</b>	<b>NODE72:</b>	<b>NODE73:</b>
EVENT MATRIX:	EVENT MATRIX:	EVENT MATRIX:
Dispersal:0	Dispersal:0	Dispersal:0
Vicariance:0	Vicariance:0	Vicariance:0
Extinction:0	Extinction:0	Extinction:0
Event Route:	Event Route:	Event Route:
D->D^D->D D	D->D^D->D D	D->D^D->D D
PROBABILITY:	PROBABILITY:	PROBABILITY:
1	1	1

<b>NODE74:</b>	<b>NODE75:</b>	<b>NODE76:</b>
EVENT MATRIX:	EVENT MATRIX:	EVENT MATRIX:
Dispersal:0	Dispersal:0	Dispersal:0
Vicariance:0	Vicariance:0	Vicariance:0
Extinction:0	Extinction:0	Extinction:0
Event Route:	Event Route:	Event Route:
D->D^D->D D	D->D^D->D D	D->D^D->D D
PROBABILITY:	PROBABILITY:	PROBABILITY:
1	1	1

<b>NODE77:</b>	<b>NODE78:</b>	<b>NODE79:</b>
EVENT MATRIX:	EVENT MATRIX:	EVENT MATRIX:
Dispersal:0	Dispersal:0	Dispersal:0
Vicariance:0	Vicariance:0	Vicariance:0
Extinction:0	Extinction:0	Extinction:0
Event Route:	Event Route:	Event Route:
D->D^D->D D	D->D^D->D D	D->D^D->D D
PROBABILITY:	PROBABILITY:	PROBABILITY:
1	1	1

<b>NODE80:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY: 1	<b>NODE81:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE82:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1
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<b>NODE83:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE84:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE85:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1
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<b>NODE86:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE87:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE88:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1
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<b>NODE89:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: F->F^F->F F PROBABILITY: 1	<b>NODE90:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY: 1	<b>NODE91:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: D->D^D->D D PROBABILITY: 1
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<b>NODE92:</b> EVENT MATRIX: Dispersal:0 Vicariance:1 Extinction:0 Event Route: AD->A D PROBABILITY: 0.7655	<b>NODE93:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: F->F^F->F F PROBABILITY: 1	<b>NODE94:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: F->F^F->F F PROBABILITY: 1
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<b>NODE95:</b> EVENT MATRIX: Dispersal:1 Vicariance:1 Extinction:0 Event Route: DF->ADF->F AD PROBABILITY: 0.5425	<b>NODE96:</b> EVENT MATRIX: Dispersal:1 Vicariance:0 Extinction:0 Event Route: DF->DF^F->DF F PROBABILITY: 0.5025	<b>NODE97:</b> EVENT MATRIX: Dispersal:1 Vicariance:1 Extinction:0 Event Route: AD->ADF->DF A PROBABILITY: 0.5402
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<b>NODE98:</b> EVENT MATRIX: Dispersal:1 Vicariance:0 Extinction:0 Event Route: D->D^D->AD^D->AD D PROBABILITY: 0.5219	<b>NODE99:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: B->B^B->B B PROBABILITY: 1	<b>NODE100:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: B->B^B->B B PROBABILITY: 1
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<b>NODE101:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: B->B^B->B B PROBABILITY: 1	<b>NODE102:</b> EVENT MATRIX: Dispersal:0 Vicariance:0 Extinction:0 Event Route: A->A^A->A A PROBABILITY: 1	<b>NODE103:</b> EVENT MATRIX: Dispersal:0 Vicariance:1 Extinction:0 Event Route: DF->F D PROBABILITY: 1
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<b>NODE104:</b>	<b>NODE105:</b>	<b>NODE106:</b>
EVENT MATRIX: Dispersal:1 Vicariance:1 Extinction:0 Event Route: AD->ADF->DF A PROBABILITY: 0.8464	EVENT MATRIX: Dispersal:1 Vicariance:0 Extinction:0 Event Route: D->D^D->AD^D->D AD PROBABILITY: 0.8464	EVENT MATRIX: Dispersal:0 Vicariance:1 Extinction:0 Event Route: BD->D B PROBABILITY: 1

<b>NODE107:</b>	<b>NODE108:</b>	<b>NODE109:</b>
EVENT MATRIX: Dispersal:1 Vicariance:0 Extinction:0 Event Route: BD->BD^D->BD D PROBABILITY: 0.6851	EVENT MATRIX: Dispersal:2 Vicariance:1 Extinction:0 Event Route: BE->BCDE->BD CE PROBABILITY: 0.505	EVENT MATRIX: Dispersal:1 Vicariance:0 Extinction:0 Event Route: BE->BE^B->BE B PROBABILITY: 0.2171

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Dispersal Between Areas:

A->F:1  
B->C:0.5  
B->D:0.5  
D->A:2.5  
D->F:1  
E->C:0.5  
E->D:0.5  
F->A:0.5

Speciation Within Areas:

A:9  
B:6  
C:2  
D:21  
E:4  
F:4

Dispersal Table:

	to	within
A	3	9
B	0	6
C	1	2
D	1	21
E	0	4
F	2	4

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Global Cost:

Global Dispersal: 10  
Global Vicariance: 8  
Global Extinction: 0



## References

- Ramírez, M. J., Magalhaes, I. L. F., Derkarabetian, S., Ledford, J., Griswold, C. E., Wood, H. M., and Hedin, M. (2021). Sequence capture phylogenomics of true spiders reveals convergent evolution of respiratory systems. *Systematic Biology* **70**(1), 14–20. [doi:10.1093/sysbio/syaa043](https://doi.org/10.1093/sysbio/syaa043)
- Wood, H. M., González, V. L., Lloyd, M., Coddington, J., and Scharff, N. (2018). Next-generation museum genomics: phylogenetic relationships among palpimanoid spiders using sequence capture techniques (Araneae: Palpimanoidea). *Molecular Phylogenetics and Evolution* **127**, 907–918. [doi:10.1016/j.ympev.2018.06.038](https://doi.org/10.1016/j.ympev.2018.06.038)