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Supplementary material

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Table S1. List of the species and molecular markers included in the multilocus phylogenetic analyses of 36 diplocentrid scorpion species, plus nine outgroups; and GenBank accession numbers

Species	*18S*	*28S*	*12S*	*16S*	*COI*
Androctonus australis	X77908	AF124955	JQ423124	KJ538465	KJ538470
Smeringurus grandis	KM274432	KM274578	KM274140	KM274286	KM274724
Bothriurus flavidus	KT446811	KT446923	KT446587	KT446699	KT447034
Urodacus planimanus	NEW SUB	NEW SUB	Not available	Not available	Not available
Liocheles australasiae	NEW SUB	NEW SUB	Not available	JQ514233	JN018157
Opisthacanthus madagascariensis	NEW SUB	NEW SUB	KF548105	JQ514236	Not available
Hadogenes paucidens	NEW SUB	NEW SUB	JQ423130	Not available	JQ514257
Pandinus imperator	NEW SUB	AY156537	AY156552	AY156567	AY156582
Heterometrus laoticus	JN018277	JN018374	AY156543	AY156558	AY156573
Nebo hierichonticus	NEW SUB	AY156526	AY156543	AY156556	AY156571
Heteronebo jamaicae	KM514559	KM514594	KM514489	KM514524	KM514629
Tarsoporosus kugleri	KM514560	KM514595	KM514490	KM514525	KM514630
Bioculus caboensis	KM514561	KM514596	KM514491	KM514526	KM514631
Bioculus comondae	KM514562	KM514597	KM514492	KM514527	KM514632
Didymocentrus krausi	KM514563	KM514598	KM514493	KM514528	KM514633
Didymocentrus lesueurii	KM514564	KM514599	KM514494	KM514529	KM514634
Kolotl magnus	KM514565	KM514600	KM514495	KM514530	KM514635
Kolotl poncei	KM514566	KM514601	KM514496	KM514531	KM514636
Diplocentrus anophthalmus	KM514567	KM514602	KM514497	KM514532	KM514637
Diplocentrus bereai	KM514568	KM514603	KM514498	KM514533	KM514638
Diplocentrus coddingtoni	KM514569	KM514604	KM514499	KM514534	KM514639
Diplocentrus colwelli	KM514570	KM514605	KM514500	KM514535	KM514640
Diplocentrus coylei	KM514571	KM514606	KM514501	KM514536	KM514641
Diplocentrus cozumel	KM514572	KM514607	KM514502	KM514537	KM514642
Diplocentrus diablo	KM514573	KM514608	KM514503	KM514538	KM514643
Diplocentrus formosus	KM514574	KM514609	KM514504	KM514539	KM514644
Diplocentrus gertschi	KM514575	KM514610	KM514505	KM514540	KM514645
Diplocentrus hoffmanni	KM514576	KM514611	KM514506	KM514541	KM514646
Diplocentrus jaca	KM514577	KM514612	KM514507	KM514542	KM514647
Diplocentrus keyserlingii	KM514578	KM514613	KM514508	KM514543	KM514648
Diplocentrus kraepelini	KM514579	KM514614	KM514509	KM514544	KM514649
Diplocentrus lindo	KM514580	KM514615	KM514510	KM514545	KM514650
Diplocentrus melici	KM514581	KM514616	KM514511	KM514546	KM514651
Diplocentrus mexicanus	KM514582	KM514617	KM514512	KM514547	KM514652
Diplocentrus mitlae	KM514583	KM514618	KM514513	KM514548	KM514653
Diplocentrus motagua	KM514584	KM514619	KM514514	KM514549	KM514654
Diplocentrus peloncillensis	KM514585	KM514620	KM514515	KM514550	KM514655
Diplocentrus rectimanus	KM514586	KM514621	KM514516	KM514551	KM514656
Diplocentrus reddelli	KM514587	KM514622	KM514517	KM514552	KM514657
Diplocentrus sagittipalpus	KM514588	KM514623	KM514518	KM514553	KM514658

Diplocentrus silanesi	KM514589	KM514624	KM514519	KM514554	KM514659
Diplocentrus sissomi	KM514590	KM514625	KM514520	KM514555	KM514660
Diplocentrus tehuacanus	KM514591	KM514626	KM514521	KM514556	KM514661
Diplocentrus whitei	KM514592	KM514627	KM514522	KM514557	KM514662
Diplocentrus zacatecanus	KM514593	KM514628	KM514523	KM514558	KM514663

Table S2. Telotarsal and basitarsal spiniform macrosetae counts on the 36 diplocentrid scorpion species studied

The first letter indicates the segment (t=telotarsus, b=basitarsus); the second indicates the face of the leg (p=prolateral, r= retrolateral), the third indicates the number of the leg; and after the number of the leg is the position of the counts (d=distal, sd= subdistal, m= medial, rm= retrolateral median, pr= proximal)

	tp1	tr1	tp2	tr2	tp3	tr3	tp4	tr4	b1d	b1sd	b1m	b1rm	b1rpr	b2d	b2sd	b2m	b2rd	b2rm	b2rpr	b3d	b3sd	b3m
Nhierichonticus	6	7	7	8	8	9	8	9	2	1	0	0	1	2	1	0	0	0	1	3	1	0
Hjamaicae	4	4	5	5	6	6	6	6	2	1	2	0	0	2	2	2	1	1	0	3	2	1
Tkugleri	3	3	3	3	4	4	4	4	1	2	0	0	0	2	1	0	0	0	0	3	1	0
Bcaboensis	3	3	4	4	5	5	5	5	0	2	1	0	0	2	2	0	0	0	0	3	1	1
Bcomondae	3	3	4	4	5	5	5	5	0	2	1	0	0	2	2	0	0	0	0	3	1	1
Dkrausi	3	3	4	4	5	5	5	5	0	0	1	0	0	2	1	0	0	0	0	3	1	0
Dlesueurii	3	3	4	4	5	5	5	5	2	2	0	0	0	2	2	0	0	0	0	3	1	0
Kmagnus	4	6	4	7	5	7	6	7	2	2	0	0	0	2	2	1	0	0	0	3	1	0
Kponcei	3	5	4	6	5	7	5	7	2	2	0	0	0	2	2	0	0	0	0	3	1	0
Danophthalmus	4	4	4	4	5	5	5	5	2	2	2	0	0	2	2	2	0	1	0	3	1	1
Dbereai	4	4	4	4	4	5	5	5	0	2	2	0	0	2	2	1	0	1	0	3	1	1
Dcoddingtoni	4	4	4	5	5	5	5	5	2	2	1	0	0	2	2	2	0	1	0	3	1	1
Dcolwelli	5	5	5	6	6	7	6	7	0	2	1	0	0	2	2	1	0	1	0	3	2	1
Dcoylei	4	5	5	5	6	6	6	6	1	1	2	1	0	3	1	1	0	1	0	3	1	0
Dcozumel	5	5	6	6	7	7	7	8	0	2	2	1	0	2	2	2	0	1	0	3	2	1
Ddiablo	4	4	4	5	5	6	5	6	2	2	2	1	0	2	2	0	0	1	0	3	2	1
Dformosus	5	6	6	6	6	6	7	7	2	0	1	1	0	2	2	1	0	1	0	3	1	0
Dgertschi	4	5	5	6	6	6	6	6	2	2	2	0	0	2	2	2	0	1	0	3	1	1
Dhoffmanni	5	5	5	5	6	6	6	6	2	0	1	1	0	1	2	1	0	1	0	3	1	0
Djaca	4	5	5	5	5	6	6	6	1	2	2	0	0	2	2	2	0	1	0	3	2	1
Dkeyserlingii	4	5	5	5	5	6	6	6	2	2	0	1	0	2	2	1	0	1	0	3	1	0
Dkraepelini	4	5	5	5	6	6	6	6	2	2	1	0	0	2	2	1	0	1	0	3	1	0
Dlindo	4	5	5	5	6	7	6	7	1	2	1	1	0	2	2	2	0	1	0	3	2	1

Dmelici	4	5	5	5	5	6	6	6	0	2	2	0	0	2	2	2	0	1	0	3	1	1
Dmexicanus	5	6	6	7	7	8	7	8	1	3	1	0	0	2	2	3	0	1	0	3	2	1
Dmitlae	4	4	4	5	5	5	5	5	2	1	0	0	0	2	1	1	0	1	0	3	1	0
Dmotagua	4	4	4	4	5	5	5	5	0	2	0	0	0	2	2	1	0	1	0	3	2	1
Dpeloncillensis	5	6	6	6	6	7	6	7	2	2	1	1	0	2	2	1	1	1	0	3	2	1
Drectimanus	4	5	5	5	6	6	6	6	1	1	1	0	0	2	2	0	0	1	0	3	1	0
Dreddelli	4	5	5	5	5	6	7	7	2	2	0	0	0	2	2	2	0	1	0	3	1	1
Dsagittipalpus	5	5	5	5	6	6	6	6	0	2	1	1	0	2	1	1	0	1	0	3	1	0
Dsilanesi	6	7	6	7	7	8	7	8	1	2	1	0	0	2	2	2	0	1	0	3	2	1
Dsissomi	5	5	5	6	6	6	6	6	2	2	1	1	0	2	2	0	0	1	0	3	1	0
Dtehuacanus	4	5	5	5	6	6	6	6	0	2	2	1	0	3	1	2	0	1	0	3	1	1
Dwhitei	6	7	6	7	7	8	7	8	2	2	2	1	0	2	2	2	0	1	0	3	2	1
Dzacatecanus	5	6	5	6	6	7	6	7	2	2	1	1	0	2	2	0	0	1	0	3	2	1

Table S3. Bayes factor comparison for the pigmentation, carapace, trichobothria, finger dentition and mesosoma characters from Santibáñez-López *et al*. (2014)

Character number refers to the original publication. Boldface text indicates significant values

Pigmentation			Carapace			Trichobothria		Finger dentition			Mesosoma	
chars	7	9	chars	16	18	chars	65	chars	54	56	chars	93
5	–4.041	**22.726**	15	**4.101**	1.824	64	0.309	53	**10.774**	**10.758**	94	–0.361
7		0.022	16		**5.976**			54		**20.348**		

Table S4. Bayes factor comparison for the carination characters from Santibáñez-López et al. (2014)

Character number refers to the original publication. Boldface text indicates significant values

	Carination						
char	31	34	38	43	48	51	52
20	0.682	–1.523	**2.327**	–0.390	–1.156	**34.781**	**3.319**
31		–0.357	–1.834	**8.581**	1.395	0.425	**5.928**
34			**14.622**	–1.328	1.424	–1.808	0.135
38				–2.844	**4.528**	**2.675**	1.903
43					**7.949**	**2.613**	**9.301**
48						**5.285**	–2.182
51							**9.199**

Table S5. Bayes factor comparison for the leg spiniform setae characters from Santibáñez-López *et al*. (2014)

Character number refers to the original publication. Boldface text indicates significant values

	Legs spiniform setae coded as discrete characters												
chars	68	71	72	73	74	77	79	80	81	82	87	89	90
67	**12.332**	**4.223**	**9.515**	**6.680**	**6.096**	0.315	**3.468**	**8.618**	–2.812	**5.446**	**5.461**	**6.385**	–1.866
68		1.453	**4.809**	**10.442**	0.522	–0.599	**2.808**	**2.758**	1.736	1.496	**10.988**	**6.940**	1.063
71			1.782	–1.431	**3.699**	**2.331**	**4.580**	-0.123	**3.823**	**6.931**	1.937	**3.311**	–1.309
72				**7.884**	**3.082**	**3.010**	1.491	**5.568**	**9.562**	1.759	0.176	**4.237**	**9.743**
73					**5.615**	**6.870**	**2.505**	**11.506**	**8.013**	**5.252**	**8.925**	**8.451**	**10.191**
74						**3.217**	0.299	1.294	**6.061**	0.153	–2.734	**2.995**	**5.830**
77							–0.266	1.628	1.687	1.660	0.652	1.157	**3.133**
79								1.345	1.837	0.253	1.204	–6.831	**3.520**
80									**9.141**	**10.711**	**4.689**	**8.704**	**11.721**
81										**8.325**	–11.597	**17.166**	**27.827**
82											**13.526**	**5.804**	**3.751**
87												**19.682**	–6.153
89													**18.438**

Table S6. Bayes factor comparison for the leg tarsal spiniform macrosetae counts as studied in the present study

Boldface text indicates significant values. p1, prolateral face of the telotarsus of leg I; r1, retrolateral face of the telotarsus of leg I; p2, prolateral face of the telotarsus of leg II; r2, retrolateral face of the telotarsus of leg II; r3, retrolateral face of the telotarsus of leg III; r4, retrolateral face of the telotarsus of leg IV; b1rpr, basitarsus of leg I, retolateral proximal setae; b2rd, basitarsus of leg II, retrolateral distal setae; b2rm, basitarsus of leg II, retrolateral medial setae; b2rpr, basitarsus of leg II, proximal setae; b3sd, basitarsus of leg III, subdistal setae; b3m, basitarsus of leg III, medial setae

Char	tr1	tp2	tr2	tr3	tr4	b1rpr	b2rd	b2rm	b2rpr	b3sd	b3m
tp1	**15.88**	**14.54**	**29.66**	**17.59**	**18.53**	**3.75**	0.59	1.79	**3.75**	**6.99**	0.04
tr1		**43.21**	**23.06**	**42.99**	**46.20**	**3.97**	0.54	1.09	**3.97**	0.28	0.72
tp2			**21.61**	**53.88**	**65.28**	**3.64**	0.33	0.90	**3.64**	**3.75**	0.37
tr2				**32.49**	**33.39**	**4.91**	0.40	0.34	**4.91**	**4.87**	0.01
tr3					**100.63**	**4.23**	0.29	0.30	**4.23**	**8.63**	0.12
tr4						**3.74**	0.26	0.30	**3.74**	**5.74**	0.04
b1rpr							0.12	**2.24**	**1342.64**	0.10	0.63
b2rd								**2.48**	0.12	0.47	0.56
b2rm									**2.24**	-42.84	**2.71**
b2rb										0.10	0.63
b3sd											**3.91**

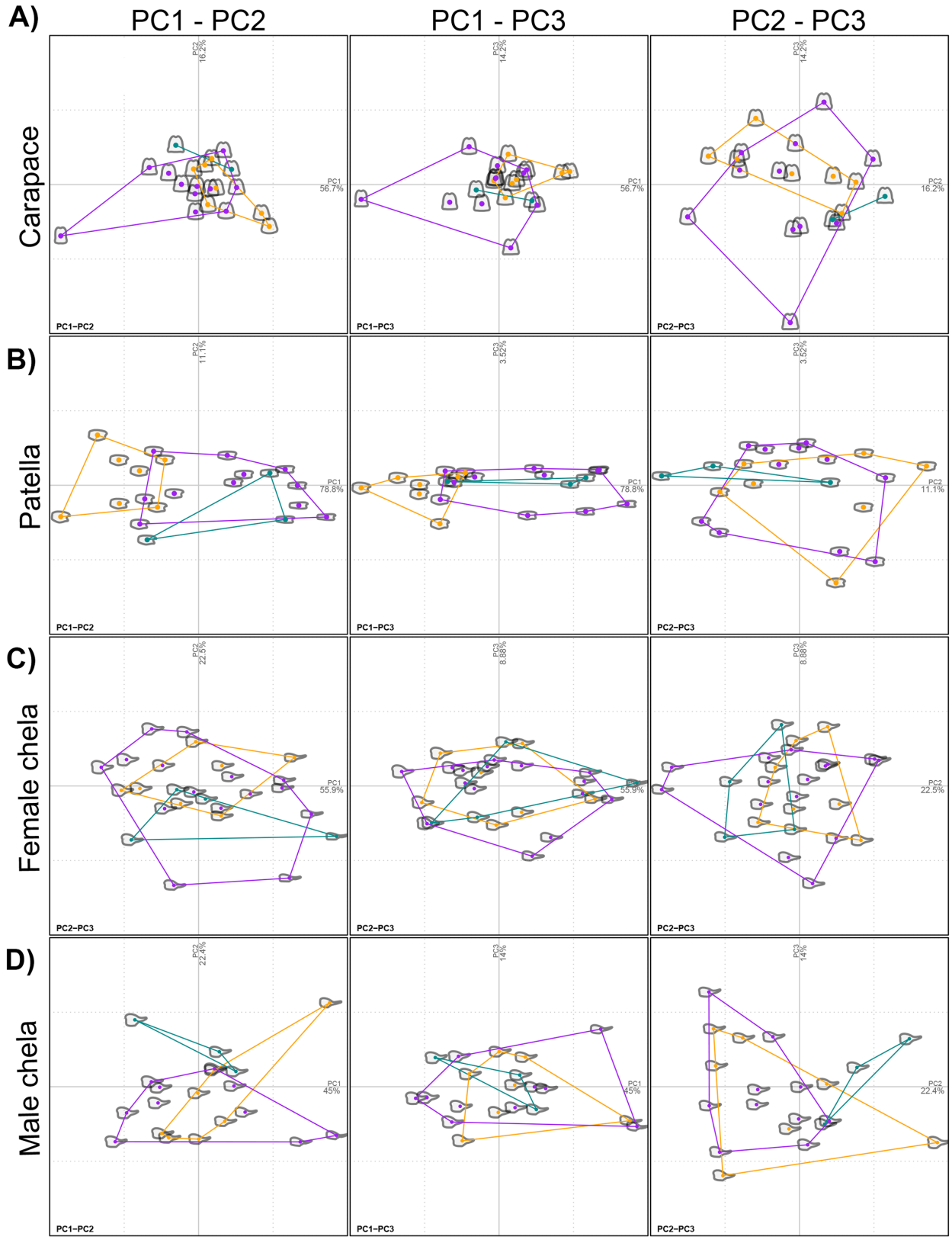

Fig. S1. Visualization of the morphospaces showing the variation in principal components within Diplocentrus. Left PC1 vs PC2, center PC1 vs PC3, right PC2 vs PC3; a) carapace, b) retrolateral surface of the pedipalp patella, c) retrolateral surface of the female pedipalp chela; d) retrolateral surface of the male pedipalp chela. Colors as in main figures.

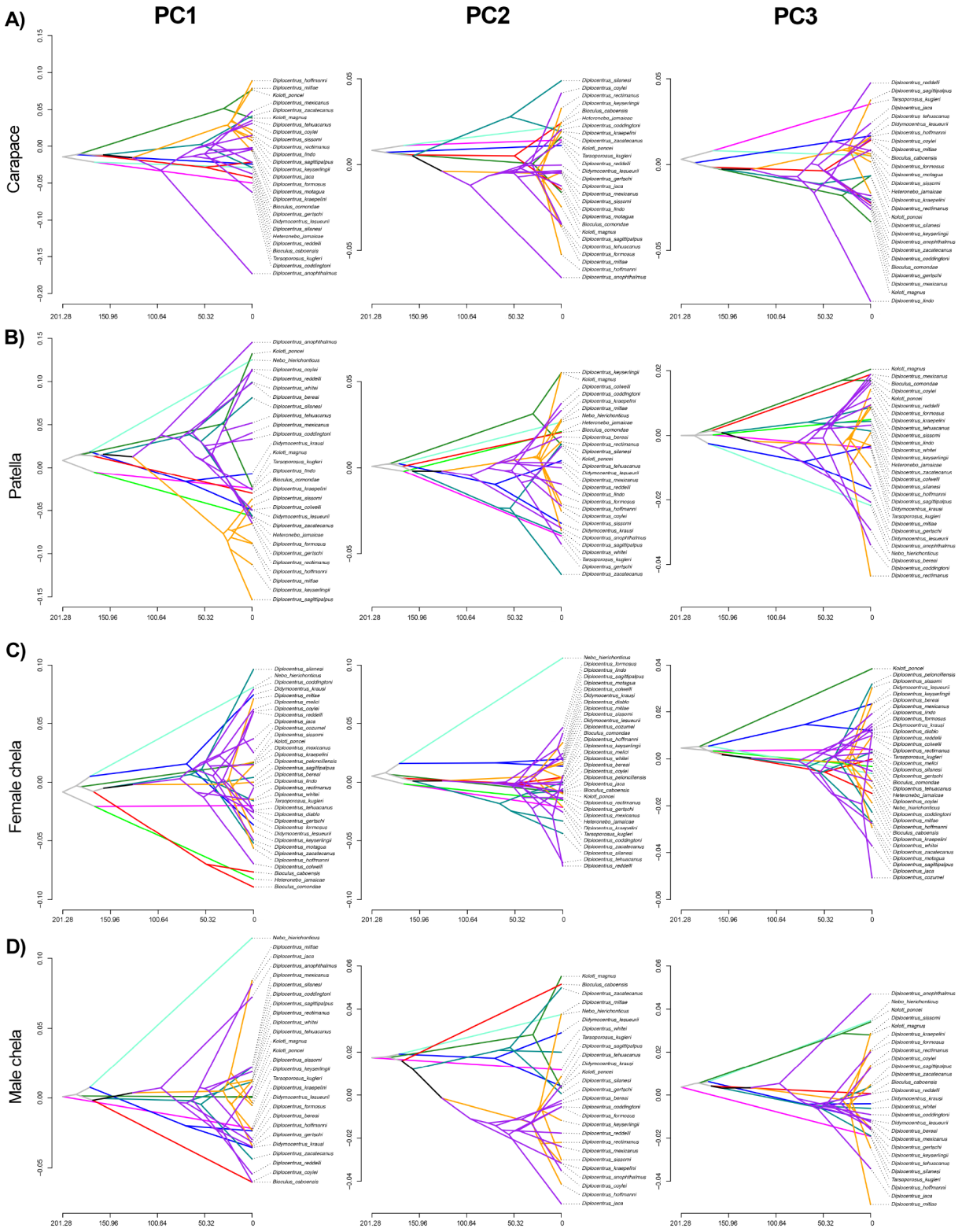

Fig. S2. Visualization of the PCs values of the morphospaces, as a function of phylogenetic relationships recovered from the dated molecular tree from BEAST; a) carapace, b) retrolateral surface of the pedipalp patella, c) retrolateral surface of the female pedipalp chela; d) retrolateral surface of the male pedipalp chela;"x" axis indicates the time of divergence, "y" axis indicates the PCs values. Colors as in main figures.

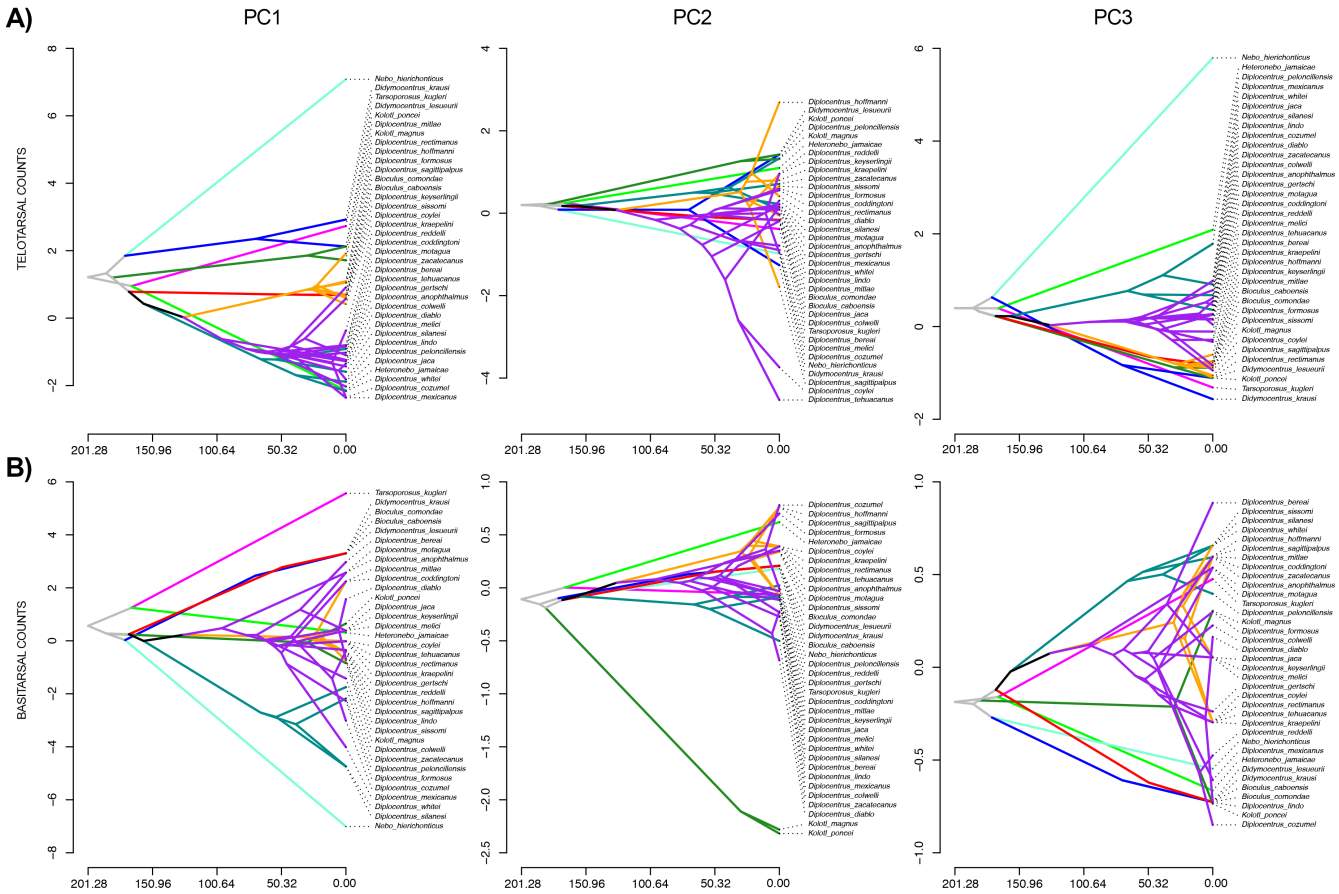

Fig. S3. Visualization of the PCs values of the variation of the tarsal spiniform macrosetae counts as a function of phylogenetic relationships recovered from the dated molecular tree from BEAST; a) telotarsal counts; b) basitarsal counts; “x” axis indicates times of divergence, “y” indicates the PCs values. Colors as in main figures.