

Additional file 2. Comparison of models used for ancestral character state reconstructions. Models compared are ‘equal rates’ (ER, one transition rate) and ‘all rates different’ (ARD). Significantly better values are in bold. Characters analysed are: (1) larval food resource, (2) larval feeding habits, (3) abdominal ST5, shape of posterior margin, (4) cercal prong, outline of dorsal surface in lateral view, (5) phallus, connection between basi- and distiphallus, (6) phallus, connection between basi- and distiphallus, shape, (7) harpes, (8) vesica, (9) phallotrema, configuration, (10) phallotrema, position with regard to phallic tube, (11) acrophallic levers, (12) styli, number, (13) capitis, (14) median process and (15) juxta.

Character	Model	-lnL	AIC	AICc	Difference
1	ARD	-52.01275	116.0255	116.8332	
	ER	-59.16782	120.3356	120.3723	3.5
2	ARD	-61.51691	147.0338	150.2175	
	ER	-71.12531	144.2506	144.2873	5.9
3	ARD	-11.70477	27.40954	27.52065	
	ER	-11.71244	25.42487	25.46157	2.1
4	ARD	-70.08216	164.1643	167.348	
	ER	-91.13013	184.2603	184.2969	16.9
5	ARD	-11.18232	26.36465	26.47576	
	ER	-11.18242	24.36484	24.40154	2.1
6	ARD	-16.33956	44.67912	45.48682	
	ER	-17.00823	36.01647	36.05317	9.4
7	ARD	-30.73725	65.47451	65.58562	
	ER	-32.02503	66.05006	66.08675	0.5
8	ARD	-22.86512	49.73024	49.84136	
	ER	-22.90556	47.81112	47.84781	2.0
9	ARD	-6.08465	16.1693	16.28041	
	ER	-6.288552	14.5771	14.6138	1.7
10	ARD	-8.536103	21.07221	21.18332	
	ER	-9.347827	20.69565	20.73235	0.5
11	ARD	-6.814652	17.6293	17.74042	
	ER	-6.992546	15.98509	16.02179	1.7
12	ARD	-17.35727	46.71454	47.52223	
	ER	-18.46484	38.92967	38.96637	8.6
13	ARD	-15.41203	34.82406	34.93517	
	ER	-15.76452	33.52904	33.56574	1.4
14	ARD	-11.93918	27.87836	27.98947	
	ER	-12.28655	26.57309	26.60979	1.4
15	ARD	-8.536103	21.07221	21.18332	
	ER	-9.347827	20.69565	20.73235	0.5