

Additional file 3. 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	-72.80864	169.6173	172.8009	
	ER	-89.30511	180.6102	180.6469	7.8
2	ARD	-83.9557	207.9114	217.2447	
	ER	-101.5164	205.0328	205.0695	12.2
3	ARD	-11.59651	27.19302	27.30413	
	ER	-11.60953	25.21905	25.25575	2.0
4	ARD	-73.33492	170.6698	173.8535	
	ER	-94.77865	191.5573	191.594	17.7
5	ARD	-11.86001	27.72003	27.83114	
	ER	-11.86126	25.72252	25.75921	2.1
6	ARD	-16.79748	45.59495	46.40264	
	ER	-17.70037	37.40073	37.43743	9.0
7	ARD	-30.51638	65.03277	65.14388	
	ER	-31.82506	65.65012	65.68682	0.5
8	ARD	-23.31111	50.62223	50.73334	
	ER	-23.33626	48.67252	48.70922	2.0
9	ARD	-6.65729	17.31458	17.42569	
	ER	-6.865953	15.73191	15.7686	1.7
10	ARD	-5.517948	15.0359	15.14701	
	ER	-5.896321	13.79264	13.82934	1.3
11	ARD	-6.924375	17.84875	17.95986	
	ER	-7.120624	16.24125	16.27794	1.7
12	ARD	-18.77524	49.55049	50.35818	
	ER	-19.87109	41.74219	41.77889	8.6
13	ARD	-10.09124	24.18249	24.2936	
	ER	-10.26919	22.53838	22.57508	1.7
14	ARD	-12.83728	29.67457	29.78568	
	ER	-13.10558	28.21117	28.24786	1.5
15	ARD	-5.517948	15.0359	15.14701	
	ER	-5.896321	13.79264	13.82934	1.3