

Supp. file 2.

Table 1. Matrix for the phylogenetic analysis of the tribe Lycini (Lycidae: Lycinae). “?” represent unknown character states, “-” represents inapplicable characters state, “*” represents a total polymorphism and “\$” represent partial polymorphism.

	0	5	1	1	2	2	3	3																													
			0	5	0	5	0	5																													
<i>Chauliognathus</i> sp.	-	2	3	3	0	1	0	-	-	5	1	4	0	1	2	0	0	2	2	1	1	0	0	0	0	1	0	0	0	1	0	0	-	0	0	1	
<i>Caenia amplicornis</i>	0	0	3	0	0	1	0	-	-	3	1	3	1	1	2	0	0	2	1	0	1	1	0	0	0	1	1	1	0	1	1	1	-	1	1	0	
<i>Caenia sinuata</i>	0	0	3	0	0	1	0	-	-	3	1	3	2	1	2	0	0	2	1	0	1	1	1	0	0	1	1	1	2	1	1	1	-	1	1	0	
<i>Calopteron bifasciatum</i>	0	0	1	1	2	1	0	-	-	4	1	3	2	1	2	2	1	1	2	0	1	0	0	0	0	1	1	2	0	1	1	1	-	2	1	0	
<i>Calopteron corrugatum</i>	0	0	1	1	2	1	0	-	-	4	1	3	2	1	2	2	1	1	2	0	1	0	0	0	0	1	1	2	0	1	0	1	-	2	1	0	
<i>Calopteron discrepans</i>	0	0	1	1	2	1	0	-	-	4	1	3	2	1	2	2	1	1	2	0	1	0	0	0	0	1	1	2	0	1	0	1	-	2	1	0	
<i>Calopteron jimenezi</i>	0	0	1	1	2	1	0	-	-	4	1	3	2	1	2	2	1	1	2	0	1	0	0	0	0	1	1	2	0	1	0	1	-	2	1	0	
<i>Lycomesus llorentei</i>	0	0	2	?	0	0	1	2	0	2	2	5	0	0	2	1	0	2	0	3	1	1	0	0	?	1	1	2	1	1	0	2	2	2	1	0	
<i>Lyconotus lateralis</i>	0	1	2	2	0	0	1	2	1	0	2	1	1	0	2	1	0	1	0	1	1	0	0	0	0	0	1	1	1	1	1	2	0	1	1	0	
<i>Lyconotus semiustus</i>	0	1	2	2	0	2	1	2	1	0	2	1	1	0	2	1	0	2	0	3	1	1	0	0	0	0	1	1	0	1	0	2	0	1	1	0	
<i>Lyconotus</i> sp. 1	0	1	2	2	1	0	1	2	0	0	0	1	1	0	2	1	0	2	0	1	1	0	0	0	0	0	1	1	0	0	-	2	0	1	1	0	
<i>Lyconotus</i> sp. 2	0	1	2	2	1	0	1	2	0	0	2	1	1	0	2	1	0	2	0	1	1	1	0	0	0	0	1	1	0	0	-	2	0	1	1	0	
<i>Lyconotus</i> sp. 3	0	1	2	2	1	0	1	2	0	0	2	1	1	0	2	1	0	2	0	1	1	0	0	0	0	0	1	1	0	0	-	2	1	1	1	0	
<i>Lyconotus</i> sp. 4	0	1	2	2	1	0	1	2	1	0	2	1	1	0	2	1	0	2	0	1	1	0	0	0	0	0	1	1	0	0	-	2	0	1	1	0	
<i>Lycorectus sordidus</i>	-	0	2	2	0	2	1	2	0	2	0	0	1	0	1	1	0	0	0	2	0	0	0	1	0	0	1	0	2	1	1	2	2	1	0	1	
<i>Lycostomus praeustus</i>	0	1	?	2	1	0	1	2	0	2	0	2	1	0	1	1	0	1	0	3	1	1	0	0	0	0	1	1	1	0	-	3	0	1	1	0	
<i>Lycostomus rubrocinctus</i>	1	0	1	1	0	2	1	2	0	2	2	0	0	0	0	2	1	1	2	3	1	0	0	0	0	0	1	1	2	1	1	2	0	1	1	1	
<i>Lycus ampliatus</i>	1	0	0	1	1	2	1	2	0	2	0	0	0	0	0	1	0	1	0	2	0	1	1	0	0	0	0	0	0	2	*	1	3	0	1	1	1
<i>Lycus trabeatus</i>	1	0	0	2	0	2	1	2	2	2	0	0	1	0	0	1	0	2	0	2	0	1	1	0	0	0	0	0	2	*	2	2	2	0	1	0	
<i>Neolycus arizonensis</i>	-	0	1	2	0	2	1	2	0	3	1	2	2	0	1	3	1	1	0	2	0	1	1	0	0	1	1	2	2	0	-	2	2	2	0	1	

<i>Neolycus carmelitus</i>	-	0	1	?	0	2	1	2	1	2	0	0	1	0	1	1	0	1	0	?	?	?	0	0	?	1	1	2	2	1	1	2	1	2	0	1	
<i>Neolycus fernandezi</i>	-	0	1	2	0	2	1	2	2	2	0	2	2	0	1	1	0	2	0	2	0	1	1	0	0	1	1	2	2	*	*	2	2	2	0	1	
<i>Neolycus lecontei</i>	-	0	1	2	0	2	1	2	1	2	1	0	1	0	1	1	0	1	0	2	0	1	1	0	0	0	1	2	2	0	-	2	2	2	1	1	
<i>Neolycus sallaei</i>	-	0	1	2	0	2	1	2	1	2	0	2	2	0	1	3	1	1	0	2	0	0	1	0	0	1	1	2	1	*	0	2	1	2	0	1	
<i>Neolycus schonherri</i>	-	0	0	2	0	2	1	2	1	2	0	2	2	0	1	1	0	1	0	2	0	1	0	0	0	1	1	2	1	*	1	2	2	2	1	1	
<i>Neolycus scutellatus</i>	-	0	0	2	0	2	1	1	-	3	1	0	1	0	1	1	0	0	0	2	0	1	0	0	0	1	1	1	2	1	*	2	2	1	0	1	
<i>Rhyncheros carnifex</i>	-	0	1	2	0	2	1	0	-	1	1	2	2	0	1	2	1	2	2	0	1	1	2	0	0	0	1	2	2	1	1	2	2	2	1	1	
<i>Rhyncheros fuliginosus</i>	-	0	1	?	0	2	1	1	-	2	2	2	2	0	1	2	1	1	2	3	1	0	0	0	?	1	1	2	2	1	0	2	0	2	0	1	
<i>Rhyncheros fulvellus</i>	1	2	1	1	0	2	1	1	-	3	1	0	2	0	1	3	1	1	0	3	1	0	0	2	1	0	1	0	2	1	*	2	2	0	0	1	
<i>Rhyncheros fulvellus femoratus</i>	-	2	2	2	2	2	1	2	0	2	0	0	0	0	1	1	0	2	0	3	1	0	0	1	0	0	0	0	2	1	*	2	1	0	1	0	
<i>Rhyncheros godmani</i>	-	0	1	?	0	2	1	2	0	1	2	1	2	0	1	2	1	2	2	2	0	0	1	0	0	1	1	1	2	1	0	2	1	1	0	1	
<i>Rhyncheros lineicollis</i>	1	2	1	1	0	2	1	1	-	3	1	0	2	0	1	2	1	1	2	3	1	0	0	0	0	1	1	1	2	1	1	3	2	1	0	1	
<i>Rhyncheros loripes</i>	-	2	2	2	1	2	1	2	2	2	0	0	0	0	1	1	0	2	0	2	0	0	0	2	1	0	0	0	1	0	-	2	1	0	1	0	
<i>Rhyncheros minutus</i>	1	2	2	2	1	2	1	2	0	2	0	0	0	0	1	1	0	2	0	2	0	0	1	2	0	0	0	0	1	0	-	2	2	0	0	1	
<i>Rhyncheros nigrofumosus</i>	-	0	1	1	0	2	1	0	-	1	0	2	2	0	1	2	1	1	2	1	1	0	0	0	0	1	1	2	2	1	1	2	2	1	0	1	
<i>Rhyncheros rusticus</i>	0	2	1	?	*	2	1	2	0	2	2	2	2	0	1	3	1	1	0	3	1	1	0	?	?	0	0	0	1	*	4	0	3	0	1	0	
<i>Rhyncheros sagittatus</i>	1	0	1	?	1	2	1	2	1	2	2	1	0	0	1	1	0	2	1	2	0	1	0	1	?	0	0	0	1	0	-	2	2	0	1	0	
<i>Rhyncheros sanguineus</i>	1	0	0	2	0	2	1	0	-	3	1	0	1	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	1	2	0	-	2	2	1	0	1
<i>Rhyncheros sanguinipennis</i>	1	0	0	0	0	2	1	0	-	3	1	0	0	0	1	2	1	1	2	1	1	1	0	0	?	1	1	1	2	1	1	3	2	1	0	1	
<i>Rhyncheros simulans</i>	1	2	1	2	1	2	1	2	0	2	1	0	1	0	1	1	0	2	0	3	1	1	0	1	0	0	0	0	2	0	-	2	2	0	0	1	

Appendix A. Continued

	3	4	4	5	5	6	6	7																												
	6	0	5	0	5	0	5	0																												
<i>Chauliognathus</i> sp.	0	2	0	1	0	0	-	1	1	0	2	1	4	3	0	0	-	0	0	0	0	1	1	0	0	-	-	2	2	0	5	1	2	2	4	2

<i>Caenia amplicornis</i>	-	0	1	1	1	1	1	1	0	1	0	0	3	4	1	1	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	0	2	1	0	0	
<i>Caenia sinuata</i>	-	0	1	1	1	1	1	1	0	1	1	2	3	4	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	1	0	0
<i>Calopteron bifasciatum</i>	-	3	1	1	2	2	2	1	0	1	0	0	3	4	1	0	0	1	1	0	0	0	0	0	0	0	1	2	0	0	1	0	2	1	3	2	
<i>Calopteron corrugatum</i>	-	3	1	1	2	1	1	1	0	0	1	2	3	4	1	0	0	1	1	0	0	0	0	0	0	0	1	2	0	0	1	0	2	1	0	2	
<i>Calopteron discrepans</i>	-	3	1	1	2	1	1	1	0	1	1	2	3	4	1	0	0	1	1	0	0	0	0	0	0	0	1	2	0	0	1	0	2	1	3	1	
<i>Calopteron jimenezi</i>	-	3	1	1	2	1	1	1	0	1	0	0	3	4	1	0	0	1	1	0	0	0	0	0	0	0	1	2	0	0	1	0	2	1	3	2	
<i>Lycomesus llorentei</i>	-	1	1	0	1	0	?	1	0	0	0	2	0	4	0	0	0	0	?	1	?	1	?	2	?	0	0	1	?	1	?	?	0	1	0	0	
<i>Lyconotus lateralis</i>	-	1	0	0	1	?	0	1	2	1	0	2	0	2	1	0	0	0	0	1	1	1	1	2	1	0	0	1	2	1	0	4	2	1	?	2	
<i>Lyconotus semiustus</i>	-	1	1	3	1	0	0	1	2	2	0	0	0	2	1	0	0	0	0	1	1	1	0	2	1	0	0	2	2	1	0	4	2	1	3	2	
<i>Lyconotus sp. 1</i>	-	1	1	2	1	0	0	0	2	0	0	0	0	2	1	0	0	0	0	1	1	1	0	2	1	0	0	2	2	1	0	-	2	1	3	2	
<i>Lyconotus sp. 2</i>	-	1	0	1	1	0	0	1	2	0	0	1	2	2	1	0	0	0	0	1	1	1	0	2	1	0	0	2	2	1	0	4	2	1	3	2	
<i>Lyconotus sp. 3</i>	-	1	0	0	1	0	0	0	2	0	0	0	0	2	1	0	0	0	0	1	1	1	0	2	1	0	0	2	2	1	1	4	2	1	2	2	
<i>Lyconotus sp. 4</i>	-	1	0	1	1	0	0	0	2	0	0	1	0	2	1	0	0	0	0	1	1	1	0	2	1	0	0	2	2	1	0	4	2	1	3	2	
<i>Lycorectus sordidus</i>	1	0	0	1	2	1	1	1	0	1	0	2	2	1	2	2	0	2	2	0	0	0	0	1	1	0	1	5	2	0	2	0	1	1	3	1	
<i>Lycostomus praeustus</i>	-	1	1	1	1	1	0	1	0	0	0	2	0	1	1	0	0	1	1	0	0	0	0	2	1	0	1	2	3	0	3	3	?	?	?	?	
<i>Lycostomus rubrocinctus</i>	0	1	1	2	1	1	0	1	0	1	0	2	0	1	1	0	1	1	1	0	0	0	0	2	1	0	1	2	2	0	1	3	1	1	3	0	
<i>Lycus ampliatus</i>	0	0	0	0	1	1	1	1	1	*	0	0	0	1	1	0	0	2	2	0	0	0	0	1	1	0	1	0	2	0	0	0	0	1	3	0	
<i>Lycus trabeatus</i>	-	0	1	0	1	2	0	1	1	*	1	2	0	0	1	0	2	1	1	0	0	1	1	1	1	0	1	3	?	0	?	?	?	1	1	2	0
<i>Neolycus arizonensis</i>	1	0	0	1	1	1	0	1	1	*	1	2	0	0	2	2	1	2	2	0	0	0	0	1	0	1	1	3	2	0	1	1	2	1	2	1	
<i>Neolycus carmelitus</i>	1	0	?	?	1	1	?	1	1	1	1	2	0	?	2	2	?	?	?	0	?	1	?	1	?	1	1	3	?	0	?	?	?	?	?	?	
<i>Neolycus fernandezi</i>	1	0	0	1	1	1	1	1	1	*	1	2	1	0	2	2	0	2	2	0	0	0	0	1	1	1	1	3	0	0	1	0	2	1	5	2	
<i>Neolycus lecontei</i>	0	0	1	1	1	1	0	1	0	*	1	2	0	0	2	2	0	1	1	0	0	1	1	1	1	1	1	4	2	0	1	1	0	1	3	2	
<i>Neolycus sallaei</i>	1	0	1	1	1	1	1	1	1	*	1	2	1	0	2	2	0	1	1	0	0	0	0	1	1	1	1	4	0	0	1	0	1	1	5	2	
<i>Neolycus schonherri</i>	0	0	0	0	1	2	0	1	1	*	1	2	1	0	2	2	0	2	1	0	0	0	0	1	1	1	1	3	2	0	2	1	2	1	5	2	
<i>Neolycus scutellatus</i>	1	0	0	1	1	0	0	1	0	*	0	2	3	1	2	0	2	1	1	0	0	0	0	1	1	1	1	2	1	0	1	0	1	1	2	0	
<i>Rhyncheros carnifex</i>	0	0	0	2	1	0	0	1	0	1	0	2	2	1	1	0	0	2	2	0	0	0	0	0	0	0	1	3	2	0	2	0	1	1	3	0	
<i>Rhyncheros fuliginosus</i>	0	0	0	0	1	1	?	1	0	1	1	2	0	1	2	2	1	2	?	0	?	0	?	0	?	0	1	3	?	0	?	?	?	?	?	?	
<i>Rhyncheros fulvellus</i>	1	0	1	1	1	0	0	0	0	1	0	0	0	1	2	0	0	1	1	0	0	0	0	1	1	0	1	0	2	0	1	3	1	0	3	0	

<i>Rhyncheros fulvellus femoratus</i>	-	0	1	1	1	0	0	0	0	1	0	2	0	1	2	0	0	2	1	0	0	0	0	2	1	0	1	1	2	0	2	0	1	1	0	0
<i>Rhyncheros godmani</i>	1	0	0	3	1	1	?	1	0	1	1	2	0	1	1	0	0	2	?	0	?	0	?	0	?	0	1	3	?	0	?	0	1	1	3	1
<i>Rhyncheros lineicollis</i>	1	0	1	1	1	0	0	0	0	1	1	2	0	1	2	0	1	1	1	0	0	0	0	1	1	0	1	3	2	0	2	1	1	1	1	1
<i>Rhyncheros loripes</i>	-	0	0	2	1	0	0	0	0	0	0	2	0	1	2	2	0	1	1	0	0	1	1	2	1	0	1	2	4	0	2	0	1	0	3	0
<i>Rhyncheros minutus</i>	0	1	0	2	1	0	0	0	0	0	1	2	0	1	2	2	0	2	2	0	0	1	1	1	1	0	1	2	2	0	1	0	1	1	3	0
<i>Rhyncheros nigrofumosus</i>	1	1	0	2	1	1	0	1	0	1	1	2	0	1	2	2	0	2	1	0	0	0	0	1	1	0	1	3	4	0	2	0	1	1	-	0
<i>Rhyncheros rusticus</i>	-	0	0	0	2	1	?	0	0	*	0	0	0	1	1	0	0	1	?	0	?	1	?	1	?	0	1	2	?	0	?	?	?	?	?	?
<i>Rhyncheros sagittatus</i>	-	1	1	1	2	0	?	0	0	*	0	2	0	1	2	2	0	2	?	0	?	1	?	1	?	0	1	2	?	0	?	?	1	0	3	2
<i>Rhyncheros sanguineus</i>	0	0	1	0	2	0	0	1	0	2	1	2	2	1	1	0	2	1	1	0	0	1	1	1	1	0	1	2	2	0	2	0	1	1	4	1
<i>Rhyncheros sanguinipennis</i>	0	0	1	1	1	0	0	1	0	1	1	2	2	1	1	0	0	2	2	0	0	0	0	1	1	0	1	4	2	0	2	0	1	1	5	0
<i>Rhyncheros simulans</i>	0	0	1	1	1	0	0	0	0	*	0	2	0	1	2	2	0	2	1	0	0	0	0	2	1	0	1	2	2	0	2	2	1	0	3	0

Appendix A. Continued

	7	7	8	8	9														
	2	5	0	5	0														
<i>Chauliognathus sp.</i>	0	0	-	-	-	-	-	0	2	1	0	1	0	1	0	0	2	0	-
<i>Caenia amplicornis</i>	4	0	-	-	-	-	-	1	1	1	0	0	0	1	0	0	0	1	1
<i>Caenia sinuata</i>	4	0	-	-	-	-	-	1	1	1	0	0	0	0	0	0	0	1	1
<i>Calopteron bifasciatum</i>	4	0	-	-	-	-	-	0	1	1	0	1	0	0	0	0	0	1	1
<i>Calopteron corrugatum</i>	4	0	-	-	-	-	-	0	1	1	0	1	0	0	0	0	0	1	1
<i>Calopteron discrepans</i>	4	0	-	-	-	-	-	0	1	0	0	1	0	0	0	0	0	1	1
<i>Calopteron jimenezi</i>	4	0	-	-	-	-	-	0	1	1	0	1	0	0	0	0	0	1	1
<i>Lycomesus llorentei</i>	5	0	-	-	-	-	-	0	?	?	?	?	?	?	?	?	?	?	?
<i>Lyconotus lateralis</i>	?	1	1	0	1	0	1	0	1	0	0	3	0	2	1	1	0	0	-
<i>Lyconotus semiustus</i>	3	1	0	1	1	0	1	0	1	1	0	3	0	2	1	1	0	0	-

<i>Rhyncheros sanguineus</i>	2	1	0	0	0	0	1	0	0	0	0	2	1	0	0	1	2	0	-
<i>Rhyncheros sanguinipennis</i>	2	1	0	0	0	1	0	0	?	?	?	?	?	?	?	?	?	?	?
<u><i>Rhyncheros simulans</i></u>	<u>5</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>-</u>	<u>2</u>	<u>0</u>