

Supporting Information

Table S1. Sample information of *Dolycoris* species in the present study.

Species	Code	Locality	Longitude	Latitude	Collection date	Accession number
<i>D. baccarum</i>	HEBCZ	Zhengzhuangzi village, Caofeidian district, Hebei, China	118.343	39.329	2020/6/6	OQ909509
<i>D. baccarum</i>	JSPD	Dishuizhu village, Pukou district, Jiangsu, China	118.570	32.110	2019/7/17	OQ909510
<i>D. baccarum</i>	JXLS	Lu Mountain, Jiujiang city, Jiangxi, China	116.009	29.557	2020/8/1	OQ909511
<i>D. baccarum</i>	NMJS	Shamujia town, Jiuyuan district, Neimenggu, China	110.340	40.592	2017/8/18	OQ909512
<i>D. baccarum</i>	QHQQ	Qingyang Ditch, Qilian county, Qinghai, China	100.402	38.149	2020/8/1	OQ909513
<i>D. baccarum</i>	SNZC	Chenjia Ditch, Zichang county, Shanxi, China	109.618	36.459	2019/8/4	OQ909514
<i>D. indicus</i>	YNLJ	Jiuxi Mountain, Luxi county, Yunnan, China	103.685	24.414	2020/7/29	OQ909515
<i>D. indicus</i>	YNNN	Ninger town, Ninger county, Yunnan, China	101.054	23.034	2021/7/12	OQ909516
<i>D. indicus</i>	YNY Y	Yulong village, Yulong county, Yunnan, China	100.209	26.986	2022/7/25	OQ909517
<i>D. penicillatus</i>	XJBS	Sailimu Lake, Bole city, Xinjiang, China	81.169	44.494	2016/8/6	OQ909518
<i>D. penicillatus</i>	XJHQ	Qingshuihe town, Huocheng county, Xinjiang, China	80.731	44.203	2016/8/5	OQ909519
<i>D. penicillatus</i>	XJTP	Putao Ditch, Tulufan city, Xinjiang, China	89.251	43.018	2016/7/28	OQ909520
<i>D. penicillatus</i>	XJTS	Tacheng Forest Park, Tacheng city, Xinjiang, China	82.953	46.760	2016/8/10	OQ909521
<i>D. penicillatus</i>	XJTY	Yemenle town, Tacheng city, Xinjiang, China	83.076	46.657	2016/8/9	OQ909522
<i>D. penicillatus</i>	XJYB	Balake village, Yining city, Xinjiang, China	81.313	43.951	2016/8/4	OQ909523

Table S2. Taxonomic information and GenBank accession numbers of mitochondrial genomes downloaded from GenBank in this study.

Family	Subfamily	Species	Accession number
Pentatomidae	Asopinae	<i>Arma custos</i>	MT535604
Pentatomidae	Asopinae	<i>Cazira horvathi</i>	NC_042817
Pentatomidae	Asopinae	<i>Dinorhynchus dybowskyi</i>	NC_037724
Pentatomidae	Asopinae	<i>Eocanthecona thomsoni</i>	NC_042816
Pentatomidae	Asopinae	<i>Picromerus griseus</i>	NC_036418
Pentatomidae	Asopinae	<i>Zicrona caerulea</i>	MW847250
Pentatomidae	Pentatominae	<i>Carbula sinica</i>	KY069964
Pentatomidae	Pentatominae	<i>Catacanthus incarnatus</i>	MF497716
Pentatomidae	Pentatominae	<i>Caystus obscurus</i>	MF497717
Pentatomidae	Pentatominae	<i>Dalpada cinctipes</i>	MW847236
Pentatomidae	Pentatominae	<i>Erthesina fullo</i>	JQ743673
Pentatomidae	Pentatominae	<i>Eurydema dominulus</i>	MW847238
Pentatomidae	Pentatominae	<i>Eurydema gebleri</i>	NC_027489
Pentatomidae	Pentatominae	<i>Eurydema maracandica</i>	NC_037042
Pentatomidae	Pentatominae	<i>Glaucias dorsalis</i>	MW847239
Pentatomidae	Pentatominae	<i>Halyomorpha halys</i>	NC_013272
Pentatomidae	Pentatominae	<i>Hippotiscus dorsalis</i>	MW847240
Pentatomidae	Pentatominae	<i>Hoplistodera incisa</i>	MF620037
Pentatomidae	Pentatominae	<i>Menida violacea</i>	MK617948
Pentatomidae	Pentatominae	<i>Neojurtina typica</i>	MW847243
Pentatomidae	Pentatominae	<i>Nezara viridula</i>	NC_011755
Pentatomidae	Pentatominae	<i>Pentatoma metallifera</i>	MW847244
Pentatomidae	Pentatominae	<i>Pentatoma semiannulata</i>	MT985377
Pentatomidae	Pentatominae	<i>Placosternum urus</i>	MF497730
Pentatomidae	Pentatominae	<i>Plautia fimbriata</i>	MF497731
Pentatomidae	Pentatominae	<i>Plautia lushanica</i>	MW847245
Pentatomidae	Pentatominae	<i>Rubiconia intermedia</i>	KP207596
Pentatomidae	Phyllocephalinae	<i>Dalsira scabrata</i>	NC_037374
Pentatomidae	Phyllocephalinae	<i>Gonopsis affinis</i>	NC_036745
Pentatomidae	Podopinae	<i>Graphosoma rubrolineatum</i>	NC_033875
Pentatomidae	Podopinae	<i>Scotinophara lurida</i>	NC_042815
Plataspidae		<i>Megacopta cribraria</i>	OP123001
Plataspidae		<i>Calacta lugubris</i>	NC_058965

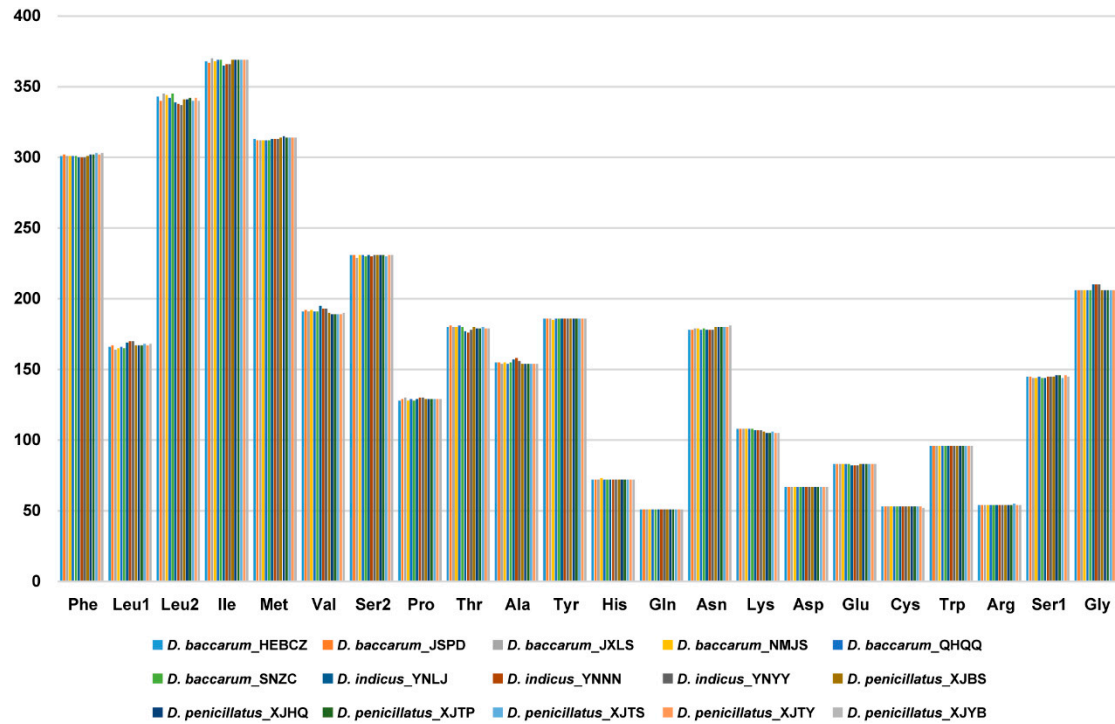


Figure S1. Patterns of codon usage in the mitogenomes of the *Dolycoris*. The X-axis shows the codon families and the Y-axis shows the total codons.

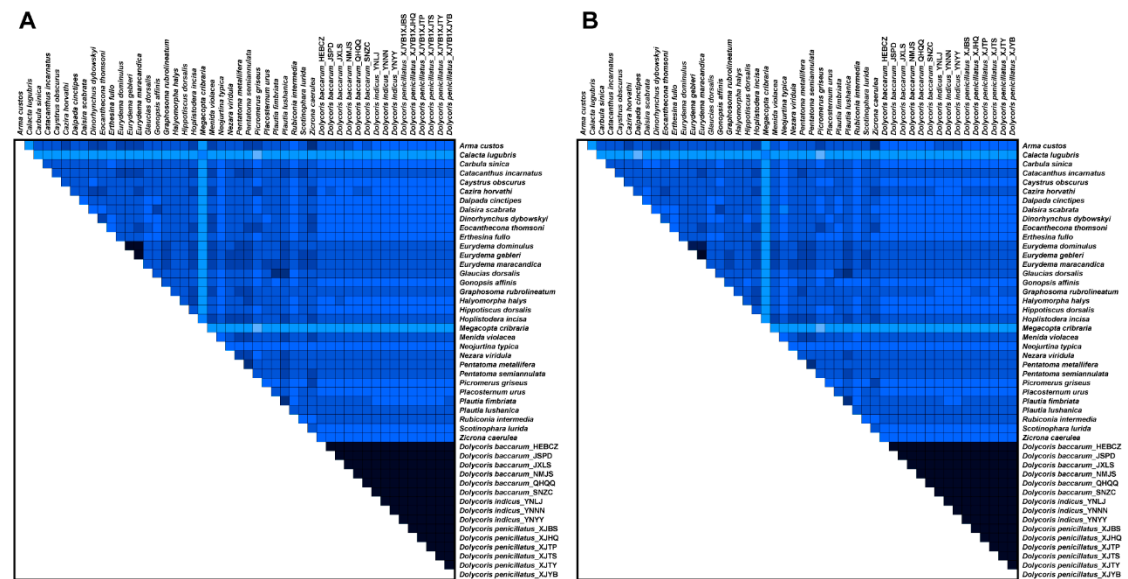


Figure S2. Heterogeneity analysis of dataset PCG123R (A) and PCG12R (B). The mean similarity score between sequences is represented by a colored square, based on the AliGROOVE scores ranging from -1 , indicating a large difference in rates from the remainder of the dataset (red coloration), to $+1$, indicating rates match all other comparisons (blue coloration).

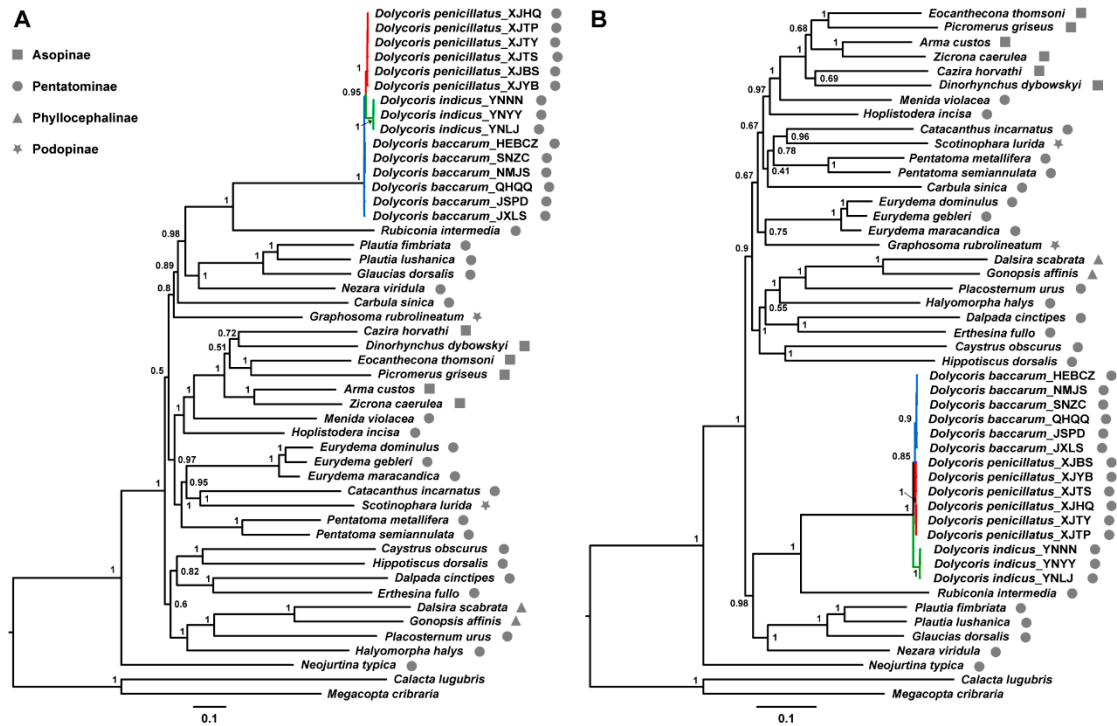


Figure S3. Phylogenetic trees of Pentatomidae inferred by BI analysis based on dataset PCG123R (A) and PCG12R (B). Numbers at the nodes are posterior probabilities.