

Table S2. Details of species and mitogenomes of Branchiopoda used in this study.

Family	Genus	Species	Length (bp)	Accession ID	Reference
Chydoridae	<i>Chydorus</i>	<i>Chydorus sphaericus</i> (O.F.Müller, 1776)	15,959	MT872704	No reference
Eurycercidae	<i>Eurycercus</i>	<i>Eurycercus lamellatus</i> (O.F.Müller, 1776)	15,775	MT872696	No reference
Daphniidae	<i>Daphnia</i>	<i>Daphnia tibetana</i> (Sars, 1903)	16,196	MW981579	No reference
		<i>Daphnia pulex</i> O.F.Müller, 1776	15,333	AF117817	67
		<i>Daphnia carinata</i> King, 1853	15,245	NC_028152	68
		<i>Daphnia magna</i> Straus, 1820	14,948	NC_026914	69
		<i>Ceriodaphnia dubia</i> Richard, 1894	14,628	LC705054	No reference
	<i>Ceriodaphnia</i>				
Moinidae	<i>Moina</i>	<i>Moina macrocopa</i> (Straus, 1820)	16,072	MZ982313	No reference
Bosminidae	<i>Bosmina</i>	<i>Bosmina fatalis</i> Burckhardt, 1924	15,209	MW770308	No reference
Sididae	<i>Sida</i>	<i>Sida crystallina</i> (O.F.Müller, 1776)	16,072	MT872684	No reference
	<i>Diaphanosoma</i>	<i>Diaphanosoma excisum</i> Sars 1885	17,615	MW476927	No reference
Leptodoridae	<i>Leptodora</i>	<i>Leptodora kindti</i> (Focke, 1844)	15,860	MT872700	No reference
Polyphemidae	<i>Polyphemus</i>	<i>Polyphemus pediculus</i> (Linnaeus, 1761)	13,456	MT862416	No reference
Lynceidae	<i>Lynceus</i>	<i>Lynceus grossipedia</i> Sigvardt et al., 2020	15,121	OP746066	This study
Thamnocephalidae	<i>Branchinella</i>	<i>Branchinella kugenumaensis</i> (Ishikawa, 1895) (Japan)	14,123	MW136376	38
		<i>Branchinella kugenumaensis</i> (Ishikawa, 1895) (Zhejiang, China)	15,127	MN660045	70
		<i>Branchinella kugenumaensis</i> (Ishikawa, 1895) (Jiangsu, China)	14,126	OP133270	36
	<i>Phallocryptus</i>	<i>Phallocryptus</i>	16,493	KP273592	71

		<i>tserensodnomi</i> Alonso & Ventura, 2013			
Streptoceph alidae	<i>Streptocephalu s</i>	<i>Streptocephalus cafer</i> (Lovén, 1847)	17,020	MN720104	72
		<i>Streptocephalus sirindhornae</i> Sanoamuang, Murugan, Weekers & Dumont, 2000	16,887	NC_026704	73
Chirocephal idae	<i>Drepanosurus</i>	<i>Drepanosurus uchidai</i> (Kikuchi, 1957)	15,795	LC633442	
		<i>Drepanosurus hatanakai</i> Takahashi & Hamasaki, in Takahashi et al., 2018	17,006	LC633440	35
		<i>Drepanosurus asanumai</i> Takahashi, in Takahashi et al., 2018	17,503	LC633438	
	<i>Eubbranchipus</i>	<i>Eubbranchipus grubii</i> (Dybowski, 1860)	16,328	MT410793	No reference
	<i>Branchinecta</i>	<i>Branchinecta gaini</i> Daday, 1910	15,536	MZ265218	74
Branchinecti dae		<i>Branchinecta paludosa</i> (O. F. Müller 1788)	16,059	MZ853171	No reference
Artemiidae	<i>Artemia</i>	<i>Artemia franciscana</i> Kellogg, 1906	15,822	NC_001620	75
		<i>Artemia urmiana</i> Gunther, 1899	15,945	NC_021382	76
		<i>Artemia tibetiana</i> Abatzopoulos, Zhang & Sorgeloos, 1998	15,742	NC_021383	76
		<i>Artemia sinica</i> Cai, 1989	15,689	MK069595	77
		<i>Artemia salina</i> (Linnaeus, 1758)	15,826	MT495441	78
		<i>Artemia persimilis</i> Piccinelli & Prosdocimi, 1968	15,436	MZ199176	79
Limnadiidae	<i>Limnadia</i>	<i>Limnadia lenticularis</i> (Linnaeus, 1761)	15,151	MH618637	80
	<i>Gondwanalim nadia</i>	<i>Gondwanalimnadia</i> sp.	15,661	MN625703. 1	72

	<i>Leptestheria</i>	<i>Leptestheria brevirostris</i> Barnard, 1924	15,579	MN548772.1	81
Triopsidae	<i>Triops</i>	<i>Triops cancriformis</i> (Bosc, 1801)	15,101	NC_004465	82
		<i>Triops australiensis</i> (Spencer & Hall, 1896)	15,125	NC_024439	83
		<i>Triops longicaudatus</i> (LeConte, 1846)	15,060	KM516710	84
		<i>Triops longicaudatus</i> (LeConte, 1846)	15,058	KM516711	85
		<i>Triops longicaudatus</i> (LeConte, 1846)	15,115	GU475465	85
		<i>Triops granarius</i> (Lucas, 1864)	15,121	MF496656	39
		<i>Lepidurus apus</i> (Linnaeus, 1758)	14,754	NC_044646	33
		<i>Lepidurus arcticus</i> (Pallas, 1793)	14,807	NC_044654	
Hutchinsoniellidae	<i>Hutchinsoniella</i>	<i>Hutchinsoniella macracantha</i> Sanders, 1955	16,491	AY456189	86
Squillidae	<i>Squilla</i>	<i>Squilla biformis</i> Bigelow, 1891	15,688	MW867305	87