

Table S1. The abundances of rotifers in the quantitative samples collected 23 reservoirs (in unit of individuals/L).

	GS	PX	FH	FX	DF H	SB	GT	YQ	YT	MX	W G	FS	QL S	QX	MH T	HS	CT	HT	DB	SH B	DS	HZ P	HS Y
<i>Keratella tropica</i>	2	0	1	0	441	1	0	2	0	15	0	0	0	0	2	71	1	0	0	1	1	0	3
<i>Keratella tecta</i>	330	1	14	2	36	8	6	49	6	159 9	97	7	5	3	6	328	1	25	4	1	28	0	125
<i>Keratella cochlearis</i>	2	9	32	34	0	0	57	5	99	192	70	32	4	10	5	37	27	50	1	58	6	52	0
<i>Trichocerca similis</i>	24	1	10	0	186	0	1	2	4	57	50	0	0	0	3	22	1	19	1	4	5	0	0
<i>Trichocerca capucina</i>	0	0	1	1	21	0	0	0	3	3	4	0	0	0	0	1	0	0	0	0	1	0	0
<i>Trichocerca cylindrica</i>	2	2	2	0	105	0	2	0	0	9	1	2	4	0	0	0	0	1	0	0	0	1	2
<i>Trichocerca pusilla</i>	0	0	2	0	24	0	0	1	0	9	0	0	0	0	0	5	1	3	1	0	0	0	0
<i>Trichocerca rousseleti</i>	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Trichocerca dixon-nuttalli</i>	0	0	4	0	0	0	4	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	2
<i>Trichocerca longisetata</i>	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Trichocerca rattus rattus</i>	0	0	10	0	0	0	0	0	0	0	10	0	0	0	0	2	0	0	0	0	0	0	0
<i>Trichocerca gracilis</i>	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	3	0	0	0	0	0	0	1
<i>Trichocerca vargai</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Brachionus angularis</i>	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
<i>Brachionus caudatus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
<i>Brachionus forficula</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	1
<i>Brachionus diversicornis</i>	0	0	0	0	3	1	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0
<i>Brachionus calyciflorus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Brachionus quadridentatus</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Synchaeta stylata</i>	1	0	82	0	3	4	0	0	0	6	27	0	0	17	2	0	6	2	9	85	56	0	1
<i>Hexarthra mira</i>	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Lecane lunaris crenata</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lecane flexilis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lecane galeata</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lecane pyriformis</i>	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lecane arcuata</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Lecane thailandensis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Conochilus unicornis</i>	1	0	9	0	0	0	1	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0
<i>Conochiloides dossuarius</i>	9	0	0	0	6	1	4	0	0	0	2	0	0	0	0	0	4	2	0	9	0	1	9
<i>Asplanchna priodonta</i>	0	0	16	0	1	2	0	0	0	0	4	0	0	0	0	13	1	2	0	0	0	0	0
<i>Filinia opoliensis</i>	1	0	1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Filinia saltator</i>	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
<i>Filinia camasecla</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Filinia terminalis</i>	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Pompholyx sulcata</i>	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	2	1	0	0	0	0	0
<i>Anuraeopsis fissa</i>	74	0	11	0	25	5	2	16	6	15	1	1	18	1	4	0	0	32	1	0	2	0	19
<i>Anuraeopsis coelata</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	101	0	0	0	0	0	0	0
<i>Polyarthra vulgaris</i>	4	0	23	1	11	0	2	0	0	12	29	0	1	2	2	11	1	0	0	6	0	4	6
<i>Polyarthra dolichoptera</i>	10	0	69	0	10	0	1	0	1	21	29	0	2	0	1	71	2	42	0	7	0	0	92
<i>Polyarthra major</i>	0	0	1	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Ploesoma hudsoni</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Ascomorpha ovalis</i>	1	0	2	0	0	0	0	0	0	0	6	5	0	0	0	3	0	2	0	0	0	0	0
<i>Ascomorpha saltans</i>	0	0	0	0	2	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	1	0

<i>Trichotria tetractis similis</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Gastropus stylifer</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
<i>Collotheca</i> sp.	1	0	0	0	0	0	0	0	1	0	16	0	1	0	0	2	0	2	0	0	0	0
<i>Bdelloidea</i> sp.	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	6

Table S2. Information of 23 investigated reservoirs in the Hanjiang River Basin.

Reservoir	abbreviation	Lon E	Lat N	Total capacity ($\times 10^8$ m ³)	The catchment area (km ²)
Gangshan	GS	116.7°	23.66°	0.46	88
Pingxi	PX	116.78°	23.82°	0.11	11.6
Fenghuang	FH	116.67°	23.89°	0.60	164
Fengxi	FX	116.7°	23.95°	0.33	45.7
Dongfanghong	DFH	115.7°	23.89°	0.13	28.6
Shibi	SB	115.75°	24.26°	0.10	102
Guitian	GT	115.84°	23.83°	0.13	27.3
Yanqian	YQ	115.9°	23.9°	0.19	37.1
Yitang	YT	115.63°	23.95°	1.65	251
Meixi	MX	115.94°	24.38°	0.51	250
Wengong	WG	115.73°	24.45°	0.22	1603
Fushi	FS	115.81°	24.56°	0.24	53
Qingliangshan	QLS	116.24°	24.22°	0.49	94.1
Qingxi	QX	116.63°	24.58°	0.80	1603
Mianhuatan	MHT	116.57°	24.68°	20.35	7907
Heshui	HS	115.7°	24.26°	1.16	600
Changtan	CT	116.13°	24.72°	1.72	1990
Huangtian	HT	115.89°	24.71°	0.54	140
Duobao	DB	116.37°	24.86°	0.22	68
Sanheba	SHB	116.59°	24.41°	0.22	1603
Dongshan	DS	116.49°	23.98°	2.50	27503
Huangzhuping	HZP	116.24°	24.73°	0.12	18.2
Heshanyan	HSY	115.8°	24.19°	0.13	27.3

Table S3. Morphological identification of rotifers from both quantitative and qualitative samples in the 23 investigated reservoirs and species identified with COI sequencing.

Family	Genera	Species	Morphology	DNA Barcoding
Branchionidae	<i>Keratella</i>	<i>Keratella tropica</i>	+++	√
		<i>K. tecta</i>	+++	√
		<i>K. cochlearis</i>	+++	√
	<i>Brachionus</i>	<i>Brachionus angularis</i>	++	√
		<i>B. caudatus</i>	++	√
		<i>B. falcatus</i>		×
		<i>B. forficula</i>	++	√
		<i>B. diversicornis</i>	++	√
		<i>B. calyciflorus</i>	++	√
		<i>B. quadridentatus</i>	+	√
		<i>B. urceolaris</i>		√
		<i>B. leydigi</i>		√
		<i>B. budapestinensis</i>		√
	<i>Anuraeopsis</i>	<i>Anuraeopsis fissa</i>	+++	×
		<i>A. coelata</i>	+	
	<i>Plationus</i>	<i>Plationus patulus</i>		√
Trichotriidae	<i>Trichotria</i>	<i>Trichotria tetractis similis</i>	+	√
		<i>T. pocillum</i>		√

Lecanidae	<i>Lecane</i>	<i>Lecane lunaris crenata</i>	+	
		<i>L. flexilis</i>	+	
		<i>L. galeata</i>	+	
		<i>L. pyriformis</i>	+	
		<i>L. arcuata</i>	+	
		<i>L. thailandensis</i>	+	
		<i>L. bulla</i>		√
Asplanchnidae	<i>Asplanchna</i>	<i>Asplanchna priodonta</i>	++	√
		<i>A. girodi</i>		×
		<i>A. brightwelli</i>		√
Gastropodidae	<i>Ascomorpha</i>	<i>Ascomorpha ovalis</i>	++	√
		<i>A. ecaudis</i>		×
		<i>A. saltans</i>	++	
	<i>Gastropus</i>	<i>Gastropus stylifer</i>	+	
Trichocercidae	<i>Trichocerca</i>	<i>Trichocerca similis</i>	+++	√
		<i>T. capucina</i>	++	√
		<i>T. cylindrica</i>	++	√
		<i>T. pusilla</i>	++	×
		<i>T. rousseleti</i>	++	×
		<i>T. dixonnuttalli</i>	++	√
		<i>T. longiseta</i>	+	×
		<i>T. bidens</i>		×
		<i>T. rattus rattus</i>	++	
		<i>T. gracilis</i>	++	
		<i>T. vargai</i>	+	
Synchaetidae	<i>Synchaeta</i>	<i>Synchaeta stylata</i>	+++	√
		<i>S. oblonga</i>		√
	<i>Polyarthra</i>	<i>Polyarthra vulgaris</i>	++	√
		<i>P. dolichoptera</i>	+++	√
		<i>P. major</i>	++	
	<i>Ploesoma</i>	<i>Ploesoma hudsoni</i>	++	√
	<i>P. truncatum</i>		√	
Conochilidae	<i>Conochilus</i>	<i>Conochilus unicornis</i>	++	×
		<i>C. hippocrepis</i>		×
	<i>Conochiloides</i>	<i>Conochiloides dossuarius</i>	++	
Testudinellidae	<i>Pompholyx</i>	<i>Pompholyx sulcata</i>	++	√
	<i>Testudinella</i>	<i>Testudinella patina</i>		×
Filiniidae	<i>Filinia</i>	<i>Filinia opoliensis</i>	++	√
		<i>F. saltator</i>	+	
		<i>F. camasecla</i>	++	
		<i>F. terminalis</i>	+	
		<i>F. longiseta</i>		×
		<i>F. camasecla cambodgensis</i>		√
Hexarthridae	<i>Hexarthra</i>	<i>Hexarthra mira</i>	++	√
Collothecidae	<i>Collotheca</i>	<i>Collotheca sp.</i>	++	
Philodinidae	<i>Philodina</i>	<i>Philodina sp.</i>	++	
Total		64	47	45

Note: "+" denotes a rare species, "++" denotes a common species, "+++" denotes a dominant species, "√" denotes the species with successful COI sequencing, "×" denotes the species with failed amplification or sequencing.

Table S4. Amplification of COI sequences in 45 rotifer species collected from 23 reservoirs.

	G S	PX	FH	FX	DF H	SB	G T	Y Q	YTMX	W G	FS	QL S	Q X	MH T	H S	CT	H T	D B	SH B	D S	HZ P	HS Y	PCR success rate(%)
<i>Keratella cochlearis</i>	√	√	√		√		√		√3	√2	√	√	√	√	√2	√	√2	√	•	√	√	•	71

[illegible]

Note: “√” indicates that the sample was successfully sequenced after one amplifications, “√₂” indicates that the sample was successfully sequenced after two amplifications, “√₃” indicates that the sample was successfully sequenced after three amplifications, “x” denotes an amplification failure samples, “●” denotes a successful amplification but sequencing failure samples, “x●” denotes an amplification failed, again pick sample amplification is successful, while sequencing failed samples.

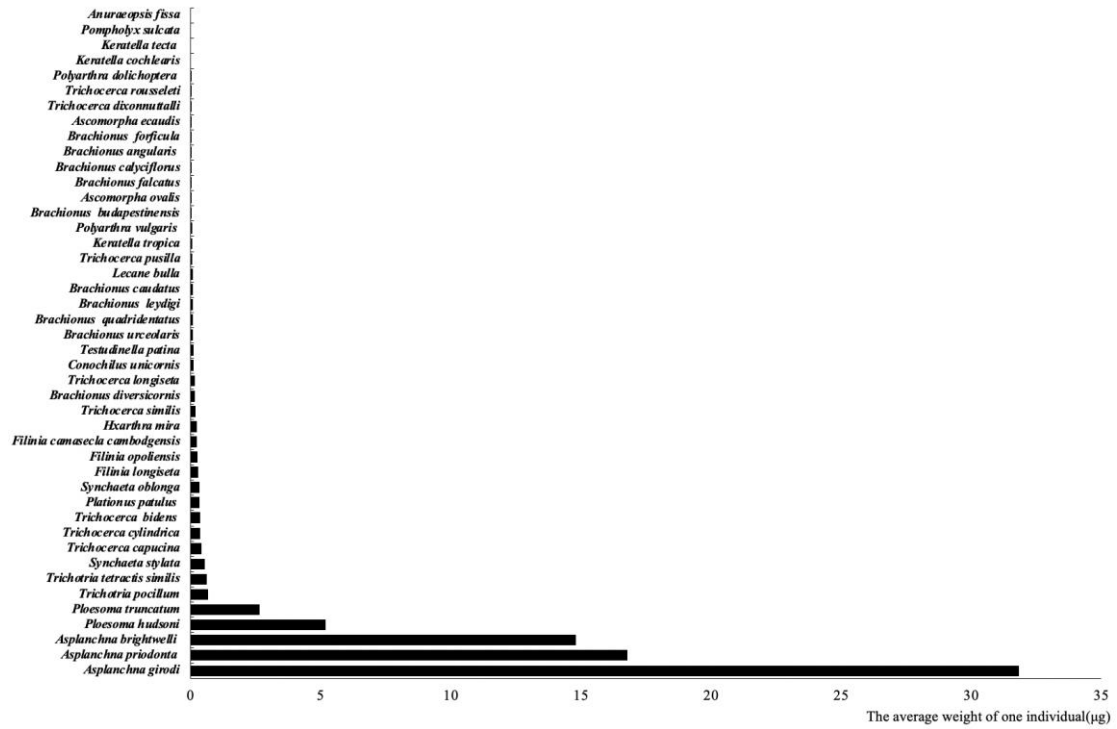


Figure S1. Average body weight of individual rotifers of 44 species.