

Biogeography of the water flea *Daphnia* O. F. Müller (Crustacea: Branchiopoda: Anomopoda) on the Indian subcontinent

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Supplementary Tab. 1. All the references used in the study as per the region studied for obtaining locality data.

References	Region
Brehm (1959) Battish (1983) Biswas (1964, 1971) Brehm (1936) Brehm (1953) Brehm and Woltereck (1939) Chatterjee <i>et al.</i> (2013) Gurney (1906) Michael and Sharma (1988) Nayar (1971) Padhye and Dumont (2015) Raina and Vaas (1993) Rane (2002, 2005) Sharma and Pant (1987) Sharma and Sharma (2008) Tiwari (1996) Venakataraman (1986, 1990) Venkataraman and Krishnaswamy (1986)	Afghanistan India
Benzie (2005) Dumont and Van de Velde (1978) Fernando and Kanduru (1984) Manca <i>et al.</i> (1994, 1998, 2006) Möst <i>et al.</i> (2013) Nevalainen <i>et al.</i> (2014) Swar and Fernando (1979)	Indian subcontinent Nepal
Brehm (1914) Korai <i>et al.</i> (2008) Mahar <i>et al.</i> (2008, 2010) Mahoon and Niazi (1985)	Pakistan
Fernando (1980) Gurney (1916) Pathmalal and Piyasari (1999) Piyasari and Chandrananda (1998) Rajapaksa and Fernando (1982)	Sri Lanka

Supplementary Tab. 2. BIOCLIM values for the 100 localities along with latitude and altitude.

Locality	Lat	B1	B2	B3	B4	B5	B6	B7	B8	B9	B 10	B11	B12	B 13	B 14	B 15	B 16	B17	B 18	B19	Alt	
Colombo	6.9276	27	6.8	67	630	31.9	21.8	10.1	26.7	26.6	27.7	26.1	2575	381	78	48	938	310	798	585	15	
Kotmale	7.02222	22.6	9	72	779	29.2	16.7	12.5	22.3	22	23.5	21.5	2940	361	109	31	966	402	699	488	831	
Randenigala	7.18944	24.5	8.9	75	897	30.5	18.7	11.8	23.7	25	25.5	23.2	2423	340	116	37	952	389	513	723	491	
Kanyakumari	8.08805	27.8	6.9	64	1154	33.2	22.5	10.7	26.7	27.2	29.2	26.2	876	200	11	74	430	69	180	272	21	
Tirunelveli	8.73	29.1	8.4	61	1703	35.9	22.3	13.6	27.4	30.3	30.8	26.5	731	198	11	96	462	41	116	331	46	
Ramnad	9.40694	28.9	7.5	59	1786	35.5	22.8	12.7	27.2	27.4	30.9	26.4	825	224	8	100	548	71	98	387	15	
Madurai	9.9257	28.8	9.6	60	2057	36.9	21	15.9	28.1	27.2	31.1	25.9	816	190	14	74	428	46	145	208	143	
Coimbatore	11.0174	25.5	9.3	60	1439	33.6	18.3	15.3	24.9	25.4	27.6	23.7	757	173	11	72	363	39	164	189	531	
Ooty	11.4053	15.8	9.5	59	1382	23.2	7.2	16	16.2	14.8	17.5	13.9	1579	261	24	58	605	90	401	128	1977	
Mysore	12.2955	24.2	10	58	1702	33.5	16.4	17.1	23.5	24.4	26.8	22.3	615	144	1	86	259	12	189	54	752	
Bang	12.9719	23.9	11.2	58	1994	34.1	14.8	19.3	23.6	23.4	26.8	21.4	820	167	2	81	438	13	146	74	890	
Chennai	13.0599	28.6	9.5	50	2871	38.4	19.4	19	27.8	27.8	32.1	24.9	1184	319	2	97	678	16	202	141	11	
Panaji	14.9743	27.1	7.8	60	1201	33.1	20.2	12.9	26.6	26.4	28.8	25.9	3149	1062	0	134	2503	1	157	11	44	
Masai	16.8166	24.6	11.1	54	2018	35.4	15.2	20.2	23.8	24.3	27.7	22.7	1549	597	0	132	1129	7	107	47	627	
Golconda	17.3830	26.4	11.6	46	3380	39.4	14.4	25	26.2	22.6	31.1	22	804	185	3	100	517	15	160	27	545	
Hyd	17.3855	26.4	11.6	46	3380	39.4	14.4	25	26.2	22.6	31.1	22	804	185	3	100	517	15	160	27	545	
Medha																						
Panchgani	17.8376	22.3	9.6	53	2028	32.2	14.1	18.1	21.4	22.2	25.5	20.6	2763	1139	0	147	2178	6	98	53	993	
Tableland	17.9226	22.3	9.6	53	2028	32.2	14.1	18.1	21.4	22.2	25.5	20.6	2763	1139	0	147	2178	6	98	53	993	
Janjira	18.3005	26.4	6.6	54	1464	31.6	19.4	12.2	26.9	24.6	28.2	24.3	3153	1099	0	143	2628	0	752	3	65	
Indapur	18.3016	25.8	13.9	53	2925	38.8	13	25.8	25.5	24.4	29.9	22.1	514	136	1	96	282	5	129	33	535	
Karimnagar	18.4383	27.7	11.6	43	3750	41.6	14.9	26.7	27.4	23.7	33.1	22.9	886	228	5	111	599	18	171	30	286	
MIT	18.5295	24.7	12.6	53	2469	36.3	12.7	23.6	25.1	23.2	28.1	21.6	1132	408	0	128	805	2	211	3	597	
Pashan	18.5339	24.7	12.6	53	2469	36.3	12.7	23.6	25.1	23.2	28.1	21.6	1132	408	0	128	805	2	211	3	597	
Dighi	18.6357	25	13.5	53	2667	37.5	12.2	25.3	24.7	23.5	28.7	21.7	677	177	0	101	402	2	162	30	572	
Ghoradeshwar	18.6932	24.5	12.4	52	2479	35.9	12.5	23.4	24.9	23	27.9	21.4	1179	437	0	131	851	2	214	3	632	
Visapur	18.7212	24.4	10.4	53	2075	33.6	14.2	19.4	24.8	22.9	27.3	21.7	3840	1607	0	156	3211	0	555	3	557	
Shirur	18.9307	25.1	13.6	53	2879	37.8	12.2	25.6	25	23.5	29.1	21.5	502	112	0	92	271	2	123	32	598	
Salher	20.7211	23.6	12.8	51	3018	35.7	10.7	25	23.7	21.3	27.7	19.6	1047	357	0	133	812	3	153	3	790	
Nagpur	21.1455	26.9	12.9	42	4448	42.6	12.5	30.1	27.4	21.2	33.1	21.2	1104	316	8	119	794	36	194	36	303	
Melghat	21.454	24.6	12.4	44	3970	39.2	11.4	27.8	24.5	25.6	30.3	19.7	1466	447	6	132	1159	23	191	38	719	
Kolakata	22.5741	26.3	10	42	3890	35.9	12.6	23.3	29.1	20.4	30.1	20.4	1678	358	7	95	983	41	466	41	6	
Indore	22.7263	24.7	13.7	45	4403	40.1	10	30.1	25.5	24.8	30.7	19	991	307	1	135	805	7	122	16	550	
Parganas	22.739	26.4	10.3	42	3955	36.4	12.3	24.1	28.8	20.3	30.2	20.3	1535	313	4	95	898	33	425	33	9	
Ahemdabad	23.044	27.3	13.8	47	4192	40.8	11.7	29.1	28.7	27	32.4	21.2	761	278	0	147	650	3	85	4	56	
Jabalpur	23.1691	24.8	13.3	40	5327	41.3	8.1	33.2	26.7	29.3	31.6	17.7	1267	409	6	139	1029	30	138	45	386	
Bardhaman																						
district	23.4597	26.4	10.7	41	4154	38.1	12.4	25.7	28.8	20.6	30.7	20.2	1299	290	5	100	799	31	335	38	57	
Mt. Abu	24.5925	23.9	11.5	42	4207	36.7	9.8	26.9	25.1	23.4	29.1	17.9	1013	380	1	161	917	4	74	6	651	
Fatesagar	24.6013	24.3	13.2	43	4877	38.5	8.1	30.4	26.4	17.4	30.1	17.4	680	208	1	135	542	7	98	7	589	

Locality	Lat	B1	B2	B3	B4	B5	B6	B7	B8	B9	B 10	B11	B12	B 13	B 14	B 15	B 16	B17	B 18	B19	Alt
Thatta-Sindh	24.7461	26.8	12	44	4724	37.9	10.9	27	31.1	24.2	31.8	19.6	209	97	1	152	163	6	116	16	11
Keenjhar Lake	24.9561	27.1	12.8	44	5013	39.2	10.6	28.6	30.7	24.3	32.4	19.5	199	88	1	150	158	6	105	13	14
Mandalgarh	25.1975	25.8	12.8	40	5524	41	9.4	31.6	28.1	24.9	32.6	18.1	725	261	1	149	632	8	66	9	375
Jalaser Taal																					
(Biwara)	25.1975	25.6	14	40	6155	42.7	8.1	34.6	28.5	29.8	33	17.1	903	347	1	149	771	8	51	41	211
Bhagalpur	25.2447	26	11.1	40	4902	38	10.7	27.3	29.2	18.6	31	18.6	1132	257	1	110	748	23	259	23	37
Benares	25.3175	26.1	12.4	38	5941	41.8	9.6	32.2	29.3	25.1	32.9	17.7	958	292	3	134	772	22	97	35	80
Bhilwara	25.3211	25.4	13	41	5396	40.3	9	31.3	27.8	24.5	31.9	17.8	625	229	1	149	545	7	57	7	425
Shillong	25.5727	17.3	8.4	43	3810	24.4	5.2	19.2	21.2	11.6	21.2	11.6	3552	901	8	98	2169	38	2169	38	1420
Las Bela																					
Baluchistan	25.75	27.2	14.8	46	5678	40.7	9.2	31.5	32	23.9	33.5	19.1	175	58	2	98	101	13	80	30	27
Birla Nagar	26.2336	25.7	13.7	38	6646	42.6	7.4	35.2	29.2	24.4	33.6	16.6	897	295	2	139	744	14	73	31	198
Jodhpur	26.2586	26.7	13.7	42	5691	41.6	9.5	32.1	29.9	25.2	33.3	18.5	369	127	1	147	311	7	164	8	217
Koya Kujjiya	26.3088	24.5	9	45	3763	31.3	11.6	19.7	27.5	18.6	28.1	18.6	2784	658	4	96	1672	29	1213	29	49
Sindh, Pakistan	26.4217	26.8	16.6	45	6845	43	6.6	36.4	32.6	22.3	34.3	16.9	148	49	1	118	106	8	62	16	50
Manchar lake	26.4488	26.8	16.6	45	6845	43	6.6	36.4	32.6	22.3	34.3	16.9	148	49	1	118	106	8	62	16	50
Jalpaiguri	26.52	26.4	10.3	42	3955	36.4	12.3	24.1	28.8	20.3	30.2	20.3	1535	313	4	95	898	33	425	33	9
Bharatpur	27.2156	25.7	13.5	39	6631	41.7	7.4	34.3	29.8	23.8	33.4	16.3	664	264	2	153	582	11	230	16	180
Thimpu	27.4662	8.7	11.9	45	5173	19.3	-6.7	26	14.7	2.5	14.7	1.6	1163	253	3	88	668	24	668	32	2956
Sikar district	27.61	24.4	14.5	43	6266	39.6	5.9	33.7	28.9	22.4	31.6	15.5	467	161	2	143	376	12	214	15	476
Periche	27.8947	-1.3	13.9	47	5533	11.5	-18	29.2	5.1	-7.3	5.6	-8.5	450	133	2	116	315	13	308	18	4897
Khumbhu valley	27.9013	2.8	12.3	48	4824	13.6	-12	25.3	8.6	-2.7	8.6	-3.7	910	240	5	108	601	22	601	32	4102
Piramide																					
Inferiore	27.96	-1.3	13.9	47	5533	11.5	-18	29.2	5.1	-7.3	5.6	-8.5	450	133	2	116	315	13	308	18	4897
Kala Patthar	27.9830	-1.3	13.9	47	5533	11.5	-18	29.2	5.1	-7.3	5.6	-8.5	450	133	2	116	315	13	308	18	4897
Khetri	28.0011	24.8	14.8	43	6479	40.4	6	34.4	29.5	22.5	32.2	15.5	482	153	4	132	383	16	201	22	372
Pokhra	28.2028	18.7	10.8	48	4293	28.3	5.9	22.4	23	13.1	23	12.3	2994	777	4	111	2052	33	2052	43	1191
Lake Phewa	28.2152	18.7	10.8	48	4293	28.3	5.9	22.4	23	13.1	23	12.3	2994	777	4	111	2052	33	2052	43	1191
Pilani	28.37	25.1	15.2	43	6681	41.1	6	35.1	30.2	16.6	32.8	15.6	390	127	3	135	315	15	159	20	282
Bhimtal	29.3516	14.1	9.5	40	4514	25.3	1.7	23.6	17.7	8.9	19	7.6	1825	532	6	107	1211	103	805	148	1766
Nainital	29.3808	15.3	9.9	40	4666	26.9	2.4	24.5	18.9	9.7	20.4	8.5	1853	545	7	110	1247	103	815	146	1572
Rara lake	29.5236	11	11	45	4665	23.2	-0.8	24	15.4	5	16.2	4.5	783	182	3	87	464	55	428	88	2816
Kali Pokhri	29.5266	16.5	10.7	43	4826	28.5	3.7	24.8	21.4	10.4	21.6	9.6	1546	397	10	99	966	91	670	130	1615
Bhatinda	30.2116	24.5	15.4	42	7268	41.5	5.1	36.4	30.7	15.4	32.7	14.3	418	117	2	119	317	21	144	31	207
Dehradun	30.3184	21.9	12.1	39	5824	36.5	6.2	30.3	26.3	24.4	28.6	13.7	1986	680	11	133	1540	91	744	122	630
Patiala	30.3318	24.5	14.1	41	6726	40.5	6.9	33.6	29.8	27.1	32.2	15.1	723	220	4	122	549	37	258	62	250
Ambala	30.3793	24.5	14	41	6771	40.5	6.9	33.6	29.7	27.3	32.2	15	897	253	6	118	670	49	322	85	273
Faridkot	30.6780	24.1	14.8	40	7258	41.2	5.1	36.1	30.5	19.3	32.3	14	466	138	3	119	353	26	171	38	200
Chandigarh	30.7339	24	13.4	40	6638	39.6	6.8	32.8	29.1	26.7	31.6	14.7	993	288	8	115	723	59	364	103	343
Ludhiana	30.9008	24.3	14.5	41	7120	40.9	5.8	35.1	30.1	19.6	32.4	14.3	742	207	6	114	530	48	273	69	247
Phagu hills	31.0855	15.2	8	33	5104	26.5	2.8	23.7	19.2	12.4	21	7.9	1353	366	14	91	808	91	557	174	1915

Locality	Lat	B1	B2	B3	B4	B5	B6	B7	B8	B9	B 10	B11	B12	B 13	B 14	B 15	B 16	B17	B 18	B19	Alt
Simla	31.0895	15.2	8	33	5104	26.5	2.8	23.7	19.2	12.4	21	7.9	1353	366	14	91	808	91	557	174	1915
Kandahar	31.6116	19	17.2	41	8875	40.8	-0.6	41.4	9.5	24	30.4	7.3	176	61	0	128	133	1	2	125	1013
Sialkot	32.4983	23.7	13.2	37	7299	40.8	5.8	35	29.8	18.9	32	13.5	706	237	7	105	446	44	183	105	246
Mansar	32.6966	22.7	11.6	36	6785	38.8	6.6	32.2	28.1	18.4	30.6	13.3	1495	405	12	104	986	93	476	236	551
Sungal pond																					
Akhnoor	32.8994	23.3	12	36	7008	39.8	6.8	33	29.1	18.8	31.4	13.5	1321	376	11	106	889	81	416	195	435
Khyagar Tso	32.9111	-3.8	12.1	33	8143	14	-22	35.7	6.3	-8.1	6.6	-14.3	230	41	6	46	97	29	84	49	5007
Tso moriri	32.9111	-3.8	12.1	33	8143	14	-22	35.7	6.3	-8.1	6.6	-14.3	230	41	6	46	97	29	84	49	5007
Sohawa	33.1127	23	14	38	7413	40.4	4.4	36	29.8	18.2	31.3	12.7	763	204	10	96	468	49	261	115	412
Doda	33.147	14.7	9.9	34	6698	28.7	-0.4	29.1	6.5	11.2	22.3	5.3	1186	156	26	43	416	137	358	332	1828
Yaye Tso	33.3119	-3.3	12.7	34	8483	15.3	-22	37.2	7.2	-8	7.5	-14.3	157	30	4	48	68	20	59	33	4899
Mitpal Tso	33.4630	-6.8	12.7	33	8672	12.4	-26	38	4.2	-11	4.4	-17.8	136	33	4	67	69	18	64	22	5441
Panggong Tso																					
in Ladak	33.7179	-2.1	13.8	34	8921	17.8	-22	39.6	9	-7.4	9.3	-13.7	87	20	2	58	41	11	37	16	4644
Phashakuri	34.0013	11.7	11.1	34	8150	28.4	-4.1	32.5	11.4	7.3	21.6	0.7	803	121	26	43	329	104	162	189	1915
Pampore	34.0058	11.7	11.1	34	8150	28.4	-4.1	32.5	11.4	7.3	21.6	0.7	803	121	26	43	329	104	162	189	1915
Gagirbal:																					
Srinagar	34.0822	11.7	11.1	34	8150	28.4	-4.1	32.5	11.4	7.3	21.6	0.7	803	121	26	43	329	104	162	189	1915
Srinagar	34.0845	13.7	11.9	37	7829	30.3	-1.7	32	13.6	9.1	23.3	3.2	718	116	25	46	301	100	148	165	1595
Chusol	34.1525	4.9	13.2	34	8724	23.9	-15	38.4	-5.4	0.2	15.6	-6.9	128	16	4	41	45	16	34	37	3558
Ladakh	34.1676	-2.9	12.2	31	9085	16.6	-22	38.8	8.3	-7.4	8.5	-14.9	89	18	3	49	39	13	35	17	4712
Manasbal	34.2469	11.5	11	34	8092	28.1	-4.2	32.3	11.1	7.1	21.4	0.6	789	122	27	45	326	106	160	184	1944
Herat	34.3419	14.7	15.2	39	8431	34.9	-3.9	38.8	5.6	25.7	25.7	3.8	279	63	0	103	176	0	0	154	1137
Kabul	34.5333	12.3	14.4	36	8561	32.1	-7.3	39.4	6.7	22.9	22.9	0.6	351	83	2	95	222	13	13	127	1791
Maymana	35.9333	13.9	13.7	36	7940	34.4	-3.2	37.6	9.1	23.1	24.4	3.8	373	86	0	88	213	2	4	138	922
Mazar-i-Sharif	36.7	17.4	13.5	33	9696	38.8	-1.6	40.4	7.1	30.2	30.2	5.1	178	44	0	96	105	0	0	83	349
Pamir	37.0797	-1.1	9.4	25	9212	17.6	-20	37.2	-2	9.8	10.3	-13.5	327	52	10	51	147	37	46	91	3996

Lat, Latitude; B, bio; Alt, altitude.

Supplementary Tab. 3. Pairwise comparison of clusters based on environmental variables. F values are provided above the diagonal and corresponding P value are below the diagonal. Underlined P values are significant after Bonferroni correction.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) <i>D. C. carinata</i>		6.5750	4.4430	1.9520	3.5380	2.3990	7.0060	12.0800	3.9260	2.6680	0.7654	6.8800
(2) <i>D. C. cephalata</i>	0.0082		18.1100	8.7780	26.6100	118.6000	0.6337	51.3500	99.5100	23.6500	28.8800	38.3800
(3) <i>D. C. fusca</i>	0.0246	0.0087		14.0000	3.3680	6.3810	20.1600	0.9385	0.9310	0.9025	0.3683	2.1860
(4) <i>D. C. lumholtzi</i>	0.1515	0.0037	<u>0.0002</u>		13.3200	10.0400	8.6250	34.6800	11.9300	11.6300	3.7390	24.0100
(5) <i>D. C. magna</i>	0.0523	<u>0.0002</u>	0.0622	<u>0.0003</u>		0.4690	29.4700	12.9900	7.7500	1.8610	0.3670	0.9098
(6) <i>D. C. similis</i>	0.1126	0.0012	0.0114	0.0028	0.5326		84.1900	28.4500	75.9400	4.3630	3.4410	3.0820
(7) <i>D. C. similoides</i>	<u>0.0060</u>	0.5439	0.0012	0.0046	<u>0.0001</u>	<u>0.0008</u>		54.6000	49.3600	25.1300	22.0700	42.6900
(8) <i>D. C. tibetana</i>	0.0002	0.0018	0.3854	<u>0.0001</u>	<u>0.0002</u>	<u>0.0007</u>	0.0012		1.1180	6.2120	3.0760	10.6500
(9) <i>D. D. dentifera</i>	0.0311	0.0440	0.3781	0.0027	0.0115	0.0283	0.0271	0.3822		3.7150	5.7900	7.3000
(10) <i>D. D. longipsina</i>	0.0846	<u>0.0005</u>	0.4204	<u>0.0004</u>	0.1676	0.0135	<u>0.0001</u>	0.0087	0.0194		0.0625	1.3420
(11) <i>D. D. obtusa</i>	0.4478	0.0476	0.7204	0.0562	0.6616	0.0820	0.0297	0.1078	0.3356	0.9295		0.1608
(12) <i>D. D. pulex</i>	0.0067	<u>0.0001</u>	0.1162	<u>0.0001</u>	0.3770	0.0523	<u>0.0001</u>	<u>0.0006</u>	0.0078	0.2709	0.8091	

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