

Table S1. Values of morphological and life history traits per site in the four habitats. White spaces represent the unavailability of the trait value for that site. Traits #3, 4, 6, 7, 8, and 12 were not measured at the hyporheic zone habitat sites. The SB/nSB ratio (Ecology) was not calculated for the fluvial benthos and littoral region habitats, as all individuals were non-stygobite. A = alluvial aquifer of Vomano River; HZ = hyporheic zone of Rio Gamberale creek; R = benthic layers of the Tiber River; L = littoral region of Lake Maggiore. Biomass is expressed in ng of dry C and abundances in number of individuals.

		Trait 1	Trait 2	Trait 3	Trait 4	Trait 5	Trait 6	Trait 7	Trait 8	Trait 9	Trait 10	Trait 11	Trait 12	Ecology
Habitat	Site	Cumulative biomass (ng)	Biomass of juveniles (ng)	Biomass of ovigerous females (ng)	Egg biomass (ng)	Body size dimorphism	Relative egg size	Egg volume (μm^3)	Number of eggs / sac	Number of juveniles	Ratio of juvenile/adult abundances	Ratio of male/female abundances	Percentage of ovigerous females	Ratio of stygobite/non-stygobite abundances
A	A1	81142	14613	3775	5	0.79	0.0012	120444	18.67	15	0.55	1.31	25.00	0.02
A	A2	13468	9858	0	0	1.06				8	2.25	1.50	0.00	0.08
A	A3	997	267	0	0					1	1.00	2.00		3.00
A	A4	65946	21167	0	0	0.80				18	1.19	1.43	0.00	0.03
A	A5	12880	3845	0	0	0.89				15	0.67	0.61	0.00	7.80
A	A6	7296	2309	0	0	0.87				12	0.50	1.15	0.00	38.00
A	A7	1130	0	0	0	1.11				0		1.33	0.00	6.00
A	A8	626	0	0	0					0		0.33	0.00	3.00
A	A9	48932	21167	0	0	0.98				24	0.93	0.87	0.00	51.00
A	A10	242714	152926	0	0					33	17.00	0.50	0.00	0.09
A	A11	6319	4799	0	0					6	3.50	2.00		0.13
A	A12	13735	3547	0	0	0.90				2	0.60	2.67	0.00	2.00
A	A13	50823	20113	0	0	0.69				13	0.93	0.22	0.00	0.04
A	A14	7629	4828	0	0	0.83				6	2.33	3.00		0.11
A	A15	129209	25973	0	0	0.73				25	0.43	1.03	0.00	0.01
A	A16	37081	5448	1804	4	0.87	0.0022	109710	6.00	8	0.47	0.57	7.69	0.22
A	A18	58278	5874	0	0					5	0.40	4.17	0.00	17.00
A	A20	524	524	0	0					1	2.00			0.50
A	A21	21050	9709	0	0					7	2.67	3.00	0.00	14.00
A	A22	418513	69671	4719	12	0.85	0.0026	312898	2.00	34	0.48	0.60	4.08	1.38
A	A23	56413	342	0	0	0.87				1	0.40	1.17	0.00	0.75
A	A24	24985	1871	0	0					1	0.25	0.13	0.00	9.00
A	A27	220571	27475	0	0	0.85				21	0.30	1.31	0.00	0.80
A	A28	18626	6424	0	0	0.97				9	1.43	1.55	0.00	6.40
A	A29	21722	3805	0	0	0.83				2	0.50	0.40	0.00	0.13
A	A30	448	251	0	0					1	1.00	2.00		3.00
A	A32	310	0	0	0					0		2.00		2.00
A	A33	82408	29109	1749	5	0.89	0.0026	123822	16.00	15	0.55	1.00	7.14	0.02
A	A34	111309	15925	0	0	1.03				12	0.68	0.88	0.00	4.25
A	A35	46693	15084	0	0	0.87				8	1.13	0.43	0.00	17.00
A	A36	552465	139342	12197	1	0.69	8.43E-07	278	60.00	37	0.67	0.93	3.45	0.01
A	A37	244473	51130	2466	1.92	0.94	0.0008	51979	8.00	21	0.35	0.68	18.92	0.01
A	A38	84628	23362	0	0	0.82				17	0.86	0.47	0.00	0.03
A	A40	120158	17119	0	0					20	0.54	0.90	0.00	0.02
A	A41	13847	1742	0	0	0.85				1	0.50	0.25	0.00	5.00
A	A42	104382	9980	2603	3.96	0.95	0.0016	107009	12.00	12	0.48	0.53	32.14	0.02
A	A43	437	437	0	0					1	2.00			0.50
A	A44	165574	27654	0	0	0.86				19	0.59	0.84	0.00	53.00
A	A45	6430	6430	0	0					9	10.00			4.50

		Trait 1	Trait 2	Trait 3	Trait 4	Trait 5	Trait 6	Trait 7	Trait 8	Trait 9	Trait 10	Trait 11	Trait 12	Ecology
Habitat	Site	Cumulative biomass (ng)	Biomass of juveniles (ng)	Biomass of ovigerous females (ng)	Egg biomass (ng)	Body size dimorphism	Relative egg size	Egg volume (μm^3)	Number of eggs / sac	Number of juveniles	Ratio of juvenile/adult abundances	Ratio of male/female abundances	Percentage of ovigerous females	Ratio of stygobite/non-stygobite abundances
A	A46	1481	1481	0	0					1	2.00			0.50
A	A48	147753	43186	0	0	0.93				41	0.56	0.57	0.00	131.00
A	A49	3958	299	0	0	0.91				1	0.67	1.67	0.00	8.00
A	A50	904	817	0	0	1.26				6	2.33	1.00	0.00	1.00
A	A51	602	0	0	0	1.18				0		1.00	0.00	3.00
A	A52	5929	1005	0	0	1.16				4	1.67	4.50	0.00	15.00
A	A57	74508	11016	0	0	0.80				12	0.35	2.82	0.00	53.00
A	A58	655	0	0	0					0		0.50	0.00	2.00
A	A59	2512	0	0	0	1.03				0		0.33	0.00	1.00
A	A59bis	20579	4662	0	0					4	0.42	6.00	0.00	17.00
A	A60	109054	37916	0	0	0.79				18	0.56	0.73	0.00	0.02
A	A61	429011	104481	10191	5	1.06	0.0005	130964	32.00	33	0.64	1.75	5.26	0.01
A	A63	4314	0	0	0					0		0.33	0.00	3.00
A	A64	4980	0	0	0	0.76				0		1.00	0.00	3.00
A	A65	107899	11258	0	0	0.95				7	0.53	0.60		0.28
HZ	HZ1	18398	4867			1.19				4	5.00	0.36		0.27
HZ	HZ2	19449	7471			1.10				8	1.80	0.63		0.05
HZ	HZ3	38801	1044			0.92				2	0.60	0.36		0.06
HZ	HZ4	150056	19688			1.00				27	0.34	0.61		0.38
HZ	HZ5	323936	30387			0.88				19	0.29	0.73		0.08
R	M-R1	121114	35894	2705	30	0.98	0.0030	68684	15.17	80	0.64	0.30	10.75	
R	M-R2	131885	34813	3001	10	0.90	0.0045	102717	13.75	72	0.68	0.36	17.33	
R	M-R3	137801	38036	4404	7	0.88	0.0014	28817	13.22	73	0.59	0.49	17.07	
R	V-R1	285610	53136	2890	5	0.92	0.0026	45251	13.27	115	0.69	0.29	12.61	
R	V-R2	87694	20577	7200	16	1.00	0.0021	70849	13.43	52	0.53	0.49	16.98	
R	V-R3	186848	38747	4920	12	0.92	0.0028	50806	14.06	89	0.53	0.37	13.11	
L	MA:D	501129	251411	5596	8	0.94	0.0017	46992	17.00	343	1.11	0.41	9.41	
L	MA:W	155789	56268	6599	7	0.87	0.0016	72232	13.75	153	1.14	0.44	18.37	
L	SC:D	90751	41207	0	0	0.93				137	1.75	1.43	0.00	
L	SC:W	511378	80729	2920	7	0.98	0.0020	36115	16.80	173	0.70	0.50	26.27	
L	FT:D	266710	106492	3497	4	0.97	0.0013	35354	15.18	133	0.61	0.76	17.58	
L	FT:W	124513	27445	1217	3	1.00	0.0022	80445	11.50	64	0.41	0.48	7.55	

Table S2. PERMDISP, PERMANOVA and pair-wise test results for the twelve morphological and life history traits. In bold, the statistically significant p-values ($p > 0.005$). A = alluvial aquifer of Vomano River; HZ = hyporheic zone of Rio Gamberale creek; R = benthic layers of the Tiber River; L = littoral region of Lake Maggiore. Ha: habitat (factor); res: residuals.

	Trait	Degrees of freedom	PERMDISP		PERMANOVA		PAIR-WISE TESTS		
		<i>ha, res</i>	<i>F</i>	<i>P(tables)</i>	<i>Pesudo-F</i>	<i>P(perm)</i>	<i>Groups</i>	<i>t</i>	<i>P(perm)</i>
1	Cumulative biomass	3, 64	5.17	0.003	4.47	0.008	A, L	2.62	0.008
							A, HZ	1.26	0.213
							A, R	2.30	0.026
							L, HZ	2.21	0.066
							L, R	1.82	0.248
							HZ, R	1.76	0.134
2	Biomass of juveniles	3, 67	1.82	0.105	1.62	0.137			
3	Biomass of ovigerous females	2, 63	0.43	0.648	24.17	0.001	A, L	4.36	0.001
							A, R	5.78	0.001
							L, R	1.02	0.321
4	Egg biomass	2, 63	0.53	0.5909	36.27	0.001	A, L	4.92	0.001
							A, R	7.54	0.001
							L, R	1.78	0.034
5	Body size dimorphism	3, 124	2.07	0.1162	1.57	0.208			
6	Relative egg size	2, 16	2.80	0.090	1.57	0.125			
7	Egg volume	2, 16	0.58	0.556	0.13	1			
8	Number of eggs / sac	2, 16	4.9	0.022	0.46	0.753			
9	Number of juveniles	3, 67	4.48	0.006	8.58	0.001	A, L	3.72	0.002
							A, HZ	0.84	0.432
							A, R	3.29	0.005
							L, HZ	4.85	0.002
							L, R	2.16	0.093
							HZ, R	2.63	0.034
10	Ratio of juvenile/adult abundances	3, 62	2.74	0.051	0.64	0.648			
11	Ratio of male/female abundances	3, 64	3.08	0.034	4.46	0.004	A, L	1.47	0.125
							A, HZ	1.78	0.07
							A, R	2.93	0.001
							L, HZ	0.52	0.693

Trait		Degrees of freedom	PERMDISP		PERMANOVA		PAIR-WISE TESTS		
		<i>ha, res</i>	<i>F</i>	<i>P(tables)</i>	<i>Pesudo-F</i>	<i>P(perm)</i>	<i>Groups</i>	<i>t</i>	<i>P(perm)</i>
							L, R	2.12	0.038
							HZ, R	1.82	0.108
12	Percentage of ovigerous females	2, 53	1.68	0.165	13.9	0.001	A, L	3.54	0.001
							A, R	4.39	0.009
							L, R	0.36	0.722

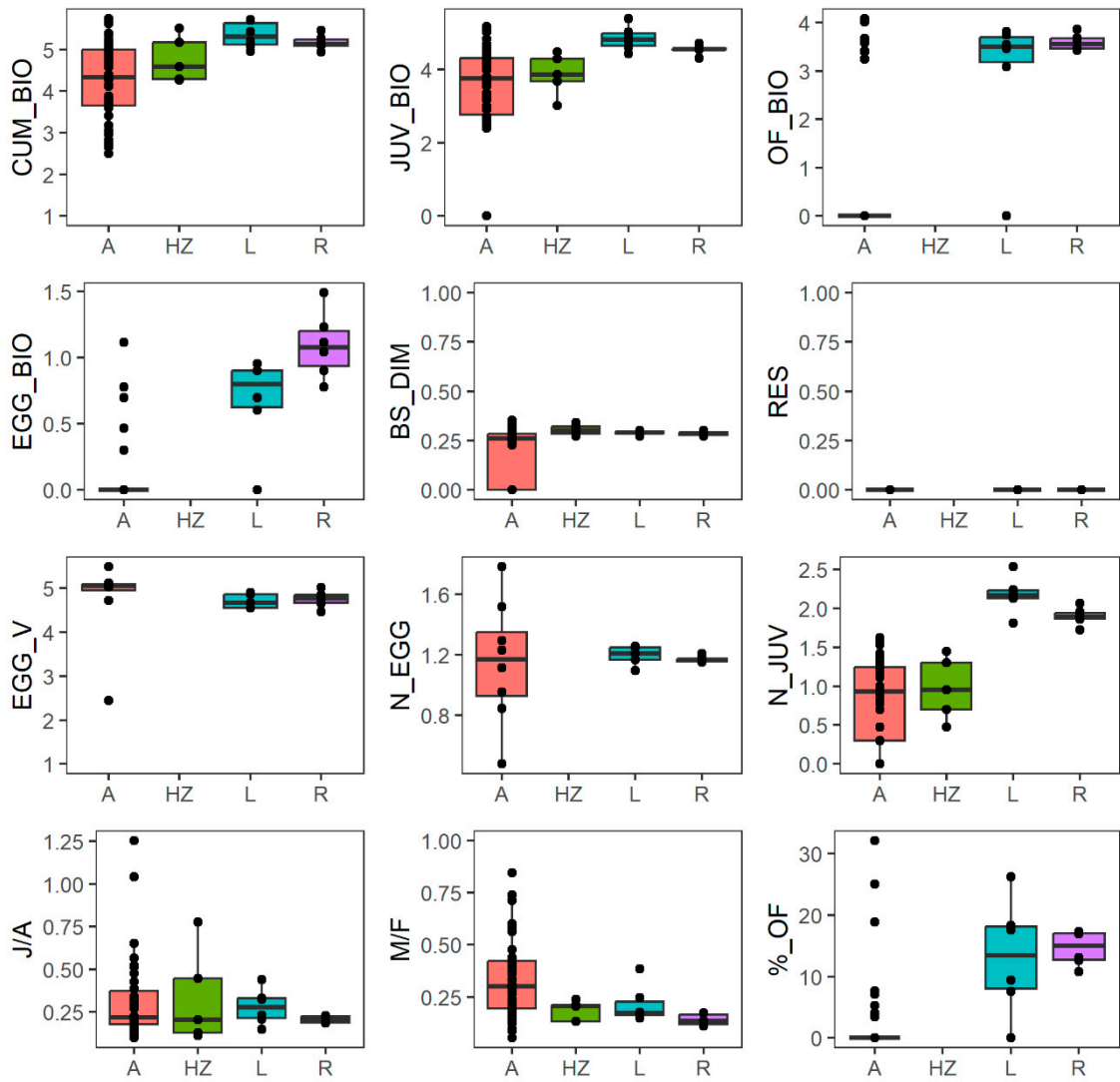


Figure S1. Box plots showing the median (horizontal lines), the first and third quartiles (box spans), and the sampling sites (black dots) of the twelve functional traits analyzed in this research. All values were $\log(x+1)$ -transformed, except for Trait #12 (bottom right box), which shows percentage values. A = alluvial aquifer of Vomano River; HZ = hyporheic zone of Rio Gamberale Creek; R = benthic layers of the Tiber River; L = littoral zone of Lake Maggiore. CUM_BIO = Cumulative biomass (ng); JUV_BIO = Biomass of juveniles (ng); OF_BIO = Biomass of ovigerous females (ng); EGG_BIO = Egg biomass (ng); BS_DIM = Body size dimorphism; RES = Relative egg size; EGG_V = Egg volume (μm^3); N_EGG = Number of eggs / sac; N_JUV = Number of juveniles; J/A = Ratio of juvenile/adult abundances; M/F = Ratio of male/female abundances; %_OF = Percentage of ovigerous females.