

Supplementary Materials

Table S1. Summary table of mean and standard deviations (SD) of the measured environmental variables. Abbreviations: Nitrite-nitrogen (NO₂N), ammonium-nitrogen (NH₄N), chemical oxygen demand (COD), biochemical oxygen demand (BOD), nickel (Ni), copper (Cu), dissolved oxygen (DO), total nitrogen (TN), orthophosphate (OPO₄), total phosphorus (TP), nitrate (NO₃N), temperature (Temp), conductivity (Cond), longitude (Long), latitude (Lat). The variables of altitude, stream water velocity and pH are as stated.

Group Site	US		MS		DS	
	Mean	SD	Mean	SD	Mean	SD
Temperature (°C)	18.42	1.67	21.03	2.14	23.20	4.02
Cond (mS/m)	0.25	0.16	0.26	0.26	0.27	0.22
DO (mg/L)	11.04	6.03	11.48	4.35	11.08	2.99
pH	7.52	0.51	7.78	0.53	7.59	0.62
Velocity (m/s)	0.25	0.29	0.23	0.21	0.20	0.27
NH ₄ N (mg/L)	0.05	0.06	0.03	0.02	0.043	0.03
NO ₂ N (mg/L)	0.03	0.03	0.05	0.03	0.05	0.05
NO ₃ N (mg/L)	0.65	0.19	1.36	1.76	0.56	0.28
TP (mg/L)	0.23	0.12	0.14	0.14	0.15	0.12
OPO ₄ (mg/L)	1.52	0.98	0.62	0.79	1.35	2.04
BOD (mg/L)	7.09	1.69	5.21	1.97	6.22	1.50
COD (mg/L)	21.48	25.24	17.38	9.88	28.40	24.37
TN (mg/L)	1.65	0.82	1.42	1.14	1.62	1.86
Cu (mg/L)	0.00	0.01	0.04	0.07	0.065	0.10
Ni (mg/L)	0.01	0.01	0.05	0.07	0.066	0.10
Long (decimal units)	30.24	0.06	29.99	0.23	30.14	0.12
Lat (decimal units)	0.58	0.06	0.21	0.17	0.19	0.12
Altitude (m.a.s.l)	1489	43.0	1216	82	1023	66.0

Table S2. Significant correlations ($p < 0.05$) of variables for the first six PCA dimensions.

Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6
Temperature (°C)	0.67			0.46		
Conductivity (mS/m)		0.51	-0.59	0.5		
Dissolved oxygen (mg/L)				0.83		
pH	0.66				0.57	
Velocity (m/s)						0.61
Ammonium nitrogen (mg/L)		0.44				
Nitrite nitrogen (mg/L)	0.72					
Nitrate nitrogen (mg/L)			-0.74			
Total phosphorus (mg/L)		0.68				
Orthophosphate (mg/L)	0.67					
BOD (mg/L)		0.5	0.5	0.41		
COD (mg/L)	0.54				-0.55	
Total nitrogen (mg/L)	0.68	0.43			0.37	
Copper (mg/L)	0.79					
Nickel (mg/L)	0.8		0.36			
Latitude (decimal units)	-0.64	0.67				
Longitude (decimal units)	-0.41	0.63				0.4
Altitude (m.a.s.l)	-0.59	0.41			0.4	
Eigen value	5.24	2.9	1.88	1.8	1.48	1.14
Percentage of variance	29.09	16.11	10.43	9.99	8.1	6.37
Cumulative percentage	29.09	45.2	55.64	65.63	73.84	80.17

Table S3. Taxa abundance list, river names and altitude class for the 30 sites in the Rwenzori study area. River name abbreviations: Kaitanjojo; YY: Yerya; DU: Duru; MP: Mpanga; MG: Mugunu; PP: Piripe; NG: Nsonge; IR: Ibaralibi; DA: Dura; NT: Ntabago; NB: Nyabugando; KE: Karuhe; MR: Murushegi; RH: Rubiriha; NY: Nyawamba; SW: Sebwe; MB: Mubuku; HI: Hima; RW: Rwimi; KH: Kahendero; HM: Hamukungu; BK: Bukangara.

Site code	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30
River name	KY	YT	DU	MP	MG	PP	NG	IR	DA	NT	NB	KE	MR	RH	NY	SW	MB	HI	RW	KH	HM	BK	NY	SW	MB	HI	RW	KH	HM	BK
Atyidae										6																				
Baetidae	3	20						4			4	4					1	25	4		4	2	1	1	162			4		
Belostomatidae																											1	2	1	
Caenidae	4	2	1		26	5	2	7	2			5			2	11					29	4			42			68		
Chironomidae		2	1					1		1		3		1	1	4	190	4			3				12			9	1	
Coenagrionidae	4		1	11		5	7		2				3	3							8		3	48					28	
Corduliidae					1					1		2	1	2													2			
Corixidae																						1				4	1		3	
Dugesidae		10																												
Dytiscidae			5		1		2		1																					
Ecnomidae												1																		
Elmidae		11			1		7	1			2					1														
Erpobdellidae				1																										
Gerridae															3															
Gomphidae	1						1					8				2														
Gyrinidae							1		1									1	1											

Heptageniid ae			2			1				1										
Hydracarin a	1																		4	
Hydraenida e	1				1															
Hydrophili dae			1			2														
Hydropsych idae	2					2		1		12									15	
Lepidostom atidae	3				3	2						1								
Leptocerida e	2			2	1							1						1		
Leptophlebi idae													1							
Libellulidae	1								1			1		1						
Limoniidae						1														
Lumbricida e									4	1		4								
Lymnaeidae			2		1		1			4						4				
Naucoridae				2		1	2		1	1		1	4		4	4	1	1	1	8
Nepidae	1	1				1					1							2		
Perlidae													16							
Physidae										5								2	1	
Planorbidae	2	2			3		1		1							24				
Pleidae				1																
Psychodida e												1		1						
Simuliidae													43	1					3	
Sphaeriidae			7										0							

Staphylinid ae				1					
Teloganodi dae	3				4			2	
Thiaridae									26
Tipulidae			1	1		1			
Tricorythida e								1	
Tubificidae		18						1	
Veliidae	2		4	4	1				13

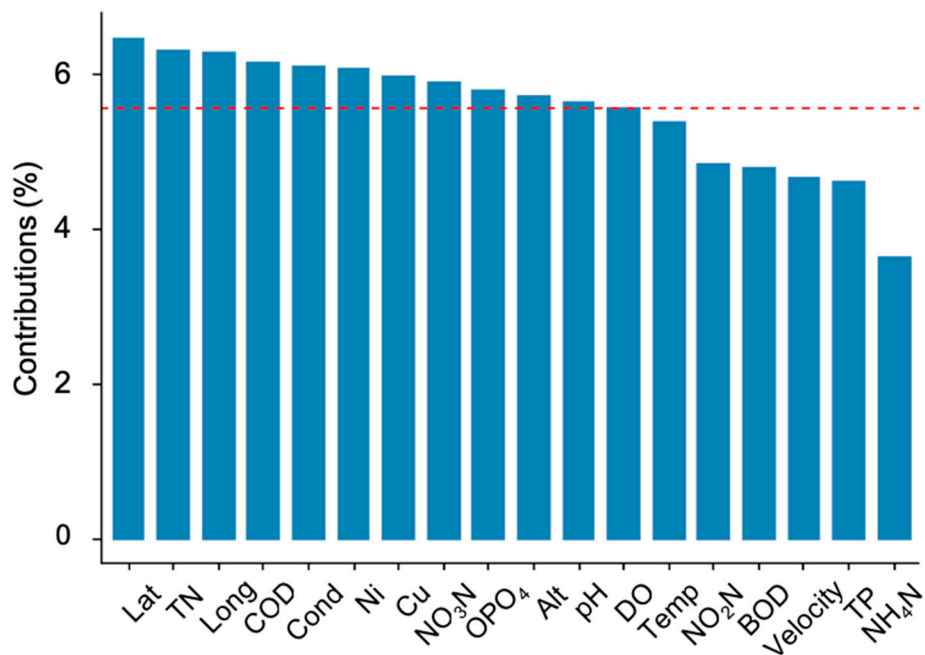


Figure S1. Graph showing the total percentage contribution of the variables to the first six PCA dimensions. The dashed red line indicates the expected average contribution. Abbreviations: Nitrite-nitrogen (NO₂N), ammonium-nitrogen (NH₄N), chemical oxygen demand (COD), biochemical oxygen demand (BOD), nickel (Ni), copper (Cu), dissolved oxygen (DO), total nitrogen (TN), orthophosphate (OPO₄), total phosphorus (TP), nitrate (NO₃N), conductivity (Cond), altitude (Alt), longitude (Long), latitude (Lat).