

Table S1. Results of CCA analysis.

	Inertia	Proportion	Rank
Total	4.3784	1.0000	
Constrained	1.0125	0.2313	8
Unconstrained	3.3658	0.7687	53

Table S2. Accumulated constrained eigenvalues.

	CCA1	CCA2	CCA3	CCA4	CCA5	CCA6	CCA7	CCA8
Eigenvalue	0.4542	0.2181	0.1113	0.08054	0.05429	0.04297	0.03152	0.01961
Proportion Explained	0.4486	0.2154	0.1099	0.07954	0.05361	0.04244	0.03113	0.01937
Cumulative Proportion	0.4486	0.6640	0.7739	0.85345	0.90706	0.94950	0.98063	1.00000

Table S3. Biplot scores for constraining variables. Biplot scores higher than 0.6 are indicated in bold.

	CCA1	CCA2	CCA3	CCA4	CCA5	CCA6
Temperature	-0.8012	-0.40491	0.05484	-0.421862	0.03720	-0.039335
Conductivity	0.1891	-0.92066	-0.13678	0.109632	-0.08282	0.125845
Chlorophyll	-0.6718	-0.04392	0.26627	0.297714	-0.39560	0.123919
Chloride	-0.1742	-0.41989	-0.31601	-0.027959	-0.17355	0.089311
DO	0.3004	0.08700	0.13094	-0.483515	-0.73356	-0.285591
Turbidity	-0.3703	-0.14609	-0.09452	-0.040524	-0.35217	0.757415
Velocity	0.8915	0.10564	-0.06493	-0.150214	0.06929	-0.051967
Elevation	0.6452	0.42168	0.59211	-0.002356	-0.02087	-0.001554

Table S4. Threshold Indicator Taxa Analysis of individual taxa in response to stream velocity (m/s) in the Guayas River basin. Taxa are listed in alphabetic order. ienv.cp—environmental change point for each taxon based on IndVal maximum; zenv.cp—environmental change point for each taxon based on z maximum; freq—number of times each taxon occurred in the data set; maxgrp—1 if z- (negative response); 2 if z+ (positive response); IndVal—IndVal statistic, scaled 0-100% (with 100 indicating a taxon that occurred in all of the samples above or below a change point value and in none of the samples on the other side of the change point); obsiv.prob—the probability of obtaining an equal or larger IndVal score from random data; (number of random IndVals $\geq$ observed IndVal)/ numPerm); zscore—IndVal z score; 5%, 10%, 50%, 90%, 95%—change point quantiles among bootstrap replicates; purity—proportion of replicates matching observed maxgrp assignment; reliability—proportion of replicate obsiv.prob values $\leq$ 0.05; z.median—median score magnitude across all bootstrap replicates; filter—logical (if >0) indicating whether each taxa met purity and reliability criteria, value indicates maxgrp assignment. Negative and positive indicators are shown in bold.

Taxa	Shortcode	ienv.cp	Zenv.cp	Freq	Maxgrp	IndVal	Obsiv.prob	Zscore	5%	10%	50%	90%	95%	Purity	Reliability	Z.median	Filter
Acari	ACARI	0.01	0.01	56	1	65.04	0.001	5.45	0	0	0	0.03	0.08	0.99	1	6.06	1
Aeshnidae	AESHNIDA	0	0	11	1	28.95	0.001	8.76	0	0	0	0.02	0.03	1	0.99	8.58	1
Ampullariidae	AMPULLAR	0	0.1	6	1	10.91	0.011	3.45	0	0	0	0.11	0.11	0.99	0.90	4.68	0
Ancylidae	ANCYLIDA	0.4	0.4	13	2	26.57	0.001	6.24	0.35	0.35	0.4	0.47	0.5	0.99	0.98	6.38	2
Baetidae	BAETIDAE	0	0.03	64	1	42.04	0.041	2.02	0	0	0	0.4	0.5	0.86	0.79	2.91	0
Belostomatidae	BELOSTOM	0	0	6	1	12.26	0.016	3.07	0	0	0.15	0.2	0.22	0.96	0.66	2.87	0
Caenidae	CAENIDAE	0	0	12	1	30.33	0.001	8.93	0	0	0	0.02	0.03	1	1	8.86	1
Calopterygidae	CALOPTER	0.45	0.42	14	2	37.8	0.001	9.22	0.28	0.3	0.42	0.45	0.47	1	1	9.61	2
Cambaridae	CAMBARID	0.05	0.06	7	1	14	0.002	4.79	0	0	0.01	0.06	0.07	0.99	0.96	5.70	1
Ceratopogonidae	CERATOPO	0	0	22	2	22.22	0.077	1.57	0	0	0.05	0.47	0.5	0.67	0.64	2.23	0
Chironomidae	CHIRONOM	0.03	0.01	100	1	81.75	0.001	4.01	0	0	0.02	0.05	0.07	0.99	0.99	4.01	1
Coenagrionidae	COENAGRI	0	0	50	1	47.22	0.014	3.32	0	0	0.1	0.4	0.5	0.79	0.83	3.04	0
Corbiculidae	CORBICUL	0.04	0.11	22	2	24.79	0.004	3.41	0.01	0.03	0.11	0.2	0.5	0.98	0.96	4.06	2
Corixidae	CORIXIDA	0.72	0.72	28	2	48.62	0.017	3.89	0	0	0.6	0.72	0.72	0.88	0.80	3.83	0
Corydalidae	CORYDALI	0.65	0.65	11	2	57.38	0.001	8.89	0.15	0.15	0.65	0.8	0.9	1	1	9.17	2
Coryphoridae	CORYPHOR	0.72	0.4	7	2	21.88	0.001	7.55	0.35	0.37	0.42	0.75	0.77	0.99	0.99	8.42	2
Crambidae	CRAMBIDA	0.6	0.6	13	2	60.22	0.001	11.14	0.2	0.32	0.47	0.6	0.65	1	1	10.42	2
Culicidae	CULICIDA	0.03	0.03	14	1	23.1	0.001	5.06	0	0	0	0.04	0.05	0.99	0.97	5.52	1
DugesIIDae	DUGESIID	0	0	33	1	56.91	0.001	7.51	0	0	0	0.01	0.02	0.99	0.99	6.79	1
Dytiscidae	DYTISCID	0	0	13	1	23.32	0.001	5.57	0	0	0	0.05	0.06	0.96	0.99	6.24	1
Elmidae	ELMIDAE	0.72	0.72	20	2	81.1	0.001	10.89	0.3	0.37	0.6	0.72	0.8	1	1	10.76	2
Gerridae	GERRIDAE	0	0.03	26	1	26.41	0.004	3.84	0	0	0	0.2	0.25	0.99	0.95	4.75	1
Glossiphoniidae	GLOSSIPH	0	0	28	1	37.13	0.002	5.59	0	0	0	0.06	0.07	0.99	0.99	6.15	1
Gomphidae	GOMPHIDA	0.4	0.09	17	2	25	0.001	5.6	0.06	0.07	0.1	0.4	0.47	1	1	6.22	2

Helicopsychidae	HELICOPS	0.72	0.37	14	2	32.55	0.001	8.32	0.32	0.34	0.4	0.72	0.72	1	1	9.40	2
Hyallelidae	HYALLELI	0	0.01	26	1	54.39	0.001	10.78	0	0	0	0.03	0.03	1	1	11.00	1
Hydrobiidae	HYDROBII	0.45	0.2	7	2	13.73	0.001	4.71	0.17	0.2	0.3	0.47	0.5	1	0.96	5.30	2
Hydrophilidae	HYDROPHI	0.26	0.26	13	1	15.37	0.023	2.63	0	0	0.2	0.27	0.3	0.97	0.87	3.23	0
Hydropsychidae	HYDROPSY	0.72	0.45	31	2	70.88	0.001	11.15	0.32	0.37	0.45	0.6	0.6	1	1	12.26	2
Hydroptilidae	HYDROPTI	0.6	0.04	12	2	12	0.086	1.71	0	0.03	0.2	0.65	0.65	0.90	0.71	2.91	0
Leptoceridae	LEPTOCER	0.75	0.1	27	2	37.45	0.001	5.03	0.04	0.04	0.13	0.8	0.9	1	1	6.20	2
Leptohyphidae	LEPTOHYP	0.72	0.4	52	2	84.56	0.001	8.94	0.14	0.2	0.32	0.5	0.60	1	1	9.65	2
Leptophlebiidae	LEPTOPHL	0.6	0.42	30	2	69.6	0.001	11.52	0.35	0.37	0.42	0.5	0.5	1	1	12.48	2
Libellulidae	LIBELLUL	0	0	55	1	58.54	0.001	5.94	0	0	0	0.04	0.05	0.99	0.99	5.88	1
Limoniidae	LIMONIID	0.6	0.6	14	2	28.46	0.006	4.39	0.11	0.12	0.42	0.6	0.72	0.97	0.94	5.01	0
Lymnaeidae	LYMNAEID	0.5	0.5	10	1	10.42	0.179	1.06	0	0	0.17	0.5	0.5	0.61	0.39	1.71	0
Megapodagrionidae	MEGAPODA	0.6	0.2	6	2	12.24	0.001	4.38	0.15	0.17	0.2	0.6	0.65	0.99	0.89	4.32	0
Mesoveliidae	MESOVELI	0	0.03	15	1	22.18	0.002	4.13	0	0	0.01	0.26	0.27	0.99	0.97	4.85	1
Naucoridae	NAUCORID	0.72	0.45	33	2	44.95	0.001	5.6	0.05	0.08	0.46	0.72	0.72	1	1	6.94	2
Notonectidae	NOTONECT	0	0	17	1	38.91	0.001	8.74	0	0	0	0.03	0.07	1	1	9.09	1
Perlidae	PERLIDAE	0.65	0.5	12	2	42.53	0.001	10.29	0.45	0.47	0.5	0.65	0.65	1	0.99	11.33	2
Philopotamidae	PHILOPOT	0.65	0.07	17	2	22.76	0.006	3.28	0.01	0.03	0.41	0.77	0.9	0.99	0.99	4.54	2
Physidae	PHYSIDAE	0.77	0.4	9	2	13.44	0.026	2.56	0	0	0.4	0.8	0.9	0.79	0.80	3.73	0
Planorbidae	PLANORBI	0	0.5	8	1	8.33	0.248	0.73	0	0	0.35	0.45	0.5	0.40	0.39	1.76	0
Platystictidae	PLATYSTI	0.75	0.42	11	2	21.89	0.001	5.21	0.01	0.03	0.42	0.6	0.72	1	0.97	5.85	2
Pleidae	PLEIDAE	0.15	0.15	7	1	11.29	0.014	3	0	0	0.1	0.17	0.2	0.99	0.87	3.58	0
Polycentropodidae	POLYCENT	0.11	0.11	6	2	9.38	0.028	2.82	0.1	0.1	0.11	0.42	0.55	0.98	0.69	2.99	0
Psephenidae	PSEPHENI	0.72	0.45	17	2	53.03	0.001	11.84	0.37	0.4	0.47	0.72	0.72	1	1	12.022	2
Simuliidae	SIMULIID	0.45	0.42	8	2	16.47	0.011	3.94	0.07	0.11	0.45	0.65	0.77	1	0.93	5.02	0
Stratiomyidae	STRATIOM	0.5	0.5	7	1	7.29	0.152	0.58	0	0	0.1	0.42	0.45	0.65	0.34	1.75	0
Tabanidae	TABANIDA	0.72	0.72	6	2	42.42	0.002	8.75	0	0.5	0.67	0.72	0.72	0.93	0.91	7.94	0
Thiaridae	THIARIDA	0.77	0.12	36	1	28.26	0.12	1.33	0	0	0	0.2	0.47	0.84	0.54	1.99	0
Tubificidae	TUBIFICI	0.31	0.31	29	1	25.79	0.054	1.69	0	0	0.2	0.32	0.32	0.87	0.73	2.46	0
Veliidae	VELIIDAE	0.45	0.37	40	2	61.38	0.001	7.44	0.3	0.31	0.4	0.5	0.6	1	0.99	8.06	2