

## Supplementary Material

River	Diversity index	Min	Max	Mean	SE
Extoraz	$0D^*$	32	40	37	1.7
	$1D$	8.3	11.6	9.2	0.7
	$H'$	2.1	2.4	2.2	0.07
Escanela-Jalpan	$0D^*$	41	52	47	1.7
	$1D$	3	13.8	8.9	1.7
	$2D$	1.6	8.9	5.3	1.1
	$H'$	1.1	2.6	2.1	0.2
Concá and Ayutla	$0D$	35	50	43	4.3
	$1D$	8.4	14.2	11.2	1.6
	$2D$	4.8	8.6	6.9	1.1
	$H'$	2.1	2.7	2.4	0.1
Santa María	$0D$	44	51	47	3.5
	$1D$	13.5	15.7	14.6	1
	$2D$	8.7	11.3	8.7	1.2
	$H'$	2.6	2.8	2.6	0.07

**Supplementary Table S1.** Summary of diversity index values. Based on all 15 sites, the minimum (min), maximum (max) and mean values, including the standard error (SE), are given for each diversity index.  $H'$ : Shannon entropy index.  $0D$ ,  $1D$  and  $2D$ : Hill's effective numbers. \*Statistical differences by one-way ANOVA test (HSD Tukey;  $p \leq 0.05$ ).



	SO <sub>4</sub>	TSS*	Water Temp	Air Temp	Tur*	Dis	Hab	Al	As	Cd	Hg	Sb	Zn	Co	Cr	Cu	Fe
Alk	0.05	-0.12	0.17	0.16	-0.11	-0.53	-0.37	-0.15	0.41	0.56	0.33	0.14	0.58	0.06	0.06	0.02	-0.04
Cl	0.44	0.14	0	0	0.13	-0.45	0	-0.14	-0.2	-0.06	-0.17	-0.25	0.28	-0.43	-0.43	-0.13	-0.05
Fec Col	-0.25	-0.08	-0.59	-0.4	-0.02	-0.46	-0.25	-0.49	0.45	0.1	-0.2	0.15	0.36	0.19	0.19	0.18	-0.42
Tot Col	-0.26	-0.13	-0.59	-0.35	-0.14	-0.56	-0.38	-0.39	0.35	0.18	-0.09	0.02	0.4	0.37	0.37	0.37	-0.34
Col	0.54	0.81	0.43	0.45	0.73	0.25	-0.07	0.59	0.07	0.25	0.53	-0.11	-0.1	-0.16	-0.16	-0.15	0.6
Cond	0.86	0.54	0.74	0.22	0.39	0.09	0.11	0.36	-0.08	0.2	0.5	-0.38	-0.01	-0.25	-0.25	-0.46	0.48
BOD <sub>5</sub>	-0.45	-0.18	-0.7	-0.09	0	-0.17	0.04	-0.62	0.01	0.05	-0.49	0.11	0.12	-0.37	-0.37	0.05	-0.59
Hard	0.38	0.04	0.21	-0.2	-0.25	-0.54	-0.06	-0.05	-0.05	0.36	0.44	-0.33	0.43	0.06	0.06	0.16	0.12
NH <sub>3</sub>	0.43	0.84	0.26	0.43	0.8	0.23	-0.12	0.49	-0.08	0.24	0.38	-0.3	-0.08	-0.25	-0.25	-0.13	0.53
NO <sub>2</sub>	0.48	0.85	0.41	0.4	0.84	0.48	-0.16	0.43	0.3	0.02	0.4	-0.27	-0.13	-0.09	-0.09	-0.45	0.44
NO <sub>3</sub>	0.32	0.59	0.36	0.21	0.51	0.34	-0.03	0.3	-0.08	0.35	0.37	-0.43	0.29	-0.19	-0.19	-0.05	0.43
TN	0.31	0.62	0.18	0.09	0.51	0.12	-0.03	0.32	0.32	0.26	0.53	0.04	-0.17	0.06	0.06	-0.28	0.38
DO	-0.23	0.1	-0.29	0.15	0.19	0.22	0.33	-0.17	-0.25	-0.46	-0.37	-0.09	-0.08	-0.43	-0.43	0.04	-0.2
O-PO <sub>4</sub>	0.31	0.69	0.48	0.53	0.65	0.19	-0.21	0.66	-0.17	-0.1	0.39	-0.49	0.22	-0.12	-0.12	-0.2	0.71
pH	-0.28	-0.39	-0.62	-0.28	-0.28	-0.2	0.11	-0.33	-0.06	-0.28	-0.76	0.45	-0.14	-0.37	-0.37	0.09	-0.47
TP	0.47	0.42	0.42	0.47	0.51	0.21	-0.03	0.13	-0.12	-0.28	0.09	-0.43	-0.35	-0.31	-0.31	-0.62	0.15
Sal	0.85	0.54	0.75	0.2	0.36	0.1	0.07	0.37	-0.11	0.26	0.52	-0.43	0.01	-0.25	-0.25	-0.44	0.5
SO <sub>4</sub>	-	0.65	0.55	0.06	0.43	0.11	0.22	0.48	-0.18	0.04	0.3	-0.34	-0.12	-0.28	-0.28	-0.43	0.53
TSS	*	-	0.46	0.24	0.91	0.43	0.01	0.55	0.03	0.1	0.49	-0.37	-0.13	-0.19	-0.19	-0.35	0.64
Water Temp			-	0.52	0.34	0.33	-0.09	0.62	-0.09	0	0.65	-0.46	0.02	-0.12	-0.12	-0.44	0.68
Air Temp				-	0.37	0.24	-0.31	0.32	-0.03	-0.1	0.25	-0.32	-0.17	-0.31	-0.31	-0.45	0.23
Tur		***			-	0.56	0.05	0.35	0.1	-0.03	0.29	-0.22	-0.19	-0.31	-0.31	-0.45	0.43
Dis						-	0.41	0.15	-0.04	-0.33	0	-0.05	-0.56	-0.31	-0.31	-0.48	0.12
Hab							-	-0.31	-0.33	-0.55	-0.39	0.1	-0.41	-0.37	-0.37	-0.27	-0.26
Al								-	-0.22	0.14	0.51	-0.3	0.06	0.12	0.12	-0.01	0.95
As									-	0.27	0.31	0.56	0.07	0.43	0.43	0.01	-0.25
Cd										-	0.47	0.1	0.46	0.29	0.29	0.38	0.23
Hg			*								-	-0.25	0.25	0.44	0.44	0.06	0.64
Sb												-	-0.01	0.26	0.26	0.28	-0.4
Zn													-	0.25	0.25	0.52	0.22
Co														-	1	0.62	0.12
Cr														***	-	0.62	0.12
Cu																-	0.02
Fe		*	*					***									-

**Supplementary Table S2.** Collinearity between predictors: correlations (Spearman's rho) are shown above the diagonal, and p-values are shown below the diagonal. The level of significance has been adjusted according to the high number of pairwise comparisons. \*\*\* $p < 0.0001$ , \*\* $p < 0.001$ , \* $p < 0.01$ . Bold: Predictors that showed high collinearity (Spearman's rho > 0.80) and were consequently excluded from further analyses. Abbreviations are explained in Supplementary Table S3.

<b>Factor</b>	<b>Unit</b>	<b>Factor</b>	<b>Unit</b>
Ammonia (NH <sub>3</sub> )	mg L <sup>-1</sup>	Salinity (Sal)	PSU
Nitrites (NO <sub>2</sub> )	mg L <sup>-1</sup>	Total suspended solids (TSS)	mg L <sup>-1</sup>
Nitrates (NO <sub>3</sub> )	mg L <sup>-1</sup>	Sulfates (SO <sub>4</sub> )	mg L <sup>-1</sup>
Total nitrogen (TN)	mg L <sup>-1</sup>	Color (Col)	Pt-Co
Orthophosphates (O-PO <sub>4</sub> )	mg L <sup>-1</sup>	Fecal coliforms (Fec Col)	MPN/100 ml
Total phosphorous (TP)	mg L <sup>-1</sup>	Total coliforms (Tot Col)	MPN/100 ml
Biochemical oxygen demand (BOD <sub>5</sub> )	mg L <sup>-1</sup>	Discharge (Dis)	m <sup>3</sup> s <sup>-1</sup>
Dissolved oxygen (DO)	mg L <sup>-1</sup>	Habitat quality (Hab)	-
pH	-	Aluminum (Al)	mg L <sup>-1</sup>
Turbidity (Tur)	NTU	Antimony (Sb)	mg L <sup>-1</sup>
Water Temperature (Water Temp)	°C	Arsenic (As)	mg L <sup>-1</sup>
Air Temperature (Air Temp)	°C	Cadmium (Cd)	mg L <sup>-1</sup>
Acid neutralizer Alkalinity (Alk)	CaCO <sub>3</sub>	Chromium (Cr)	mg L <sup>-1</sup>
Total hardness (Hard)	CaCO <sub>3</sub>	Copper (Cu)	mg L <sup>-1</sup>
Conductivity (Cond)	mS cm <sup>-1</sup>	Mercury (Hg)	mg L <sup>-1</sup>
Chlorides (Cl)	mg L <sup>-1</sup>	Zinc (Zn)	mg L <sup>-1</sup>

**Supplementary Table S3:** Environmental factors analyzed and corresponding units.