

Supplementary Material: Evidence of taxonomic and functional recovery of macroinvertebrate communities following river restoration of a low land groundwater river.

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Seasonal assessments

Here, we present graphical outputs (boxplot) highlighting seasonal differences in select α -diversity metrics (taxonomic richness and functional evenness), as well as specific taxa and traits associated with each season derived via a group-equalized “Indicator Value” (IndVal) analysis. This was performed using the taxonomic and functional trait compositions and was conducted via the “multipatt” function in the ‘indicspecies’ package [S1] and performed across 999 permutations to determine its significance (see the main text for further information on these statistical approaches.”

Reference

S1 De Caceres, M.; Jansen, F.; Dell, N.; *Relationship Between Species and Groups of Sites*. Version 1.7.9. 2020. Available online: <https://cran.project.org/web/packages/indicspecies/indicspecies.pdf> (accessed on 11 June 2021).

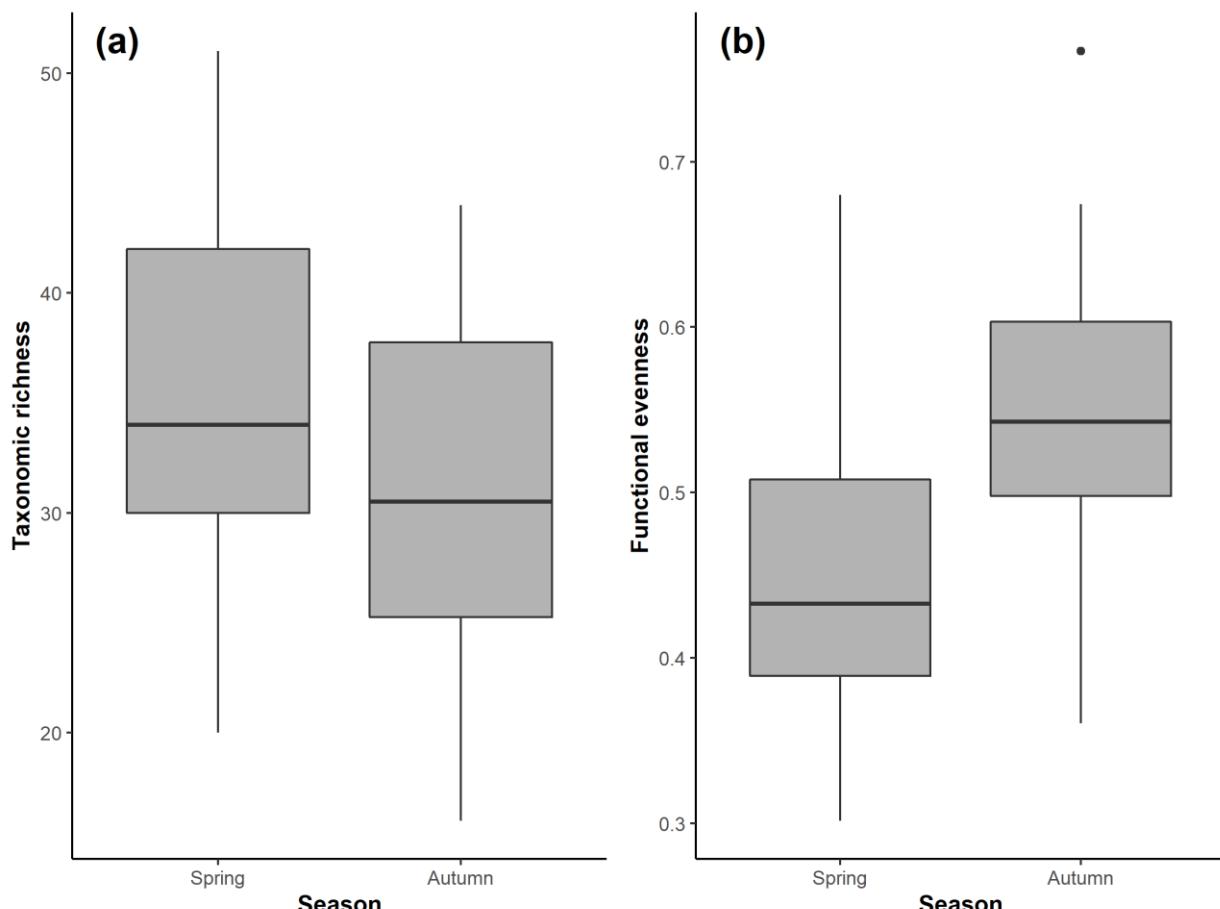


Figure S1 – Boxplots indicating differences in a) taxonomic richness and b) functional evenness between seasons. The boxes indicate the 25th, 50th and 75th percentiles, while whiskers indicate the data range except for extreme outliers which are indicated by points.

Table S2 – Indicator species analysis quantifying the association of individual taxa and functional traits with sampling seasons.

Season	Taxa	Indicator value	p-value	Grouping feature	Trait	Indicator value	p-value	
Spring	<i>Serratella ignita</i>	0.96	0.001***	Reproduction strategy	Isolated, free eggs	0.79	0.001***	
	<i>Atripsodes albifrons</i>	0.93	0.001***	Food consumed	Microorganisms	0.78	0.001***	
	<i>Caenis rivulorum</i>	0.90	0.001***	Reproduction strategy	Isolated, cemented eggs	0.77	0.002**	
	<i>Lepidostoma hirtum</i>	0.88	0.001***	Feeding group	Deposit feeder	0.75	0.002**	
	<i>Hydroptila</i>	0.88	0.001***	Food consumed	Living macrophytes	0.75	0.001***	
	<i>Limnephilus lunatus</i>	0.86	0.001***	Aquatic stages	Nymph	0.75	0.012*	
	<i>Baetis scambus</i>	0.80	0.001***	Dispersal strategy	Aerial active	0.74	0.002**	
	<i>Gammarus</i> sp.	0.78	0.037*	Resistance form	Eggs/ statoblasts	0.73	0.007**	
	<i>Baetis rhodani/ atlanticus</i>	0.77	0.007**	Body size	>0.5-1cm	0.73	0.001***	
	<i>Leuctra fusca</i>	0.72	0.003**	Life-cycle duration	≤1 year	0.73	0.001***	
	<i>Heptagenia sulphurea</i>	0.72	0.018*	Dispersal strategy	Aerial passive	0.73	0.025*	
	<i>Drusus annulatus</i>	0.70	0.022*	Locomotion and substrate relation	Crawler	0.73	0.001***	
	<i>Polycentropus flavomaculatus</i>	0.66	0.015*	Aquatic stages	Larvae	0.72	0.001***	
	<i>Halesus digitatus</i>	0.64	0.001***	Resistance form	None	0.72	0.025*	
	<i>Simulium (Wilhelmsia)</i>	0.59	0.019*	Body size	>8cm	0.53	0.01**	
	<i>Pacifastacus leniusculus</i>	0.54	0.001***					
	<i>Halesus radiatus</i>	0.54	0.004**					
	<i>Hemerodromia</i>	0.49	0.027*					
	<i>Melampophylax mucoreus</i>	0.49	0.007**					
	<i>Simulium vernum</i>	0.42	0.019*					
	<i>Alainites muticus</i>	0.37	0.04*					
	<i>Nigrobaetis niger</i>	0.37	0.04*					
	<i>Simulium equinum/ lineatum/ pseudequinum</i>	0.37	0.047*					
Autumn	Chironomidae	0.85	0.001***	Locomotion and substrate relation	Surface swimmer	0.78	0.015*	
	<i>Sialis lutaria</i>	0.57	0.019*	Respiration method	Hydrostatic vesicle	0.78	0.007**	
	<i>Oxyethira</i> sp.	0.55	0.025*	Aquatic Stages	Adult	0.77	0.001***	
	Ostracoda	0.55	0.045*	Reproduction strategy	Ovoviparity	0.76	0.004**	
	Chydoridae	0.51	0.007**	Food consumed	Living invertebrates	0.76	0.008**	
	Corixidae	0.49	0.006**	Resistance form	Diapause / dormancy	0.76	0.001***	
	<i>Sigara dorsalis</i>	0.43	0.045*	Life-cycle duration	>1 year	0.75	0.001***	
	<i>Haliplus</i> sp.	0.42	0.017*	Respiration method	Spiracle	0.75	0.009**	
	<i>Dixa nebulosa</i>	0.42	0.032*	Body size	>0.25 - 0.5cm	0.73	0.016*	
				Dispersal strategy	Aquatic passive	0.73	0.001***	
				Resistance form	Cocoons	0.65	0.041*	