

**Complex effects of acidification, habitat properties and fish stock on littoral
macroinvertebrate assemblages in montane standing waters**

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Tab. S1. Spearman's correlations of measured variables. Three types of variables (chemical, littoral and fish stock) are separated by lines. Significant correlations are in **bold**.

	pH	O ₂ saturation	DOC	P _t	NO ₃ -N	Cond.	Al _i	Water temperature	Sedges	Mosses	Vegetation belt	Organic substrate	Littoral depth
O ₂ saturation	0.505												
DOC	-0.164	-0.318											
P _t	0.025	-0.099	0.757***										
NO ₃ -N	0.068	0.021	-0.369	-0.500									
Conductivity	0.515	0.362	0.026	0.366	-0.096								
Al _i	-0.705***	-0.205	-0.034	-0.308	0.171	-0.636**							
Water temperature	0.043	0.148	0.148	0.252	-0.181	0.253	-0.267						
Sedges	0.143	-0.406	0.601**	0.517	-0.159	0.047	-0.349	-0.002					
Mosses	-0.248	-0.492	0.659***	0.600**	-0.504	-0.246	0.093	0.027	0.533**				
Vegetation belt	-0.045	-0.324	0.604**	0.422	-0.132	-0.279	0.130	-0.051	0.680***	0.576**			
Organic substrate	0.064	-0.478	0.641***	0.544**	-0.290	-0.046	-0.239	-0.123	0.726***	0.623**	0.610**		
Water depth	-0.024	-0.342	0.295	0.263	-0.121	-0.079	-0.051	-0.485**	0.582**	0.430*	0.377	0.589**	
Fish stock	0.767***	0.340	0.133	0.201	0.066	0.466	-0.674***	0.366	0.289	-0.099	0.035	0.228	-0.056

***p<0.001; **p<0.01; *p<0.05

Tab. S2. List of taxa recorded at 23 montane standing water bodies. For site code explanations see Tab. 1.

	Water level manipulation:		Without water level manipulation											Manipulated water level													
	Type:	Site code:	Lakes					Ponds						Reservoirs													
			CernJ	CertJ	GrosA	KleiA	Laka	PlesJ	PrasJ	Rachel	JeJeJ	PoleN	Tokan	ZdarJ	CernR	Liech	MrtvR	StarR	VolarR	BlatR	Bedr	Flaje	JoseD	Prise	Sous		
Ephemeroptera																											
<i>Ameletus inopinatus</i> Eaton, 1887			X		X									X												X	
<i>Arthroplea congener</i> Bengtsson, 1908											X	X	X	X													
<i>Baetis vernus</i> Curtis, 1834							X													X							
<i>Caenis horaria</i> (Linnaeus, 1758)															X	X						X		X	X		
<i>Cloeon dipterum</i> (Linnaeus, 1761)					X	X	X	X		X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	
<i>Leptophlebia marginata</i> (Linnaeus, 1767)							X																				
<i>Leptophlebia vespertina</i> (Linnaeus, 1758)			X	X	X	X		X	X	X	X		X		X		X										
<i>Siphonurus lacustris</i> (Eaton, 1870)							X			X	X	X	X							X	X	X	X			X	
Odonata																											
<i>Aeshna cyanea</i> (Müller, 1764)			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X			X			X	
<i>Aeshna juncea</i> (Linnaeus, 1758)					X	X	X	X		X	X	X	X	X	X	X	X	X	X		X						
<i>Coenagrion hastulatum</i> (Charpentier, 1825)					X	X	X	X		X	X	X	X	X	X	X	X	X	X		X						
<i>Coenagrion puella</i> (Linnaeus, 1758)					X		X			X	X	X		X													
<i>Cordulia aenea</i> (Linnaeus, 1758)					X	X	X			X			X		X												
<i>Enallagma cyathigerum</i> (Charpentier, 1840)					X	X				X		X		X			X	X		X	X	X	X	X	X	X	
<i>Lestes sponsa</i> (Hansemann, 1823)										X		X	X	X			X	X				X				X	
<i>Lestes virens</i> (Charpentier, 1825)																X	X		X								
<i>Leucorrhinia dubia</i> (Van der Linden, 1825)					X	X				X					X	X		X									
<i>Libellula quadrimaculata</i> Linnaeus, 1758					X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X				X	
<i>Pyrrhosoma nymphula</i> (Sulzer, 1776)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X				X	
<i>Somatochlora metallica</i> (Van der Linden, 1825)			X	X	X	X		X	X		X	X		X	X	X	X	X		X	X	X				X	
<i>Sympetrum danae</i> (Sulzer, 1776)					X										X		X	X		X	X					X	
Plecoptera																											
<i>Amphinemura sulcicollis</i> (Stephens, 1836)											X									X							
<i>Leuctra digitata</i> Kempny, 1899																				X		X					
<i>Leuctra inermis</i> Gr.										X																	
<i>Leuctra nigra</i> (Olivier, 1811)			X					X												X							
<i>Leuctra pseudocingulata</i> Mendl, 1968			X																								
<i>Nemoura avicularis</i> Morton, 1894			X																								
<i>Nemoura cinerea</i> (Retzius, 1783)			X	X		X	X	X	X	X	X	X	X							X	X						
<i>Nemurella pictetii</i> Klapálek, 1900			X			X	X	X	X	X	X	X								X			X				
<i>Protonemura auberti</i> Illies, 1954			X																								

	Water level manipulation:		Without water level manipulation														Manipulated water level						
	Type:		Lakes							Ponds							Reservoirs						
Site code:	CernJ	CertJ	GrosA	Kleia	Laka	PlesJ	PrasJ	Rachel	JeJeJ	PoleN	Tokan	ZdarJ	CernR	Liech	MrtvR	StarR	VolarR	BlatR	Bedr	Flaje	JoseD	Prise	Sous
Heteroptera																							
<i>Aquarius paludum</i> (Fabricius, 1794)	X							X	X		X	X	X	X					X			X	
<i>Callicorixa praeusta</i> (Fieber, 1848)					X									X	X		X					X	
<i>Corixa dentipes</i> Thomson, 1869															X								
<i>Corixinae</i> gen. sp. juv.	X	X		X	X	X	X	X		X		X	X	X	X	X	X	X	X		X		X
<i>Cymatia bondsdorffii</i> (C.R. Sahlberg, 1819)							X	X				X		X	X	X							
<i>Cymatia rogenhoferi</i> (Fieber, 1864)		X																					
<i>Gerris gibbifer</i> Schummel, 1832							X			X		X		X									
<i>Gerris lacustris</i> (Linnaeus, 1758)	X			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X
<i>Gerris odontogaster</i> (Zetterstedt, 1828)			X		X	X		X		X		X	X	X		X	X					X	X
<i>Gerris thoracicus</i> Schummel, 1832															X								
<i>Glaenocoris propinqua</i> (Fieber, 1860)		X				X	X	X									X						
<i>Hebrus pusillus</i> (Fallen, 1807)							X		X		X												
<i>Hebrus ruficeps</i> Thomson, 1871			X	X	X				X	X		X	X		X	X	X						
<i>Hesperocorixa linnaei</i> (Fieber, 1848)															X		X						
<i>Hesperocorixa sahlbergi</i> (Fieber, 1848)					X					X	X	X		X	X		X						
<i>Hydrometra gracilentata</i> Horváth, 1899										X	X												
<i>Hydrometra stagnorum</i> (Linnaeus, 1758)				X						X						X				X		X	
<i>Limnopus rufoscutellatus</i> (Latreille, 1807)						X			X	X													
<i>Mesovelgia furcata</i> Mulsant & Rey, 1852						X						X								X			X
<i>Microvelia reticulata</i> (Burmeister, 1835)				X	X	X	X	X	X	X	X	X	X	X		X	X			X		X	
<i>Nepa cinerea</i> Linnaeus, 1758							X						X		X	X							
<i>Notonecta glauca</i> Linnaeus, 1758		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X		X	X
<i>Notonecta lutea</i> Müller, 1776													X				X						
<i>Notonecta obliqua</i> Thunberg, 1787											X												
<i>Notonecta reuteri</i> Hungerford, 1928					X																		
<i>Notonecta viridis</i> Delcourt, 1909											X				X								
<i>Plea minutissima</i> Leach, 1817	X		X	X		X		X		X					X					X		X	
<i>Ranatra linearis</i> (Linnaeus, 1758)															X								
<i>Sigara distincta</i> (Fieber, 1848)			X	X	X	X	X	X				X	X	X	X	X		X	X	X	X		
<i>Sigara falleni</i> (Fieber, 1848)						X									X						X		X
<i>Sigara fossarum</i> (Leach, 1817)	X	X		X	X		X	X	X		X					X							
<i>Sigara lateralis</i> (Leach, 1817)															X								
<i>Sigara nigrolineata</i> (Fieber, 1848)	X	X	X			X			X														
<i>Sigara scotti</i> (Douglas & Scott, 1868)														X									

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<i>Sigara semistriata</i> (Fieber, 1848)			X	X	X		X	X		X				X	X		X							
<i>Sigara striata</i> (Linnaeus, 1758)							X		X			X												
<i>Velia caprai</i> Tamanini, 1947									X															
Megaloptera																								
<i>Sialis fuliginosa</i> Pictet, 1836	X	X			X																			
<i>Sialis lutaria</i> (Linnaeus, 1758)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X			X
Coleoptera																								
<i>Acilius sulcatus</i> (Linnaeus, 1758)														X	X		X							
<i>Agabus affinis</i> (Paykull, 1798)								X	X	X		X		X	X		X							
<i>Agabus bipustulatus</i> (Linnaeus, 1767)					X					X					X						X			
<i>Agabus congener</i> (Thunberg, 1794)										X			X											
<i>Agabus guttatus</i> (Paykull, 1794)		X						X																
<i>Agabus sturmii</i> (Gyllenhal, 1808)			X		X	X	X	X	X	X	X	X	X	X	X		X	X			X	X		
<i>Agabus undulatus</i> (Schränk, 1776)								X																
<i>Agabus unguicularis</i> Thomson, 1867										X														
<i>Anacaena globulus</i> (Paykull, 1798)							X		X	X	X		X			X								
<i>Anacaena lutescens</i> (Stephens, 1829)			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X
<i>Coelostoma orbiculare</i> (Fabricius, 1775)			X	X	X		X	X	X		X	X				X	X							
<i>Crenitis punctatostrata</i> (Letzner, 1840)				X					X	X			X		X	X		X	X		X			X
<i>Cyphon</i> sp.			X	X	X	X		X	X		X	X	X	X	X	X	X							
<i>Deronectes latus</i> (Stephens, 1829)	X	X					X																	
<i>Dytiscus marginalis</i> Linnaeus, 1759			X		X		X		X	X	X	X	X	X	X	X	X	X					X	X
<i>Elmis aenea</i> (Müller, 1806)																								X
<i>Elmis rioloides</i> Kuwert, 1890																								X
<i>Enochrus affinis</i> (Thunberg, 1794)			X	X								X												
<i>Enochrus coarctatus</i> (Gredler, 1863)														X										
<i>Enochrus fuscipennis</i> (Thomson, 1884)																								X
<i>Enochrus ochropterus</i> (Marsham, 1802)			X	X	X	X			X	X	X	X	X	X	X	X	X							
<i>Enochrus testaceus</i> (Fabricius, 1801)																	X							
<i>Graptodytes pictus</i> (Fabricius, 1787)					X		X		X	X	X	X	X			X	X				X			X
<i>Gyrinus marinus</i> Gyllenhal, 1808									X							X								
<i>Gyrinus substriatus</i> Stephens, 1828	X	X			X				X		X													
<i>Haliplus flavicollis</i> Sturm, 1834																X						X	X	
<i>Haliplus heydeni</i> Wehncke, 1875									X	X	X	X					X							
<i>Haliplus lineatocollis</i> (Marsham, 1802)					X						X													

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<i>Haliphys sibiricus</i> Motschulsky, 1860							X			X	X	X	X		X								X		
<i>Helochares obscurus</i> (Müller, 1776)						X		X		X	X		X	X	X	X	X	X	X	X					X
<i>Helophorus aquaticus</i> (Linnaeus, 1758)										X					X	X				X					
<i>Helophorus brevipalpis</i> Bedel, 1881																							X		
<i>Helophorus flavipes</i> Fabricius, 1792					X	X		X	X		X	X	X	X								X			
<i>Helophorus granularis</i> (Linnaeus, 1761)										X						X			X						
<i>Helophorus cf. griseus</i> Herbst, 1793														X											
<i>Helophorus nanus</i> Sturm, 1836																						X			
<i>Hydaticus seminiger</i> (De Geer, 1774)										X															
<i>Hydraena britteni</i> Joy, 1907										X		X					X								
<i>Hydraena melas</i> Dalla Torre, 1877												X										X			
<i>Hydrobius fuscipes</i> (Linnaeus, 1758)					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
<i>Hydroglyphus geminus</i> (Fabricius, 1792)					X	X	X		X		X	X	X					X						X	
<i>Hydroporus erythrocephalus</i> (Linnaeus, 1758)							X		X	X						X	X	X							
<i>Hydroporus ferrugineus</i> Stephens, 1828					X											X									
<i>Hydroporus gyllenhalii</i> Schiödte, 1841														X											
<i>Hydroporus incognitus</i> Sharp, 1869					X	X	X	X	X	X	X	X	X	X				X	X			X			
<i>Hydroporus melanarius</i> Sturm, 1835														X		X									
<i>Hydroporus memnonius</i> Nicolai, 1822					X		X	X	X		X					X									
<i>Hydroporus nigrata</i> (Fabricius, 1792)										X	X														
<i>Hydroporus obscurus</i> Sturm, 1835					X	X									X	X									
<i>Hydroporus palustris</i> (Linnaeus, 1761)		X	X	X	X	X	X	X	X	X	X	X	X					X				X			X
<i>Hydroporus planus</i> (Fabricius, 1781)														X											
<i>Hydroporus striola</i> (Gyllenhal, 1826)																						X			
<i>Hydroporus tristis</i> (Paykull, 1798)					X			X	X	X	X	X	X	X	X	X	X	X	X						X
<i>Hydroporus umbrosus</i> (Gyllenhal, 1808)						X			X	X		X	X	X	X	X	X	X							
<i>Hydrovatus cuspidatus</i> (Kunze, 1818)													X												
<i>Hygrotus decoratus</i> (Gyllenhal, 1810)									X																
<i>Hygrotus impressopunctatus</i> (Schaller, 1783)														X			X					X			
<i>Hygrotus inaequalis</i> (Fabricius, 1777)																						X			
<i>Hygrotus versicolor</i> (Schaller, 1783)																						X			
<i>Hyphydrus ovatus</i> (Linnaeus, 1761)					X					X							X	X				X			
<i>Ilybius aenescens</i> Thomson, 1870																		X							
<i>Ilybius crassus</i> Thomson, 1854					X	X	X	X	X	X	X	X		X		X									
<i>Ilybius fenestratus</i> (Fabricius, 1781)								X	X								X	X							

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<i>Ilybius fuliginosus</i> (Fabricius, 1792)									X	X	X		X					X	X		X		
<i>Laccobius bipunctatus</i> (Fabricius, 1775)										X	X												
<i>Laccobius minutus</i> (Fabricius, 1758)					X	X	X		X	X		X				X		X	X	X	X	X	X
<i>Laccobius obscurus</i> Rottenberg, 1874										X													
<i>Laccobius striatulus</i> (Fabricius, 1801)												X											
<i>Laccobius ytenensis</i> Sharp, 1910											X												
<i>Laccophilus minutus</i> (Fabricius, 1758)					X			X		X					X		X						
<i>Laccophilus poecilus</i> Klug, 1834																		X					
<i>Limnebius truncatellus</i> (Thunberg, 1794)					X		X			X													
<i>Limnius perrisi</i> (Dufour, 1843)		X			X	X		X	X	X	X	X				X		X					X
<i>Limnius volckmari</i> (Panzer, 1793)											X												
<i>Nebrioporus assimilis</i> (Paykull, 1798)								X															
<i>Nebrioporus canaliculatus</i> (Lacordaire, 1835)						X																	
<i>Nebrioporus elegans</i> (Panzer, 1794)																							X
<i>Noterus clavicornis</i> (De Geer, 1774)					X	X	X	X		X		X									X		
<i>Noterus crassicornis</i> (Müller, 1776)					X	X	X	X		X	X			X	X	X	X						X
<i>Oreodytes sanmarkii</i> (Sahlberg, 1834)								X										X					
<i>Platambus maculatus</i> (Linnaeus, 1758)											X							X			X		
<i>Rhantus exsoletus</i> (Forster, 1771)			X		X					X	X	X		X	X	X	X		X	X		X	X
<i>Rhantus suturalis</i> (Mac Leay, 1825)						X	X		X						X								
<i>Scirtes</i> sp.													X										
<i>Spercheus emarginatus</i> (Schaller, 1783)								X															
<i>Stictotarsus duodecimpustulatus</i> (Fabricius, 1792)				X								X									X		X
Trichoptera																							
<i>Agrypnia</i> cf. <i>obsoleta</i> (Hagen, 1864)																X	X						
<i>Agrypnia</i> cf. <i>varia</i> Fabricius, 1793	X		X	X	X	X	X	X		X				X							X		X
<i>Anabolia furcata</i> Brauer, 1857																		X					
<i>Anabolia nervosa</i> (Curtis, 1834)										X			X							X	X		
<i>Anomalopterygella chauviniana</i> (Stein, 1874)																		X					
<i>Athripsodes aterrimus</i> (Stephens, 1836)																X				X			
<i>Beraea pullata</i> (Curtis, 1834)											X												
<i>Beraeodes minutus</i> (Linnaeus, 1761)											X												
<i>Chaetopteryx villosa</i> (Fabricius, 1789)	X	X	X		X		X	X	X		X	X						X	X		X		
<i>Cyrnus flavidus</i> McLachlan, 1864	X		X	X		X							X			X			X				X
<i>Cyrnus insolutus</i> McLachlan, 1878													X										

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<i>Drusus annulatus</i> (Stephens, 1837)																							X
<i>Halesus digitatus</i> (Schrank, 1781) / <i>tesselatus</i> (Rambur, 1842)											X												
<i>Halesus radiatus</i> (Curtis, 1834)											X												
<i>Holocentropus dubius</i> (Rambur, 1842)			X	X	X		X	X	X	X				X	X	X	X						
<i>Holocentropus picicornis</i> (Stephens, 1836)					X	X				X	X					X							
<i>Limnephilus centralis</i> Curtis, 1834		X																			X		
<i>Limnephilus decipiens</i> (Kolenati, 1848)																				X			X
<i>Limnephilus cf. extricatus</i> McLachlan, 1865											X												
<i>Limnephilus ignavus</i> McLachlan, 1865																						X	
<i>Limnephilus lunatus</i> Curtis, 1834													X							X		X	
<i>Limnephilus nigriceps</i> (Zetterstedt, 1840)													X			X							
<i>Limnephilus rhombicus</i> (Linnaeus, 1758)	X	X			X	X	X		X	X	X					X				X			
<i>Limnephilus stigma</i> Curtis, 1834										X	X	X											
<i>Limnephilus subcentralis</i> (Brauer, 1857)										X		X											X
<i>Limnephilus vittatus</i> (Fabricius, 1798)																							X
<i>Molanna angustata</i> Curtis, 1834																					X		
<i>Molanna nigra</i> (Zetterstedt, 1840)	X	X					X																
<i>Molannodes tinctus</i> (Zetterstedt, 1840)					X	X					X												
<i>Mystacides azurea</i> (Linnaeus, 1761)	X	X	X																		X		
<i>Mystacides longicornis</i> (Linnaeus, 1758)																				X		X	
<i>Oecetis furva</i> (Rambur, 1842)																X							
<i>Oecetis lacustris</i> (Pictet, 1834)																X			X	X			
<i>Oecetis ochracea</i> (Curtis, 1825)																				X		X	
<i>Oligotricha striata</i> (Linnaeus, 1758)			X	X	X	X	X	X	X	X	X			X	X	X	X						
<i>Phryganea bipunctata</i> Retzius, 1783	X		X			X	X	X		X	X												
<i>Plectrocnemia conspersa</i> (Curtis, 1834)							X																
<i>Polycentropus flavomaculatus</i> (Pictet, 1834)						X																X	
<i>Potamophylax</i> sp.											X												
<i>Pseudopsilopteryx zimmeri</i> (McLachlan, 1876)																			X				
<i>Sericostoma personatum</i> Kirby & Spencer, 1826 / <i>schneideri</i> (Kolenati, 1848)												X											
<i>Triaenodes bicolor</i> (Curtis, 1834)																X				X			
Chironomidae																							
<i>Ablabesmyia longistyla</i> Fittkau, 1962														X						X	X	X	
<i>Ablabesmyia monilis</i> (Linnaeus, 1758)	X	X	X	X	X	X		X	X	X	X	X	X	X		X		X	X		X	X	X

Water level manipulation: Type:	Without water level manipulation																Manipulated water level						
	Lakes								Ponds								Reservoirs						
Site code:	CernJ	CertJ	GrosA	Kleia	Laka	PlesJ	PrasJ	Rachel	JeJeJ	PoleN	Tokan	ZdarJ	CernR	Liech	MrtvR	StarR	VolarR	BlatR	Bedr	Flaje	JoseD	Prise	Sous
<i>Ablabesmyia phatta</i> (Egger, 1863)																	X						
<i>Acricotopus lucens</i> (Zetterstedt, 1850)																			X				
<i>Apsectrotanytus trifascipennis</i> (Zetterstedt, 1838)											X								X				
<i>Chaetocladius piger</i> Gr.									X										X	X			X
<i>Chironomus cf. abberatus</i> Keyl, 1961						X																	
<i>Chironomus acutiventris</i> Wülker, Ryser & Scholl, 1983 / <i>obtusidens</i> Goetghebuer, 1921												X										X	
<i>Chironomus dorsalis</i> (Meigen, 1818)						X	X						X				X						
<i>Chironomus luridus</i> Gr.			X		X	X									X		X						X
<i>Chironomus</i> sp. juv.	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X				X
<i>Cladotanytarsus vanderwulpi</i> (Edwards, 1929)										X												X	
<i>Conchapelopia</i> sp.				X	X		X		X	X											X		
<i>Corynoneura scutellata</i> Gr.	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
<i>Cricotopus annulator</i> Gr.												X	X										
<i>Cricotopus cylindraceus</i> (Kieffer, 1908) / <i>albiforceps</i> (Kieffer, 1916)										X									X				
<i>Cricotopus intersectus</i> (Staeger, 1839) / <i>reversus</i> Hirvenoja, 1973																					X		
<i>Cricotopus sylvestris</i> Gr.			X						X		X	X	X			X		X	X	X		X	X
<i>Diamesa cinerella</i> Gr.							X												X				
<i>Dicotendipes</i> sp.		X			X	X	X				X	X					X	X	X	X	X	X	X
<i>Endochironomus</i> sp.	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X		X		
<i>Endochironomus tendens</i> (Fabricius, 1775)			X				X			X			X			X	X						
<i>Eukiefferiella claripennis</i> (Lundbeck, 1898)																			X				
<i>Glyptotendipes</i> sp. A	X	X						X	X		X	X	X	X	X	X	X		X		X		
<i>Glyptotendipes</i> sp. B	X	X						X	X		X		X						X				
<i>Heterotanytarsus apicalis</i> (Kieffer, 1921)					X																		
<i>Heterotrissocladius marcidus</i> (Walker, 1856)	X	X	X		X	X	X		X		X									X			X
<i>Krenopelopia</i> sp.												X											
<i>Larsia</i> sp.																							X
<i>Limnophyes</i> sp.				X	X	X	X		X	X	X	X	X		X	X	X		X				
<i>Macropelopia</i> sp.	X	X	X	X	X					X	X			X					X	X			
<i>Metriocnemus fuscipes</i> Gr.									X														
<i>Metriocnemus hygropetricus</i> Gr.									X				X			X		X			X		
<i>Micropsectra</i> spp.					X						X	X	X										
<i>Microtendipes pedellus</i> Gr.											X	X	X			X			X			X	

	Water level manipulation:		Without water level manipulation													Manipulated water level									
	Type:		Lakes						Ponds							Reservoirs									
	Site code:		CernJ	CertJ	GrosA	Kleia	Laka	PlesJ	PrasJ	Rachel	JeJeJ	PoleN	Tokan	ZdarJ	CernR	Liech	MrtvR	StarR	VolarR	BlatR	Bedr	Flaje	JoseD	Prise	Sous
<i>Monopelopia tenuicalcar</i> (Kieffer, 1918)			X		X			X		X	X			X	X	X		X							
<i>Nanocladius cf. balticus</i> (Palmen, 1959)																									X
<i>Nanocladius cf. dichromus</i> (Kieffer, 1906)														X											
<i>Natarsia</i> sp.					X	X	X	X	X	X		X	X			X	X	X	X			X			
<i>Neozavrelia</i> sp.																					X				
<i>Orthocladus rubicundus</i> Gr.																			X						
<i>Pagastiella orophila</i> (Edwards, 1929)									X	X															X
<i>Paracladopelma</i> sp.														X							X		X		
<i>Parachironomus varus</i> (Goetghebuer, 1921)										X	X	X	X	X				X							
<i>Parakiefferiella</i> sp.								X	X															X	
<i>Paratanytarsus</i> sp.					X					X		X	X	X				X	X			X	X		
<i>Paratendipes nudisquama</i> (Edwards, 1929)														X											
<i>Phaenopsectra</i> sp.			X	X	X	X		X	X	X					X	X		X	X	X					
<i>Polypedilum pedestre</i> (Meigen, 1830)			X	X	X						X	X	X	X				X					X		
<i>Polypedilum uncinatum</i> (Goetghebuer, 1921)			X		X	X			X	X	X	X	X	X			X	X	X		X	X	X		
<i>Procladius</i> sp.			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
<i>Prodiamesa olivacea</i> (Meigen, 1818)			X																	X					
<i>Psectrocladius (Allopectrocladius)</i> sp.							X			X	X		X		X	X			X						
<i>Psectrocladius (Mesopsectrocladius) barbatipes</i> Kieffer, 1923						X	X				X					X	X								X
<i>Psectrocladius (Monopsectrocladius) calcaratus</i> (Edwards, 1929)					X	X				X			X	X											
<i>Psectrocladius limbatellus</i> (Holmgren, 1869) / <i>sordidellus</i> (Zetterstedt, 1838)				X	X	X	X	X	X	X	X		X	X	X		X		X		X	X	X	X	X
<i>Psectrocladius psilopterus</i> Gr.			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<i>Psectrotanytarsus varius</i> (Fabricius, 1787)												X													
<i>Pseudorthocladus</i> sp.																X									
<i>Pseudosmittia</i> sp.																X									
<i>Smittia</i> sp.										X															
<i>Stempelinella brevis</i> (Edwards, 1929) / <i>flavidula</i> (Edwards, 1929)						X				X	X		X				X								
<i>Stempellina</i> sp.									X																
<i>Stenochironomus</i> sp.					X																				
<i>Synorthocladus semivirens</i> (Kieffer, 1909)																				X					
<i>Tanytarsus</i> spp.			X	X	X	X	X	X	X		X		X	X	X					X	X	X	X	X	X
<i>Thienemannimyia</i> sp.																									X
<i>Trissopelopia</i> sp.			X	X	X	X	X	X	X	X			X		X	X						X			X
<i>Zavrelimyia</i> sp.					X	X				X		X		X			X		X						X

Water level manipulation: Type:	Without water level manipulation													Manipulated water level										
	Lakes						Ponds							Reservoirs										
Site code:	CernJ	CertJ	GrosA	KleIA	Laka	PlesJ	PrasJ	Rachel	JeJeJ	PoleN	Token	ZdarJ	CernR	Liech	MrtvR	StarR	VolarR	BlatR	Bedr	Flaje	JoseD	Prise	Sous	
Diptera (exc. Chironomidae)																								
<i>Anopheles maculipennis</i> s. lato												X	X											
<i>Ceratopogoninae</i> g. sp.	X		X	X	X	X	X	X	X	X	X	X												
<i>Chaoborus flavicans</i> (Meigen, 1830)																	X							
<i>Chaoborus</i> cf. <i>obscuripes</i> (Van der Wulp, 1859)			X		X												X							
<i>Chrysops</i> sp.	X		X																					
<i>Culex pipiens</i> Linnaeus, 1758													X											
<i>Dicranota</i> sp.													X											
<i>Dixella</i> cf. <i>aestivalis</i> (Meigen, 1818)				X	X	X			X	X	X	X												
<i>Dixella</i> cf. <i>autumnalis</i> (Meigen, 1838)						X																		
<i>Eloeophila</i> cf. <i>maculata</i> (Meigen, 1804)									X															
<i>Helius</i> cf. <i>longirostris</i> (Meigen, 1818)				X							X	X												
<i>Helius</i> sp.											X													
<i>Hexatoma</i> sp.							X																	
<i>Hybomitra</i> cf. <i>arpadi</i> (Szilady, 1923)			X			X			X	X	X	X												
<i>Hybomitra lundbecki</i> Lyneborg, 1959 / <i>tropica</i> (Linnaeus, 1758)				X								X												
<i>Myolepta</i> sp.															X									
<i>Pedicia</i> sp.	X																							
<i>Phalacrocerca replicata</i> (Linnaeus, 1758)									X	X														
<i>Simuliidae</i> g. sp.											X													
<i>Syrphidae</i> g. sp.							X	X	X						X		X							
<i>Tipula lateralis</i> Meigen, 1804									X															
<i>Tipula obscuriventris</i> Strobl, 1900				X																				
Non-insect fauna																								
<i>Galba truncatula</i> (O.F. Müller, 1774)																X				X		X		
<i>Gammarus fossarum</i> Koch, 1836											X													
<i>Helobdella stagnalis</i> (Linnaeus, 1758)			X		X																			
<i>Pisidium casertanum</i> (Poli, 1791)	X			X	X		X	X	X	X	X	X	X			X		X	X	X	X	X	X	X
<i>Polycelis nigra</i> Mueller, 1774				X												X	X				X			
<i>Radix peregra</i> (O.F. Müller, 1774)			X								X										X			

Tab. S3. Differences in environmental variables and macroinvertebrate species richness and abundances between sites with manipulated water levels and sites with stable water levels. Median, interquartile range (Q1–Q3) and Mann-Whitney test p-values are shown. Rows with significant difference between the two groups are in **bold**.

Variables	Manipulated (6 sites)	Stable (17 sites)	p-value (M.-W. test)
pH	6.6 (6.4–6.9)	5.5 (4.9–6.2)	0.014 *
O₂ saturation (%)	107.3 (105.8–110.6)	95.5 (86.5–100.5)	0.004 **
P _t (µg L ⁻¹)	13.4 (9.4–18.0)	18.5 (6.6–33.6)	0.575
NO ₃ -N (mg L ⁻¹)	0.2 (0.1–0.3)	0.2 (0.1–0.5)	0.562
DOC (mg L ⁻¹)	4.8 (3.8–5.4)	6.5 (4.9–11.9)	0.052
Conductivity (µS cm⁻¹)	50.8 (38.1–69.3)	20.5 (16.3–34.1)	0.006 **
Al_i (µg L⁻¹)	4.5 (0.5–9.5)	38 (24.7–68.0)	0.005 **
Water temperature	16.75 (16–17.9)	16 (15.5–16.5)	0.318
Sedges (%)	12 (5–73)	80 (60–95)	0.130
Mosses (%)	1 (0–8)	20 (5–50)	0.026 *
Vegetation belt (m)	0 (0–1.5)	5.0 (3.0–6.0)	0.004 **
Organic substrate (%)	60 (45–75)	90 (75–99)	0.057
Fish stock	2 (2–3)	1 (1–3)	0.240
Water depth	50 (46.3–53.8)	60 (50–65)	0.065
Species richness			
Ephemeroptera	3 (2–3)	2 (2–3)	0.461
Plecoptera	1 (0–1)	1 (0–2)	0.884
Odonata	4 (2–6)	8 (7–8)	0.012 *
Heteroptera	6 (4–7)	11 (9–12)	0.002 **
Coleoptera	11 (7–16)	21 (17–26)	0.017 *
Trichoptera	5 (5–6)	5 (4–8)	0.859
Diptera	17 (14–19)	21 (20–25)	0.017 *
Non-insect fauna	1 (1–2)	1 (1–2)	0.403
Total sp. richness	50 (39–58)	73 (64–88)	0.003 **
Species abundance			
Ephemeroptera	80 (23–136)	185 (88–404)	0.135
Plecoptera	0 (0–0.75)	0 (0–39)	0.395
Odonata	23 (8–55)	69 (47–212)	0.054
Heteroptera	8 (4–18)	61 (26–109)	0.001 **
Coleoptera	45 (15–68)	56 (31–125)	0.293
Trichoptera	12 (9–16)	72 (28–97)	0.004 **
Diptera	597 (286–890)	785 (656–1,148)	0.256
Non-insect fauna	16 (8–38)	2 (0–7)	0.005 **
Total abundance	959 (581–1,142)	1,711 (1,292–1,960)	0.003 **

***p<0.001; **p<0.01; *p<0.05.

Tab. S4. Results of simple linear regression analysis of macroinvertebrate species richness and abundance with environmental variables performed on the whole (23 sites) and reduced dataset (sites with stable water levels; 17 sites) separately. F-statistics, adjusted R² values, trends (positive or negative relationships) and p-values are provided. Significant relationships are in **bold**.

Species richness									
	Whole dataset				Reduced dataset				
	F-value	Adj. R ² (x100)	Trend	p	F-value	Adj. R ² (x100)	Trend	p	
pH	0	-4.7	+	0.951	5	19.9	+	0.041	*
O ₂	1.7	3.3	-	0.2	0.3	-4.3	+	0.568	
P _t	3.7	11	+	0.068	3.7	14.6	+	0.072	
NO ₃ -N	0	-4.7	+	0.96	0.2	-5.2	-	0.659	
DOC	18	43.6	+	<0.001	14.34	45.5	+	0.002	**
Conductivity	1.1	0.7	-	0.296	0.9	-0.9	+	0.371	
Al _i	0	-4.6	+	0.862	6.1	24.1	-	0.026	*
Water temperature	1.2	0.9	-	0.284	0	-6.5	-	0.894	
Sedges	19.9	46.2	+	<0.001	11.8	40.4	+	0.004	**
Mosses	9.4	27.7	+	0.006	2.7	9.5	+	0.123	
Vegetation belt	30.4	57.2	+	<0.001	10.7	37.7	+	0.005	**
Organic substrate	13.8	36.7	+	0.001	7	27.4	+	0.018	*
Fish stock	0.3	-3.4	+	0.61	3.2	12.2	+	0.093	
Water depth	7.8	23.6	+	0.011	1.6	3.8	+	0.22	
Abundance									
	Whole dataset				Reduced dataset				
	F-value	Adj. R ² (x100)	Trend	p	F-value	Adj. R ² (x100)	Trend	p	
pH	4.6	14.2	-	0.043	0.6	-2.6	-	0.454	*
O ₂	0.4	-2.8	-	0.534	2.6	9.3	+	0.125	
P _t	0	-4.6	+	0.839	0.2	-5.6	-	0.696	
NO ₃ -N	0.3	-3.5	+	0.613	0.2	-5.5	+	0.69	
DOC	0.6	-2	+	0.458	0.3	-4.5	-	0.587	
Conductivity	5	15.2	-	0.037	0.4	-4	-	0.547	*
Al _i	8.8	26.3	+	0.007	1.3	2	+	0.267	**
Water temperature	1.9	3.8	-	0.186	0.2	-5.6	-	0.702	
Sedges	0	-4.6	+	0.842	2	5.7	-	0.181	
Mosses	1.4	1.8	+	0.248	0.7	-2.2	-	0.431	
Vegetation belt	4.4	13.4	+	0.048	0.1	-5.7	+	0.718	*
Organic substrate	1.9	4.1	+	0.179	0	-6.5	-	0.867	
Fish stock	4.7	14.5	-	0.041	2.7	9.7	-	0.12	*
Water depth	3	8.5	+	0.095	0.6	-2.4	+	0.44	

***p<0.001; **p<0.01; *p<0.05.

Fig. S1. Variability in littoral zone properties studied: M – manipulated water level; R – reservoir, L – lake, P – pond; JIZ – Jizerské hory Mts., SUM – Šumava and Bavarian Forest, KRU – Krušné hory Mts.

