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Supplementary information files for Temporal effects of fine sediment deposition on benthic macroinvertebrate community structure, function and biodiversity likely reflects landscape setting

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Table S1. Macroinvertebrate functional traits examined within this study (taken from Tachet et al., 2010).

Grouping feature	Trait	Grouping feature	Trait
<i>Maximum potential size</i>	≤0.25cm	<i>Respiration method</i>	Gill
	>0.25- 0.5cm		Plastron
	>0.5- 1cm		Spiracle
	>1- 2cm		Hydrostatic vesicle
	> 2- 4 cm		Tegument
	>4- 8cm		Microorganisms
<i>Life-cycle duration</i>	>8cm	<i>Food consumed</i>	Detritus <1mm
	≤1 year		Dead plant ≥1mm
	>1 year		Living microphytes
<i>Voltinism</i>	<1		Living macrophytes
	1		Dead animal ≥1mm
	>1		Living microinvertebrates
<i>Aquatic stages</i>	Egg		Living invertebrates
	Larva		Vertebrates
	Nymph		Absorber
	Adult		Deposit feeder
<i>Reproduction strategy</i>	Ovoviviparity	<i>Feeding group</i>	Shredder
	Isolated, free eggs		Scraper
	Isolated, cemented eggs		Filter-feeder
	Clutches, cemented		Piercer
	Clutches, free		Predator
	Clutches, in vegetation		Parasite
<i>Dispersal strategy</i>	Clutches, terrestrial		
	Asexual		
	Aquatic passive		
	Aquatic active		
	Aerial passive		
<i>Resistance form</i>	Aerial active		
	Eggs/statoblasts		
	Cocoons		
	Housings against desiccation		
	Diapause / dormancy		
<i>Locomotion and substrate relation</i>	None		
	Flier		
	Surface swimmer		
	Full water swimmer		
	Crawler		
	Burrower		
	Interstitial		
	Temporarily attached		
	Permanently attached		

Table S2. Summary of paired t-tests between the proportion of nestedness and turnover contributing to clogged and clean substrate comparisons for each time period for taxonomic and functional communities in alpine and lowland rivers. Significant ($p < 0.05$) results are in bold.

	Short		Medium		Long	
	t	p	T	p	t	p
Alpine taxonomic	9.46	<0.001	13.48	<0.001	9.54	<0.001
Lowland taxonomic	-0.84	0.404	4.43	<0.001	1.93	0.054
Alpine functional	16.71	<0.001	20.19	<0.001	21.34	<0.001
Lowland functional	10.61	<0.001	-15.82	<0.001	12.52	<0.001

Table S3. Summary of Kruskal Wallis test examining temporal change in the proportion of turnover contributing to clogged and clean substrate comparisons for taxonomic and functional communities in alpine and lowland rivers. Significant ($p < 0.05$) results are in bold.

	χ^2	p
Alpine taxonomic	3.64	0.162
Lowland taxonomic	11.39	0.004
Alpine functional	23.68	<0.001
Lowland functional	10.22	0.006

Table S4. Summary of pairwise post-hoc tests examining temporal change in the proportion of turnover contributing to clogged and clean substrate comparisons for taxonomic and functional communities in alpine and lowland rivers. Significant ($p < 0.05$) results are in bold. Note the alpine taxonomic model was not significant (Table S3) and is therefore not presented here.

	Lowland taxonomic		Alpine functional		Lowland functional	
	Z	p	Z	p	Z	p
Short vs medium	-3.33	0.003	1.53	<0.001	3.18	0.004
Short vs long	-2.17	0.045	-3.21	<0.001	1.90	0.087
Medium vs long	1.19	0.234	4.77	<0.001	-1.32	0.188

Table S5. Functional traits that demonstrated >5% differences in community contribution to grouping feature in control and clogged comparisons based on presence and absence data. Traits that were positively associated with sediment are shown in bold italics.

Time period	Alpine	Lowland
Short	Body size: >1-2cm (-10%)	Body size: >1-2cm (-6%)
	<i>Body size: > 0.25-0.5 cm (+11%)</i>	<i>Body size: >2-4 cm (+6%)</i>
	<i>Reproduction: isolated eggs, cemented (+11%)</i>	Voltinism: >1 (-6%)
	Reproduction: clutches, cemented or fixed (-6%)	Dispersal: aquatic passive (-8%)
	Respiration: gill (-8%)	Respiration: gill (-9%)
Medium	<i>Food consumed: living macroinvertebrates (+8%)</i>	<i>Respiration: spiracle (+7%)</i>
	<i>Feeding group: shredder (7%)</i>	
	Body size: >1-2cm (-8%)	Resistance mode: diapause (+7%)
	Reproduction: clutches, cemented or fixed (-8%)	
	Respiration: gill (-9%)	
Long	<i>Respiration: spiracle (+9%)</i>	
	<i>Locomotion: burrower (+7%)</i>	
	Locomotion: crawler (-7%)	
	Body size: >1-2cm (-15%)	Locomotion: crawler (-7%)
	<i>Body size: > 0.25-0.5 cm (+5%)</i>	Voltinism: >1 (-6%)
Long	<i>Body size: > 0.50-1 cm (+13%)</i>	<i>Voltinism: 1 (+5%)</i>
	<i>Reproduction: isolated eggs, cemented (+14%)</i>	<i>Reproduction: isolated eggs, cemented (+6%)</i>
	Reproduction: clutches, cemented or fixed (-12%)	Reproduction: Ovoviviparity (-9%)
	Respiration: gill (-11%)	Feeding group: filter feeder (-6%)
	<i>Respiration: spiracle (+8%)</i>	
Long	<i>Locomotion: burrower (+7%)</i>	