

# **Effects of a flow event and nutrients on stream periphyton and macroinvertebrates: an experimental study using flumes**

Knut Andreas Eikland Bækkelie, Susanne C. Schneider, Camilla H. C. Hagman, Zlatko Petrin

APPENDIX



**Tab. S2.** List of soft-bodied benthic algae sampled in the stream Sagelva, and on the nutrient diffusing substrates in the flumes in July and September 2015. Pseudotaxa for some genera of filamentous green algae were defined by filament width (*Mougeotia*, *Spirogyra*, *Oedogonium*, *Zygnema*), and the number of chloroplasts (*Spirogyra*). Treatments in the flumes are coded as C = control, F = flood, NP = nutrients, NPF = flow and nutrients. Note that diatoms are not included in this list, because restricted funding prevented an analysis of diatoms in the stream.

month	July 2015									September 2015								
	1	1	1	1	2	2	2	2	stream	1	1	1	1	2	2	2	2	stream
sampling	C	F	NP	NPF	C	F	NP	NPF	stream	C	F	NP	NPF	C	F	NP	NPF	stream
<b>Cyanobacteria</b>																		
Aphanocapsa sp.	1	1		1	1			1						1	1			
Aphanothece sp.				1														
Chamaesiphon rostafinskii									1									1
Chamaesiphon spp.									1									1
Dichothrix sp.									1	1								1
Leptolyngbya sp.				1				1		1	1	1			1	1		
Chroococcus sp.					1			1			1			1	1	1		
Jaaginema sp.		1	1	1		1	1	1						1	1	1	1	
Merismopedia sp.		1	1										1		1	1		1
Nostoc parmeloides																		1
Plectonema sp.			1															
Pseudanabaena sp.	1			1	1	1	1	1		1	1	1	1	1	1	1	1	1
Phormidium sp.							1		1	1	1		1		1	1		1
<b>Green algae</b>																		
Bulbochaete sp.	1	1		1		1						1	1					1
Gloeotila sp.			1															
Chaetophora sp.																1		
Closterium sp.	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
Cosmarium sp.	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1
Coleochaete orbicularis									1									1
Euastrum sp.	1		1									1		1				
Geminella sp.					1			1		1	1			1	1	1	1	
Gloeotila sp.			1															
Klebsormidium sp.																	1	
Microspora sp.	1	1		1	1	1							1					
Microspora amoena									1									1
Mougeotia a (6-12µ)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Mougeotia b (15-21µ)		1	1	1	1		1	1		1	1	1	1	1		1	1	
Mougeotia d (25-30µ)	1	1	1	1	1				1	1	1	1	1			1	1	1
Mougeotia e (30-40µ)		1			1			1	1					1	1	1		1
Mougeotia f (41-50 µ)		1										1						
Mougeoutiopsis calospora				1		1	1	1	1	1	1	1	1	1	1	1	1	1
Oedogonium a1 (3-4µ)										1								
Oedogonium a (5-11µ)			1	1	1	1	1	1		1	1	1	1	1	1	1	1	
Oedogonium b (13-18µ)	1			1	1			1		1			1				1	1
Oedogonium b/c (19-21µ)			1					1				1					1	
Oedogonium c (23-28µ)									1				1					1
Oedogonium d (29-32µ)									1									1
Oedogonium f (48-60µ)																		1
Oocystis sp.																		
Spirogyra a (20-42µ,1K,L)				1				1	1	1	1	1	1	1	1	1	1	1
Spirogyra sp6 70-75µ,2K,L)														1				
Staurastrum spp.									1									
Tellingia sp.							1							1		1		
unidentified coccal green				1	1		1	1	1		1		1	1				1
Microspora sp.						1	1	1						1				1
Ulothrix sp.	1			1	1	1	1	1	1	1	1	1	1		1	1	1	1
Zygnema b (22-25µ)										1			1	1				1
<b>Xanthophyceae</b>																		
Tribonema sp.												1					1	
<b>Red algae</b>																		
Audouinella chalybaea									1									1
Batrachospermum spp.																		1
<b>number of taxa</b>	<b>11</b>	<b>16</b>	<b>16</b>	<b>14</b>	<b>13</b>	<b>13</b>	<b>15</b>	<b>16</b>	<b>19</b>	<b>15</b>	<b>18</b>	<b>19</b>	<b>19</b>	<b>16</b>	<b>15</b>	<b>23</b>	<b>14</b>	<b>23</b>

**Tab. S3.** Summary (p-values) of ANOVAS comparing leaf decay and invertebrate parameters in mesh bag samples, as well as periphyton parameters, on nutrient diffusing substrates between nutrient and control treatments (day 0 of the experiment); due to malfunctioning of the BenthosTorch, *Chl a* data are from one experimental round only; no significant effects ( $p < 0.05$ ) were observed, but p-values  $< 0.1$  are marked in italics.

<b>dependent variable</b>	<b>nutrients</b>	<b>ranking</b>
<i>leaf litter decomposition rate</i>		
coarse mesh bags (k)	0.104	
fine mesh bags (k)	0.939	
coarse-fine (k)	<i>0.095</i>	<i>control &lt; nutrients</i>
<i>invertebrates in coarse mesh bags</i>		
total invertebrate density	<i>0.065</i>	<i>control &lt; nutrients</i>
taxon richness	0.469	
EPT richness	0.707	
Shannon-Wiener diversity	0.572	
% rheophile	0.903	
Proportion of grazers/scrapers	0.234	
Proportion of shredders	0.851	
Proportion of gathering collectors	0.880	
Proportion of predators	0.299	
<i>periphyton</i>		
total Chl a	0.873	
cyanobacteria (Chl a)	0.490	
diatoms (Chl a)	0.981	
green algae (Chl a)	0.597	
biovolume cyanobacteria	0.626	
biovolume green algae	0.871	
biovolume diatoms	0.761	
total biovolume	0.995	
taxon richness	0.188	