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Supplementary materials

Epiphyton in agricultural streams: structural control and comparison to epilithon

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Table S1. Description of nine environmental variables used in our study.

Environmental variable code	Unit	Description
Other environmental variables (Other env.)		
Light	Photons m^{-2} day^{-1}	Cumulative light in 21 days
Temperature	^{o}C	Mean temperature in 21 days
DOC	mg L^{-1}	Mean of daily average dissolved organic carbon (DOC) concentrations in 21 days period before sampling date
Hydrology		
Q_{med}	L s^{-1}	Median of the discharge in 21 days period before sampling date
CV of Q	%	Coefficient of variation of discharge in 21 days period before sampling date
Fre_{Low}	days	Frequency of low discharge: number of days during 21 days period, where the magnitude of discharge remains below a lower threshold. Low discharge is defined as daily mean flow below the 25th percentile of all daily values for the time period 2019 - 2020
Fre_{High}	days	Frequency of high discharge: number of days during 21 days period, where the magnitude of discharge remains above a higher threshold. High discharge is defined as flow above the 75th percentile of all daily values for the time period 2019 – 2020
Nutrients		
PO_4^{3-}	mg L^{-1}	Mean of daily average phosphate (PO_4^{3-}) concentrations in 21 days period before sampling date
DIN	mg L^{-1}	Mean of daily average dissolved inorganic nitrogen (DIN) concentrations in 21 days period before sampling date

Table S2. Epiphyton and epilithon biomass and AI related to environmental variables (Kendall correlation coefficients; displayed only significant co-relations p<0.05). Correlations are significant but weak (<0.40).

	Epiphyton			Epilithon		
Variables	**Chl-a**	**AFDM**	**AI**	Chl-a	AFDM	AI
Light	0.27	0.22	-0.19		0.16	0.18
Temperature		0.36			0.19	
DOC	-0.20	-0.16			-0.07	
Q_{med}	-0.22	-0.24	0.13		-0.10	
CV of Q	-0.23	-0.09	0.25	-0.20		0.2
PO_4^{3-}	0.07	0.25		0.30		-0.19
DIN		-0.35	0.02		-0.14	

Table S3. Relative abundance (%) of 20 most abundant diatom species in the biofilms.

Diatom species name	**Epiphyton**		**Epilithon**	
	Aarhus	**Lyngbygård**	**Aarhus**	**Lyngbygård**
Achnanthidium minutissimum (Kützing) Czarnecki 1994	12.01	3.43	46.91	27.58
Amphora pediculus (Kützing) Grunow 1875	2.08	1.03	1.67	3.50
Aulacoseira ambigua (Grunow) Simonsen 1979		3.15		1.38
Cocconeis pediculus Ehrenberg 1838	1.77	4.05	1.52	
Cocconeis placentula Ehrenberg 1838	0.97			
Cocconeis placentula var. *euglypta* (Ehrenberg) Grunow 1884	26.98	24.44	7.32	7.97
Cyclostephanos dubius (Fricke) Round 1987	1.53	3.98	0.43	3.70
Diatoma vulgaris Bory 1824		1.30		
Encyonema silesiacum (Bleisch) Mann 1990	1.27			
Fragilaria capucina var. *Gracilis* (Østrup) Hustedt 1950		1.02		0.96
Fragilaria vaucheriae (Kützing) Petersen 1938	4.68		3.25	1.47
Gomphonema olivaceum (Hornemann) Ehrenberg 1838	1.97	6.83	2.93	1.79
Gomphonema parvulum (Kützing) Kützing 1849	2.45	7.15	1.42	2.75
Gomphonema pumilum (Grunow) Reichardt & Lange-Bertalot 1991		1.60		
Gomphonema pumilum var. *rigidum* Reichardt & Lange-Bertalot 1997		1.69		
Gomphonema sp. Ehrenberg, 1832	0.78	3.24		1.05
Melosira varians Agardh 1827	3.83		0.57	
Navicula capitatoradiata Germain 1981	0.73			
Navicula cryptotenella Lange-Bertalot 1985	3.71	2.15	2.33	0.92
Navicula gregaria Donkin 1861	2.72	1.45	3.25	2.59
Navicula lanceolata Ehrenberg 1838	7.49	9.87	8.51	10.91
Navicula minima Grunow 1880				1.51
Navicula reichardtiana Lange-Bertalot 1989	4.27		1.58	
Navicula tripunctata (Müller) Bory 1822	3.65	7.19	1.43	3.11
Nitzschia frustulum (Kützing) Grunow 1880			0.43	
Nitzschia palea (Kützing) Smith 1856	1.54	1.30	1.22	1.11
Planothidium frequentissimum (Lange-Bertalot) Lange-Bertalot 1999			1.11	5.36
Planothidium lanceolatum (Brébisson ex Kützing) Lange-Bertalot 1999	1.39	1.01	3.46	4.07
Rhoicosphenia abbreviata (Agardh) Lange-Bertalot 1980		1.77		
Staurosira construens f. *venter* (Ehrenberg) Bukhtiyarova 1995			0.68	1.33
Staurosira construens var. *construens* Ehrenberg 1843				0.98
Staurosirella pinnata (Ehrenberg) Williams & Round 1988			0.53	

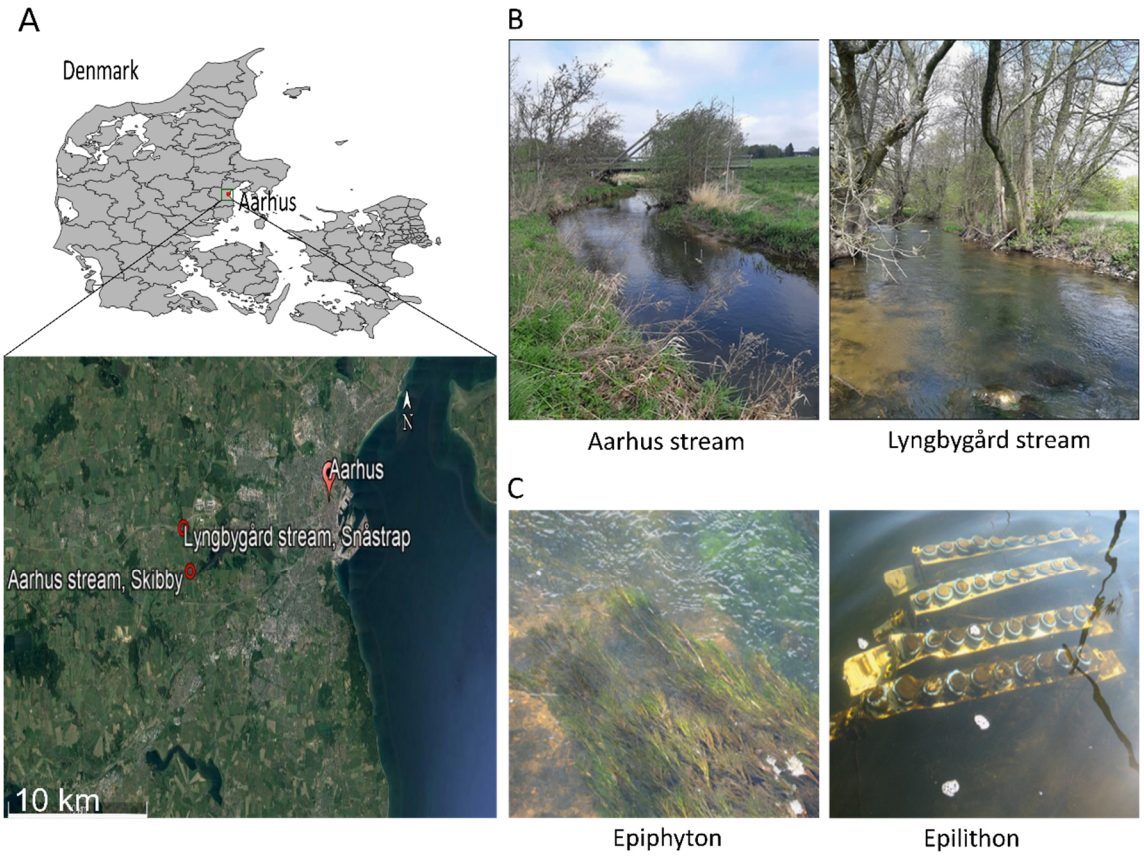

Figure S1. Location of monitored two agricultural streams at Aarhus, Denmark (A), study sites (B: Aarhus stream and Lyngbygård stream) and studied stream algae communities (C: epiphyton and epilithon).

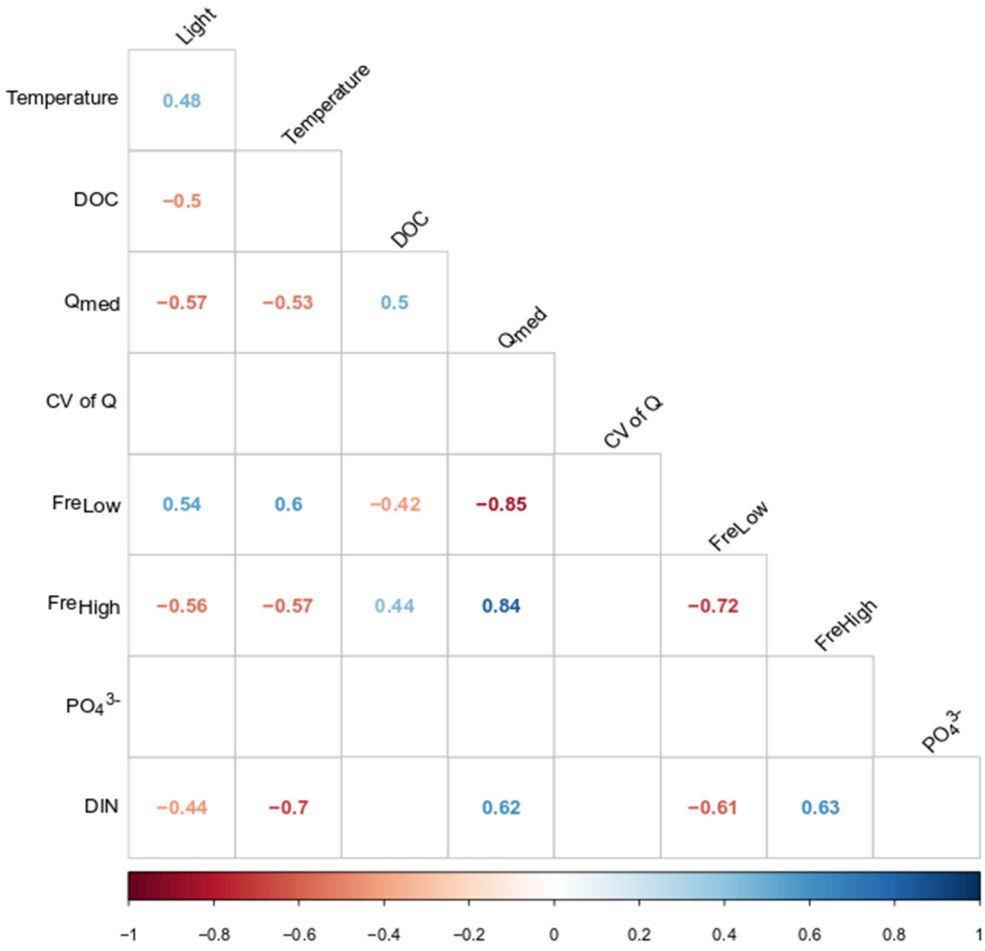

Figure S2. Correlations between environmental variables.

Only significant correlations ($p<0.05$, Kendall correlation coefficients) are shown in here.