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SUPPLEMENTARY MATERIAL

Oligochaete distribution in alpine freshwaters: not a mere question of altitude

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Tab. S1. Macroinvertebrates sampling. Sites code: letters represent the catchments: NB= Noce Bianco and CR= Careser (in the Stelvio National Park); C= Conca-Bedù (in the Adamello-Brenta Natural Park); altitude (m asl) = altitude of sampling sites." / " means "or".

A.

Year	Month	Method	Stations
2000	VI, IX	kick	NB1bis, NB2bis, NB3bis, Lungo Lake littoral zone (LittL)
		drift	NB3
2001	VI, VII, IX/X	Kick	NB1, NB2, NB3, NB4, NB5, NB1bis, NB2bis, NB3bis, CR1, CR2, CR3, CR1bis
		drift	NB1, NB2, NB3, NB4, NB1bis, NB2bis, NB3bis, CR2, CR3, CR1bis
2002	V, VI, VIII, X	kick	NB1, NB3, NB4, NB5, NB1bis, NB2bis, NB3bis, CR1, CR3, CR1bis, NBspr, Lungo Lake inlet (InL) and littoral zone (LittL)
		drift	NB3, NB4, NB5, NB2bis, NB3bis, CR1, CR2, CR3, CR1bis, NBspr
2003	VI, VII, VIII, IX	kick	NB2, NB3, NB4, NB3bis
		drift	NB3, NB4, NB3bis
2004	VI, VII, IX/X	kick	NB3, NB4, NB5, NB7, NB3bis, NBspr
		drift	NB3, NB4, NB5, NB7, NB3bis, NBspr
2005	V/VI, VIII, IX	kick	NB4, NB7, NB3bis, C3, C4, C7, C8
		drift	NB3, NB5, NB7, NB3bis, C3, C7, C8

B.

Sampling sites	Altitude m (asl)
NB1	2650
NB2	2455
NB3	2270
NB4	2257
NB5	1950
NB7	1223
NBspr	2270
NB1bis	2703
NB2bis	2526
NB3bis	2270
CR1bis	2647
CR1	2694
CR2	2642
CR3	1985
lnL	2665
LittL	2550
C3	2252
C4	2115
C7	2170
C8	1300

Tab. S2. Model coefficients of linear regression analysis with species richness and taxonomic diversity as dependent variables (altitude as independent variable).

	t	p
Species richness		
(constant)	2.4073	0.02702
Altitude	-0.64824	0.52501
Taxonomic diversity		
(constant)	2.5875	0.01858
Altitude	-0.14735	0.8845

Tab. S3. Model coefficients of the two generalized linear mixed models (GLMMs) with the number of individuals and the number of species as dependent variables. The following independent variables are included in both models: stream type, glacier type, altitude and method of sampling.

Effect	F	df1	df2	p
N of individuals				
Stream type	14.16	3	338	< 0.001
Glacier	0.03	1	338	0.9
Altitude	14.71	1	338	< 0.001
Method	15.42	1	338	< 0.001
N of species				
Stream type	9.66	3	338	< 0.001
Glacier	0.00	1	338	0.99
Altitude	0.16	1	338	0.68
Method	12.92	1	338	< 0.001

Tab. S4. Pairwise contrasts for stream type variables from the two GLMM models with the number of individuals and number of species as dependent variables (see Tab. S3). Contrasts were applied with adjustment for multiple tests using least significant difference (significance level 0.05).

Contrast	Contrast Estimate	Std. error	t	df	Adj. Sig.	95% Confidence Interval	
						Lower	Upper
N of individuals							
GLACIO-RHITHRAL STREAM - KRYAL	5.329	1.985	2.684	338	0.008	1.424	9.234
GLACIO-RHITHRAL STREAM - SPRING-BROOK	-2.926	1.842	-1.588	338	0.113	-6.550	0.698
GLACIO-RHITHRAL STREAM - SPRINGS	-12.509	7.595	-1.647	338	0.100	-27.448	2.430
KRYAL - GLACIO-RHITHRAL STREAM	-5.329	1.985	-2.684	338	0.008	-9.234	-1.424
KRYAL - SPRING-BROOK	-8.255	2.443	-3.378	338	0.001	-13.061	-3.449
KRYAL - SPRINGS	-17.838	8.222	-2.169	338	0.031	-34.011	-1.665
SPRING-BROOK - GLACIO-RHITHRAL STREAM	2.926	1.842	1.588	338	0.113	-0.698	6.550
SPRING-BROOK - KRYAL	8.255	2.443	3.378	338	0.001	3.449	13.061
SPRING-BROOK - SPRINGS	-9.583	7.243	-1.323	338	0.187	-23.829	4.663
SPRINGS - GLACIO-RHITHRAL STREAM	12.509	7.595	1.647	338	0.100	-2.430	27.448
SPRINGS - KRYAL	17.838	8.222	2.169	338	0.031	1.665	34.011
SPRINGS - SPRING-BROOK	9.583	7.243	1.323	338	0.187	-4.663	23.829

Contrast	Contrast Estimate	Std. error	t	df	Adj. Sig.	95% Confidence Interval	
						Lower	Upper
N of species							
GLACIO-RHITHRAL STREAM - KRYAL	0.797	0.302	2.642	338	0.009	0.204	1.390
GLACIO-RHITHRAL STREAM - SPRING-BROOK	-0.787	0.293	-2.687	338	0.008	-1.363	-0.211
GLACIO-RHITHRAL STREAM - SPRINGS	-1.187	0.756	-1.571	338	0.117	-2.674	0.299
KRYAL - GLACIO-RHITHRAL STREAM	-0.797	0.302	-2.642	338	0.009	-1.390	-0.204
KRYAL - SPRING-BROOK	-1.584	0.329	-4.811	338	2.270E-06	-2.232	-0.936
KRYAL - SPRINGS	-1.984	0.779	-2.547	338	0.011	-3.517	-0.452
SPRING-BROOK - GLACIO-RHITHRAL STREAM	0.787	0.293	2.687	338	0.008	0.211	1.363
SPRING-BROOK - KRYAL	1.584	0.329	4.811	338	2.270E-06	0.936	2.232
SPRING-BROOK - SPRINGS	-0.400	0.725	-0.552	338	0.581	-1.826	1.026
SPRINGS - GLACIO-RHITHRAL STREAM	1.187	0.756	1.571	338	0.117	-0.299	2.674
SPRINGS - KRYAL	1.984	0.779	2.547	338	0.011	0.452	3.517
SPRINGS - SPRING-BROOK	0.400	0.725	0.552	338	0.581	-1.026	1.826

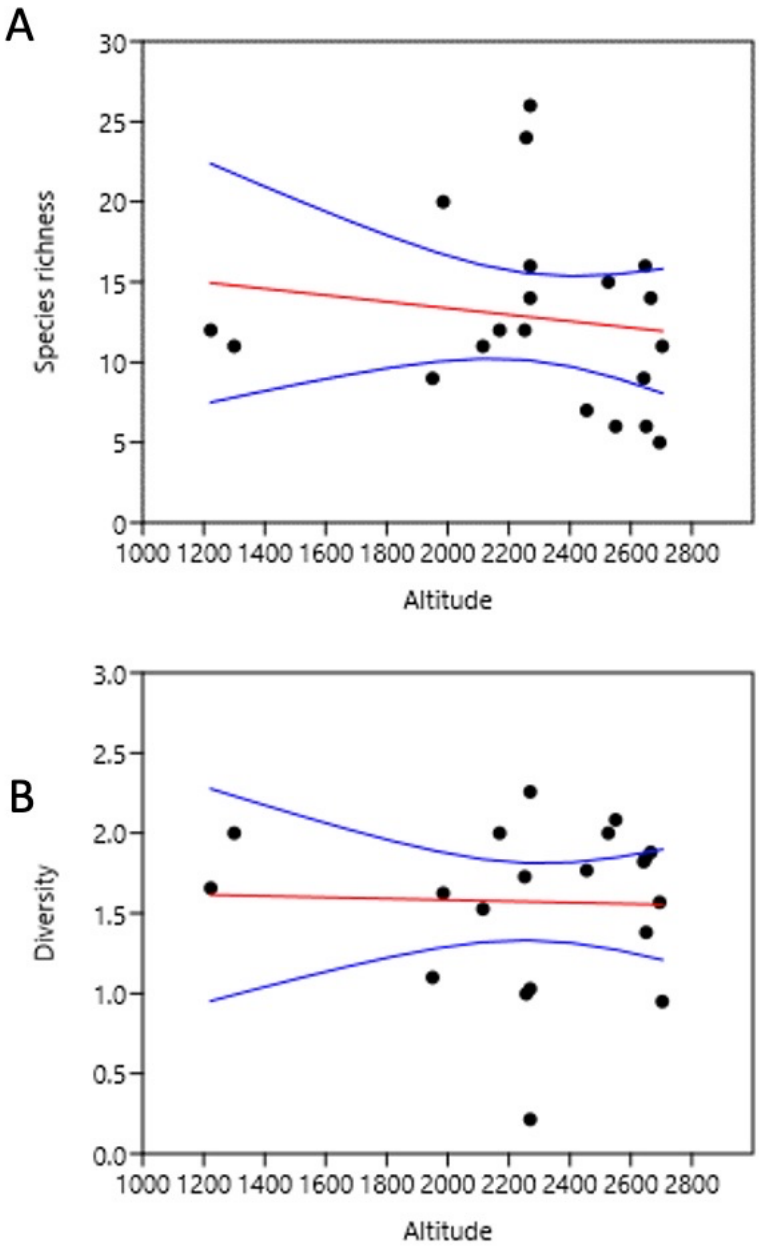

Fig. S1. Species richness (A) and taxonomic diversity (B) in relation to altitude (m asl). Red line, regression line; blue curves, 95% percentile.

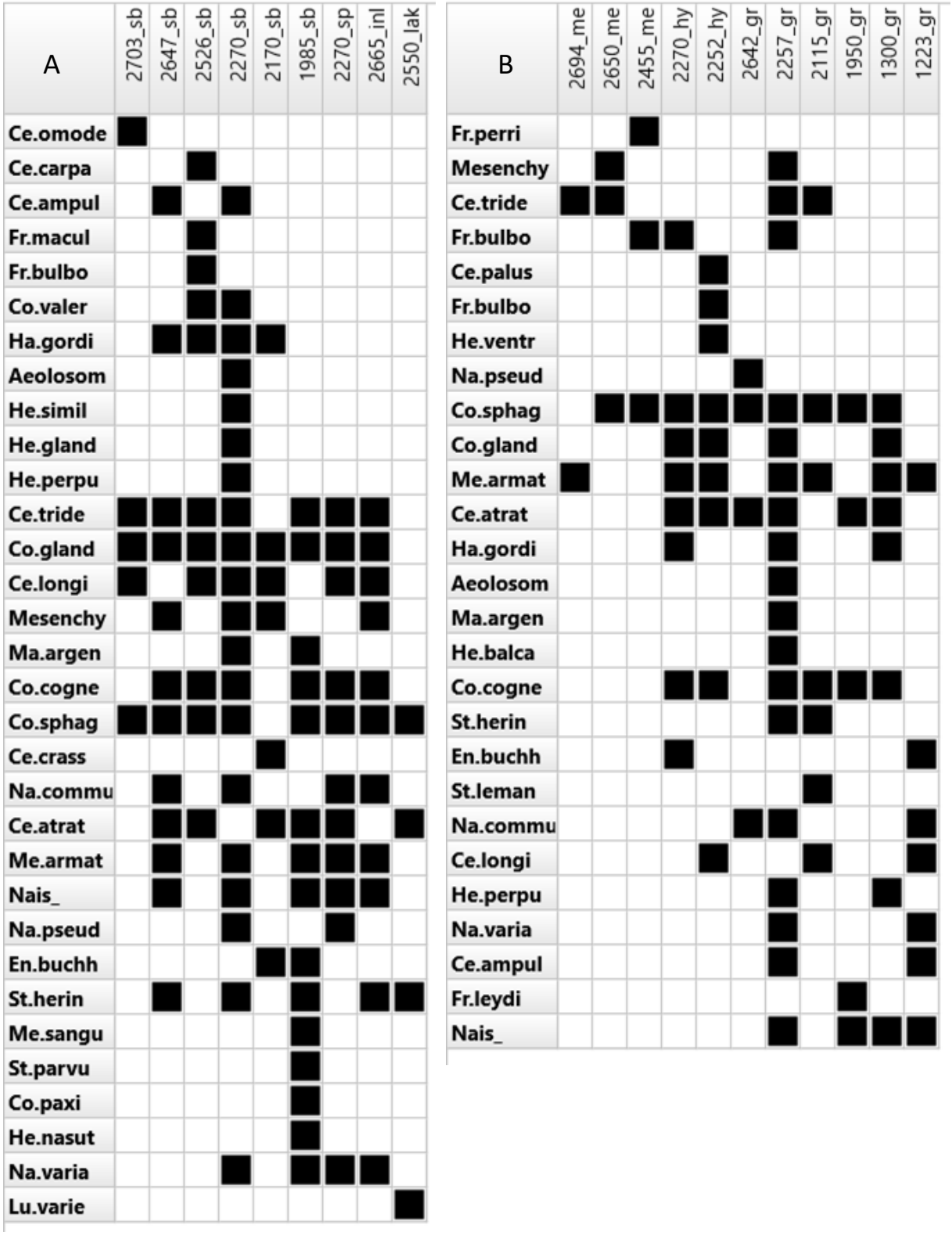

Fig. S2. Species distribution in relation to altitude (m asl) in non-glacial (A) and glacial (B) sites. Species are ordered according to the first axis obtained from the seriation analysis. Species codes are in Tab. 1. Site code: altitude (m asl) habitat type; me, metakryal; hy, hypokryal; gr, glacio-rhithral; sb, springbrook; sp, spring; lak, lake littoral; inl, lake inlet.