The following supplement accompanies the article

Relative importance of biodiversity and the abiotic environment in mediating an ecosystem process

J. A. Godbold*, M. Solan

Oceanlab, Institute of Biological and Environmental Sciences, University of Aberdeen, Newburgh, Aberdeenshire AB41 6AA, UK

*Email: j.a.godbold@abdn.ac.uk

Marine Ecology Progress Series 396:273–282 (2009)

Supplement. Figures and table required for model selection, and a representative sediment profile image for each station (Fig. S5)

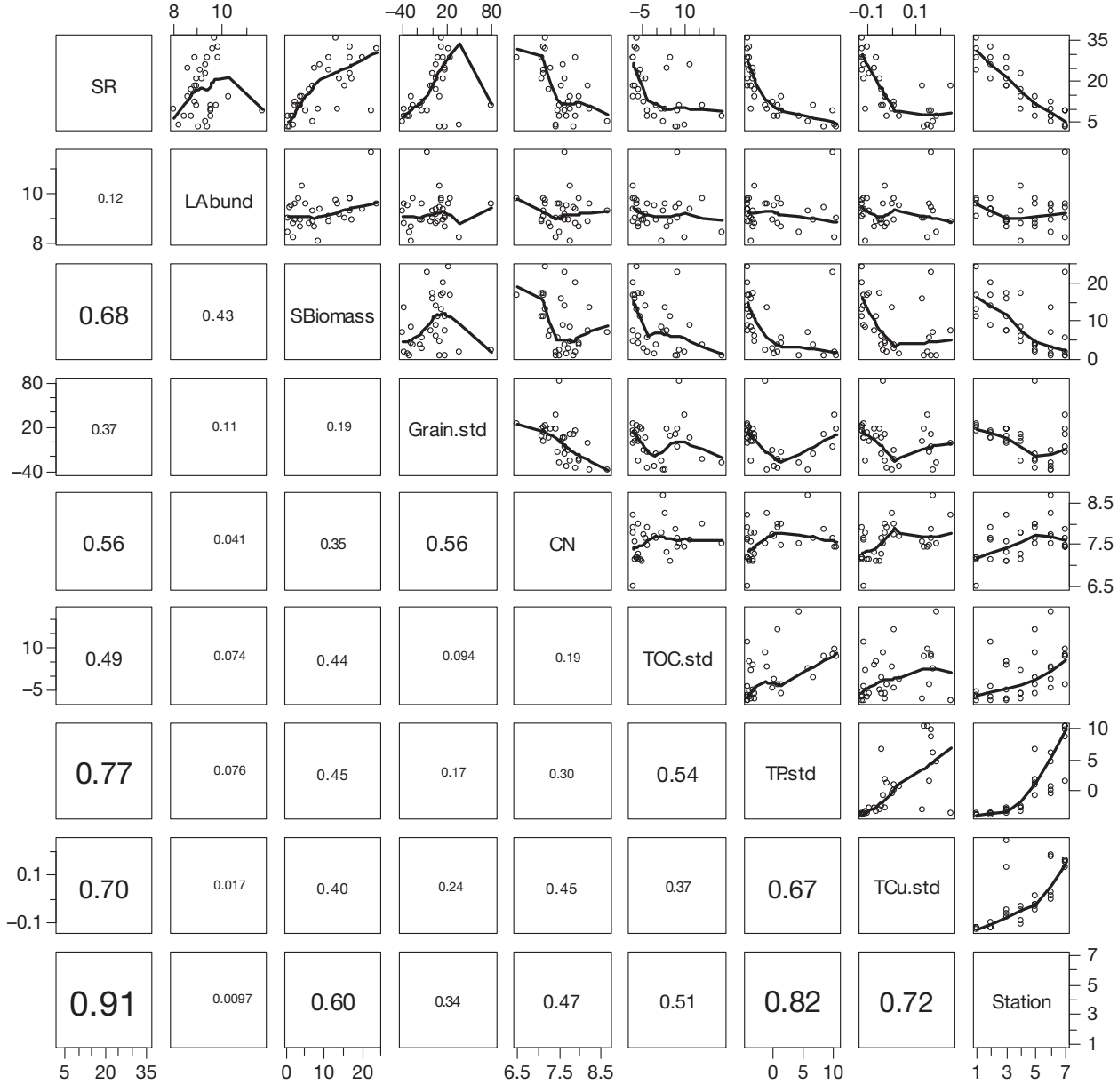

Fig. S1. Scatter plot matrix of explanatory variables indicated along the diagonal. The lower panel (below diagonal) shows the (absolute) correlation coefficients and the upper panel (above diagonal) the scatterplots with associated Loess smoother. The font size of the correlation (0.91 to 0.30 only) is proportional to its size. A correlation > 0.6 suggests collinearity between two variables. Abbreviations are: SR, species richness; LAbund, log Abundance (ind. m^{-2}); SBiomass, square root Biomass (g m^{-2}); Grain.std, mean grain diameter (µm); CN, carbon : nitrogen; TOC.std, total organic carbon (%); TP.Std, total phosphorus (mg g^{-1}); TCu.std, total copper (mg g^{-1}); std = standardised by centering on the variables mean across the gradient

Supplement 1 (continued)

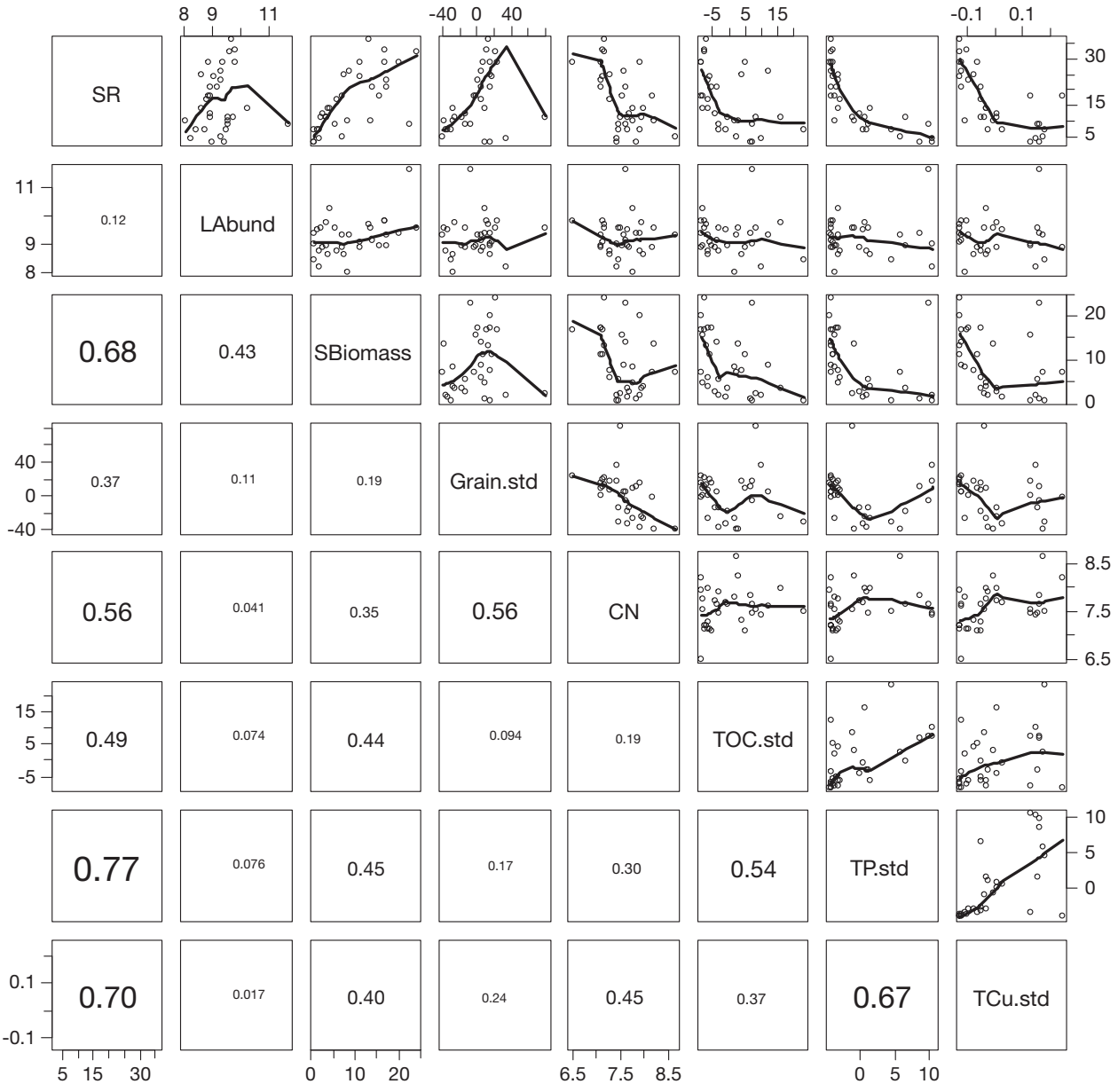

Fig. S2. Scatter plot matrix of explanatory variables indicated along the diagonal. The lower panel (below diagonal) shows the (absolute) correlation coefficients and the upper panel (above diagonal) the scatterplots with associated Loess smoother. The font size of the correlation (0.77 to 0.24 only) is proportional to its size. Abbreviations are: SR, species richness; LAbund, log Abundance (ind. m^{-2}); SBiomass, square root Biomass (g m^{-2}); Grain.std, mean grain diameter (µm); CN, carbon : nitrogen; TOC.std, total organic carbon (%); TP.Std, total phosphorus (mg g^{-1}); TCu.std, total copper (mg g^{-1}); std = standardised by centring on the variables mean across the gradient

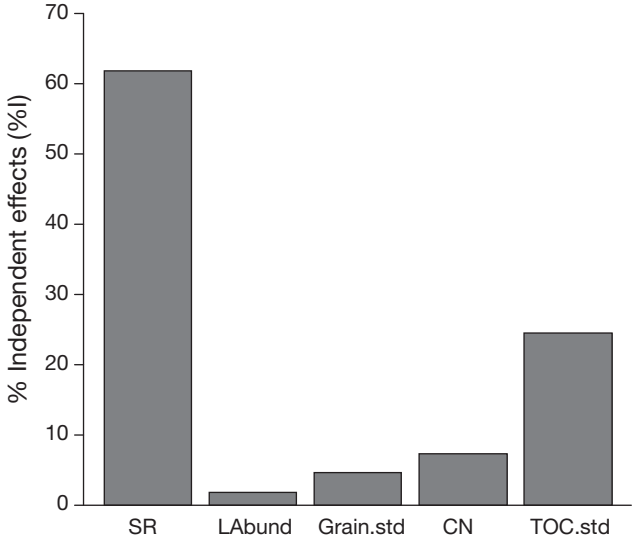

Fig. S3. Summary of the hierarchical partitioning analysis showing the independent contribution of each variable to the total explained variance. Both species richness and TOC have an independent contribution of >10 % and were therefore chosen for the model

Table S1. Values of the best regression models based on Mallow's C_p and $r^2_{adj.}$ 1 = present in model, * represents significant effect ($p < 0.05$), 1_m = marginal effect ($p < 0.06$). Highlighted in red is the best model based on C_p and r^2_{adj}

Model number	Intercept	SR	Abundance	Grain size	C:N	TOC	C_p	r^2_{adj}
1	0	1	1	0	0	1	0.6123	
2	1*	1*	0	0	0	1_m	0.7949	0.6245
3	0	1	0	0	1	1	1.3580	
4	1	1*	1	0	0	1_m	2.2680	0.6186
5	0	1	1	0	1	1	2.3580	
6	0	1	1	1	0	1	2.4690	
7	1	1*	0	1	0	1_m	2.5360	0.6145
8	0	1	0	0	1	1	2.6420	
9	1	1*	0	0	1	1_m	2.7930	0.6107
10	0	1	1	1	1	1	4.0120	
11	1	1*	1	1	0	1_m	4.0590	0.6072
12	1	1*	1	0	1	1	4.2680	0.6039
13	1	1*	0	1	1	1_m	4.4490	0.6011

Supplement 1 (continued)

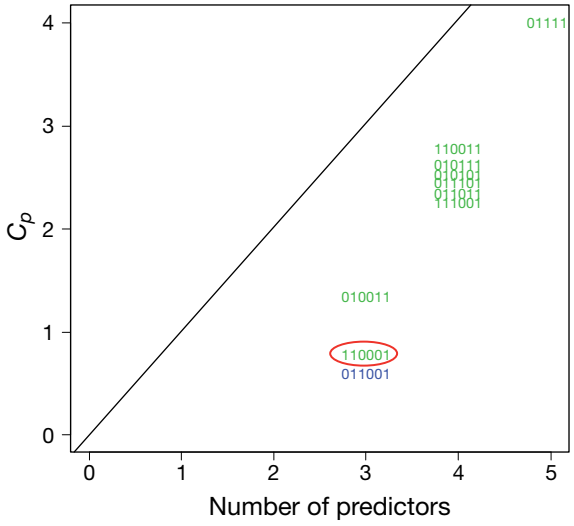

Fig. S4. Graphical summary of Mallow's C_p. 0 and 1 refer to the absence and presence of individual variables (Intercept, species richness, abundance, grain size, C:N, TOC) respectively. Circled in red is the best model (Draper & Smith 1998)

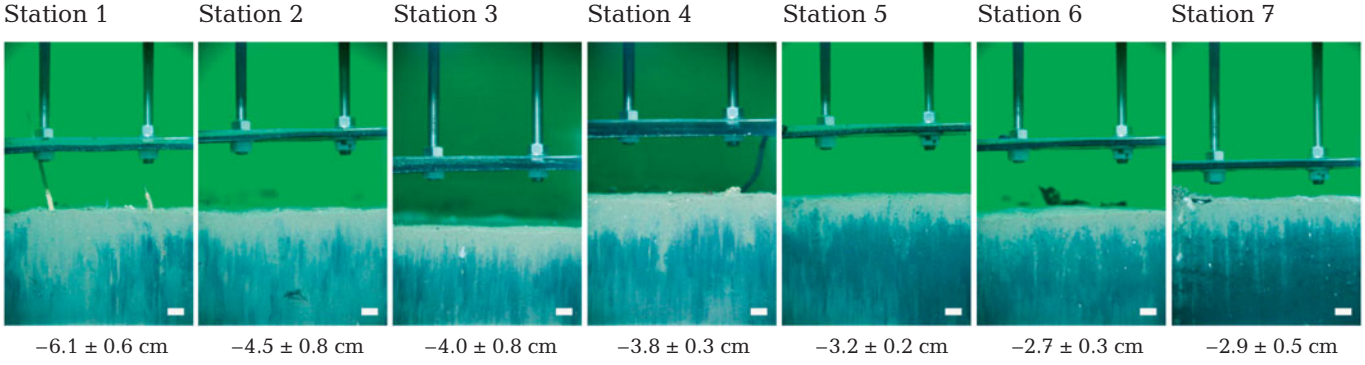

Fig. S5. Sediment profile images and the mixing depth (mean ± SD, n = 5) at each Station along the enrichment gradient (Station 1 – 7). Scale bars = 2 cm

LITERATURE CITED

Draper NR, Smith H (1998) Applied regression analysis, 3rd edn. John Wiley & Sons, New York