

Erratum

Responses of stream algae to grazing minnows and nutrients: a field test for interactions

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The analysis of variance (ANOVA) used individual tiles in both treatments of each pool as replicates. It is more appropriate not to treat the three tiles as independent replicates because the experimental units in this experiment were the areas within and outside of the exclosures in each pool. Two-way ANOVA using the means of the three tiles in each experimental unit for 2 levels of grazing \times 2 levels of nutrients with 2 replicates per treatment yields:

Net productivity per unit area					
	Sum of squares	MS	df	F	Prob. of F
Grazing	112836.2	112836.2	1	167.7	0.0002
Nutrients	20899.9	20899.9	1	30.1	0.0051
Grazing \times nutrients	2831.3	2831.3	1	4.2	0.1095
Error	2691.5	672.9	4		
Total	139258.9	–	7		
Biomass-specific net productivity					
	Sum of squares	MS	df	F	Prob. of F
Grazing	28496.0	28496.0	1	10.71	0.0307
Nutrients	5876.2	5876.2	1	2.21	0.2114
Grazing \times nutrients	8204.2	8204.2	1	3.08	0.1539
Error	10638.8	2659.7	4		
Total	53215.2	–	7		
Periphyton biomass					
	Sum of squares	MS	df	F	Prob. of F
Grazing	111.2	111.2	1	25.53	0.0072
Nutrients	65.3	65.3	1	14.98	0.0180
Grazing \times nutrients	49.2	49.2	1	11.28	0.0283
Error	17.4	4.4	4		
Total	243.1	–	7		

In this analysis, grazing strongly affects biomass-specific net productivity, net primary productivity, and periphyton biomass; nutrients affect biomass and net productivity, but not biomass-specific productivity; and the grazing-nutrient interaction is statistically significant only for periphyton biomass.

The re-analysis requires three changes in the text of the paper:

1. Summary, p. 1: "Additions of N + P + K increased biomass-specific net primary productivity..." should read "Additions of N + P + K increased net primary productivity..."

2. Summary, p. 1: "I conclude that although nutrient supply limits biomass-specific primary productivity..." should read "I conclude that although nutrient supply limits primary productivity..."

3. Discussion, p. 5, para. 2: "Significant interactions between grazing and nutrient treatments were also apparent for periphyton biomass and for net primary productivity (the latter expressed either per unit area or per unit AFDW) (Table 3, Fig. 2)." should read "Significant interactions between grazing and nutrient treatments were apparent only for periphyton biomass (Table 3, Fig. 2)."

The relationships shown in Table 3 indicate that the grazing minnows probably did not affect the periphyton just by changing the availability of nutrients. Mechanisms by which the minnows could affect the periphyton independently of nutrients include the alleviation of light limitation to understory algae by removal of filamentous overstory species, the replacement of relatively non-productive algal species that are relatively susceptible to grazing by more productive species with adnate or more prostrate growth habits, etc. The overall conclusion – that the grazing minnows at natural densities were able to "outrun" periphyton growth even when nutrients were supplied in excess – is not changed by the re-analysis. In Brier Creek, the periphyton can be simultaneously nutrient limited and grazer-controlled. The intensity of nutrient limitation and grazing pressure in this stream also changes seasonally and over pool-to-pool-spatial scales. Hence, arguments about whether this system is controlled from the "top down" or from the "bottom up" are largely meaningless.