

Constraints on viral production in the Sargasso Sea and North Atlantic

Janet M. Rowe¹, Matthew A. Saxton¹, Matthew T. Cottrell², Jennifer M. DeBruyn³, G. Mine Berg⁴, David L. Kirchman², David A. Hutchins^{2,5}, Steven W. Wilhelm^{1,*}

¹Department of Microbiology, University of Tennessee, Knoxville, Tennessee 37922, USA

²College of Marine and Earth Studies, University of Delaware, Lewes, Delaware 19958, USA

³Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, Tennessee 37922, USA

⁴Department of Geophysics, Stanford University, Stanford, California 94305, USA

⁵Department of Biological Sciences, University of Southern California, Los Angeles, California 90089, USA

* Corresponding author. Email: wilhelm@utk.edu

Aquatic Microbial Ecology 52:233–244 (2008)

Appendix 1. Data supplementing that which is reported in the 'Results' and 'Discussion' sections for Rowe et al. (2008). Multivariate analyses, canonical correspondence analysis (CCA; Fig. A1) and redundancy analysis (RDA; Fig. A2) show the statistical separation of the Sargasso Sea and North Atlantic transects. Table A1 lists estimates of virus-mediated nutrient regeneration

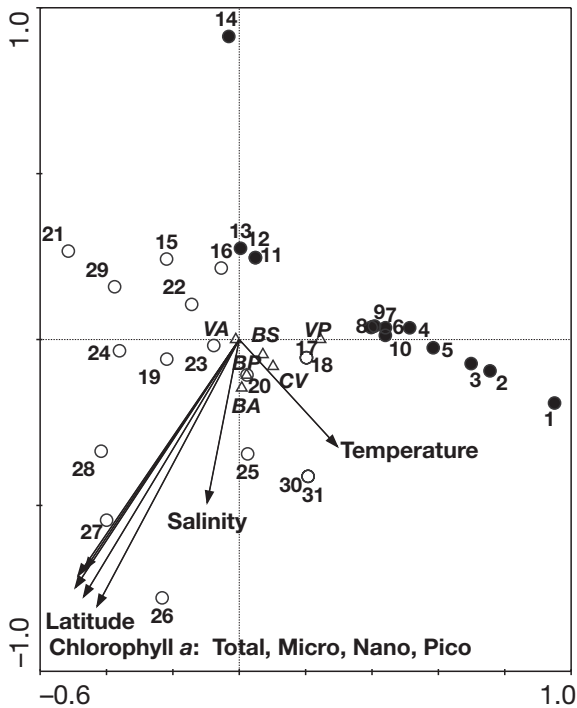


Fig. A1. Plot of canonical correspondence analysis, a unimodal and constrained statistical model. Response (biological) variables = viral production (VP) and abundance (VA), bacterial production (BP) and abundance (BA), burst size (BS), and bacterial cell volume (CV). Predictor (environmental) variables = latitude, total chl a, micro-, nano-, pico-chl a, salinity, and temperature. ●: Sargasso Sea samples (1–14), ○: North Atlantic samples (15–31), and △: response variables. Outlier sample 32 was removed

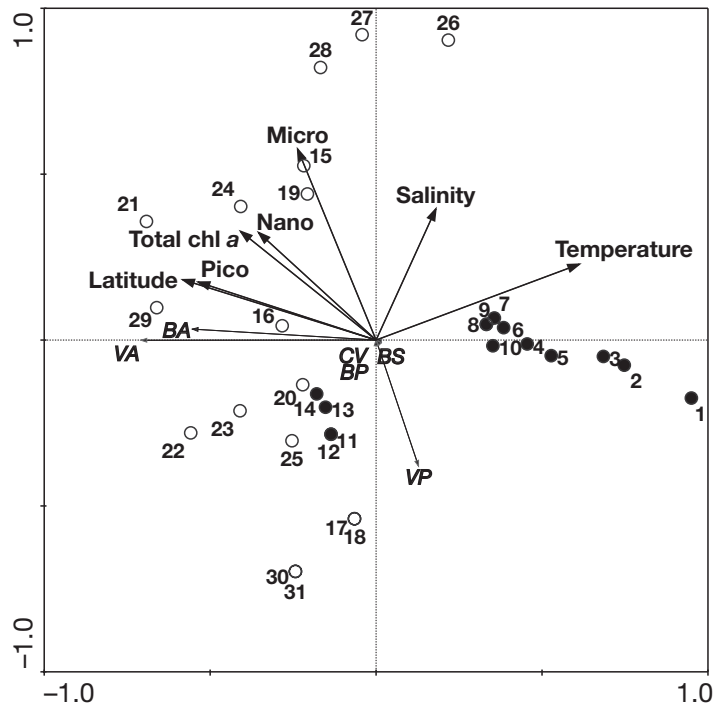


Fig. A2. Plot of redundancy analysis, a linear counterpart to canonical correspondence analysis. Response (biological) variables = viral production and abundance, bacterial production and abundance, burst size, and cell volume. Predictor (environmental) variables = latitude, total chl a, micro-, nano-, pico-chl a, salinity, and temperature. ●: Sargasso Sea samples (1–14), with 11–14 transitioning into the North Atlantic; ○: North Atlantic samples (15–31). Outlier sample 32 was removed

Appendix 1 (continued)

Table A1. Estimated regeneration of nutrients from the biological pool to the POM/DOM pool. Nutrient regeneration rates were determined from estimates of virus-induced mortality of bacterioplankton and estimated quotas for the following: C, 23.3 fg cell⁻¹ (Simon & Azam 1989); N, 5.6 fg cell⁻¹ (Lee & Fuhrman 1987); and Fe, 1.1 ag cell⁻¹ (Tortell et al. 1996)

Viral production estimate	C (nM d ⁻¹)	N (nM d ⁻¹)	Fe (pM d ⁻¹)
1	122.7	25.3	1.3
2	21.9	4.5	0.2
3	301.5	62.1	3.1
4	67.3	13.9	0.7
5	9.3	1.9	0.1
6	166.6	34.3	1.7
7	272.5	56.1	2.8
8	761.1	156.7	7.8
9	634.0	130.6	6.5
10	612.4	126.1	6.2
11	407.2	83.9	4.1
12	626.7	129.0	6.4
13	282.4	58.2	2.9
14	80.2	16.5	0.8
15	122.7	25.3	1.2
16	59.3	12.2	0.6
17	134.2	27.6	1.4
18	86.1	17.7	0.9
21	60.8	12.5	0.6
22	142.5	29.3	1.5
23	95.0	19.6	1.0
24	15.5	3.2	0.2
27	17.9	3.7	0.2
28	16.8	3.5	0.2
31	751.7	154.8	7.7
32	145.5	30.0	1.5