

Detrital production in Nova Scotian kelp beds: patterns and processes

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Supplement. Additional statistical analyses

Table S1. Linear regression models generated from the relationship between wet weight and dry weight for blade tissue in *Saccharina longicuris* and *Laminaria digitata* at each site and during each sampling period. CC: Cranberry Cove; DE: Duncan's Cove Exposed; DP: Duncan's Cove Protected; SP: Splitnose Point; TL: The Lodge. na: not applicable

Sampling period	Site	<i>S. longicuris</i>	R ²	<i>L. digitata</i>	R ²
July 2008	CC	$y = 0.2095x + 0.2561$	0.9679	na	na
	DE	$y = 0.1636x - 0.6254$	0.8021	$y = 0.2767x - 3.1465$	0.9091
	DP	$y = 0.1437x + 0.2936$	0.9707	na	na
	TL	$y = 0.2217x + 0.4634$	0.9689	$y = 0.2650x - 1.8475$	0.9046
	SP	$y = 0.1434x + 0.205$	0.9702	$y = 0.1624x + 0.2841$	0.8840
September 2008	CC	$y = 0.2045x - 0.1033$	0.8785	na	na
	DE	$y = 0.1636x - 0.6254$	0.8021	$y = 0.1500x + 0.7404$	0.8873
	DP	$y = 0.1859x + 0.2133$	0.8182	$y = 0.1714x + 0.1406$	0.9054
	TL	$y = 0.1661x - 0.4027$	0.8860	$y = 0.2198x - 0.6231$	0.9803
	SP	$y = 0.1434x + 0.205$	0.9702	$y = 0.1624x + 0.2841$	0.8840
November 2008	TL	$y = 0.1802x - 0.9854$	0.9193	$y = 0.1872x + 0.2187$	0.9818
	SP	$y = 0.1556x - 0.5932$	0.9602	$y = 0.1798x + 0.2595$	0.9226
February 2009	CC	$y = 0.1142x - 0.2741$	0.9061	na	na
	DP	$y = 0.1199x + 0.0317$	0.9577	$y = 0.1368x - 0.0389$	0.9592
	SP	$y = 0.1224x - 0.3955$	0.9894	$y = 0.1236x + 0.6040$	0.9194
May 2009	CC	$y = 0.1444x - 0.2199$	0.9726	na	na
	DE	$y = 0.1136x + 0.1949$	0.9438	$y = 0.1264x + 0.0873$	0.9653

	DP	$y = 0.1274x - 0.323$	0.9434	$y = 0.1344x - 0.2702$	0.9559
	TL	$y = 0.1023x + 2.2951$	0.8732	$y = 0.1312x + 0.3412$	0.9937
	SP	$y = 0.1391x - 2.1842$	0.9351	$y = 0.1373x - 0.9716$	0.9862
September 2009	CC	$y = 0.2045x - 0.1033$	0.8785	na	na
	DE	$y = 0.1456x - 0.4258$	0.724	$y = 0.1682x + 0.4325$	0.9271
	DP	$y = 0.1636x - 0.6254$	0.8021	$y = 0.1714x + 0.1406$	0.9054
	TL	$y = 0.1646x + 0.1011$	0.8320	$y = 0.1600x + 0.9668$	0.8857
	SP	$y = 0.1709x + 0.955$	0.8743	$y = 0.1435x - 0.3239$	0.8500

Table S2. Akaike's information criterion (AIC) results for all possible combinations of ≤ 3 factors explaining variation in erosion rate (g d^{-1}) for *Saccharina longicruris* and *Laminaria digitata*: percentage cover by *Membranipora membranacea* (% M), percentage distal area grazed by snails (% Gzd) and temperature (Temp). Uncorrected AIC, the number of observations (n), second-order bias-corrected AIC (AIC_c), the difference between the minimum AIC_c and the AIC_c for each model (ΔAIC_c), the log likelihood function, the model probability (w_i) and the R^2 value of each model are shown

Species	Model	AIC	n	AIC_c	ΔAIC_c	Log likelihood	w_i	R^2
<i>Saccharina longicruris</i>	% M + % Gzd + Temp	-91.31	20	-89.81	0.000	48.65	0.361	0.48
	% M + Temp	-89.12	20	-88.41	1.396	46.56	0.179	0.40
	% M + % Gzd	-88.49	20	-87.79	2.019	46.25	0.131	0.38
	% M	-87.67	20	-87.45	2.353	44.84	0.111	0.33
	% M + Exp + Temp	-87.49	20	-85.99	3.818	46.74	0.053	0.37
	% Gzd + Temp	-86.37	20	-85.67	4.138	45.19	0.046	0.31
	% M + Exp	-86.10	20	-85.39	4.414	45.05	0.040	0.30
	% M + % Gzd + Exp	-86.49	20	-84.99	4.812	46.25	0.033	0.34
	% Gzd + Exp + Temp	-85.25	20	-83.75	6.052	45.63	0.017	0.30
	Temp	-83.52	20	-83.30	6.509	42.76	0.014	0.17
	% Gzd	-82.11	20	-81.89	7.917	42.06	0.007	0.11
	Exp + Temp	-81.52	20	-80.81	8.993	42.76	0.004	0.12
	% Gzd + Exp	-80.70	20	-80.00	9.810	42.35	0.003	0.08
Exp	-78.72	20	-78.50	11.31	40.36	0.001	-0.06	
<i>Laminaria digitata</i>	% Gzd + Exp	-69.09	16	-68.17	0.000	36.54	0.284	0.412
	Exp	-68.32	16	-68.03	0.132	35.16	0.266	0.351
	% M + Exp	-67.17	16	-66.25	1.914	35.59	0.109	0.337
	Exp + Temp	-67.12	16	-66.20	1.964	35.56	0.106	0.335
	% M + % Gzd + Exp	-67.74	16	-65.74	2.426	36.87	0.084	0.388
	% Gzd + Exp + Temp	-67.25	16	-65.25	2.912	36.63	0.066	0.369
	% M + Exp + Temp	-65.61	16	-63.61	4.559	35.80	0.029	0.301
	% M	-63.54	16	-63.25	4.912	32.77	0.024	0.124
	% M + % Gzd	-61.76	16	-60.84	7.330	32.88	0.007	0.069
	% M + Temp	-61.56	16	-60.63	7.531	32.78	0.007	0.058
	% Gzd	-60.90	16	-60.61	7.552	31.45	0.007	-0.033
	Temp	-60.62	16	-60.34	7.826	31.31	0.006	-0.051
	% Gzd + Temp	-59.59	16	-58.67	9.499	31.79	0.002	-0.065
	% M + % Gzd + Temp	-59.86	16	-57.86	10.31	32.93	0.002	-0.085

Table S3. Akaike's information criterion (AIC) results for all possible combinations of ≤ 3 factors explaining variation in the ratio of erosion to productivity for *Saccharina longicruris* and *Laminaria digitata*: percentage cover by *Membranipora membranacea* (% M), percentage distal area grazed by snails (% Gzd), exposure (Exp) and temperature (Temp). Uncorrected AIC, the number of observations (n), second-order bias corrected AIC (AIC_c), the difference between the minimum AIC_c and the AIC_c for each model (ΔAIC_c), the log likelihood function, the model probability (w_i) and the R^2 value of each model are shown

Species	Model	AIC	n	AIC_c	ΔAIC_c	Log likelihood	w_i	R^2
<i>Saccharina longicruris</i>	% M	15.12	16	15.34	0.000	-6.561	0.311	0.31
	% M + Exp	15.78	16	16.48	1.140	-5.889	0.176	0.32
	% M + Exp + Temp	15.05	16	16.55	1.209	-4.527	0.170	0.30
	% M + Temp	16.54	16	17.25	1.902	-6.270	0.120	0.29
	% M + % Gzd	16.87	16	17.57	2.230	-6.434	0.102	0.28
	% M + % Gzd + Exp	17.78	16	19.28	3.933	-5.889	0.043	0.28
	% M + % Gzd + Temp	18.34	16	19.84	4.498	-6.171	0.033	0.26
	Exp	21.62	16	21.84	6.495	-9.809	0.012	0.05
	Temp	22.01	16	22.23	6.890	-10.01	0.010	0.03
	Exp + Temp	21.75	16	22.45	7.107	-8.873	0.009	0.08
	% Gzd + Exp	23.15	16	23.85	8.511	-9.574	0.004	0.02
	% Gzd	23.69	16	23.91	8.566	-10.84	0.004	-0.06
	% Gzd + Exp + Temp	23.15	16	24.65	9.303	-8.574	0.003	0.05
	% Gzd + Temp	23.99	16	24.70	9.355	-10.00	0.003	-0.03
<i>Laminaria digitata</i>	% M + % Gzd	10.60	16	11.52	0.000	-3.300	0.553	0.72
	% M + % Gzd + Exp	11.89	16	13.89	2.366	-2.945	0.169	0.71
	% M + % Gzd + Temp	12.29	16	14.29	2.768	-3.146	0.138	0.71
	% M	15.67	16	15.95	4.430	-6.834	0.060	0.60
	% M + Temp	15.98	16	16.90	5.374	-5.988	0.038	0.61
	% M + Exp	16.49	16	17.41	5.886	-6.243	0.029	0.60
	% M + Exp + Temp	17.16	16	19.16	7.632	-5.578	0.012	0.60
	Temp	28.79	16	29.08	17.553	-13.40	<0.001	0.09
	% Gzd + Exp	29.44	16	30.36	18.836	-12.72	0.000	0.10
	Exp + Temp	29.94	16	30.86	19.337	-12.97	0.000	0.07
	% Gzd	30.83	16	31.12	19.594	-14.42	0.000	-0.03
	Exp	30.86	16	31.15	19.622	-14.43	0.000	-0.03
	% Gzd + Temp	30.65	16	31.58	20.051	-13.33	0.000	0.03
	% Gzd + Exp + Temp	29.84	16	31.84	20.314	-11.92	0.000	0.12