The following supplement accompanies the article

Facilitation cascade maintains a kelp -community

Jacqueline E. Bell[1,*], Melanie J. Bishop[1], Richard B. Taylor[2], Jane E. Williamson[1]

[1]**Department of Biological Sciences, Macquarie University, Sydney, New South Wales 2109, Australia**
[2]**Leigh Marine Laboratory, University of Auckland, PO Box 349, Warkworth 0941, New Zealand**

*Corresponding author: jacqui.bell@mq.edu.au

Marine Ecology Progress Series 501: 1–10 (2014)

Supplement. Sources of spatial variation in the abundance of *Phasianotrochus eximius* and *Holopneustes purpurascens*

Table S1. Abundance of *Phasianotrochus eximius* and *Holopneustes purpurascens* (mean ± SE number of individuals per plant, n = 10) between 2009 and 2011 at Fairlight, Bare Island, Balmoral and Long Bay, Australia, on 4 common algae (*Ecklonia radiata*, *Sargassum vestitum*, *S. linearifolium*, *Corallina officinalis*). *P. eximius* and *H. purpurascens* were significantly more abundant on *E. radiata* than on the other 3 algal species at Fairlight, Bare Island and Long Bay (see Tables 1 & 2). Letters indicate the outcome of *a posteriori* tests for significant permutational analyses of variance (see Tables 1 & 2), examining differences in means among algal sources, within seasons or years

			P. eximius per host plant			*H. purpurascens* per host plant		
Site	Time	Host plant	Mean	SE		Mean	SE	
Fairlight	Spring Yr 1	*E. radiata*	7.90	3.05	a	0.20	0.20	a
		S. vestitum	0.40	0.96	b	0.10	0.10	a
		S. linearifolium	2.10	3.96	b	0.20	0.13	a
		C. officinalis	0.00	0.00	c	0.10	0.10	a
	Summer Yr 1	*E. radiata*	1.40	0.10	a	0.70	0.40	a
		*S. vestitum*0	0.10	0.00	b	0.00	0.00	b
		S. linearifolium	.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Autumn Yr 1	*E. radiata*	0.30	0.15	a	0.50	0.17	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Winter Yr 1	*E. radiata*	0.30	0.15	a	0.30	0.21	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.10	0.10	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Spring Yr 2	*E. radiata*	1.90	1.27	a	0.50	0.22	a
		S. vestitum	0.10	0.10	b	0.00	0.00	a
		S. linearifolium	0.00	0.00	b	0.00	0.00	a
		C. officinalis	0.00	0.00	b	0.10	0.10	a

	Summer Yr 2	*E. radiata*	3.10	1.70	a	1.60	0.64	a
		S. vestitum	0.10	0.10	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Autumn Yr 2	*E. radiata*	0.50	0.31	a	0.60	0.31	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Winter Yr 2	*E. radiata*	0.30	0.21	a	0.20	0.13	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
Bare Island	Spring Yr 1	*E. radiata*	2.00	0.73	a	0.80	0.33	a
		S. vestitum	0.80	0.33	b	0.30	0.21	b
		S. linearifolium	2.00	0.13	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Summer Yr 1	*E. radiata*	2.40	1.67	a	1.10	0.43	a
		S. vestitum	0.60	0.34	b	0.00	0.00	b
		S. linearifolium	1.00	0.61	b	0.00	0.00	b
		C. officinalis	0.10	0.10	b	0.00	0.00	b
	Autumn Yr 1	*E. radiata*	1.30	0.60	a	0.20	0.13	a
		S. vestitum	0.10	0.10	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Winter Yr 1	*E. radiata*	0.40	0.16	a	0.60	0.27	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Spring Yr 2	*E. radiata*	1.90	0.98	a	0.60	0.27	a
		S. vestitum	1.30	0.37	b	0.10	0.10	b
		S. linearifolium	0.60	0.22	b	0.00	0.00	b
		C. officinalis	0.00	0.00	c	0.00	0.00	b
	Summer Yr 2	*E. radiata*	4.80	2.00	a	0.30	0.21	a
		S. vestitum	0.10	0.10	b	0.00	0.00	b
		S. linearifolium	2.50	0.62	b	0.00	0.00	b
		C. officinalis	0.10	0.10	c	0.00	0.00	b
	Autumn Yr 2	*E. radiata*	1.50	0.56	a	0.00	0.00	a
		S. vestitum	0.10	0.10	b	0.00	0.00	a
		S. linearifolium	0.20	0.20	b	0.00	0.00	a
		C. officinalis	0.00	0.00	c	0.00	0.00	a
	Winter Yr 2	*E. radiata*	0.50	0.27	a	0.10	0.10	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	c	0.00	0.00	b

Balmoral	Spring Yr 1	*E. radiata*	0.00	0.00	a	0.20	0.20	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.10	0.10	a	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
	Summer Yr 1	*E. radiata*	0.00	0.00	a	0.30	0.21	a
		S. vestitum	0.00	0.00	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	c	0.00	0.00	b
	Autumn Yr 1	*E. radiata*	0.00	0.00	a	0.00	0.00	a
		S. vestitum	0.00	0.00	a	0.00	0.00	a
		S. linearifolium	0.00	0.00	a	0.00	0.00	a
		C. officinalis	0.00	0.00	a	0.00	0.00	a
	Winter Yr 1	*E. radiata*	0.10	0.10	a	0.10	0.10	a
		S. vestitum	0.10	0.10	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b
Long Bay	Spring Yr 2	*E. radiata*	0.80	0.59	a	0.20	0.20	a
		S. vestitum	0.40	0.22	b	0.00	0.00	a
		S. linearifolium	0.30	0.21	b	0.00	0.00	a
		C. officinalis	0.10	0.10	b	0.00	0.00	a
	Summer Yr 2	*E. radiata*	10.20	2.91	a	1.00	0.42	a
		S. vestitum	0.20	0.13	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	4.50	0.96	b	0.00	0.00	b
	Autumn Yr 2	*E. radiata*	1.40	0.81	a	0.20	0.13	a
		S. vestitum	0.00	0.00	b	0.00	0.00	a
		S. linearifolium	0.10	0.10	b	0.00	0.00	a
		C. officinalis	0.50	0.27	b	0.00	0.00	a
	Winter Yr 2	*E. radiata*	0.40	0.22	a	0.40	0.16	a
		S. vestitum	0.10	0.10	b	0.00	0.00	b
		S. linearifolium	0.00	0.00	b	0.00	0.00	b
		C. officinalis	0.00	0.00	b	0.00	0.00	b

Table S2. Permutational analyses of variance, with algal biomass as a covariate, testing for sources of spatial variation in the abundance of *Phasianotrochus eximius* among potential host plant species (S: *Ecklonia radiata*, *Sargassum vestitum, S. linearifolium*, *Corallina officinalis*), seasons (Se: spring, summer, autumn, winter) and years (Y: 2009/2010, 2010/2011). Balmoral and Long Bay were sampled only in 1 yr each. Numbers in **bold** indicate a significant difference at $p < 0.05$. n = 10

	df	MS	Pseudo-*F*	p
		Bare Island		
Y	1	20.4	10.5	**0.001**
Se	3	1.4	0.7	0.573
S	3	10.2	5.2	**0.001**
Y × Se	3	1.2	0.6	0.61
Y × S	3	13.5	6.9	**0.001**
Se × S	9	1.3	0.7	0.782
Y × Se × S	9	2	1	0.464
Residual	288	1.9		
		Fairlight		
Y	1	15.1	6.6	**0.013**
Se	3	34.3	9.6	**0.001**
S	3	49.5	10	**0.001**
Y × Se	3	51.8	2.2	0.093
Y × S	3	11.4	2.9	**0.024**
Se × S	9	15.1	3.9	**0.001**
Y × Se × S	9	20.2	1.7	0.098
Residual	288	8.6		
		Balmoral		
Se	3	115.9	6.1	**0.001**
S	3	114.9	13.2	**0.001**
Se × S	9	51.4	13.1	**0.001**
Residual	144	8.8		
		Long Bay		
Se	3	1.6	2.8	**0.018**
S	3	2	3.5	**0.01**
Se × S	9	0.6	1	0.446
Residual	144	0.6		

Table S3. Permutational analyses of variance, with algal biomass as a covariate, testing for sources of spatial variation in the abundance of *Holopneustes purpurascens* among potential host plant species (S: *Ecklonia radiata*, *Sargassum vestitum, S. linearifolium*, *Corallina officinalis*), seasons (Se: spring, summer, autumn, winter) and years (Y: 2009/2010, 2010/2011). Balmoral and Long Bay were sampled only in 1 yr each. Numbers in **bold** indicate a significant difference at $p < 0.05$. n = 10

	df	MS	Pseudo-*F*	p
		Bare Island		
Y	1	2.27	13.1	**0.001**
Se	3	0.61	3.5	**0.027**
S	3	1.33	7.7	**0.001**
Y × Se	3	0.08	0.4	0.735
Y × S	3	1.02	6	**0.002**
Se × S	9	0.47	2.7	**0.006**
Y × Se × S	9	0.13	0.8	0.614
Residual	288	0.17		
		Fairlight		
Y	1	0.06	0.2	0.635
Se	3	0.83	3	**0.027**
S	3	5.3	19.1	**0.001**
Y × Se	3	0.27	1	0.395
Y × S	3	0.5	1.8	0.153
Se × S	9	0.89	3.2	**0.003**
Y × Se × S	9	0.24	0.9	0.578
Residual	288	0.28		
		Balmoral		
Se	3	0.06	1	0.374
S	3	0.09	1.6	0.214
Se × S	9	0.05	0.8	0.586
Residual	144	0.06		
		Long Bay		
Se	3	0.41	2.4	0.047
S	3	0.72	4.4	**0.006**
Se × S	9	0.37	2.2	**0.026**
Residual	144	0.16		