

The following supplement accompanies the article

Rafting on abiotic substrata: properties of floating items and their influence on community succession

**Macarena Bravo¹, Juan Carlos Astudillo¹, Domingo Lancellotti¹, Guillermo Luna-Jorquera^{1,2},
Nelson Valdivia^{2,3}, Martin Thiel^{1,2,*}**

¹Facultad de Ciencias de Mar, Universidad Católica del Norte, Larrondo 1281, Coquimbo, Chile

²Centro de Estudios Avanzados en Zonas Áridas (CEAZA), Coquimbo, Chile

³Instituto de Ciencias Marinas y Limnológicas, Facultad de Ciencias, Universidad Austral de Chile,
Campus Isla Teja s/n, Valdivia, Chile

*Corresponding author. Email: thiel@ucn.cl

Marine Ecology Progress Series 439: 1–17 (2011)

Table S1. ANOVA of taxonomic richness (raw data) and total percentage cover (arcsine-transformed data). Greenhouse-Geisser correction for degrees of freedom of within-plot sources is given. Error terms used as denominator are given in the ‘*F*-ratio denominator’ column. Significant probabilities are shown in **bold**. We used a split-plot design in which plots correspond to each piece of substratum and either time (ring experiment) or face (line and cage experiments) were the splits.

‘Rings’ experiment

Species richness

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
Between plots					
Substratum = A	2	4.71	1.87	0.205	A × B
Block = B	5	6.30	2.51	0.048	C(AB)
A × B	10	2.52	1.00	0.461	C(AB)
Plots (A, B) = C(AB)	36	2.52			
Within plots					
Time = D	5	90.87	23.16	<0.001	B × D
A × D	10	5.37	4.81	0.001	A × B × D
B × D	25	3.92	2.90	<0.001	A × B × D
A × B × D	50	1.11	0.82	0.742	C(AB) × A × B × D
C(AB) × A × B × D	180	1.35			
Greenhouse-Geisser epsilon = 0.71653					

Arcsine (total % cover)

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
Between plots					
Substratum = A	2	144.15	1.09	0.375	A × B
Block = B	5	302.48	2.85	0.029	C(AB)
A × B	10	132.85	1.25	0.293	C(AB)
Plots (A, B) = C(AB)	36	106.08			
Within plots					
Time = D	5	1583.36	9.09	0.001	B × D
A × D	10	799.18	8.27	<0.001	A × B × D
B × D	25	174.25	2.54	0.002	A × B × D
A × B × D	50	96.59	1.41	0.094	C(AB) × A × B × D
C(AB) × A × B × D	180	68.62			
Greenhouse-Geisser epsilon = 0.67509					

'Lines' experiment

Species richness

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
Between plots					
Substratum = A	2	13.767	6.898	0.018	A × B
Block = B	4	4.793	2.433	0.081	C(AB)
A × B	8	1.996	1.013	0.457	C(AB)
Plots (A, B) = C(AB)	20	1.969			
Within plots					
Face = D	2	5.610	3.096	0.153	B × D
A × D	4	9.244	3.037	0.098	A × B × D
B × D	8	1.812	0.359	0.835	C(AB) × D
A × B × D	16	3.044	0.603	0.782	C(AB) × D
C(AB) × D	40	5.049			
Greenhouse-Geisser epsilon = 0.60701					

Arcsine (total % cover)

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
Between plots					
Substratum = A	2	7170	61.785	<0.001	A × B
Block = B	4	306	2.260	0.099	C(AB)
A × B	8	116	0.857	0.567	C(AB)
Plots (A, B) = C(AB)	20	135			
Within plots					
Face = D	2	1287	3.937	0.118	B × D
A × D	4	1408	2.735	0.118	A × B × D
B × D	8	327	0.375	0.824	C(AB) × D
A × B × D	16	515	0.591	0.791	C(AB) × D
C(AB) × D	40	872			
Greenhouse-Geisser epsilon = 0.56741					

'Cages' experiment

Species richness

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
--------	----	----	----------	---	-----------------------------

Between plots

Substratum = A	2	63.27	19.295	0.001	A × B
Block = B	4	0.91	0.474	0.754	C(AB)
A × B	8	3.28	1.712	0.122	C(AB)
Plots (A, B) = C(AB)	45	1.91			

Within plots

Face = D	2	63.27	24.979	0.008	B × D
A × D	4	120.61	61.547	<0.001	A × B × D
B × D	8	2.53	1.499	0.216	C(AB) × D
A × B × D	16	1.96	1.160	0.339	C(AB) × D
C(AB) × D	90	1.69			

Greenhouse-Geisser epsilon = 0.60701

Arcsine (total % cover)

Source	df	MS	<i>F</i>	p	<i>F</i> -ratio denominator
--------	----	----	----------	---	-----------------------------

Between plots

Substratum = A	2	5116	27.543	<0.001	A × B
Block = B	4	28	0.221	0.925	C(AB)
A × B	8	186	1.443	0.205	C(AB)
Plots (A, B) = C(AB)	45	129			

Within-plots

Face = D	2	3181	128.388	<0.001	B × D
A × D	4	7845	68.353	<0.001	A × B × D
B × D	8	25	0.247	0.959	C(AB) × D
A × B × D	16	115	1.143	0.338	C(AB) × D
C(AB) × D	90	100			

Greenhouse-Geisser epsilon = 0.8532

Table S2. Analysis of similitude (ANOSIM) of community composition of the ‘Rings’ experiment. Total % cover data were presence-absence transformed before the analysis. Significant p values are in **bold**; adjacent columns show results of pairwise comparisons. PM: pumice; PL: plastic and ST: Styrofoam.

	Difference between substrata			Difference between rings		
	R	p		R	p	
2 wk	0.28	0.001	PL ≠ PM = ST	0.31	0.001	4 ≠ (1–2–3–5–6) 3 ≠ (1–2–5–6)
4 wk	0.03	0.314	–	0.13	0.03	1 ≠ (2–3–4–5) 2 ≠ 4
6 wk	0.01	0.467	–	0.05	0.226	–
8 wk	0.10	0.119	–	0.04	0.259	–
10 wk	0.21	0.012	PL ≠ PM	0.18	0.008	1 ≠ (2–5–6) 2 ≠ 4 4 ≠ 5
14 wk	0.19	0.02	PL ≠ PM = ST	0.30	0.001	1 ≠ (2–4–6) 2 ≠ (3–4–5–6) 3 ≠ 5 4 ≠ 5

Table S3. Analysis of similitude (ANOSIM) of community composition of the ‘Lines’ experiment. Total % cover data were presence-absence transformed before the analysis. Significant p values are in **bold**; adjacent columns show results of pairwise comparisons. PM: pumice; PL: plastic and ST: Styrofoam. AD: All 3 substrata are different among each other.

	Difference between substrata			Difference between lines		
	R	p		R	p	
2 wk	0.38	0.001	AD	0.09	0.06	–
4 wk	0.19	0.004	AD	–0.02	0.562	–
6 wk	0.50	0.001	AD	0.17	0.009	4 ≠ (1–2–3)
8 wk	0.49	0.001	AD	0.03	0.332	–
10 wk	0.55	0.001	AD	0.07	0.210	–
14 wk	0.35	0.003	AD	0.01	0.429	–

Table S4. Analysis of similitude (ANOSIM) of community composition of the ‘Cages’ experiment. Total % cover data were presence-absence transformed before the analysis. Significant p values are in **bold**; adjacent columns show results of pairwise comparisons. PM: pumice; PL: plastic and ST: Styrofoam. AD: All 3 substrata are different among each other.

	Difference between substrata			Difference between cages		
	R	p		R	p	
2 wk	0.02	0.291	–	–0.01	0.748	–
4 wk	0.56	0.001	AD	0.17	0.004	2 ≠ (3–4)
6 wk	0.66	0.001	AD	0.19	0.001	1 ≠ (3–4) 3 ≠ (4–5) 4 ≠ 5
8 wk	0.61	0.001	AD	0.02	0.316	–
10 wk	0.57	0.001	AD	0.03	0.272	–
14 wk	0.64	0.001	AD	0.18	0.001	1 ≠ (4–5) 2 ≠ (3–4–5) 3 ≠ (4–5)