

## **Foundation species identity and trophic complexity affect experimental seagrass communities**

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TABLE S1. Experimental densities of seagrass and crustacean mesograzers. The initial densities of seagrass (added as wet weight equivalent to g dry mass), added to vegetated treatments and mesograzer density (as number of individuals) added to animal treatments. The initial grazer density added was equivalent to approximately 4 individuals per gram dry mass of seagrass.

Density treatment	Grazers added (no. indiv./tank)	Seagrass added (g dry mass/0.28m <sup>2</sup> tank)	Equivalent biomass per square meter (g dry mass/m <sup>2</sup> )
0	20	0	0
1	20	5	17
2	40	9	33
3	60	14	50
4	80	19	67
5	100	23	83
6	120	28	100

TABLE S2. Mean abundance of recruiting taxa (g AFDM) by vegetation treatment and trophic treatment. Taxa are arranged vertically in order of greatest to least abundance overall, based on pooled treatments. Most abundant taxa, comprising over 95% of total biomass, are shown in bold. Relative abundances are shown as percent of total biomass in experiment and cumulative percent of total biomass. Standard error of the mean is shown in parentheses.

Trophic Treatment Taxon	No Vegetation					
	No Animals		Grazers		Grazers & Predators	
	Mean	SE	Mean	SE	Mean	SE
<i>Ulva sp.</i>	2.004	(1.091)	0.073	(0.027)	2.109	(1.665)
<i>Molgula manhattensis</i>	1.736	(0.325)	0.759	(0.219)	2.268	(0.220)
Diatoms	2.520	(1.163)	0.001	(0.001)	3.713	(2.595)
<i>Haminoea</i>	1.452	(0.157)	0.156	(0.051)	0.834	(0.024)
<i>Nereid worms</i>	0.061	(0.047)	0.014	(0.014)	0.003	(0.003)
<i>Nereid egg cases</i>	0.193	(0.045)	0	(0.000)	0.230	(0.031)
<i>Balanus spp</i>	0.011	(0.007)	0.007	(0.007)	0.007	(0.007)
<i>Spiochaetoptera worms</i>	0.002	(0.002)	0	(0.000)	0	(0.000)
<i>Maldanidae worms</i>	0.019	(0.012)	0.018	(0.018)	0.007	(0.007)
<i>Mytilus edulis</i>	0	(0)	0	(0)	0	(0)
Porifera	0.0058	(0.006)	0.005	(0.005)	0	(0.000)
Polychaetes unknown	0	(0)	0	(0)	0	(0)
<i>Eurypanopeus depressus</i>	0	(0)	0	(0)	0	(0)
<i>Mulinia lateralis</i>	0.022	(0.022)	0	(0)	0	(0)
<i>Geukensia demissa</i>	0	(0)	0	(0)	<0.001	(<0.001)
<i>Callinectes sapidus</i>	0	(0)	0	(0)	0	(0)
<i>Panopeus herbstii</i>	0	(0)	0	(0)	0	(0)
<i>Crepidula fornicata</i>	0	(0)	0	(0)	0.000	(<0.001)
<i>Anomia simplex</i>	0	(0)	0	(0)	0.005	(0.00465)
<i>Crassostera virginica</i>	0	(0)	0	(0)	0	(0)
<i>Gracilaria</i>	0	(0)	0	(0)	0	(0)
<i>Serpulidae worms</i>	<0.001	(<0.001)	0	(0.000)	0.002	(0.002)
<i>Diadumene leucolena</i>	0	(0)	0	(0)	0	(0)
<i>Barnea truncata</i>	0	(0)	0	(0)	0	(0)
<i>Polysiphonia</i>	0	(0)	0	(0)	0	(0)
<i>Pennaria tiarella</i>	0	(0)	0	(0)	0	(0)
<i>Sertularia argentea</i>	0	(0)	0	(0)	0	(0)
<i>Sabellidae worms</i>	0	(0)	0	(0)	0	(0)
<i>Petricola pholadiformis</i>	0	(0)	0	(0)	0	(0)
Colonial hydroid	0	(0)	0	(0)	0	(0)
<i>Cratena pilata nudi</i>	0	(0)	0	(0)	0	(0)
<i>Ceramium</i>	<0.001	(<0.001)	0	(0.000)	0	(0.000)
<i>Doridella obscura</i>	0	(0)	0	(0)	0	(0)
nudibranch	0	(0)	0	(0)	0	(0)
<i>Hippolytes</i>	0	(0)	0	(0)	0.002	(0.0016)
<i>Mysidae</i>	0	(0)	0	(0)	0	(0)
<i>Agardiella sp.</i>	0	(0)	0	(0)	0	(0)
Bryozoan encrusting	0	(0)	0	(0)	0	(0)
<i>Pinnixia chaetoptera</i>	0	(0)	0	(0)	0	(0)
Anemone	0	(0)	0	(0)	0	(0)
<i>Barnacle Lepas sp</i>	0	(0)	0	(0)	0	(0)
All Taxa	0.196	(0.453)	0.025	(0.088)	0.224	(0.625)

Vegetation Treatment		<i>Ruppia maritima</i>				
Trophic Treatment	No Animals		Grazers		Grazers & Predators	
Taxon	Mean	SE	Mean	SE	Mean	SE
<i>Ulva sp.</i>	1.996	(0.323)	0.050	(0.020)	1.235	(0.497)
<i>Molgula manhattensis</i>	1.303	(0.191)	0.743	(0.290)	1.270	(0.291)
Diatoms	1.020	(0.389)	0.026	(0.023)	0.678	(0.598)
<i>Haminoea</i>	0.940	(0.137)	0.185	(0.105)	0.601	(0.236)
<i>Nereid worms</i>	0.147	(0.078)	0.084	(0.029)	0.051	(0.023)
<i>Nereid egg cases</i>	0.469	(0.113)	0.016	(0.016)	0.082	(0.059)
<i>Balanus spp</i>	0.027	(0.007)	0.034	(0.013)	0.024	(0.007)
<i>Spiochaetoptera worms</i>	0.041	(0.016)	0.015	(0.005)	0.021	(0.006)
<i>Maldanidae worms</i>	<0.001	(<0.001)	0.011	(0.004)	0.002	(0.001)
<i>Mytilus edulis</i>	0.005	(0.003)	0.016	(0.006)	0.012	(0.009)
Porifera	0.005	(0.004)	0.022	(0.014)	0	(0.000)
Polychaetes unknown	0.001	(0.001)	0.007	(0.003)	0.007	(0.004)
<i>Eurypanopeus depressus</i>	0	(0)	0	(0)	0	(0)
<i>Mulinea lateralis</i>	0.001	(0.001)	0.003	(0.002)	0.002	(0.001)
<i>Geukensia demissa</i>	0.002	(0.002)	0.009	(0.004)	0.009	(0.005)
<i>Callinectes sapidus</i>	0	(0)	0	(0)	0.017	(0.017)
<i>Panopeus herbstii</i>	0	(0)	0	(0)	0	(0)
<i>Crepidula fornicata</i>	0	(0)	0	(0)	<0.001	(<0.001)
<i>Anomia simplex</i>	0	(0)	0.001	(0.001)	0	(0)
<i>Crassostera virginica</i>	0	(0)	0	(0)	0	(0)
<i>Gracilaria</i>	0	(0)	0.004	(0.004)	0.002	(0.001)
<i>Serpulidae worms</i>	0.001	(0.001)	<0.001	(<0.001)	0.002	(0.001)
<i>Diadumene leucolena</i>	0	(0)	0.005	(0.005)	0	(0)
<i>Barnea truncata</i>	0	(0)	<0.001	(<0.001)	0	(0)
<i>Polysiphonia</i>	0.002	(0.0016)	0	(0)	<0.001	(<0.001)
<i>Pennaria tiarella</i>	0	(0)	0	(0)	0	(0)
<i>Sertularia argentea</i>	<0.001	(<0.001)	0	(0)	0	(0)
<i>Sabellidae worms</i>	0	(0)	0	(0)	0	(0)
<i>Petricola pholadiformis</i>	0	(0)	0	(0)	0.001	(0.0007)
Colonial hydroid	0	(0)	0	(0)	<0.001	(<0.001)
<i>Cratena pilata nudi</i>	0.001	(0.001)	0	(0)	0	(0)
<i>Ceramium</i>	0	(0.000)	0	(0.000)	0.001	(0.001)
<i>Doridella obscura</i>	0	(0)	0	(0)	0.001	(0.0007)
nudibranch	0.001	(0.000)	0	(0)	<0.001	(<0.001)
<i>Hippolytes</i>	0	(0)	0	(0)	0	(0)
<i>Mysidae</i>	0	(0)	0	(0)	0	(0)
<i>Agardiella sp.</i>	0	(0)	<0.001	(<0.001)	0	(0)
Bryozoan encrusting	0	(0)	0	(0)	0	(0)
<i>Pinnixia chaetoptera</i>	<0.001	(0)	0	(0)	0	(0)
Anemone	0	(0)	0	(0)	0	(0)
<i>Barnacle Lepas sp</i>	<0.001	(<0.001)	0	(0)	0	(0)
All Taxa	0.145	(0.188)	0.030	(0.066)	0.098	(0.173)

Vegetation Treatment		<i>Zostera marina</i>				
Trophic Treatment	No Animals		Grazers		Grazers & Predators	
Taxon	Mean	SE	Mean	SE	Mean	SE
<i>Ulva sp.</i>	2.079	(0.650)	0.169	(0.046)	3.626	(2.407)
<i>Molgula manhattensis</i>	1.534	(0.180)	0.416	(0.144)	0.880	(0.205)
Diatoms	2.286	(0.808)	0.000	(0.000)	0.121	(0.054)
<i>Haminoea</i>	0.752	(0.175)	0.151	(0.069)	0.224	(0.082)
<i>Nereid worms</i>	0.424	(0.106)	0.224	(0.083)	0.294	(0.083)
<i>Nereid egg cases</i>	0.215	(0.072)	0	(0.000)	0.039	(0.039)
<i>Balanus spp</i>	0.046	(0.009)	0.063	(0.019)	0.071	(0.014)
<i>Spiochaetoptera worms</i>	0.047	(0.013)	0.034	(0.011)	0.046	(0.012)
<i>Maldanidae worms</i>	0.017	(0.009)	0.014	(0.005)	0.011	(0.003)
<i>Mytilus edulis</i>	0.003	(0.003)	0.014	(0.010)	0.005	(0.003)
Porifera	0.015	(0.014)	0.000	(0.000)	0.004	(0.003)
Polychaetes unknown	0.010	(0.005)	0.012	(0.006)	0.002	(0.002)
<i>Eurypanopeus depressus</i>	0.017	(0.0173)	0.005	(0.0046)	0	(0)
<i>Mulinia lateralis</i>	0.002	(0.001)	0.001	(0.001)	0.005	(0.003)
<i>Geukensia demissa</i>	0.001	(0.001)	0	(0)	0	(0)
<i>Callinectes sapidus</i>	0	(0)	0	(0)	0	(0)
<i>Panopeus herbstii</i>	0	(0)	0.011	(0.011)	0	(0)
<i>Crepidula fornicata</i>	0.001	(0.001)	0.005	(0.002)	0.004	(0.002)
<i>Anomia simplex</i>	0.001	(0.001)	0.004	(0.003)	0.002	(0.001)
<i>Crassostera virginica</i>	0.005	(0.002)	0.004	(0.003)	0	(0)
<i>Gracilaria</i>	0	(0)	0	(0)	0.001	(0.001)
<i>Serpulidae worms</i>	0.001	(0.001)	0.001	(<0.001)	<0.001	(<0.001)
<i>Diadumene leucolena</i>	0	(0)	0	(0)	<0.001	(<0.001)
<i>Barnea truncata</i>	0.001	(0.0006)	0.003	(0.003)	0.001	(0.0009)
<i>Polysiphonia</i>	0.001	(0.001)	0	(0)	0	(0)
<i>Pennaria tiarella</i>	0	(0)	0	(0)	0.002	(0.002)
<i>Sertularia argentea</i>	0	(0)	0.001	(0.001)	0	(0)
<i>Sabellidae worms</i>	0	(0)	0	(0)	0.002	(0.002)
<i>Petricola pholadiformis</i>	<0.001	(<0.001)	0	(0)	0.001	(0.001)
Colonial hydroid	0.001	(<0.001)	0.001	(0.0005)	<0.001	(<0.001)
<i>Cratena pilata nudi</i>	0	(0)	0	(0)	0	(0)
<i>Ceramium</i>	0	(0.000)	0	(0.000)	0	(0.000)
<i>Doridella obscura</i>	0	(0)	0	(0)	<0.001	(<0.001)
nudibranch	0	(0)	0	(0)	0	(0)
<i>Hippolytes</i>	0	(0)	0	(0)	0	(0)
<i>Mysidae</i>	<0.001	(<0.001)	0	(0)	0	(0)
<i>Agardiella sp.</i>	0	(0)	0	(0)	0	(0)
Bryozoan encrusting	<0.001	(<0.001)	0	(0)	<0.001	(<0.001)
<i>Pinnixia chaetoptera</i>	0	(0)	<0.001	(<0.001)	0	(0)
Anemone	0	(0)	<0.001	(<0.001)	0	(0)
<i>Barnacle Lepas sp</i>	0	(0)	0	(0)	0	(0)
All Taxa	0.182	(0.264)	0.028	(0.042)	0.130	(0.417)

Vegetation Treatment	All Treatments Pooled				
Trophic Treatment	Total Mass (AFDW)		% of Total	Cumulative %	
Taxon	Mean	SE			
<i>Ulva sp.</i>	<b>1.507</b>	(0.392)	<b>63.298</b>	33.785	33.785
<i>Molgula manhattensis</i>	<b>1.105</b>	(0.104)	<b>46.400</b>	24.766	58.551
Diatoms	<b>0.887</b>	(0.240)	<b>37.256</b>	19.885	78.436
<i>Haminoea</i>	<b>0.524</b>	(0.074)	<b>22.000</b>	11.742	90.178
<i>Nereid worms</i>	<b>0.179</b>	(0.032)	<b>7.505</b>	4.006	94.183
<i>Nereid egg cases</i>	<b>0.137</b>	(0.032)	<b>5.773</b>	3.081	97.265
<i>Balanus spp</i>	0.039	(0.005)	1.640	0.875	98.140
<i>Spiochaetoptera worms</i>	0.029	(0.005)	1.222	0.652	98.792
<i>Maldanidae worms</i>	0.010	(0.002)	0.418	0.223	99.015
<i>Mytilus edulis</i>	0.008	(0.002)	0.326	0.174	99.189
Porifera	0.007	(0.003)	0.304	0.162	99.351
Polychaetes unknown	0.006	(0.001)	0.239	0.128	99.479
<i>Eurypanopeus depressus</i>	0.003	(0.003)	0.131	0.070	99.549
<i>Mulinia lateralis</i>	0.003	(0.001)	0.130	0.069	99.619
<i>Geukensia demissa</i>	0.003	(0.001)	0.125	0.067	99.685
<i>Callinectes sapidus</i>	0.002	(0.002)	0.102	0.055	99.740
<i>Panopeus herbstii</i>	0.002	(0.002)	0.065	0.035	99.775
<i>Crepidula fornicata</i>	0.002	(0.000)	0.065	0.035	99.809
<i>Anomia simplex</i>	0.001	(0.001)	0.055	0.030	99.839
<i>Crassostera virginica</i>	0.001	(0.001)	0.053	0.029	99.867
<i>Gracilaria</i>	0.001	(0.001)	0.044	0.023	99.891
<i>Serpulidae worms</i>	0.001	(0.000)	0.041	0.022	99.913
<i>Diadumene leucolena</i>	0.001	(0.001)	0.032	0.017	99.930
<i>Barnea truncata</i>	0.001	(0.001)	0.031	0.016	99.946
<i>Polysiphonia</i>	0.000	(0.000)	0.014	0.008	99.954
<i>Pennaria tiarella</i>	0.000	(0.000)	0.012	0.006	99.960
<i>Sertularia argentea</i>	0.000	(0.000)	0.011	0.006	99.966
<i>Sabellidae worms</i>	0.000	(0.000)	0.011	0.006	99.972
<i>Petricola pholadiformis</i>	0.000	(0.000)	0.011	0.006	99.978
Colonial hydroid	0.000	(0.000)	0.010	0.006	99.983
<i>Cratena pilata nudi</i>	0.000	(0.000)	0.006	0.003	99.986
<i>Ceramium</i>	0.000	(0.000)	0.006	0.003	99.989
<i>Doridella obscura</i>	0.000	(0.000)	0.005	0.003	99.992
nudibranch	0.000	(0.000)	0.004	0.002	99.994
<i>Hippolytes</i>	0.000	(0.000)	0.003	0.002	99.996
<i>Mysidae</i>	0.000	(0.000)	0.003	0.002	99.997
<i>Agardiella sp.</i>	0.000	(0.000)	0.001	0.001	99.998
Bryozoan encrusting	0.000	(0.000)	0.001	0.001	99.999
<i>Pinnixia chaetoptera</i>	0.000	(0.000)	0.001	0.001	99.999
Anemone	0.000	(0.000)	0.001	0.001	100.000
<i>Barnacle Lepas sp</i>	0.000	(0.000)	0.000	0.000	100.000
All Taxa	0.109	(0.089)	187.3554	100.000	100.000

Table S3. Results from linear models of seagrass species and predator treatment effects on diversity of recruiting taxa in treatments with vegetation. Shannon-Wiener Diversity and Species Evenness were Box-Cox transformed to improve normality. Bold indicates significant effect at  $p < 0.05$ .

Factors	Species Richness				Shannon-Wiener Diversity (H')				Species Evenness			
	MS	Num. DF, Den. DF	F	p	MS	Num. DF, Den. DF	F	p	MS	Num. DF, Den. DF	F	p
Seagrass Species	1.366	1, 23.822	1.085	0.308	0.028	1, 18.434	0.338	0.568	0.000	1, 23.834	0.002	0.970
Seagrass Density	5.242	1, 23.996	1.187	0.287	0.026	1, 18.979	0.260	0.616	0.005	1, 23.933	1.029	0.321
Trophic Treatment	0.028	2, 21.715	0.040	0.961	0.301	2, 23.226	2.010	0.157	0.006	2, 21.649	2.150	0.141
Seagrass Species x Seagrass density	11.725	1, 23.961	2.077	0.163	0.068	1, 19.341	0.964	0.338	0.000	1, 23.935	0.017	0.896
Seagrass Species x Trophic Treatment	12.028	2, 22.746	1.066	0.361	0.008	2, 23.946	0.495	0.616	0.004	2, 22.652	1.214	0.316
Trophic Treatment x Seagrass Density	0.302	2, 22.247	0.089	0.916	0.311	2, 23.416	4.472	<b>0.023</b>	0.008	2, 22.164	3.668	<b>0.042</b>
Seagrass Species x Seagrass density x Trophic Treatment	1.888	2, 22.511	0.361	0.701	0.051	2, 22.798	0.733	0.492	0.001	2, 22.442	0.362	0.700