

1 **Supplementary Material**

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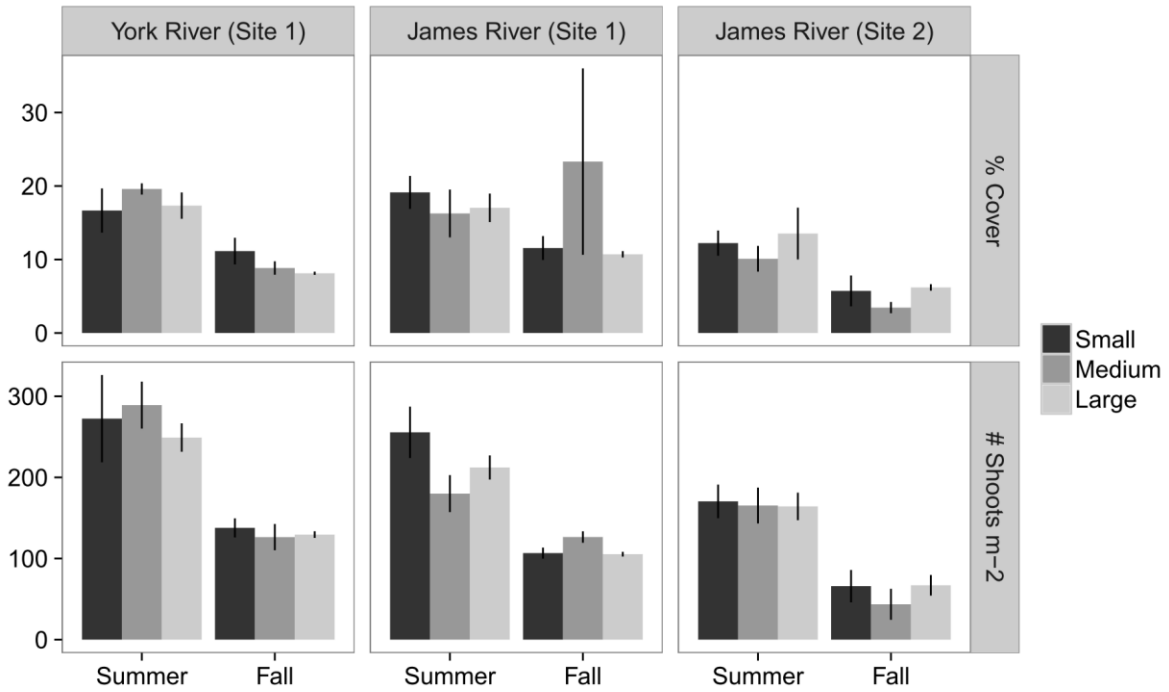
3 **Supplement S1:** R code (.R) and data (.ZIP) used to conduct all analyses and produce all  
4 figures.

5 **Supplement S2:** Functional traits used in the analysis (.XLSX).

6 **Table S1:** Functional traits used in the analysis of functional diversity, their units, and  
 7 ecological interpretations.

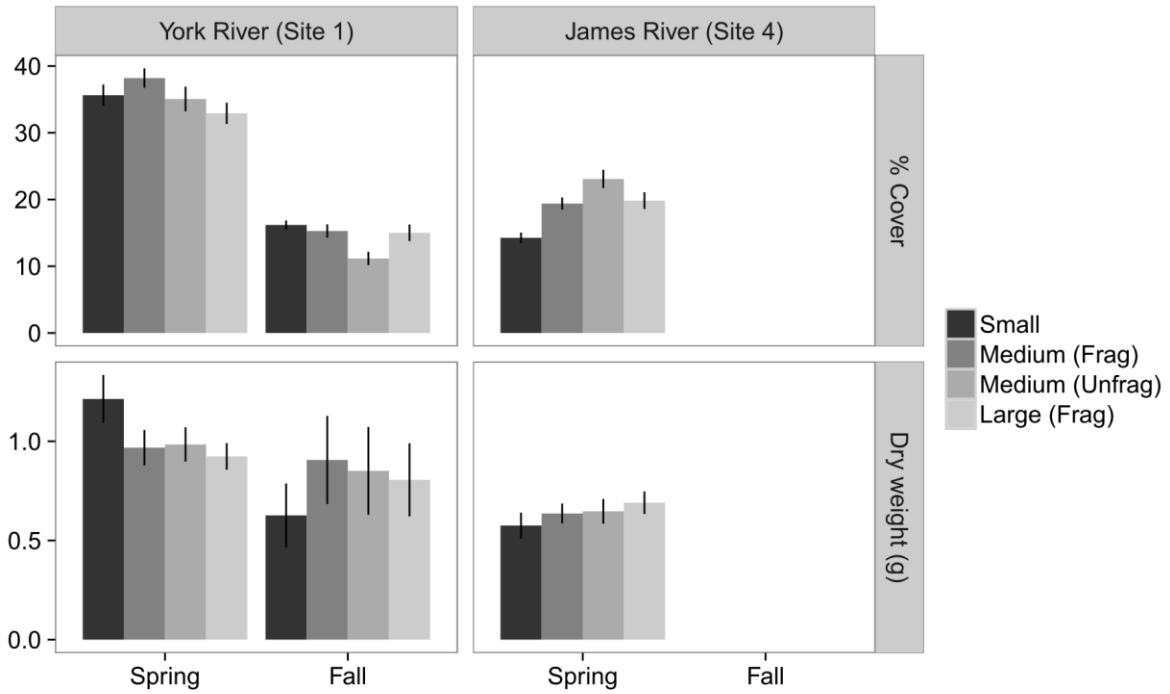
<b>Trait</b>	<b>Description</b>	<b>Units</b>	<b>Functional Interpretation</b>
Exoskeleton material	The primary material used in forming the exoskeleton	Calcium carbonate, chitin	Defense and competition
Trophic group	The primary trophic guild of the organism	Detritivore, filter feeder, grazer, omnivore, predator	Resource partitioning
Specific diet	The general group that forms the majority of the diet based on published analyses of diet preferences and/or gut contents	Benthic microalgae, bivalves, crustaceans, detritus, epibionts, epiphytic microalgae, hydroids, macroalgae, microalgae, polychaetes, sponges	Resource partitioning
Maximum length	The largest recorded size of the organism	Continuous, in mm	Habitat use and partitioning, resource partitioning
Mobility	The general state of activity of the organism	Crawling, free-swimming, tube-building	Habitat use and partitioning, colonization potential
Egg retention	Whether the organism retains its eggs or releases them into the water column	Brooding, external release	Colonization and dispersal potential
Development mode	Whether the organism has a larval stage, and, if so, if that larvae disperse in the plankton	Direct, larval (non-planktonic), larval (planktonic)	Colonization and dispersal potential

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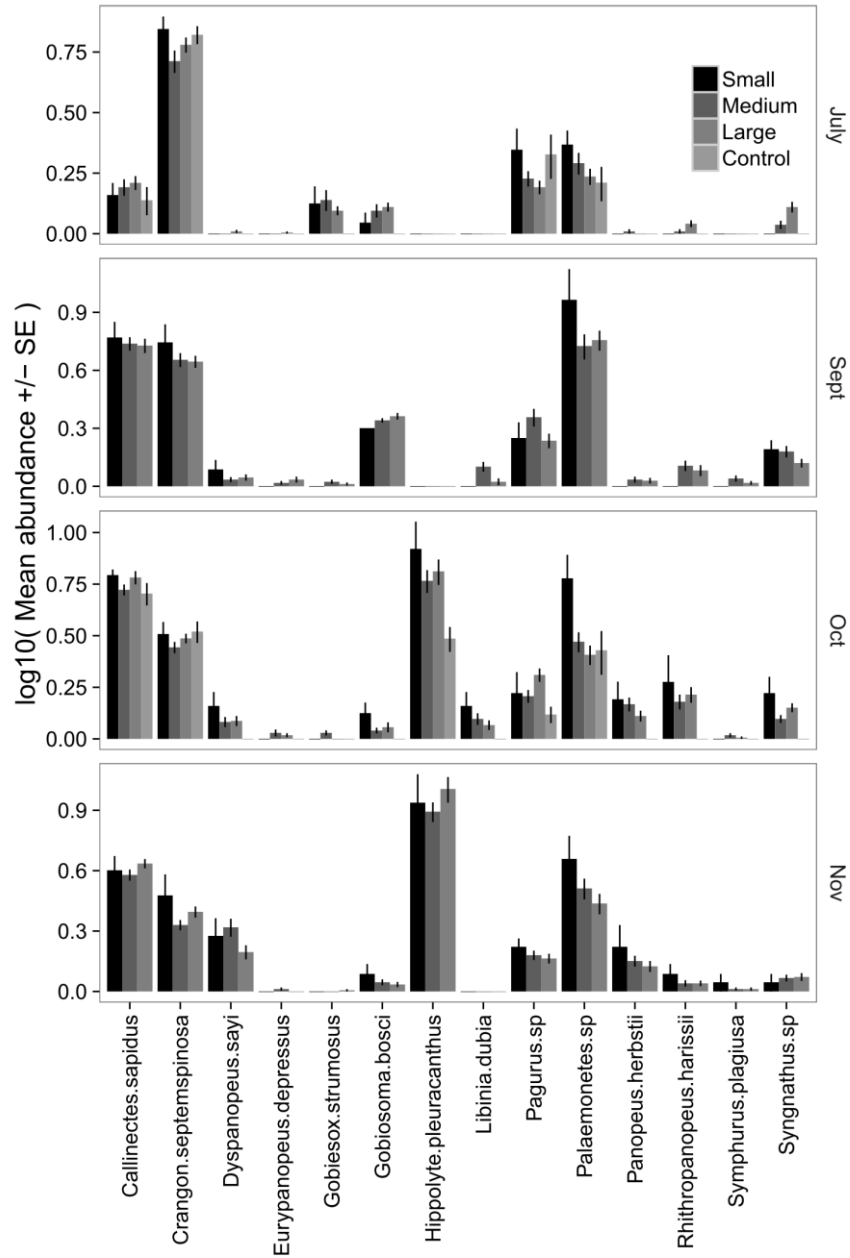
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10 **Figure S1:** Percent cover (top row) assessed using quadrats and shoot density (shoots m<sup>-2</sup>,  
 11 bottom row) assessed using ring counts for three sites in Experiment 1 (CG = site 1, York  
 12 River, MS = site 2, James River, SB = site 3, James River) in two seasons, and for each  
 13 experimental landscape size: small (4 m<sup>2</sup>), medium (100 m<sup>2</sup>), and large (400 m<sup>2</sup>).



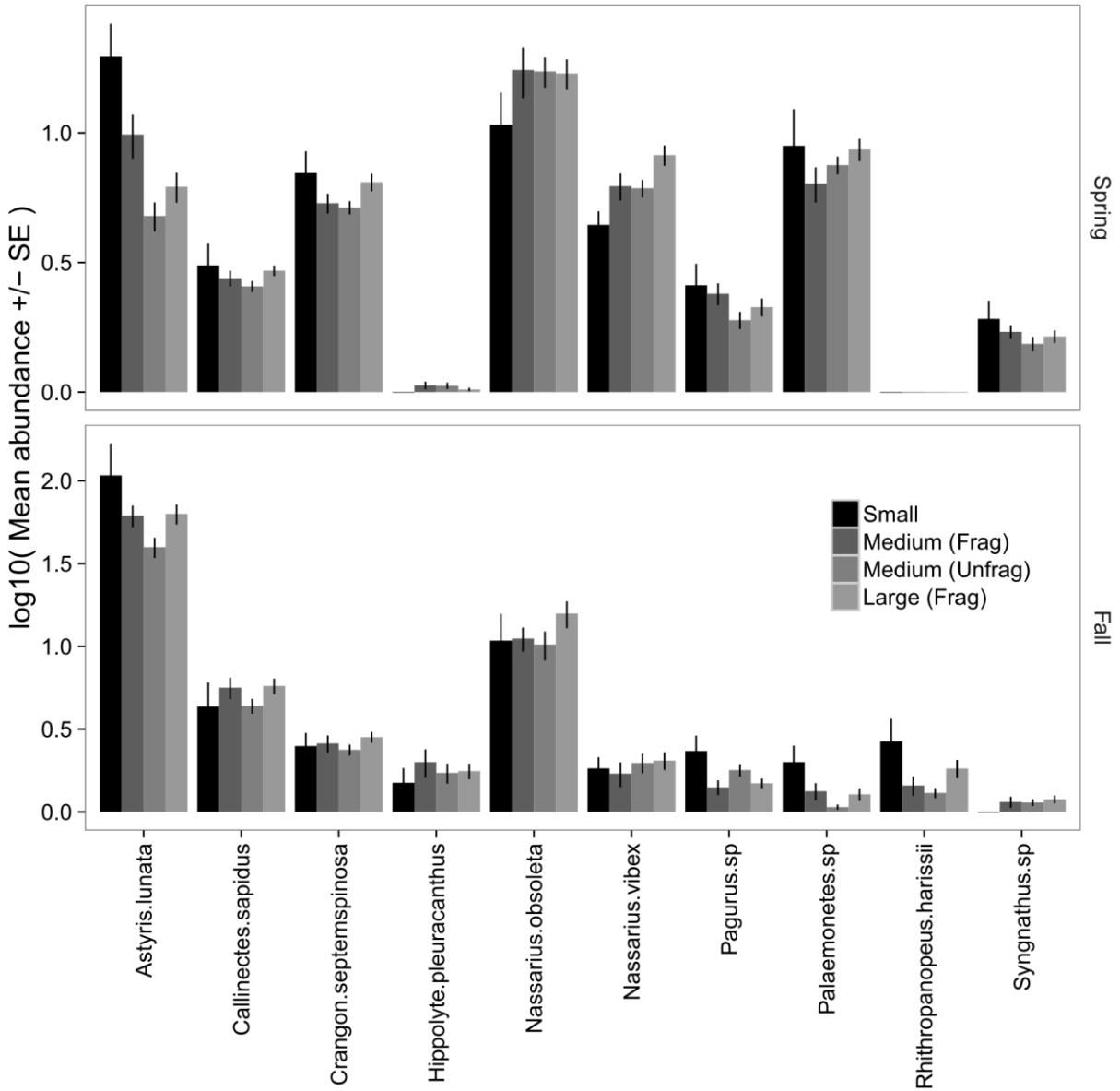
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15 **Figure S2:** Percent cover (top row) assessed using quadrats and shoot dry weight (g,  
 16 bottom row) assessed from core samples for two sites in Experiment 2 (York River and  
 17 James River) in two seasons, and for each experimental landscape size: small (4 m<sup>2</sup>),  
 18 medium (100 m<sup>2</sup>), both fragmented and unfragmented, and large fragmented (400 m<sup>2</sup>).



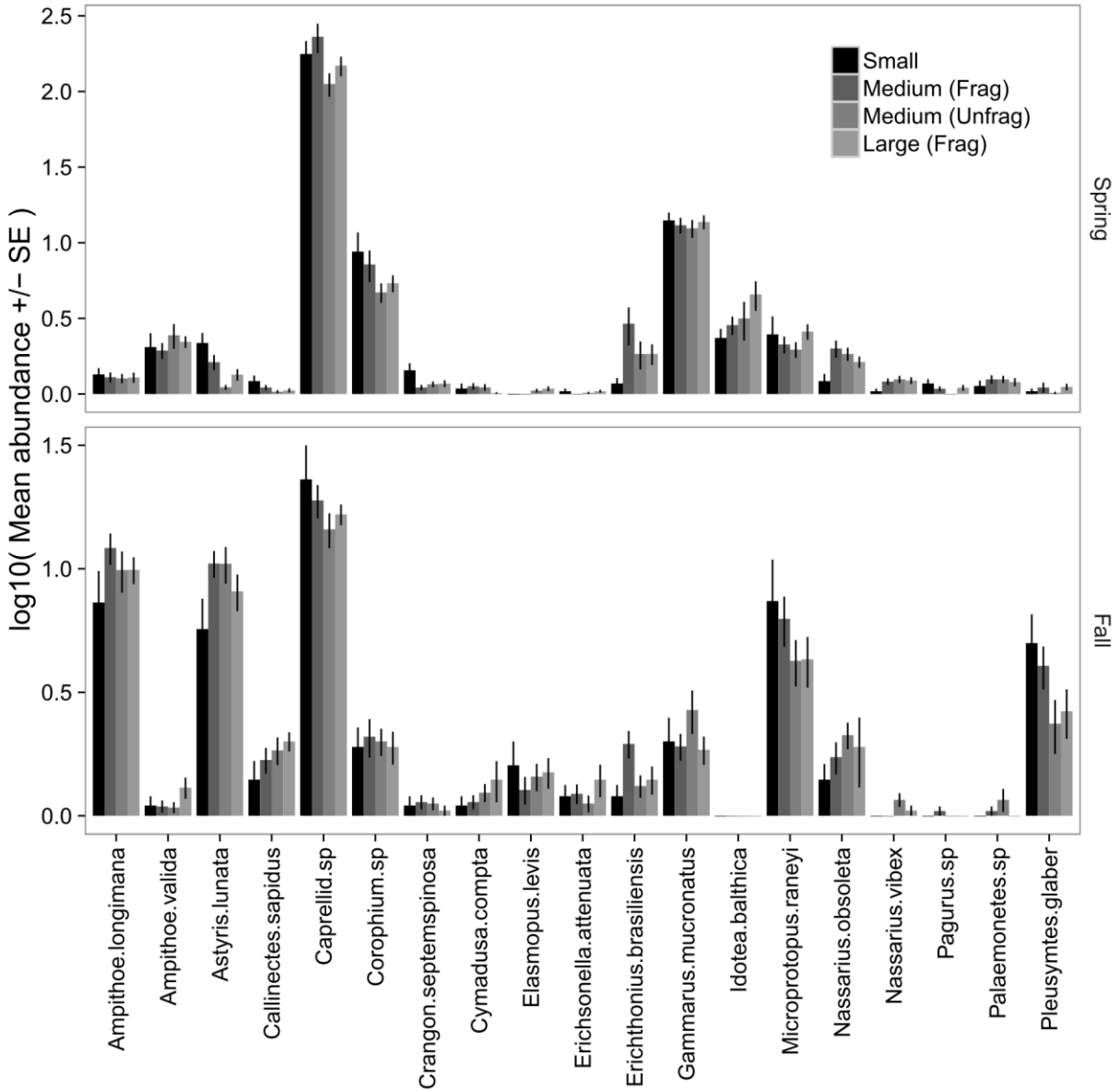
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20 **Figure S3:** Log<sub>10</sub>-transformed mean abundances ± 1 SE for species obtained during suction  
 21 samples in Experiment 1 for each sampling dates in 1997 and for each experimental  
 22 landscape size: small (4 m<sup>2</sup>), medium (100 m<sup>2</sup>), and large (400 m<sup>2</sup>). Control refers to an  
 23 adjacent natural eelgrass bed, sampled to determine whether natural faunal communities  
 24 resembled ones recruiting to the experimental transplants.



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26 **Figure S4:** Log<sub>10</sub>-transformed mean abundances ± 1 SE for species obtained during suction  
 27 samples in Experiment 2 for the two samples dates in 1999 and for each experimental  
 28 landscape size: small (4 m<sup>2</sup>), medium (100 m<sup>2</sup>), both fragmented and unfragmented, and  
 29 large fragmented (400 m<sup>2</sup>).



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31 **Figure S4:** Log<sub>10</sub>-transformed mean abundances ± 1 SE for species obtained during core  
 32 samples in Experiment 2 for the two samples dates in 1999 and for each experimental  
 33 landscape size: small (4 m<sup>2</sup>), medium (100 m<sup>2</sup>), both fragmented and unfragmented, and  
 34 large fragmented (400 m<sup>2</sup>).