

Faunal Communities Associated with *Sargassum horneri*

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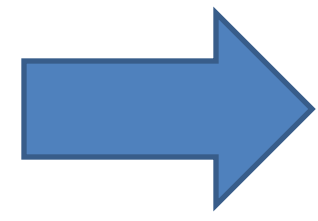
Introduction

An important, but often overlooked function provided by macroalgae is their capacity to provide habitat for small invertebrates that form the primary food source for many reef fish. Changes in the algal community as a result of invasive species have the potential to affect the invertebrate assemblages that colonize the algae. *Sargassum horneri* is an invasive species of brown algae recently introduced to the kelp forests of southern California. We were concerned with determining if *S. horneri* supports a different community of invertebrates than those found on native kelps. The objective was to characterize the meso-invertebrate assemblage associated with *S. horneri* and compare these communities to those found on *M. pyrifera*, a prevalent kelp native to California.

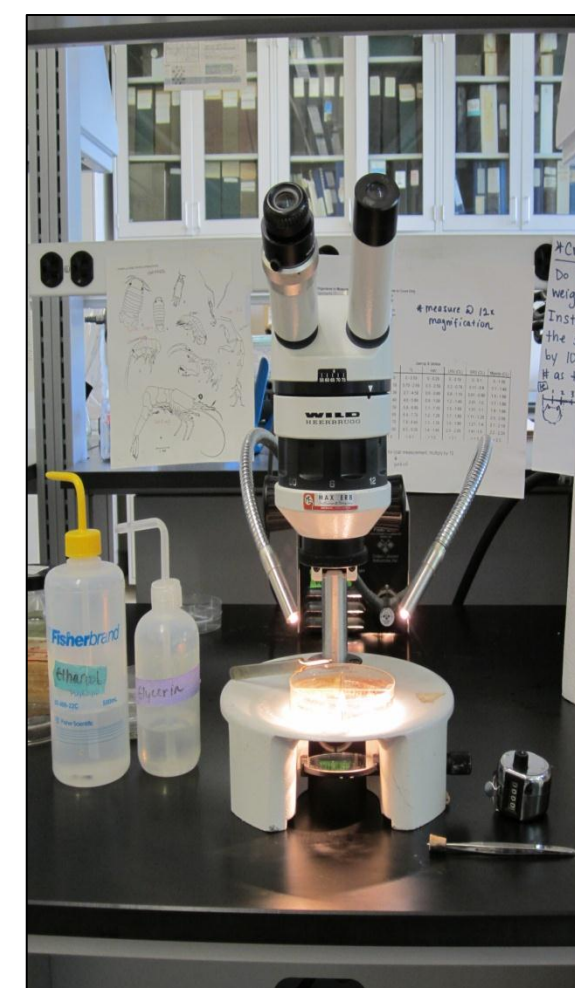
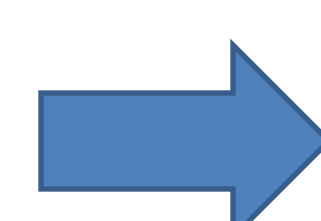
Materials and Methods



S. horneri individuals were collected from three sites off the coast of Catalina Island

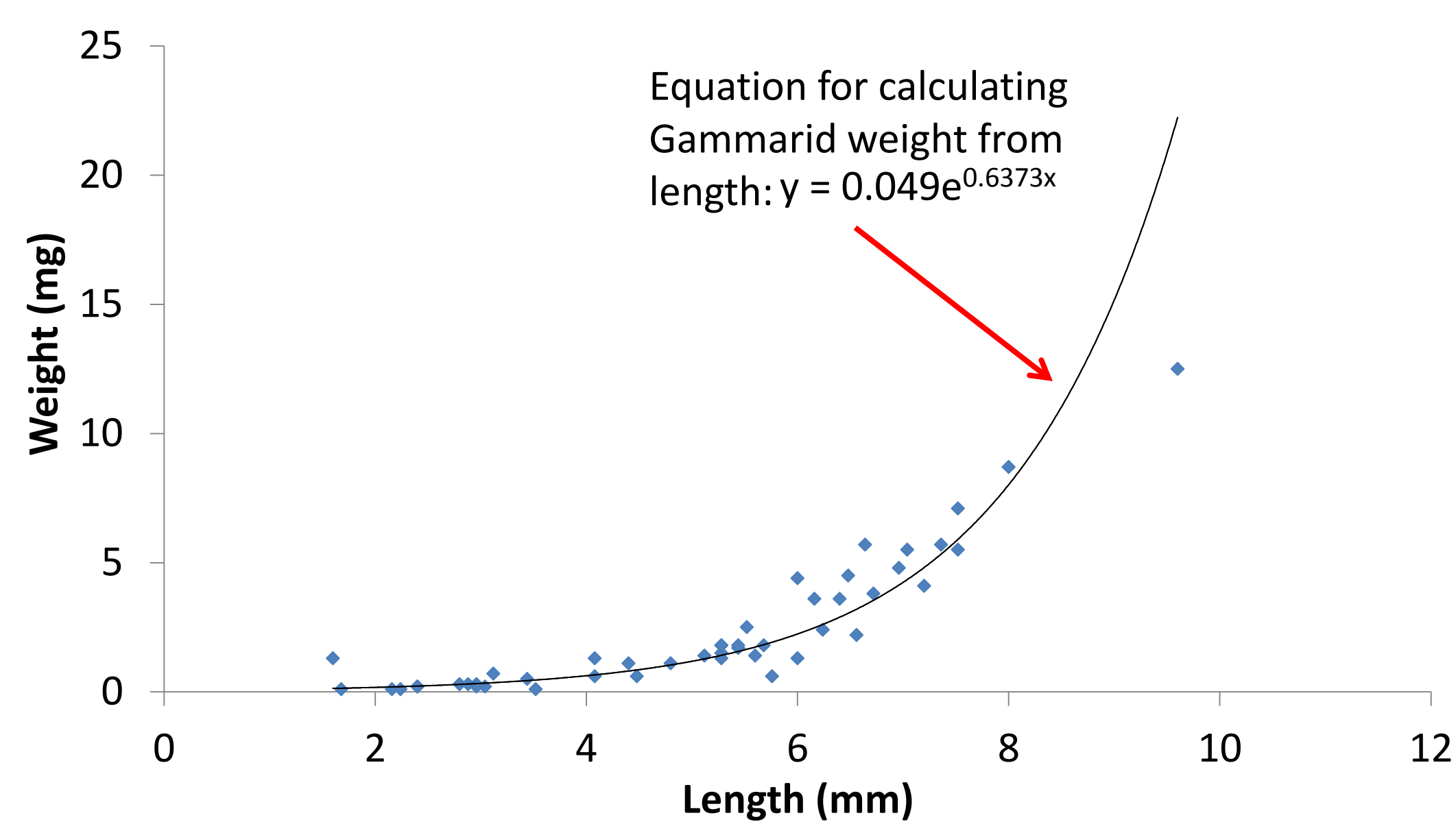


Associated invertebrates were rinsed off the alga through a fine mesh sieve and preserved in ethanol



Invertebrates were identified and enumerated under the microscope, and the most abundant taxa were measured

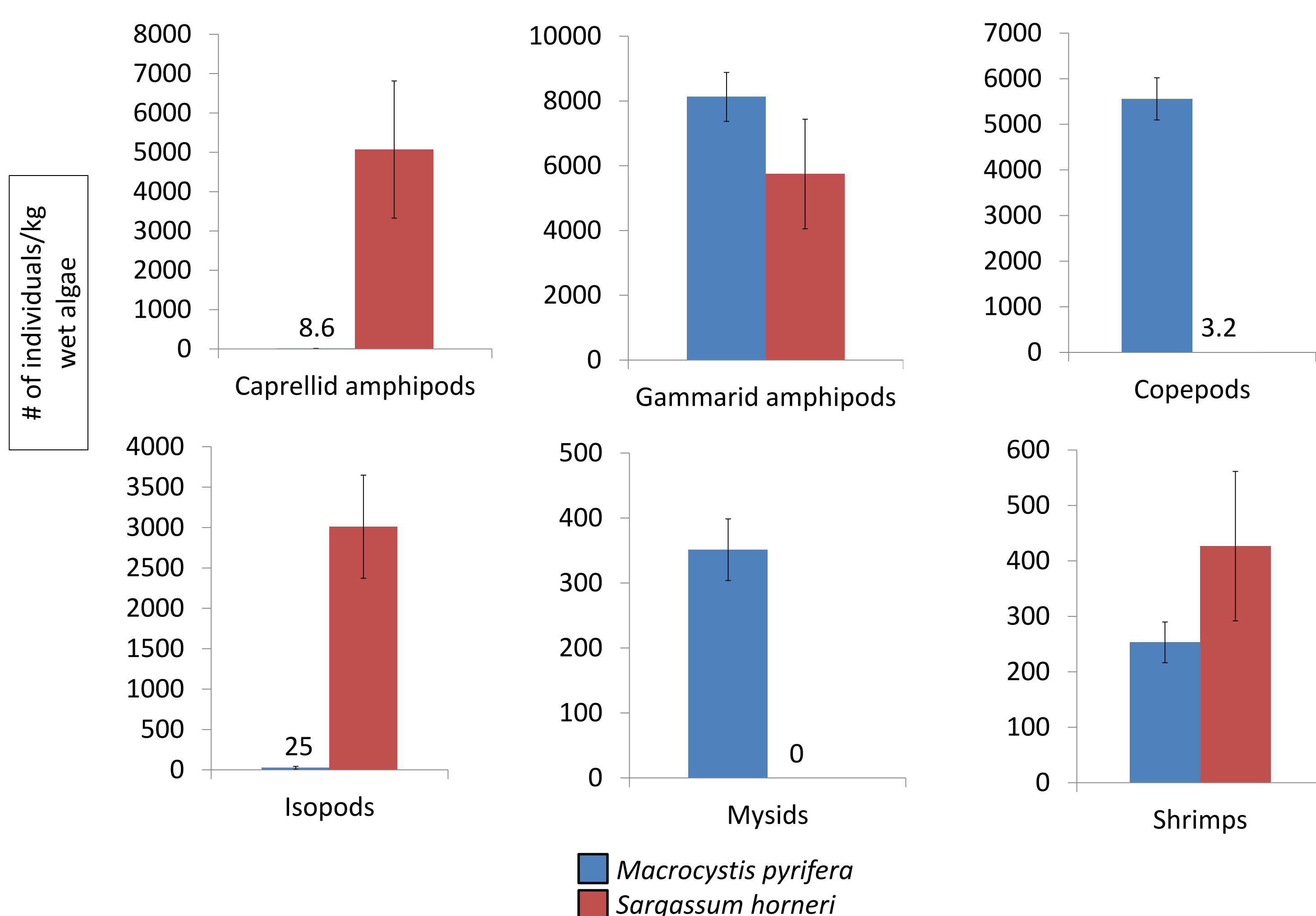
Length-weight relationships were formulated for the most abundant taxa. Approximately 50 invertebrates from each taxa were individually measured and weighed and a best-fit line through these data given by Microsoft Excel was used to estimate the weight of all individuals.



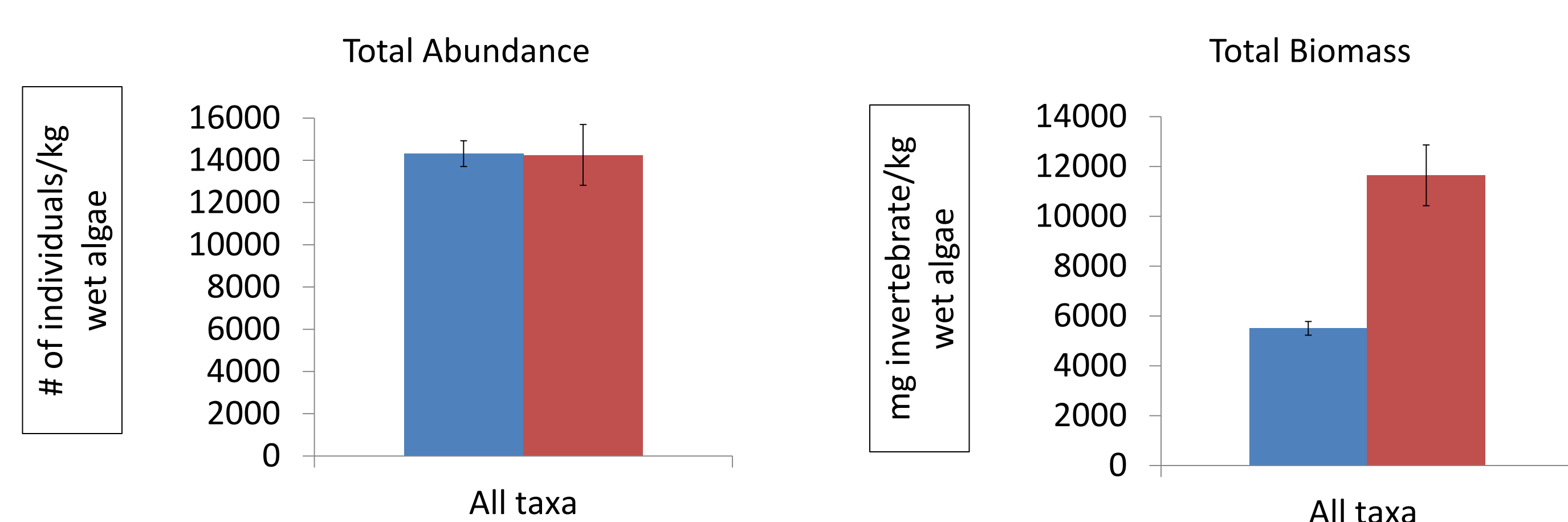
Invertebrate species composition and biomass for *S. horneri* were compared against the invertebrate assemblages associated with *M. pyrifera*.

Results

The invertebrate assemblages associated with *M. pyrifera* and *S. horneri* varied between the two species of algae. Invertebrate abundance for the most significant taxa are shown below. Mean invertebrate abundance per kilogram of wet algae for the most common taxa on either algal species are shown below with standard error bars.



Total invertebrate abundance and biomass (for the above taxa) were compared for *M. pyrifera* and *S. horneri*. Although the mean number of individuals from all the major taxa combined present on each algal species is nearly equal, as shown on the right, the mean biomass on *S. horneri* is roughly double compared to the community on *M. pyrifera*.



Discussion

The morphology of the two species of algae are different, which may explain why the invertebrate communities associated with each of them vary. Some invertebrate taxa might be better suited to one habitat over the other.



Macrocytis pyrifera: morphologically simple



Sargassum horneri: highly complex structure

M. pyrifera has a relatively simple structure with fewer branches per stipe compared to *S. horneri*, which is highly branched and overall more morphologically complex. Some taxa such as caprellids may utilize the structural complexity of *S. horneri* to avoid fish predation. Alternatively, others such as copepods which are very small and flat are better suited to the simple, more uniform habitat provided by *M. pyrifera*.



The five invertebrates found on *S. horneri* samples that were used in the species composition analysis. From bottom left to right: copepod, sphaerid isopod, caprellid, gammarid, shrimp.

The difference in size between each of the taxa is most likely responsible for *S. horneri* having roughly double the invertebrate biomass but the almost the same invertebrate abundance compared to *M. pyrifera*. For example, Copepods constituted a significant portion of the invertebrate assemblage associated with *M. pyrifera*, but they are miniscule in comparison to shrimp, a dominant taxa of *S. horneri*.

These results indicate that *S. horneri* is potentially accountable for altering the distribution of fauna throughout southern California kelp forests. These changes would directly impact predators of these fauna, and so marine food webs would be affected throughout all trophic levels. Further study of the invertebrate assemblages associated with *S. horneri* such as collecting samples from other environments to which it has spread is required to fully understand the consequences of its invasion.

Acknowledgements

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Contact Information

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