

Variation in a simple trait of mangrove roots governs predator access to, and assemblage composition of, epibiotic sponges

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Marine Ecology Progress Series 573: 15–23 (2017)

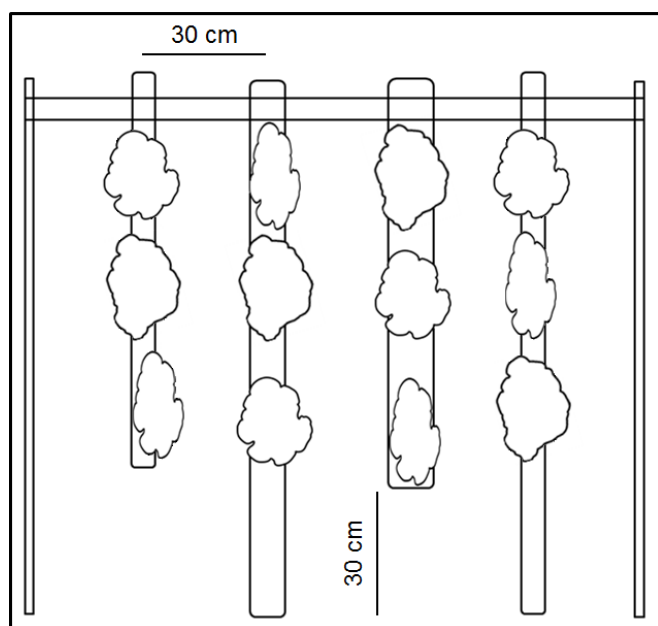


Figure S1. Schematic of the experimental setup to test predation rates on sponges on grounded and suspended mangrove roots. The experiment was conducted at an average of 1.4 m water depth among naturally occurring roots. The four mangrove roots are stabilized by rebar stakes on each end of the block and two strands of nylon string (about 150 cm long) across the top. Three sponge pieces are secured to each of the mangrove roots.

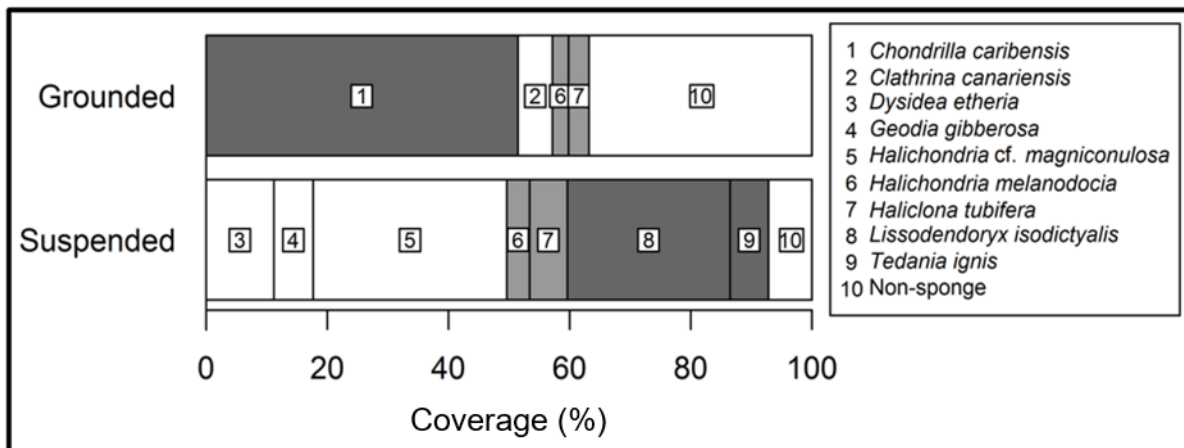


Figure S2. Whole-root sponge ensembles constructed from cumulative percent coverage on surveyed natural roots at the study site. Suspended roots were 55% longer than grounded roots on average and area is not standardized between the two root types in this analysis. Sponge species are listed in alphabetical order from 1 – 9. Dark gray shading highlights the species used in our experiment and light gray shading highlights the sponge species seen on both suspended and grounded roots. The “non-sponge” category includes hydroids, anemones, and algae.

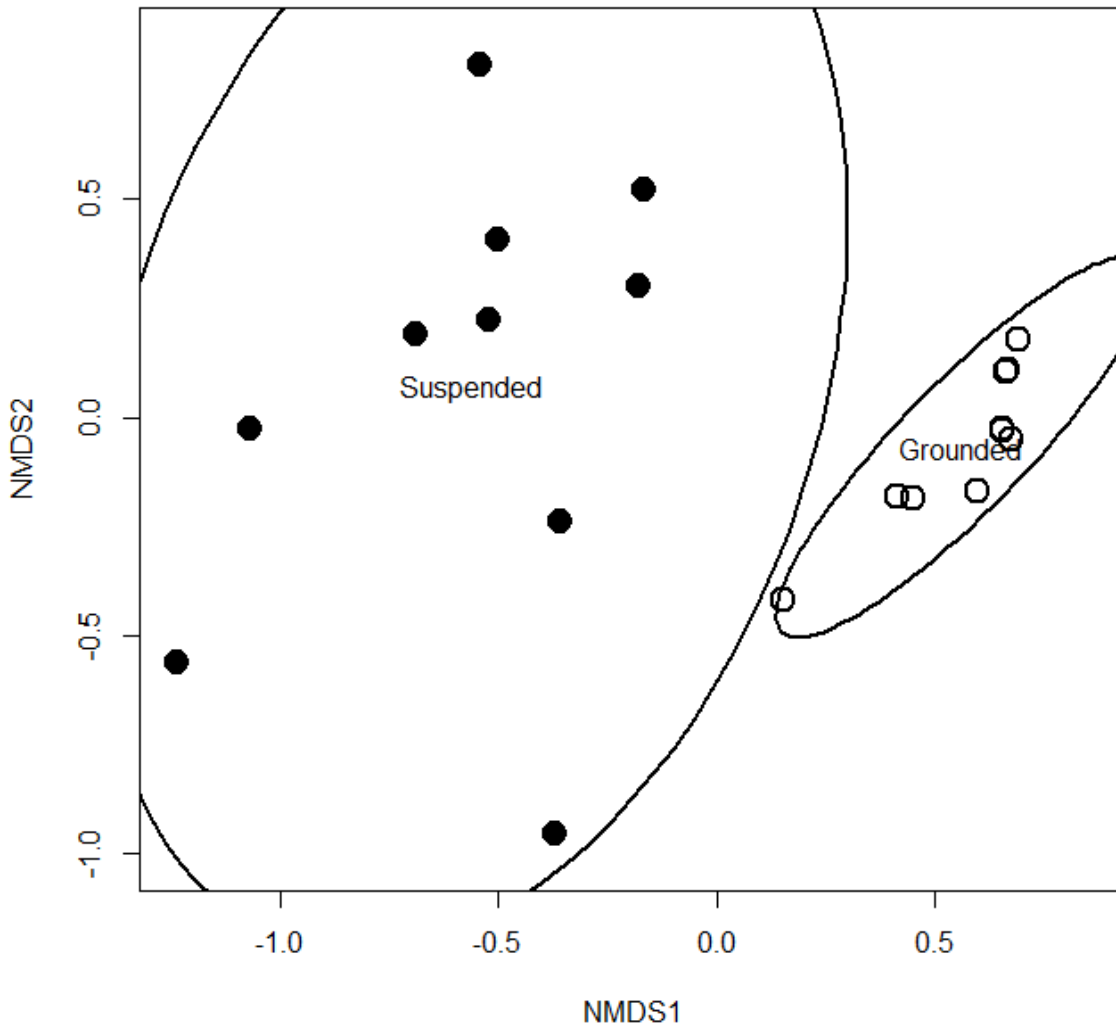


Figure S3. A Bray-Curtis analysis of similarity (performed on whole root lengths [suspended roots were 55% longer than grounded roots on average]) indicated that root position significantly affected root ensemble composition ($R = 0.81$, $p < 0.001$). Root position designations are plotted at the centroid of scores for each root type and ellipses show the 95% confidence intervals for the standard error around these centroids. The larger ellipse around the points representing suspended roots indicates higher variance in sponge ensembles between roots (compared to ensembles on grounded roots).

Table S1. Percent cover of all sponge species seen in our natural epibiont assemblage surveys averaged across roots within each root type. Numbers for suspended roots in this table are for the equalized analysis only, in which only the upper 0.6 m of suspended roots were analyzed. Species numbers refer to Fig. 3.

Species #	Species Name	Grounded roots	Suspended roots
		Mean % cover \pm SD	Mean % cover \pm SD
1	<i>Chondrilla caribensis</i>	52 \pm 31	-
2	<i>Clathrina canariensis</i>	6 \pm 6	-
3	<i>Dysidea etheria</i>	-	11 \pm 18
4	<i>Geodia gibberosa</i>	-	10 \pm 14
5	<i>Halichondria</i> cf. <i>magniconulosa</i>	-	38 \pm 39
6	<i>Halichondria melanodocia</i>	3 \pm 9	1 \pm 5
7	<i>Haliclona tubifera</i>	4 \pm 9	9 \pm 15
8	<i>Lissodendoryx isodictyalis</i>	-	31 \pm 33
9	<i>Tedania ignis</i>	-	14 \pm 45
10	Non-sponge	35 \pm 24	-

Table S2. Biodiversity indices for sponge epibiont communities on grounded and suspended mangrove roots using the full lengths of all sampled roots. Suspended roots were, on average, 55% longer than grounded roots. Whole-assemblage indices are based on percent cover as a proportion of cumulative subtidal root length covered by sponges on all ten roots of each type, while per-root values represent the means and standard deviations of indices calculated using the percent coverage of sponges at the level of individual roots.

Index	Total species richness	Evenness	Shannon diversity index	Bray-Curtis analysis of similarity	Similarity (%)
Whole assemblage					
Grounded	4	0.49	0.67		6.97
Suspended	7	0.77	1.5		
Per root					
Grounded	1.9 \pm 0.74	0.64 \pm 0.26	0.37 \pm 0.35	R = 0.87, p < 0.001	
Suspended	3.0 \pm 1.41	0.81 \pm 0.13	0.81 \pm 0.43		