

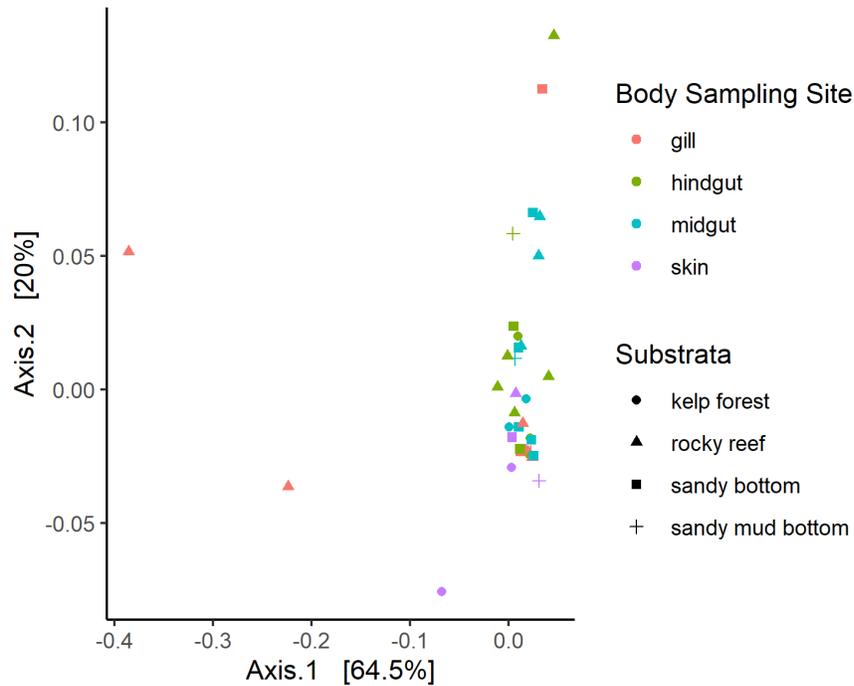
SUPPLEMENTARY MATERIALS:

FIG. S1 Substrata and body sampling sites do not exhibit homogenous microbiomes. To explore and to visualize dissimilarities between substrata and body sampling site samples, a Weighted Unifrac principal coordinate analysis (PCoA) was generated using vegan, ape and tidyverse packages in Rstudio (version 2022.12.0+353). Significant differences were found for microbial composition in substrata ($p = 0.0298$) and body sampling sites ($p < 0.001$) using one-way ANOVA.

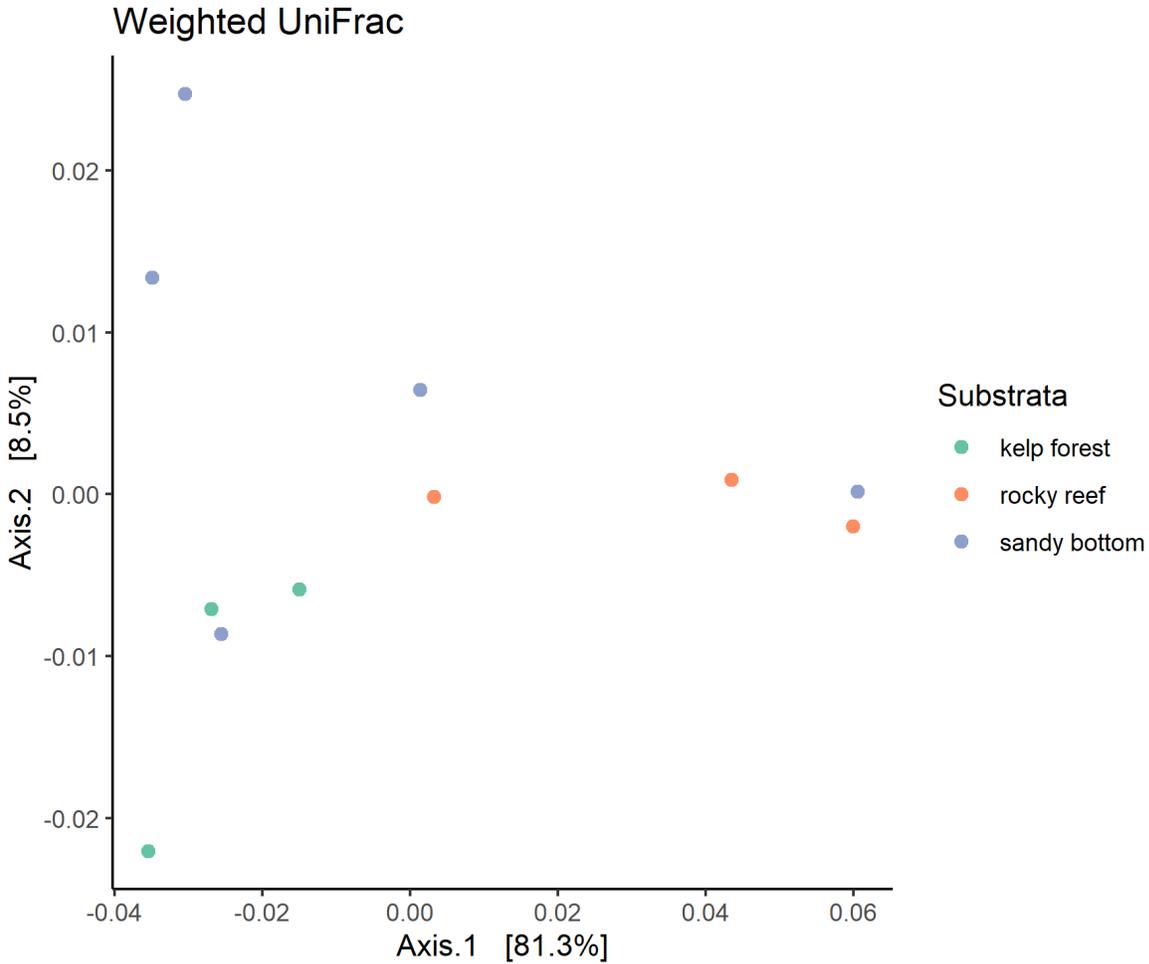


FIG. S2 Midgut samples from the sandy bottom, kelp forest, and rocky reef substrata were **not significantly different in beta diversity**. Principal coordinates analysis (PCoA) plot of beta diversity (Weighted UniFrac) distances across different substrata types, $p = 0.107$, significance calculated via PERMANOVA. The X-axis carries the greatest determination of distance. Samples per substrata: $N = 3$ for rocky reef, $N = 3$ for kelp forest, and $N = 5$ for sandy bottom.

TABLE. S1 Chao1 PERMANOVA results for midgut samples based on only the rocky reef and kelp forest substrata generated via adonis2 (vegan). Pr(>F) is the p-value.

Rocky Reef & Kelp Forest	Substrata	Residual	Total
Degrees of Freedom (DF)	1	4	5
Sum of Squares	0.34008	1.88452	2.22460
R2	0.15287	0.84713	1.00000
F	0.7218	N/A	N/A
Pr(>F) (p-value)	0.9	N/A	N/A

TABLE. S2 Chao1 PERMANOVA results for midgut samples based on only the sandy bottom and kelp forest substrata generated via `adonis2` (`vegan`). $\text{Pr}(>F)$ is the p-value.

Sandy Bottom & Kelp Forest	Substrata	Residual	Total
Degrees of Freedom (DF)	1	6	7
Sum of Squares	0.4564	2.7341	3.1905
R2	0.14305	0.85695	1.00000
F	1.0016	N/A	N/A
$\text{Pr}(>F)$ (p-value)	0.438	N/A	N/A

TABLE. S3 Chao1 PERMANOVA results for midgut samples based on only the rocky reef and sandy bottom substrata generated via adonis2 (vegan). Pr(>F) is the p-value.

Rocky Reef & Sandy Bottom	Substrata	Residual	Total
Degrees of Freedom (DF)	1	6	7
Sum of Squares	0.5412	2.6586	3.1998
R2	0.16915	0.83085	1.0000
F	1.2215	N/A	N/A
Pr(>F) (p-value)	0.217	N/A	N/A