

Supplementary File to

Symbiodiniaceae shifts over the last decade on the hottest coral reefs on Earth

Authors:

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Supplementary Data

Supplementary Data S1. PERMANOVA statistical testing details.

PERMANOVA on all sites and species 2022

```
adonis2(formula = its2ProfsNorm[, c(4:ncol(its2ProfsNorm))]) ~ Species * Site, data =  
its2ProfsNorm, permutations = 9999, method = "bray")
```

	Df	Sums of Sq	R2	F	Pr(>F)	Sign
Species	1	8.922	0.09964	29.646	0.0001	0.001
Site	2	14.570	0.16273	24.207	0.0001	0.001
Species:Site	1	7.962	0.08892	26.456	0.0001	0.001
Residual	193	58.082	0.64871			
Total	197	89.535	1.00000			

Pairwise PERMANOVAs

Sites in 2022

```
pairwise.adonis(its2ProfsNorm[, c(4:ncol(its2ProfsNorm))]), factors = its2ProfsNorm$Site,  
sim.method = "bray", p.adjust.m = "BH", perm = 9999)
```

Pairs	Df	Sums of Sq	F-Model	R2	p-value	p-adj	Sign
SY vs SA	1	7.080734	20.10952	0.1477452	0.0001	0.0001	0.001
SY vs AA	1	8.172654	20.52398	0.1162674	0.0001	0.0001	0.001
SA vs AA	1	7.341437	18.94598	0.1383464	0.0001	0.0001	0.001

Species in 2022

```
pairwise.adonis(its2ProfsNorm[, c(4:ncol(its2ProfsNorm))]), factors = its2ProfsNorm$Species,  
sim.method = "bray", p.adjust.m = "BH", perm = 9999)
```

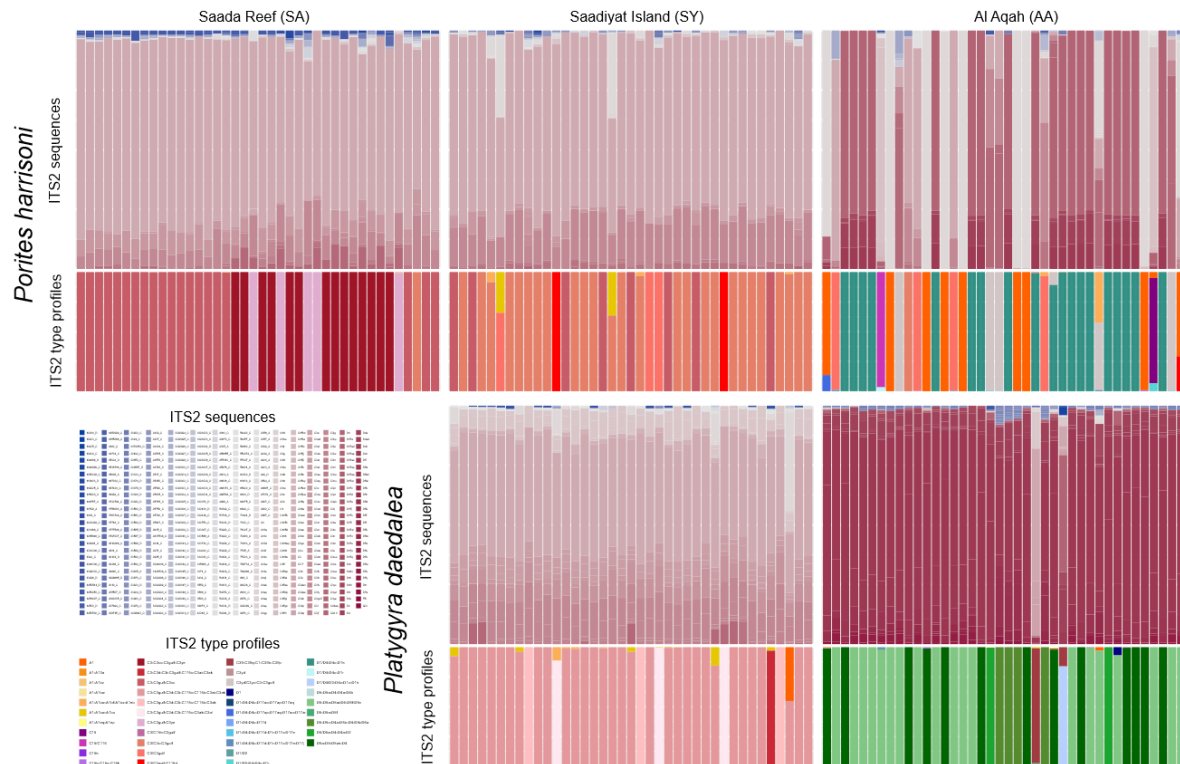
Pairs	Df	Sums of Sq	F-Model	R2	p-value	p-adj	Sign
Pdae vs Phar	1	8.921594	21.69164	0.09964388	0.0001	0.0001	0.001

PERMANOVA for decadal comparison 2012 – 2022

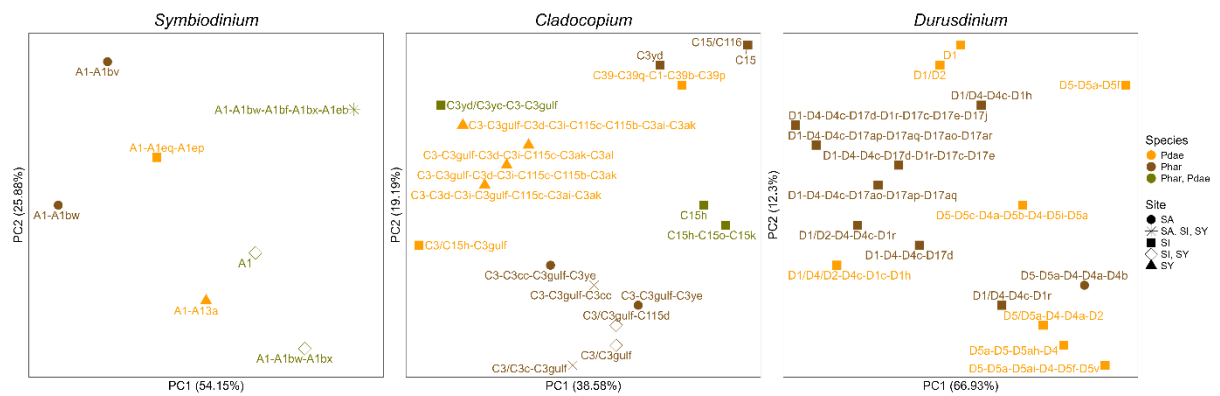
```
adonis2(formula = its2ProfsNorm[, c(5:ncol(its2ProfsNorm))]) ~ Site * Dataset, data =  
its2ProfsNorm, permutations = 9999, method = "bray")
```

	Df	Sums of Sq	R2	F	Pr(>F)	Sign
Site	1	7.380	0.10379	20.293	0.0001	0.001
Year	1	3.803	0.05348	10.457	0.0001	0.001
Site:Year	1	3.916	0.05508	10.769	0.0001	0.001
Residual	154	56.002	0.78764			
Total	157	71.101	1.00000			

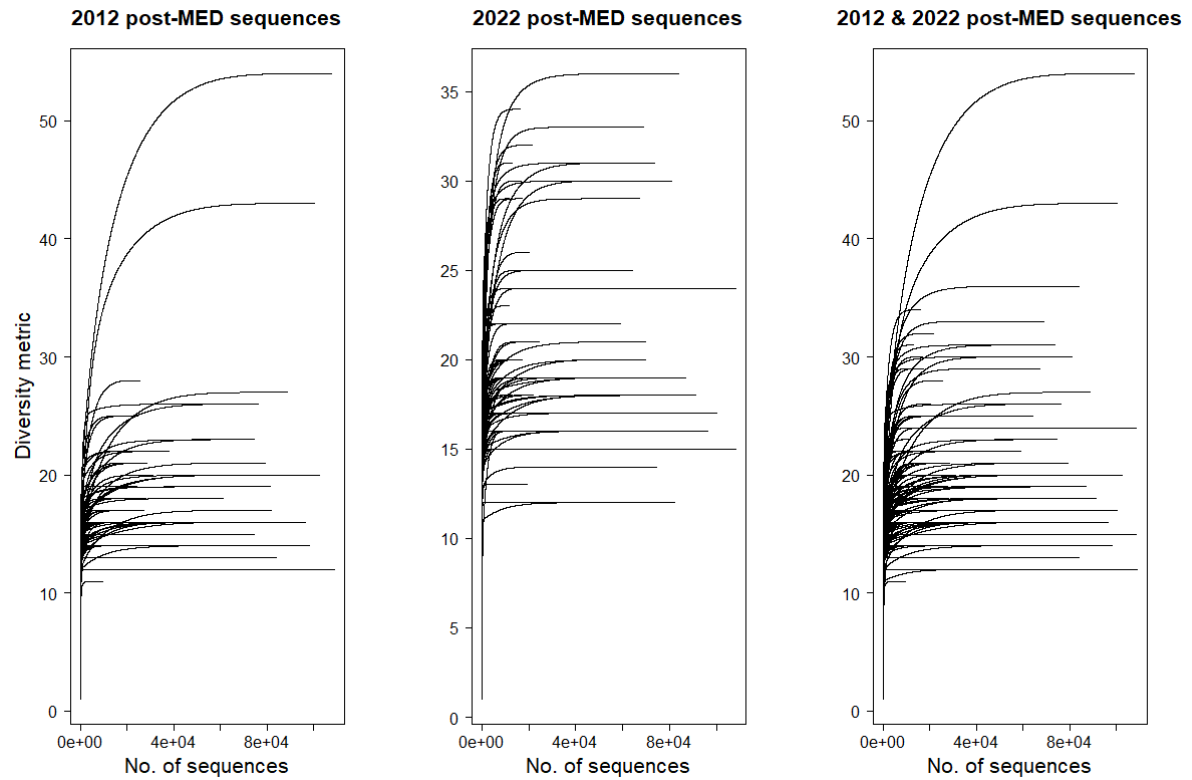
Supplementary Figures



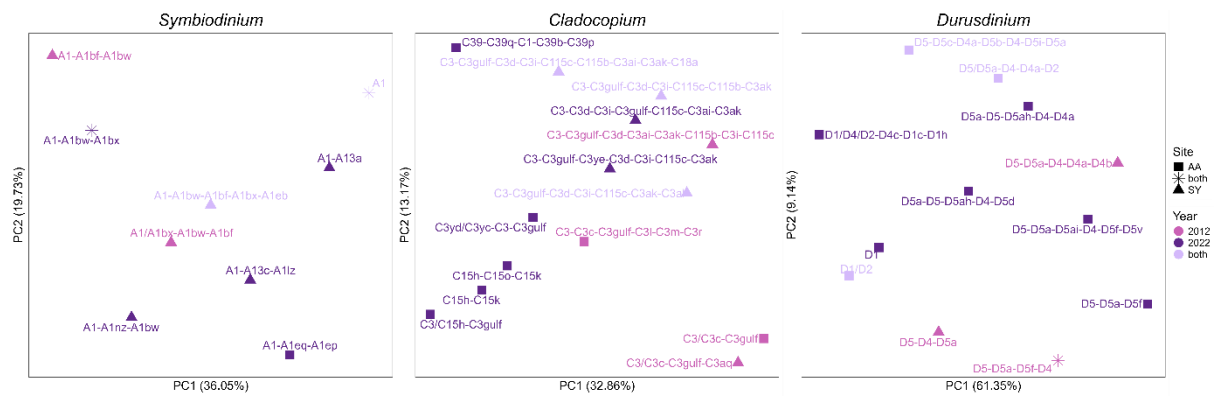
Supplementary Figure S1. Barplot of ITS2 post-MED sequences and the corresponding predicted ITS2 type profiles (normalized to 1) for each colony as output by SymPortal for the 2022 dataset (this study) for both coral species *Porites harrisoni* and *Platygyra daedalea* at all three locations (Saada Reef, SA, and Saadiyat Island, SY, in the Persian/Arabian Gulf) and Al Aqah, AA, in the Gulf of Oman).



Supplementary Figure S2. Principal component analysis (PCoA) plots based on Bray-Curtis square-root between-profile distances of ITS2 type profiles for *Platygyra daedalea* and *Porites harrisoni* output from SymPortal from three sites in the Persian/Arabian Gulf (sites Al Saada Reef, SA, and Saadiyat Reef, SY) and the Gulf of Oman (site Al Aqah, AA) from the 2022 dataset (this study).



Supplementary Figure S3. Rarefaction curves of ITS2 post-MED sequences as output by the SymPortal run of the Howells et al. (2020) dataset (“2012 post-MED sequences”), the dataset generated in this study (“2022 post-MED sequences”), and the combined dataset (“2012 & 2022 post-MED sequences”)



Supplementary Figure S5. Principal component analysis (PCoA) plots based on Bray-Curtis square-root between-profile distances of ITS2 type profiles for the overlap dataset of *Platygyra daedalea* of Howells et al. (2020) (“Year 2012”) and this study (“Year 2022”) as output by SymPortal separated by sampling location (AA = Al Aqah in the Gulf of Oman, SY = Saadiyat Reef in the Persian/Arabian Gulf).