Electronic Supplementary Material

Reduced thermal tolerance of massive coral species in a highly variable environment

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Methods

Symbiodiniaceae physiology under heat stress

Junior PAM instrument settings were as follows: Measuring Light Intensity = 6; Saturation Intensity = 12; Saturation Pulse Width = 0.6s; Gain = 2.

Symbiodiniaceae sequencing

Symbiodiniaceae was identified to the lowest taxonomic level using a 350 bp segment of the internal transcribed spacer region 2 (ITS2) rDNA. ITS2 was amplified using specific primers, ITS-Dino-forward [5'-GTGAATTGCAGAACTCCGTG-3'; 1] and its2rev2-reverse [5'-CCTCCGCTTACTTATATGCTT-3'; 2]. PCR reactions (20µl) consisted of the same reagents and volumes used for coral host PCR, except 0.2µl of 10µM forward and reverse primers was used. PCR cycles were run using the following profile: 95 °C for 5 min, followed by 22-37 cycles of 95 °C for 40s, 59 °C for 2 min, 72 °C for 30s, then a final extension of 7 min at 72 °C. To minimize the number of PCR cycles for each sample, PCR cycle checking [3] of final cycle number was performed and reactions were stopped when a faint band appeared following 1% EtBr agarose gel electrophoresis. Individual samples that did not amplify by 35 cycles were removed from analysis.

PCR products were cleaned with ExoSAP-IT prior to a second series of PCRs to incorporate sequencer primers and unique barcode sequences to each sample using Illumina's Nextera XT Adapter Kit [sensu 4, 5]. Each primer contained a universal linker, for downstream incorporation of Illumina adapters and barcodes, and four degenerate bases, denoted as N. The forward ('5′-GTCTCGTCGGCTCGG + AGATGTGTATAAGAGACAG + NNNN) and reverse primer linker (5′-TCGTCGGCAGCGTCA + AGATGTGTATAAGAGACAG + NNNN) preceded the ITS2 forward and reverse primer sequences. Following barcoding PCR, samples were visualized on a 1% EtBr agarose gel and pooled based on band intensity. The resulting pool was again run on a 1% stained gel for 30 min, the target band excised, then cleaned using a QIAquick® Gel Extraction Kit (QIAGEN, MD). The pooled sample was sequenced on ODU's Illumina MiSeq (250bp paired-end Reagent Nano Kit v2). Samples were sequenced in two batches, the first in February and the second in November 2017.

The first ITS2 MiSeq sequencing run yielded 485,867 raw reads from 78 samples, and the second sequencing run yielded only 2,554 forward raw reads from 58 samples. Therefore, we incorporated only the forward reads from the second run with the initial sequence data. Sequenced raw reads were demultiplexed, and trimmed of barcodes, adapters, linkers, ITS2

primers, and degenerate bases. Distinct amplicon sequence variants (ASVs), a similar, but higher-resolution analog of traditional Operational Taxonomic Units (OTUs) were identified and a resulting abundance count for each ASV/sample produced using the R program DADA2.1.8.0 [6]. After filtering, denoising, and pooling positively correlated ASVs, DADA2 produced a final read abundance table containing 13 unique ASVs (Table S7). Each ASV representative sequence was identified by via BLASTN comparison to the Geosymbio Symbiodiniaceae reference database [Table S7C; 7] and Santos lab reference database (Table S7C; http://webhome.auburn.edu/~santosr/sequencedatasets.htm), and confirmed via BLASTN against NCBI's nt database. All ASV's matched one or more reference sequences with an evalue below $3E^{-16}$, thus top hits were considered matches.

Symbiodiniaceae ASV abundance analysis used the R package MCMC.OTU as described in Green, Davies [5]. Samples were first subset by coral host species, and then outlier and rare (< 0.1% of the global sum of counts) ASVs and samples with low sequence coverage were identified and removed. Remaining ASVs were run through the MCMC.OTU model, with fixed effects for origin site, destination site, and time. Pairwise differences between all fixed effect combinations were calculated and adjusted using the false discovery rate (FDR). Count data were further filtered to retain ASV's detected in > 10% of all samples. A PERMANOVA was carried out on transformed ASV counts using the ADONIS function of the R package VEGAN [8].

Figures and Tables

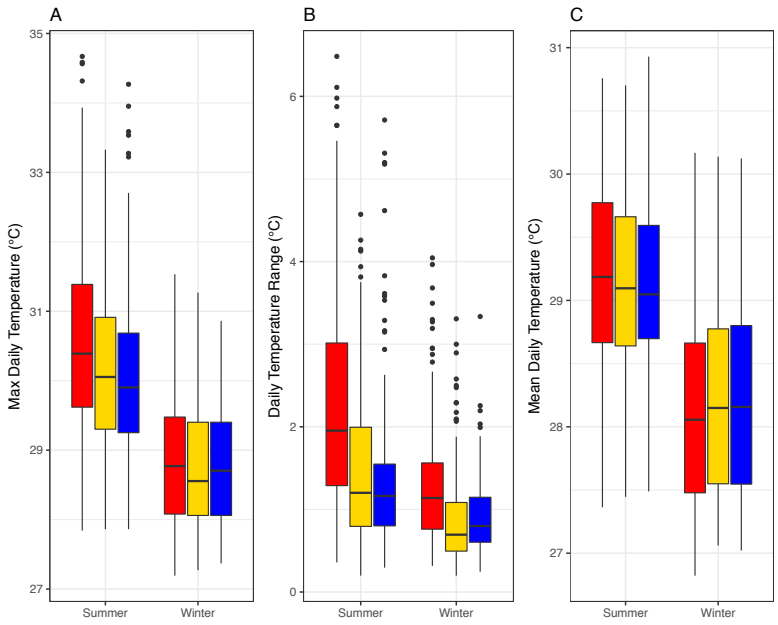

Figure S1. Seasonal distribution of Ofu's three backreef pools *in situ* thermal regimes. A. Daily max temperatures, B. daily temperature range, and C. daily mean temperatures of the HV (red), MV (gold), and LV (blue) pools collected during this study (July 2015 – June 2016). Winter includes the months April-October, and summer includes October-April. Boxplots constructed using ggplot2's geom_boxplot display the median, hinges (first and third quartile), and whiskers (largest/smallest value no further than 1.5*IQR).

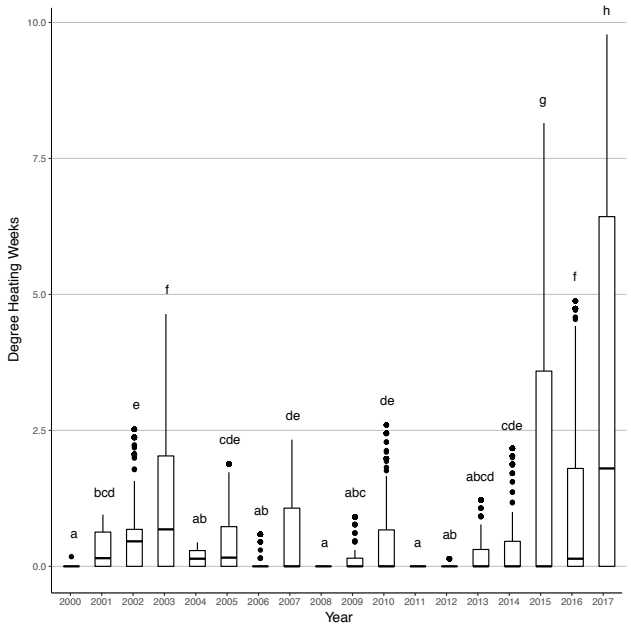

Figure S2. Distribution of the Degree Heating Weeks (DHW) of Ofu Island spanning 2000-2017. Letters indicate Tukey's post-hoc pairwise comparisons.

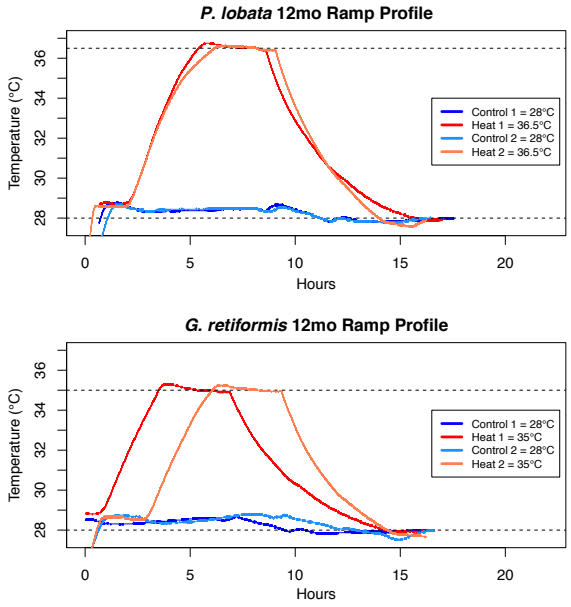

Figure S3. Thermal profile of acute heat stress assays.

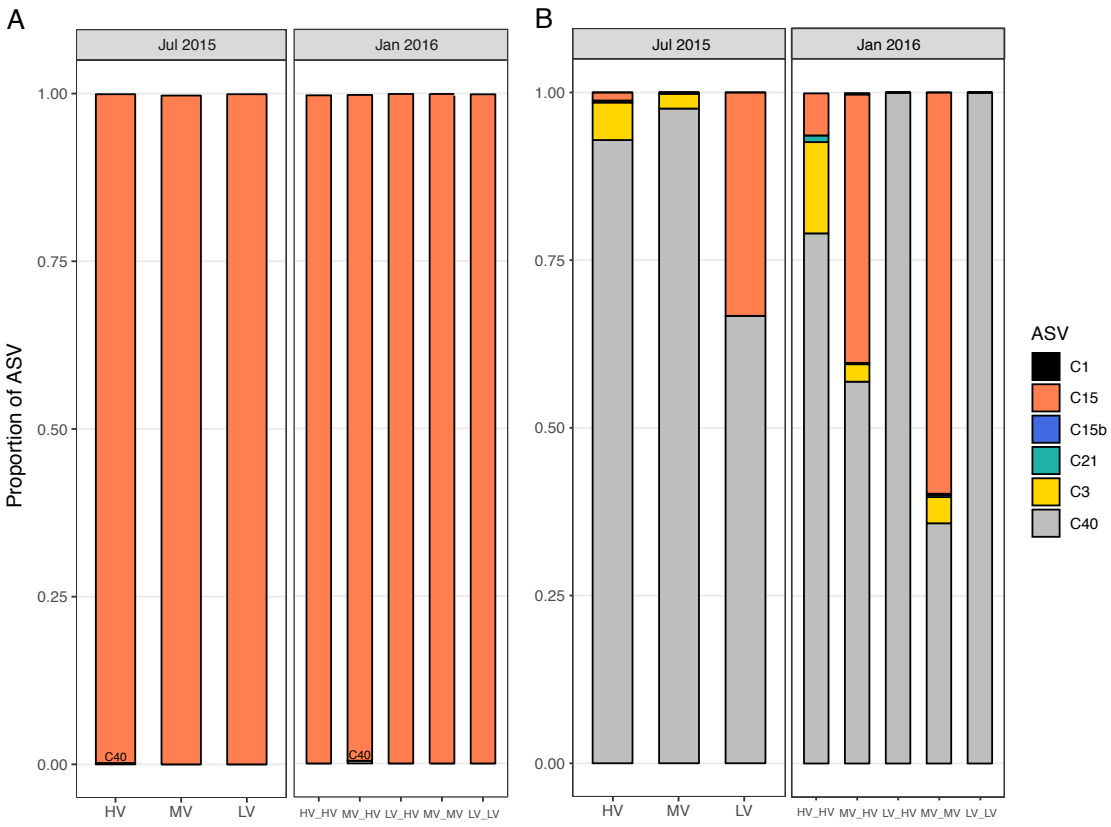

Figure S4. Relative proportion of Amplicon Sequence Variants (ASVs) belonging to *Cladocopium spp.* ITS2 types found in *P. lobata* (A) and *G. retiformis* (B). July 2015 panels represent community composition averaged over donor colonies in each backreef site, and January 2016 panels represent ASV proportions averaged for each transplant group.

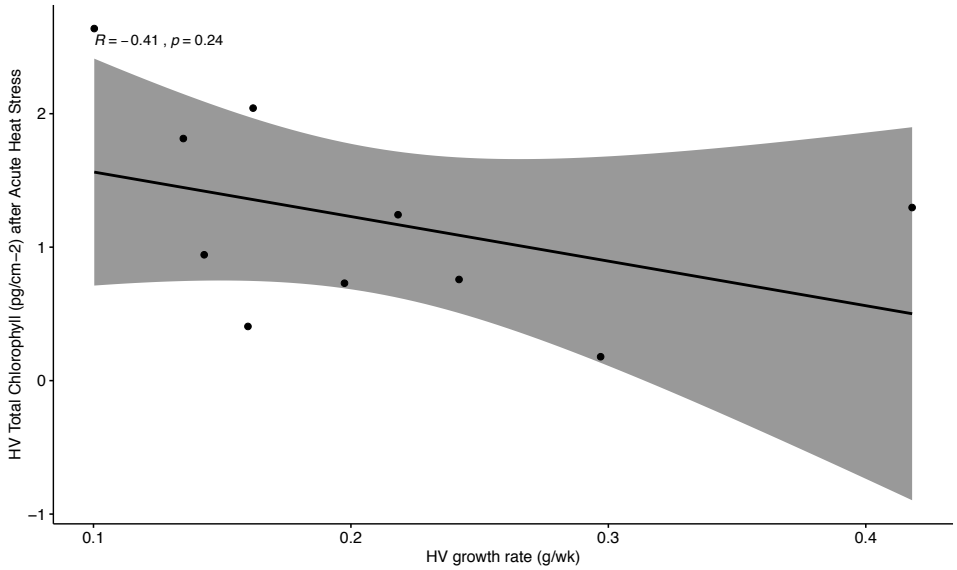

Figure S5. Pearson's correlation between HV pool *P. lobata* weekly growth rate and total chlorophyll after acute heat stress.

Table S1. Ofu Island backreef pool seasonal temperature summary.

Site	Season	Water Temperature (°C)								
		Mean	SD	Max	SD	Min	SD	DTR	SD	maxDTR
HV	Winter 2015 (Oct-Apr)	28.12	0.76	28.81	0.95	27.53	0.81	1.29	0.72	4.045
	Summer 2015-16 (Apr - Oct)	29.19	0.63	30.64	0.9	28.34	0.68	2.3	0.82	6.484
	Annual	28.63	0.94	29.68	1.51	27.91	0.91	1.77	1.19	
MV	Winter 2015 (Oct-Apr)	28.02	0.72	28.57	0.83	27.7	0.73	0.88	0.51	3.307
	Summer 2015-16 (Apr - Oct)	29.15	0.78	30.13	1.08	28.61	0.8	1.51	0.92	4.572
	Annual	28.66	0.9	29.4	1.19	28.23	0.86	1.17	0.82	
LV	Winter 2015 (Oct-Apr)	28.22	0.77	28.8	0.85	27.88	0.85	0.92	0.42	3.335
	Summer 2015-16 (Apr - Oct)	29.15	0.79	30.05	1.17	28.68	0.79	1.37	0.95	5.714
	Annual	28.66	0.9	29.4	1.19	28.26	0.88	1.14	0.76	

Table S2. Weekly growth rate summary for *P. lobata* and *G. retiformis*.

Species	Time	Origin_Dest	Mean	SD	n
P. lobata	16-Jan	HV_HV	0.165	0.06	5
		MV_HV	0.068	0.029	5
		MV_MV	0.083	0.05	5
		LV_HV	0.088	0.054	4
		LV_LV	0.106	0.054	5
	16-Jul	HV_HV	0.272	0.135	5
		MV_HV	0.125	0.047	4
		MV_MV	0.249	0.049	4
		LV_HV	0.07	0.054	4
		LV_LV	0.177	0.051	5
G. retiformis	16-Jan	HV_HV	0.074	0.019	5
		MV_HV	0.047	0.009	5
		MV_MV	0.062	0.011	5
		LV_HV	0.071	0.014	5
		LV_LV	NA	NA	0
	16-Jul	HV_HV	0.088	0.021	5
		MV_HV	0.063	0.026	5
		MV_MV	0.129	0.034	5
		LV_HV	0.068	0.032	5
		LV_LV	0.04	0.027	4

Table S3. F_vF_m and total chlorophyll summary for *P. lobata* and *G. retiformis*.

Species	Time	Origin_Dest	Treatment	F_vF_m			Total Chlorophyll		
				Mean	SD	n	Mean	SD	n
P. lobata	16-Jan	HV_HV	control	0.88	0.02	5	6.505	2.217	5
			heat	0.563	0.069	5	1.437	0.804	5
		MV_HV	control	0.887	0.058	5	4.737	1.539	5
			heat	0.788	0.024	5	3.415	1.37	5
		LV_HV	control	0.87	0.034	4	8.272	1.965	4
			heat	0.664	0.164	4	3.459	1.27	4
		MV_MV	control	0.894	0.05	5	4.639	2.367	5
			heat	0.811	0.061	5	2.93	1.625	5
		LV_LV	control	0.865	0.029	5	11.831	3.415	5
			heat	0.551	0.13	5	5.122	3.014	5
	16-Jul	HV_HV	control	0.969	0.036	5	3.715	0.849	5
			heat	0.433	0.19	5	0.973	0.742	5
		MV_HV	control	0.951	0.019	4	3.502	1.3	4
			heat	0.66	0.119	4	2.197	1.284	4
		LV_HV	control	0.936	0.037	3	3.534	1.629	3
			heat	0.547	0.186	3	1.75	0.753	3
		MV_MV	control	0.942	0.02	5	4.967	1.2	5
			heat	0.772	0.12	5	2.87	0.962	5
		LV_LV	control	0.939	0.019	4	6.414	0.911	4
			heat	0.679	0.131	4	4.642	0.51	4
G. retiformis	16-Jan	HV_HV	control	0.913	0.028	4	5.746	1.118	5
			heat	0.856	0.038	4	3.825	0.593	5
		MV_HV	control	0.936	0.033	5	5.966	0.509	5
			heat	0.902	0.039	5	4.259	0.9	5
		LV_HV	control	0.934	0.037	5	5.457	0.953	3
			heat	0.832	0.049	5	3.811	1.003	3
		MV_MV	control	0.893	0.02	5	5.814	0.679	5
			heat	0.868	0.063	5	3.776	0.818	5
	16-Jul	HV_HV	control	0.959	0.032	5	7.544	0.705	5
			heat	0.743	0.122	5	4.762	0.904	5
		MV_HV	control	0.94	0.034	5	8.171	1.242	5
			heat	0.722	0.108	5	4.096	1.097	5
		LV_HV	control	0.892	0.036	5	7.471	1.746	5
			heat	0.783	0.058	5	2.987	1.013	5
		MV_MV	control	0.936	0.048	5	7.89	1.654	5
			heat	0.712	0.136	5	5.223	3.292	5
		LV_LV	control	0.948	0.038	3	5.619	2.643	3
			heat	0.765	0.101	3	3.577	0.85	3

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Table S4 Ofu Temperature

A. Ofu Pools Max Daily Temperatures

ANOVA

Model: max ~ site*seaon	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
	site	2	20.8600	10.4300	9.1371	**0.0001157**
	season	1	634.2100	634.2100	555.5856	**<.0001**
	site:season	2	17.5700	8.7800	7.6950	**0.0004792**
	Residuals	1139	1300.1900	1.1400		

Tukey's Test

	Contrast	Estimate	SE	Df	t-ratio	p-value
site	**HV - LV**	0.3039	0.0772	1139.0000	3.9350	**0.0003000**
	HV - MV	0.2950	0.0775	1139.0000	3.8080	**0.0004000**
	LV - MV	-0.0090	0.0776	1139.0000	-0.1160	0.9926
season	**Summer-Winter**	1.4890	0.0632	1139.0000	23.5510	**<.0001**
site*season	**HV_Summer-LV_Summer**	0.5930	0.1117	1139.0000	5.3090	**<.0001**
	HV_Summer-MV_Summer	0.5182	0.1123	1139.0000	4.6130	**0.0001000**
	LV_Summer-MV_Summer	-0.0748	0.1123	1139.0000	-0.6660	0.9856
	HV_Winter-LV_Winter	0.0149	0.1067	1139.0000	0.1400	1.000
	HV_Winter-MV_Winter	0.0718	0.1067	1139.0000	0.6730	0.9849
	LV_Winter-MV_Winter	0.0569	0.1071	1139.0000	0.5310	0.9949
	HV_Summer-HV_Winter	1.8305	0.1090	1139.0000	16.7880	**<.0001**
	LV_Summer-LV_Winter	1.2524	0.1094	1139.0000	11.4450	**<.0001**
	MV_Summer-MV_Winter	1.3841	0.1101	1139.0000	12.5760	**<.0001**

B. Ofu Pools Min Daily Temperatures

ANOVA

Model: min ~ site*season	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
	site	2	28.2500	14.1240	22.3507	**<.0001**
	season	1	174.6300	174.6260	276.3347	**<.0001**
	site:season	2	0.3700	0.1860	0.2938	0.7455

	Residuals	1139	719.7700	0.6320		

	Contrast	Estimate	SE	Df	t-ratio	p-value
site	**HV - LV**	-0.3446	0.0575	1139.0000	-5.9960	**<.0001**
	HV - MV	-0.3133	0.0576	1139.0000	-5.4370	**<.0001**
	LV - MV	0.0312	0.0577	1139.0000	0.5410	0.8510
season	**Summer-Winter**	0.7817	0.0470	1139.0000	16.6170	**<.0001**
site*season	**HV_Summer-LV_Summer**	-0.3346	0.0831	1139.0000	-4.0260	**0.0009000**
	HV_Summer-MV_Summer	-0.2710	0.0836	1139.0000	-3.2430	**0.01540**
	LV_Summer-MV_Summer	0.0636	0.0836	1139.0000	0.7610	0.9739
	HV_Winter-LV_Winter	-0.3546	0.0794	1139.0000	-4.4660	**0.0001000**
	HV_Winter-MV_Winter	-0.3557	0.0794	1139.0000	-4.4800	**0.0001000**
	LV_Winter-MV_Winter	-0.0011	0.0797	1139.0000	-0.0140	1.000
	HV_Summer-HV_Winter	0.8166	0.0811	1139.0000	10.0650	**<.0001**
	LV_Summer-LV_Winter	0.7966	0.0814	1139.0000	9.7840	**<.0001**
	MV_Summer-MV_Winter	0.7319	0.0819	1139.0000	8.9380	**<.0001**

C. Ofu Pools Mean Daily Temperatures

ANOVA

Model: mean ~ site*seaso	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
	site	2	0.3200	0.1580	0.2640	0.7681
	season	1	275.5600	275.5630	460.7104	**<.0001**
	site:season	2	1.0400	0.5210	0.8704	0.4191
	Residuals	1139	681.2700	0.5980		

	Contrast	Estimate	SE	Df	t-ratio	p-value
season	**Summer-Winter**	0.9820	0.04577	1139	21.4560	**<.0001**

D. NOAACRW DHW of Ofu Island from 2010-12 & 2015-16

ANOVA

Model: DHW ~ year	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
	year	17	4159.4000	244.6720	157.7300	**<0.0001**

Tukey's Test

	Contrast	Estimate	SE	Df	t-ratio	p-value
year	**2010 - 2011**	0.5982	0.0922	6557	6.4890	**<.0001**
	2010 - 2012	0.5852	0.0921	6557	6.3520	**<.0001**
	2010 - 2015	-1.3454	0.0922	6557	-14.5930	**<.0001**
	2010 - 2016	-0.6612	0.0921	6557	-7.1770	**<.0001**
	2011 - 2012	-0.0130	0.0921	6557	-0.1410	1
	2011 - 2015	-1.9436	0.0922	6557	-21.0820	**<.0001**
	2011 - 2016	-1.2594	0.0921	6557	-13.6700	**<.0001**
	2012 - 2015	-1.9306	0.0921	6557	-20.9550	**<.0001**
	2012 - 2016	-1.2464	0.0921	6557	-13.5380	**<.0001**
	2015 - 2016	0.6842	0.0921	6557	7.4270	**<.0001**

E. NOAACRW SST of Ofu Island from 2010-12 & 2015-16

ANOVA

Model: SST ~ year

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
	year	17	209.6000	12.3280	25.4690	**<0.0001**

Tukey's Test

	Contrast	Estimate	SE	Df	t-ratio	p-value
year	**2010 - 2011**	0.5198	0.0515	6557	10.0940	**<.0001**
	2010 - 2012	0.3170	0.0515	6557	6.1590	**<.0001**
	2010 - 2015	0.2721	0.0515	6557	5.2840	**<.0001**
	2010 - 2016	0.0099	0.0515	6557	0.1930	1.000

2011 - 2012	-0.2029	0.0515	6557	-3.9420	**0.01010**
2011 - 2015	-0.2477	0.0515	6557	-4.8100	**0.000200**
2011 - 2016	-0.5099	0.0515	6557	-9.9080	**<.0001**
2012 - 2015	-0.0448	0.0515	6557	-0.8710	1.000
2012 - 2016	-0.3070	0.0514	6557	-5.9700	**<.0001**
2015 - 2016	-0.2622	0.0515	6557	-5.0950	**0.0001**

F. NOAACRW SSTAnomalies of Ofu Island from 2010-12 & 2015-16

ANOVA

Model: SSTA ~ year

Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
year	17	210.1600	12.3623	94.5920	**<.0001**

Tukey's Test

	Contrast	Estimate	SE	t-ratio	p-value
year	**2010 - 2011**	0.5199	0.0268	19.4280	**<.0001**
	2010 - 2012	0.3188	0.0267	11.9200	**<.0001**
	2010 - 2015	0.2722	0.0268	10.1700	**<.0001**
	2010 - 2016	0.0118	0.0267	0.4400	1.000
	2011 - 2012	-0.2011	0.0267	-7.5210	**<.0001**
	2011 - 2015	-0.2477	0.0268	-9.2570	**<.0001**
	2011 - 2016	-0.5081	0.0267	-19.0010	**<.0001**
	2012 - 2015	-0.0466	0.0267	-1.7420	0.9584
	2012 - 2016	-0.3070	0.0267	-11.4880	**<.0001**
	2015 - 2016	-0.2604	0.0267	-9.7380	**<.0001**

G. Ofu Pool Seasonal Temperature Summary

		Water Temperature (°C)								
Site	**Season**	Mean	SD	Maximum	SD	Minimum	SD	DTR	SD	maxDTR
HV	Winter 2015 (Oct-Apr)	28.119	0.756	28.814	0.951	27.526	0.811	1.288	0.720	4.045
	Summer 2015-16 (Apr - Oct)	29.185	0.627	30.645	0.901	28.343	0.683	2.302	0.822	6.484
	Annual	28.626	0.941	29.684	1.506	27.914	0.914	1.770	1.188	
MV	Winter 2015 (Oct-Apr)	28.023	0.717	28.572	0.827	27.695	0.726	0.877	0.508	3.307
	Summer 2015-16 (Apr - Oct)	29.155	0.781	30.127	1.082	28.614	0.800	1.513	0.920	4.572
	Annual	28.656	0.901	29.398	1.195	28.229	0.862	1.169	0.817	
LV	Winter 2015 (Oct-Apr)	28.218	0.765	28.799	0.852	27.881	0.849	0.919	0.421	3.335
	Summer 2015-16 (Apr - Oct)	29.149	0.789	30.052	1.172	28.678	0.785	1.374	0.954	5.714
	Annual	28.664	0.905	29.399	1.194	28.263	0.877	1.137	0.761	

Table S5 *Porites lobata* physiology

WEEKLY GROWTH RATE

A. Growth (g) over Time ((final-initial) / weeks)

Shapiro-wilk

growth ~ time+origin+dest	time	origin	dest	p-value
	Jan-16	HV	HV	0.05005
		MV	HV	0.05031
		LV	HV	0.3070
		MV	MV	0.1381
		LV	LV	0.8672
	Jul-16	HV	HV	0.4296
		MV	**HV**	**0.01741**
		LV	HV	0.3606
		MV	MV	0.8815
		LV	LV	0.5801

Bartlett HOV

growth ~ time+origin_dest	time	K-squared	df	p-value
	Jan-16	1.8024	4	0.7720
	Jul-16	6.6295	4	0.1568

Summary

time	origin_dest	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV	0.1650	0.0600	0.0950	0.1050	0.2000	0.2100	0.2150	5
	MV_HV	0.0680	0.0290	0.0400	0.0500	0.0500	0.1000	0.1000	5
	MV_MV	0.0830	0.0500	0.0200	0.0400	0.1050	0.1250	0.1250	5
	LV_HV	0.0880	0.0540	0.0400	0.0440	0.0800	0.1240	0.1500	4
	LV_LV	0.1060	0.0540	0.0250	0.0850	0.1200	0.1300	0.1700	5
Jul-16	HV_HV	0.2720	0.1350	0.1300	0.1400	0.2950	0.3600	0.4350	5
	MV_HV	0.1250	0.0470	0.0550	0.1220	0.1450	0.1480	0.1550	4
	MV_MV	0.2490	0.0490	0.1950	0.2180	0.2480	0.2790	0.3050	4
	LV_HV	0.0700	0.0540	0.0200	0.0280	0.0650	0.1080	0.1300	4
	LV_LV	0.1770	0.0510	0.1200	0.1400	0.1650	0.2200	0.2400	5

ANOVA

Model: grate ~ time*origin_dest + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	0.0234	0.0234	2.217	0.1670
	origin_dest	3	0.0733	0.0244	2.31	0.1380
	residuals	10	0.1057	0.0106		
Error: Within	**time**	1	0.0604	0.0604	33.75	**< 0.0001**
	origin_dest	2	0.0359	0.0180	10.04	**0.0006780**
	time:origin_dest	4	0.0356	0.0089	4.97	**0.004596**
	residuals	24	0.0430	0.0018		

Tukey's Test

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
origin_dest	**MV_HV - HV_HV**	-0.1291	0.0422	-3.0580	**0.02230**
	LV_HV - HV_HV	-0.1415	0.0435	-3.2500	**0.01150**
	MV_MV - HV_HV	-0.0658	0.0422	-1.5580	1.000
	LV_LV - HV_HV	-0.0770	0.0414	-1.8580	0.6314
	LV_HV - MV_HV	-0.0123	0.0443	-0.2780	1.000
	MV_MV - MV_HV	0.0633	0.0334	1.8960	0.5801
	LV_LV - MV_HV	0.0521	0.0422	1.2350	1.000
	MV_MV - LV_HV	0.0757	0.0443	1.7090	0.8748
	LV_LV - LV_HV	0.0645	0.0344	1.8750	0.6083
	LV_LV - MV_MV	-0.0112	0.0422	-0.2650	1.000
time*origin_dest					
Jan-16	Jan-16.MV_HV - Jan-16.HV_HV	-0.0970	0.0438	-2.2170	1.000
	Jan-16.LV_HV - Jan-16.HV_HV	-0.0807	0.0452	-1.7850	1.000
	Jan-16.MV_MV - Jan-16.HV_HV	-0.0820	0.0438	-1.8740	1.000
	Jan-16.LV_LV - Jan-16.HV_HV	-0.0590	0.0438	-1.3480	1.000
	Jan-16.LV_HV-Jan-16.MV_HV	0.0163	0.0452	0.3620	1.000
	Jan-16.MV_MV-Jan-16.MV_HV	0.0150	0.0270	0.5550	1.000

	Jan-16.LV_LV-Jan-16.MV_HV	0.0380	0.0438	0.8680	1.000
	Jan-16.MV_MV-Jan-16.LV_HV	-0.0013	0.0452	-0.0300	1.000
	Jan-16.LV_LV-Jan-16.LV_HV	0.0217	0.0293	0.7400	1.000
	Jan-16.LV_LV-Jan-16.MV_MV	0.0230	0.0438	0.5260	1.000
Jul-16	**Jul-16.MV_HV-Jul-16.HV_HV**	-0.1547	0.0452	-3.4250	**0.02769**
	Jul-16.LV_HV-Jul-16.HV_HV	-0.2052	0.0452	-4.5410	**0.0002520**
	Jul-16.MV_MV-Jul-16.HV_HV	-0.0310	0.0452	-0.6860	1.000
	Jul-16.LV_LV-Jul-16.HV_HV	-0.0950	0.0438	-2.1710	1.000
	Jul-16.LV_HV-Jul-16.MV_HV	-0.0504	0.0466	-1.0830	1.000
	Jul-16.MV_MV-Jul-16.MV_HV	0.1238	0.0302	4.0950	**0.001904**
	Jul-16.MV_MV-Jul-16.LV_HV	0.1742	0.0466	3.7410	**0.008253**
	Jul-16.LV_LV-Jul-16.LV_HV	0.1102	0.0293	3.7630	**0.007564**
	Jul-16.LV_LV-Jul-16.MV_MV	-0.0640	0.0452	-1.4170	1.000
Jan-16 vs. Jul-16	**Jul-16.HV_HV-Jan-16.HV_HV**	0.1070	0.0270	3.9580	**0.003399**
	Jul-16.MV_HV-Jan-16.MV_HV	0.0493	0.0293	1.6830	1.000
	Jul-16.LV_HV-Jan-16.LV_HV	-0.0175	0.0302	-0.5790	1.000
	Jul-16.MV_MV-Jan-16.MV_MV	0.1580	0.0293	5.3980	**< 0.0001**
	Jul-16.LV_LV-Jan-16.LV_LV	0.0710	0.0270	2.6260	0.3883

Fv/Fm

B. Normalized Fv/Fm following heat stress ((0hr-21hr)/0hr)

Shapiro-wilk

Model: Fvfm ~ time+orig	time	origin	dest	trt	p-value
	Jan-16	HV	HV	heat	0.4211
		HV	HV	cont	0.1014
		MV	HV	heat	0.3078
		MV	HV	cont	0.5283
		MV	MV	heat	0.9036
		MV	MV	cont	0.4504
		LV	HV	heat	0.4676
		LV	HV	cont	0.5751
		LV	LV	heat	0.7559
		LV	LV	cont	0.0651
	Jul-16	HV	HV	heat	0.2175
		HV	HV	cont	0.4771
		MV	**HV**	**heat**	**0.01827**
		MV	HV	cont	0.9470
		MV	MV	heat	0.4734
		MV	MV	cont	0.1270
		LV	HV	heat	0.6272
		LV	HV	cont	0.3074
		LV	LV	heat	0.7562
		LV	LV	cont	0.7022

Bartlett HOV

Model: Fvfm ~ time+orig	time	K-squared	df	p-value
	Jan-16	14.8220	4	**0.005085**
	Jul-16	8.4805	4	0.07548

Summary

time	origin_dest.trt	mean	sd	min	Q1	median	Q3	max	n

Jan-16	HV_HV.cont	0.8800	0.0200	0.8620	0.8670	0.8680	0.8990	0.9050	5
	HV_HV.heat	0.5630	0.0690	0.4530	0.5440	0.5820	0.6100	0.6260	5
	MV_HV.cont	0.8870	0.0580	0.7990	0.8620	0.9100	0.9210	0.9440	5
	MV_HV.heat	0.7880	0.0240	0.7590	0.7670	0.7940	0.8080	0.8110	5
	LV_HV.cont	0.8700	0.0340	0.8390	0.8500	0.8620	0.8830	0.9180	4
	LV_HV.heat	0.6640	0.1640	0.4880	0.5440	0.6680	0.7870	0.8320	4
	MV_MV.cont	0.8940	0.0500	0.8240	0.8590	0.9150	0.9270	0.9430	5
	MV_MV.heat	0.8110	0.0610	0.7320	0.7810	0.8220	0.8250	0.8960	5
	LV_LV.cont	0.8650	0.0290	0.8150	0.8710	0.8720	0.8750	0.8910	5
	LV_LV.heat	0.5510	0.1300	0.3800	0.4590	0.5960	0.6140	0.7050	5
Jul-16	HV_HV.cont	0.9690	0.0360	0.9100	0.9610	0.9800	0.9880	1.0050	5
	HV_HV.heat	0.4330	0.1900	0.1230	0.3980	0.4750	0.5820	0.5860	5
	MV_HV.cont	0.9510	0.0190	0.9310	0.9400	0.9500	0.9610	0.9740	4
	MV_HV.heat	0.6600	0.1190	0.4830	0.6490	0.7120	0.7240	0.7320	4
	LV_HV.cont	0.9360	0.0370	0.8930	0.9220	0.9510	0.9570	0.9630	3
	LV_HV.heat	0.5470	0.1860	0.3440	0.4660	0.5890	0.6490	0.7090	3
	MV_MV.cont	0.9420	0.0200	0.9230	0.9350	0.9350	0.9400	0.9750	5
	MV_MV.heat	0.7720	0.1200	0.5910	0.7310	0.7790	0.8770	0.8840	5
	LV_LV.cont	0.9390	0.0190	0.9190	0.9260	0.9380	0.9520	0.9610	4
	LV_LV.heat	0.6790	0.1310	0.5440	0.5880	0.6680	0.7600	0.8360	4

ANOVA

Model: Fvfmnorm ~ time*origin_dest*trt + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Between Subjects	time	1	0.0271	0.0271	1.7770	0.2193
	origin_dest	4	0.3094	0.0774	5.0660	**0.02480**
	time:origin_dest	1	0.0103	0.0103	0.6740	0.4355
	Residuals	8	0.1222	0.0153		
Within Subjects	time	1	0.0001	0.0001	0.0140	0.9053
	origin_dest	2	0.0205	0.0102	1.5330	0.2245
	trt	1	1.5442	1.5442	231.0940	**< 0.0001**

time:origin_dest	4	0.0329	0.0082	1.2290	0.3085
time:trt	1	0.0869	0.0869	13.0100	**0.0006460**
origin_dest:trt	4	0.2591	0.0648	9.6950	**< 0.0001**
time:origin_dest:trt	4	0.0560	0.0140	2.0960	0.09293
Residuals	58	0.3876	0.0067		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
origin_dest	MV_HV - HV_HV	-0.1121	0.0568	-1.9750	0.4820
	LV_HV - HV_HV	-0.0449	0.0609	-0.7380	1.000
	LV_HV - MV_HV	0.0672	0.0623	1.0790	1.000
	MV_MV - HV_HV	-0.1435	0.0553	-2.5970	0.09400
	LV_LV - HV_HV	-0.0416	0.0568	-0.7330	1.000
	MV_MV - MV_HV	-0.0314	0.0568	-0.5530	1.000
	LV_LV - LV_HV	0.0033	0.0623	0.0530	1.000
	LV_LV - MV_HV	0.0705	0.0582	1.2100	1.000
	MV_MV - LV_HV	-0.0986	0.0609	-1.6190	1.000
	LV_LV - MV_MV	0.1019	0.0568	1.7940	0.7270
origin_dest*trt	**HV_HV.heat - HV_HV.cont**	0.4266	0.0410	10.4160	**< 0.0001**
	MV_HV.heat - MV_HV.cont	0.1847	0.0432	4.2780	**0.0008500**
	LV_HV.heat - LV_HV.cont	0.2846	0.0490	5.8140	**< 0.0001**
	MV_MV.heat - MV_MV.cont	0.1258	0.0410	3.0720	0.09578
	LV_LV.heat - LV_LV.cont	0.2901	0.0432	6.7200	**< 0.0001**
	MV_HV.heat - HV_HV.heat	-0.2327	0.0502	-4.6330	**0.0001620**
	MV_HV.cont - HV_HV.cont	0.0092	0.0502	0.1840	1.000
	LV_HV.heat - HV_HV.heat	-0.1265	0.0533	-2.3730	0.7950
	LV_HV.cont - HV_HV.cont	0.0155	0.0533	0.2910	1.000
	LV_HV.heat - MV_HV.heat	0.1062	0.0543	1.9560	1.000
	LV_HV.cont - MV_HV.cont	0.0063	0.0543	0.1160	1.000
	MV_MV.heat - HV_HV.heat	-0.2939	0.0492	-5.9720	**< 0.0001**

	MV_MV.cont - HV_HV.cont	0.0069	0.0492	0.1400	1.000
	LV_LV.heat - HV_HV.heat	-0.1029	0.0502	-2.0480	1.000
	LV_LV.cont - HV_HV.cont	0.0336	0.0502	0.6690	1.000
	MV_MV.heat - MV_HV.heat	-0.0612	0.0422	-1.4510	1.000
	MV_MV.cont - MV_HV.cont	-0.0023	0.0422	-0.0550	1.000
	LV_LV.heat - LV_HV.heat	0.0237	0.0471	0.5020	1.000
	LV_LV.cont - LV_HV.cont	0.0181	0.0471	0.3850	1.000
	LV_LV.heat - MV_HV.heat	0.1299	0.0512	2.5350	0.5062
	LV_LV.cont - MV_HV.cont	0.0244	0.0512	0.4760	1.000
	MV_MV.heat - LV_HV.heat	-0.1674	0.0533	-3.1380	0.07650
	MV_MV.cont - LV_HV.cont	-0.0086	0.0533	-0.1610	1.000
	LV_LV.heat - MV_MV.heat	0.1910	0.0502	3.8030	**0.006428**
	LV_LV.cont - MV_MV.cont	0.0267	0.0502	0.5320	1.000
time*trt	**Jan-16.heat - Jan-16.cont**	0.2038	0.0296	6.8800	**< 0.0001**
	Jul-16.heat - Jul-16.cont	0.3284	0.0317	10.3690	**< 0.0001**
	Jan-16.heat - Jul-16.heat	-0.0591	0.0308	-1.9220	0.3280
	Jan-16.cont - Jul-16.cont	0.0655	0.0308	2.1280	0.2000
time*origin_dest*trt					
Jan-16	**Jan-16.HV_HV.heat - Jan-16.HV_HV.cont**	0.3172	0.0521	6.0860	**< 0.0001**
	Jan-16.MV_HV.heat - Jan-16.MV_HV.cont	0.0994	0.0521	1.9070	1.000
	Jan-16.LV_HV.heat - Jan-16.LV_HV.cont	0.2068	0.0583	3.5480	**0.07367**
	Jan-16.MV_MV.heat - Jan-16.MV_MV.cont	0.0824	0.0521	1.5810	1.000
	Jan-16.LV_LV.heat - Jan-16.LV_LV.cont	0.3140	0.0521	6.0250	**< 0.0001**
	Jan-16.MV_HV.heat - Jan-16.HV_HV.heat	-0.2248	0.0590	-3.8130	**0.02612**
	Jan-16.LV_HV.heat - Jan-16.HV_HV.heat	-0.1106	0.0621	-1.7800	1.000
	Jan-16.MV_MV.heat - Jan-16.HV_HV.heat	-0.2482	0.0590	-4.2100	**0.004862**
	Jan-16.LV_LV.heat - Jan-16.HV_HV.heat	0.0122	0.0590	0.2070	1.000
	Jan-16.MV_MV.heat - Jan-16.MV_HV.heat	-0.0234	0.0521	-0.4490	1.000
	Jan-16.LV_HV.heat - Jan-16.MV_HV.heat	0.1142	0.0621	1.8380	1.000

	Jan-16.LV_LV.heat - Jan-16.MV_HV.heat	0.2370	0.0590	4.0200	**0.01108**
	Jan-16.LV_LV.heat - Jan-16.LV_HV.heat	0.1228	0.0557	2.2050	1.000
	Jan-16.MV_MV.heat - Jan-16.LV_HV.heat	-0.1376	0.0621	-2.2140	1.000
	Jan-16.LV_LV.heat - Jan-16.MV_MV.heat	0.2604	0.0590	4.4160	**0.001906**
	Jan-16.MV_HV.cont - Jan-16.HV_HV.cont	-0.0070	0.0590	-0.1190	1.000
	Jan-16.LV_HV.cont - Jan-16.HV_HV.cont	-0.0002	0.0621	-0.0020	1.000
	Jan-16.MV_MV.cont - Jan-16.HV_HV.cont	-0.0134	0.0590	-0.2270	1.000
	Jan-16.LV_LV.cont - Jan-16.HV_HV.cont	0.0154	0.0590	0.2610	1.000
	Jan-16.MV_MV.cont - Jan-16.MV_HV.cont	-0.0064	0.0521	-0.1230	1.000
	Jan-16.LV_HV.cont - Jan-16.MV_HV.cont	0.0068	0.0621	0.1100	1.000
	Jan-16.LV_LV.cont - Jan-16.MV_HV.cont	0.0224	0.0590	0.3800	1.000
	Jan-16.MV_MV.cont - Jan-16.LV_HV.cont	-0.0132	0.0621	-0.2130	1.000
	Jan-16.LV_LV.cont - Jan-16.LV_HV.cont	0.0156	0.0557	0.2790	1.000
	Jan-16.LV_LV.cont - Jan-16.MV_MV.cont	0.0288	0.0590	0.4880	1.000
Jul-16	**Jul-16.HV_HV.heat - Jul-16.HV_HV.cont**	0.5360	0.0521	10.2850	**< 0.0001**
	Jul-16.MV_HV.heat - Jul-16.MV_HV.cont	0.2913	0.0583	4.9980	**0.0001100**
	Jul-16.LV_HV.heat - Jul-16.LV_HV.cont	0.3883	0.0673	5.7720	**< 0.0001**
	Jul-16.MV_MV.heat - Jul-16.MV_MV.cont	0.1692	0.0521	3.2470	0.2219
	Jul-16.LV_LV.heat - Jul-16.LV_LV.cont	0.2603	0.0583	4.4660	**0.001511**
	Jul-16.MV_HV.heat - Jul-16.HV_HV.heat	-0.2255	0.0621	-3.6330	0.05317
	Jul-16.LV_HV.heat - Jul-16.HV_HV.heat	-0.1259	0.0670	-1.8790	1.000
	Jul-16.MV_MV.heat - Jul-16.HV_HV.heat	-0.3396	0.0590	-5.7600	**< 0.0001**
	Jul-16.LV_LV.heat - Jul-16.HV_HV.heat	-0.2310	0.0621	-3.7220	**0.03759**
	Jul-16.MV_MV.heat - Jul-16.MV_HV.heat	-0.1141	0.0556	-2.0530	1.000
	Jul-16.LV_HV.heat - Jul-16.MV_HV.heat	0.0996	0.0698	1.4270	1.000
	Jul-16.LV_LV.heat - Jul-16.MV_HV.heat	-0.0056	0.0650	-0.0860	1.000
	Jul-16.LV_LV.heat - Jul-16.LV_HV.heat	-0.1051	0.0646	-1.6280	1.000
	Jul-16.MV_MV.heat - Jul-16.LV_HV.heat	-0.2137	0.0670	-3.1890	0.2715
	Jul-16.LV_LV.heat - Jul-16.MV_MV.heat	0.1086	0.0621	1.7490	1.000
	Jul-16.MV_HV.cont - Jul-16.HV_HV.cont	0.0193	0.0621	0.3100	1.000
	Jul-16.LV_HV.cont - Jul-16.HV_HV.cont	0.0218	0.0670	0.3250	1.000

	Jul-16.MV_MV.cont - Jul-16.HV_HV.cont	0.0272	0.0590	0.4610	1.000
	Jul-16.LV_LV.cont - Jul-16.HV_HV.cont	0.0447	0.0621	0.7200	1.000
	Jul-16.MV_MV.cont - Jul-16.MV_HV.cont	0.0079	0.0556	0.1430	1.000
	Jul-16.LV_HV.cont - Jul-16.MV_HV.cont	0.0025	0.0698	0.0360	1.000
	Jul-16.LV_LV.cont - Jul-16.MV_HV.cont	0.0254	0.0650	0.3910	1.000
	Jul-16.MV_MV.cont - Jul-16.LV_HV.cont	0.0054	0.0670	0.0810	1.000
	Jul-16.LV_LV.cont - Jul-16.LV_HV.cont	0.0230	0.0646	0.3550	1.000
	Jul-16.LV_LV.cont - Jul-16.MV_MV.cont	0.0175	0.0621	0.2820	1.000
Jan-16 vs. Jul-16	Jan-16.HV_HV.cont - Jul-16.HV_HV.cont	0.0886	0.0521	1.7000	1.000
	Jan-16.HV_HV.heat - Jul-16.HV_HV.heat	-0.1302	0.0521	-2.4980	1.000
	Jan-16.LV_HV.cont - Jul-16.LV_HV.cont	0.0667	0.0634	1.0520	1.000
	Jan-16.LV_HV.heat - Jul-16.LV_HV.heat	-0.1149	0.0634	-1.8120	1.000
	Jan-16.LV_LV.cont - Jul-16.LV_LV.cont	0.0593	0.0556	1.0660	1.000
	Jan-16.LV_LV.heat - Jul-16.LV_LV.heat	0.1130	0.0556	2.0320	1.000
	Jan-16.MV_HV.cont - Jul-16.MV_HV.cont	0.0623	0.0556	1.1210	1.000
	Jan-16.MV_HV.heat - Jul-16.MV_HV.heat	-0.1295	0.0556	-2.3300	1.000
	Jan-16.MV_MV.cont - Jul-16.MV_MV.cont	0.0480	0.0521	0.9210	1.000
	Jan-16.MV_MV.heat - Jul-16.MV_MV.heat	-0.0388	0.0521	-0.7440	1.000

CHL

C. Total Chlorophyll Retention (1-(control-heat)/control)

Shapiro-wilk

Model: chlratio ~ time+ori	time	origin	dest	p-value
	Jan-16	**HV**	**HV**	**0.02362**
		MV	HV	0.3643
		MV	MV	0.8767
		LV	HV	0.1460
		LV	LV	0.3353
	Jul-16	HV	HV	0.3350
		MV	HV	0.8908
		MV	MV	0.4590
		LV	HV	0.7497
		LV	LV	0.3829

Bartlett HOV

Model: chlratio ~ time+ori	time	K-squared	df	p-value
	Jan-16	2.5123	4	0.6424
	Jul-16	10.4210	4	**0.03391**

Summary

time	origin_dest	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV	0.2360	0.1670	0.1190	0.1480	0.1750	0.2100	0.5290	5
	MV_HV	0.7570	0.3240	0.2560	0.6180	0.9140	0.9360	1.0600	5
	MV_MV	0.6380	0.2770	0.3070	0.5190	0.5570	0.7680	1.0370	5
	LV_HV	0.4700	0.3160	0.2350	0.2880	0.3570	0.5390	0.9330	4
	LV_LV	0.4310	0.1800	0.2250	0.3000	0.3960	0.6110	0.6220	5
Jul-16	HV_HV	0.3170	0.3150	0.0430	0.0870	0.2380	0.3940	0.8240	5
	MV_HV	0.5890	0.1470	0.4310	0.4940	0.5790	0.6740	0.7670	4
	MV_MV	0.6030	0.2630	0.2830	0.4200	0.5760	0.8560	0.8800	5
	LV_HV	0.6560	0.5230	0.1770	0.3770	0.5770	0.8950	1.2130	3
	LV_LV	0.7270	0.0490	0.6740	0.6920	0.7300	0.7660	0.7750	4

ANOVA

Model: chlratio ~ time*origin*dest + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	0.0014	0.0014	0.0100	0.9232
	origin	2	0.9778	0.4889	3.4930	0.08120
	dest	2	0.1895	0.0947	0.6770	0.5351
	time:dest	1	0.2877	0.2877	2.0550	0.1896
	Residuals	8	1.1199	0.1400		
Error: Within	time	1	0.0335	0.0335	0.8540	0.3650
	dest	2	0.0464	0.0232	0.5920	0.5610
	time:origin	2	0.2499	0.1250	3.1860	0.06000
	time:dest	2	0.0318	0.0159	0.4050	0.6720
	Residuals	23	0.9020	0.0392		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
origin	MV - HV	1.7321	0.8984	1.9280	0.1616
	LV - HV	2.9576	0.9072	3.2600	**0.003340**
	LV - MV	1.2254	0.8737	1.4030	0.4822
time*origin	**Jan-16.MV - Jan-16.HV**	0.4609	0.1562	2.9510	**0.04760**
	Jan-16.LV - Jan-16.HV	0.2171	0.1578	1.3750	1.000
	Jan-16.LV - Jan-16.MV	-0.2438	0.1459	-1.6710	1.000
	Jul-16.MV - Jul-16.HV	0.2732	0.1577	1.7320	1.000
	Jul-16.LV - Jul-16.HV	0.3772	0.1617	2.3330	0.2948
	Jul-16.LV - Jul-16.MV	0.1040	0.1517	0.6850	1.000
	Jul-16.HV - Jan-16.HV	0.0809	0.1202	0.6730	1.000
	Jul-16.MV - Jan-16.MV	-0.1068	0.0878	-1.2160	1.000
	Jul-16.LV - Jan-16.LV	0.2410	0.0967	2.4920	0.1905

ANOVA

Model: chlratio ~ time*origin_dest + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)

Error: Between	time	1	0.0014	0.0014	0.0100	0.9230
	origin_dest	4	1.1673	0.2918	2.0850	0.1750
	time:origin_dest	1	0.2877	0.2877	2.0550	0.1900
	Residuals	8	1.1199	0.1400		
Error: Within	time	1	0.0335	0.0335	0.8540	0.3650
	origin_dest	2	0.0464	0.0232	0.5920	0.5610
	time:origin_dest	4	0.2817	0.0704	1.7960	0.1640
	Residuals	23	0.9020	0.0392		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
origin_dest	MV_HV - HV_HV	0.4011	0.1502	2.6700	0.07580
	LV_HV - HV_HV	0.3134	0.1571	1.9950	0.4608
	MV_MV - HV_HV	0.3436	0.1483	2.3180	0.2046
	LV_LV - HV_HV	0.2582	0.1502	1.7180	0.8571
	MV_MV - MV_HV	-0.0575	0.0965	-0.5950	1.000
	LV_HV - MV_HV	-0.0877	0.1590	-0.5520	1.000
	LV_LV - MV_HV	-0.1430	0.1522	-0.9400	1.000
	LV_LV - LV_HV	-0.0553	0.1109	-0.4980	1.000
	MV_MV - LV_HV	0.0302	0.1571	0.1920	1.000
	LV_LV - MV_MV	-0.0855	0.1502	-0.5690	1.000
time*origin_dest	Jan-16.MV_HV - Jan-16.HV_HV	0.5204	0.1721	3.0250	0.1120
	Jan-16.LV_HV - Jan-16.HV_HV	0.2491	0.1795	1.3880	1.000
	Jan-16.MV_MV - Jan-16.HV_HV	0.4013	0.1721	2.3320	0.8860
	Jan-16.LV_LV - Jan-16.HV_HV	0.1945	0.1721	1.1300	1.000
	Jan-16.MV_MV - Jan-16.MV_HV	-0.1191	0.1255	-0.9490	1.000
	Jan-16.LV_HV - Jan-16.MV_HV	-0.2713	0.1795	-1.5120	1.000
	Jan-16.LV_LV - Jan-16.MV_HV	-0.3259	0.1721	-1.8940	1.000
	Jan-16.LV_LV - Jan-16.LV_HV	-0.0546	0.1356	-0.4030	1.000
	Jan-16.LV_HV - Jan-16.MV_MV	-0.1523	0.1795	-0.8480	1.000
	Jan-16.LV_LV - Jan-16.MV_MV	-0.2068	0.1721	-1.2020	1.000

Jul-16.MV_HV - Jul-16.HV_HV	0.2569	0.1790	1.4350	1.000
Jul-16.LV_HV - Jul-16.HV_HV	0.4179	0.1907	2.1910	1.000
Jul-16.MV_MV - Jul-16.HV_HV	0.2859	0.1721	1.6620	1.000
Jul-16.LV_LV - Jul-16.HV_HV	0.3490	0.1791	1.9480	1.000
Jul-16.MV_MV - Jul-16.MV_HV	0.0291	0.1349	0.2150	1.000
Jul-16.LV_HV - Jul-16.MV_HV	0.1610	0.1970	0.8170	1.000
Jul-16.LV_LV - Jul-16.MV_HV	0.0921	0.1858	0.4950	1.000
Jul-16.LV_LV - Jul-16.LV_HV	-0.0689	0.1609	-0.4280	1.000
Jul-16.LV_HV - Jul-16.MV_MV	0.1319	0.1907	0.6920	1.000
Jul-16.LV_LV - Jul-16.MV_MV	0.0630	0.1791	0.3520	1.000
Jan-16.HV_HV - Jul-16.HV_HV	-0.0809	0.1255	-0.6440	1.000
Jan-16.MV_HV - Jul-16.MV_HV	0.1827	0.1349	1.3540	1.000
Jan-16.LV_HV - Jul-16.LV_HV	-0.2497	0.1543	-1.6180	1.000
Jan-16.MV_MV - Jul-16.MV_MV	0.0345	0.1255	0.2750	1.000
Jan-16.LV_LV - Jul-16.LV_LV	-0.2353	0.1351	-1.7420	1.000

CHL

D. Total Chlorophyll (control and heat)

Shapiro-wilk

Model: totalchl ~ time+o	time	origin	dest	trt	p-value
Jan-16	**Jan-16**	**HV**	**HV**	**cont**	**0.02567**
Jan-16		MV	HV	cont	0.3534
Jan-16		LV	HV	cont	0.1598
Jan-16		**MV**	**MV**	**cont**	**0.00527**
Jan-16		LV	LV	cont	0.8198
Jan-16		HV	HV	heat	0.3989
Jan-16		MV	HV	heat	0.1726
Jan-16		LV	HV	heat	0.9793
Jan-16		MV	MV	heat	0.7432
Jan-16		LV	LV	heat	0.1124
Jul-16	Jul-16	HV	HV	cont	0.8330
Jul-16		MV	HV	cont	0.1121
Jul-16		LV	HV	cont	0.6726
Jul-16		MV	MV	cont	0.1662
Jul-16		LV	LV	cont	0.5304
Jul-16		HV	HV	heat	0.8063
Jul-16		MV	HV	heat	0.3501
Jul-16		LV	HV	heat	0.1002
Jul-16		MV	MV	heat	0.1215
Jul-16		LV	LV	heat	0.4485

Bartlett HOV

Model: chlratio ~ time+o	time	K-squared	df	p-value
Jan-16		10.7390	9	0.2940
Jul-16		4.8643	9	0.8460

Summary

time	origin_dest_trt	mean	sd	min	Q1	median	Q3	max	n

Jan-16	HV_HV_cont	6.505	2.217	4.984	5.124	5.92	6.124	10.372	5
	HV_HV_heat	1.437	0.804	0.73	0.758	1.243	1.814	2.638	5
	LV_HV_cont	8.272	1.965	5.402	7.854	8.961	9.379	9.765	4
	LV_HV_heat	3.459	1.27	2.037	2.751	3.38	4.087	5.039	4
	LV_LV_cont	11.831	3.415	7.261	10.878	11.824	12.408	16.784	5
	LV_LV_heat	5.122	3.014	2.656	3.264	4.516	4.913	10.259	5
	MV_HV_cont	4.737	1.539	3.312	3.648	4.614	4.881	7.231	5
	MV_HV_heat	3.415	1.37	1.18	3.099	3.866	4.462	4.469	5
	MV_MV_cont	4.639	2.367	3.186	3.418	3.769	3.983	8.837	5
	MV_MV_heat	2.93	1.625	1.051	1.652	2.896	4.13	4.919	5
Jul-16	HV_HV_cont	3.715	0.849	2.477	3.296	3.965	4.164	4.671	5
	HV_HV_heat	0.973	0.742	0.179	0.406	0.943	1.297	2.042	5
	LV_HV_cont	3.534	1.629	1.768	2.812	3.855	4.417	4.979	3
	LV_HV_heat	1.75	0.753	0.882	1.514	2.145	2.184	2.224	3
	LV_LV_cont	6.414	0.911	5.182	6.204	6.545	6.755	7.383	4
	LV_LV_heat	4.642	0.51	3.952	4.412	4.771	5	5.074	4
	MV_HV_cont	3.502	1.3	2.355	2.399	3.425	4.528	4.806	4
	MV_HV_heat	2.197	1.284	1.04	1.17	2.033	3.061	3.684	4
	MV_MV_cont	4.967	1.2	3.991	4.259	4.374	5.28	6.932	5
	MV_MV_heat	2.87	0.962	1.24	2.909	3.039	3.514	3.646	5

ANOVA

Model: totalchl ~ time*origin_dest*trt + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	**time**	1	32.89	32.89	13.849	**0.007442**
	origin_dest	4	184.25	46.06	19.398	**0.000686**
	trt	1	0.21	0.21	0.09	0.7725
	time:origin_dest	1	8.46	8.46	3.561	0.1011
	Residuals	7	16.62	2.37		
Error: Within	**time**	1	58.33	58.33	28.488	**< 0.0001**
	origin_dest	2	28.79	14.4	7.031	**0.001850**
	trt	1	204.34	204.34	99.797	**< 0.0001**

	time:origin_dest	4	39.44	9.86	4.815	**0.002010**
	time:trt	1	19.49	19.49	9.518	**0.003120**
	origin_dest:trt	4	34.88	8.72	4.258	**0.004330**
	time:origin_dest:trt	4	21	5.25	2.564	**0.04767**
	Residuals	58	118.76	2.05		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
time	**Jul-16 - Jan-16**	-1.744	0.5956	-2.928	0.003410
origin_dest	MV_HV - HV_HV	0.3739	0.8481	0.441	1.000
	LV_HV - HV_HV	1.3267	0.9096	1.459	1.000
	MV_MV - HV_HV	0.6939	0.8255	0.841	1.000
	LV_LV - HV_HV	4.0084	0.8481	4.73E+00	**< 0.0001**
	LV_HV - MV_HV	0.9528	0.9302	1.024	1.000
	MV_MV - MV_HV	0.32	0.8481	0.377	1.000
	LV_LV - MV_HV	3.6346	0.8701	4.177	**0.0002950**
	MV_MV - LV_HV	-0.6328	0.9096	-0.696	1.000
time*origin_dest*trt					
16-Jan	**Jan-16.HV_HV.heat - Jan-16.HV_HV.cont**	-5.0682	0.90949	-5.573	**< 0.0001**
	Jan-16.MV_HV.heat - Jan-16.MV_HV.cont	-1.322	0.90949	-1.454	1.000
	Jan-16.LV_HV.heat - Jan-16.LV_HV.cont	-4.8135	1.01684	-4.734	**0.0004190**
	Jan-16.MV_MV.heat - Jan-16.MV_MV.cont	-1.709	0.90949	-1.879	1.000
	Jan-16.LV_LV.heat - Jan-16.LV_LV.cont	-6.7094	0.90949	-7.377	**< 0.0001**
	Jan-16.MV_HV.heat - Jan-16.HV_HV.heat	1.9786	1.10737	1.787	1.000
	Jan-16.LV_HV.heat - Jan-16.HV_HV.heat	2.49669	1.16064	2.151	1.000
	Jan-16.MV_MV.heat - Jan-16.HV_HV.heat	1.493	1.10737	1.348	1.000
	Jan-16.LV_LV.heat - Jan-16.HV_HV.heat	3.685	1.10737	3.328	0.1664
	Jan-16.MV_MV.heat - Jan-16.MV_HV.heat	-0.4856	0.90949	-0.534	1.000
	Jan-16.LV_HV.heat - Jan-16.MV_HV.heat	0.51809	1.16064	0.446	1.000
	Jan-16.LV_LV.heat - Jan-16.MV_HV.heat	1.7064	1.10737	1.541	1.000
	Jan-16.LV_LV.heat - Jan-16.LV_HV.heat	1.18831	0.97364	1.22	1.000

	Jan-16.LV_HV.heat - Jan-16.MV_MV.heat	1.00369	1.16064	0.865	1.000
	Jan-16.LV_LV.heat - Jan-16.MV_MV.heat	2.192	1.10737	1.979	1.000
	Jan-16.MV_HV.cont - Jan-16.HV_HV.cont	-1.7676	1.10737	-1.596	1.000
	Jan-16.LV_HV.cont - Jan-16.HV_HV.cont	2.24199	1.16064	1.932	1.000
	Jan-16.MV_MV.cont - Jan-16.HV_HV.cont	-1.8662	1.10737	-1.685	1.000
	Jan-16.LV_LV.cont - Jan-16.HV_HV.cont	5.3262	1.10737	4.81	**0.0002870**
	Jan-16.MV_MV.cont - Jan-16.MV_HV.cont	-0.0986	0.90949	-0.108	1.000
	Jan-16.LV_HV.cont - Jan-16.MV_HV.cont	4.00959	1.16064	3.455	0.1047
	Jan-16.LV_LV.cont - Jan-16.MV_HV.cont	7.0938	1.10737	6.406	**< 0.0001**
	Jan-16.LV_LV.cont - Jan-16.LV_HV.cont	3.08421	0.97364	3.168	0.2919
	Jan-16.LV_HV.cont - Jan-16.MV_MV.cont	4.10819	1.16064	3.54	0.07614
	Jan-16.LV_LV.cont - Jan-16.MV_MV.cont	7.1924	1.10737	6.495	**< 0.0001**
16-Jul	Jul-16.HV_HV.heat - Jul-16.HV_HV.cont	-2.7412	0.90949	-3.014	0.4899
	Jul-16.MV_HV.heat - Jul-16.MV_HV.cont	-1.305	1.01684	-1.283	1.000
	Jul-16.LV_HV.heat - Jul-16.LV_HV.cont	-1.78367	1.17414	-1.519	1.000
	Jul-16.MV_MV.heat - Jul-16.MV_MV.cont	-2.0976	0.90949	-2.306	1.000
	Jul-16.LV_LV.heat - Jul-16.LV_LV.cont	-1.87106	1.03114	-1.815	1.000
	Jul-16.MV_HV.heat - Jul-16.HV_HV.heat	1.54053	1.15866	1.33	1.000
	Jul-16.LV_HV.heat - Jul-16.HV_HV.heat	1.02966	1.2419	0.829	1.000
	Jul-16.MV_MV.heat - Jul-16.HV_HV.heat	1.8962	1.10737	1.712	1.000
	Jul-16.LV_LV.heat - Jul-16.HV_HV.heat	3.55196	1.15844	3.066	0.4120
	Jul-16.MV_MV.heat - Jul-16.MV_HV.heat	0.35567	0.97127	0.366	1.000
	Jul-16.LV_HV.heat - Jul-16.MV_HV.heat	-0.51087	1.28784	-0.397	1.000
	Jul-16.LV_LV.heat - Jul-16.MV_HV.heat	2.01143	1.20755	1.666	1.000
	Jul-16.LV_LV.heat - Jul-16.LV_HV.heat	2.5223	1.13135	2.229	1.000
	Jul-16.LV_HV.heat - Jul-16.MV_MV.heat	-0.86654	1.2419	-0.698	1.000
	Jul-16.LV_LV.heat - Jul-16.MV_MV.heat	1.65576	1.15844	1.429	1.000
	Jul-16.MV_HV.cont - Jul-16.HV_HV.cont	0.10433	1.15866	0.09	1.000
	Jul-16.LV_HV.cont - Jul-16.HV_HV.cont	0.07213	1.2419	0.058	1.000
	Jul-16.MV_MV.cont - Jul-16.HV_HV.cont	1.2526	1.10737	1.131	1.000
	Jul-16.LV_LV.cont - Jul-16.HV_HV.cont	2.68182	1.15844	2.315	1.000

	Jul-16.MV_MV.cont - Jul-16.MV_HV.cont	1.14827	0.97127	1.182	1.000
	Jul-16.LV_HV.cont - Jul-16.MV_HV.cont	-0.0322	1.28784	-0.025	1.000
	Jul-16.LV_LV.cont - Jul-16.MV_HV.cont	2.57749	1.20755	2.134	1.000
	Jul-16.LV_LV.cont - Jul-16.LV_HV.cont	2.60969	1.13135	2.307	1.000
	Jul-16.LV_HV.cont - Jul-16.MV_MV.cont	-1.18047	1.2419	-0.951	1.000
	Jul-16.LV_LV.cont - Jul-16.MV_MV.cont	1.42922	1.15844	1.234	1.000
Jan-16 vs. Jul-16	Jul-16.HV_HV.heat - Jan-16.HV_HV.heat	-0.4632	0.90949	-0.509	1.000
	Jul-16.HV_HV.cont - Jan-16.HV_HV.cont	-2.7902	0.90949	-3.068	0.4096
	Jul-16.MV_HV.heat - Jan-16.MV_HV.heat	-0.90127	0.97127	-0.928	1.000
	Jul-16.MV_HV.cont - Jan-16.MV_HV.cont	-0.91827	0.97127	-0.945	1.000
	Jul-16.LV_HV.heat - Jan-16.LV_HV.heat	-1.93023	1.10826	-1.742	1.000
	Jul-16.LV_HV.cont - Jan-16.LV_HV.cont	-4.96006	1.10826	-4.476	**0.001448**
	Jul-16.MV_MV.heat - Jan-16.MV_MV.heat	-0.06	0.90949	-0.066	1.000
	Jul-16.MV_MV.cont - Jan-16.MV_MV.cont	0.3286	0.90949	0.361	1.000
	Jul-16.LV_LV.heat - Jan-16.LV_LV.heat	-0.59624	0.97101	-0.614	1.000
	Jul-16.LV_LV.cont - Jan-16.LV_LV.cont	-5.43458	0.97101	-5.597	**< 0.0001**

Table S6 *Goniastrea retiformis* physiology

WEEKLY GROWTH RATE

A. Growth (g) over Time ((final-initial) / weeks)

Shapiro-wilk

Model: grate ~ time+orig	time	origin	dest	p-value
Jan-16	Jan-16	HV	HV	0.7828
	Jan-16	MV	HV	0.8258
	Jan-16	LV	HV	0.8234
	Jan-16	MV	MV	0.6071
Jul-16	Jul-16	HV	HV	0.05427
	Jul-16	MV	HV	0.9189
	Jul-16	LV	HV	0.3550
	Jul-16	MV	MV	0.8627
	Jul-16	LV	LV	0.9511

Bartlett HOV

Model: grate ~ time+orig	time	K-squared	df	p-value
	Jan-16	2.1946	3	0.5330
	Jul-16	0.8560	4	0.9308

Summary

time	origin_dest	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV	0.0740	0.0190	0.0450	0.0700	0.0750	0.0850	0.0950	5
	MV_HV	0.0470	0.0090	0.0350	0.0450	0.0450	0.0500	0.0600	5
	MV_MV	0.0620	0.0110	0.0450	0.0600	0.0650	0.0650	0.0750	5
	LV_HV	0.0710	0.0140	0.0550	0.0600	0.0700	0.0800	0.0900	5
	LV_LV	NaN	NA	NA	NA	NA	NA	NA	0
Jul-16	HV_HV	0.0880	0.0210	0.0700	0.0800	0.0800	0.0850	0.1250	5
	MV_HV	0.0630	0.0260	0.0300	0.0450	0.0650	0.0800	0.0950	5
	MV_MV	0.1290	0.0340	0.0900	0.1100	0.1200	0.1500	0.1750	5
	LV_HV	0.0680	0.0320	0.0400	0.0450	0.0550	0.0850	0.1150	5
	LV_LV	0.0400	0.0270	0.0100	0.0250	0.0380	0.0520	0.0750	4

ANOVA

Model: grate ~ time*origin_dest + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	**time**	1	0.0053	0.0053	8.1820	**0.01550**
	origin_dest	2	0.0014	0.0007	1.1040	0.3655
	residuals	11	0.0071	0.0006		
Error: Within	**time**	1	0.0040	0.0040	10.7760	**0.003260**
	origin_dest	2	0.0109	0.0055	14.6980	**<0.0001**
	time:origin_dest	3	0.0069	0.0023	6.1470	**0.003170**
	residuals	23	0.0085	0.0004		

Tukey's Test

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
origin_dest	MV_HV-HV_HV	-0.0260	0.0126	-2.0710	0.2289
	LV_HV-HV_HV	-0.0115	0.0126	-0.9160	0.8890
	MV_MV-HV_HV	0.0145	0.0126	1.1550	0.7737
	LV_LV-HV_HV	-0.0410	0.0166	-2.4690	0.09562
	LV_HV-MV_HV	0.0145	0.0126	1.1550	0.7737
	MV_MV-MV_HV	0.0405	0.0126	3.2260	**0.01060**
	LV_LV-MV_HV	-0.0150	0.0166	-0.9030	0.8940
	MV_MV-LV_HV	0.0260	0.0126	2.0710	0.2289
	LV_LV-LV_HV	-0.0295	0.0166	-1.7760	0.3827
	LV_LV-MV_MV	-0.0555	0.0166	-3.3420	**0.007330**
time*origin_dest					
Jan-16	Jan-16.MV_HV-Jan-16.HV_HV	-0.0270	0.0146	-1.8460	0.6420
	Jan-16.LV_HV-Jan-16.HV_HV	-0.0030	0.0146	-0.2050	1.000
	Jan-16.MV_MV-Jan-16.HV_HV	-0.0120	0.0146	-0.8210	0.9961
	Jan-16.LV_HV-Jan-16.MV_HV	0.0240	0.0146	1.6410	0.7747
	Jan-16.MV_MV-Jan-16.MV_HV	0.0150	0.0124	1.2100	0.9523
	Jan-16.MV_MV-Jan-16.LV_HV	-0.0090	0.0146	-0.6150	0.9995

Jul-16	Jul-16.MV_HV-Jul-16.HV_HV	-0.0250	0.0146	-1.7100	0.7330	
	Jul-16.LV_HV-Jul-16.HV_HV	-0.0200	0.0146	-1.3680	0.9060	
	Jul-16.MV_MV-Jul-16.HV_HV	0.0410	0.0146	2.8040	0.1107	
	Jul-16.LV_LV-Jul-16.HV_HV	-0.0444	0.0154	-2.8810	0.09085	.
	Jul-16.LV_HV-Jul-16.MV_HV	0.0050	0.0146	0.3420	1.000	
	Jul-16.MV_MV-Jul-16.MV_HV	0.0660	0.0124	5.3230	**<0.001**	
	Jul-16.LV_LV-Jul-16.MV_HV	-0.0194	0.0154	-1.2580	0.9403	
	Jul-16.MV_MV-Jul-16.LV_HV	0.0610	0.0146	4.1720	**<0.001**	
	Jul-16.LV_LV-Jul-16.LV_HV	-0.0244	0.0133	-1.8320	0.6523	
	Jul-16.LV_LV-Jul-16.MV_MV	-0.0854	0.0154	-5.5430	**<0.001**	
Jan-16 vs. Jul-16	Jul-16.HV_HV-Jan-16.HV_HV	0.0140	0.0124	1.1290	0.9683	
	Jul-16.MV_HV-Jan-16.MV_HV	0.0160	0.0124	1.2900	0.9314	
	Jul-16.LV_HV-Jan-16.LV_HV	-0.0030	0.0124	-0.2420	1.000	
	Jul-16.MV_MV-Jan-16.MV_MV	0.0670	0.0124	5.4030	**<0.001**	

Fv/Fm

B. Normalized Fv/Fm following heat stress ((0hr-21hr)/0hr)

Shapiro-wilk

Model: Fvfm ~ time+orig	time	origin	dest	trt	p-value
Jan-16	Jan-16	HV	HV	heat	0.3392
	Jan-16	HV	HV	cont	0.6714
	Jan-16	MV	HV	heat	0.2319
	Jan-16	MV	HV	cont	0.6557
	Jan-16	**MV**	**MV**	**heat**	**0.002411**
	Jan-16	MV	MV	cont	0.7516
	Jan-16	LV	HV	heat	0.1755
	Jan-16	LV	HV	cont	0.8139
Jul-16	Jul-16	HV	HV	heat	0.4215
	Jul-16	HV	HV	cont	0.8722
	Jul-16	MV	HV	heat	0.1138
	Jul-16	**MV**	**HV**	**cont**	**0.001938**
	Jul-16	MV	MV	heat	0.7234
	Jul-16	MV	MV	cont	0.4404
	Jul-16	**LV**	**HV**	**heat**	**0.03077**
	Jul-16	LV	HV	cont	0.2898
	Jul-16	LV	LV	heat	0.6048
	Jul-16	LV	LV	cont	0.4351

Bartlett HOV

Model: Fvfm ~ time+orig	time	K-squared	df	p-value
	Jan-16	3.2157	3	0.3595
	Jul-16	4.6762	4	0.3222

Summary

time	origin_dest.trt	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV.cont	0.9130	0.0280	0.8750	0.9040	0.9180	0.9280	0.9410	4
	HV_HV.heat	0.8560	0.0380	0.8250	0.8300	0.8440	0.8710	0.9090	4

	MV_HV.cont	0.9360	0.0330	0.8850	0.9270	0.9460	0.9490	0.9720	5
	MV_HV.heat	0.9020	0.0390	0.8630	0.8760	0.8850	0.9390	0.9480	5
	LV_HV.cont	0.9340	0.0370	0.8920	0.9040	0.9380	0.9510	0.9830	5
	LV_HV.heat	0.8320	0.0490	0.7920	0.7970	0.8270	0.8330	0.9130	5
	MV_MV.cont	0.8930	0.0200	0.8720	0.8790	0.8900	0.9000	0.9230	5
	MV_MV.heat	0.8680	0.0630	0.7560	0.8890	0.8900	0.9000	0.9040	5
Jul-16	HV_HV.cont	0.9590	0.0320	0.9170	0.9480	0.9610	0.9650	1.0050	5
	HV_HV.heat	0.7430	0.1220	0.5920	0.6370	0.7890	0.8240	0.8730	5
	MV_HV.cont	0.9400	0.0340	0.8790	0.9500	0.9550	0.9550	0.9590	5
	MV_HV.heat	0.7220	0.1080	0.5450	0.6930	0.7820	0.7830	0.8060	5
	LV_HV.cont	0.8920	0.0360	0.8530	0.8630	0.8840	0.9270	0.9310	5
	LV_HV.heat	0.7830	0.0580	0.6820	0.7900	0.8060	0.8100	0.8250	5
	MV_MV.cont	0.9360	0.0480	0.8630	0.9140	0.9460	0.9760	0.9790	5
	MV_MV.heat	0.7120	0.1360	0.5420	0.6210	0.7080	0.8260	0.8650	5
	LV_LV.cont	0.9480	0.0380	0.9060	0.9340	0.9610	0.9700	0.9780	3
	LV_LV.heat	0.7650	0.1010	0.6540	0.7220	0.7890	0.8200	0.8520	3

ANOVA

Model: Fvfm ~ time*origin*dest*trt + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	0.0040	0.0040	0.5770	0.4650
	origin	2	0.0034	0.0017	0.2420	0.7890
	dest	1	0.0001	0.0001	0.0130	0.9130
Error: Within	**time**	1	0.0688	0.0688	17.9780	**0.0001**
	dest	2	0.0062	0.0031	0.8070	0.4516
	trt	1	0.3484	0.3484	91.0520	**<0.0001**
	time:origin	2	0.0031	0.0015	0.4000	0.6726
	time:dest	1	0.0026	0.0026	0.6690	0.4170
	time:trt	1	0.0967	0.0967	25.2640	**<0.0001**
	origin:trt	2	0.0026	0.0013	0.3450	0.7099
	dest:trt	2	0.0001	0.0001	0.0150	0.9853

	time:origin:trt	2	0.0287	0.0144	3.7540	**0.02970**
	time:dest:trt	1	0.0001	0.0001	0.0320	0.8587

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
time	**Jul-16 - Jan-16**	0.0536	0.0214	2.5060	**0.01220**
time*trt	**Jan-16.heat - Jan-16.cont**	0.0542	0.0200	2.7070	**0.04068**
	Jul-16.heat - Jul-16.cont	0.1905	0.0182	10.4770	**<0.0001**
	Jul-16.heat - Jan-16.heat	0.1230	0.0192	6.4160	**<0.0001**
	Jul-16.cont - Jan-16.cont	-0.0133	0.0192	-0.6960	1.000
time*origin*trt					
Jan-16	Jan-16.HV.heat - Jan-16.HV.cont	0.0575	0.0428	1.3420	1.000
	Jan-16.MV.heat - Jan-16.MV.cont	0.0293	0.0271	1.0810	1.000
	Jan-16.LV.heat - Jan-16.LV.cont	0.1012	0.0383	2.6410	0.5455
	Jan-16.MV.heat - Jan-16.HV.heat	-0.0257	0.0392	-0.6560	1.000
	Jan-16.MV.cont - Jan-16.HV.cont	0.0025	0.0392	0.0630	1.000
	Jan-16.LV.heat - Jan-16.HV.heat	0.0269	0.0436	0.6160	1.000
	Jan-16.LV.cont - Jan-16.HV.cont	-0.0168	0.0436	-0.3850	1.000
	Jan-16.MV.heat - Jan-16.LV.heat	-0.0526	0.0365	-1.4420	1.000
	Jan-16.MV.cont - Jan-16.LV.cont	0.0193	0.0365	0.5290	1.000
Jul-16	**Jul-16.HV.heat - Jul-16.HV.cont**	0.2162	0.0383	5.6420	**<0.0001**
	Jul-16.MV.heat - Jul-16.MV.cont	0.2205	0.0271	8.1380	**<0.0001**
	Jul-16.LV.heat - Jul-16.LV.cont	0.1369	0.0303	4.5180	**0.0004**
	Jul-16.MV.heat - Jul-16.HV.heat	0.0259	0.0365	0.7100	1.000
	Jul-16.MV.cont - Jul-16.HV.cont	0.0216	0.0365	0.5920	1.000
	Jul-16.LV.heat - Jul-16.HV.heat	-0.0312	0.0378	-0.8260	1.000
	Jul-16.LV.cont - Jul-16.HV.cont	0.0481	0.0378	1.2720	1.000
	Jul-16.MV.heat - Jul-16.LV.heat	0.0571	0.0326	1.7540	1.000
	Jul-16.MV.cont - Jul-16.LV.cont	-0.0265	0.0326	-0.8130	1.000
Jan-16 vs. Jul-16	Jul-16.HV.heat - Jan-16.HV.heat	0.1163	0.0409	2.8420	0.2954

	Jul-16.HV.cont - Jan-16.HV.cont	-0.0424	0.0409	-1.0370	1.000
	Jul-16.MV.heat - Jan-16.MV.heat	0.1679	0.0271	6.1970	**<0.0001**
	Jul-16.MV.cont - Jan-16.MV.cont	-0.0233	0.0271	-0.8600	1.000
	Jul-16.LV.heat - Jan-16.LV.heat	0.0582	0.0346	1.6800	1.000
	Jul-16.LV.cont - Jan-16.LV.cont	0.0225	0.0346	0.6490	1.000

ANOVA

Model: Ylossnorm ~ time*origin_dest*trt + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	0.0040	0.0040	0.5770	0.4650
	origin_dest	3	0.0035	0.0012	0.1660	0.9170
	Residuals	10	0.0700	0.0070		
Error: Within	**time**	1	0.0688	0.0688	17.9780	**< 0.0001**
	origin_dest	2	0.0062	0.0031	0.8070	0.4516
	trt	1	0.3484	0.3484	91.0520	**< 0.0001**
	time:origin_dest	3	0.0056	0.0019	0.4890	0.6911
	time:trt	1	0.0967	0.0967	25.2640	**< 0.0001**
	origin_dest:trt	4	0.0028	0.0007	0.1800	0.9479
	time:origin_dest:trt	3	0.0289	0.0096	2.5130	0.06810
	Residuals	54	0.2066	0.0038		

Tukey's Test

time*origin_dest*trt	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
Jan-16 heat vs. control	Jan-16.HV_HV.heat - Jan-16.HV_HV.cont	0.0575	0.0437	1.3150	0.9979
	Jan-16.MV_HV.heat - Jan-16.MV_HV.cont	0.0336	0.0391	0.8590	1.0000
	Jan-16.LV_HV.heat - Jan-16.LV_HV.cont	0.1012	0.0391	2.5870	0.4589
	Jan-16.MV_MV.heat - Jan-16.MV_MV.cont	0.0250	0.0391	0.6390	1.0000
Jan-16 heat	Jan-16.MV_HV.heat - Jan-16.HV_HV.heat	-0.0432	0.0442	-0.9770	1.0000
	Jan-16.LV_HV.heat - Jan-16.HV_HV.heat	0.0266	0.0442	0.6010	1.0000
	Jan-16.MV_MV.heat - Jan-16.HV_HV.heat	-0.0088	0.0442	-0.1990	1.0000
	Jan-16.LV_HV.heat - Jan-16.MV_HV.heat	0.0698	0.0418	1.6710	0.9709
	Jan-16.MV_MV.heat - Jan-16.MV_HV.heat	0.0344	0.0391	0.8790	1.0000
	Jan-16.MV_MV.heat - Jan-16.LV_HV.heat	-0.0354	0.0418	-0.8470	1.0000

Jan-16 control	Jan-16.MV_HV.cont - Jan-16.HV_HV.cont	-0.0193	0.0442	-0.4360	1.0000
	Jan-16.LV_HV.cont - Jan-16.HV_HV.cont	-0.0171	0.0442	-0.3870	1.0000
	Jan-16.MV_MV.cont - Jan-16.HV_HV.cont	0.0237	0.0442	0.5360	1.0000
	Jan-16.LV_HV.cont - Jan-16.MV_HV.cont	0.0022	0.0418	0.0530	1.0000
	Jan-16.MV_MV.cont - Jan-16.MV_HV.cont	0.0430	0.0391	1.0990	0.9998
	Jan-16.MV_MV.cont - Jan-16.LV_HV.cont	0.0408	0.0418	0.9770	1.0000
Jul-16 heat vs. control	**Jul-16.HV_HV.heat - Jul-16.HV_HV.cont**	0.2162	0.0391	5.5270	**<0.0001**
	Jul-16.MV_HV.heat - Jul-16.MV_HV.cont	0.2178	0.0391	5.5670	**<0.0001**
	Jul-16.LV_HV.heat - Jul-16.LV_HV.cont	0.1090	0.0391	2.7860	0.3181
	Jul-16.MV_MV.heat - Jul-16.MV_MV.cont	0.2232	0.0391	5.7050	**<0.0001**
	Jul-16.LV_LV.heat - Jul-16.LV_LV.cont	0.1833	0.0505	3.6300	**0.03030**
Jul-16 heat	Jul-16.MV_HV.heat - Jul-16.HV_HV.heat	0.0212	0.0418	0.5080	1.0000
	Jul-16.LV_HV.heat - Jul-16.HV_HV.heat	-0.0396	0.0418	-0.9480	1.0000
	Jul-16.MV_MV.heat - Jul-16.HV_HV.heat	0.0306	0.0418	0.7330	1.0000
	Jul-16.LV_LV.heat - Jul-16.HV_HV.heat	-0.0183	0.0480	-0.3810	1.0000
	Jul-16.MV_MV.heat - Jul-16.MV_HV.heat	0.0094	0.0391	0.2400	1.0000
	Jul-16.LV_HV.heat - Jul-16.MV_HV.heat	-0.0608	0.0418	-1.4560	0.9931
	Jul-16.LV_LV.heat - Jul-16.MV_HV.heat	-0.0395	0.0480	-0.8230	1.0000
	Jul-16.MV_MV.heat - Jul-16.LV_HV.heat	0.0702	0.0418	1.6810	0.9691
	Jul-16.LV_LV.heat - Jul-16.MV_MV.heat	-0.0489	0.0480	-1.0190	0.9999
	Jul-16.LV_LV.heat - Jul-16.LV_HV.heat	0.0213	0.0457	0.4670	1.0000
Jul-16 control	Jul-16.MV_HV.cont - Jul-16.HV_HV.cont	0.0196	0.0418	0.4690	1.0000
	Jul-16.LV_HV.cont - Jul-16.HV_HV.cont	0.0676	0.0418	1.6180	0.9787
	Jul-16.MV_MV.cont - Jul-16.HV_HV.cont	0.0236	0.0418	0.5650	1.0000
	Jul-16.LV_LV.cont - Jul-16.HV_HV.cont	0.0146	0.0480	0.3040	1.0000
	Jul-16.MV_MV.cont - Jul-16.MV_HV.cont	0.0040	0.0391	0.1020	1.0000
	Jul-16.LV_HV.cont - Jul-16.MV_HV.cont	0.0480	0.0418	1.1490	0.9996
	Jul-16.LV_LV.cont - Jul-16.MV_HV.cont	-0.0050	0.0480	-0.1040	1.0000
	Jul-16.MV_MV.cont - Jul-16.LV_HV.cont	-0.0440	0.0418	-1.0530	0.9999
	Jul-16.LV_LV.cont - Jul-16.LV_HV.cont	-0.0530	0.0457	-1.1610	0.9996
	Jul-16.LV_LV.cont - Jul-16.MV_MV.cont	-0.0090	0.0480	-0.1880	1.0000

Jan-16 vs. Jul-16	Jul-16.HV_HV.heat - Jan-16.HV_HV.heat	0.1160	0.0417	2.7790	0.3211
	Jul-16.MV_HV.heat - Jan-16.MV_HV.heat	0.1804	0.0391	4.6110	**<0.0100**
	Jul-16.LV_HV.heat - Jan-16.LV_HV.heat	0.0498	0.0391	1.2730	0.9986
	Jul-16.MV_MV.heat - Jan-16.MV_MV.heat	0.1554	0.0391	3.9720	**< 0.0001**
	Jul-16.HV_HV.cont - Jan-16.HV_HV.cont	-0.0427	0.0417	-1.0230	0.9999
	Jul-16.MV_HV.cont - Jan-16.MV_HV.cont	-0.0038	0.0391	-0.0970	1.0000
	Jul-16.LV_HV.cont - Jan-16.LV_HV.cont	0.0420	0.0391	1.0740	0.9998
	Jul-16.MV_MV.cont - Jan-16.MV_MV.cont	-0.0428	0.0391	-1.0940	0.9998

CHL

C. Total Chlorophyll Ratio (1-(control-heat)/control)

Shapiro-wilk

Model: chlratio ~ time+origin+dest	time	origin	dest	p-value
Jan-16	Jan-16	HV	HV	0.6371
	Jan-16	MV	HV	0.2933
	Jan-16	MV	MV	0.9573
	Jan-16	LV	HV	0.8825
Jul-16	Jul-16	HV	HV	0.3222
	Jul-16	MV	HV	0.5389
	Jul-16	MV	MV	0.5554
	Jul-16	LV	HV	0.1717
	Jul-16	LV	LV	0.5228

Bartlett HOV

Model: chlratio ~ time+origin_dest	time	K-squared	df	p-value
	Jan-16	1.5667	3	0.6670
	Jul-16	10.0580	4	**0.03947**

Summary

time	origin_dest	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV	0.6800	0.1360	0.5390	0.5980	0.6290	0.7590	0.8750	5
	MV_HV	0.7250	0.2040	0.5350	0.5950	0.6180	0.8660	1.0120	5
	MV_MV	0.6480	0.1100	0.4960	0.6140	0.6490	0.6830	0.7980	5
	LV_HV	0.7050	0.1890	0.5100	0.6150	0.7190	0.8030	0.8870	3
Jul-16	HV_HV	0.6330	0.1190	0.4360	0.6170	0.6730	0.6940	0.7460	5
	MV_HV	0.5040	0.1290	0.3810	0.3910	0.4940	0.5580	0.6940	5
	MV_MV	0.6450	0.3040	0.2520	0.5970	0.6030	0.6720	1.1020	5
	LV_HV	0.4360	0.2070	0.1780	0.2510	0.5240	0.6060	0.6220	5
	LV_LV	0.8240	0.5960	0.3310	0.4920	0.6530	1.0700	1.4860	3

ANOVA

Model: chlrat ~ time*origin_dest + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	0.1651	0.1651	3.0590	0.1110
	origin_dest	3	0.2141	0.0714	1.3220	0.3210
	Residuals	10	0.5398	0.0540		
Error: Within	**time**	1	0.2094	0.2094	5.4710	**0.02980**
	origin_dest	2	0.0450	0.0225	0.5890	0.5645
	time:origin_dest	3	0.2539	0.0846	2.2120	0.1183
	Residuals	20	0.7654	0.0383		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
time	Jan-16 - Jul-16	0.11334	0.06758	1.6770	0.09350

D. Total Chlorophyll (control and heat)

Shapiro-wilk

Model: totalchl ~ origin+time+dest	time	origin	dest	totalchl	p-value
Jan-16	Jan-16	HV	HV	cont	0.8659
	Jan-16	HV	HV	heat	0.8399
	Jan-16	MV	HV	cont	0.7286
	Jan-16	MV	MV	cont	0.6472
	Jan-16	MV	HV	heat	0.2830
	Jan-16	MV	MV	heat	0.1244
	Jan-16	LV	HV	cont	0.7202
	Jan-16	LV	HV	heat	0.5631
Jul-16	Jul-16	HV	HV	cont	0.5288
	Jul-16	HV	HV	heat	0.1293
	Jul-16	MV	HV	cont	0.4584
	Jul-16	MV	MV	cont	0.5670
	Jul-16	MV	HV	heat	0.8153
	Jul-16	MV	MV	heat	0.3280
	Jul-16	LV	HV	cont	0.2118
	Jul-16	LV	LV	cont	0.5669
	Jul-16	LV	HV	heat	0.9143
	Jul-16	LV	LV	heat	0.1170

Bartlett HOV

Model: totalchl~origin_dest+trt	time	K-squared	df	p-value
	Jan-16	3.2255	7	0.8634
	Jul-16	15.6320	9	0.07498

Summary

time	origin_dest_trt	mean	sd	min	Q1	median	Q3	max	n
Jan-16	HV_HV_cont	5.7460	1.1180	4.3520	4.9140	5.9770	6.3440	7.1440	5
	HV_HV_heat	3.8250	0.5930	3.0910	3.4180	3.8100	4.2730	4.5340	5

	LV_HV_cont	5.4570	0.9530	4.5940	4.9450	5.2960	5.8880	6.4800	3
	LV_HV_heat	3.8110	1.0030	2.7030	3.3890	4.0740	4.3650	4.6570	3
	MV_HV_cont	5.9660	0.5090	5.3680	5.7460	5.7650	6.2900	6.6630	5
	MV_HV_heat	4.2590	0.9000	3.4170	3.5680	3.8860	4.9950	5.4310	5
	MV_MV_cont	5.8140	0.6790	4.7970	5.7220	5.9120	5.9450	6.6950	5
	MV_MV_heat	3.7760	0.8180	2.9300	2.9470	3.8580	4.5690	4.5750	5
Jul-16	HV_HV_cont	7.5440	0.7050	6.4190	7.3830	7.6890	7.9950	8.2320	5
	HV_HV_heat	4.7620	0.9040	3.2210	4.7860	5.0760	5.1750	5.5510	5
	LV_HV_cont	7.4710	1.7460	5.6560	6.1680	6.8880	9.2460	9.3960	5
	LV_HV_heat	2.9870	1.0130	1.6710	2.3220	3.2330	3.4270	4.2810	5
	LV_LV_cont	5.6190	2.6430	2.7010	4.5030	6.3050	7.0780	7.8510	3
	LV_LV_heat	3.5770	0.8500	2.5980	3.3070	4.0150	4.0670	4.1190	3
	MV_HV_cont	8.1710	1.2420	6.7090	7.8250	8.0010	8.1810	10.1410	5
	MV_HV_heat	4.0960	1.0970	2.6260	3.8600	3.9490	4.3680	5.6770	5
	MV_MV_cont	7.8900	1.6540	5.8290	6.5350	8.3040	9.0970	9.6860	5
	MV_MV_heat	5.2230	3.2920	2.0890	3.4770	4.3930	5.4820	10.6740	5

ANOVA

Model: totalchl ~ time*origin_dest*trt + Error(colony)

	Factor	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Error: Between	time	1	6.8300	6.8300	2.6890	0.1320
	origin_dest	3	2.7390	0.9130	0.3590	0.7840
	Residuals	10	25.4010	2.5400		
Error: Within	**time**	1	29.7000	29.7000	16.4070	**0.0001710**
	origin_dest	2	0.6700	0.3400	0.1860	0.8309
	trt	1	146.0500	146.0500	80.6790	**<0.0001**
	time:origin_dest	3	2.1300	0.7100	0.3930	0.7588
	time:trt	1	10.8100	10.8100	5.9730	**0.01796**
	origin_dest:trt	4	5.2300	1.3100	0.7220	0.5806
	time:origin_dest:trt	3	4.0400	1.3500	0.7440	0.5309
	Residuals	52	94.1300	1.8100		

Tukey's Test (Bonferroni corrected)

	Contrast	Estimate	Std. Error	z value	Pr(>|z|)
time	**Jan-16 - Jul-16**	-0.9789	0.4369	-2.2410	**0.02510**
trt	**heat - cont**	-2.6691	0.3242	-8.2330	**<0.0001**
time*trt	**Jan-16.heat - Jan-16.cont**	-1.8482	0.4277	-4.3210	**<0.0001**
	Jul-16.heat - Jul-16.cont	-3.3116	0.3784	-8.7520	**<0.0001**
	Jan-16.cont - Jul-16.cont	-1.8360	0.4080	-4.5000	**<0.0001**
	Jan-16.heat - Jul-16.heat	-0.3727	0.4080	-0.9130	1.000
time*origin_dest*trt					
Jan-16 heat vs. control	HV_HV.heat - HV_HV.cont	-1.9210	0.8362	-2.2970	1.000
	MV_MV.heat - MV_HV.cont	-1.7070	0.8362	-2.0410	1.000
	MV_MV.heat - MV_MV.cont	-1.6453	1.0795	-1.5240	1.000
	LV_HV.heat - LV_HV.cont	-2.0384	0.8362	-2.4380	1.000
Jan-16 heat	MV_HV.heat - HV_HV.heat	0.4342	0.8682	0.5000	1.000
	LV_HV.heat - HV_HV.heat	-0.0558	1.0008	-0.0560	1.000
	MV_MV.heat - HV_HV.heat	-0.0494	0.8682	-0.0570	1.000
	LV_HV.heat - MV_HV.heat	0.4900	1.0008	0.4900	1.000
	MV_MV.heat - MV_HV.heat	-0.4836	0.8362	-0.5780	1.000
	MV_MV.heat - LV_HV.heat	0.0064	1.0008	0.0060	1.000
Jan-16 control	MV_HV.cont - HV_HV.cont	0.2202	0.8682	0.2540	1.000
	LV_HV.cont - HV_HV.cont	-0.3314	1.0008	-0.3310	1.000
	MV_MV.cont - HV_HV.cont	0.0680	0.8682	0.0780	1.000
	LV_HV.cont - MV_HV.cont	0.5516	1.0008	0.5510	1.000
	MV_MV.cont - MV_HV.cont	-0.1522	0.8362	-0.1820	1.000
	MV_MV.cont - LV_HV.cont	0.3994	1.0008	0.3990	1.000
Jul-16 heat vs. control	HV_HV.heat - HV_HV.cont	-2.7818	0.8362	-3.3270	0.1345
	MV_HV.heat - MV_HV.cont	**-4.0754**	**0.8362**	**-4.8740**	**0.0001680**
	LV_HV.heat - LV_HV.cont	**-4.4840**	**0.8362**	**-5.3620**	**<0.0001**
	MV_MV.heat - MV_MV.cont	-2.6672	0.8362	-3.1900	0.2179
	LV_LV.heat - LV_LV.cont	-2.0417	1.0795	-1.8910	1.000

Jul-16 heat	MV_HV.heat - HV_HV.heat	-0.6658	0.8682	-0.7670	1.000
	LV_HV.heat - HV_HV.heat	-1.7750	0.8682	-2.0440	1.000
	MV_MV.heat - HV_HV.heat	0.4612	0.8682	0.5310	1.000
	LV_LV.heat - HV_HV.heat	-1.1352	1.0008	-1.1340	1.000
	LV_HV.heat - MV_HV.heat	1.1092	0.8682	1.2780	1.000
	MV_MV.heat - MV_HV.heat	1.1270	0.8362	1.3480	1.000
	LV_LV.heat - MV_HV.heat	0.4694	1.0008	0.4690	1.000
	MV_MV.heat - LV_HV.heat	2.2362	0.8682	2.5760	1.000
	LV_LV.heat - LV_HV.heat	0.6398	0.9731	0.6580	1.000
	LV_LV.heat - MV_MV.heat	1.5964	1.0008	1.5950	1.000
Jul-16 control	MV_HV.cont - HV_HV.cont	0.6278	0.8682	0.7230	1.000
	LV_HV.cont - HV_HV.cont	-0.0728	0.8682	-0.0840	1.000
	MV_MV.cont - HV_HV.cont	0.3466	0.8682	0.3990	1.000
	LV_LV.cont - HV_HV.cont	-1.8753	1.0008	-1.8740	1.000
	LV_HV.cont - MV_HV.cont	0.7006	0.8682	0.8070	1.000
	MV_MV.cont - MV_HV.cont	-0.2812	0.8362	-0.3360	1.000
	LV_LV.cont - MV_HV.cont	2.5031	1.0008	2.5010	1.000
	MV_MV.cont - LV_HV.cont	0.4194	0.8682	0.4830	1.000
	LV_LV.cont - LV_HV.cont	-1.8025	0.9731	-1.8520	1.000
	LV_LV.cont - MV_MV.cont	2.2219	1.0008	2.2200	1.000
Jan-16 vs. Jul-16	HV_HV.heat - HV_HV.heat	0.9366	0.8362	1.1200	1.000
	MV_HV.heat - MV_HV.heat	-0.1634	0.8362	-0.1950	1.000
	LV_HV.heat - LV_HV.heat	-0.7826	0.9731	-0.8040	1.000
	MV_MV.heat - MV_MV.heat	1.4472	0.8362	1.7310	1.000
	HV_HV.cont - HV_HV.cont	1.7974	0.8362	2.1490	1.000
	MV_HV.cont - MV_HV.cont	2.2050	0.8362	2.6370	1.000
	LV_HV.cont - LV_HV.cont	2.0560	0.9731	2.1130	1.000
	MV_MV.cont - MV_MV.cont	2.0760	0.8362	2.4830	1.000

Table S7 Symbiodiniaceae genotyping

A. Symbiodiniaceae ITS-2 Amplicon Sequencing and DADA2 Summary

		N	Input	Filtered	Denoised	Merged	Tabled	onchimer	Mapped
P. lobata		79	367307	289420	289420	2086	2716	2716	282349
HV		25	111735	98299	98299	470	562	562	95286
MV	HV	5	47020	32042	32042	319	319	319	31376
	MV	23	80810	50210	50210	430	779	779	49173
LV	HV	6	27959	22591	22591	160	227	227	22211
	LV	20	99783	86278	86278	707	829	829	84303
G. retiformis		58	121221	84153	84153	621	2124	2124	82905
HV		19	71172	41050	41050	352	744	744	40393
MV	HV	5	15526	13158	13158	55	161	161	12990
	MV	14	33540	29263	29263	214	537	537	28852
LV	HV	4	184	182	182	0	182	182	183
	LV	16	799	500	500	0	500	500	487

B. Symbiodiniaceae Read Counts

Species	Time	Site	g	C15	C3	C40	C15b	C3e	C39	C1	A4a	C60	B2	C2	C21	C3k	Number
P. lobata	Jul-15	HV	side	33273	18	62	0	18	0	0	0	0	0	0	0	0	33371
			top	21896	10	0	0	0	10	0	0	0	0	0	0	0	21916
		MV	side	20240	32	0	0	0	32	0	0	0	0	0	0	0	20304
			top	15069	0	264	0	0	0	0	0	0	102	0	0	0	15435
		LV	side	22260	11	79	0	11	0	0	14	0	0	65	0	0	22440
			top	30751	0	0	28	0	0	0	0	0	0	0	0	0	30779
	Average Relative Proportion			0.993	0.001	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	
	Jan-16	HV	HV	39877	60	0	0	0	60	0	0	0	0	0	0	0	39997
		MV	HV	31121	15	110	0	0	15	114	0	16	0	0	0	0	31391
			MV	13125	26	0	0	0	26	0	0	0	0	51	0	0	13228
		LV	HV	22203	6	0	8	0	6	0	0	0	0	0	0	0	22223
			LV	30951	58	0	17	0	58	0	0	0	0	0	0	0	31084
	Average Relative Proportion			0.995	0.001	0.001	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.001	0.000	0.000	

	Jul-16	HV	HV	90	0	0	0	0	0	0	0	0	0	0	0	0	90
		MV	MV	230	0	0	0	0	0	0	0	0	0	0	0	0	230
		LV	LV	114	0	0	0	0	0	0	0	0	0	0	0	0	114
	Average Relative Proportion			1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
G. retiformis	Jul-15	HV	side	139	351	1860	0	0	0	0	0	0	0	0	32	0	2382
			top	43	1368	11582	0	12	0	0	0	0	0	0	31	0	13036
		MV	side	0	607	4942	0	0	0	0	0	0	0	0	57	0	5606
			top	43	0	180	0	0	0	0	0	0	0	0	0	0	223
		LV	side	0	0	73	0	136	0	0	0	0	0	0	0	0	209
			top	14	0	64	0	15	0	0	0	0	0	0	0	0	93
	Average Relative Proportion			0.068	0.060	0.733	0.000	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	
	Jan-16	HV	HV	640	2722	21297	0	0	0	109	0	0	0	0	219	0	24987
		MV	HV	9208	480	3215	10	0	0	42	0	0	0	0	45	0	13000
			MV	14439	828	7697	66	0	0	0	0	0	0	0	59	0	23089
		LV	HV	0	0	63	0	120	0	0	0	0	0	0	0	0	183
			LV	0	0	123	0	34	0	0	0	0	0	0	0	13	170
	Average Relative Proportion			0.27	0.036	0.500	0.001	0.171	0.000	0.002	0.000	0.000	0.000	0.000	0.003	0.015	

C. Symbiodiniaceae Type BLASTn Results

Query ID	ITS2 type	Accession #	%QueryCover	QueryLength	Gaps	Mismatch	QueryStart	QueryEnd	MatchStart	MatchEnd	E-value	MaxScore
GeoSymbio Database												
seq1	C15	AY239369	100	283	0	0	1	283	1	283	4E-147	511
seq4	C3	AF499789	100	283	0	0	1	283	1	283	4E-147	511
seq2	C40	AY258485	100	283	0	0	1	283	1	283	4E-147	511
seq100	C15b	AY258491	93.99	283	0	1	1	266	1	283	4E-127	444
seq99		D1_AF334660	100	271	0	0	1	271	1	271	1E-140	489
seq43		C1023_DQ33533	93	243	6	2	1	235	1	240	1E-102	363
seq51	C1	AF333515	100	283	0	0	1	283	1	283	4E-147	511
seq110	A4a	AF499778	100	255	0	0	1	255	1	255	6E-132	461
seq107	C60	AY589764	100	159	0	0	55	213	125	283	6E-80	288
seq69	B2	AF333512	99.64	275	1	0	1	275	1	275	4E-141	491
seq68		C1233_EU11816	100	193	0	0	48	240	91	283	2E-98	349
seq29	C21	C21/3d/C3k_AY2	99.28	276	2	0	1	276	1	276	1E-140	489
SEQ8	C3k	AY589737	100	175	0	0	1	175	1	175	9E-89	316
SSantos Database												
seq1	C15		100	283	0	0	1	283	1	283	1E-147	511
seq4	C3		100	283	0	0	1	283	1	283	1E-147	511
seq2	C40		100	283	0	0	1	283	1	283	1E-147	511
seq100	C15b		93.99	283	0	1	1	266	1	283	2E-127	444
seq99	C3e		94.2	69	4	0	1	69	1	69	3E-26	107
seq43	C39		86.25	269	3	1	1	235	1	269	1E-97	345
seq51	C1		100	283	0	0	1	283	1	283	1E-147	511
seq110	A4a		100	259	0	0	1	259	1	259	1E-134	468
seq107	C60		100	159	0	0	55	213	125	283	2E-80	288
seq69	B2		99.65	289	1	0	1	289	1	289	3E-149	517
seq68	C2		100	193	0	0	48	240	91	283	8E-99	349
seq29	C21		98.91	276	3	0	1	276	1	276	2E-139	484
SEQ8	C3k		100	175	0	0	1	175	1	175	3E-89	316

D. Adjusted p-values between Multiple Comparisons of *Cladocopium* ITS type C40 in *P. lobata* colonies

	HV_HV:Jul-15	HV_HV:Jan-16	HV_HV:Jul-16	LV_LV:Jul-15	LV_LV:Jan-16	LV_LV:Jul-16	LV_HV:Jul-15	LV_HV:Jan-16	LV_HV:Jul-16	MV_HV:Jul-15
HV_HV:Jul-15	NA	-33.053	-38.690	-67.691	93.763	-112.305	56.592	-29.818	-1607.520	609.216
HV_HV:Jan-16	1.000	NA	-5.637	-34.638	126.816	-79.251	89.645	3.235	-1574.466	642.269
HV_HV:Jul-16	1.000	1.000	NA	-29.001	132.453	-73.615	95.282	8.872	-1568.830	647.906
LV_LV:Jul-15	1.000	1.000	1.000	NA	161.454	-44.614	124.283	37.873	-1539.828	676.907
LV_LV:Jan-16	1.000	1.000	1.000	1.000	NA	-206.067	-37.171	-123.581	-1701.282	515.454
LV_LV:Jul-16	1.000	1.000	1.000	1.000	0.2214	NA	168.897	82.486	-1495.215	721.521
LV_HV:Jul-15	1.000	1.000	1.000	1.000	1.000	1.000	NA	-86.410	-1664.112	552.624
LV_HV:Jan-16	1.000	1.000	1.000	1.000	0.8879	1.000	1.000	NA	-1577.701	639.035
LV_HV:Jul-16	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	NA	2216.736
MV_HV:Jul-15	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	NA
MV_HV:Jan-16	1.000	1.000	0.2455	1.000	1.000	0.1604	1.000	0.1604	1.000	1.000
MV_HV:Jul-16	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
MV_MV:Jul-15	1.000	1.000	1.000	1.000	1.000	0.8199	1.000	1.000	1.000	1.000
MV_MV:Jan-16	1.000	1.000	1.000	1.000	0.1604	1.000	1.000	1.000	1.000	1.000
MV_MV:Jul-16	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

E. Adjusted p-values between Multiple Comparisons of *Cladocopium* ITS types in G. *retiformis* colonies

	HV_HV:Jul-15	HV_HV:Jan-16	LV_HV:Jul-15	LV_HV:Jan-16	LV_LV:Jul-15	LV_LV:Jan-16	MV_HV:Jul-15	MV_HV:Jan-16	MV_MV:Jul-15	MV_MV:Jan-16
C1										
HV_HV:Jul-15	NA	24.1244	-1168.9859	-7.5019	-75.1456	-60.2601	-423.0424	24.6817	-113.0263	-5.8451
HV_HV:Jan-16	0.5466	NA	-1193.1103	-31.6263	-99.2700	-84.3845	-447.1668	0.5572	-137.1507	-29.9695
LV_HV:Jul-15	0.9997	0.9997	NA	1161.4840	1093.8403	1108.7257	745.9434	1193.6680	1055.9596	1163.1408
LV_HV:Jan-16	0.9997	0.4883	0.9997	NA	-67.6437	-52.7583	-415.5405	32.1835	-105.5244	1.6568
LV_LV:Jul-15	0.7368	0.6106	0.9997	0.8874	NA	14.8854	-347.8968	99.8272	-37.8807	69.3005
LV_LV:Jan-16	0.7132	0.3554	0.9997	0.7132	0.9997	NA	-362.7823	84.9418	-52.7661	54.4151
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	447.7241	310.0161	417.1974

MV_HV:Jan-16	0.5320	0.9997	0.9997	0.4820	0.6106	0.3523	0.9997	NA	-137.7079	-30.5267
MV_MV:Jul-15	0.1105	**0.001400**	0.9997	0.1208	0.9997	0.6106	0.9997	**0.001437**	NA	107.1812
MV_MV:Jan-16	0.9997	0.3655	0.9997	0.9997	0.8874	0.7323	0.9997	0.3655	0.05363	NA
					C15					
HV_HV:Jul-15	NA	0.7538	744.6356	-49.2301	1.6292	-46.5213	828.5051	2.1524	-218.4267	3.0256
HV_HV:Jan-16	0.9997	NA	743.8818	-49.9839	0.8754	-47.2751	827.7513	1.3987	-219.1805	2.2718
LV_HV:Jul-15	0.9997	0.9997	NA	-793.8658	-743.0064	-791.1569	83.8694	-742.4832	-963.0623	-741.6101
LV_HV:Jan-16	0.5064	0.5064	0.9997	NA	50.8593	2.7088	877.7352	51.3826	-169.1966	52.2557
LV_LV:Jul-15	0.9997	0.9997	0.9997	0.4993	NA	-48.1505	826.8758	0.5232	-220.0559	1.3963
LV_LV:Jan-16	0.3655	0.3655	0.9997	0.9997	0.3647	NA	875.0263	48.6737	-171.9054	49.5468
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	-826.3526	-1046.9320	-825.4795
MV_HV:Jan-16	0.9997	0.9997	0.9997	0.4904	0.9997	0.3554	0.9997	NA	-220.5791	0.8731
MV_MV:Jul-15	**0.001437**	**0.001437**	0.9997	0.1110	**0.001437**	0.1082	0.9997	**0.001437**	NA	221.4522
MV_MV:Jan-16	0.7323	0.8874	0.9997	0.4866	0.9997	0.3523	0.9997	0.9997	**0.001437**	NA
					C15b					
HV_HV:Jul-15	NA	-46.6837	-1652.3083	9.5933	-49.4357	-69.9185	1166.9340	35.5739	-29.5635	35.0848
HV_HV:Jan-16	0.5064	NA	-1605.6246	56.2770	-2.7521	-23.2348	1213.6177	82.2575	17.1202	81.7685
LV_HV:Jul-15	0.9997	0.9997	NA	1661.9016	1602.8725	1582.3898	2819.2423	1687.8821	1622.7448	1687.3931
LV_HV:Jan-16	0.9997	0.7568	0.9997	NA	-59.0290	-79.5118	1157.3407	25.9806	-39.1568	25.4915
LV_LV:Jul-15	0.4255	0.9997	0.9997	0.6228	NA	-20.4827	1216.3697	85.0096	19.8723	84.5205
LV_LV:Jan-16	0.3655	0.9997	0.9997	0.4896	0.9997	NA	1236.8525	105.4924	40.3550	105.0033
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	-1131.3601	-1196.4975	-1131.8492
MV_HV:Jan-16	0.3655	0.3655	0.9997	0.6106	0.3254	0.1082	0.9997	NA	-65.1373	-0.4891
MV_MV:Jul-15	0.9997	0.9997	0.9997	0.5064	0.9997	0.9997	0.9997	0.1491	NA	64.6483
MV_MV:Jan-16	0.3655	0.3655	0.9997	0.6106	0.3274	0.1082	0.9997	0.9997	0.1534	NA
					C21					
HV_HV:Jul-15	NA	1.5364	137.5845	-70.9126	-47.0547	-34.3445	-117.3467	-0.5148	0.3103	-0.3785
HV_HV:Jan-16	0.7220	NA	136.0481	-72.4490	-48.5911	-35.8809	-118.8831	-2.0512	-1.2261	-1.9149
LV_HV:Jul-15	0.9997	0.9997	NA	-208.4972	-184.6393	-171.9291	-254.9312	-138.0993	-137.2743	-137.9631
LV_HV:Jan-16	0.3655	0.3655	0.9997	NA	23.8579	36.5681	-46.4340	70.3979	71.2229	70.5341
LV_LV:Jul-15	0.3655	0.3655	0.9997	0.9997	NA	12.7102	-70.2920	46.5400	47.3650	46.6762

LV_LV:Jan-16	0.3720	0.3655	0.9997	0.9754	0.9997	NA	-83.0022	33.8298	34.6548	33.9660
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	116.8319	117.6569	116.9682
MV_HV:Jan-16	0.9997	0.5064	0.9997	0.3655	0.3655	0.3746	0.9997	NA	0.8250	0.1362
MV_MV:Jul-15	0.9997	0.9004	0.9997	0.3655	0.3655	0.3655	0.9997	0.9997	NA	-0.6888
MV_MV:Jan-16	0.9997	0.4330	0.9997	0.3655	0.3655	0.3746	0.9997	0.9997	0.9997	NA
C3										
HV_HV:Jul-15	NA	1.6633	1299.7742	-38.5247	-140.0756	-22.8138	568.0491	-2.1865	-1.3394	-1.4546
HV_HV:Jan-16	0.9004	NA	1298.1109	-40.1881	-141.7389	-24.4771	566.3857	-3.8499	-3.0027	-3.1180
LV_HV:Jul-15	0.9997	0.9997	NA	-1338.2990	-1439.8500	-1322.5880	-731.7252	-1301.9608	-1301.1136	-1301.2289
LV_HV:Jan-16	0.6087	0.5606	0.9997	NA	-101.5509	15.7110	606.5738	36.3382	37.1854	37.0701
LV_LV:Jul-15	**0.006248**	**0.006248**	0.9997	0.3655	NA	117.2619	708.1247	137.8891	138.7362	138.6210
LV_LV:Jan-16	0.5064	0.4778	0.9997	0.9997	0.0965	NA	590.8628	20.6272	21.4744	21.3591
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	-570.2356	-569.3884	-569.5037
MV_HV:Jan-16	0.7587	0.3655	0.9997	0.6251	**0.006468**	0.5821	0.9997	NA	0.8472	0.7319
MV_MV:Jul-15	0.9997	0.5466	0.9997	0.6106	**0.006248**	0.5466	0.9997	0.9997	NA	-0.1153
MV_MV:Jan-16	0.9997	0.4247	0.9997	0.6106	**0.006248**	0.5466	0.9997	0.9997	0.9997	NA
C40										
HV_HV:Jul-15	NA	-0.0485	-793.5264	**0.0216**	-0.7061	**0.0273**	217.2640	-1.7745	**0.0278**	-2.7056
HV_HV:Jan-16	0.9997	NA	-793.4779	0.0701	-0.6576	0.0758	217.3125	-1.7260	0.0762	-2.6572
LV_HV:Jul-15	0.9997	0.9997	NA	793.5480	792.8203	793.5537	1010.7904	791.7519	793.5542	790.8208
LV_HV:Jan-16	0.9997	0.9997	0.9997	NA	-0.7277	**0.0057**	217.2424	-1.7961	**0.0062**	-2.7272
LV_LV:Jul-15	0.9997	0.9997	0.9997	0.9997	NA	0.7334	217.9701	-1.0684	0.7339	-1.9995
LV_LV:Jan-16	0.9997	0.9997	0.9997	0.9997	0.9997	NA	217.2367	-1.8018	**0.0005**	-2.7330
MV_HV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	NA	-219.0385	-217.2363	-219.9697
MV_HV:Jan-16	0.3655	0.3746	0.9997	0.5466	0.8874	0.4255	0.9997	NA	1.8023	-0.9311
MV_MV:Jul-15	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.3655	NA	-2.7334
MV_MV:Jan-16	0.1311	0.1308	0.9997	0.3554	0.4159	0.2170	0.9997	0.8874	0.1082	NA

MV_HV:Jan-16	MV_HV:Jul-16	MV_MV:Jul-15	MV_MV:Jan-16	MV_MV:Jul-16
131.867	1884.519	78.980	-65.404	-4.765
164.920	1917.572	112.033	-32.351	28.288
170.557	1923.209	117.670	-26.714	33.925
199.558	1952.210	146.671	2.287	62.926
38.104	1790.756	-14.782	-159.167	-98.528
244.172	1996.824	191.285	46.901	107.539
75.275	1827.927	22.388	-121.996	-61.357
161.685	1914.337	108.799	-35.586	25.053
1739.386	3492.038	1686.500	1542.115	1602.754
-477.349	1275.303	-530.236	-674.620	-613.982
NA	1752.652	-52.887	-197.271	-136.632
1.000	NA	-1805.539	-1949.923	-1889.284
1.000	1.000	NA	-144.384	-83.745
0.003706	1.000	1.000	NA	60.639
1.000	1.000	1.000	1.000	NA

F. PERMANOVA of *Cladocopium* ITS types representing >1% in *P. lobata* samples

Model: scores ~ origin_dest * time, Euclidean method

	Df	SumsOfSqs	MeanSqs	F.Model	R2	Pr(>F)
origin_dest	4	1.5090	0.3773	0.5809	0.0237	0.7460
time	3	1.1790	0.3929	0.6049	0.0185	0.6690
origin_dest:tim	8	3.8680	0.4835	0.7444	0.0607	0.6790
Residuals	88	57.1580	0.6495	0.8971		
Total	103	63.7140	1.0000			

G. PERMANOVA of *Cladocopium* ITS types representing >1% in *G. retiformis* colonies

Model: scores ~ origin_dest * time, Euclidean method

	Df	SumsOfSqs	MeanSqs	F.Model	R2	Pr(>F)
origin_dest	4	269.21	67.3020	1.5783	0.1732	0.1580
time	1	44.28	44.2810	1.0384	0.0285	0.3440
origin_dest:tim	2	175.13	87.5630	2.0534	0.1126	0.0980
Residuals	25	1066.08	42.6430	0.6857		
Total	32	1554.69	1.0000			