

## *Supplementary Material*

### 1 Supplementary Figures and Tables

#### 1.1 Supplementary Tables

**Supplemental Table 1. Summary table indices for each plot.** Site names are abbreviated (Off=offshore, Mid= midchannel, Near=nearshore). Total prevalence is the fraction of colonies at a plot that showed signs of SCTL D at some point during the survey period. The Shannon diversity index (H) was calculated by the ‘diversity’ function from the Vegan package in R. Species richness is the total number of unique species at a quadrat. Colony density was measured as the number of individual colonies per m<sup>2</sup>. The average nearest neighbor distance is measured in m and the average maximum width was measured in cm.

Site	Quadrat	Number of colonies	Total prevalence	Shannon diversity index	Species richness	Colony density	Avg. nearest neighbor	Avg. maximum width
Off	27	225	0.04	1.42	9	2.25	0.32	14.10
	28	322	0.05	1.61	13	3.22	0.29	16.11
Mid	23	275	0.05	1.63	11	2.75	0.31	18.59
	25	418	0.04	1.50	13	4.18	0.26	17.18
Near	45	302	0.16	2.10	14	3.02	0.31	30.78
	47	470	0.16	2.09	14	4.7	0.25	33.84

**Supplemental Table 2. Timing of site visits, activities that occurred, and disease state at each site monitored for stony coral tissue loss disease (SCTLD).**

Date	Survey Group	Activities	Disease state
Mid-May	Mote	Site establishment	No Disease
June 1, 2018	Mote	Complete disease surveys	No Disease
June 21, 2018	Mote	Complete disease surveys	No Disease
July 16, 2018	Mote	Complete disease surveys; photos for mosaics	No Disease
July 17, 2018	Mote	Complete disease surveys; photos for mosaics	No Disease
August 1, 2018	Mote/FWC	Complete disease surveys, collection of percent old mortality for each coral	No Disease
August 7, 2018	Mote/FWC	Complete disease surveys, collection of percent old mortality for each coral	No Disease
August 22, 2018	FWC	Quick assessment for disease activity	No Disease
September 7, 2018	FWC	Quick assessment for disease activity	No Disease
September 14, 2018	FWC	Quick assessment for disease activity	No Disease
September 20, 2018	FWC	Quick assessment for disease activity	No Disease
September 25, 2018	FWC	Quick assessment for disease activity	No Disease
Early October, 2018	FWC	Quick assessment for disease activity	SCTLD present
October 30, 2018	Mote/FWC	Complete disease surveys	SCTLD
November 9, 2018	Mote	Disease surveys at mid-channel and nearshore site	SCTLD
November 12, 2018	Mote	Disease surveys at offshore site	SCTLD
November 29, 2018	Mote	Complete disease surveys at all sites	SCTLD
December 12, 2018	Mote	Complete disease surveys at all sites	SCTLD
January 4, 2019	Mote	Complete disease surveys at all sites	SCTLD
January 18, 2019	Mote	Complete disease surveys at all sites	SCTLD
February 1, 2019	Mote	Complete disease surveys at all sites	SCTLD
March 4, 2019	Mote	Complete disease surveys at all sites	SCTLD
March 21, 2019	Mote	Complete disease surveys at all sites	SCTLD
April 11, 2019	Mote	Complete disease surveys at all sites	SCTLD
May 2, 2019	Mote	Complete disease surveys at all sites	SCTLD
May 16, 2019	Mote	Complete disease surveys at all sites	SCTLD
May 28, 2019	Mote	Complete disease surveys at all sites	SCTLD
June 13, 2019	Mote	Complete disease surveys at all sites	SCTLD
July 1, 2019	Mote	Complete disease surveys at all sites	SCTLD
July 22, 2019	Mote	Complete disease surveys at all sites	SCTLD
August 16, 2019	Mote	Complete disease surveys at all sites	SCTLD
September 17, 2019	Mote	Complete disease surveys at all sites	SCTLD
October 14, 2019	Mote	Complete disease surveys at all sites	SCTLD
November 12, 2019	Mote	Complete disease surveys at all sites	SCTLD
December 6, 2019	Mote	Complete disease surveys at all sites	SCTLD

**Supplemental Table 3. Eigenvalues of the dimensions (principal components) and their percent of variance explained for the principal component analysis of the 11 susceptible species at the 6 quadrats.** Species abundances were normalized by the total number of colonies at each quadrat. The maximum number of principal components that can be extracted is  $n-1$ ,  $6-1=5$ . An eigenvalue of  $>1$  indicates that principal components account for more variance than accounted by one of the original variables.

Dimension	Eigenvalue	Variance Percent	Cumulative Variance Percent
1	6.79	67.9	67.9
2	1.90	19.0	86.9
3	1.07	10.7	97.6
4	0.13	1.3	98.9
5	0.11	1.1	100

**Supplemental Table 4. Significantly associated variables (out of the 11 susceptible species) with the first principal component.** Output of the dimdesc function in R.

Species	Correlation	P value
Cnat	0.98	0.0008
Ofav	0.97	0.0012
Mcav	0.97	0.0018
Sbou	0.85	0.0310
Ssid	-0.95	0.0043
Dsto	-0.97	0.0012

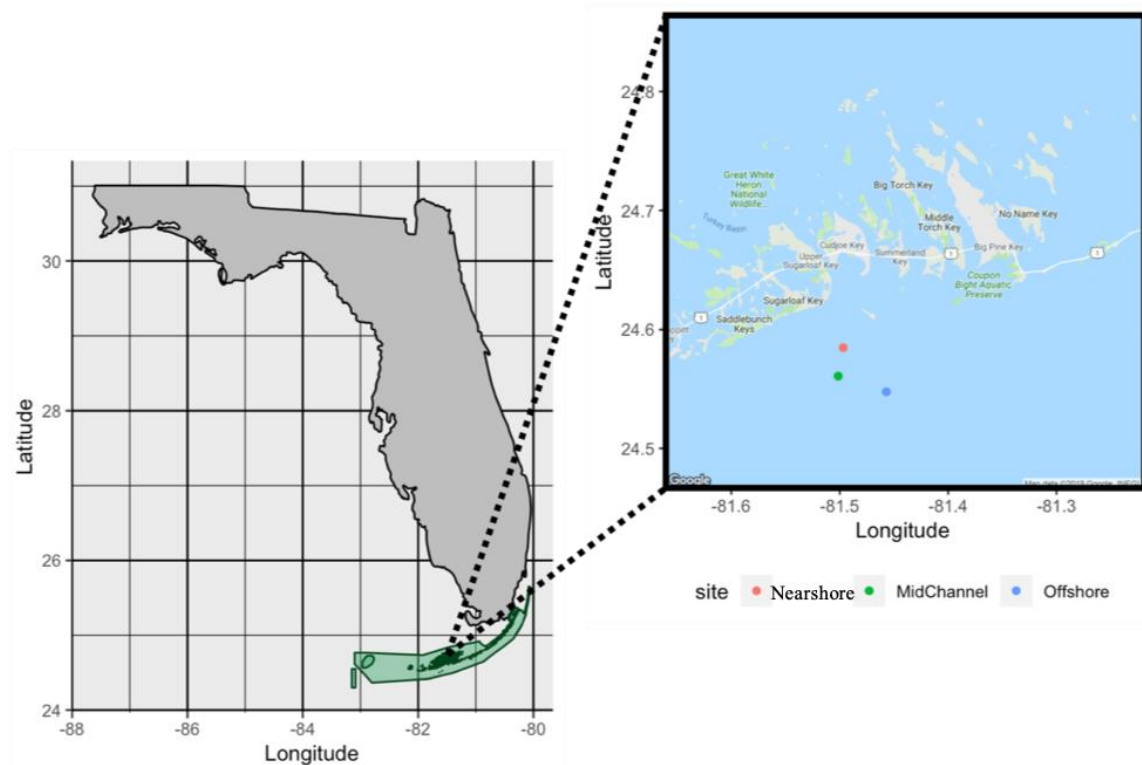
**Supplemental Table 5. Species contributions to the PCA dimensions (for the analysis including just the 11 susceptible species), ordered by contribution to Dim1.** Variables with high contribution to Dim 1 and Dim 2 are the most important for explaining variability in the data set.

Species Variable	Dim 1	Dim 2	Dim 3	Dim 4	Dim 5
Cnat	14.08	1.36	1.31	0.41	3.65
Ofav	13.89	0.01	4.07	8.56	1.58
Dsto	13.89	0.70	0.77	22.79	5.30
Mcav	13.72	3.48	0.01	0.48	1.18
Ssid	13.18	4.55	0.89	0.82	7.59
Sbou	10.71	9.74	3.1	2.58	46.71
Pstr	8.65	18.89	0.89	24.46	11.61
Oann	6.66	26.36	2.96	0.47	13.59
Sint	4.26	34.42	0.04	36.78	8.15
Dlab	0.96	0.49	85.96	2.65	0.64

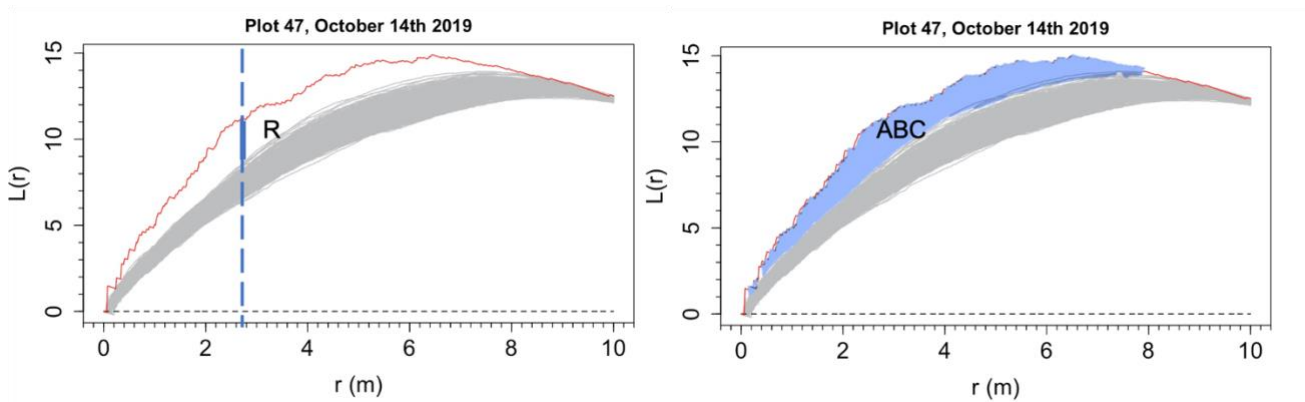
**Supplemental Table 6. Total abundance (tot) of each species by site, total disease prevalence (dis) of each species by site, and percent mortality of each species by site.**

Species	Mid Channel			Offshore			Nearshore		
	Tot	Dis	Mortality %	Tot	Dis	Mortality %	Tot	Dis	Mortality %
AAGA	0	0	NA	1	0	0	0	0	NA
ACER	0	0	NA	13	0	0	0	0	NA
CNAT	4	0	25	1	0	0	56	37	77
DLAB	3	1	33	4	2	75	6	3	83
DSTO	42	20	71	34	12	71	12	5	50
MCAV	10	0	10	10	2	20	134	19	1
MMEA	0	0	NA	0	0	NA	1	0	100
MYCE	0	0	NA	0	0	NA	2	0	50
OANN	0	0	NA	0	0	NA	33	11	12
OCUL	0	0	NA	0	0	NA	2	0	100
ODIF	0	0	NA	0	0	NA	2	0	0
OFAV	5	0	0	4	1	25	16	3	19
PAST	171	0	0	134	0	1	135	0	0
PCLI	3	1	0	1	0	100	1	0	100
PDIV	0	0	NA	1	0	0	0	0	NA
PPOR	9	0	0	0	0	NA	0	0	NA
PSTR	11	3	27	8	1	50	36	24	75
SBOU	4	0	0	5	0	0	41	8	12
SINT	165	1	0.6	106	1	0	132	9	0
SRAD	2	0	0	0	0	NA	7	0	0
SSID	264	2	0	225	4	0	156	6	0

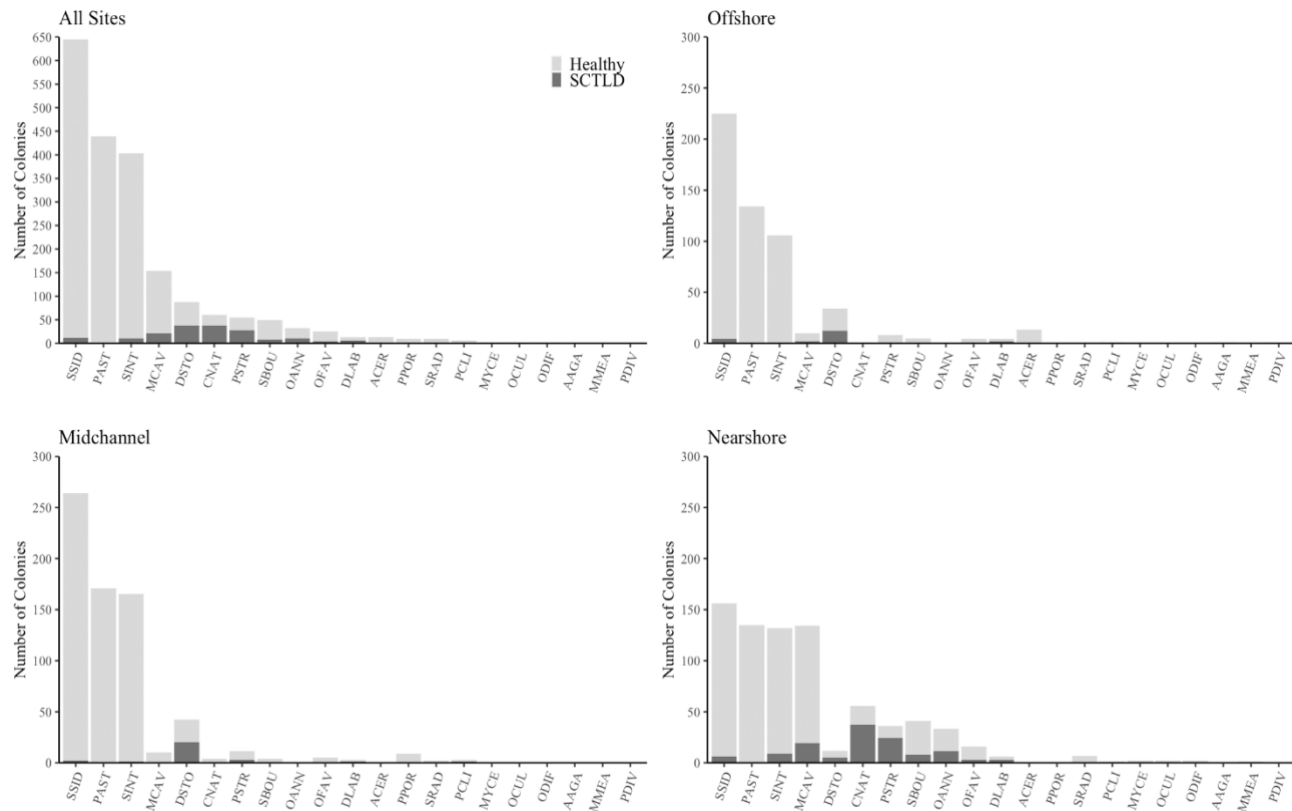
## 1.2 Supplementary Figures



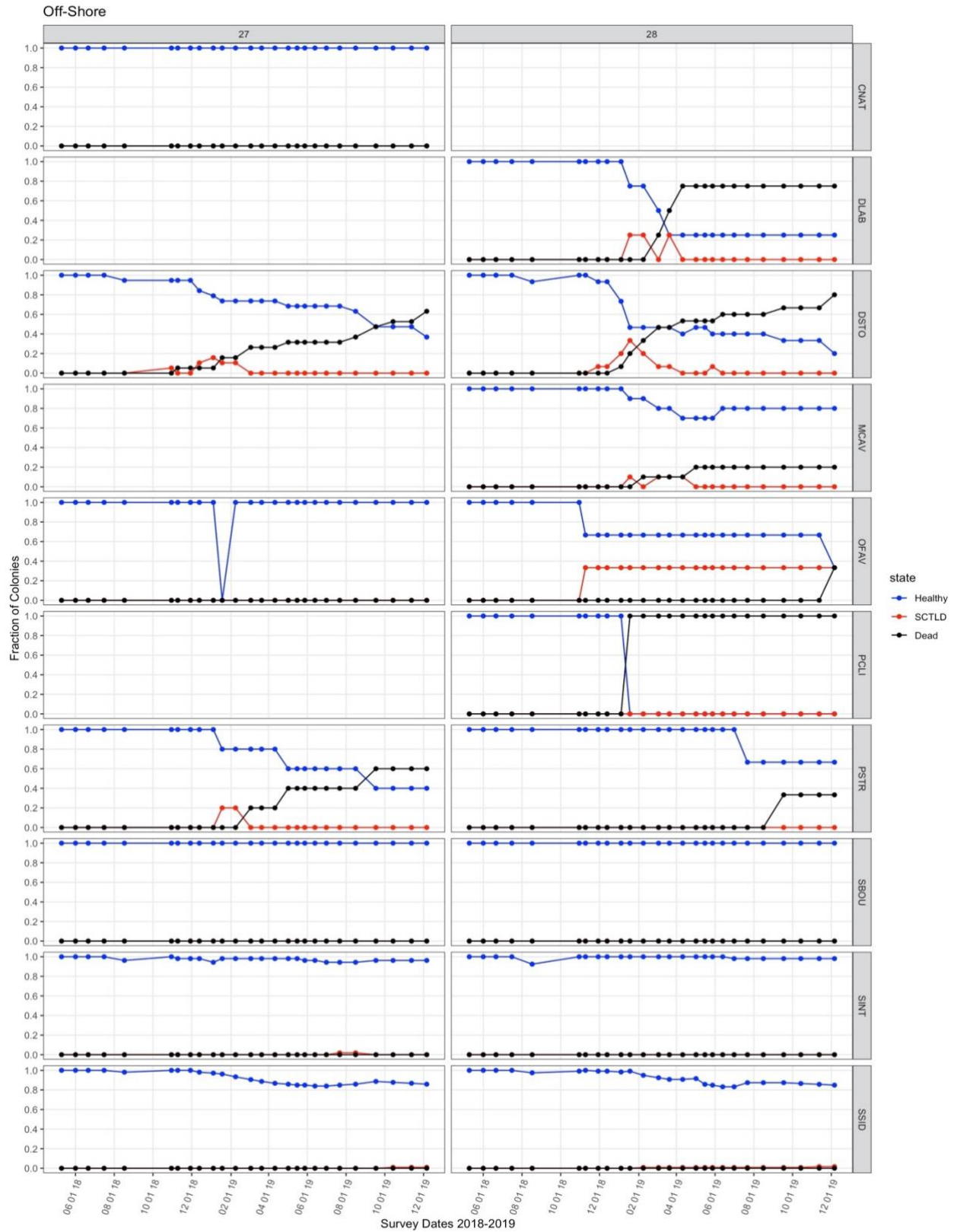
**Supplemental Figure 1. Map of survey sites in the lower Florida Keys.**



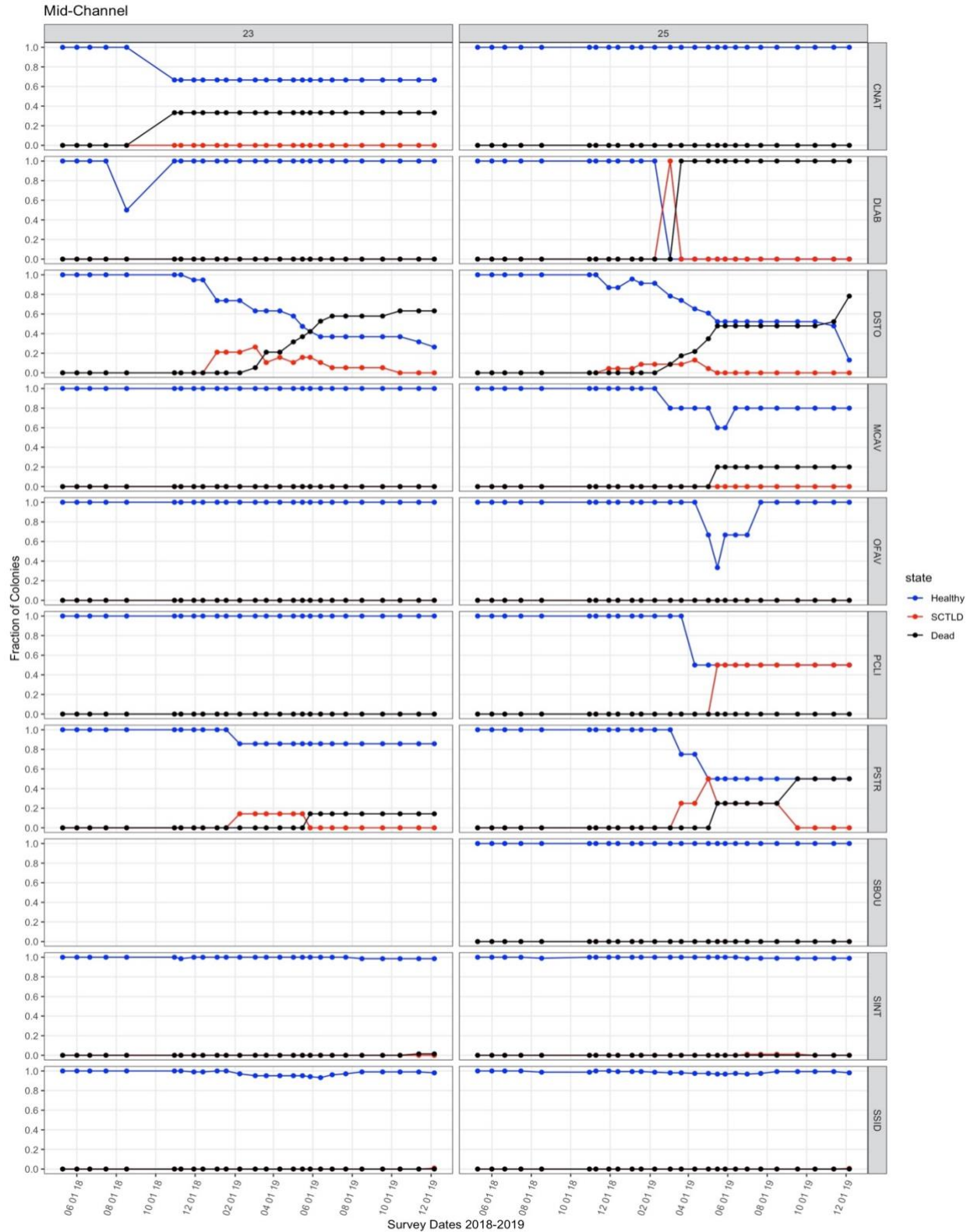
**Supplemental Figure 2. Conceptual diagram of Ripley's K analysis measures R and ABC.** The black dotted line marks  $L(r)=0$ , the red line is the  $L(r)$  for the diseased colonies, and the grey lines are the null distribution of  $L(r)$ . Diseased colonies are significantly more clustered when the red line is above the null distribution. The peak clustering radius (R) is measured as the point on the  $L(r)$  curve for the diseased corals that is farthest (largest  $\Delta y$ ) from the null  $L(r)$  distribution. The area between the realized distribution of Besag's L values for the diseased colonies and those of the null distribution (ABC) is solved for by using Simpson's method for numerical integration and represents the total amount of significant clustering over the radius considered.



**Supplemental Figure 3. Total number of colonies showing signs of SCTLD compared with the total number of apparently healthy colonies for each coral species over the entire survey period.**

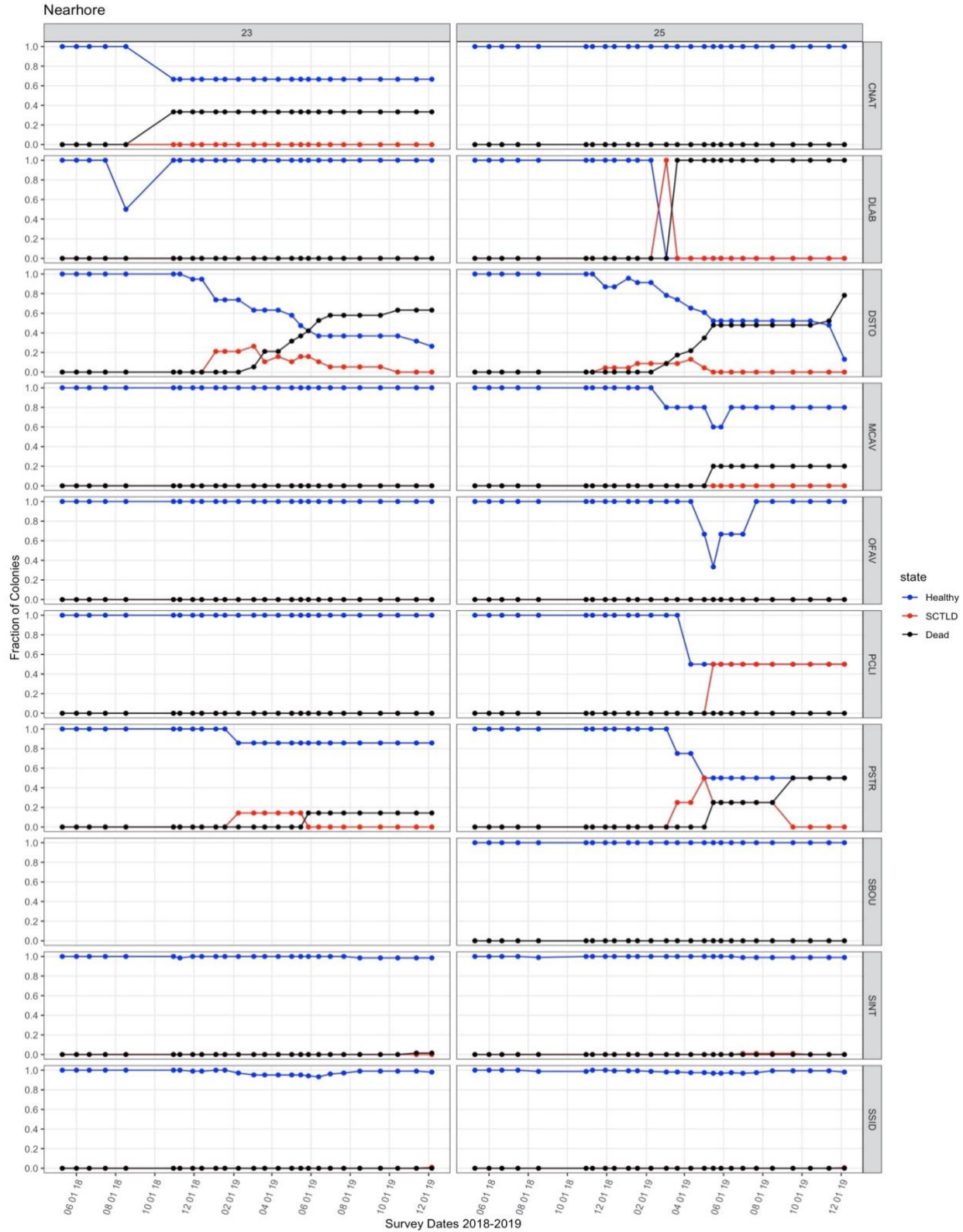


**Supplemental Figure 4.** Temporal dynamics of SCTLD for each species at the offshore site quadrats. Fraction of “unknown” colonies, i.e. not found during a survey, are not shown as they accounted for a low fraction of all colonies. However, they do account for missing fractions when the Healthy, SCTLD, and Dead fractions do not sum to 1.

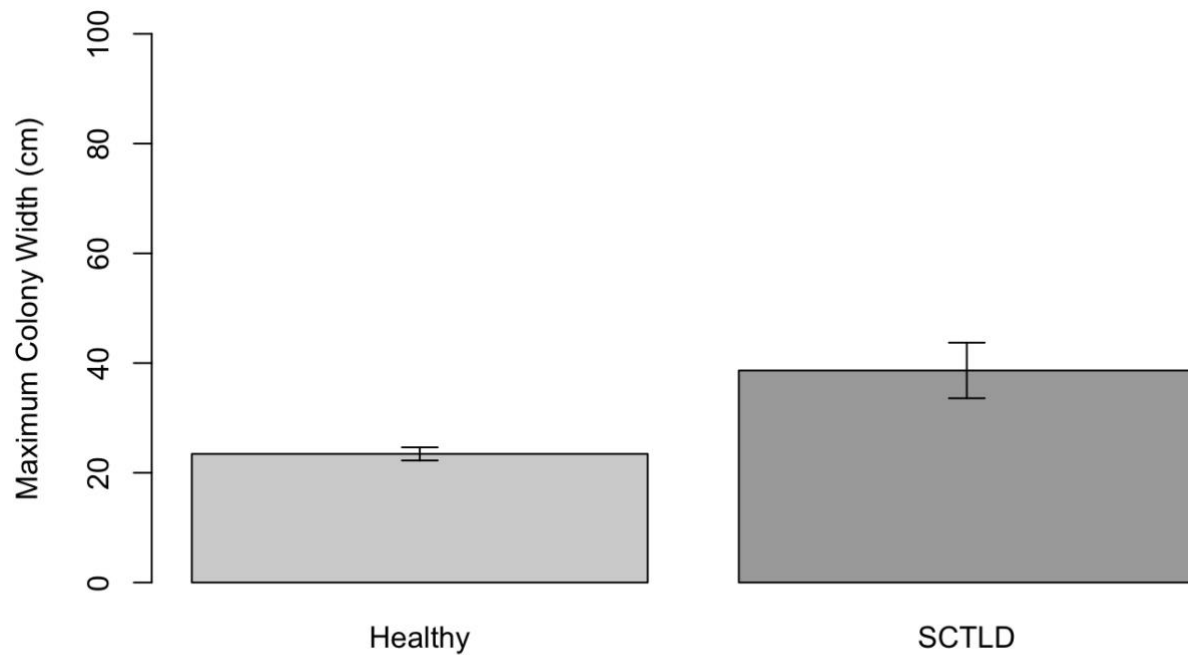


**Supplemental Figure 5. Temporal dynamics of SCTLD for each species at the midchannel site quadrats.** Fraction of “unknown” colonies, i.e. not found during a survey, are not shown as they accounted for a low fraction of all colonies. However, they do account for missing fractions when the Healthy, SCTLD, and Dead fractions do not sum to 1.

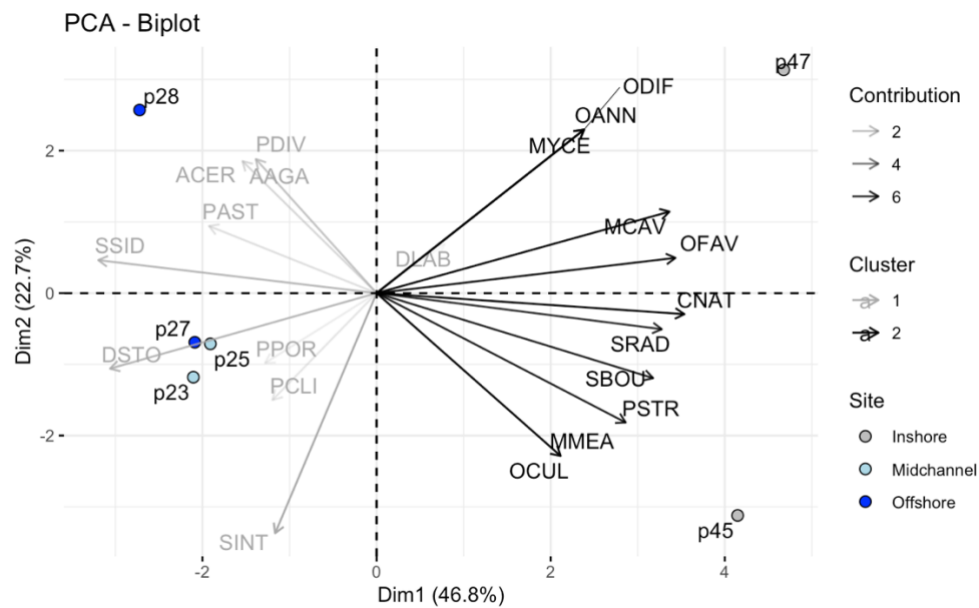




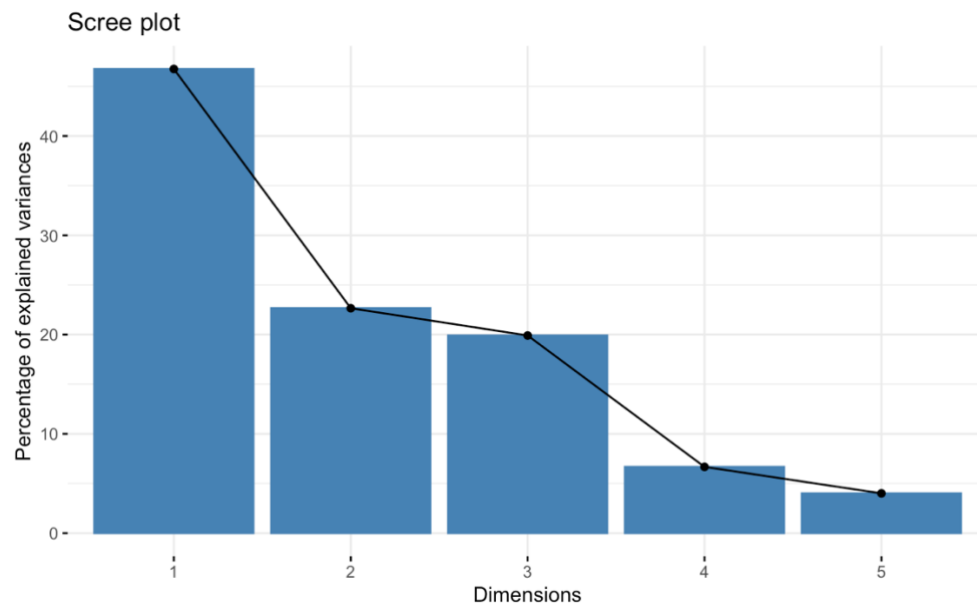
**Supplemental Figure 6. Temporal dynamics of SCTLD for each species at the nearshore site quadrats.** Fraction of “unknown” colonies, i.e. not found during a survey, are not shown as they accounted for a low fraction of all colonies. However, they do account for missing fractions when the Healthy, SCTLD, and Dead fractions do not sum to 1.



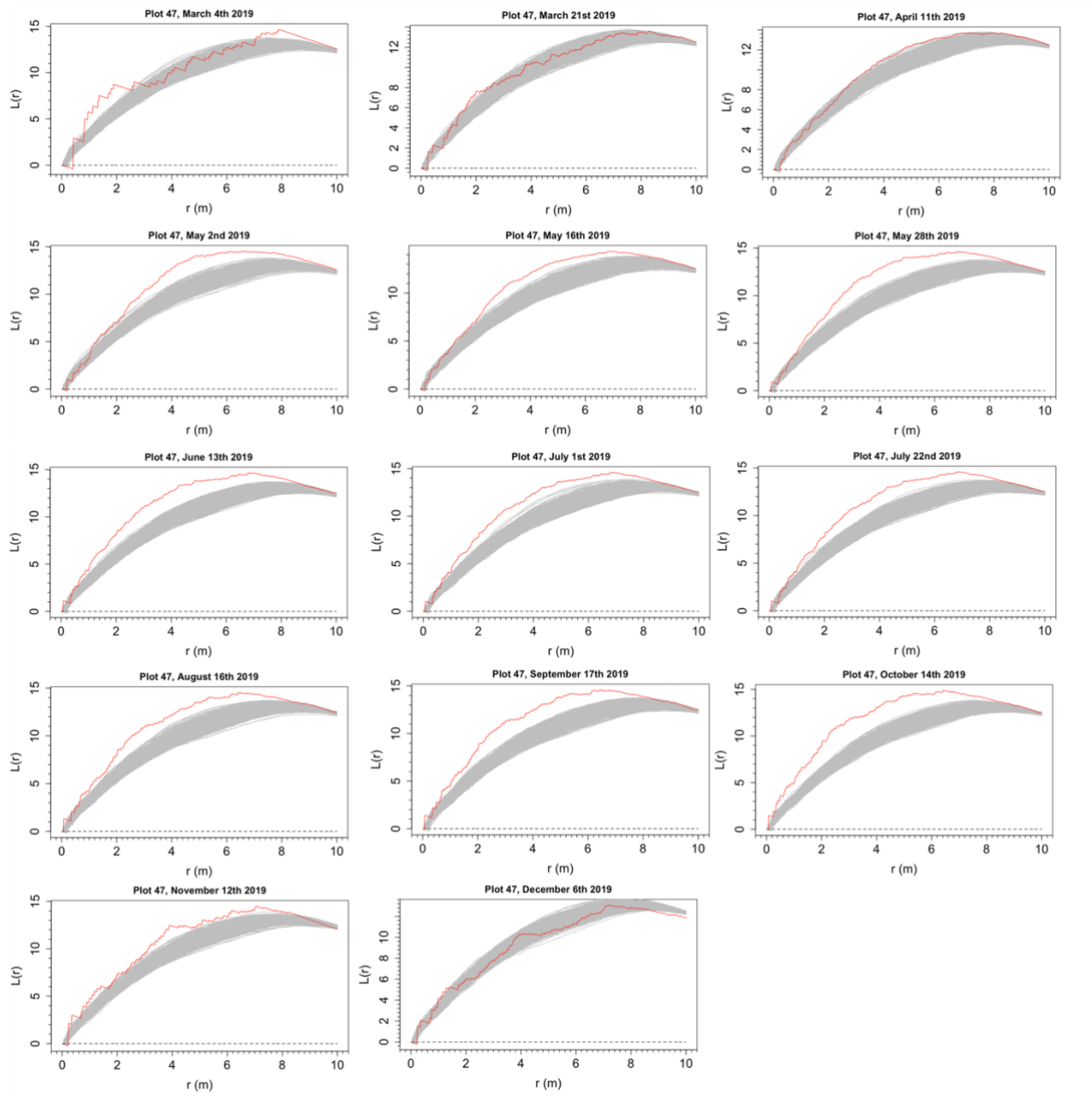
**Supplemental Figure 7. Size dependent susceptibility to SCTLD of the 11 susceptible species.** Maximum width of colonies that stayed healthy or showed signs of SCTLD during the survey period. Error bars are the 95% confidence intervals.



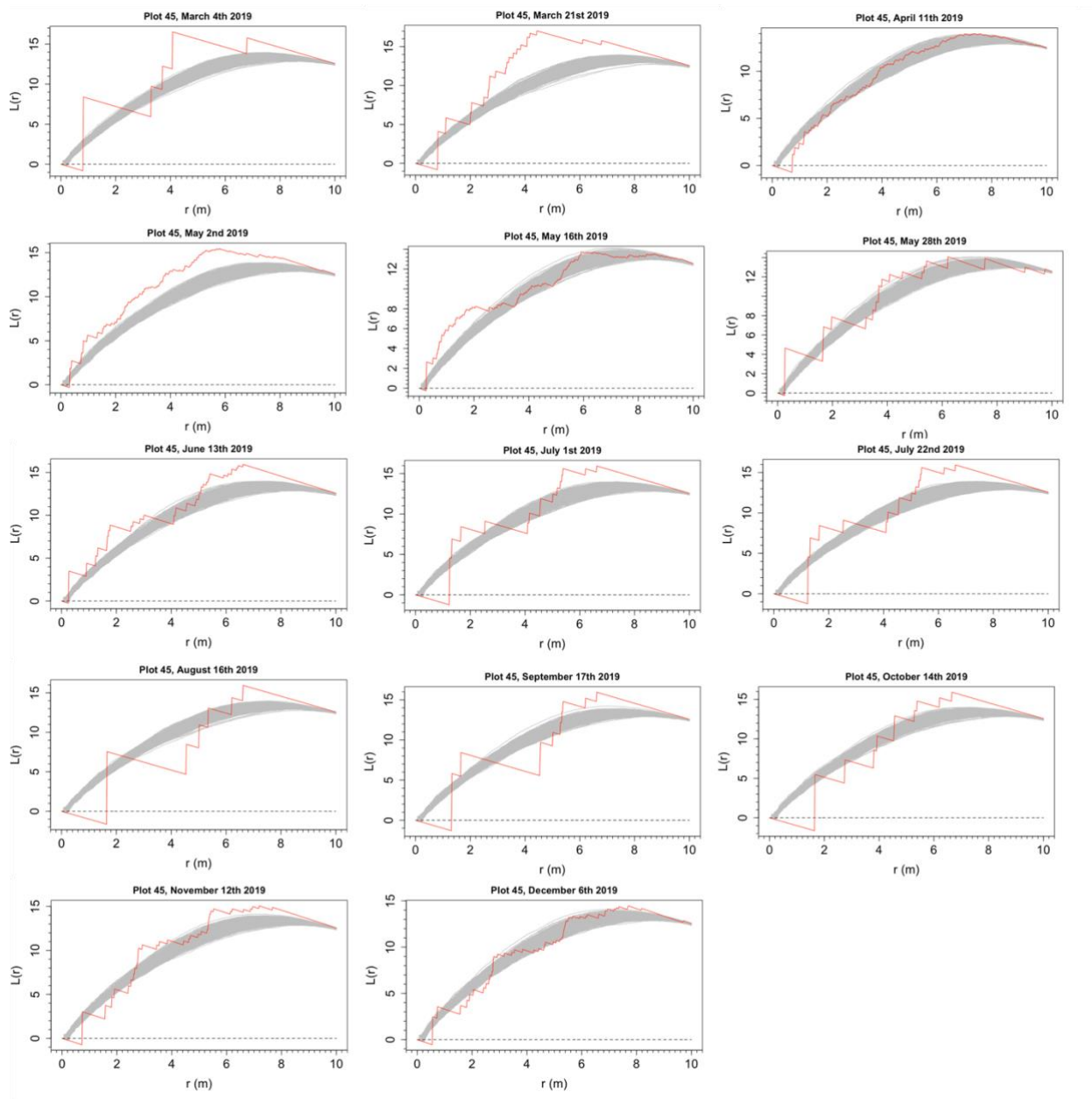
**Supplemental Figure 8. PCA biplot showing the proportion of variation in species composition at each quadrat explained by every species surveyed.**



**Supplemental Figure 9. Percentage of explained variance per dimension of the above PCA analysis for all surveyed species.**



**Supplemental Figure 10. Ripley's K plots for quadrat 47 at the nearshore site for each time point considered.** The red line is the  $L(r)$  for the diseased colonies and the grey lines are the null distribution.



**Supplemental Figure 11. Ripley's K plots for quadrat 45 at the nearshore site for each time point considered.** The red line is the  $L(r)$  for the diseased colonies and the grey lines are the null distribution.