

Effects of tropical storms on the demography of reef corals

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Table S1. Coefficient estimates for the binomial and zero-truncated poisson models predicting the number of eggs per polyp for *A. cf. digitifera* as a function of colony size (log scale) and cyclone status (pre- or post-cyclone), and with colony identity and year (nested within cyclone status) as random effects.

<i>Acropora cf. digitifera</i>				
Binomial with logit link				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	1.13	0.08	0.99	1.31
Random effect: year:cyclone				
sd(Intercept)	0.22	0.20	0.01	0.66
Population-level effects				
Intercept (post-cyclone)	-5.89	0.81	-7.46	-4.36
log(area cm ²)	0.86	0.13	0.63	1.11
cyclone (pre-cyclone)	-0.22	0.44	-1.08	0.65
Zero-truncated poisson				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	0.15	0.01	0.13	0.18
Random effect: year:cyclone				
sd(Intercept)	0.07	0.04	0.01	0.18
Population-level effects				
Intercept (post-cyclone)	1.21	0.15	0.90	1.50
log(area cm ²)	0.09	0.02	0.05	0.14
cyclone (pre-cyclone)	0.06	0.10	-0.16	0.25

Table S2. Coefficient estimates for the binomial and zero-truncated poisson models predicting the number of eggs per polyp for *A. hyacinthus* as a function of colony size (log scale) and cyclone status (pre- or post-cyclone), and with colony identity and year (nested within cyclone status) as random effects.

<i>Acropora hyacinthus</i>				
Binomial with logit link				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	1.4	0.1	1.21	1.61
Random effect: year:cyclone				
sd(Intercept)	0.38	0.32	0.04	1.06
Population-level effects				
Intercept (post-cyclone)	-6.64	1.10	-8.75	-4.40
log(area cm2)	0.67	0.13	0.40	0.93
cyclone (pre-cyclone)	0.76	0.84	-0.91	2.47
Zero-truncated poisson				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	0.14	0.01	0.12	0.16
Random effect: year:cyclone				
sd(Intercept)	0.07	0.04	0.02	0.18
Population-level effects				
Intercept (post-cyclone)	1.39	0.16	1.10	1.71
log(area cm2)	0.02	0.02	-0.02	0.05
cyclone (pre-cyclone)	0.16	0.14	-0.10	0.43

Table S3. Coefficient estimates for the binomial and zero-truncated poisson models predicting the number of eggs per polyp for *G. pectinata* as a function of colony size (log scale) and cyclone status (pre- or post-cyclone), and with colony identity and year (nested within cyclone status) as random effects. The binomial model did not include year as a random effect.

<i>Goniastrea pectinata</i>				
Binomial with logit link				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	1.78	0.13	1.54	2.02
Population-level effects				
Intercept (post-cyclone)	-4.56	0.57	-5.68	-3.5
log(area cm2)	0.11	0.09	-0.05	0.31
cyclone (pre-cyclone)	2.79	0.43	1.98	3.62
Zero-truncated negative binomial				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	0.53	0.04	0.46	0.61
Random effect: year:cyclone				
sd(Intercept)	0.21	0.13	0.03	0.55
Population-level effects				
Intercept (post-cyclone)	3.67	0.38	2.88	4.40
log(area cm2)	0.07	0.06	-0.05	0.19
cyclone (pre-cyclone)	0.54	0.32	-0.10	1.16

Table S4. Coefficient estimates for the binomial and zero-truncated poisson models predicting the number of eggs per polyp for *G. retiformis* as a function of colony size (log scale) and cyclone status (pre- or post-cyclone), and with colony identity and year (nested within cyclone status) as random effects.

<i>Goniastrea retiformis</i>				
Binomial with logit link				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	2.89	0.22	2.49	3.38
Random effect: year:cyclone				
sd(Intercept)	0.93	0.61	0.13	2.41
Population-level effects				
Intercept (post-cyclone)	-9.21	1.93	-13.16	-5.43
log(area cm2)	1.23	0.27	0.71	1.77
cyclone (pre-cyclone)	-0.09	1.46	-2.92	2.81
Zero-truncated negative binomial				
	Estimate	Est. Error	lower 95% CI	upper 95% CI
Random effect: Colony identity				
sd(Intercept)	0.77	0.05	0.67	0.87
Random effect: year:cyclone				
sd(Intercept)	0.2	0.15	0.01	0.6
Population-level effects				
Intercept (post-cyclone)	2.62	0.55	1.56	3.71
log(area cm2)	0.12	0.09	-0.05	0.3
cyclone (pre-cyclone)	0.33	0.38	-0.43	1.06

Table S5. Summary of the raw data for the probability of a polyp being mature, the number of eggs per mature polyp, and the egg carbon content (μg).

Probability of polyp maturity								
Species	Cyclone status	Mean	SD	Median size	Upper size (0.975 quantile)	Lower size (0.025 quantile)	Number of colonies	Number of observations
<i>A. cf. digitifera</i>	pre	0.90	0.30	389.35	1183.97	51.86	32	3754
	post	0.92	0.28	208.30	694.51	78.19	12	288
<i>A. hyacinthus</i>	pre	0.87	0.33	2010.74	8478.89	154.56	30	3492
	post	0.60	0.49	279.34	3433.90	190.28	5	120
<i>G. pectinata</i>	pre	0.95	0.21	114.00	506.01	18.73	30	786
	post	0.60	0.49	38.24	223.30	7.63	16	96
<i>G. retiformis</i>	pre	0.78	0.42	202.74	667.21	9.49	30	864
	post	0.77	0.42	121.54	370.69	8.61	13	78

Number of eggs per mature polyp								
Species	Cyclone status	Mean	SD	Median size	Upper size (0.975 quantile)	Lower size (0.025 quantile)	Number of colonies	Number of observations
<i>A. cf. digitifera</i>	pre	6.33	1.76	419.14	1262.90	102.78	32	3376
	post	5.57	1.34	180.36	694.51	78.19	11	264
<i>A. hyacinthus</i>	pre	5.48	1.39	2160.05	8478.89	470.67	30	3044
	post	4.49	0.90	268.91	279.34	190.28	3	72
<i>G. pectinata</i>	pre	106.74	59.54	114.24	506.01	18.73	30	750
	post	68.76	65.90	78.22	223.30	15.55	10	58
<i>G. retiformis</i>	pre	46.50	32.58	247.21	1094.53	30.71	30	672
	post	31.30	21.38	188.44	370.69	8.61	10	60

Egg carbon content (μg)								
Species	Cyclone status	Mean	SD	Median size	Upper size (0.975 quantile)	Lower size (0.025 quantile)	Number of colonies	Number of observations
<i>G. pectinata</i>	pre	13.27	3.02	218.53	417.86	25.50	3	15
	post	5.58	1.61	95.16	95.38	35.73	3	14
<i>G. retiformis</i>	pre	16.82	5.53	153.88	390.81	54.74	3	13
	post	5.94	2.05	128.94	485.64	66.45	4	17

Table S6. Coefficient estimates for the linear model predicting carbon content per egg (μg) with species (*G. pectinata* or *G. retiformis*), year (2013 or 2015) and an interaction between species and year as fixed, and with colony identity as a random effect. The intercept of the population-level effects corresponds to the estimate of *G. pectinata* in 2013.

	Estimate	lower 95% CI	upper 95% CI
Random effect: Colony identity			
sd(Intercept)	1.28	0.16	2.72
Population-level effects			
Intercept	13.25	11.20	15.26
cyclone (post-cyclone)	-7.66	-10.58	-4.79
G. retiformis	2.21	-0.74	5.05
cyclone (post-cyclone) x G. retiformis	-1.92	-5.83	2.03