

Figure S1. Relative growth rate (proportional change in colony area) vs Minimum Colony Age (i.e., years surveyed). Blue regression line represents the trend in relative growth rate. Points represent the relative growth rate of each coral colony during each timepoint.

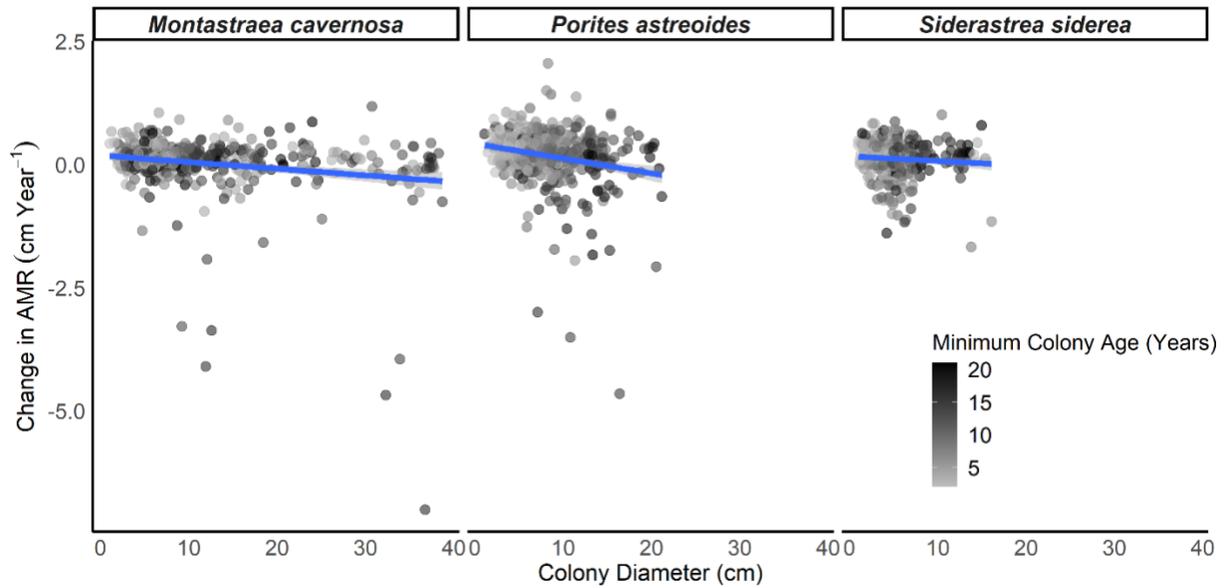


Figure S2. Change in AMR with size. Points represent changes in AMR of each individual colony between timepoints. Blue line represents linear regression of change in AMR vs Colony Diameter.

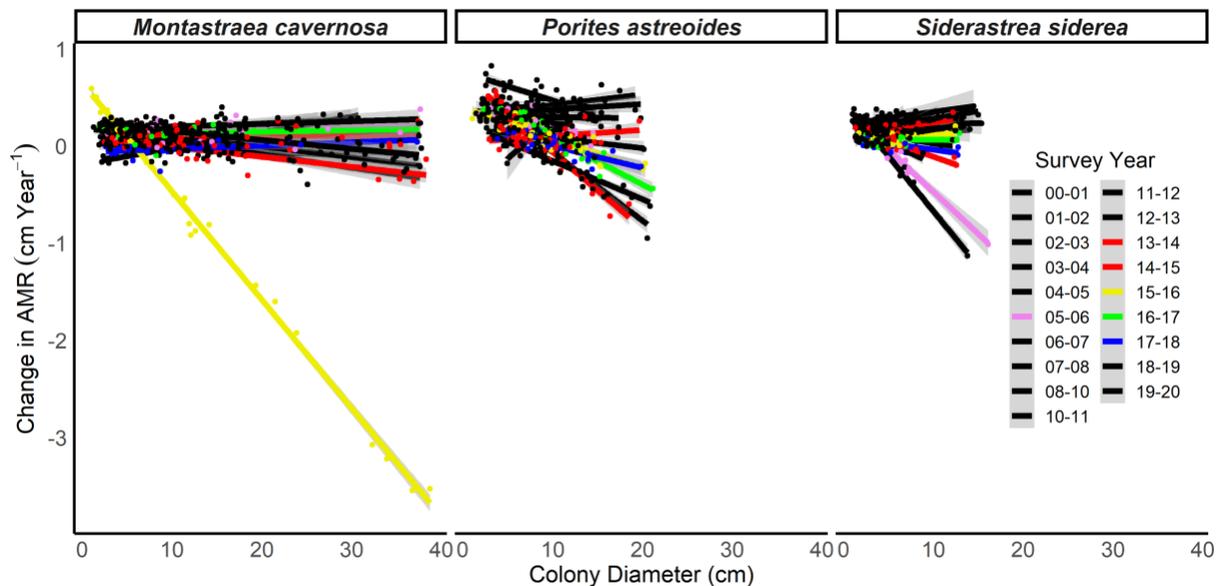


Figure S3. Change in AMR with size. Points represent changes in AMR of each individual colony between timepoints. Line represents linear regression of change in AMR vs Colony Diameter in each year. Colours indicate whether a disturbance occurred during the survey year: Black = Inter-disturbance; Red = Coral Bleaching; Blue = Hurricane; Green = SCTLD (Stony Coral Tissue Loss Disease); Violet = Coral Bleaching and Hurricane; Yellow = Coral Bleaching and SCTLD.

Table S1. Monitored coral colonies. Location, duration of monitoring and size changes. All colonies not surveyed until 2020 died. Most colonies with start year after 2000 were monitored from recruits. Images at site DB2 were unusable in 2000. Site FTL5 was first monitored in 2003. Whether colony was measured or used solely for mortality prevalence noted (Y or N).

Species	Site	Habitat	Sub-region	Depth (m)	Start year	End year	Years surveyed	Initial diameter (cm)	End diameter (cm)	Measured
MCAV	DB2	Middle	Deerfield	11	2001	2015	15	2	7.3	Y
MCAV	DB2	Middle	Deerfield	11	2001	2016	17	8.1	3.7	Y
MCAV	DB2	Middle	Deerfield	11	2000	2015	16	7	9.1	Y
MCAV	DB2	Middle	Deerfield	11	2000	2015	16	3.1	5.7	Y
MCAV	DB2	Middle	Deerfield	11	2000	2020	21	14.8	25.7	Y
MCAV	DB2	Middle	Deerfield	11	2004	2019	16	1.9	5.7	Y
MCAV	DB2	Middle	Deerfield	11	2000	2020	21	5.4	14.3	Y
MCAV	FTL2	Middle	FTL	15	2010	2020	11	2.9	4.9	Y
MCAV	FTL2	Middle	FTL	15	2015	2020	6	2.8	5.9	Y
MCAV	FTL2	Middle	FTL	15	2015	2020	6	1.1	5.8	Y
MCAV	FTL3	Outer	FTL	18	2007	2016	10	2	3.5	Y
MCAV	FTL3	Outer	FTL	18	2007	2016	10	3.5	2.9	Y
MCAV	FTL3	Outer	FTL	18	2000	2020	21	10	11.2	Y
MCAV	FTL3	Outer	FTL	18	2002	2020	19	2.4	8.5	Y
MCAV	FTL4	Inner	FTL	6	2000	2015	16	16.3	12.7	Y
MCAV	FTL4	Inner	FTL	6	2000	2015	16	26.5	28.9	Y
MCAV	FTL4	Inner	FTL	6	2000	2016	17	36.3	22.9	Y
MCAV	FTL4	Inner	FTL	6	2000	2020	21	21.8	24.4	Y
MCAV	FTL4	Inner	FTL	6	2000	2015	16	5.9	9.9	Y
MCAV	FTL4	Inner	FTL	6	2000	2015	16	11.6	10.7	Y
MCAV	FTL5	Inner	FTL	8	2003	2016	14	35.4	26	Y
MCAV	FTL5	Inner	FTL	8	2003	2020	18	37.7	37.7	Y
MCAV	FTL5	Inner	FTL	8	2003	2015	13	17.7	18.1	Y
MCAV	FTL5	Inner	FTL	8	2003	2020	18	23.1	4.2	Y
MCAV	HB2	Middle	Deerfield	11	2000	2020	21	6.2	13.7	Y
MCAV	HB2	Middle	Deerfield	11	2000	2016	17	29.2	22.7	Y
MCAV	HB2	Middle	Deerfield	11	2015	2020	6	1.6	4.9	Y
MCAV	HB3	Outer	Deerfield	15	2007	2015	9	6.1	7.5	Y
MCAV	HB3	Outer	Deerfield	15	2008	2020	13	2.9	5.9	Y
MCAV	HB3	Outer	Deerfield	15	2010	2020	11	2.3	6.4	Y
MCAV	HB3	Outer	Deerfield	15	2001	2016	16	7.7	11.8	Y
MCAV	JUL2	Outer	Hollywood	16	2000	2020	21	15.4	20.6	Y
MCAV	JUL8	Outer	Hollywood	18	2000	2020	21	6.9	8.9	Y
MCAV	JUL8	Outer	Hollywood	18	2008	2020	13	2.5	4.4	Y
MCAV	JUL8	Outer	Hollywood	18	2000	2020	21	2.7	6.6	Y
MCAV	POMP3	Outer	FTL	16	2000	2020	21	3.1	4.3	Y
MCAV	POMP3	Outer	FTL	16	2000	2015	16	4.3	7.1	Y
MCAV	POMP3	Outer	FTL	16	2000	2020	21	5	8.7	Y
MCAV	POMP3	Outer	FTL	16	2000	2020	21	6.2	16.5	Y
MCAV	POMP3	Outer	FTL	16	2000	2012	13	7.7	2.6	Y
MCAV	POMP5	Inner	FTL	9	2000	2020	21	13.6	7.2	Y
MCAV	POMP6	Middle	FTL	16	2012	2020	9	6.1	6.8	Y
PAST	DB2	Middle	Deerfield	11	2000	2018	19	7.6	10.6	Y
PAST	DB2	Middle	Deerfield	11	2000	2016	17	9.9	8.1	Y
PAST	FTL1	Inner	FTL	6	2000	2011	12	9.8	16.1	Y
PAST	FTL1	Inner	FTL	6	2006	2020	15	2.5	8.2	Y
PAST	FTL1	Inner	FTL	6	2005	2020	16	2.5	13.7	Y
PAST	FTL1	Inner	FTL	6	2008	2017	10	3.3	10.2	Y
PAST	FTL1	Inner	FTL	6	2010	2020	11	3.6	10.1	Y
PAST	FTL1	Inner	FTL	6	2000	2015	16	5.4	10	Y
PAST	FTL2	Middle	FTL	15	2010	2020	11	2.3	7.6	Y

Species	Site	Habitat	Sub-region	Depth (m)	Start year	End year	Years surveyed	Initial diameter (cm)	End diameter (cm)	Measured
PAST	FTL2	Middle	FTL	15	2000	2020	21	4.4	10	Y
PAST	FTL4	Inner	FTL	6	2004	2020	17	2.6	11.9	Y
PAST	FTL4	Inner	FTL	6	2000	2016	17	8.9	11.8	Y
PAST	FTL5	Inner	FTL	8	2003	2020	18	5.4	6.8	Y
PAST	FTL5	Inner	FTL	8	2003	2020	18	1.5	6.9	Y
PAST	HB2	Middle	Deerfield	11	2006	2020	15	3.2	17.5	Y
PAST	HB2	Middle	Deerfield	11	2010	2020	11	3.8	2.9	Y
PAST	HB3	Outer	Deerfield	15	2008	2016	9	2.6	5.4	Y
PAST	HB3	Outer	Deerfield	15	2010	2020	11	3.5	5.9	Y
PAST	HB3	Outer	Deerfield	15	2010	2020	11	2.4	11.5	Y
PAST	HB3	Outer	Deerfield	15	2010	2020	11	4.3	11.1	Y
PAST	HB3	Outer	Deerfield	15	2007	2020	14	4.1	7.8	Y
PAST	HB3	Outer	Deerfield	15	2006	2020	15	6.8	9.5	Y
PAST	HB3	Outer	Deerfield	15	2008	2016	9	4.2	3.3	Y
PAST	JUL2	Outer	Hollywood	16	2004	2020	17	3.6	10.1	Y
PAST	JUL2	Outer	Hollywood	16	2008	2020	13	2.1	9.4	Y
PAST	JUL6	Inner	Hollywood	4	2000	2020	21	9.2	7.3	Y
PAST	JUL6	Inner	Hollywood	4	2002	2020	19	2.8	12.9	Y
PAST	JUL6	Inner	Hollywood	4	2000	2020	21	9.4	9.7	Y
PAST	JUL7	Inner	Hollywood	10	2008	2016	9	3.4	7.2	Y
PAST	JUL7	Inner	Hollywood	10	2002	2020	19	2	4.5	Y
PAST	JUL8	Outer	Hollywood	18	2000	2020	21	8.6	20.7	Y
PAST	JUL8	Outer	Hollywood	18	2007	2020	14	2.7	3.8	Y
PAST	JUL8	Outer	Hollywood	18	2000	2020	21	8.2	13.6	Y
PAST	POMP1	Inner	FTL	6	2011	2020	10	2.1	10.9	Y
PAST	POMP1	Inner	FTL	6	2010	2016	7	2.7	3.9	Y
PAST	POMP1	Inner	FTL	6	2005	2016	12	3	11	Y
PAST	POMP1	Inner	FTL	6	2011	2020	10	1.9	5.7	Y
PAST	POMP1	Inner	FTL	6	2011	2020	10	2.8	9.5	Y
PAST	POMP2	Middle	FTL	15	2013	2020	8	3.7	9.6	Y
PAST	POMP2	Middle	FTL	15	2010	2020	11	4.3	9.2	Y
PAST	POMP3	Outer	FTL	16	2010	2020	11	2.8	7	Y
PAST	POMP3	Outer	FTL	16	2010	2020	11	5.2	5.6	Y
SSID	DB2	Middle	Deerfield	11	2004	2014	11	2.8	6.3	Y
SSID	DB2	Middle	Deerfield	11	2015	2020	6	2.4	5.1	Y
SSID	DB2	Middle	Deerfield	11	2000	2020	21	4.3	3.9	Y
SSID	DB3	Outer	Deerfield	17	2011	2020	10	2.1	5.3	Y
SSID	DB3	Outer	Deerfield	17	2006	2020	15	1.9	4.9	Y
SSID	DB3	Outer	Deerfield	17	2013	2020	8	2.7	3.5	Y
SSID	FTL2	Middle	FTL	15	2000	2020	21	4.1	9.2	Y
SSID	FTL2	Middle	FTL	15	2013	2020	8	2.3	5.2	Y
SSID	FTL2	Middle	FTL	15	2014	2020	7	1.8	3.1	Y
SSID	FTL3	Outer	FTL	18	2010	2020	9	3.4	4.2	Y
SSID	FTL3	Outer	FTL	18	2010	2020	11	2.3	6.2	Y
SSID	FTL3	Outer	FTL	18	2008	2020	13	1.2	5.4	Y
SSID	FTL5	Inner	FTL	8	2003	2007	5	5.9	8.3	Y
SSID	HB2	Middle	Deerfield	11	2010	2020	11	2.5	5	Y
SSID	HB2	Middle	Deerfield	11	2011	2020	10	1	4.5	Y
SSID	HB2	Middle	Deerfield	11	2010	2020	11	4.3	3.6	Y
SSID	HB2	Middle	Deerfield	11	2010	2020	11	1.8	5.2	Y
SSID	HB2	Middle	Deerfield	11	2010	2020	11	1.5	3.4	Y
SSID	HB2	Middle	Deerfield	11	2013	2020	8	1.7	3.2	Y
SSID	HB3	Outer	Deerfield	15	2008	2020	13	3.6	3	Y
SSID	HB3	Outer	Deerfield	15	2010	2020	11	3.6	2.2	Y
SSID	JUL1	Middle	Hollywood	12	2010	2020	11	1	5.2	Y

Species	Site	Habitat	Sub-region	Depth (m)	Start year	End year	Years surveyed	Initial diameter (cm)	End diameter (cm)	Measured
SSID	JUL2	Outer	Hollywood	16	2000	2020	21	1.3	4.9	Y
SSID	JUL2	Outer	Hollywood	16	2005	2014	10	3.4	4	Y
SSID	JUL2	Outer	Hollywood	16	2007	2020	14	1.5	4.2	Y
SSID	JUL7	Inner	Hollywood	10	2014	2020	7	1.3	4.2	Y
SSID	JUL7	Inner	Hollywood	10	2000	2020	21	8.1	13.8	Y
SSID	JUL7	Inner	Hollywood	10	2008	2020	13	3.1	6.5	Y
SSID	POMP1	Inner	FTL	6	2000	2020	21	4.1	9.8	Y
SSID	POMP1	Inner	FTL	6	2000	2020	21	3	14.1	Y
SSID	POMP2	Middle	FTL	15	2000	2020	21	2.3	8.2	Y
SSID	POMP2	Middle	FTL	15	2000	2020	21	14.1	16.6	Y
SSID	POMP2	Middle	FTL	15	2008	2020	13	3.5	8.6	Y
SSID	POMP2	Middle	FTL	15	2010	2020	11	3.6	2.4	Y
SSID	POMP2	Middle	FTL	15	2000	2015	16	4.4	9.1	Y
SSID	POMP3	Outer	FTL	16	2000	2020	21	3.7	2.7	Y
SSID	POMP3	Outer	FTL	16	2006	2015	10	1.2	5.5	Y
MCAV	DB2	Middle	Deerfield	11	2010	2015	6	21.2	25	N
MCAV	DB2	Middle	Deerfield	11	2001	2015	15	5.5	1.5	N
MCAV	DB2	Middle	Deerfield	11	2006	2015	10	10.1	11.5	N
MCAV	FTL3	Outer	FTL	18	2015	2020	6	8.8	11.3	N
MCAV	FTL4	Inner	FTL	6	2000	2015	16	18.8	24.6	N
MCAV	FTL4	Inner	FTL	6	2000	2018	19	22.7	6.9	N
MCAV	FTL5	Inner	FTL	8	2003	2015	13	14	3.5	N
MCAV	FTL5	Inner	FTL	8	2010	2020	11	24.9	31.4	N
MCAV	FTL5	Inner	FTL	8	2003	2015	13	27.6	30.3	N
MCAV	FTL5	Inner	FTL	8	2003	2020	18	34.1	40.1	N
MCAV	FTL5	Inner	FTL	8	2003	2015	13	27.6	29.7	N
PAST	DB2	Middle	Deerfield	11	2010	2020	11	7.3	8.8	N
PAST	FTL1	Inner	FTL	6	2000	2017	18	14.8	7.7	N
PAST	FTL1	Inner	FTL	6	2002	2014	13	10.7	11.7	N
PAST	JUL6	Inner	Hollywood	4	2010	2020	11	23.8	18.4	N

Table S2. Sample sizes per species for each categorical fixed effect in the Minimum Adequate Model (MAM). Note, repeated measurements were taken of the same colony annually and accounted for in the MAM as a random intercept.

Categorical Fixed Effect	Level	<i>Montastraea cavernosa</i>	<i>Porites astreoides</i>	<i>Siderastrea siderea</i>
Species	NA	465	466	386
Habitat	Inner Reef	118	217	69
	Middle Reef	143	93	184
	Outer Reef	204	156	133
Sub Region	Deerfield	157	115	59
	Fort Lauderdale	259	208	130
	Hollywood	59	143	71
Survey Year	2000–2001	15	10	9
	2001–2002	19	8	7
	2002–2003	17	11	7
	2003–2004	23	13	9
	2004–2005	20	12	10
	2005–2006	25	16	9
	2006–2007	26	18	12
	2007–2008	32	20	15
	2008–2010	31	26	16
	2010–2011	26	33	24
	2011–2012	20	33	24
	2012–2013	30	34	27
	2013–2014	33	37	31
	2014–2015	35	38	32
	2015–2016	29	39	30
	2016–2017	19	32	32
	2017–2018	23	28	30
2018–2019	21	28	30	
2019–2020	21	30	32	

Table S3. Summary table of the fitted linear mixed effects model of coral growth rate fitted by restricted maximum likelihood. Values are the mean relative growth rate at that level, with standard error, Comparisons are made to the highest level of each factor, e.g., for Species, *Porites astreoides* (PAST) and *Siderastrea siderea* (SSID) relative growth rates are compared to *Montastraea cavernosa*.

	Value	SE	df	t-value	p-value
(Intercept)	-0.21211	5.396506	1136	-0.039304	0.9687
SpeciesPAST	26.62309	9.594337	112	2.774876	0.0065
SpeciesSSID	41.0037	11.10105	112	3.693677	0.0003
SpeciesMCAV: Min.colony.age	-1.23671	0.380289	1136	-3.252031	0.0012
SpeciesPAST: Min.colony.age	-1.24487	0.514352	1136	-2.420259	0.0157
SpeciesSSID: Min.colony.age	0.3065	0.477268	1136	0.642196	0.5209
SpeciesMCAV: Diameter	-0.2274	0.147013	1136	-1.546838	0.1222
SpeciesPAST: Diameter	-1.7795	0.433936	1136	-4.100835	0
SpeciesSSID: Diameter	-3.04405	0.656544	1136	-4.636481	0
SpeciesMCAV:fYear2002	7.29306	5.354277	1136	1.3621	0.1734
SpeciesPAST:fYear2002	1.66851	10.306845	1136	0.161884	0.8714
SpeciesSSID:fYear2002	11.00349	11.099532	1136	0.991347	0.3217
SpeciesMCAV:fYear2003	4.62049	5.402086	1136	0.855315	0.3926
SpeciesPAST:fYear2003	13.49754	9.737972	1136	1.386073	0.166
SpeciesSSID:fYear2003	3.1024	12.604983	1136	0.246124	0.8056
SpeciesMCAV:fYear2004	13.50317	5.258276	1136	2.567985	0.0104
SpeciesPAST:fYear2004	8.66527	9.549611	1136	0.907395	0.3644
SpeciesSSID:fYear2004	5.08924	11.403633	1136	0.446282	0.6555
SpeciesMCAV:fYear2005	6.60804	5.434939	1136	1.215845	0.2243
SpeciesPAST:fYear2005	1.88092	9.694316	1136	0.194023	0.8462
SpeciesSSID:fYear2005	6.23288	10.171654	1136	0.61277	0.5402
SpeciesMCAV:fYear2006	13.9918	5.339813	1136	2.620279	0.0089
SpeciesPAST:fYear2006	11.59611	9.379927	1136	1.236268	0.2166
SpeciesSSID:fYear2006	-20.89612	9.863036	1136	-2.11863	0.0343
SpeciesMCAV:fYear2007	14.26115	5.485851	1136	2.599623	0.0095
SpeciesPAST:fYear2007	29.91224	9.366255	1136	3.193618	0.0014
SpeciesSSID:fYear2007	-23.86834	10.259334	1136	-2.3265	0.0202
SpeciesMCAV:fYear2008	13.63396	5.408818	1136	2.520692	0.0118
SpeciesPAST:fYear2008	14.75719	9.154452	1136	1.612023	0.1072
SpeciesSSID:fYear2008	-2.40261	10.321484	1136	-0.232777	0.816
SpeciesMCAV:fYear2010	19.15141	5.857802	1136	3.269385	0.0011
SpeciesPAST:fYear2010	18.40875	9.134755	1136	2.015243	0.0441
SpeciesSSID:fYear2010	-13.16846	11.185274	1136	-1.177304	0.2393
SpeciesMCAV:fYear2011	16.59414	6.117071	1136	2.712759	0.0068
SpeciesPAST:fYear2011	23.30123	9.116716	1136	2.55588	0.0107
SpeciesSSID:fYear2011	5.32634	10.331737	1136	0.515532	0.6063
SpeciesMCAV:fYear2012	12.75623	6.695452	1136	1.905208	0.057
SpeciesPAST:fYear2012	20.86758	9.131573	1136	2.285212	0.0225
SpeciesSSID:fYear2012	5.20627	10.272421	1136	0.50682	0.6124
SpeciesMCAV:fYear2013	16.38929	6.546302	1136	2.503595	0.0124
SpeciesPAST:fYear2013	7.73667	9.117122	1136	0.848587	0.3963
SpeciesSSID:fYear2013	-6.94992	10.19598	1136	-0.681634	0.4956
SpeciesMCAV:fYear2014	19.77723	6.67518	1136	2.962801	0.0031
SpeciesPAST:fYear2014	10.67121	9.286086	1136	1.149161	0.2507
SpeciesSSID:fYear2014	-10.56242	10.12349	1136	-1.043358	0.297
SpeciesMCAV:fYear2015	17.7461	6.929561	1136	2.560927	0.0106
SpeciesPAST:fYear2015	11.06897	9.454871	1136	1.170716	0.242
SpeciesSSID:fYear2015	1.77565	10.424794	1136	0.170329	0.8648
SpeciesMCAV:fYear2016	2.83898	7.232602	1136	0.392526	0.6947
SpeciesPAST:fYear2016	13.32523	9.579856	1136	1.390964	0.1645
SpeciesSSID:fYear2016	-5.89079	10.480494	1136	-0.562072	0.5742
SpeciesMCAV:fYear2017	20.55842	7.769915	1136	2.6459	0.0083
SpeciesPAST:fYear2017	12.24775	9.819279	1136	1.247316	0.2125

	Value	SE	df	<i>t</i> -value	p-value
SpeciesSSID:fYear2017	-8.08947	10.574134	1136	-0.765025	0.4444
SpeciesMCAV:fYear2018	14.69797	7.867076	1136	1.868288	0.062
SpeciesPAST:fYear2018	8.64748	10.158433	1136	0.851261	0.3948
SpeciesSSID:fYear2018	-13.50766	10.871966	1136	-1.24243	0.2143
SpeciesMCAV:fYear2019	23.79451	8.182491	1136	2.907979	0.0037
SpeciesPAST:fYear2019	12.95718	10.440118	1136	1.241096	0.2148
SpeciesSSID:fYear2019	-4.84738	11.096095	1136	-0.436854	0.6623
SpeciesMCAV:fYear2020	27.022	8.380056	1136	3.22456	0.0013
SpeciesPAST:fYear2020	6.83992	10.656645	1136	0.641846	0.5211
SpeciesSSID:fYear2020	1.12579	11.14901	1136	0.100977	0.9196
SpeciesMCAV: HabitatMiddle	8.06367	3.474432	112	2.32086	0.0221
SpeciesPAST: HabitatMiddle	0.68016	3.919556	112	0.173529	0.8625
SpeciesSSID: HabitatMiddle	-8.92831	4.562392	112	-1.956937	0.0528
SpeciesMCAV: HabitatOuter	4.38401	3.522227	112	1.24467	0.2159
SpeciesPAST: HabitatOuter	-1.44169	3.41116	112	-0.422641	0.6734
SpeciesSSID: HabitatOuter	-18.048	5.514039	112	-3.273099	0.0014

Table S4. Change in AIC (dAIC) score by removing fixed effects from the minimum adequate model. dAIC is a measure of model fit and indicates how much model fit worsens with the omission of each fixed effect.

Fixed Effect	Fixed effect type	dAIC
Species: Colony Diameter	Continuous	-31.8
Species: Survey Year	Categorical	-20.0
Species: Minimum Colony Age	Continuous	-12.1
Species: Habitat	Categorical	-6.3