

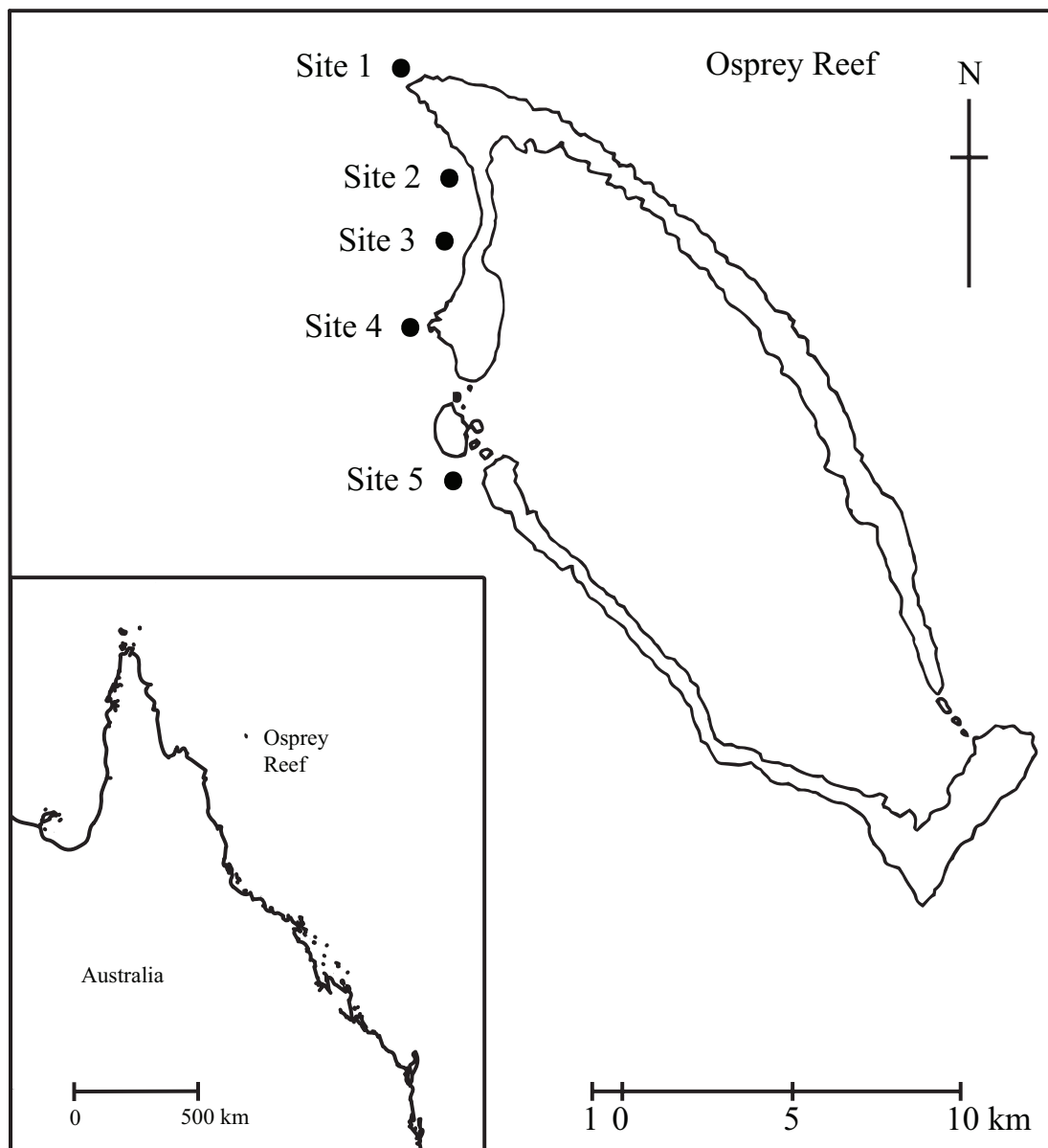
*The following supplement accompanies the article*

## **Response of reef corals and fish at Osprey Reef to a thermal anomaly across a 30 m depth gradient**

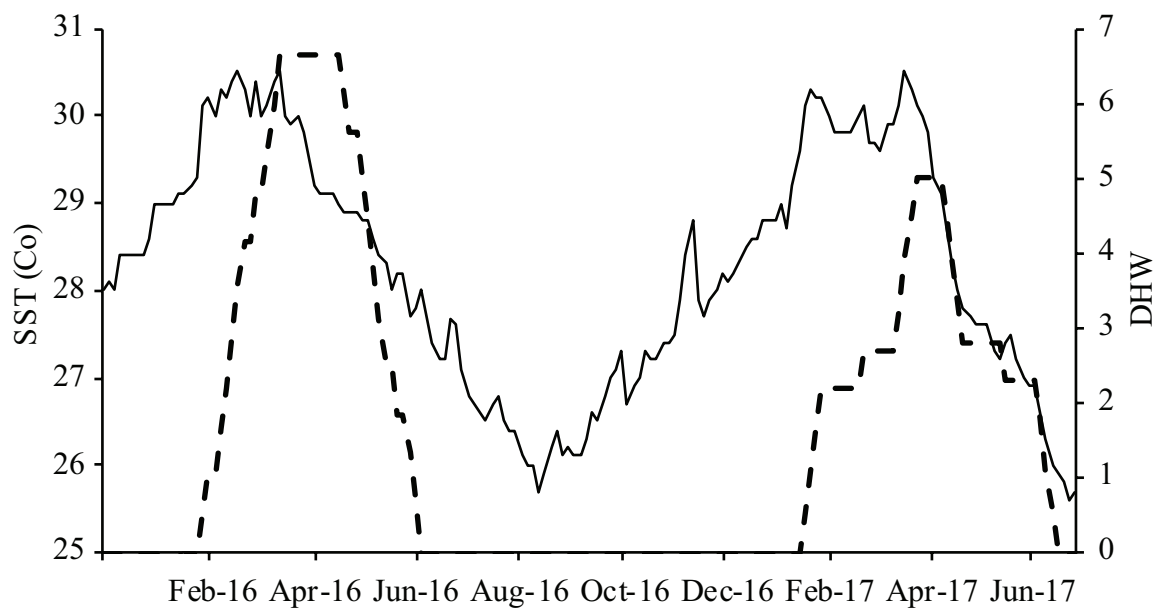
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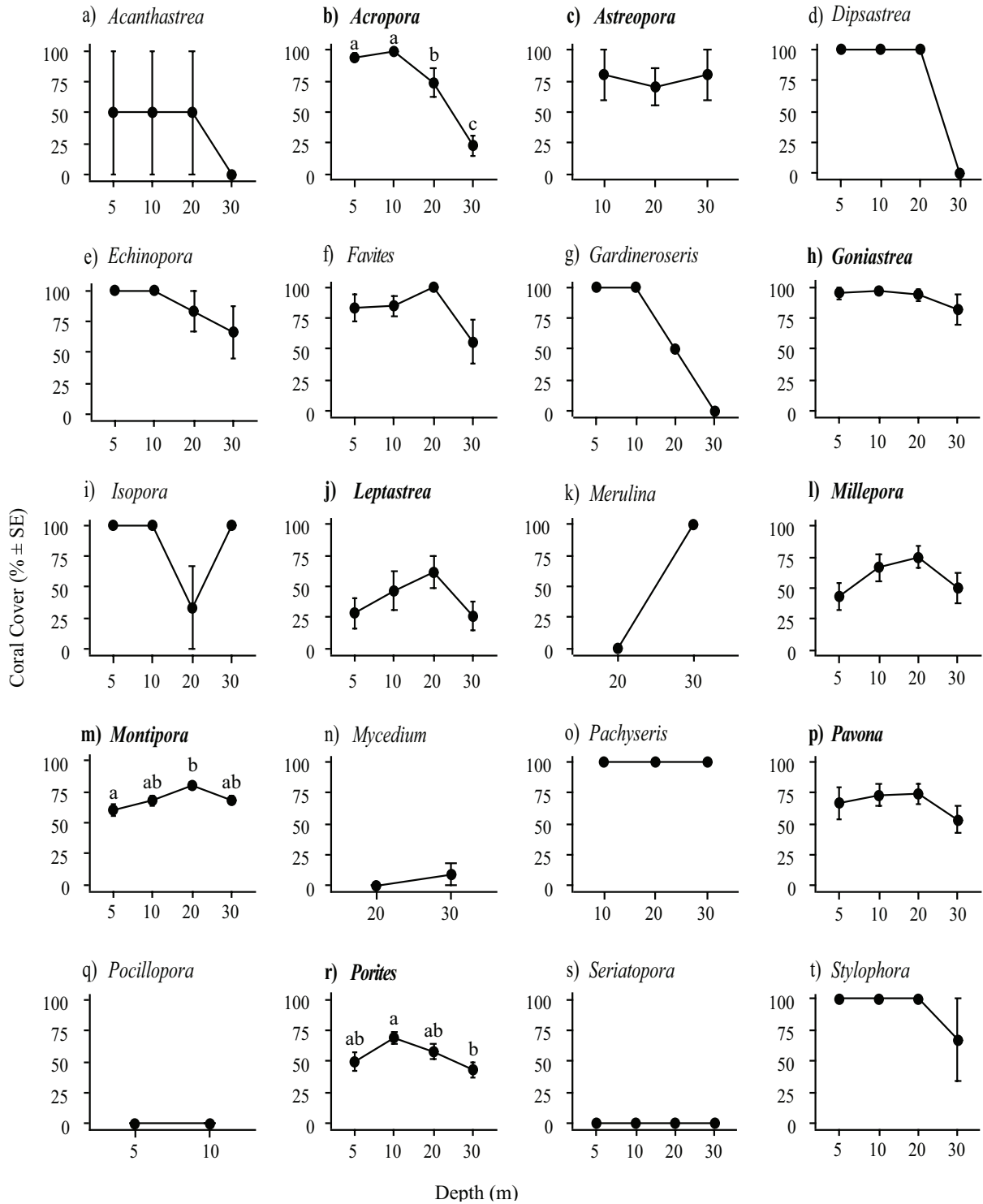
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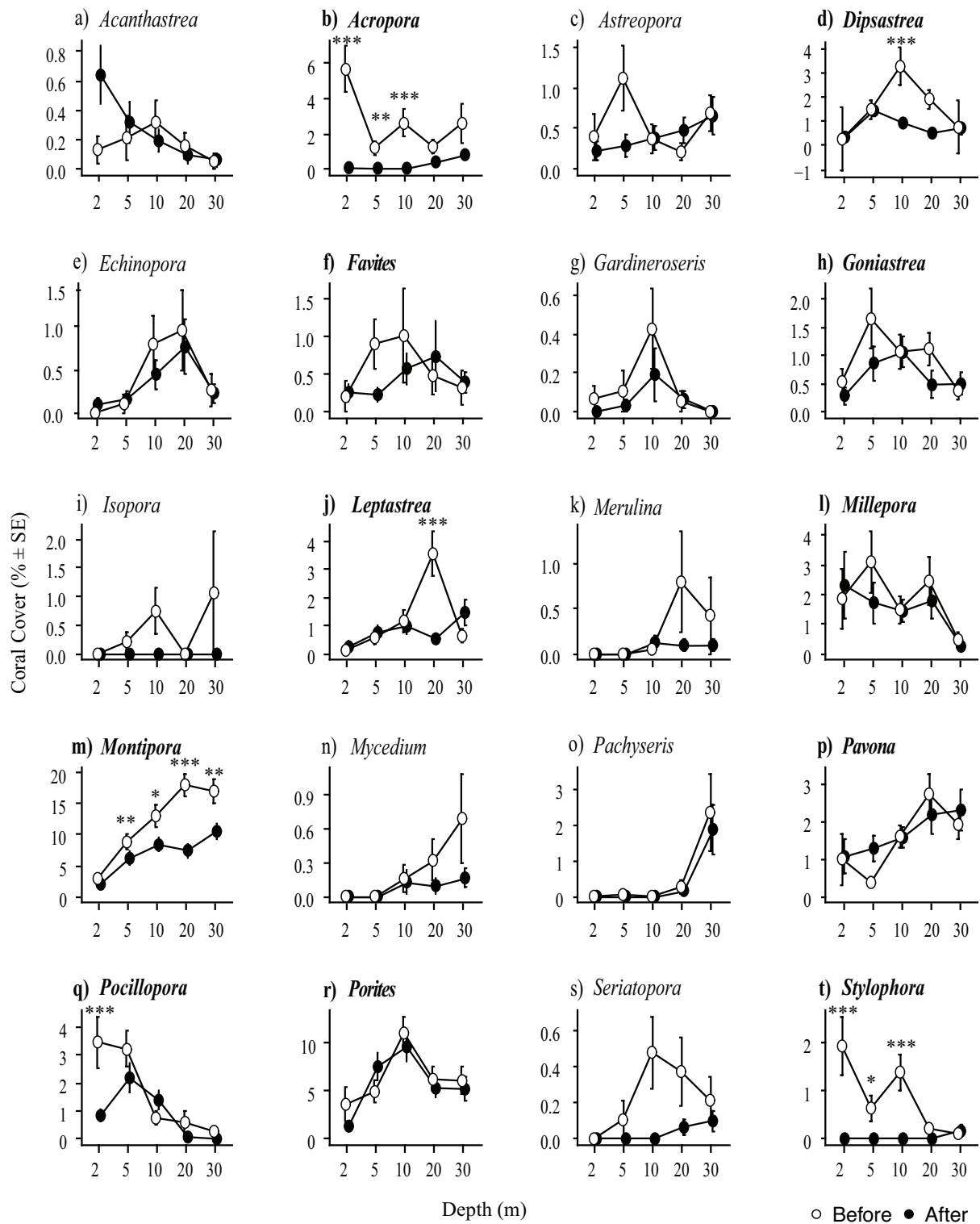
**Figure S1.** Regional-scale map of Osprey Reef and study sites in relation to the north-eastern Australia coast. Osprey Reef rises ~1500 m above the surrounding Queensland Plateau seafloor.



**Figure S2.** Mean sea surface temperatures (SST), and degree heating weeks (DHW, dotted line) for Osprey reef between January 2016 and June 2017. Derived from remote sensing data (NOAA Coral Reef Watch 2018).



**Figure S3.** Percent bleaching incidence of coral cover during April 2016 on Osprey reef at 5, 10, 20, and 30 m depths, for each genus. **Small faced** letters represent level of significance differences in bleaching across depths as determined by Tukey's test. **Bold** headings indicate 5 or more observations at each depth.



**Figure S4.** Percent live coral cover in January 2016 before (white fill) the bleaching event, and in April 2017 one year after (black fill) the bleaching event on Osprey reef at 2, 5, 10, 20, and 30 m depths, for each genus. \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$  represent level of significance of within depth differences in live cover before and after the bleaching event. **Bold** headings indicate 5 or more observations at each depth.

**Table S1.** Summary of one-way ANOVAs of lme models tests on the difference in bleaching severity of each coral genera during April 2016 on Osprey reef, at 2, 5, 10, 20, and 30 m depth. Significant ( $p < 0.05$ ) results are reported in **bold**. NA indicates insufficient data ( $< 5$  observations per depth) for test.

Taxa	Depth		
	DF	F-Value	P
<i>Acanthastrea</i>	NA	NA	NA
<b><i>Acropora</i></b>	3.000	38.359	<b>&lt;0.001</b>
<i>Astreopora</i>	2.000	0.115	0.892
<i>Dipsastraea</i>	NA	NA	NA
<i>Echinopora</i>	NA	NA	NA
<i>Favites</i>	3.000	2.783	0.051
<i>Gardineroseris</i>	NA	NA	NA
<i>Goniastrea</i>	3.000	1.183	0.321
<i>Isopora</i>	NA	NA	NA
<i>Leptastrea</i>	3.000	2.795	0.051
<i>Merulina</i>	NA	NA	NA
<i>Millepora</i>	3.000	2.082	0.110
<b><i>Montipora</i></b>	3.000	2.967	<b>0.032</b>
<i>Mycedium</i>	NA	NA	NA
<i>Pachyseris</i>	NA	NA	NA
<i>Pavona</i>	3.000	0.752	0.524
<i>Pocillopora</i>	NA	NA	NA
<b><i>Porites</i></b>	3.000	2.791	<b>0.042</b>
<i>Seriatopora</i>	NA	NA	NA
<i>Stylophora</i>	NA	NA	NA

**Table S2.** Summary of two-way ANOVAs of lme models on the difference in % live cover of each coral genera between January 2016 before the coral bleaching event and April 2017 one year after the bleaching event on Osprey reef, at 2, 5, 10, 20, and 30 m depth. Significant ( $p < 0.05$ ) results are reported in **bold**. NA indicates insufficient data (<5 observations per depth) for test.

Taxa	Depth			Date			Depth x Date		
	DF	F-Value	P	DF	F-Value	P	DF	F-Value	P
<i>Acanthastrea</i>		NA			NA			NA	
<i>Acropora</i>	4	5.489	<b>&lt;0.001</b>	1	116.272	<b>&lt;0.001</b>	4	8.443	<b>&lt;0.001</b>
<i>Astreopora</i>		NA			NA			NA	
<i>Echinopora</i>		NA			NA			NA	
<i>Dipsastraea</i>	4	11.584	<b>&lt;0.001</b>	1	9.797	<b>0.002</b>	4	6.493	<b>&lt;0.001</b>
<i>Favites</i>	4	1.078	0.366	1	0.156	0.693	4	1.317	0.262
<i>Gardineroseris</i>		NA			NA			NA	
<i>Goniastrea</i>	4	3.602	<b>0.006</b>	1	8.207	<b>0.004</b>	4	1.413	0.228
<i>Isopora</i>		NA			NA			NA	
<i>Leptastrea</i>	4	9.281	<b>&lt;0.001</b>	1	4.871	<b>0.028</b>	4	8.919	<b>&lt;0.001</b>
<i>Merulina</i>		NA			NA			NA	
<i>Millepora</i>	4	4.015	<b>0.003</b>	1	1.915	0.167	4	0.324	0.862
<i>Montipora</i>	4	33.335	<b>&lt;0.001</b>	1	69.385	<b>&lt;0.001</b>	4	3.534	<b>0.007</b>
<i>Mycedium</i>		NA			NA			NA	
<i>Pachyseris</i>		NA			NA			NA	
<i>Pavona</i>	4	9.827	<b>&lt;0.001</b>	1	0.119	0.730	4	1.374	0.241
<i>Pocillopora</i>	4	27.951	<b>&lt;0.001</b>	1	12.860	<b>&lt;0.001</b>	4	5.886	<b>&lt;0.001</b>
<i>Porites</i>	4	16.260	<b>&lt;0.001</b>	1	7.877	<b>0.005</b>	4	0.702	0.590
<i>Seriatopora</i>		NA			NA			NA	
<i>Stylophora</i>	4	9.110	<b>&lt;0.001</b>	1	71.358	<b>&lt;0.001</b>	4	11.370	<b>&lt;0.001</b>

## LITERATURE CITED

NOAA Coral Reef Watch (2018) Daily 5 km satellite coral bleaching heat stress monitoring. NOAA Satellite and Information Service, College Park, MD