

Reef Check Australia

Magnetic Island Summary Report 2018



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www.reefcheckaustralia.org

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Magnetic Island Season Report 2018



Reef Check Australia

Reef Check Australia (RCA) is an environmental charity dedicated to protecting Australia's reefs and oceans by engaging the community in hands-on citizen science and education initiatives. Survey teams are part of a worldwide network of trained volunteers that regularly monitor and report on reef health in more than 90 countries using a standardized scientific survey method.

The goal of Reef Check monitoring is to determine broad-scale trends of how our reefs are changing over time on both local and global scales. RCA data can be provided to scientists and managers as an early warning system to supplement other monitoring programs that document changes and disturbances on the reef.

Reef Check Surveys

Reef Check surveys are conducted along a transect line that is laid along a constant depth and reef habitat type. The total transect length that is surveyed is 80m, divided into four 20m sections or transect replicates.

A set of biological indicators was chosen for Reef Check, to serve individually as indicators of specific types of human impacts, and collectively as a proxy for ecosystem health. These indicators fall into the following categories:

- Percent cover of reef composition is surveyed using a "point sample" method with a plumbline, or weighted line. Divers record the substrate type that is directly below the tape measure every 0.5m along each of the four 20m sections interval to estimate percent cover of 25 substrate categories.
- Invertebrate, reef health impact and fish (when logistically suitable) abundance are documented using a 5m wide u-shaped search pattern across the transect line to search for target indicators.

For additional details on monitoring methodology, please see the [Reef Check Australia Monitoring Methods](#) (Hill & Loder 2013).

This initiative is proudly supported by Townsville City Council.



Special thanks to all our amazing team of trained surveyors who supported the Magnetic Island surveys in 2018: Christine Giuliano, Kristy Joy Brown, Casey Whalen, Samantha Jaworski, Jilly Wheeler, Mila Grinblat, Laura Lazar.

Thank you to our Industry Champions who provided in-kind donations to support the 2018 survey season: Adrenalin Dive, Dive Patrol, Fantasea Magnetic Island, Pleasure Divers Magnetic Island, Reef Ecologic, and Dr Rick Brailey.



Magnetic Island Reef Monitoring 2018



Monitoring Sites

In 2018, Reef Check Australia volunteers visited eight sites across five areas in the Magnetic Island region. Sites included Alma Bay (Site 1 & 2), Florence Bay (Site 2), Geoffrey Bay (site 4 & 5), Middle Reef (Site 1 & 2) and Nelly Bay (Site 1 & 5) (Fig 1).

Monitoring sites were established in various years, with the earliest site established in 2003 (Geoffrey Bay and Nelly Bay). Two new sites were established in 2018 at the Nelly Bay (Site 5) and Geoffrey Bay (Site 5) snorkel trails with support from Dr Rick Brailey.

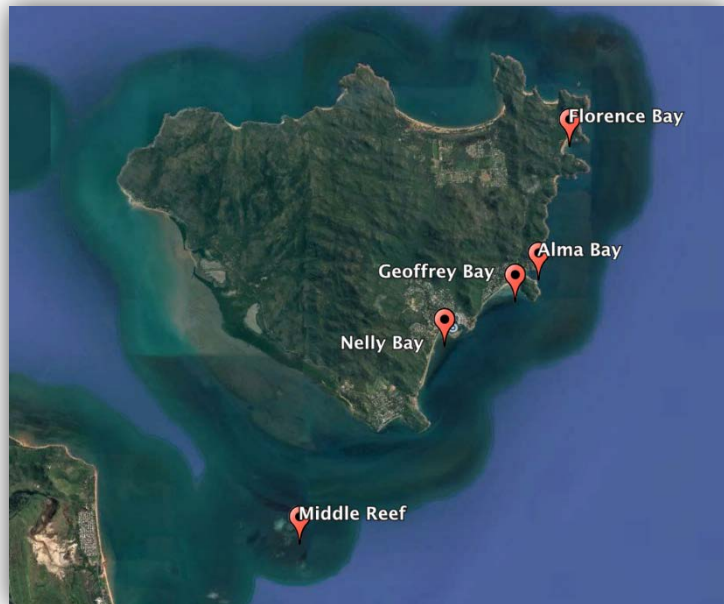


Figure 1. Location of Reef Check Australia monitoring areas around Magnetic Island surveyed in 2017.

Table 1. Summary table of RCA monitoring findings for surveys conducted around Magnetic Island in the 2018 season. Information includes a basic site summary of average hard and soft coral cover (%), total macroalgae (MA) abundance, nutrient indicator algae (NIA) cover (%) and silt levels (%), as well as a summary of the impacts at each site: average coral bleaching of the population (%) and abundance of reef impacts (marine debris, coral damage and coral scars).

Magnetic Island Reefs	Site Summary					Presence of Impacts								
	Hard Coral Coverage (%)	Soft Coral Coverage (%)	Macroalgae (#) per 80m transect	Nutrient Indicator Algae (%)	Silt (%)	Coral Population Bleaching (%)	Coral Disease (#)	Fishing Line (#)	Marine Debris (General) (#)	Anchor Damage (#)	Coral Damage (#) (unknown causes)	Drupella Scar (#)	Crown of Thorns Scar (#)	Unknown Scar (#)
Alma Bay, Site 2	34	1	15	9	3	3	0	0	0	0	10	0	0	2
Florence Bay, Site 2	34	1	9	18	13	0	0	0	0	0	0	0	0	3
Geoffrey Bay, Site 4	61	1	7	14	4	5	6	0	0	0	33	17	0	11
Geoffrey Bay, Site 5	41	0	14	13	6	6	0	0	0	0	7	3	0	8
Middle Reef, Site 1	36	2	8	21	26	0	0	0	0	0	0	0	0	1
Middle Reef, Site 2	41	5	8	20	16	0	0	0	0	0	0	0	0	5
Nelly Bay, Site 1	24	1	30	11	4	0	0	0	0	0	6	5	0	23
Nelly Bay, Site 5	33	1	10	25	13	3	8	0	0	0	13	0	0	10

Magnetic Island Site Composition 2018



Substrate patterns

- The average hard coral cover for sites surveyed in 2018 was 41%, with a range from 24-61% (Fig 2). Foliose coral and encrusting coral growth forms were the most common hard coral growth form in 2018.
- Rock (RC) accounted for 20% of cover across all sites. Rock totals included rock with coralline algae (8%), rock with turf algae (12%), and bare rock (6%). Nelly Bay Site 4 (18%) and Nelly Bay Site 4 (14%) had the highest cover of coralline algae.
- Nutrient indicator algae accounted for 16% of cover on average across all sites. There was an average of 13 counts of RCA seasonal macroalgae categories (including *Sargassum*, *Padina* and *Turbinaria*, *Asparagopsis*).
- Soft coral (SC) was present at 6 of the 8 sites, but in low levels of cover (1% of the total substrate composition on average). The highest cover of soft coral was at Middle Reef Site 2 (5%). In 2018, Sponge was also present in low quantities (2%) and was recorded at 6 of the 8 sites. The highest sponge cover was at Almas Bay Site 4 (8%).

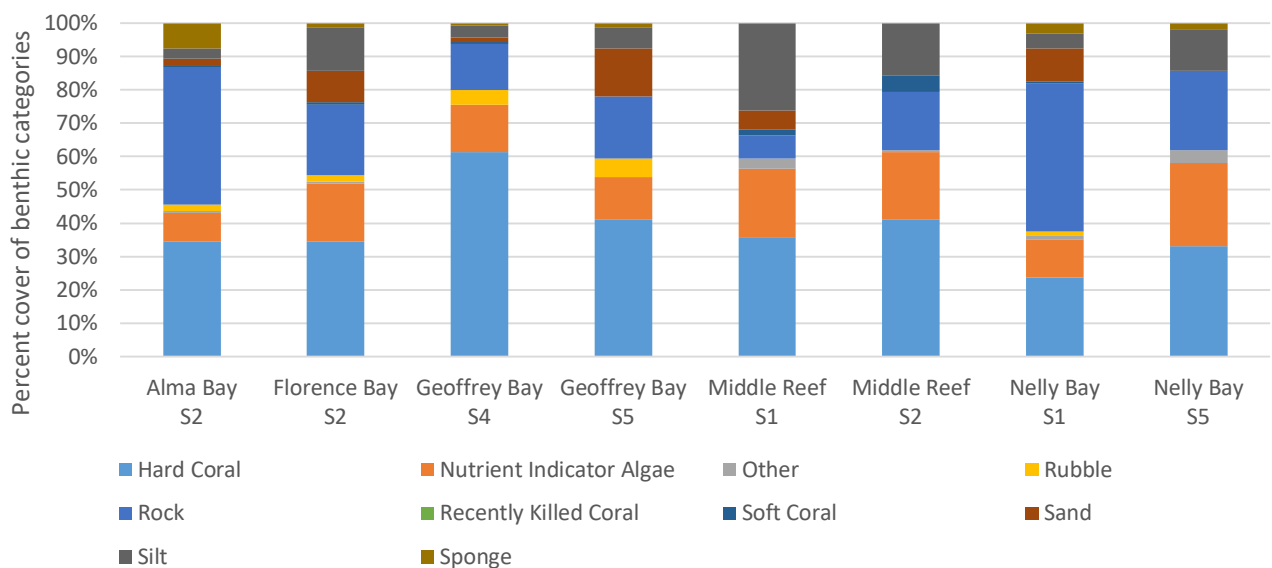
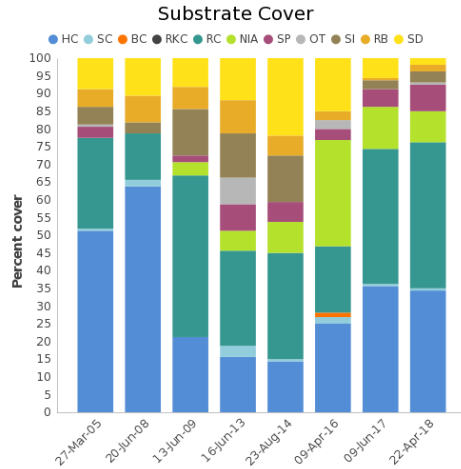


Figure 2. Substrate cover at all Magnetic Island Sites for the 2018 season. Substrates recorded include hard coral (HC), soft coral (SC), bleached coral (BC), recently killed coral (RKC), rock (RC), nutrient indicating algae (NIA), sponge (SP), other (OT), rubble (RB), sand (SD) and silt (SI).

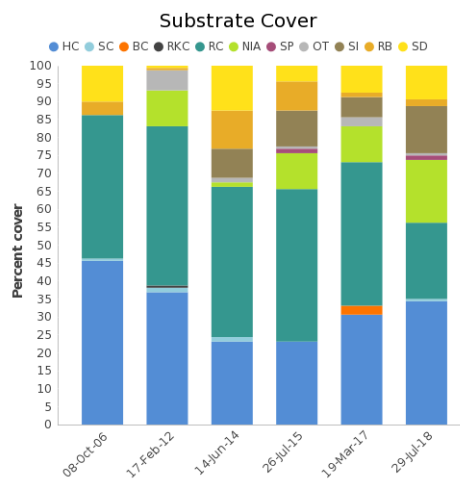
Magnetic Island Reef Composition 2018 & trends



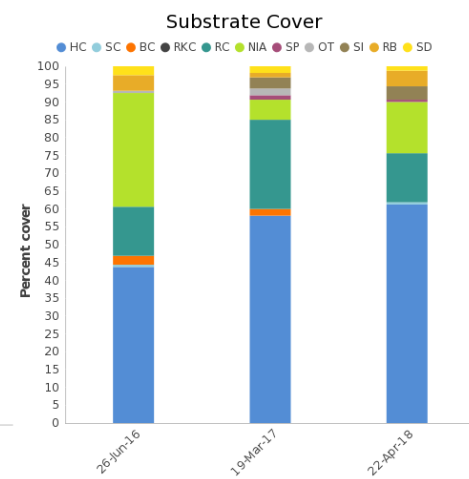
Alma Bay Site 2



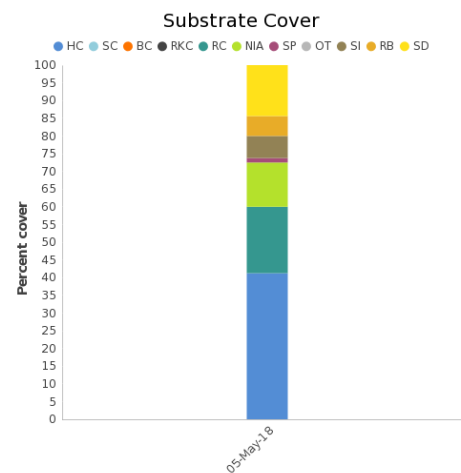
Florence Bay Site 2



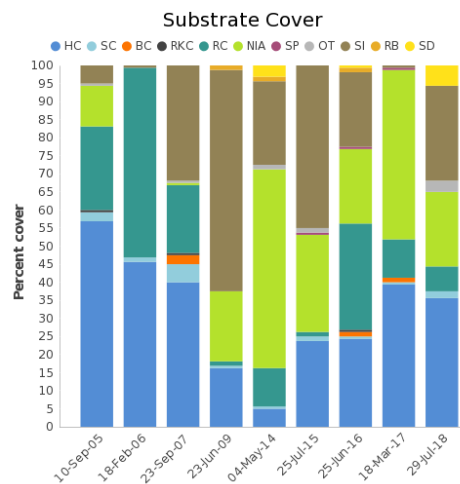
Geoffrey Bay Site 4



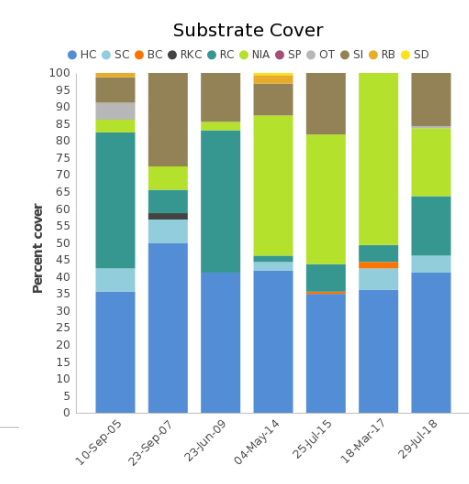
Geoffrey Bay Site 5



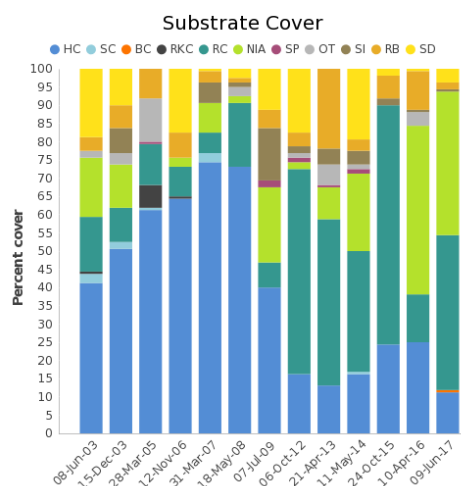
Middle Reef Site 1



Middle Reef Site 2



Nelly Bay Site 1



Nelly Bay Site 5

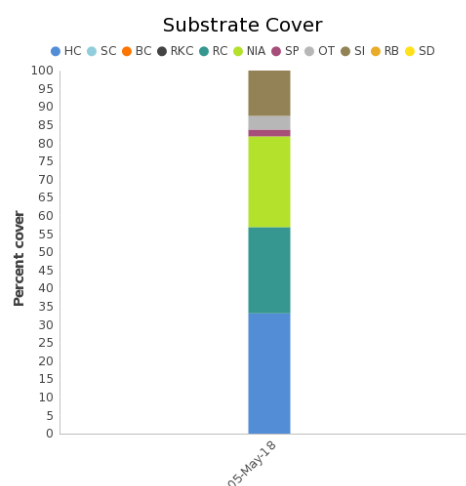


Figure 3. Percent cover of substrate composition at Magnetic Island Reef Check Australia monitoring sites. Percent cover data is collected using point-intercept surveys.

Magnetic Island Monitoring trends 2018



Signs of Reef Stress

- 'Other coral damage' was recorded on 5 out of 8 sites. Geoffrey Bay Site 4 had the highest incidents of damage recorded (33).
- The highest number of *Drupella* scars (17) was recorded at Geoffrey Bay Site 4 (with the highest number of *Drupella* snails). Scars from unknown causes were documented at all sites, with the highest at Nelly Bay Site 1 (11) and Geoffrey Bay Site 4 (10).
- No marine debris was recorded on surveys.
- Coral disease was recorded at Nelly Bay Site 5 (8) and Geoffrey Bay Site 4 (6).
- Coral bleaching was recorded in low levels on all sites in 2018. The lowest average population impact with 0.25% (Geoffrey Bay Site 5), the highest at Nelly Bay Site 5 (6%).
- While Geoffrey Bay Site 4 had the highest live coral cover (62%), it also had the highest ratio of impact abundance (67 counts of impacts) to live coral cover compared to other sites.

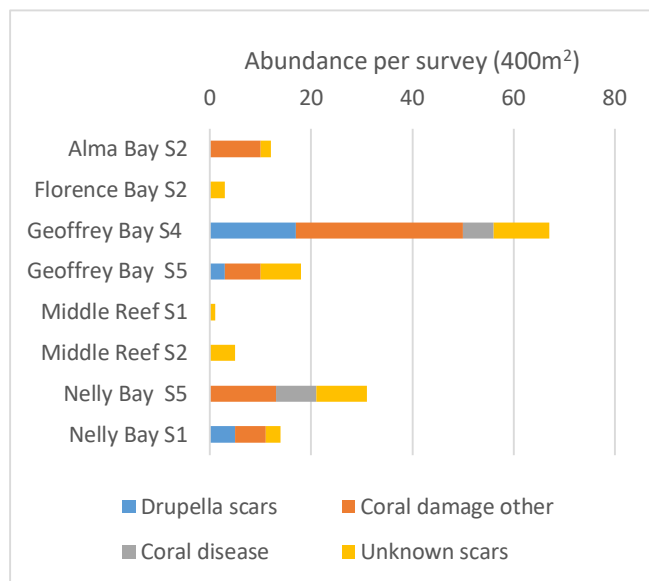


Figure 4. Abundance of recorded reef health impacts around Magnetic Island in the 2018 season.



Indicator Invertebrates

- *Drupella* snails were recorded at 6 of the 8 sites. The highest number of snails was recorded at Geoffrey Bay Site 4 (35).
- Giant clams were recorded at both of the snorkel trail sites Geoffrey Bay Site 5 (6) and Nelly Bay Site 5 (8).
- Trochus were only recorded at Nelly Bay Site 1 (1) and Site 5 (1).
- Banded coral shrimp were only recorded at Middle Reef Site 1 (1) and Site 2 (1).
- One anemone was recorded at Nelly Bay Site 1.

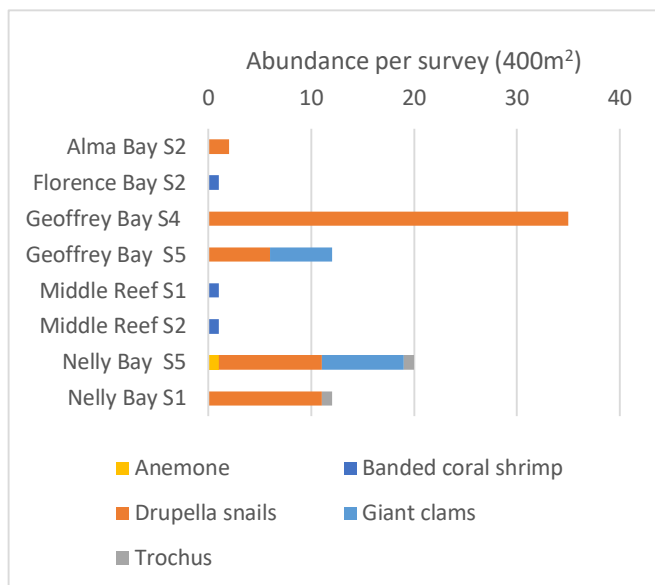
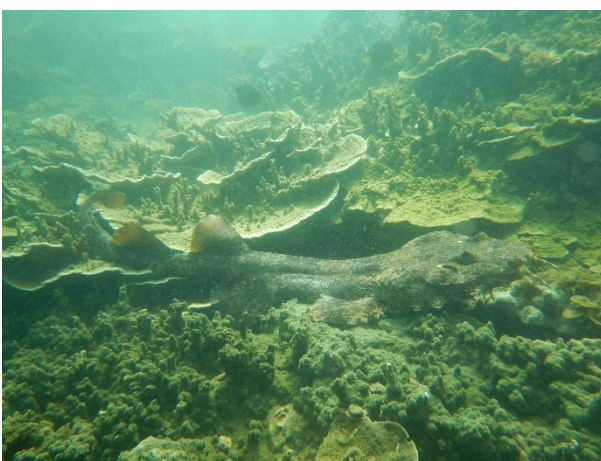
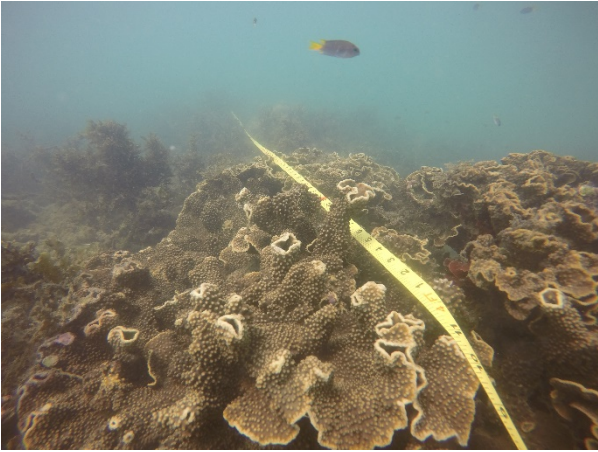


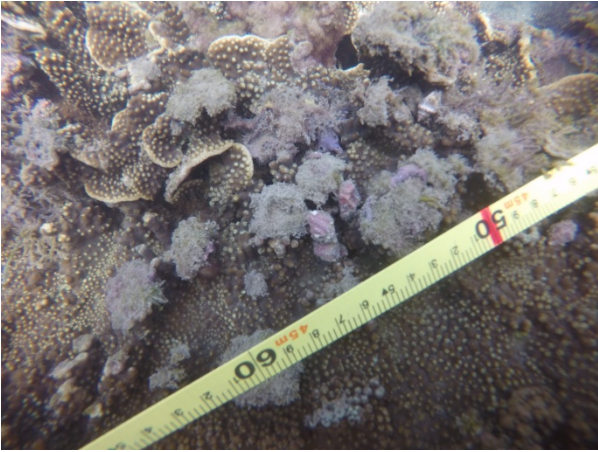
Figure 5. Abundance of recorded reef health impacts around Magnetic Island in the 2018 season. For bleached coral, see Figures 2 and 3.

Magnetic Island Survey Images 2018



Images: Top to bottom, left to right: Site photo, Alma Bay Site 2 | Foliose coral recruits, Alma Bay Site 2 | RCA surveyor, Nelly Bay Site 1 | Coral damage, Nelly Bay Site | Wobbegong and coral, Geoffrey Bay Site 4 | RCA survey team with Dr Rick Brailey, Geoffrey Bay.

Magnetic Island Survey Images 2018



Images: Top to bottom, left to right: *Drupella* snails, Alma Bay Site 1 | Sargassum (RCA seasonal macroalgae), Alma Bay Site 1 | Coral and *Asparagopsis* algae, Middle Reef | Giant clams, Geoffrey Bay Site 5 Snorkel Trail | Survey team, Nelly Bay Site 1 | Surveyor, Geoffrey Bay Site 4

For more information on Reef Check Australia, survey methods, sites and previous reports, please go to www.reefcheckaustralia.org.