Reef Check Australia

Whitsundays Region
Season Summary Report 2023

REEF CHECK AUSTRALIA

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This project was made possible by a network of dedicated volunteers, generous dive operators, wise advisors, innovative collaborators and funding by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation.

Thank you to the dedicated citizen scientists who have contributed to survey activities within the Whitsunday Region and assisted with data entry: Aimee Brown, Terry Farr, Deb Duggan, Julie Schubert.

The images used within this document were taken by Reef Check Australia volunteers as listed above. The image on the front was taken at Blue Pearl Bay, Hayman Island under GBRMPA permit number G21/44891.1.

Project activities were conducted on the traditional lands and sea country of the Ngaro People. We acknowledge the Traditional Custodians of the land, of Elders past, present and emerging.

A big thank you to Whitsunday Paradise Explorer, Aqua Dive, Cruise Whitsundays and Daydream Island Resort and Living Reef for assisting with boats, equipment, crew and access to the sites.

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1.0 PROJECT INTRODUCTION

This report outlines the survey results documented at nine (9) Reef Check Australia Monitoring sites located at Black Island (1), Hook Island (2), Whitsunday Island (2), Hayman Island (2) and Daydream Island (2) (Figure 1). Reef Check Australia has been monitoring these sites as funds allow to detect changes related to seasonal variation and changes to substrate composition.

Figure 1.0 Location of Reef Check Australia monitoring sites: Black Island, Hayman Island, Whitsunday Island, Hook Island, Daydream Island.

1.1 KEY FINDINGS FROM 2023 SURVEYS

1.1.1 SUBSTRATE

Hard coral cover was recorded at all sites and was highest at Hook Island, Butterfly Bay at 28.75%, whilst the lowest recording was Whitsunday Island, Peters Bay, Site 2 at 1.88%. Soft coral cover was highest at Whitsunday Island, Peter's Bay, Site 1 (30.63%). Soft coral was recorded at all sites except Hayman Island, Blue Pearl Bay, Site 3. Rock (including rock with turf algae) was the dominant substrate at all sites except Whitsunday Island, Peter's Bay, Site 1 where soft coral was slightly higher.

Coral bleaching was recorded at all sites, but at 1% of the population or less, with individual colony averages ranging from 18% at Black Island to 64% at Daydream Island, Mermaids Cove.

1.1.2 IMPACTS

Levels of impacts were low with the highest recorded impact being 12 incidents of coral damage at Hook Island-Butterfly Bay (similar to last year). Marine debris was recorded at both sites at Hayman Island, Blue Pearl Bay, but at only one count each.

1.1.3 INVERTEBRATE ABUNDANCE

With the exception of one anemone recorded at Daydream Island, Mermaids Cove, invertebrates were limited to giant clams with the most recorded at Hayman Island-Blue Pearl Bay-Site 1 (95).

1.1.4 FISH ABUNDANCE

The highest number of target fish recorded were parrotfish (61 across all sites), with butterflyfish being the second most sighted (40 across all sites). The highest count of target fish overall was 21 individuals at Hayman Island, Blue Pearl Bay, Site 1. Other species observed include coral trout, grouper, humphead wrasse, snapper and sweetlips.

Refer to Table 1 for summary of site data and section 2 for individual site reports.

Table 1: Summary table of RCA monitoring findings for surveys conducted in the Whitsundays Region for the 2023 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 (N=none, L=low, M=medium, H=high), as well as a summary of the impacts at each site: average coral bleaching of the population (%) and abundance of reef impacts (coral disease, marine debris, coral damage, and scars). All figures showing a count, rather than a percentage, are a total across all 4 transects at the site (i.e. at total across 80m)

	Basic site summary					Presence of Impacts							
	Hard Coral Coverage (%)	Soft Coral Coverage (%)	Macroalgae (#) per 80m transect	Nutrient Indicator Algae (%)	Silt Loading	Coral Population Bleaching (%)	Coral Disease (#)	Fishing Line (#)	Marine Debris (General) (#)	Anchor Damage (#)	Coral Damage (#) (Unknown Causes)	*Drupella* Scar (#)	Unknown Scar (#)
Black Island, West, S1	11.25	15.00	0	0.63	M	0.50	0	0	0	0	4	0	3
Daydream Island, Lovers Cove, S1	9.38	0.63	92	0	L	1.00	0	0	0	0	0	0	2
Daydream Island, Mermaids Cove, S1	18.13	2.50	68	0	L	1.00	1	0	0	0	3	0	5
Hayman Island, Blue Pearl Bay, S1	22.50	0.63	0	0.63	M	1.00	0	0	0	0	0	0	2
Hayman Island, Blue Pearl Bay, S3	10.00	0	0	0.63	M	0.75	0	0	0	0	3	0	0
Hook Island, Butterfly Bay, S1	29.38	13.75	0	0	L	0.50	0.50	0	0	0	12	0	2
Hook Island, Luncheon Bay, S1	8.13	17.50	0	0	L	1.00	0	0	0	0	3	0	5
Whitsunday Island, Peter's Bay, S1	18.13	30.63	28	0	M	0.75	0	0	0	0	1	0	0
Whitsunday Island, Peter's Bay, S2	1.88	15	61	0	L	0.75	0	0	0	0	0	0	0

2.0 SITE REPORTS

2.1 BLACK ISLAND, WEST, SITE 1

Black Island is located west of Hook Island and is surrounded by reef on both sides. This site, sitting at a depth of 2-3m, was set up with the assistance of Ngaro Traditional Owners in 2021 to monitor changes in reef composition due to the site being the primary location of the Boats4coral re seeding project in 2021 and 2022. The Reef Islands Initiative Coral Nurture program also has sites located here.

Rock (covered with turf algae) dominated the substrate (54%) followed by soft coral (15%, an increase from last year), hard coral (11%) and sand (11%). Rubble (8%), with nutrient indicator algae and silt both just under 1% made up the balance (Figure 2.1.1).

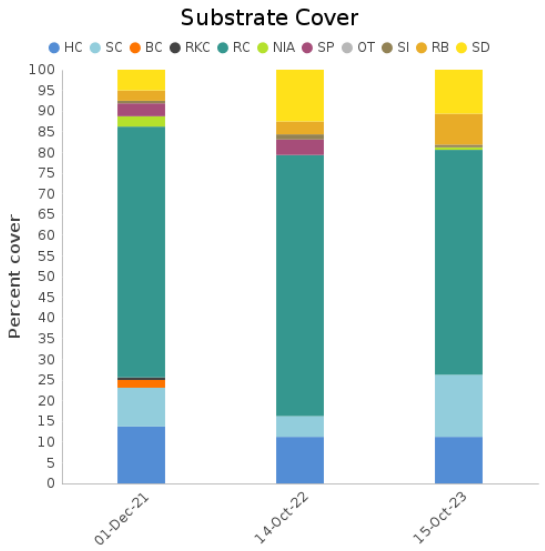

Figure 2.1.1. Benthic type and percent cover: Black Island West, Site 1, 2021 - 2023

Coral bleaching was observed to be 1% of the coral population, with an average of 18% of any individual colony bleached, similar to last year.

Four incidents of coral damage and three unknown scars were recorded. Marine debris was not recorded. Target invertebrates were again limited to giant clams (11). Turf algae and *Turbinaria* spp. were the dominant algae.

A fish survey was conducted with six butterflyfish being the only target fish observed.

Image 2.1A Site photo

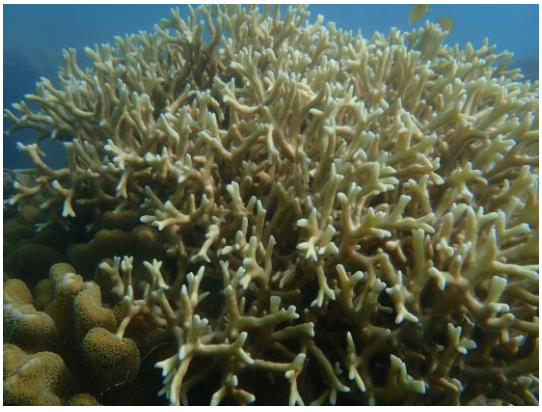

Image 2.1B Hard coral

Image 2.1C Unknown scar

2.2 DAYDREAM ISLAND, LOVERS COVE

This site is located on the north-western side of the island on the reef flat. The site was established in 2013 and sits at a depth of 1-2m on low tide.

Rock dominated the substrate (64%), followed by rubble (26%). Hard coral at 9% was an increase from last year and soft coral at just under 1% made up the balance of the substrate (Figure 2.2.1). Additional hard corals were observed scattered throughout the survey area, along with numerous hard coral recruits.

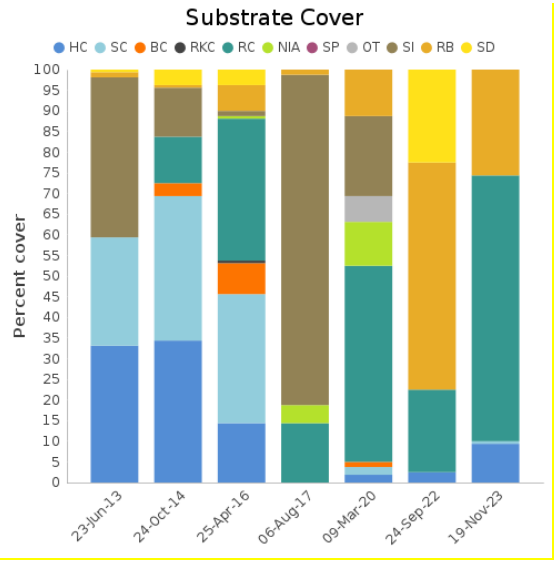

Figure 2.2.1. Benthic type and percent cover: Daydream Island, Lovers Cove, 2013 - 2023

Coral bleaching averaged 30% of each colony observed as bleached, with an average of <1% of the coral population bleached. Macro algae counts were high with *Padina* spp. and *Sargassum* spp. being the dominant species.

Damage, disease and marine debris were not observed, but one unknown scar was recorded. One giant clam was observed during the invertebrate survey. During the fish survey, nine parrotfish, two butterflyfish and one snapper were recorded, along with one friendly non-target Blubberlip.

Image 2.2A Site photo

Image 2.2B Bleached Hard coral

Image 2.2C Parrotfish

2.3 DAYDREAM ISLAND, MERMAIDS COVE

Mermaids Cove is situated on the northern end of Daydream Island and less frequented by guests. The site sits at 3m and adjoins a rocky headland.

Rock made up 58% of the substrate followed by hard coral (18%, an increase from last year). Rubble (15%), sand (6%), soft coral (2%) and other (<1%) made up the balance. (Figure 2.3.1). Substrate composition is similar to last year, but levels of hard and soft coral have increased this season.

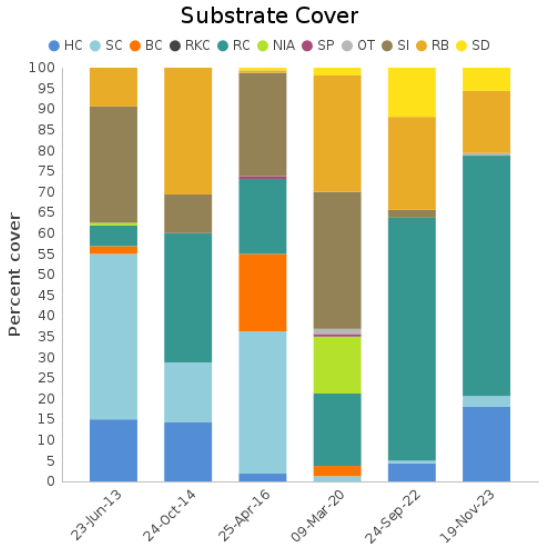

Figure 2.3.1. Benthic type and percent cover: Daydream Island, Mermaids Cove, 2013 - 2023

Bleaching was recorded on an average of 1% of the population with an average of 64% of any individual colony bleached. Five unknown scars, one incident of coral disease and three incidents of coral damage were also recorded. Six giant clams and one small anemone without fish were recorded on the invertebrates' survey and a large urchin was observed off-transect.

A fish survey was conducted and seven` parrotfish, ten butterflyfish, one coral trout and one snapper were observed.

Image 2.3A Site photo

Image 2.3B Damaged coral

Image 2.3C Anemone

2.4 HAYMAN ISLAND, BLUE PEARL BAY, SITE 1

Blue Pearl Bay is located on the northern end of Hayman Island and a popular dive spot for tourist boats from the mainland, given the protection afforded in southerly winds. This site is one of our oldest survey sites and was first surveyed in 2001.

Rock was the dominant substrate at 61%, followed by hard coral at 22%. Hard coral levels remain lower than that recorded prior to Cyclone Debbie in 2016. Sand (9%), rubble (6%) and soft coral, nutrient indicator algae and sponge each at just under 1% made up the balance of the substrate (Figure 2.4.1).

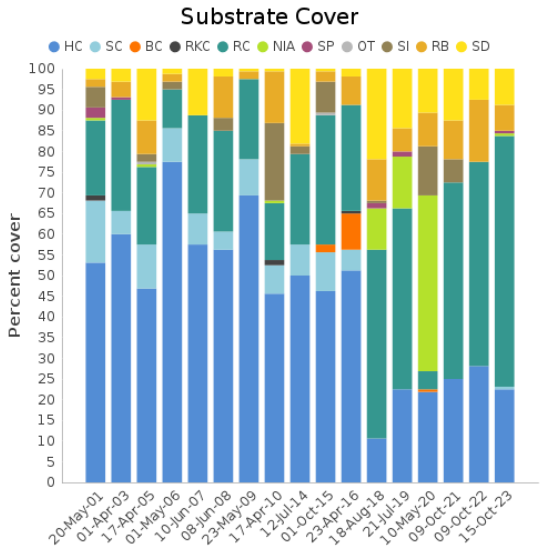

Figure 2.4.1. Benthic type and percent cover: Hayman Island, Blue Pearl Bay, Site 1, 2001 - 2023

Bleaching was limited to 1% of the coral population with an average of 43% of individual colonies bleached. Two unknown scars and one item of marine debris were recorded. Giant clams (95) were the only target invertebrate observed.

A fish survey was conducted and 12 parrotfish, two snapper, five butterflyfish, one coral trout and one humphead wrasse were recorded.

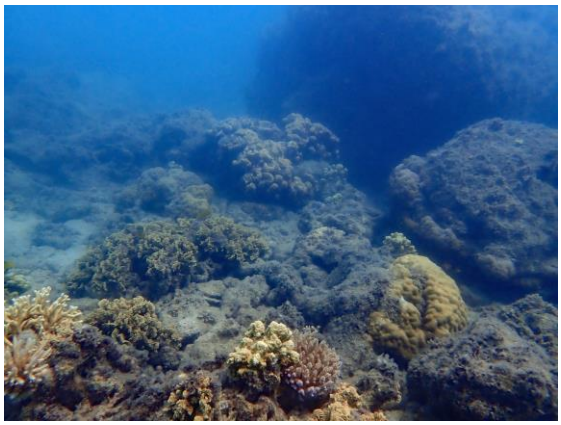

Image 2.4A Site photo

Image 2.4B Bleached hard coral

Image 2.4C Butterflyfish

2.5 HAYMAN ISLAND, BLUE PEARL BAY, SITE 3

This site is located south of Site 1 and is located on the fringing reef adjoining the rocky foreshore. This site was first surveyed with a substrate only survey in 2003, before complete surveys commenced in 2006.

Rock dominated (57%) followed by rubble (18%). Other (14%), hard coral at 10% and silt and nutrient indicator algae at just under 1% each made up the balance of the substrate (Figure 2.5.1). Levels are hard coral are once again much lower than historic levels but similar to levels recorded in 2018.

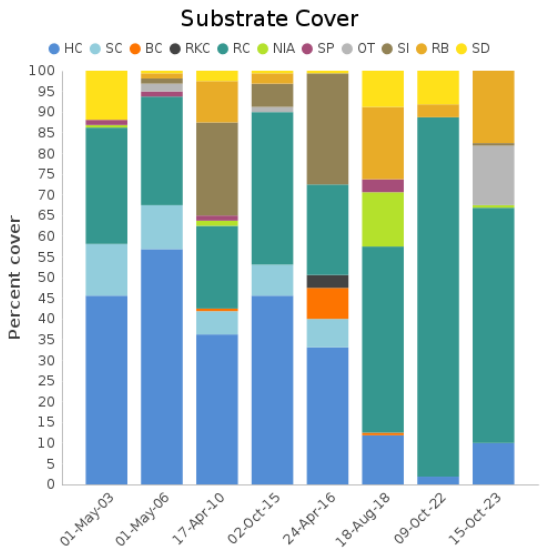

Figure 2.5.1. Benthic type and percent cover: Hayman Island, Blue Pearl Bay, Site 3, 2003 – 2023.

Coral bleaching averaged 29% of coral colonies (down from 2023) and remained at less than 1% of the population. Three incidents of coral damage and one of marine debris were recorded.

Once again giant clams (78) were the only target invertebrate recorded, slightly up from 65 last year. A fish survey was conducted and one butterflyfish, three coral trout and 12 parrotfish, were recorded. Other target and non-targe fish were observed off transect.

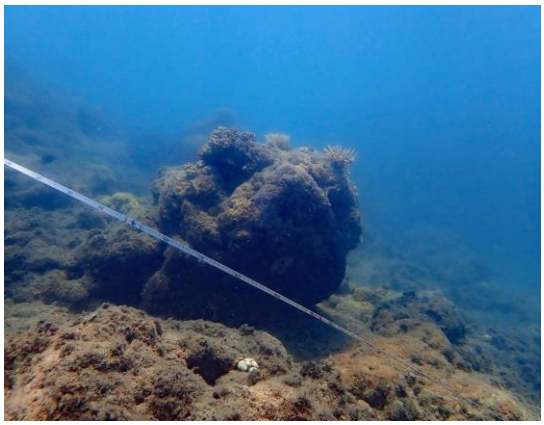

Image 2.5A Site photo

Image 2.5B Damaged coral

Image 2.5C Trash (we understand this rope was previously part a coral restoration project)

2.6 HOOK ISLAND, BUTTERFLY BAY

Butterfly Bay is located on the northern end of Hook Island and is a popular destination for boating, providing a sheltered location. This site sits at 4m on the fringing reef and was first surveyed in 2018.

Rock made up 34% of the substrate, followed by hard coral at 29%. Rubble attributed 22%, and soft coral 14%. (Figure 2.6.1). This level of hard coral is higher than previous surveys but similar to 2019 with soft coral reasonably consistent with previous records.

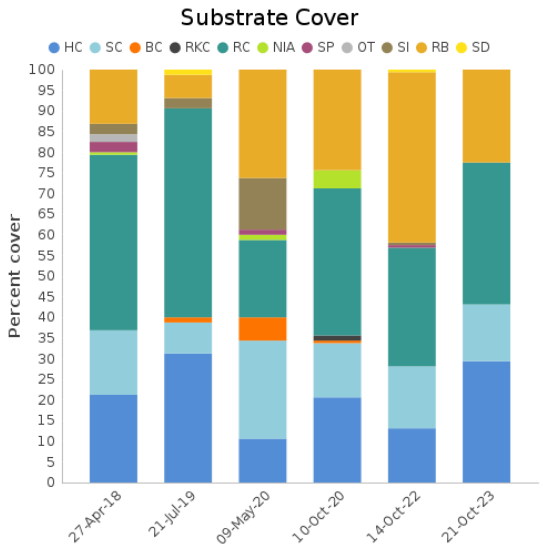

Figure 2.6.1. Benthic type and percent cover: Hook Island, Butterfly Bay, 2018 - 2023

Bleaching affected 1% of the total coral population with an average of 28% of any individual colony being bleached. Twelve incidents of coral damage, one of disease and two unknown scars were recorded. The damage was not unexpected due to the popularity of this site with large groups of snorkellers as observed prior to our survey.

Target invertebrates were again limited to giant clams (5).

A fish survey was conducted, and the following fish were recorded: seven parrotfish, four butterflyfish, two snapper and two coral trout.

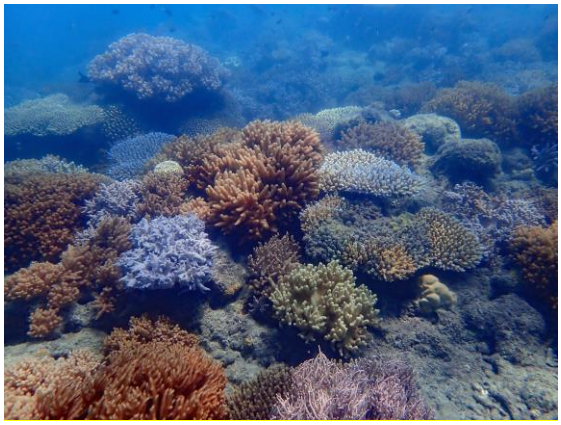

Image 2.6A Site photo

Image 2.6B Coral trout

Image 2.6C Giant clam

2.7 HOOK ISLAND, LUNCHEON BAY

This site is located further east than Butterfly Bay and is less protected. The site runs along the fringing reef at 3m depth and was first surveyed in 2013.

Rock again dominated the substrate at an average of 51%. Soft coral at 17% was an increase from last year and sand declined to 16%. Rubble at 8%, hard coral at 8% and other at less than 1% made up the balance of the substrate (Figure 2.7.1)

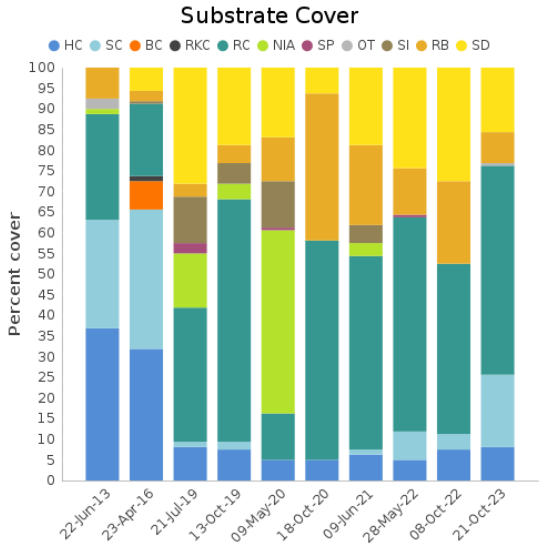

Figure 2.7.1. Benthic type and percent cover: Hook Island, Luncheon Bay, 2013 - 2023

Bleaching affected 1% of the total coral population with an average of 57% of any individual colony being bleached. Three incidents of coral damage were recorded, with five unknown scars. Marine debris was not recorded.

Forty-one giant clams were the only target invertebrate recorded survey during the invertebrate survey.

A fish survey was conducted and seven butterflyfish, one grouper, 16 parrotfish and one snapper were recorded.

Image 2.7A Site photo

Image 2.7B Unknown scar

Image 2.7C Example of transect photo to be used by AI.

2.8 WHITSUNDAY ISLAND, PETER'S BAY, SITE 1

This site is located on a shallow fringing reef within a protected cove on Whitsunday Island's northern-eastern side and was established in 2020. The site sits at a depth of around 4m.

Soft coral (31%) dominated the substrate followed by rock at 29% and hard coral at 18%. The level of hard coral has remained stable with soft coral increasing. Sand (14%), rubble (7%), other and recently killed coral at just over 1% each made up the balance (Figure 2.8.1). Twenty-eight counts of macroalgae were recorded during the point intercept survey.

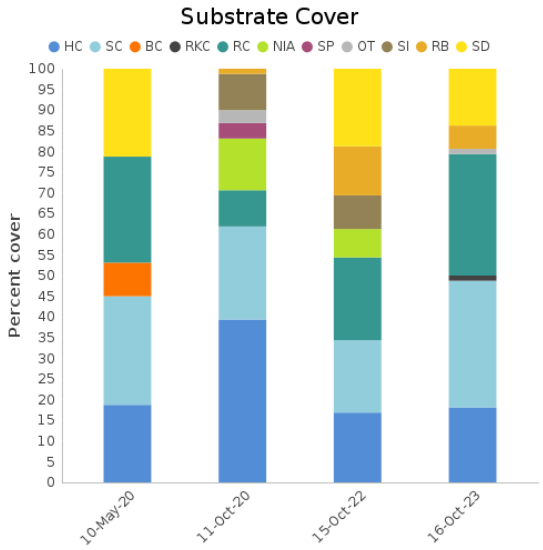

Figure 2.8.1. Benthic type and percent cover: Whitsunday Island, Peter's Bay, Site 1 2020 - 2023

Bleaching affected 1% of the total coral population with an average of 36% of any individual colony being bleached. One incident of damage was the only impact recorded. Fifty-seven giant clams were an increase from last year when only one was recorded during the invertebrate survey.

A fish survey was conducted, and three butterflyfish, three sweetlip, one snapper and one parrotfish were recorded.

Image 2.8A Site photo

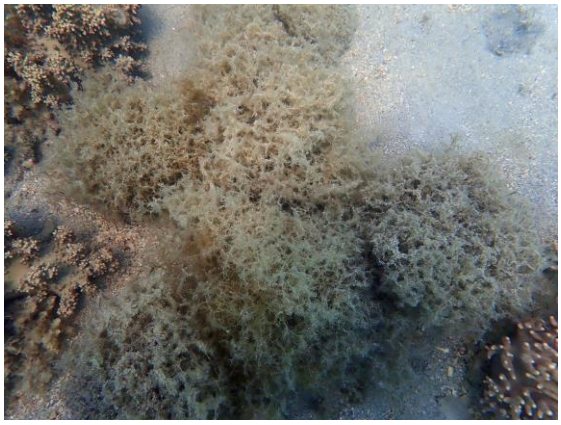

Image 2.8B Dominant algae

Image 2.8C Clams

2.9 WHITSUNDAY ISLAND, PETER'S BAY, SITE 2

Site 2 is located just north of site 1 and follows the reef edge. This site is shallower than site 1 at only 2 metres and hosts a variety of hard and soft corals and small fish.

Sand dominated the substrate at 39%, followed by rock at 38%. Soft coral was lower than previous years at only 15%, with hard coral also down to 2%. Rubble and other attributed just over 3% each. (Figure 2.9.1). Macroalgae counts were high with 61 counts recorded during the point intercept survey.

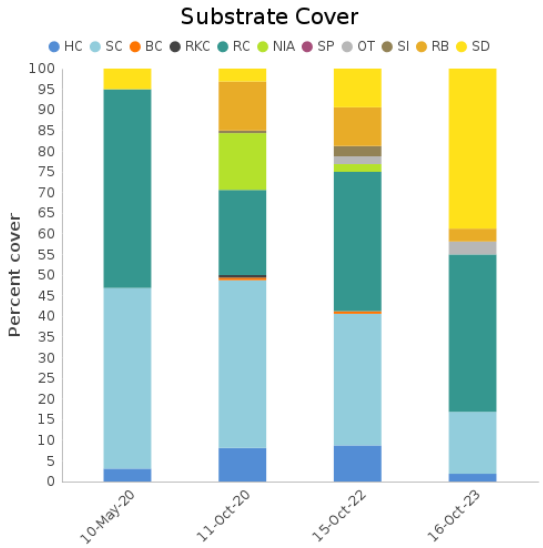

Figure 2.9.1. Benthic type and percent cover: Whitsunday Island, Peter' Bay, Site 2, 2020 - 2023

Bleaching affected just over 1% of the total coral population with an average of 32% of any individual colony being bleached. No other coral impacts were observed. Giant clams (9) were the only invertebrates recorded.

A fish survey was conducted and three butterflyfish, two snapper and six parrotfish were recorded

Image 2.9A Site photo

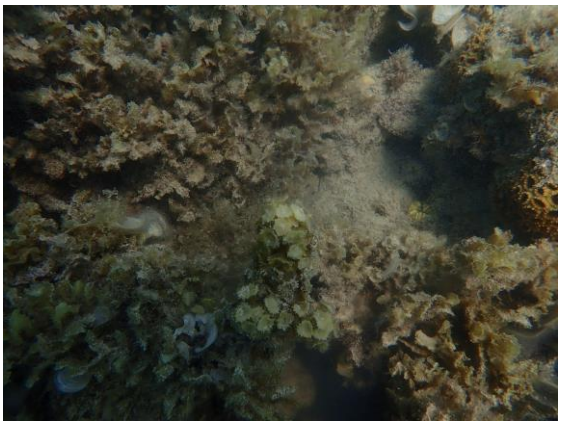

Image 2.9B Dominant algae - *Turbinaria*

Image 2.9C Nudibranch – *Roboastra gracilis*

3.0 Project Photos




Images from left to right, top to bottom.
Image 1 & 2; Hook Island Luncheon Bay. Image 3; Whitsunday Survey Team. Image 4: Surveyor in Action. Image 5; Community Event – Proserpine Film Festival. Image 6; Community Event – Beach Clean Up Kings Beach Bowen.

4.0 Drone Photos

Image 1: Hayman Island Blue Pearl Bay.

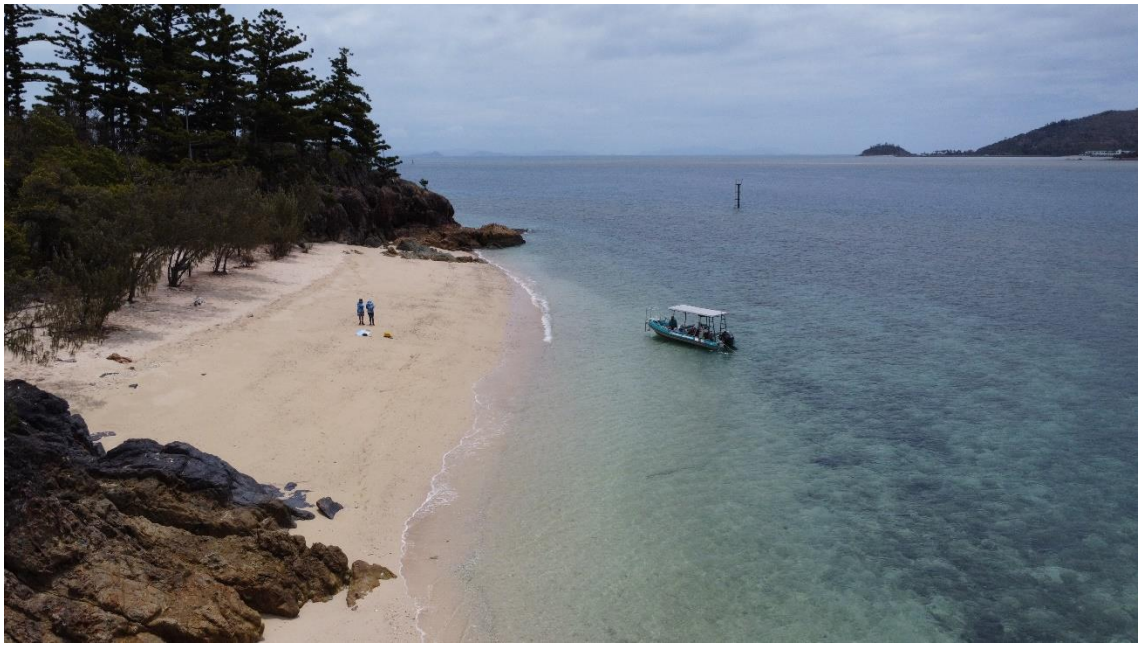

Image 2: Steens Beach, Hook Island

Image 3: Grays Bay, Bowen – new survey site.
(All images taken under permit).