

# Reef Check Australia

## Whitsundays Region Season Summary Report 2022



REEF CHECK AUSTRALIA

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# REEF CHECK AUSTRALIA

Whitsundays Region

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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, Jenni Calcraft, Charlotte Choules, Nathan Cook, Joan Li and Laura Oates.

The images used within this document were taken by Reef Check Australia volunteers as listed above. The image on the front was taken at Lovers Cove, Daydream Island.

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



Great Barrier  
Reef Foundation

A big thank you to Whitsunday Paradise Explorer, Aqua Dive, Cruise Whitsundays and Daydream Island Resort 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.

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### 1.1 KEY FINDINGS FROM 2022 SURVEYS

#### 1.1.1 SUBSTRATE

Hard coral cover was highest at Hayman Island-Blue Pearl Bay-Site 1 at 28.13%, whilst the lowest recording was Blue Pearl Bay-Site 2 at 1.88%. Soft coral cover was highest at Whitsunday Island-Peter's Bay-Site 2 (31.87%). Soft coral was not recorded at Daydream Island-Lovers Cove, or either site at Hayman Island.

Levels of bleaching were 3.5% of the population or less, with the highest of 3.5% recorded at Daydream Island-Lovers Cove which had an average of 27% of the coral colony bleached.

#### 1.1.2 IMPACTS

Levels of impacts were low with the highest recorded impact being 9 incidents of coral damage at both Black Island and Hook Island-Butterfly Bay. Marine debris was not recorded at any site.

#### 1.1.3 INVERTEBRATE ABUNDANCE

With the exception of one anemone recorded at Whitsunday Island-Peter's Bay-Site 1 and two long-spined urchins at Hook Island-Luncheon Bay, invertebrates were limited to giant clams with the most recorded at Hayman Island-Blue Pearl Bay-Site 1 (134).

#### 1.1.4 FISH ABUNDANCE

The highest number of target fish recorded were parrotfish (99 across all sites), with butterflyfish being the second most sighted (55 across all sites). The highest count of target fish overall was 68 individuals at Hook Island-Butterfly Bay-Site 1. Other species observed include coral trout, morays, grouper, humphead wrasse, snapper and sweetlips.

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



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Table 1: Summary table of RCA monitoring findings for surveys conducted in the Whitsundays Region for the 2022 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	5.00	0	0	M	2.50	1	0	0	0	9	0	0
Daydream Island, Lovers Cove, S1	2.50	0	20	12.50	M	3.50	0	0	0	0	0	0	0
Daydream Island, Mermaids Cove, S1	4.38	0.63	36	22.50	L	0	0	0	0	0	1	0	0
Hayman Island, Blue Pearl Bay, S1	28.13	0	1	0.63	M	0.50	0	0	0	0	0	0	0
Hayman Island, Blue Pearl Bay, S3	1.88	0	0	0	M	0.75	0	0	0	0	1	0	0
Hook Island, Butterfly Bay, S1	13.13	15.00	0	0	L	1.25	1	0	0	0	9	0	0
Hook Island, Luncheon Bay, S1	7.50	3.75	19	0	M	1.25	0	0	0	0	2	0	0
Whitsunday Island, Peter's Bay, S1	16.88	17.50	23	21.25	M	2.00	0	0	0	0	3	0	1
Whitsunday Island, Peter's Bay, S2	8.75	31.87	41	27.50	M	1.25	0	0	0	0	5	0	0

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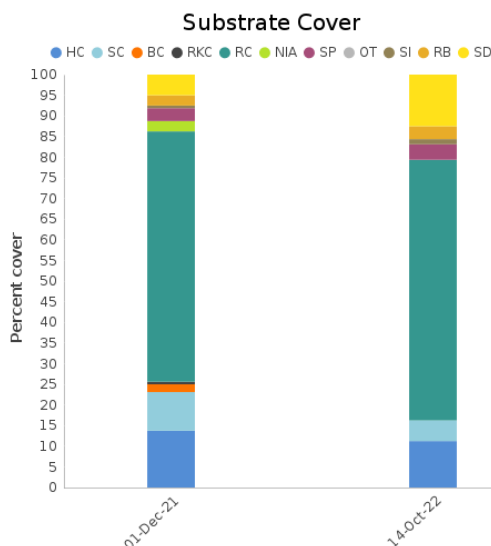


### 2.0 SITE REPORTS

#### 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 Ngāro 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 (63%) followed by sand (12%) and hard coral (11%). Soft coral (5%), sponge (4%), rubble (3%) and silt just over 1% made up the balance (Figure 2.1.1). These results are consistent with percentages observed in 2021.

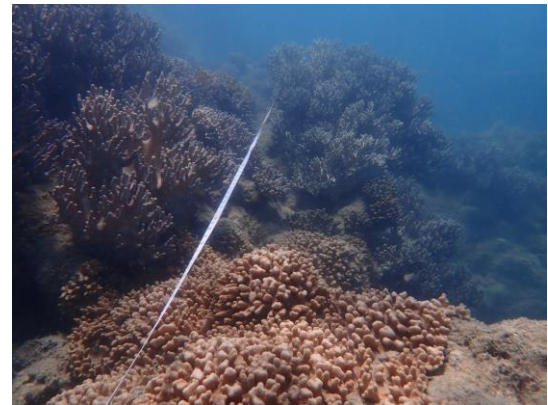


**Figure 2.1.1.** Benthic type and percent cover: Black Island West, Site 1, 2021 - 2022

Coral bleaching was observed to be 2.5% of the coral population, with an average of 18% of any individual colony bleached.

Nine incidents of coral damage and one of coral disease were recorded. Marine debris was not recorded. Target invertebrates were limited to giant clams (37). Turf algae and *Padina* spp. were the dominant algae.

Fish surveys were conducted with six butterflyfish, one coral trout, one humphead wrasse, eight parrotfish and five snapper recorded.



**Image 2.1A** Site photo



**Image 2.1B** Soft coral



**Image 2.1C** Bleached coral

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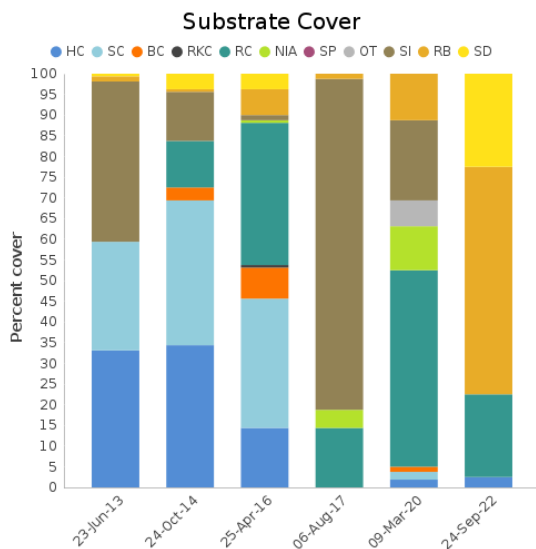
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### 2.2 DAYDREAM ISLAND, LOVERS COVE

This site is located on the north-western side of the island on the reef flat. The site was established in 2013 and site at a depth of 3m.

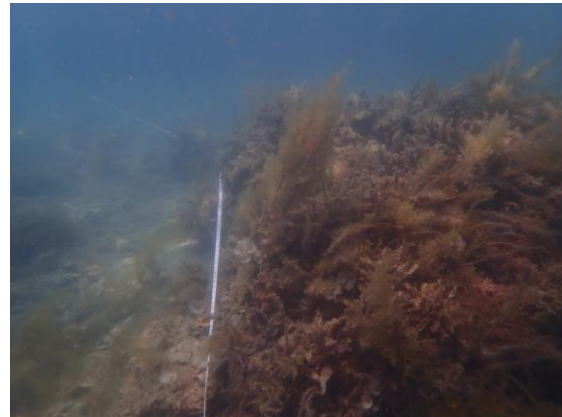
Rubble dominated the substrate (55%), followed by sand (22%) and rock (20%), Hard coral at 2.5% made up the balance of the substrate (Figure 2.2.1). The levels of hard and soft coral recorded are much lower than those recorded in the first three years, but consistent with 2017 and 2020.



**Figure 2.2.1.** Benthic type and percent cover: Daydream Island, Lovers Cove, 2013 - 2022

Coral bleaching averaged 3.5% of each colony observed as bleached, with an average of 27% of the coral population bleached.

Damage, disease and marine debris were not observed. One giant clam was observed during the invertebrate survey. During the fish survey, 20 parrotfish, one butterflyfish and one coral trout were recorded.



**Image 2.2A** Site photo



**Image 2.2B** Hard coral



**Image 2.2C** Bleached coral



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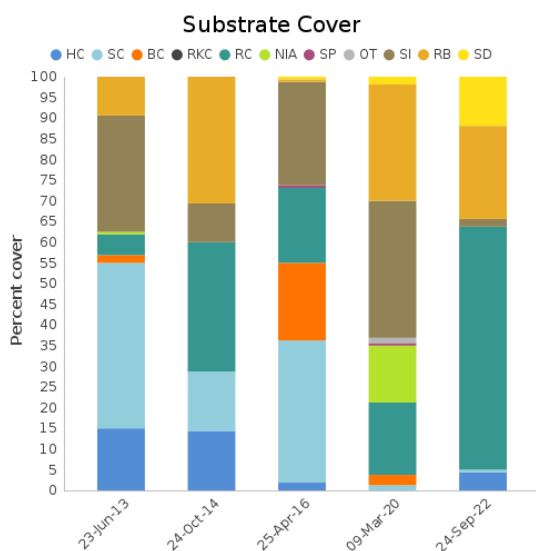
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### 2.3 DAYDREAM ISLAND, MERMAIDS COVE

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.

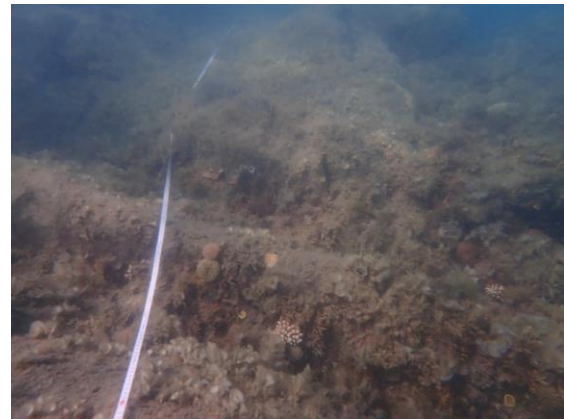
Rock made up 59% of the substrate followed by rubble (23%). Sand (12%), hard coral (4%), silt (2%) and soft coral (<1%) made up the balance. (Figure 2.3.1). As indicated in the below figure, substrate composition varies greatly at this site, but levels of soft coral have declined from 40% in 2013 to less than 1% this season.



**Figure 2.3.1.** Benthic type and percent cover: Daydream Island, Mermaids Cove, 2013 - 2022

Impacts were limited to one observation of coral damage, with bleaching not recorded. Invertebrates were limited to two giant clams.

A fish survey was conducted and three parrotfish, two butterflyfish and one grouper were observed.



**Image 2.3A** Site photo



**Image 2.3B** Hard corals



**Image 2.3C** Dominant algae – *Padina* sp.

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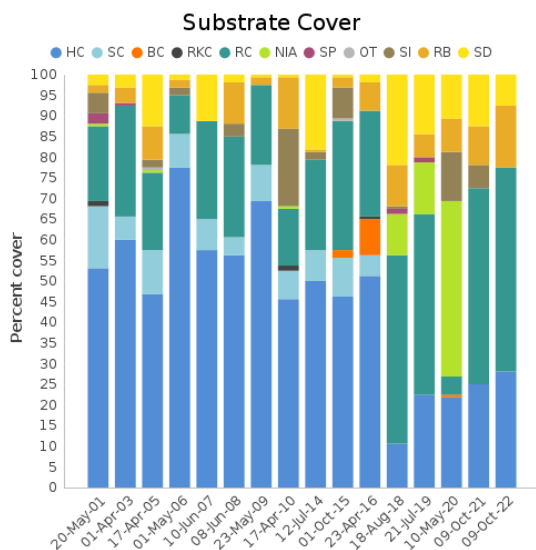
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### 2.4 HAYMAN ISLAND, BLUE PEARL BAY, SITE 1

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.

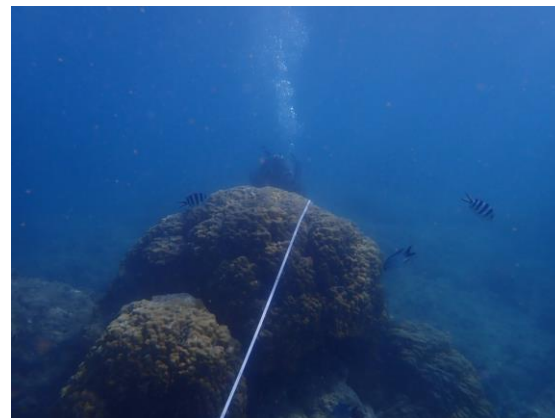
Rock was the dominant substrate at 49%, followed by hard coral at 28%. This level of hard coral is lower than historical levels but consistent with recent years. Rubble (15%) and sand (7%) made up the balance of the substrate (Figure 2.4.1).



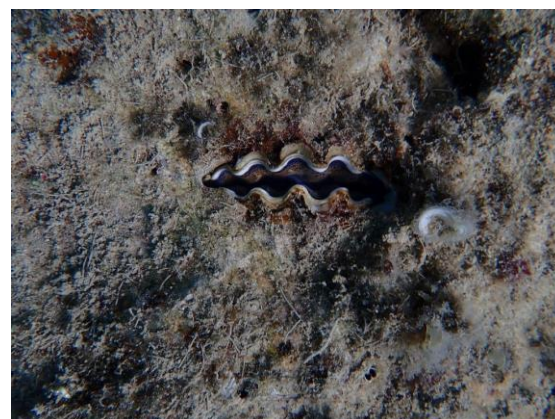
**Figure 2.4.1.** Benthic type and percent cover: Hayman Island, Blue Pearl Bay, Site 1, 2001 - 2022

Bleaching was limited to 0.5% of the coral population with an average of 18% of individual colonies bleached. No other impacts were recorded. This site had the highest number of giant clams (134) which were the only invertebrates observed.

A fish survey was conducted and 13 parrotfish, 10 snapper, five butterflyfish, two grouper, two sweetlips and one coral trout were recorded.



**Image 2.4A** Site photo



**Image 2.4B** Giant clam



**Image 2.4C** Five-lined snapper



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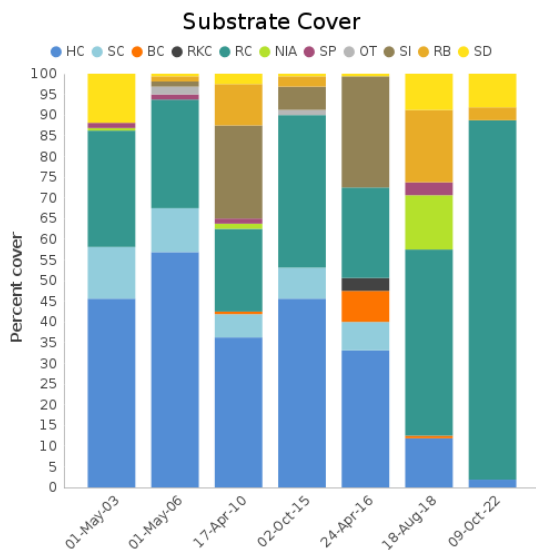
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### 2.5 HAYMAN ISLAND, BLUE PEARL BAY, SITE 3

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 (87%) followed by sand (8%). Hard coral at 2% and rubble at 3% made up the balance of the substrate (Figure 2.5.1). Levels of hard coral are once again much lower than historic levels (56% in 2006) and lower than our last survey in 2018.



**Figure 2.5.1.** Benthic type and percent cover: Hayman Island, Blue Pearl Bay, Site 3, 2003 – 2022.

Coral bleaching averaged 60% of coral colonies but less than 1% of the population. One incident of coral damage was recorded.

A fish survey was conducted and five butterflyfish, one grouper, four parrotfish, one snapper and one sweetlip were recorded.



**Image 2.5A** Site photo



**Image 2.5B** Surveyor in action



**Image 2.5C** Parrotfish

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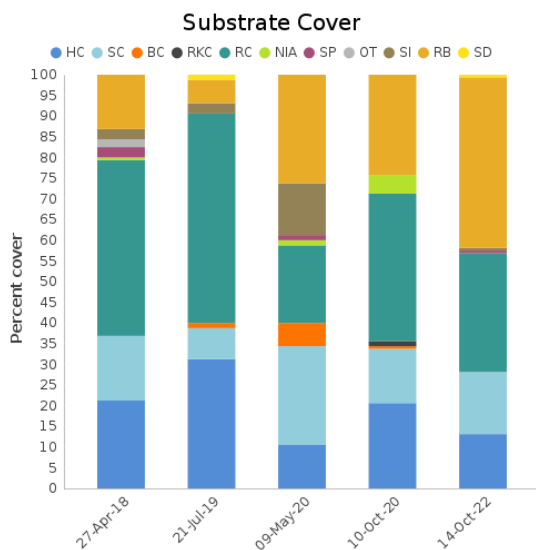
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## 2.6 HOOK ISLAND, BUTTERFLY BAY

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.

Rubble made up 41% of the substrate, followed by rock at 29%. Hard coral attributed 13%, and soft coral 15%. Sponge, sand and silt, each at just under 1% made up the balance of the substrate. (Figure 2.6.1). These levels are reasonably consistent with previous records.

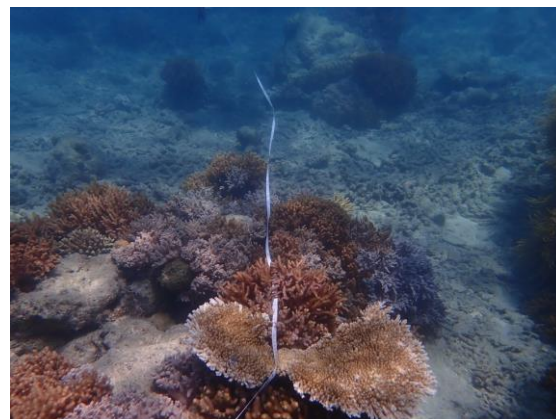


**Figure 2.6.1.** Benthic type and percent cover: Hook Island, Butterfly Bay, 2018 - 2022

Bleaching affected 1.25% of the total coral population with an average of 58% of any individual colony being bleached. Nine incidents of coral damage and one of disease were recorded.

Invertebrates were again limited to giant clams (10) however a large Crown-of-thorns starfish was observed off transect.

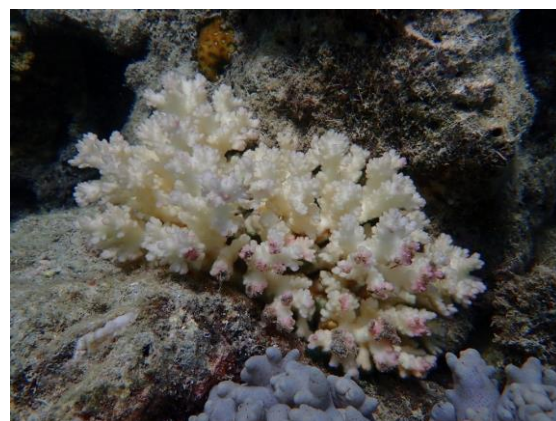
A fish survey was conducted, and the following fish were recorded: 36 parrotfish, 18 butterflyfish, five snapper, three sweetlips, four coral trout and two grouper.



**Image 2.6A** Site photo



**Image 2.6B** Soft coral



**Image 2.6C** Bleached coral



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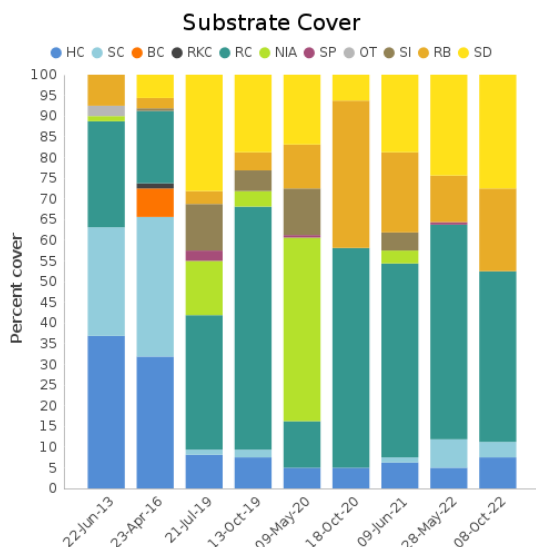
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### 2.7 HOOK ISLAND, LUNCHEON BAY

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.

This site was surveyed twice in 2022 with rock dominating the substrate at an average of 46%. Sand (average 25%) was the next highest contributor with rubble at 15%, hard coral at 6% and sponge at less than 1% making up the balance of the substrate (Figure 2.7.1).



**Figure 2.7.1.** Benthic type and percent cover: Hook Island, Luncheon Bay, 2013 - 2022

Bleaching affected 1.25% of the total coral population with an average of 50% of any individual colony being bleached. Coral damage was recorded (7 in May, 2 in October), with 29 unknown scars recorded in May. Marine debris was not recorded. Seven giant clams were recorded in May and 43-three giant clams were recorded in October, with one long-spined urchin recorded on each survey during the invertebrate survey.

A fish survey was conducted and butterflyfish, coral trout, humphead wrasse, and parrotfish were recorded.



**Image 2.7A** Site location



**Image 2.7B** Transect photo



**Image 2.7C** Butterflyfish

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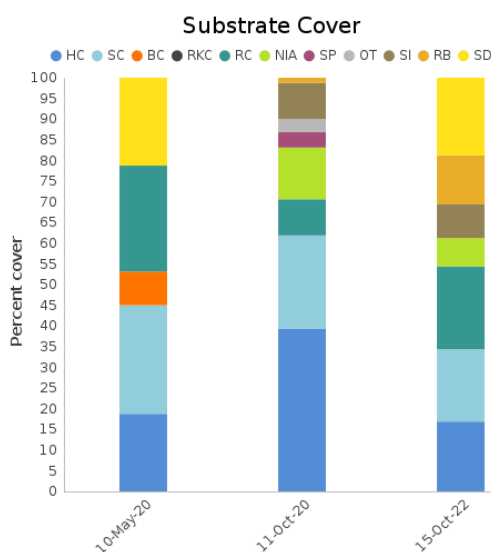
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## 2.8 WHITSUNDAY ISLAND, PETER'S BAY, SITE 1

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.

Rock (20%) dominated the substrate followed by sand at 19% and hard coral and soft coral at 17% each. The level of hard coral has reduced since 2020, down from 40%. Rubble (12%), silt (8%) and nutrient indicator algae (7%) made up the balance (Figure 2.8.1).



**Figure 2.8.1.** Benthic type and percent cover: Whitsunday Island, Peter's Bay, Site 1 2020 - 2022

Bleaching affected 2% of the total coral population with an average of 26% of any individual colony being bleached. One unknown scar and three incidents of damage were recorded, with no marine debris observed. One giant clam and one anemone were recorded during the invertebrate survey.

A fish survey was conducted, and two butterfly fish and three parrotfish were recorded.



**Image 2.8A** Site photo



**Image 2.8B** Bleached hard coral



**Image 2.8C** Dominant algae



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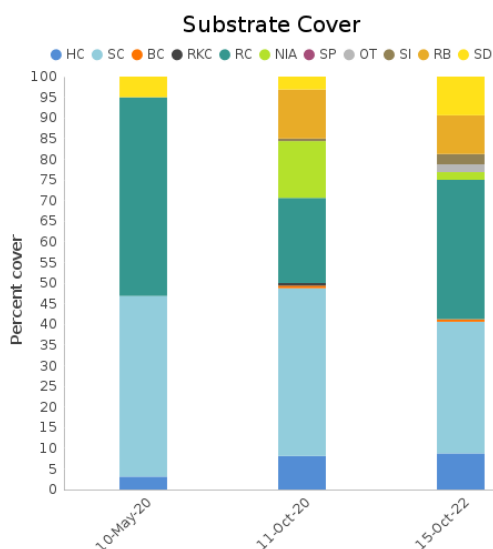
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## 2.9 WHITSUNDAY ISLAND, PETER'S BAY, SITE 2

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.

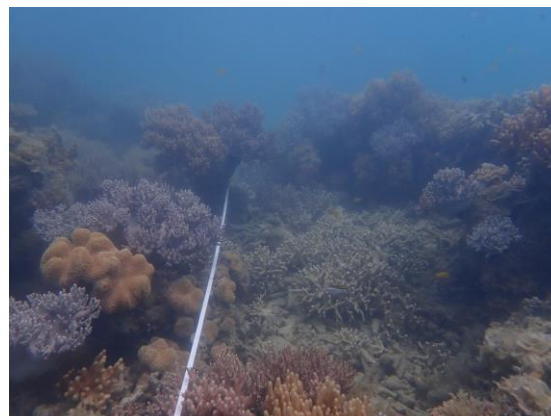
Rock dominated the substrate at 34%, followed by soft coral at 32%. Rubble and sand each attributed 9%, hard coral 8%, whilst silt, nutrient indicator algae and other attributed 2%. Bleached coral at just under 1% made up the balance of the substrate. (Figure 2.9.1). These levels are consistent with those recorded on our last survey.



**Figure 2.9.1.** Benthic type and percent cover: Whitsunday Island, Peter' Bay, Site 2, 2020 - 2022

Bleaching affected just over 1% of the total coral population with an average of 27% of any individual colony being bleached. Five incidents of coral damage were recorded. No fishing line or marine debris was recorded. Giant clams (17) were the only invertebrates recorded.

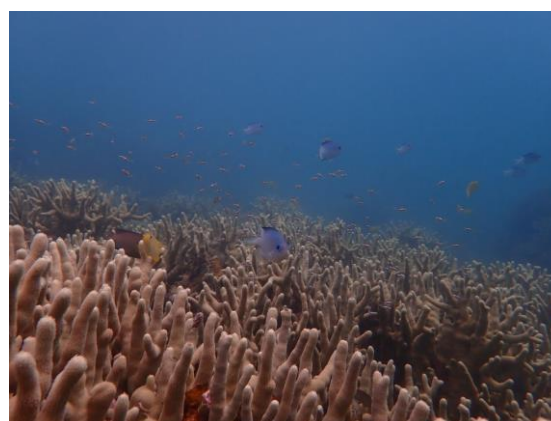
A fish survey was conducted and four butterflyfish, three snapper, one grouper and four parrotfish were recorded



**Image 2.9A** Site photo



**Image 2.9B** Giant clam



**Image 2.9C** Small fish

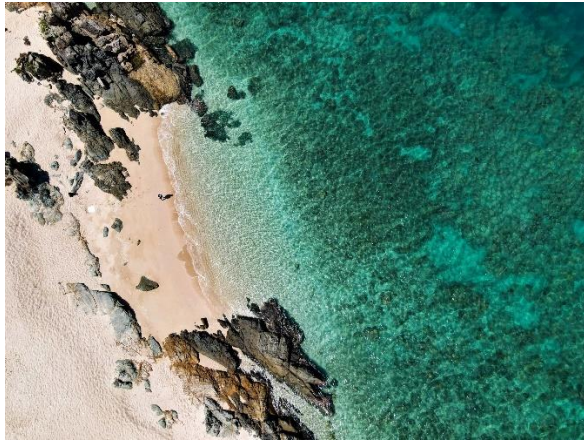


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### 3.0 Project Photos



**Images from left to right, top to bottom.**

Image 1, 2 and 3; Drone images of Black Island and shallow reef. Taken under GBRMPA permit.

Image 4; Day on the water with local operators and Ngaro Traditional Owners. Image 5; RCA team with Whitsundays Paradise Explorer to survey Whitsunday reefs. Image 6; Divers below.