

REEF CHECK AUSTRALIA

Blue Pearl Bay

Season Report 2015



Reef Check Australia Citizen Science

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 the standardized Reef Check scientific survey method.

Reef monitoring sites

In 2015, Reef Check Australia volunteers visited three established monitoring sites in Blue Pearl Bay, Hayman Island. This protected bay is located on the northwest side of the island, and has a diverse and unique reef system. These sites are also a part of Reef Check Australia’s earliest monitoring locations, which began in 2001.



Photo 1: Colorful soft coral at Blue Pearl Bay



Figure 1: Map of Hayman Island and location of Blue Pearl Bay.

Table 1: Overview of basic site characteristics and presence of reef health impacts. Boxes with “x” signify presence of impact/invertebrate. Silt loading was categorized as low levels (L), where a light layer of silt is visible on occasional surfaces; medium level (M), where silt covers most surfaces; and high level (H), where silt covers all surfaces.

Basic site summary						Presence of Impacts								
Blue Pearl Bay Site #	% Hard Coral	% Soft Coral	Macro algae count	% Nutrient Indicator Algae	Silt	Drupella Scar	Unknown Scar	COT Scars	Anchor Damage	Coral Damage (Unknown cause)	Fishing Line/Net	General Trash	Coral Disease	Coral Bleaching
Site 1	48	9	0	0	L	-	X	-	X	-	-	-	X	X
Site 2	30	13	0	0	M	-	X	-	X	X	-	-	X	X
Site 3	46	8	0	0	M	-	-	-	-	X	-	-	X	X

2015 BLUE PEARL BAY REPORT

Benthic Composition

- On average, hard coral accounted for 38% of the total benthic substrate across all sites. Soft coral made up 10%.
- The highest abundance of hard coral was recorded at site 1, making up 48% of the substrate. These corals largely consisted of the massive, foliose, and general hard coral (e.g. digitate) growth forms.
- All sites have remained relatively stable over the course of monitoring. Site 2 has shown a small decreasing trend (figure 3), although it must be noted that only three surveys have been conducted at this site. Longer monitoring is needed to detect changes.
- Soft coral levels increased at all three sites since the previous surveys (2014 for site 1 and 2, and 2010 for site 3).
- Rock with turf algae was found to be the most dominant benthic substrate across all sites, covering an average of 40%.
- The abundance of silt increased from 2014 survey levels by 6% in site 1 and 2.5% in site 2, but decreased from 23% to 6% in site 3 (from previous survey in 2010).
- Rubble made up a small portion of all three sites, with the highest recorded percentage found at site 2 (11%).



Photo 2 & 3: Blue Pearl Bay coral cover, and surveyor in 2015.

Substrate Cover across Blue Pearl Bay

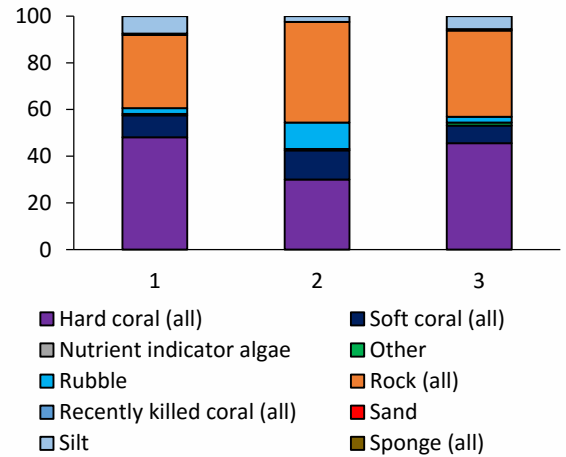


Figure 2: The average percent substrate cover among the three sites within Blue Pearl Bay

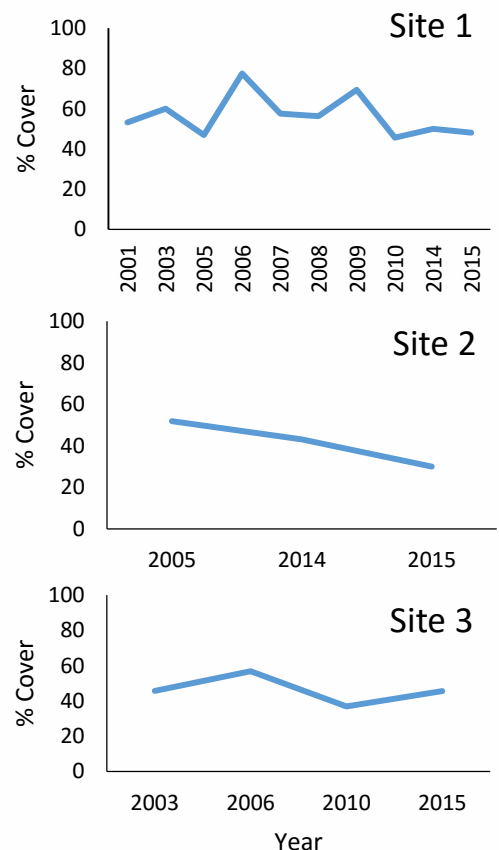


Figure 3: Change in hard coral cover over time across all three sites.

2015 TRENDS & PATTERNS

Impacts

- Bleaching was reported at all sites, and affected an average of 17% of the coral population.
- Coral damage had the largest impact on coral colonies, with a total of 23 incidents recorded; twenty of which occurred in site 3.
- A total of 14 incidents of coral disease were recorded over all three sites.
- Few unknown scars were recorded at any of the sites, with the most at site 1, with only 4 incidents observed.
- No *Drupella* scars, COTs scars, or rubbish items were recorded at any sites.

Table 1: The percent of RCA survey sites with recorded impacts (of a total of 3 sites), and the average abundance of impacts recorded in 2015

Impacts	% of sites with impact	Total abundance (impacts/400m ²)
Coral Bleaching	100	17%
Coral Damage	100	30
Coral Disease	100	14
<i>Drupella</i> Scars	0	0
Fishing line	0	0
Marine Debris	0	0
Unknown scars	67	5



Photo 4: One of 266 giant clams recorded at Blue Pearl Bay

Indicator Invertebrates

- A total of 268 indicator invertebrates were recorded across all three sites.
- Giant clams were the most abundant indicator invertebrate, with a total of 266 individuals recorded in 2015! 103 of these were found in site 2 alone. This was a sizeable increase from 2014 recorded numbers (6 were recorded on transect in site 2 for 2014). Variations in transect line placement are possible, however it was noted that the majority of giant clams recorded were juveniles, between the sizes 1-20cm in length (figure 5).
- For the first time since surveys began in 2001, 1 *Drupella* snail was recorded on transect in site 1.
- One anemone was recorded at site 3.

Giant clam abundance trends

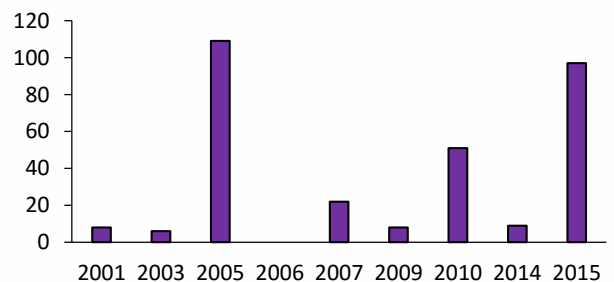


Figure 4: Abundance of giant clams through time at site 1.

Giant clam size ranges recorded in 2015

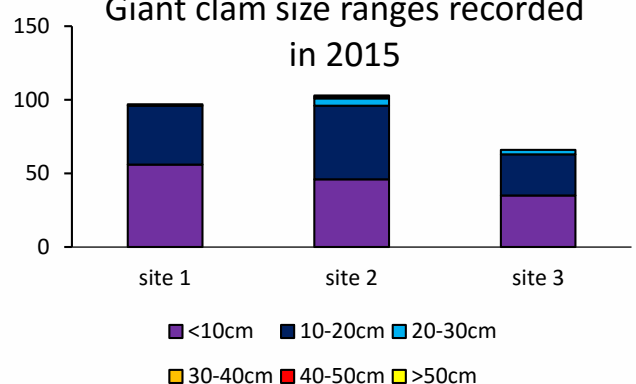


Figure 5: Giant clam size ranges recorded in 2015 across all three sites.

Special thanks to all our amazing team of Reef Check volunteer divers who supported Whitsunday surveys in 2015: Tom Bridges and Katerina McPherson.

Thank you to our Reef Check Industry Champions who provided in-kind donations to support the 2015 survey season.