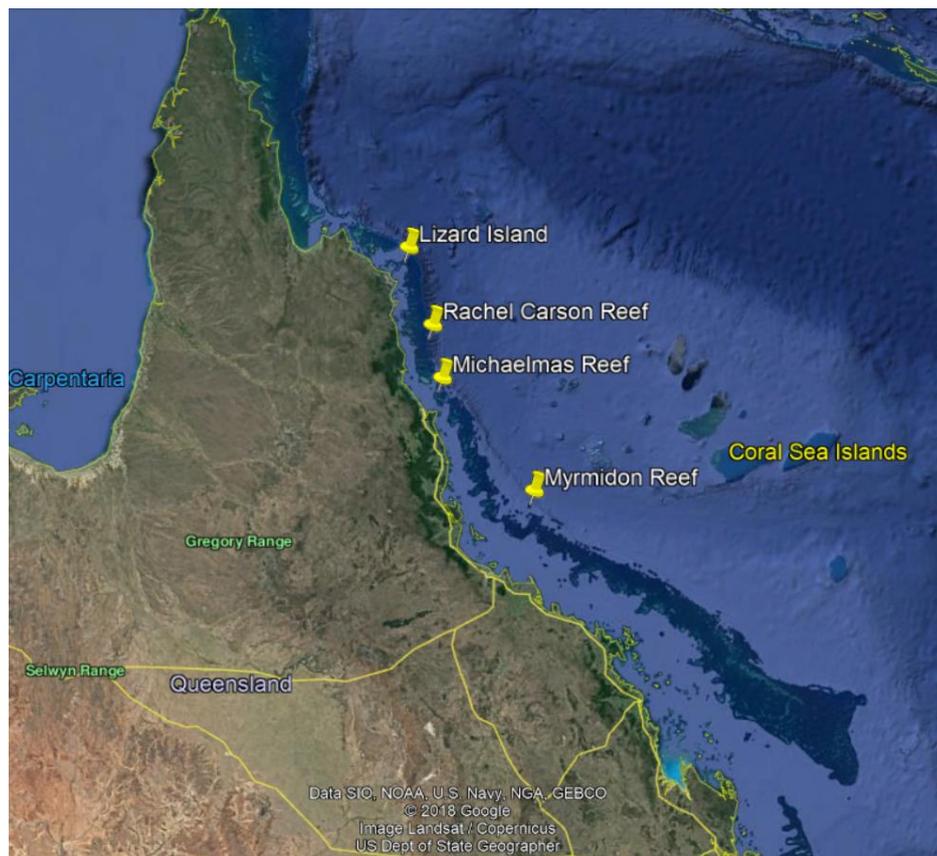


## Lizard Island Corals on Clams – Image Analysis Notes

### Introduction

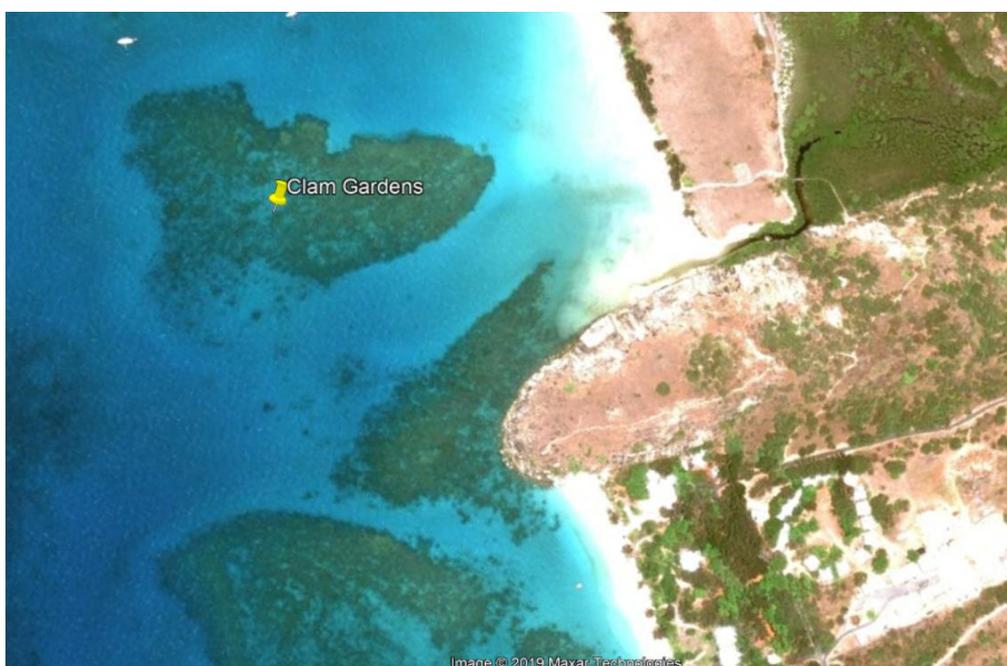
This image dataset has been collected as part of a long-term study on the population dynamics of Giant Clams on the Great Barrier Reef by Coral Sea Foundation staff in collaboration with consultant clam biologist Dr Rick Braley of Aquasearch ([www.aquasearch.net.au](http://www.aquasearch.net.au)). The original survey sites for this study in the mid-1980's were Lizard Island, Rachel Carson Reef, Michaelmas Reef, and Myrmidon reef. The first three sites were re-surveyed in 2007, and Lizard Island has been surveyed again in 2017 and annually since.



The image data being analysed by the Coral Sea Foundation members is stored on the cloud in Google Drive. You will be given read-only access to the necessary folders in order to take part in the project. If you haven't been given access yet, please email [coralseafoundation@gmail.com](mailto:coralseafoundation@gmail.com) to arrange details.

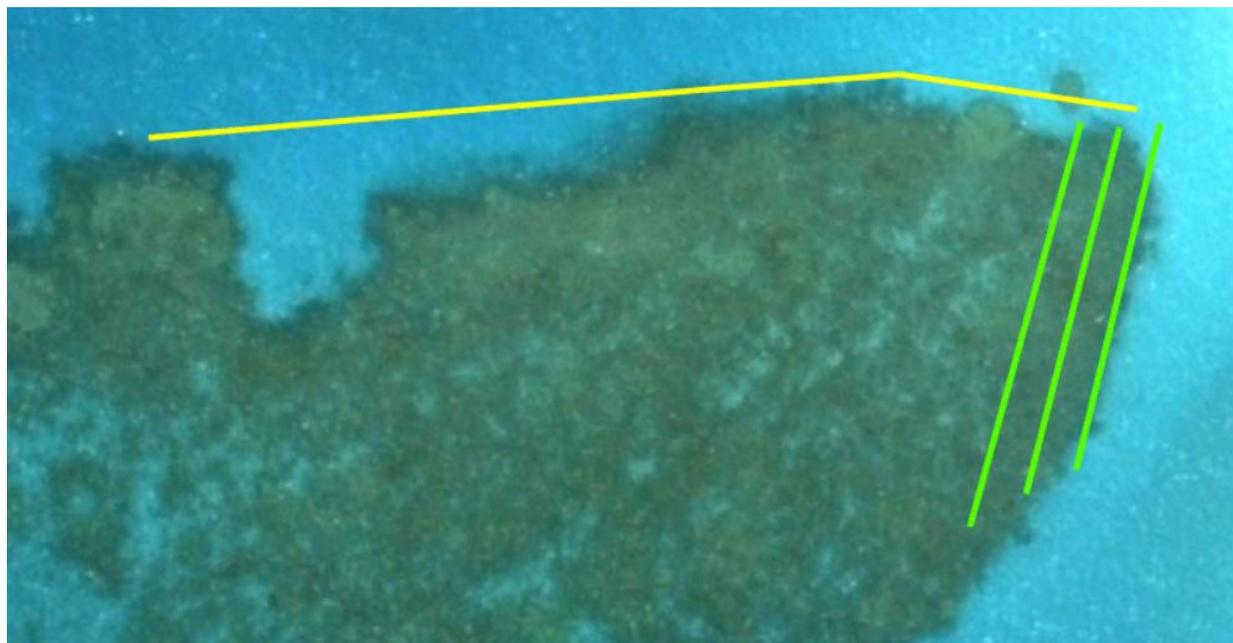
## Analysis Notes

The clams at Lizard Island have been surveyed (counted, measured, identified) on the Clam Gardens site in 1985, 2007, and 2017, with photo images of each clam collected in 2007 and 2017. Detailed images of the attached corals have been taken in 2017, 2018, and 2019.



The clams along the upper half of the reef (as per the image above) were all surveyed for position, measured and photographed in **2017**, and pictures of coral recruits on each clam were taken. Each clam was photographed on the right and left side so the whole shell was in frame, and then macro images taken of any attached corals.

A transect grid was laid over the site, with the baseline starting in the creek corner and extending toward the hill (yellow line below), and the 5m wide transect census lanes (green) were laid running roughly perpendicular out to the west for approximately 70-80m.



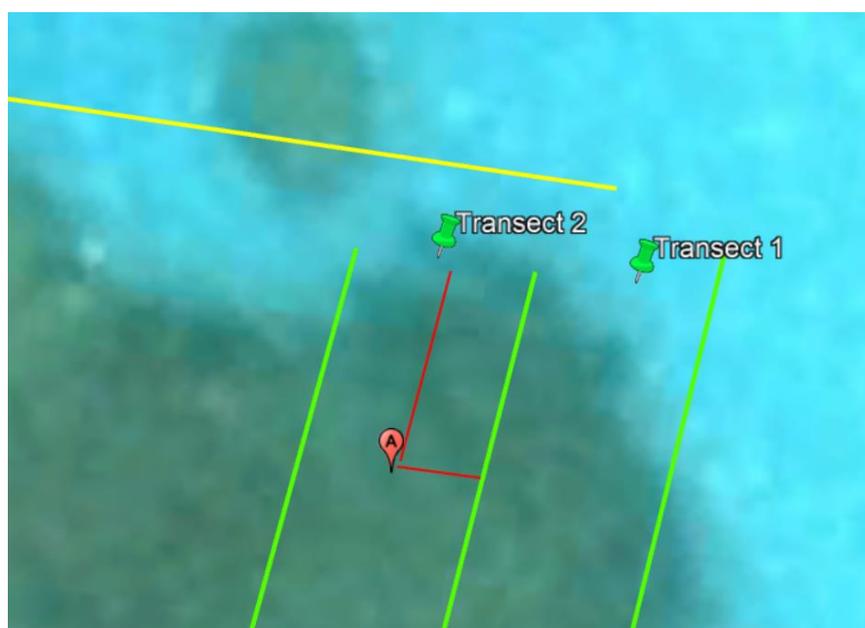
Each clam had a **distance along** the baseline recorded as its transect number plus how far along the 5m transect lane it was (e.g. if it was in the middle of the transect lane it got a 2.5m), and also its **distance into** the transect .

So for example a clam at "A" (below) would have:

**distance along = transect 2 + 2.5m**

**distance along = 5m + 5m + 2.5m**

and **distance in about 20m** in this example.



## Analysis Notes:

**2017 Images:** The original images of the clams and attached corals for the **Clam Gardens** site are in shared **Google Drive** folder:

**Clam research / images/Lizard/Clam Trip 2017**

in folders dated

**7/7/17**

**8/7/17**

**9/7/17**

and the location data for each clam along with photo image number is in the shared Google Drive spreadsheet file **Clam research / data / Lizard / lizard\_2017\_1.xlsx**

## 2018 Images

The clams at the Clam Gardens site that had attached Acroporid corals were re-photographed in 2018 in a haphazard way (sorry). Each animal was photographed using the same method as in the 2017 survey - right side whole animal, left side whole animal, then individual corals with finger scale for measurement (fingernail=15mm).

These images from 2018 are in the shared **Lizard coral settlement** folder on the Google Drive, in

**Lizard coral settlement / images / 2018 / clam gardens / field images**

with images spread over several days (in folders by date).

*(Note this is not the same Google Drive root folder as the 2017 clam images).*

**Note: Image filenames have the following information:**

First letter – Camera type (S – Sony, C – Canon)

First four digits – month and day as MMDD

Last three digits – individual image number.

Using the whole animal photos and taking note of the reef characteristics in the frame, it is possible to find the same animals in the 2017 and 2018 image datasets. We have started going through that process, systematically starting with the clams from the **2018 images in chronological order and going back to try and find them in the 2017 images.**

Images from Matched clams between 2017 and 2018 and their associated corals are in shared Google drive folder **Lizard coral settlement / images / 2018 / clam gardens /image pairs**

with the numbers on the folders (eg **clam 135-87**) referring to the last three digits of the clam's image file number in the **2017 and 2018 image sets** respectively.

We have found 21 matched animals so far, but we estimate there could be at least 50 more to identify.

## In 2019

The clams at the Clam Gardens site that had attached Acroporid corals were re-photographed in a systematic way (lesson learned) using the same sequence of transects as used in 2017, starting in the SE corner. Each animal was photographed using the same method as in the 2017 survey - right side whole animal, left side whole animal, then individual corals with finger scale for measurement (fingernail=15mm).

These images from 2019 are in the shared **Lizard coral settlement** folder on the Google Drive, in

[Lizard coral settlement / images / 2019 / clam gardens / field images /](#)

In folders with dates:

[18/6/19](#)

[19/6/19](#)

[25/6/19](#)

We created a new image pairs folder for 2019 which is on the Shared Google Drive as

[Lizard coral settlement / images / 2019 / clam gardens / image pairs /](#)

This folder contains the 2017, 2018, and 2019 images of each clam for easy comparison, with the numbers on the folders (eg **clam 135-87-54**) referring to the last three digits of the clam's image file number in the **2017, 2018 and 2019 image sets** respectively.

### **Analysis Plan:**

Dr Andy Lewis will allocate you a section of data to examine, as noted in the worksheet "Work Allocation" in the shared Google Drive spreadsheet file

### **Clam Gardens - Clam Photo ID Log**

The plan is to continue working through the **2018 clam gardens images** in a systematic way, looking for matches in the **2017 images**. Once a 2017-2018 match is found, it is quite straightforward to cross check the spatial location spreadsheet data from 2017 in shared Google Drive spreadsheet file [Clam research / data / Lizard / lizard\\_2017\\_1.xlsx](#)

to find the same animal in the **2019 images**.

**Please log any matches in the shared Google Drive spreadsheet file**

### **Clam Gardens - Clam Photo ID Log**

Noting the image numbers for each year and your *Found by* name.

### **Tip – Easy Start**

Select one of the **2017-2018** matched clams listed in the [Clam Gardens - Clam Photo ID Log](#) above and use the location of the 2017 clam in shared Google Drive spreadsheet file

[Clam research / data / Lizard / lizard\\_2017\\_1.xlsx](#)

To find the animal in the 2019 images

[Lizard coral settlement / images / 2019 / clam gardens / field images /](#)

In folders with dates:

[18/6/19](#)

[19/6/19](#)

[25/6/19](#)

Noting that the images will be in a similar sequence, with clams counted from the creek corner of the site first in repeated belt transects.

Thanks for your help! Please email [coralseafoundation@gmail.com](mailto:coralseafoundation@gmail.com) with any questions.