

John Brewer Reef

The Great Barrier Reef

The John Brewer Reef, located offshore from Townsville in the Great Barrier Reef Marine Park, is a naturally-formed reef, with some weather protection, 10-15metre visibility, natural coral walls and a flat sandy base.



About the Great Barrier Reef

The Great Barrier Reef is a global icon and an integral part of Australia's national identity. The Great Barrier Reef is a vast and spectacular ecosystem, and one of the most complex natural systems on Earth. It is also the sea country home for the first Australians — more than 70 Traditional Owner groups — whose connections to the marine environment date back more than 60,000 years.

As the world's largest coral reef ecosystem, it is bigger in size than Italy, and spans 2300 kilometres of Australia's north east coast. It comprises almost 3000 individual reefs, about 10 percent of the world's coral reefs.

Extending over 14 degrees of latitude, from shallow estuarine areas to deep oceanic waters, the reef is a unique range of ecological communities, habitats and species and is protected by the Great Barrier Reef Marine Park Authority (GBRMPA). In 1981, the Great Barrier Reef became the first coral reef ecosystem in the world to receive a World Heritage listing, and remains one of the best-managed marine ecosystems in the world.



AREA

344,400 km²

LENGTH

2,300 km

70 million
football fields

Roughly the
same area as



ITALY



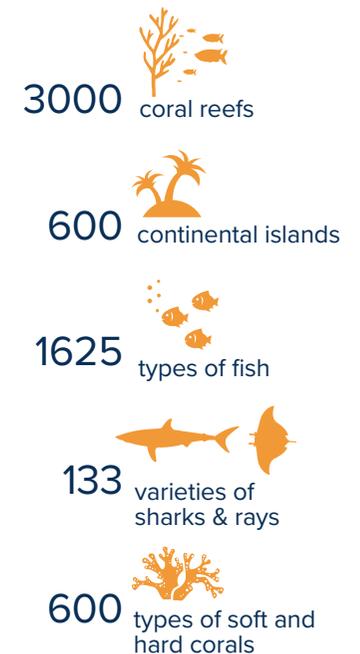
JAPAN



GERMANY



MALAYSIA



History of John Brewer Reef

Of course, for thousands of years the Wulgurukaba people and other groups paddled these waters in their canoes, hunting turtle and fish. There was trading along the coast between tribal groups. These people had an intimate understanding of their environment, the seasons and the spirituality behind it all. As far as we know this individual reef did not have a name in those times.

The reef was actually named after a troop ship named John Brewer that was sailing from Sydney to India in 1842, a barque (a sailing ship, typically with three masts) similar to Cook's Endeavour. That ship and two others in a convoy all struck separate reefs on 30 June 1842, and all were refloated and repaired.

Biologically, John Brewer Reef was first surveyed in 1984. Since then it has had a similar story

to many reefs along our coast, with fluctuating Crown of Thorns Starfish outbreaks and live coral cover varying from 5-50%. It was mildly affected by coral bleaching in 2017. In 2019, 74 different fish species were recorded here.

The Floating Hotel

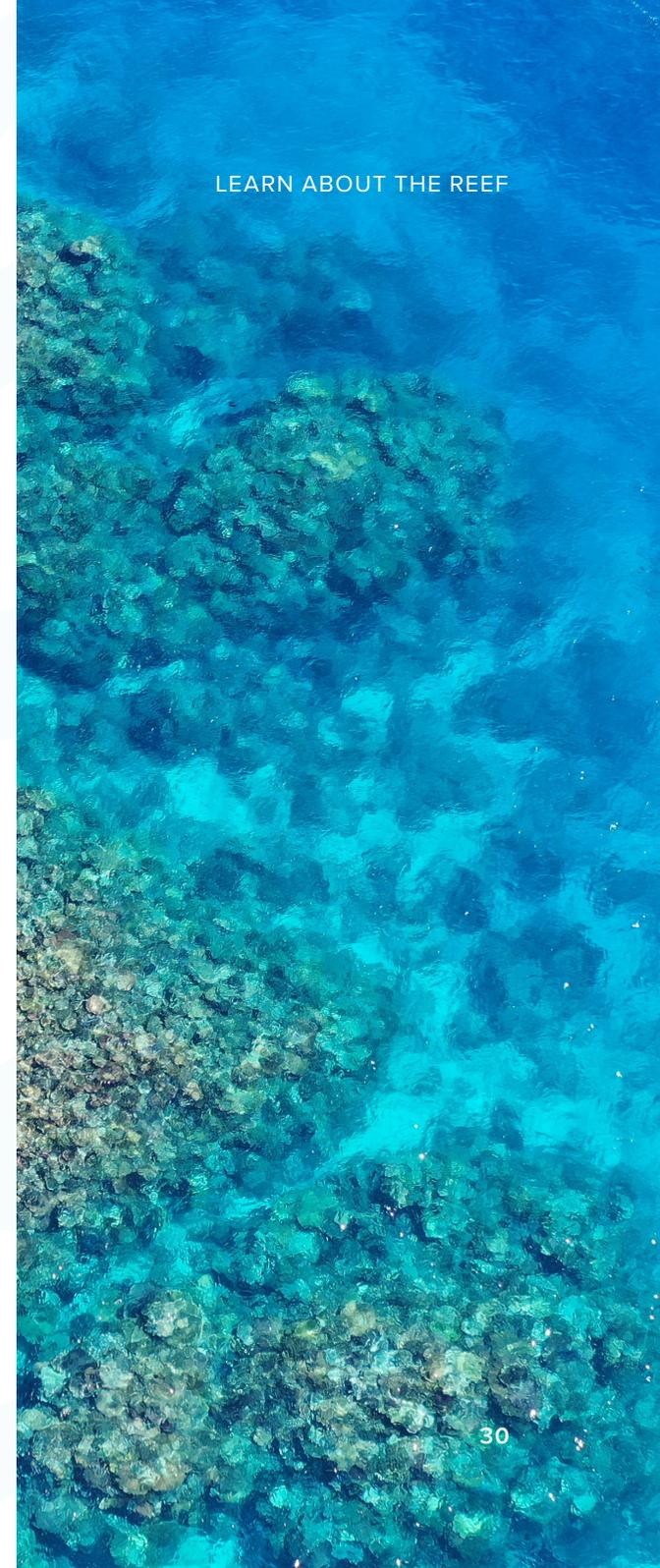
One of the weirdest chapters in Queensland tourism history happened on John Brewer Reef, and is still playing out in North Korea. In 1988, a five-storey self-contained floating building was constructed in Singapore and towed over 5000km to John Brewer Reef on a huge heavy lift ship - and became the Four Seasons Barrier Reef Resort. The hotel was the first of its kind in the world and had 140 double rooms and 34 luxury suites. Floating pontoons provided walkways, moorings, a swimming pool and tennis courts, and there

was also a glowing neon nightclub, bars, restaurants and a helipad. The hotel was 24 metres high above sea level with a draught of 3 metres and had capacity for 356 guests and 98 staff.

After only operating for 12-months, the hotel was decommissioned after numerous issues, and bought by a Japanese company and moved to Vietnam as The Saigon Floating Hotel. After a short stay, the building was then sold to a new buyer who took it to North Korea where it remains to this day at Kumgang port on the east coast, called Hotel Haegumgang. Over the past 30 years it has travelled over 14,000km.

John Brewer Reef is, to this day, one of the finest examples of the Great Barrier Reef, and teeming with a vast array of marine life.

LEARN ABOUT THE REEF



What is Coral?

LEARN ABOUT THE REEF

The amazing array of coral on the Great Barrier Reef is responsible for many of the bright and beautiful colours that this natural icon is internationally renowned for. About 600 different types of coral can be found in the Great Barrier Reef Marine Park, and all of them come in a variety of shapes, sizes and colours. Despite looking like plants, these corals are actually colonies of very small animals called coral polyps which are closely related to jellyfish!

- **Soft coral** - Soft corals are flexible because they lack a solid skeleton which means they are often mistaken for plants. Instead they are supported by tiny limestone spike-like structures called spicules. Apart from their swaying bodies and jelly-like feel, soft corals also have eight tentacles on each polyp. The tentacles have a feathery appearance, whereas hard corals have smooth tentacles. Soft corals tend to be brightly coloured, with bright pinks and mauves rarely seen in hard corals.
- **Hard coral** - Hard corals act as building blocks for the Reef. They form when colonies of coral polyps produce limestone skeletons to support themselves. In most cases, a hard coral consists of hundreds, thousands or even millions of individual coral polyps living together as a colony. They have six (or multiples of six) smooth tentacles.

What do coral eat?

Most of the coral's nutrients come from the zooxanthellae. Like plants, zooxanthellae use the sun to make food for themselves and the coral. This is why it is important for corals to live in clear, shallow waters where they can get lots of sunlight. Corals also eat plankton, or even small fish.

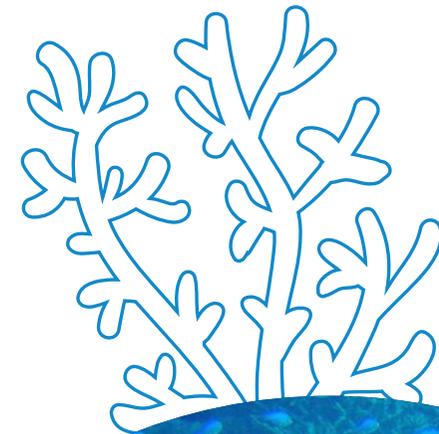
How fast do coral grow?

The exact rate at which coral colonies grow varies between types. Colonies of boulder coral — which can live up to one thousand years — are likely to be the longest living corals on the Great Barrier Reef, and grow in height at about one centimetre each year. Some branching coral species, such as staghorn corals, can grow up to 30 centimetres each year, while the porites (stony corals with finger-like structures) grow at an annual average of one to three millimetres. Meanwhile, soft corals grow relatively quickly and may

double or triple the size of their colonies over a year.

Why are coral different colours, and sometimes brown?

Some corals have pigments, or fluorescent proteins, in their tissues that give them their orange, yellow, green, blue, red and purple colours; while others get their golden-brown colour from the algae, called zooxanthallae, that live within their tissues.



Common Species

LEARN ABOUT THE REEF

The 10 most common species observed by naturalists on John Brewer Reef are available from an online project 'Citizen science at Coral Greenhouse' which is available here: <https://inaturalist.ala.org.au/projects/coral-greenhouse-john-brewer-reef?tab=species>.

Interestingly, nine of these species are fish and one is a shark.



19 observations

Lemon Damsel

Pomacentrus moluccensis



18 observations

Blackaxil Puller

Chromis triptoralis



17 observations

Common Coral Trout

Plectropomus leopardus



16 observations

Sixband Parrotfish

Scarus frenatus



16 observations

Staghorn Damsel

Amblyglyphidodon curacao



15 observations

Sixbar Wrasse

Thalassoma hardwicke



14 observations

Whitetip Reef Shark

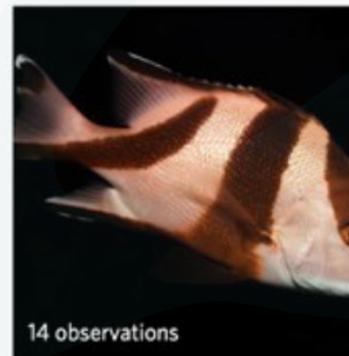
Triaenodon obesus



14 observations

Blacksaddle Toby

Canthigaster valentini



14 observations

Red Emperor Snapper

Lutjanus sebae



14 observations

Headband Humbug

Dascyllus reticulatus

Rare and Unusual Species

As of 1 May 2023 there have been 1464 observations of 378 species by 18 observers and 101 identifiers at John Brewer Reef. The full list can be seen here <https://inaturalist.ala.org.au/projects/coral-greenhouse-john-brewer-reef?tab=species>.

This is a fraction of the estimated 1625 types of fish, 600 types of soft and hard corals, 3000 varieties of molluscs, 500 species of worms, 133 varieties of sharks and rays and more than 30 species of whales and dolphins that live in the Great Barrier Reef region.

Examples of rare, favourite, unusual and popular species at John Brewer Reef are the Blackback Anemonefish, Longfin Batfish, Blue Linckia, Hermann's Sea Cucumber and the Smooth Giant Clam (not to be confused with the Gigas Giant Clam):



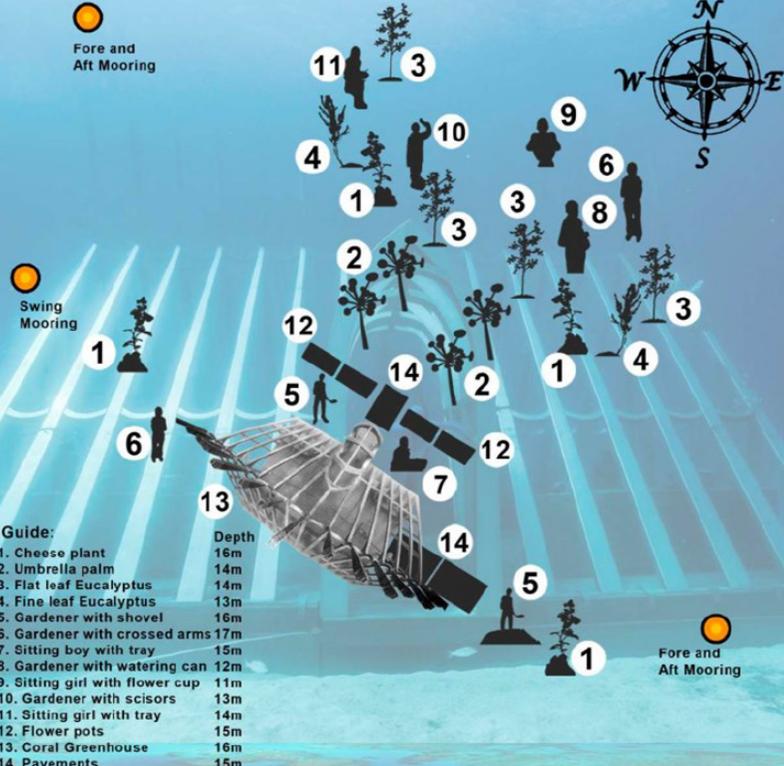


MOUA
MUSEUM OF UNDERWATER ART

**John Brewer Reef
Coral Greenhouse**



Fore and
Aft Mooring



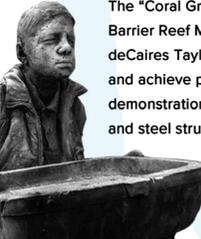


Fore and
Aft Mooring

Guide:

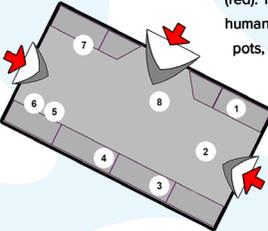
	Depth
1. Cheese plant	16m
2. Umbrella palm	14m
3. Flat leaf Eucalyptus	14m
4. Fine leaf Eucalyptus	13m
5. Gardener with shovel	16m
6. Gardener with crossed arms	17m
7. Sitting boy with tray	15m
8. Gardener with watering can	12m
9. Sitting girl with flower cup	11m
10. Gardener with scissors	13m
11. Sitting girl with tray	14m
12. Flower pots	15m
13. Coral Greenhouse	16m
14. Pavements	15m

CORAL GREENHOUSE



The "Coral Greenhouse" is part of the Museum of Underwater Art (MOUA) project on the Great Barrier Reef Marine Park. It is the first submerged building designed by world famous artist Jason deCaires Taylor. The underwater art is envisioned to inspire reef and ocean conservation action and achieve positive outcomes through tourism and education. The site may also serve as a demonstration site for conservation, coral restoration and other scientific research. The concrete and steel structures also provide ideal substrate for coral recruits and attract other marine life.

Inside the Greenhouse



The coral greenhouse is 16m deep and rises up to 12m. The 72 m² skeletal greenhouse structure has 3 main entrance points (red). There are 25 sculptures outside the greenhouse and 8 human figures, benches and other small sculptures including pots, cups, and a microscope inside the greenhouse. The figures depict scientists, conservationists and coral gardeners. On top of the greenhouse, we can also see floating structures that move along with the currents.







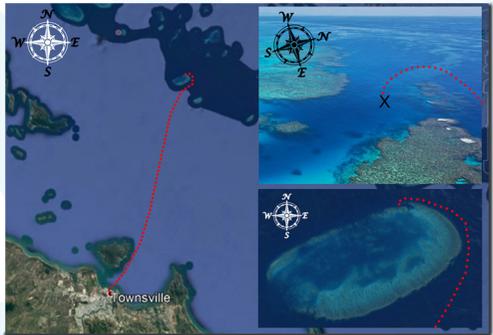



The synergy of artificial and natural attractions at John Brewer Reef makes it perfect for snorkelers, scuba and free divers. Scuba and free divers can see the sculptures up close and even swim through the greenhouse. Snorkelers can see the attraction from above, especially during low tide or swim over the wonderful reefs a few metres from the sculptures.

How to get there

John Brewer Reef is 40 Nm (74km) offshore from Townsville. The Coral Greenhouse is located at 18°36'49.9032" S 147°47.0644" E in a sheltered lagoon area protected by surrounding coral reefs. Access to the Coral Greenhouse is available through different commercial tourism operators using MOUA's moorings. Private and recreational users may also visit MOUA under their own anchorage.

Prepared by:
Reef Ecologic (May 2020)
Adam Smith, Nathan Cook, Jo Stacey,
Gemma Molinaro, Greta Sartori, Al Songcuan



For more information visit moua.com.au

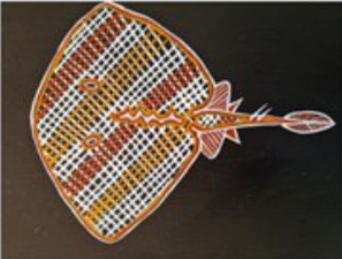
Photos provided by: Jason deCaires Taylor, Matt Curnock, Nathan Cook

The image is a collage of educational materials for the John Brewer Reef Coral Greenhouse project. It features several key elements:

- Map:** A map of Queensland, Australia, with a red 'X' marking the location of Townsville. An inset shows a satellite-style view of the reef area.
- Aerial View:** A photograph of the reef from above, with yellow markers indicating the location of the greenhouse.
- Greenhouse Diagram:** A 3D perspective diagram of the greenhouse structure, labeled "Inside the Greenhouse", showing silhouettes of people inside.
- Background Scene:** A large blue background with silhouettes of people, trees, and a satellite in orbit. A compass rose is in the top right corner. Two bronze statues of people are visible at the bottom.
- Logos:** At the bottom, there are logos for Reef Ecologic (For a better planet), MOUA (MUSEUM OF UNDERWATER ART), and Adventure Queensland.
- Title:** The text "John Brewer Reef Coral Greenhouse" is prominently displayed at the bottom right.

Reef organisms with Wulgurukaba art and language

Artist: Jordan Kahle Wyles



Minggamingga (Stingray)



Bururu (Shark)



Guya (Fish)



Galgun (Dolphin)



Dugaru (Whale)



Angugan (Turtle)



Dhambi (Coral)



Guburu (Clam)



Dabu (Sea cucumber)

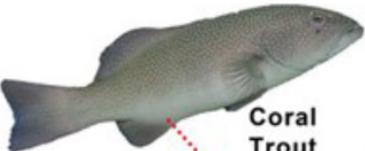
Common fishes at the Coral Greenhouse



Painted Sweetlips



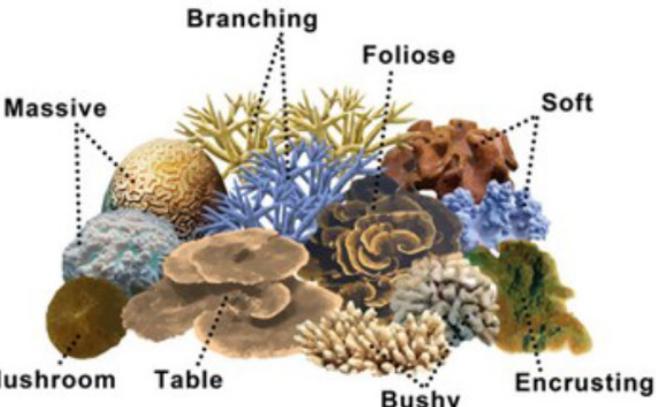
Batfish



Coral Trout



Bannerfish



Coral Morphology



John Brewer Reef Coral Greenhouse