R eef H opping 2 0 1 9

R eef H opping 2 0 1 9

Our 2019 Coral Cruise story is a bit different this year. Rather than a chronological journal, we have focused on the Reef Hopping elements of our voyage to the tropics. This is in two parts:

1. The Reef Way

In this section we have documented how we go about our explorations, have compiled the list of reefs we visited this year and have organized our cruising notes from South to North rather than in date order. The sites are grouped around the following geographical regions:

- Capricorn & Bunker Group
- Offshore of the Whitsundays
- North Queensland - Offshore of Hinchinbrook, Dunk and Magnetic Islands
- Far North Queensland – Offshore of Cairns & Port Douglas

2. Intriguing Marine Creatures

With the many snorkels we were lucky to enjoy, we came across some creatures that enthralled us and piqued our curiosity. So we gathered some information about the following:

- Crinoids
- Christmas Tree Worms
- Crown of Thorns Starfish
- Giant Clams Tridacna giga
- Sponges
- Tunicates

The Reef Way

With a new boat, the freedom of retirement and a spirit of adventure, our May to November 2019 Coral Sea Cruise was about experiencing the Great Barrier Reef. We wanted to go further north than we had been before, spend time at as many reefs as we could, discover, snorkel, take photos, have fun, explore, explore, explore!

We have always thought that being at the Reef in strong conditions is not something we want to do: uncomfortable, a little scary, and you don't get rewarded for your bravery with the crystal clear, calm waters you need for beautiful snorkeling and underwater photography. So ideally, we wanted to be out there when the breeze was light and variable, below 10 knots. Trouble is, 2019 was not a calm season. The Southeast trade winds were relentless. So it became very obvious right from the beginning that if we wanted to spend time at the Reef, we would have to alter our stance and toughen up.

From 1 May to 30 October 2019, we spent 49 days Reef hopping. It may not sound like a lot: 49 out of a possible 184 days, but the rest of the time we were still floating or sailing along the Great Barrier Reef, just closer inshore!

And in those 49 days, we had only 16 days of idyllic conditions that looked something like this:

We even had a few days that looked threatening like this:

This is us at Flynn Reef after 3 days of 15 to 18 knots wind. The wind is picking up over 20, the sky looks stormy, time to beat a retreat!

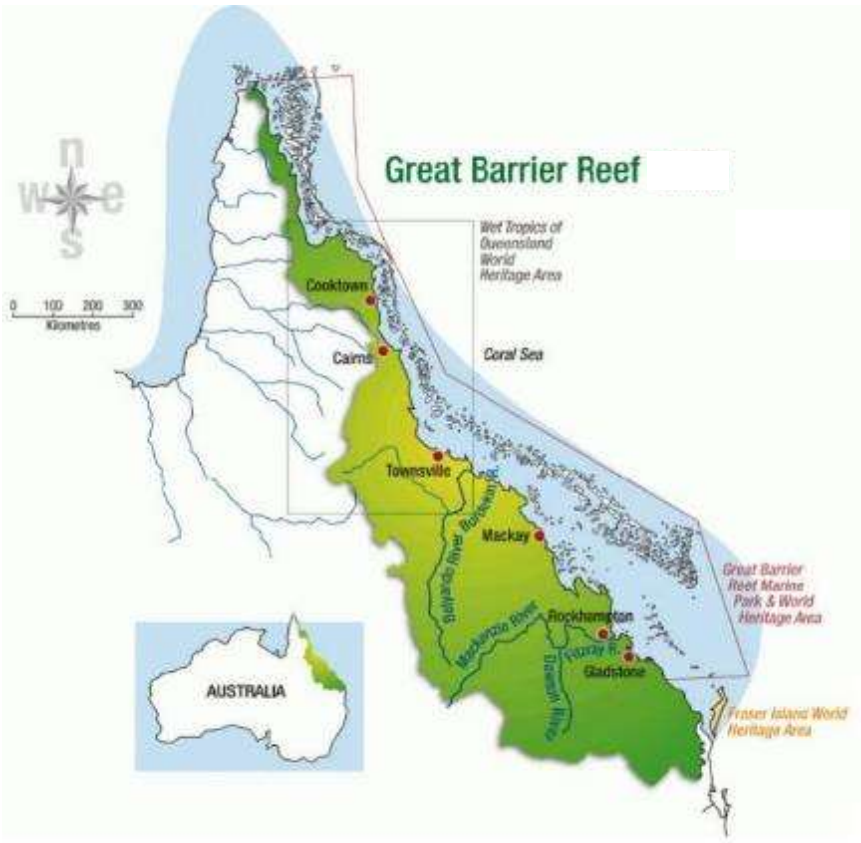
The two big challenges with spending time at the Reef are picking decent weather and finding a safe spot to stop at. We experimented and found that a combination of settings worked for us. Judging from the scarcity of boats we shared an anchorage with, it certainly is not for everybody.

The right combination for us

Everyone says and we agree that at over 15 knots of breeze, it gets uncomfortable out at the Reef: you get tossed around and there is little protection, especially at high tide when several meters of water cover the reef flat. In trade wind season the south-easterlies blow fairly ceaselessly, which also happens to be the time when most cruising yachts head to the tropics. What we found in 2019 was that the calm days below 10 knots were few and far between. So much so that if we wanted to see the Reef, we had to put up with less than ideal weather conditions.

When we look back at our cruising notes and tally up the days they show that between the beginning of May and the end of October, we had 16 days of calm conditions with less than 10 knots of breeze. The rest of the time it was blowing at 15 to 20, with peaks at 25 to 30. Our notes also show that most of the time we spent at the Reef was in 15 to 18 knots. Bear in mind we are on a 52ft cat. Anui moves in the chop, but not as much as smaller cats or monohulls. So we became adept at looking for spots offering the best protection possible for those prevailing conditions. We found that the middle to outer reefs, with a sand cay, a public mooring, and within 30 to 40 miles of the mainland for easy returns to shelter, offered us the best combination.

If you look at a map of the Great Barrier Reef, particularly as you head further north of Townsville, the GBR gets closer to the coast. Off Cairns and Port Douglas for instance, the furthest offshore you have to travel to be at the outer reef is 30 miles, whereas down south, you may have to travel 90 miles – to the Swains for example.



We also found that the very inner reefs and fringing reefs around islands close to shore are badly affected by coastal run off, often covered with filamentous algae, with hardly any coral left even if there is still some fish life. The water is turbid and clarity poor.

On the other hand the outer reefs offer the best water clarity and therefore visibility underwater, show no detrimental effect from coastal runoff, you find there is limited rubble from cyclone damage. Corals might not be as dense as they used to be, but they are healthy or recovering and you still have the option of a relatively quick return to shelter if the weather turns. Add a green zone, where no fishing or take is allowed, and you find more fish life which is also less nervous about human presence.

Another aspect we noted was that the more central reefs have the advantage of offering slightly more protection because of the layering effect of a reef within a reef. For instance Michaelmas Reef sits on the inside of the Arlington Reef.

Then add a sand cay and although these islets are only two or three meters above sea level, ten or twelve if they are vegetated, they provide an extra break from swell and chop.

Anchoring Vs Mooring

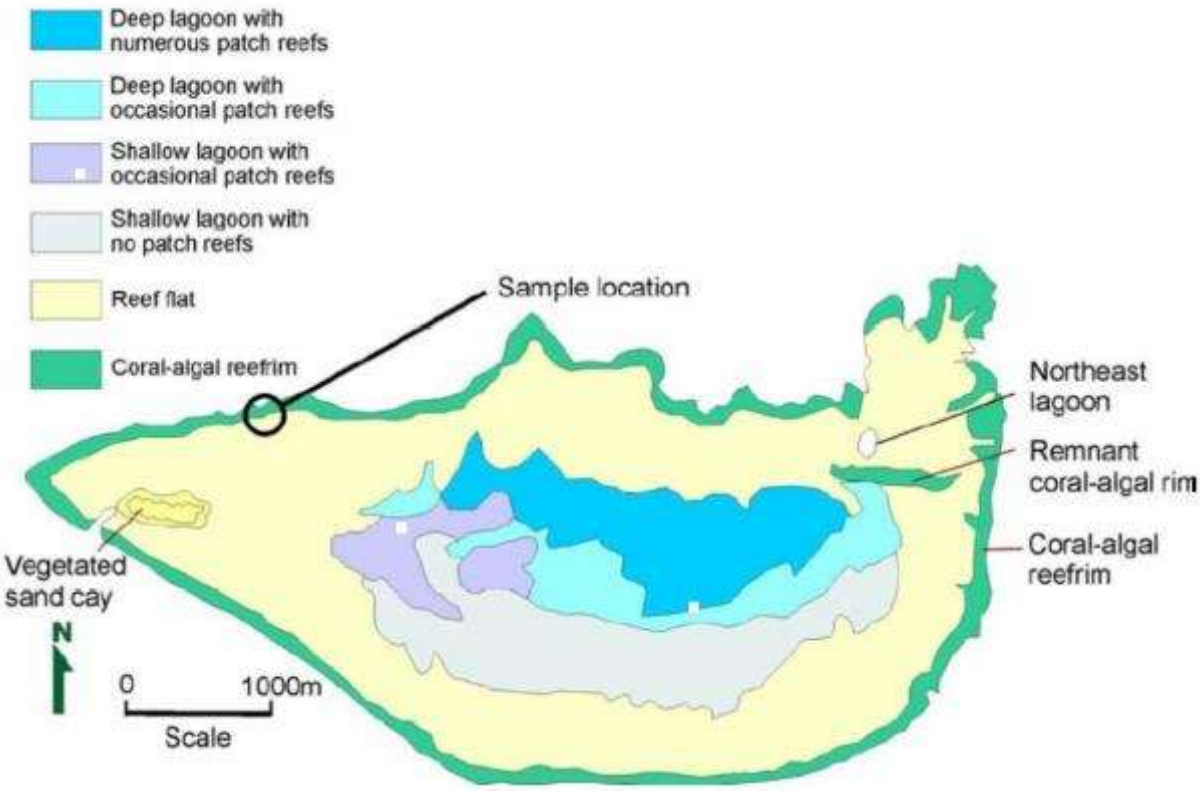
Once you find the spot, should you anchor or do you pick up a mooring buoy? There is a bit of debate among cruisers as to what is the best when at the Reef. Some would rather use their own ground tackle, knowing exactly the state it is in. But as far as we are concerned, the enemy at the reef is getting your anchor chain caught on isolated coral heads. You might be able to manoeuver the boat around to get the chain free, but you might not, and if this happens in really deep water, you need diving gear to get freed up, unless you can free dive – which we can't!

If we can find a large enough patch of sand, free of coral heads and not too deep, we anchor. We tend to look for a location in 6 to 10 meters of aqua water over sand at high tide, crystal clear so we can see the bottom, and put out 30 to 60 m of chain, and then we dig in the anchor by reversing hard and we set our anchor alarm. You don't want to drag at the reef! When we do find a spot, we mark it on our GPS for future reference. And to be sure to be sure, we dive down to the anchor to check the bottom.

But on the whole, give us a public mooring buoy any time! The Great Barrier Reef Marine Park Authority have installed quite a number of public mooring buoys, colour coded to show their class (maximum length of vessel and maximum wind speed limits). We use the green or blue moorings, which are also the most numerous. They are regularly maintained, they are often close to the best dive spots and close to the reef wall. They are generally worry free and are there to protect the coral from anchor chain damage. We say generally, because we have had one instance when a poorly spliced loop gave way in the night at Norman Reef. We realized fairly quickly as our anchor alarm on our AIS sounded when we started to drift out of our safe circle. Here is a hint: even on a mooring, use your anchor alarm. It might save you from serious trouble, as it did for us. But despite this incident, we always favour the public mooring buoys over anchoring. We don't hook on blindly; we systematically dive on the mooring to check its condition.

Typical Reef

This is a useful diagram of a typical reef, showing its structure and the various areas to be found. This was produced by Luke Nothdurft, Queensland University of Technology. Anchorages will often be on the lee side of the reef where protection from the stronger southeasterly trades is more likely.



Another day, another sand cay

Of all the 26 different reefs we visited, over half – 16 – had a sand cay. Have you ever seen those amazing wisps of whiteness gleaming out from a turquoise sea, these tiny sand islands on the Great Barrier Reef? If you have, like us, you probably go searching for them because sand cays, as they are called, not only provide a bit of shelter at anchor, but they are also pretty special.

So what is a sand cay?

Unlike continental islands which share the same geology as the nearby mainland, a sand cay is a small, low elevation sandy island on the surface of a coral reef. A cay forms when ocean currents transport loose sediment across the surface of a reef to a low area where the current slows or converges with another current, releasing its sediment load. Gradually, layers of deposited sediment build up on the reef surface and an island is formed. Its shape changes with time, governed by the weather patterns and tidal movements.

Some cays are still relatively young, and start their life as a sandbank. Other more established ones are covered with vegetation which gives them more stability.

The cay resulting from sediment accumulation is made up of the skeletal remains of plants and animals from the surrounding reef ecosystems. Much of this sediment is comprised of coral skeleton—calcium carbonate—that has been processed through various species of parrotfish. As the parrotfish feed, their beak-like mouths scrape of algae off dead coral, taking small pieces of coral skeleton with it. The parrotfish then eliminate the sand, which falls to the reef floor in a very fine sandy powder. Yap, fish poo! Think of that next time you sit on one of those gorgeous islets gazing at the amazing views and graduations of colours!

We can hear you ask, so you want us to sit on a pile of poo. What's the attraction?

Well first of all, the cay despite its small elevation, together with its surrounding reef, provide a little bit of shelter for anchoring, particularly at low tide when the reef breaks the effect of waves and swell.

Secondly, cays are home to a great diversity of wildlife, both in the surrounding reef and on the islet itself. You go there not only for snorkeling, but for bird watching.

And lastly, you go there for how they make you feel – serene, in awe, away from all your worries!

How do we decide where to go?

There is not really a guide to refer to about the Reef…. Now here is an idea for a book… Some food for thought!

To search for good spots to explore we rely on:

- The Great Barrier Reef Marine Park charts
- The Public Mooring Access PDFs for different regions
- Google Earth for Satellite images
- MotionX-GPS phone App for Satellite images, routing and waypoints
- Navionics Charting Software for charts, routing and waypoints
- Word of mouth from other reef explorers

Because typically you don't have much internet at the Reef, it takes some preparation ahead of leaving the coast. We scout around, get on the internet and search for information on various reefs, download aerial pictures or take screen dumps of satellite images for areas we are interesting in exploring, mark spots on the apps. If we find there is a public mooring there, there is no holding us back. But for more remote spots or less frequented ones where you will have to anchor, the satellite images help you work out the lay of the reef, the look of the sea floor, whether there are patches of sand big enough to drop the pick in away from bommies and at what rough depth.

Whenever we meet cruisers at the Reef, we tend to exchange information. We never ask nor give precise GPS anchoring coordinates. But the few people you meet out there are keen reef hoppers like us. We readily share general information about the attractiveness of certain reefs, their accessibility and ease of anchoring at. And that is sufficient to put in the planning mix.

And then it is a matter of going there! So now that we have revealed all our secrets for staying "on the outer", let the Reef Hopping begin!

Capricorn & Bunker Group

The Capricorn and Bunker Group are a string of reefs running offshore of the coastal towns of Bundaberg and Yeppoon. They are the first reefs you get to on the way north, and the last on the way south!

We have spent quite a bit of time at the Southern Reef in previous years and were keen to explore different locations this year. You can tend to rely on the good old favourites like Lady Musgrave and Fitzroy Reef because they are well protected, you know what to expect and they are very attractive. But there has to be other reefs worth investigating, off the beaten track.

So our objective this year was to do just that. We did not get a chance to reef hop on the way north, only stopping at Masthead Island, because of the strong south-easterlies, but on the way south, we had a small window of moderate northerlies. The weather was not ideal, but manageable, especially after spending a few months at the northern Queensland reefs in stronger conditions. Yet in the end, the only new anchorages the weather allowed us to visit were Broomfield Reef and the northeastern end at Heron Reef. You can only do what the weather allows!

So in the Capricorn & Bunker group, this year we stopped at:

Fitzroy Reef

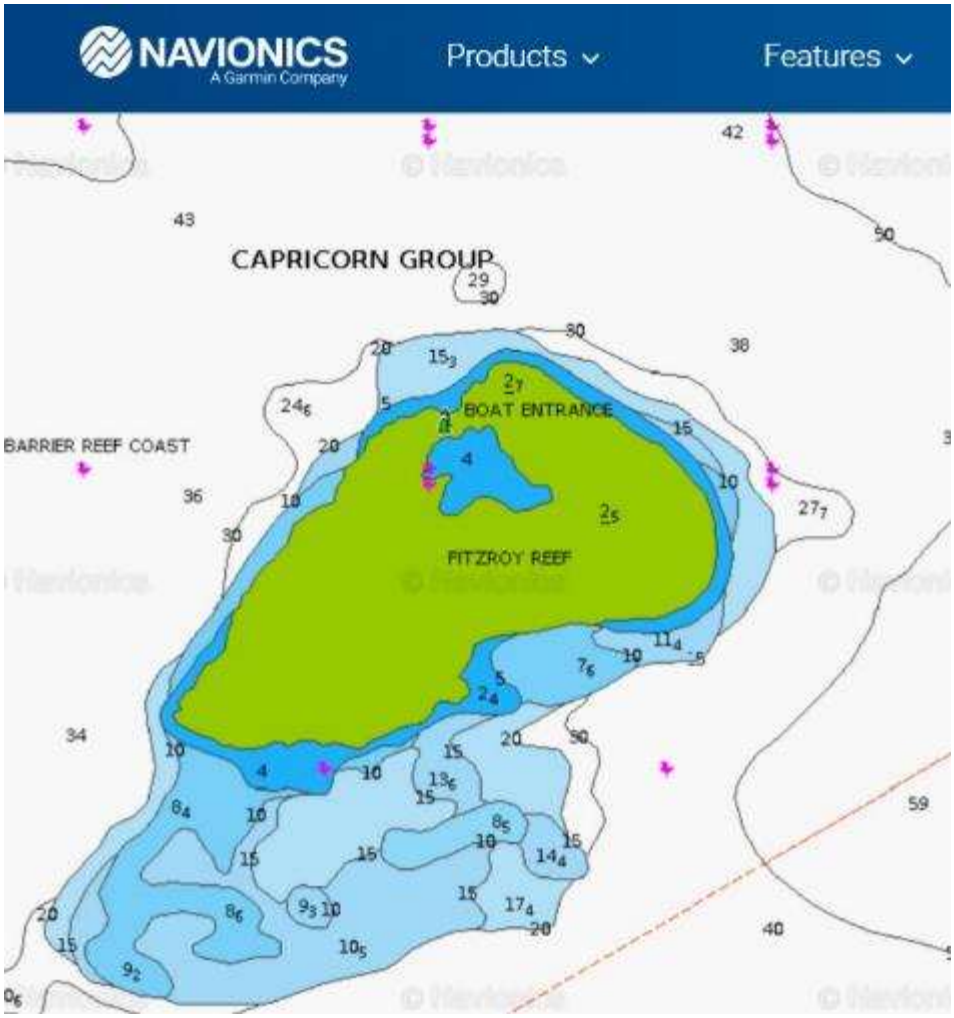
Masthead Island

Heron Reef

Broomfield Reef

Fitzroy Reef

We have been to Fitzroy Reef many times, but the entrance into the lagoon is always spectacular and a little daunting. This is when we realise that Anui is a much wider boat than our old Take It Easy!



The passage to get into the lagoon is well marked but is not totally straight forward. It does an S, snaking its way between the uneven edges of the narrow gap in the reef wall. But once in, the turquoise lagoon calms all your jitters! It is stunning. Three public moorings are available, or you can anchor over sand in 6 meters at low tide.

We have been at Fitzroy in all sorts of weather, from calm, glassy conditions to 25 knots winds, so we know this is a well-protected spot.

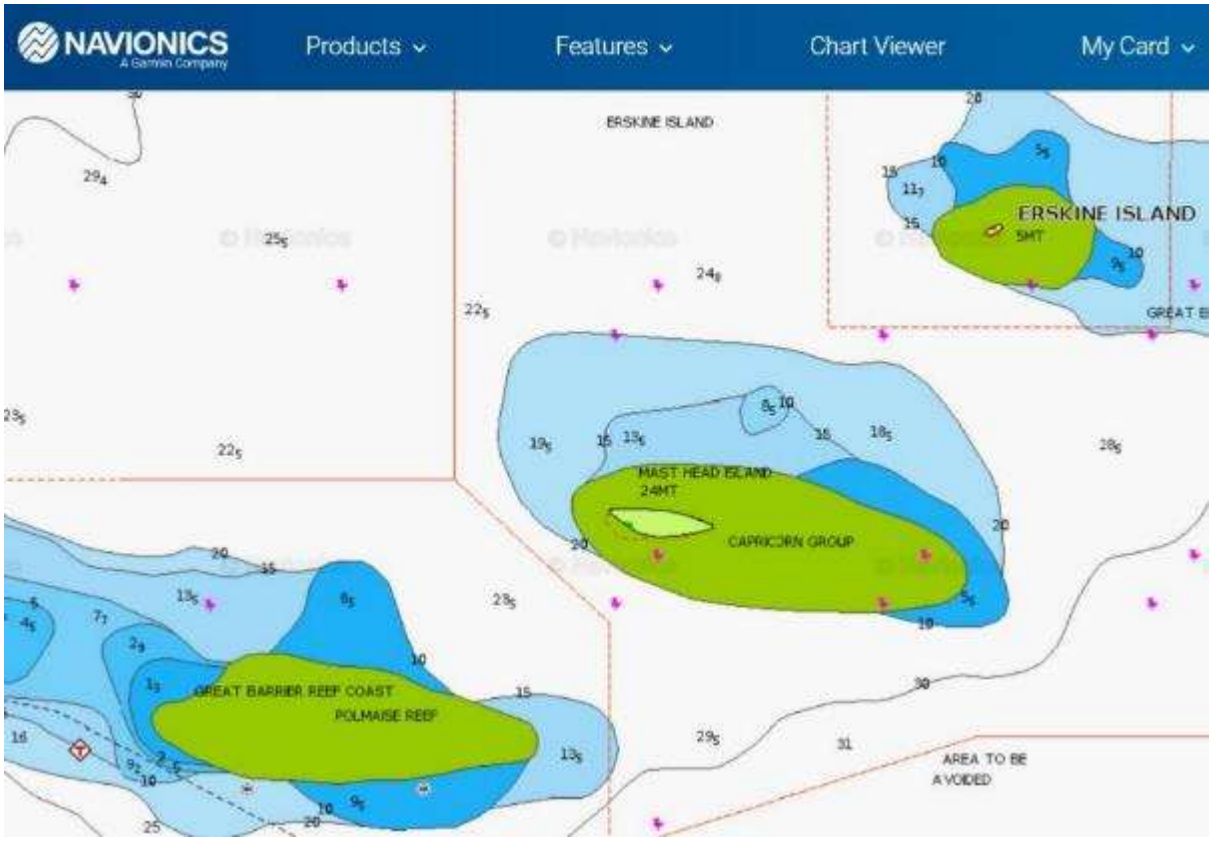
The lagoon is quite large, but navigation inside is restricted by numerous bommies beyond the area in front of the entrance.

The reef is quite extensive and you can snorkel around the large bommies or along the reef wall. Water clarity was reasonable when we were there this time. Over the years we have noticed that the state of the Reef has deteriorated, with storm damage such as upturned corals, broken branches and areas of rubble. The coral is not as vibrant as it used to be and losing colour. Some areas where the coral has died are covered with filamentous algae. It is sad to observe.

For instance you can see the algae growing on the grey coral underneath this striking Harlequin Tuskfish. It may be that the coral in this area died from the damage inflicted by cyclone Debbie and the algae has colonized it. Fitzroy Reef is some 50 nm away from the mainland, so you would expect it would not be affected by coastal runoff.

There were a few nice finds though, like this huge turtle, nearly the size of Wade, a little family of anemonefish and some of the leafy coral. And the beauty of being inside a lagoon is that there is very little current which makes exploring easier and photography more stable.

Masthead Island



Masthead Island, the central reef on the chart, is an elongated platform reef, with a coral cay. It is located 32 nautical miles northeast of Gladstone. The island is a protected area and forms part of Capricornia Cays National Park. Masthead Island is one of the most undisturbed cays in the national park because human and feral animal impacts have been rare. The cay covers an area of 0.45 km^2 and is surrounded by a coral reef that is partially exposed at low-tide.

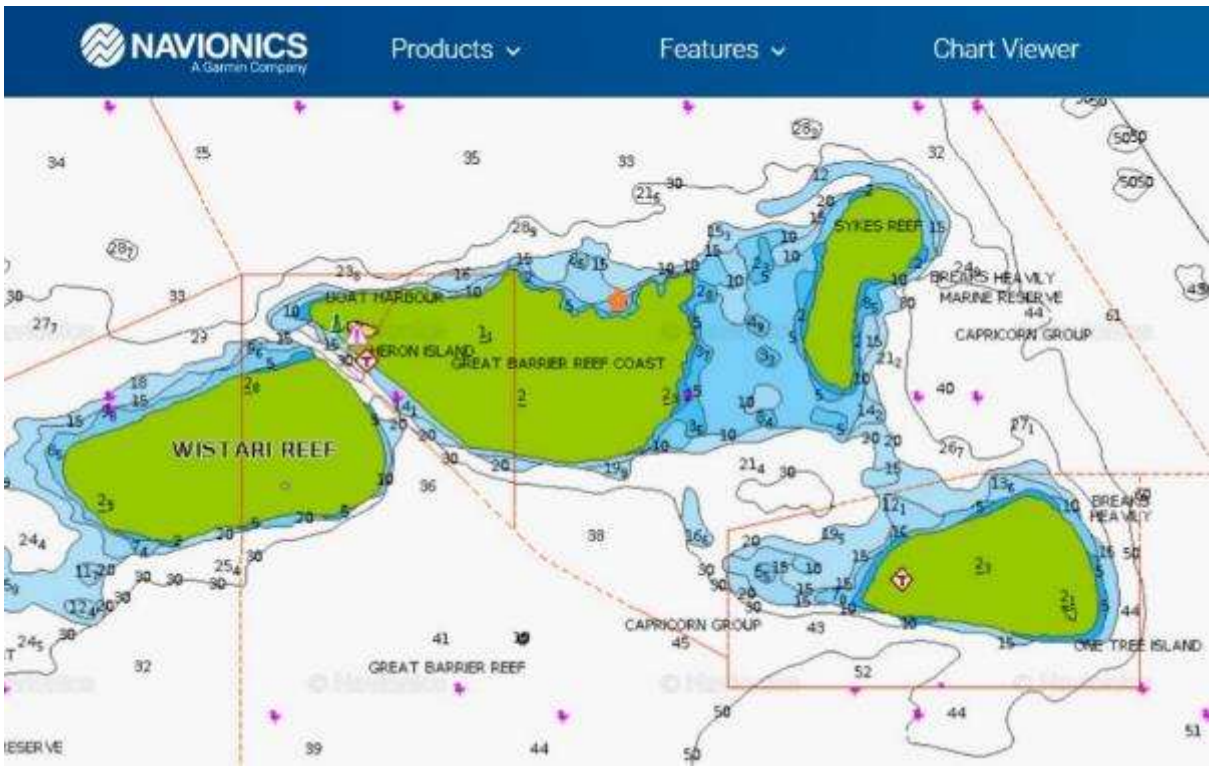
You can anchor on the north-west end of the reef, close to the cay but there is always current wrapping around the reef, so it never is totally calm. There is now one public mooring there which we used when we came to Masthead Island at the beginning of the season in very strong conditions with our friend Phil. He was keen to see a coral cay so we braved the choppy conditions. This was the closest cay and reef to the mainland in the Capricorn Group and we only stayed there overnight. It was a great sail there though!

The island has been declared an Important Bird Area, supporting a diverse seabird population, including the black noddy, wedge-tailed shearwater, back-naped tern, bridled tern and many others. So for birdwatchers, it is heaven! The island is closed to the public from mid-October to Easter to protect nesting seabirds and turtle hatchlings. At other times the island is open for camping, however there are no facilities provided. During the previous occasions when we have visited Masthead over the years, we have never seen anybody and had this beautiful place to ourselves.

This time, it was too choppy to even consider a snorkel, but we did go ashore for a walk around the island, and enjoyed the bird life.

H eron R eef

Heron is a large reef with an enclosed lagoon on the inside and a vegetated cay at its western end, which also houses the Heron Island Resort. The resort is strictly for guests only and visitors are not welcome. But although you can't land on the island, you certainly can dive around the extensive reef.



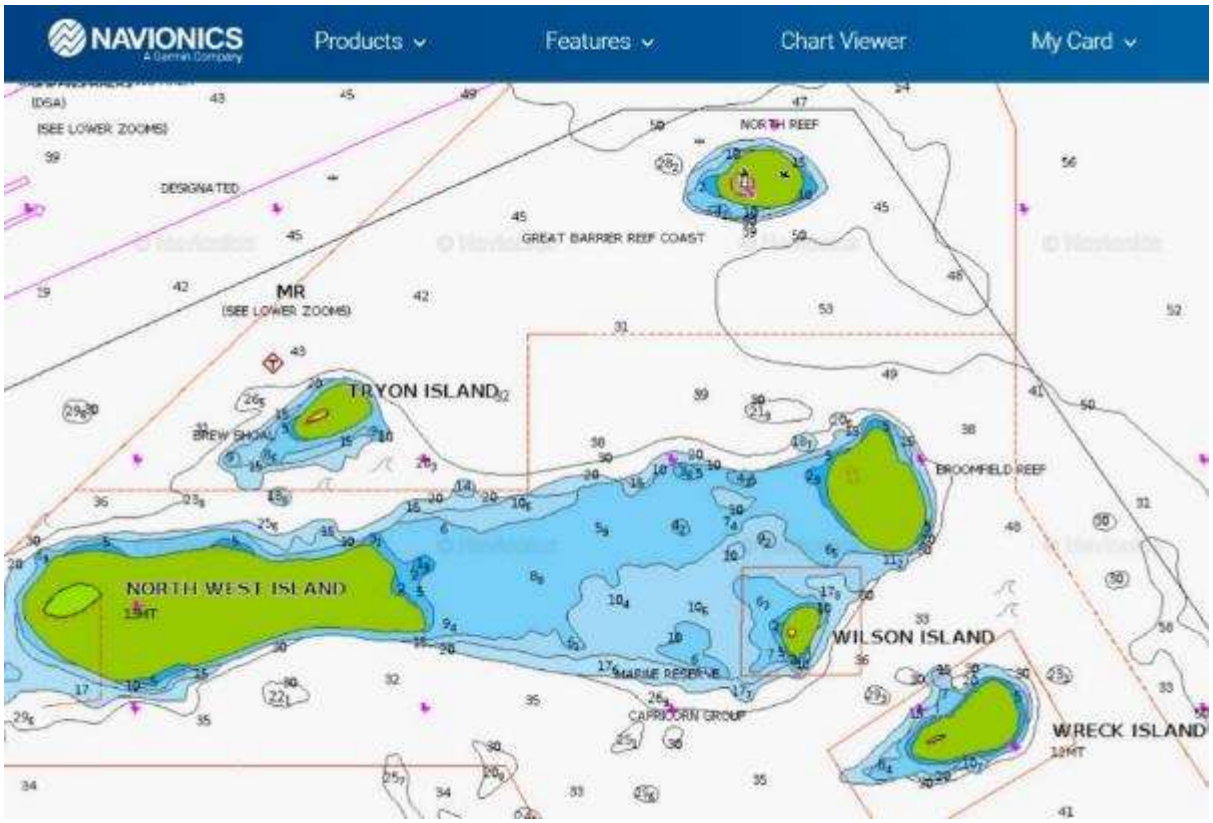
We had snorkeled at the north-western end of the reef last year where the wreck of the gunboat HMS Protector is, but we never had the opportunity to check out the north-eastern end marked with an orange star on the Navionics chart. So although the conditions were not ideal (high tide, early in the morning, northerly breeze, overcast skies) we had a brief stop there, hooked onto to a large public mooring and dinghied to the edge of the reef for a reconnaissance snorkel. It is a beautiful reef, well worth a return in the right conditions, which means, lowish tide so the current is minimised, sunny, calm day, preferably with a SE breeze, exactly what we did not have!

Our snorkel was in very clear water with good visibility. We did not take many photos because it was hard to stabilize ourselves in the strong current. As soon as you stopped finning, you were going backwards! We were very much aware of the amount of current running alongside the reef, so struggled upstream first and once we had had enough, we let ourselves drift back to the dinghy. We had a serious amount of finning exercise that morning!

The northeast end of the reef is in a yellow conservation zone, which means you are allowed to fish. Wade spotted a crayfish, but was not able to snag it!

Broomfield Reef

About 55 nm east of Great Keppel Island, and 10 miles past North West Island, at the very northern end of the Capricorn Group, is a reef we had never been to before: Broomfield, with an enclosed lagoon surrounding a long sand cay in the center. The broad ring of reef partly uncovers at low tide.



When you approach the reef and its cay, lots of seabirds are flying about. It is an added attraction. We saw Noddies, Brown Boobies and a few Reef Egrets on the reef flat at low tide.

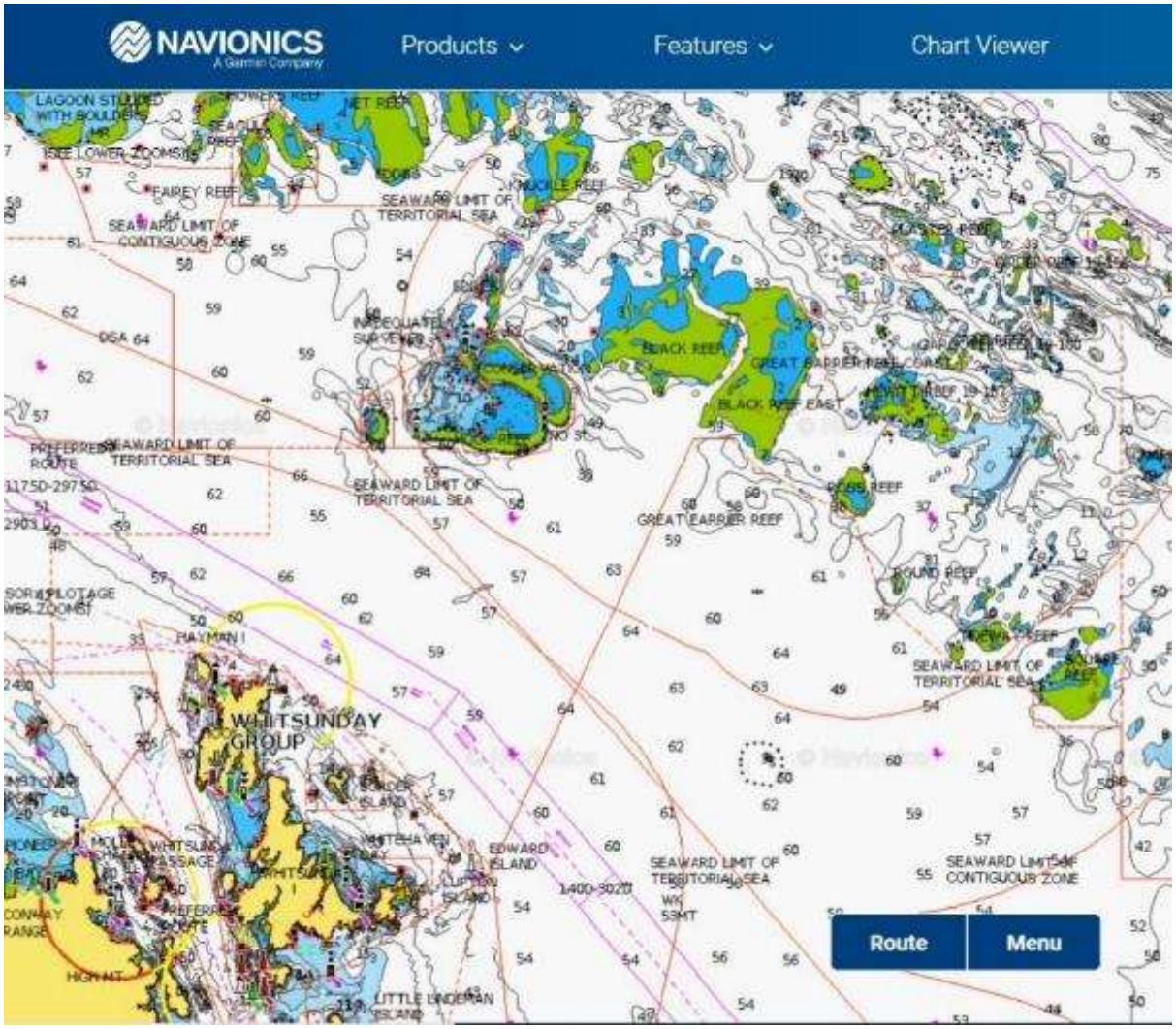
It was blowing at 15-20 knots when we got there, so certainly not ideal conditions, but we had no trouble finding a spot to anchor in 5 meters of turquoise water over clear sand at low tide.

We often jump into the water from the back of the boat and swim to the reef edge or the outlying bommies. But as there was a fair amount of current running along the edge of the reef, we dinghied close to the reef wall and anchored in a patch of sand to go snorkeling, being conscious to swim upstream first, so as to just let ourselves drift back to the dinghy after our explorations.

Broomfield Reef is another one of these locations where you dive down, have a look and surface again to say to your dive buddy: “Wow that is so different!” With large fields of varied types of Acropora as well as soft corals, in relatively shallow water along the edge of the platform reef, the seascapes were beautiful, colourful and the water was crystal clear. Among the branching coral swam lots of Bluespine Unicornfish, the elegant Moorish Idols with their long trailing fin, the usual little Pullers, Wrasses and Parrotfish. We even had the surprise appearance of a group of Blackback Anemonefish, with their favourite anemone hidden among the coral.

It is really pleasing when you take a punt with the weather and location and you are rewarded with a nice dive. The night however was a little rock and rolly, and so noisy with water slaps and our creaking internal panels on the boat.

Offshore of the Whitsundays



The Whitsundays are a convenient launching pad for the nearby offshore reefs. It is an easy jump from Hayman Island or the northern bays of Hook Island to head off. There is a tendency to go to the often frequented Bait Reef and southern part of Hook Reef, just because you may be able to grab a public mooring or return to your old marks. We were keen to see a little more. We had two cracks at it: one on the way north, and another on the way back south. Here is where we went:

Little Black Reef

Hook Reef

Hardy Reef

Bait Reef

Little Black Reef

We found Little Black Reef by scouting around our MotionX app and Google Earth. It is a triangular reef that sits underneath Black Reef. A passage between the two reefs gives access to a beautiful large lagoon where you can anchor in 5 to 8 meters of water at low tide. When we were there, half a dozen boats were anchored in there. Although the Navionics charts show a solid reef, you can clearly see the lagoon on the satellite image. In fact you see two, the second with a possible entrance at the SW end, but one reef scraping incident at Hardy the morning prior was enough for us!

The lagoon offers a mix of spots for snorkeling, some of which have healthy coral and an abundance of small fish, others which are barren and cyclone damaged. You can take your pick and explore the bommies or various spots along the reef wall in the dinghy. Because of the size of the lagoon, you can easily spend a few days there. It is a bit hit and miss in terms of coral health and quality, but you will find little gems. It is just a matter of jumping in, having a look, and if it is too ordinary, moving a little further.

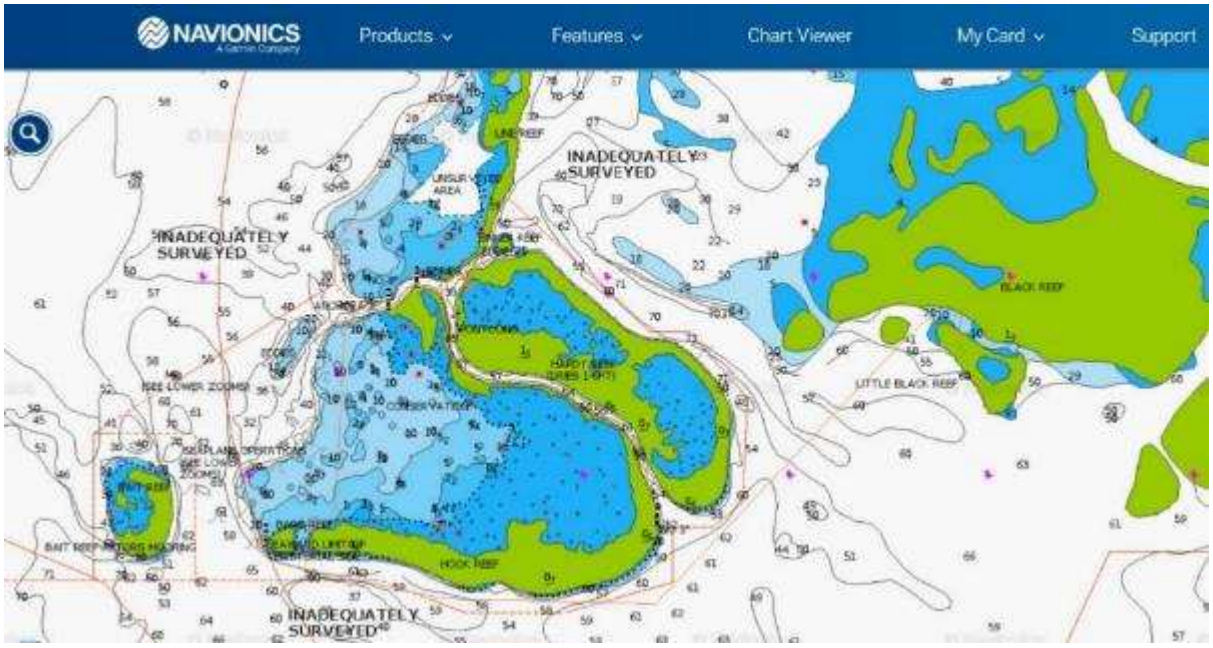

Si-Amui.com


Si-Amui.com


Sv-Anni.com


Anni.com

H ook R eef



If you like your privacy, enjoy anchoring on your lonesome away from commercial tour boats, and are looking for a safe entrance, then Hook Reef is the spot! Finding the way in is easy as the western end of the southern wall is marked with a cardinal marker. The entrance into the hook is wide, clear of bommies and deep. The current can be strong between Bait and Hook, looking a bit like a pot boil, but once out of the passage, the water calms down. You can take your pick and anchor on the southern side of the ‘hook’ or cross over to the northern side, close to Hardy and Line Reefs.

We have had mixed success with anchoring comfortably. We have several spots marked along the the southern wall, however some of these were suitable for our old boat, but tight for Anui. So these days we tend to anchor further out from the reef wall, in 5 to 8 meters of water at low tide with ample room to swing between bommies. It is always a bit nerve racking and with both of us having to feel comfortable where we throw the pick in, it can take a few attempts before we are all settled. We like to snorkel off the boat, so try to find spots that allow us to do this. Of course if you stay further out, you can anchor in clean sand and dinghy closer in, saving yourself some stress.

One of the things we like about Hook Reef is the sense of being anchored in the middle of the ocean at high tide, and at low tide the amazing graduations of colour. And of course sunsets and sunrises are really special, particularly when the ocean is glassy.

There is a wide variety and size of fish and you are also allowed to line fish or go spearfishing.

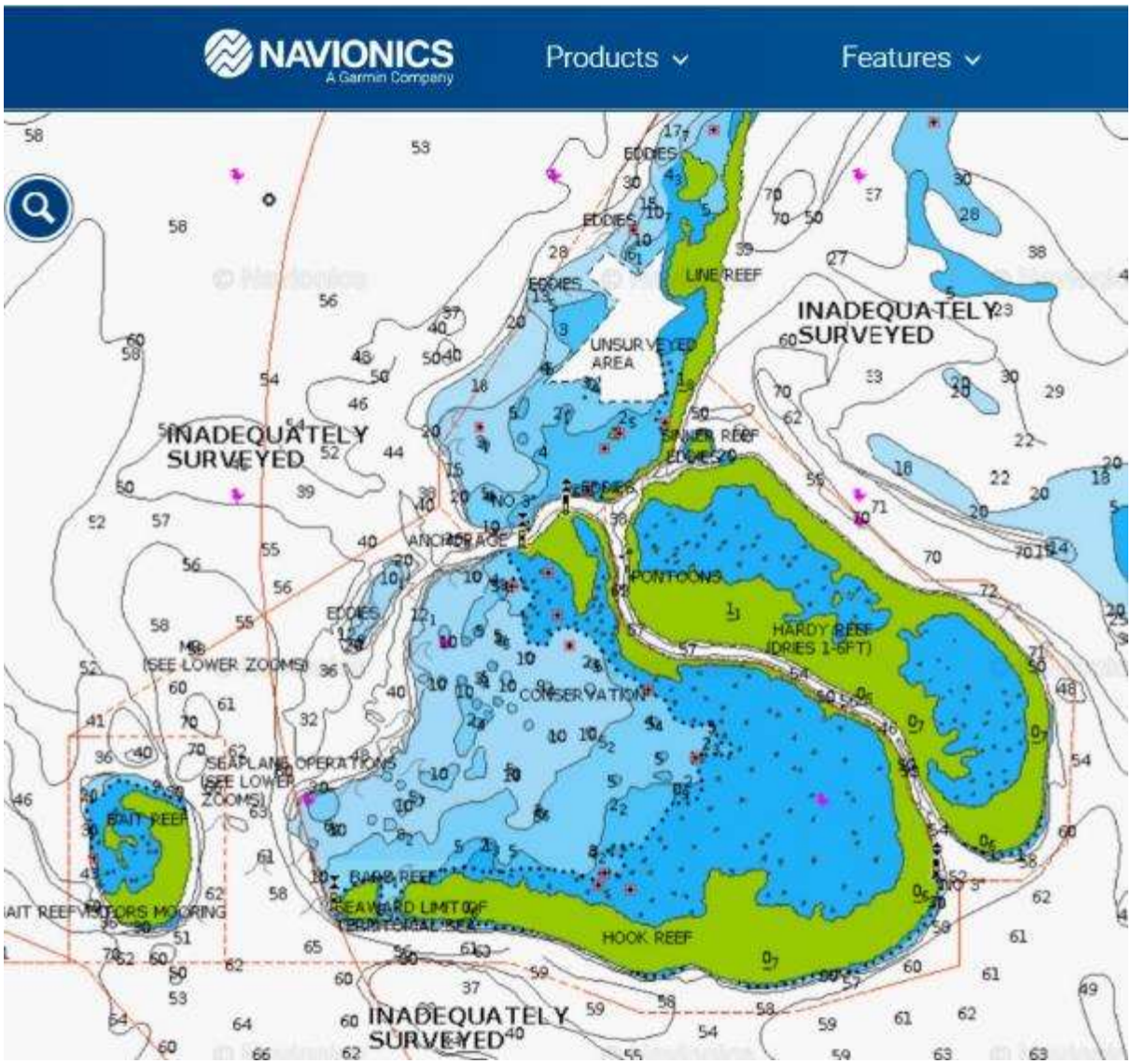
The snorkelling there is quite good, more so around the large bommies rather than close to the reef wall. We like to do meanders from one coral pinnacle to another and dive down along their wall. You can sometimes find lacy gorgonian fans at greater depth. There is some cyclone damage in places, but overall it is very beautiful and thriving.


Si-Anui.com

Hardy Reef

As you can see from the chart, Hardy, Line, Hook & Sinker Reefs are in the same cluster, and obviously named by a keen fisherman!

A word of warning, you don't go to Hardy Reef for privacy. It is heavily used by dive charters, fast catamarans with their load of tourists which go there and tie up at pontoons just on the outside in the channel running between Hardy and Hook Reefs. You will even see helicopters and light planes flying over.



Hardy Reef is approached by following the deep channel between Hook and Line Reefs. Looking closely at the reef wall around the lagoon, it is hard to see where you can actually get in… and that gives a big hint! But there is a super narrow gap to access the lagoon – where the reef wall is at its narrowest on the chart, just above the 38m depth mark.

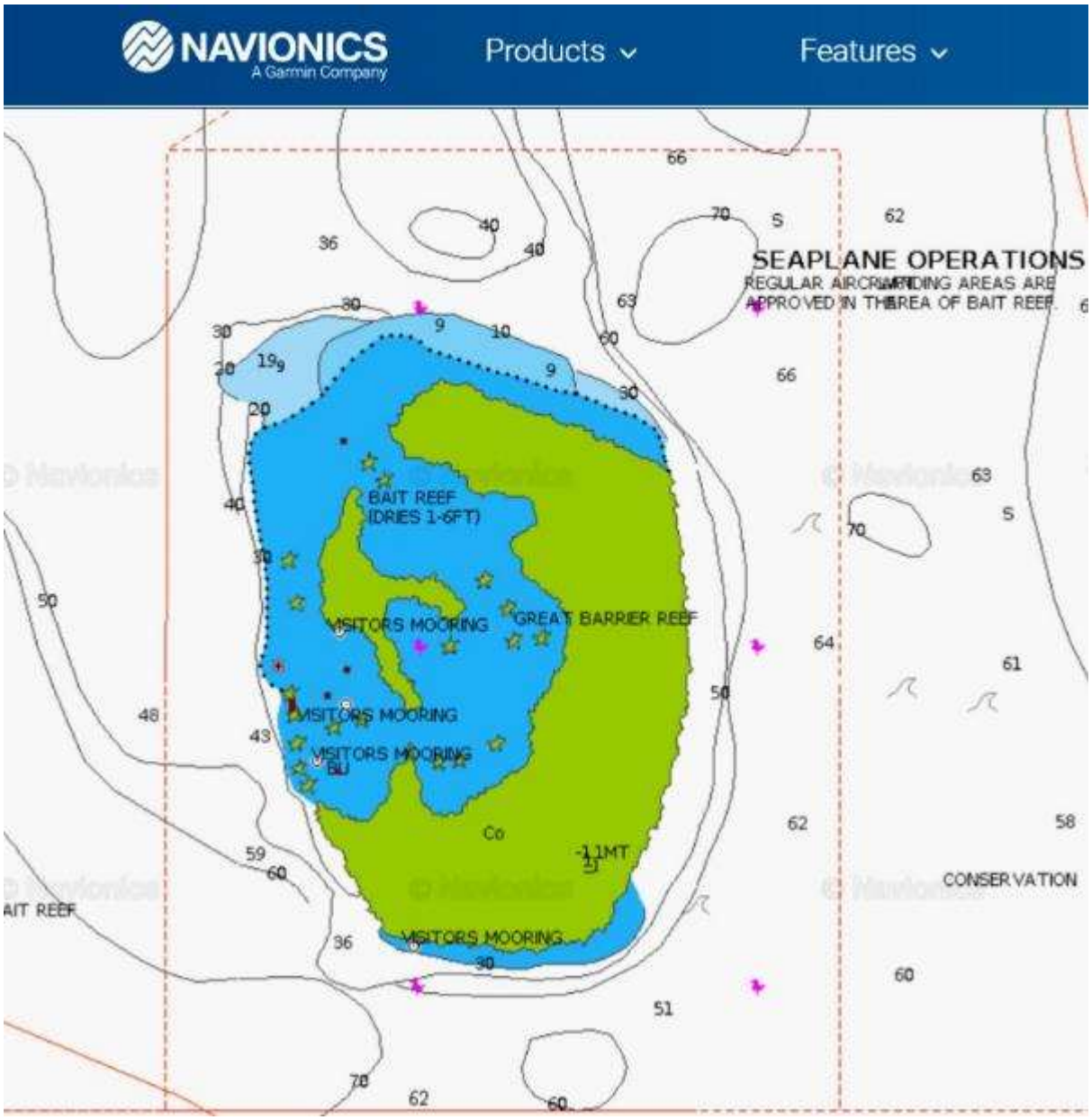
For those who can get into the beautiful lagoon, it is a well-protected spot with ample room to anchor in 5 to 9 meters of water. But you have to get in first! One of the features of the Hardy Lagoon entrance is The Waterfall, an impressive sight when water is emptying from the reef. It becomes ‘stabilised’ close to or at high tide. Another important aspect to mention is the gap in the coral wall to get into the lagoon. Although it is deep, it is the narrowness that gets you! Here is what it looks like at close to low tide.

We had never been inside the Lagoon and had the opportunity to go with cruising friends who have been multiple times. So armed with a series of waypoints they gave us, we followed.

Those who read our blog will remember a post recounting our attempt at getting inside. We did not fit! We scraped our rudders and daggerboards trying to follow our friends into the lagoon early in the morning when the tide was right but the light was not. We could not see what we were doing, were following waypoints, but hit the sides. With its 8.5m beam, Anui did not fit! We should have known better and this experience is well and truly etched into our memory.

So no photos of Anui inside the beautiful lagoon and the snorkelling on this one, but a couple of our scraped rudders and daggerboards! The moral of the story is: don't attempt to enter a lagoon through a narrow entrance even with waypoints, unless the sun is high in the sky and you can see what you are doing.

B ait R eef



Bait Reef is the nearest of the platform reefs from Hook Island in the Whitsundays, about 16 miles from the north east of the island. This is a fascinating spot which attracts commercial dive boats to the wonderful site of **The Stepping Stones**. These are 18 flat-topped coral pinnacles which have a variety of fish patrolling around them. The corals has been damaged by Cyclone Debbie but is in recovery mode. The pinnacles rise from a depth of 15 to 25 metres and stop within one meter of the surface. Definitely worth a look for the novelty of the pinnacles, especially for a dive with tanks.

But it is from the air that you really get a sense of your surroundings.

At low tide from the water surface:

The colours and scenery from your deck are breathtaking at Bait Reef. This site is really spectacular. Being in a Green Zone, or Marine National Park, you can look but don't take. A local trevally befriended our boat, spending a lot of time beneath our hulls.

You can't anchor there, but there are 8 public moorings available for two hours inside the Stepping Stones, and one on the outside, at the Manta Ray Dropoff. So you don't get that feeling of being away from it all, you may not be able to settle there for the day if it gets busy and you have to share the spot with lots of tourists! The moorings are however right inside of the Stepping Stones and small lagoon, so you can just jump off the back of your boat for a snorkel or use the dinghy to explore further. The platform reef is quite beautiful and if you explore at mid tide, you will be able to swim over the extensive coral gardens. Soft and hard corals are varied and the reflections are to die for.


Se-Aqua.com

North Queensland – North of Townsville

Spread across a large area offshore of Magnetic, Palm, Hinchinbrook and Dunk Islands are a series of reefs which we have started exploring. There is a lot to see and it will take a few more visits to investigate! This year we were lucky to explore this in calm conditions, a rarity in our months in the tropics! And we had company, since Wade's brother Murray and his wife Maree were with us for the Cairns to Townsville leg.

We visited five reefs in that region:

Wheeler

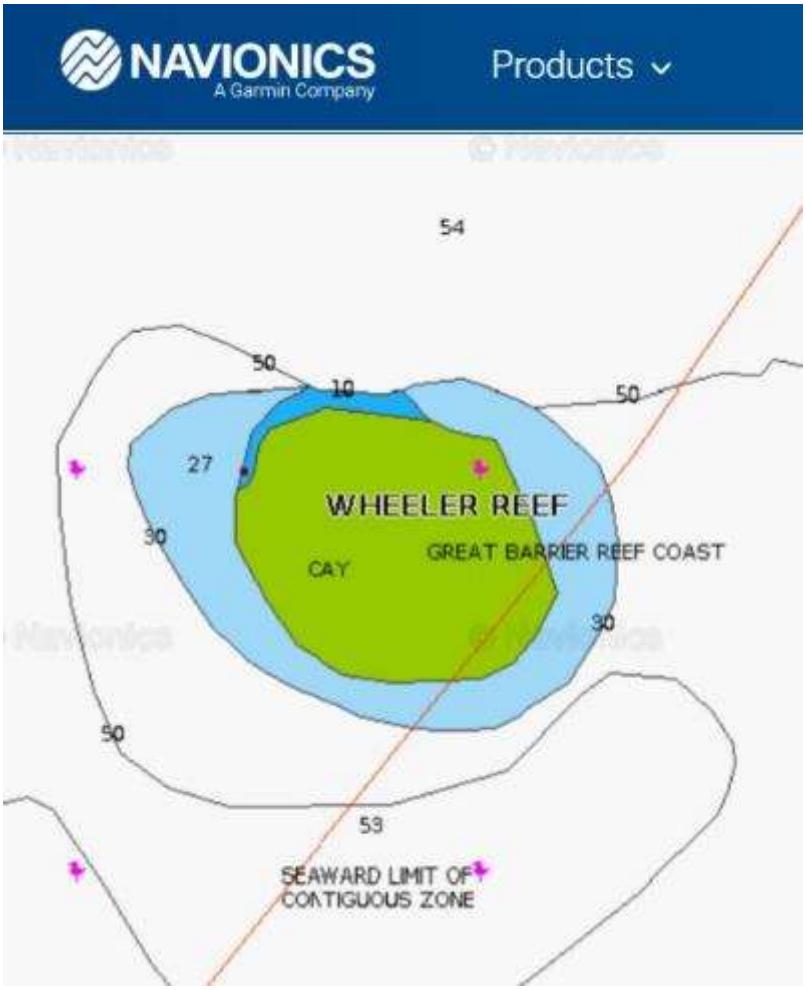
Keeper

Walker

Taylor

Beaver

Wheeler Reef & Cay



Located about 35 miles east of Magnetic Island, Wheeler Reef is a stunning spot, with one public mooring on the edge of a roundish reef. Anchoring there is not really an option, too deep for our liking on the side protected from south-easterlies, but there is a public mooring. At low tide a shy little cay appears, which is always fun to land on. You feel a bit like castaways!

Snorkeling along the deep trenches patrolled by big fish held our interest there, as well as the vibrant coral. We were at Wheeler Reef during one of those rare spells of calm weather and the visibility was incredible: 30m plus. Blue, crystal clear water, absolutely brilliant for underwater photography. Being a fair way offshore, we also saw a few pelagic species and the ever present black tip sharks. It is always good to see them, but can be a little unnerving when they start circling around you. They might not be dangerous, but when they are longer than your height you feel a little vulnerable!

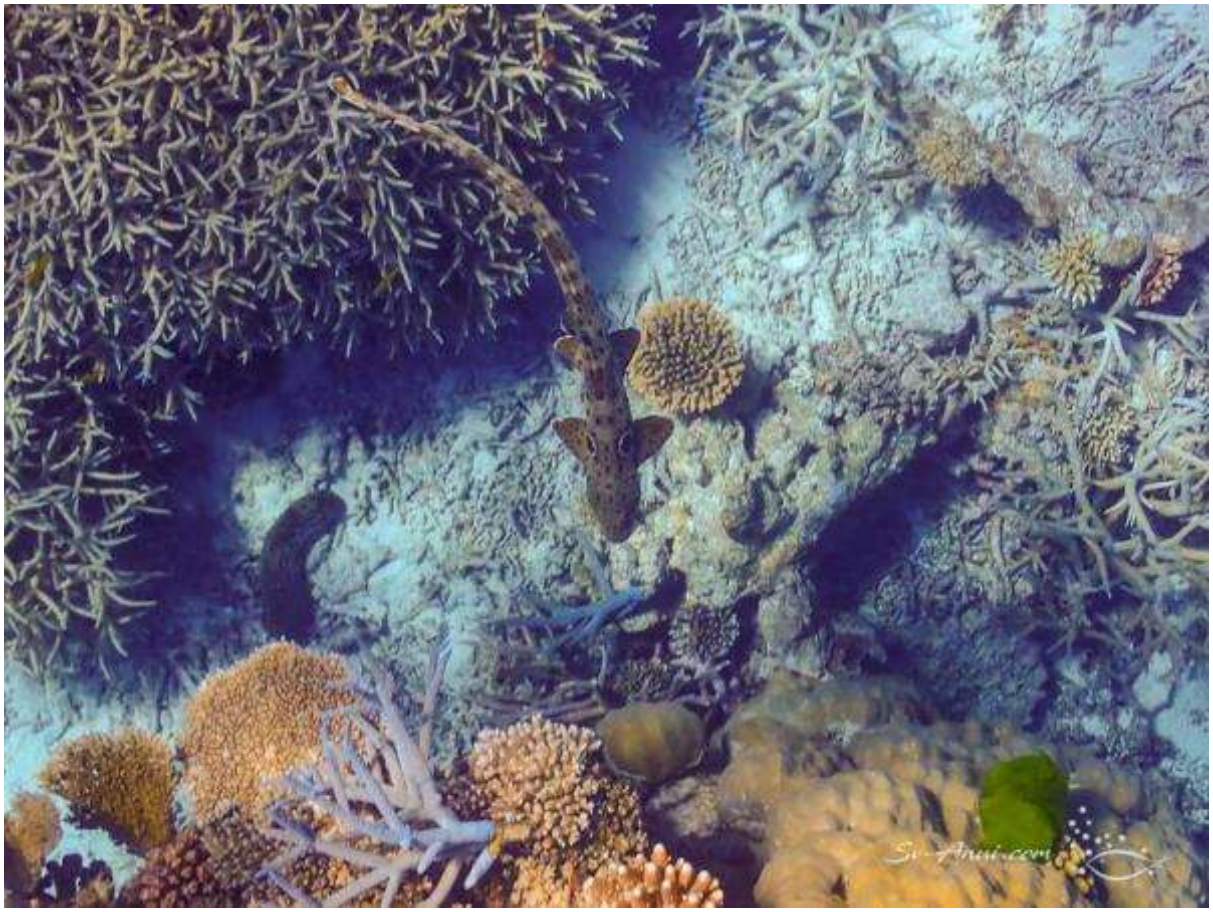
The great advantage of snorkeling and photographing on a sunny, calm day is that your images come out vibrant and clean. The water is crystal clear, without floating particles that catch the light and can ruin your shots! There is hardly any backscatter to clean up, those pesky little white spots that make your photos look like it is snowing and which can take ages to remove in post production.


Si-Anui.com


Si-Anui.com

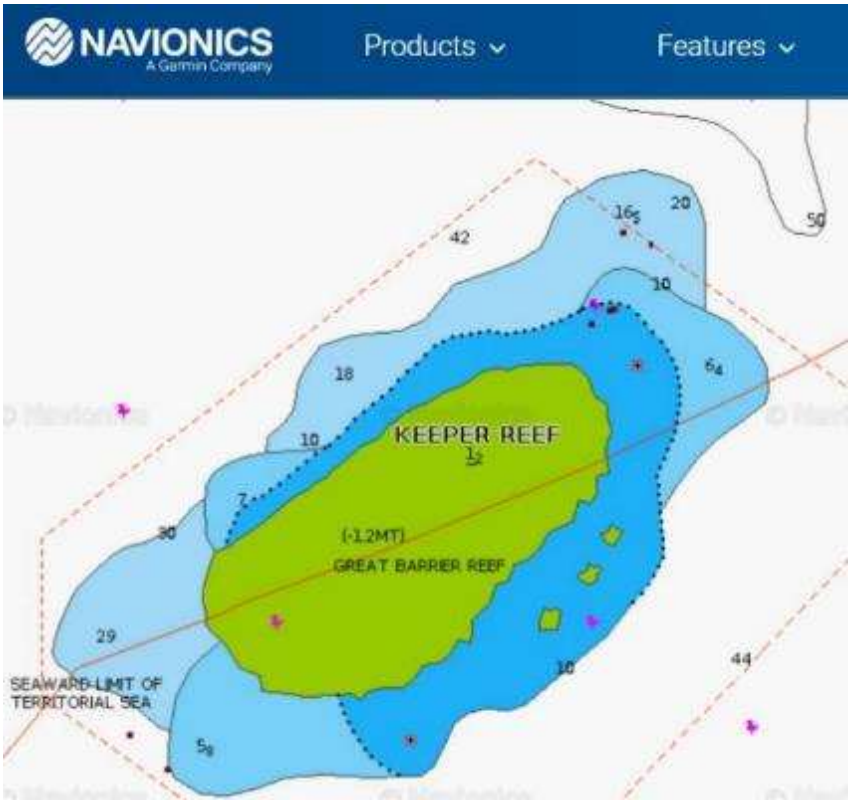

Si-Anui.com


Si-Anui.com



Keeper Reef

What an aptly named reef: definitely a keeper! We really liked this reef!

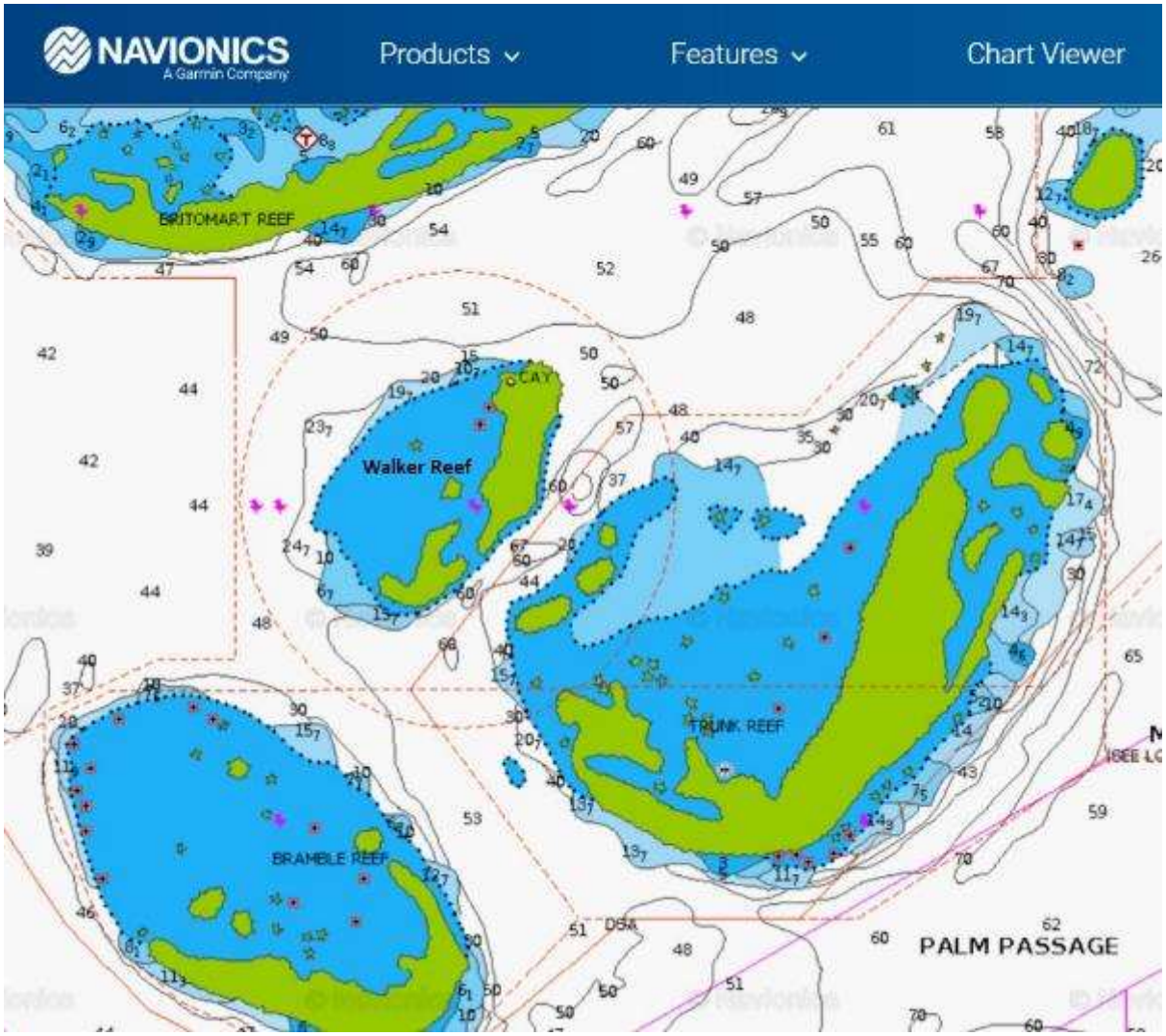


Keeper Reef is an elongated platform reef, with long bommies on the edge of the reef flat. This gives a variety of spots to snorkel at, with different healthy and colourful corals and a multitude of fish species. The visibility and water clarity were splendid. Most of our underwater images show a cobalt blue water – the real thing, not a result of photo editing!


Si-Anui.com

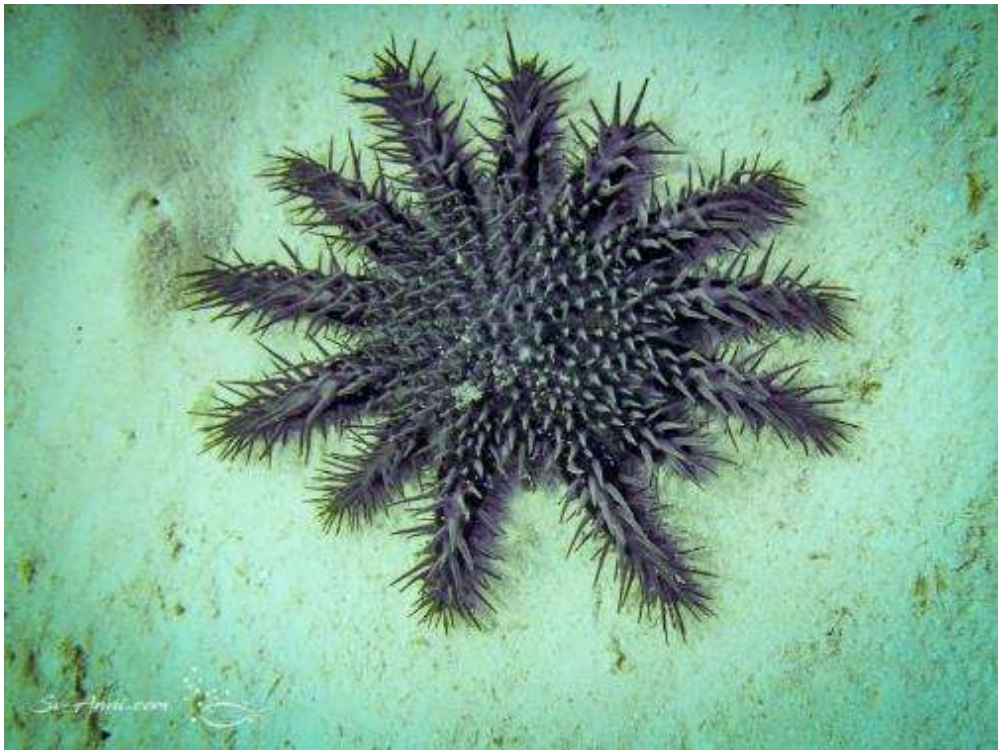

Si-Anui.com

Walker Reef



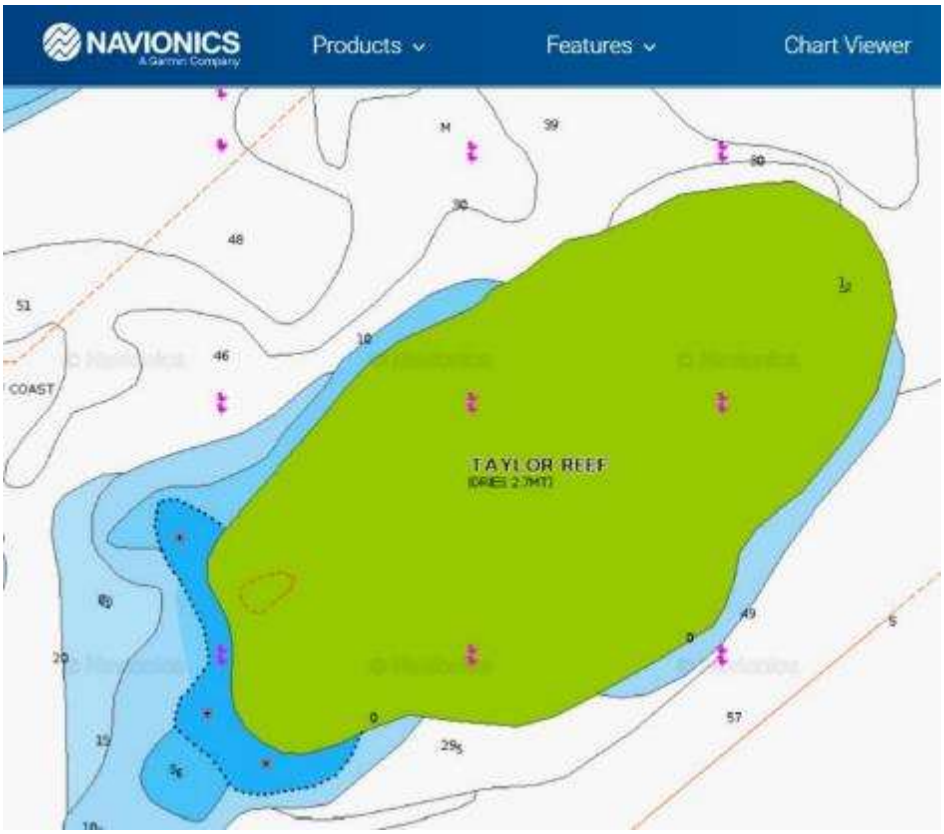
Walker Reef is one of the few reefs in the region where we anchored. No mooring buoy there, but ample space to safely drop the pick over clear sand in six meters of water at low tide. There is a series of long bommies radiating around a shy little cay which only makes an appearance at low tide.

Walker Reef has the sad distinction of being one of the most damaged we have seen, not from cyclones or coastal run off, but from a Crown of Thorns infestation. We were shocked, having never seen these predators in such numbers. In fact we reported the sightings to the GBR Marine Park Authority who ended up sending a team of divers to cull these nasties. To find out more about the Crown of Thorns Starfish, go to our “Intriguing Marine Creatures” section!



A redeeming feature of Walker Reef was the number of different types of anemonefish. Wade found Nemo the Eastern Clownfish, and I found the Orangefin Anemonefish.

Taylor Reef & Cay



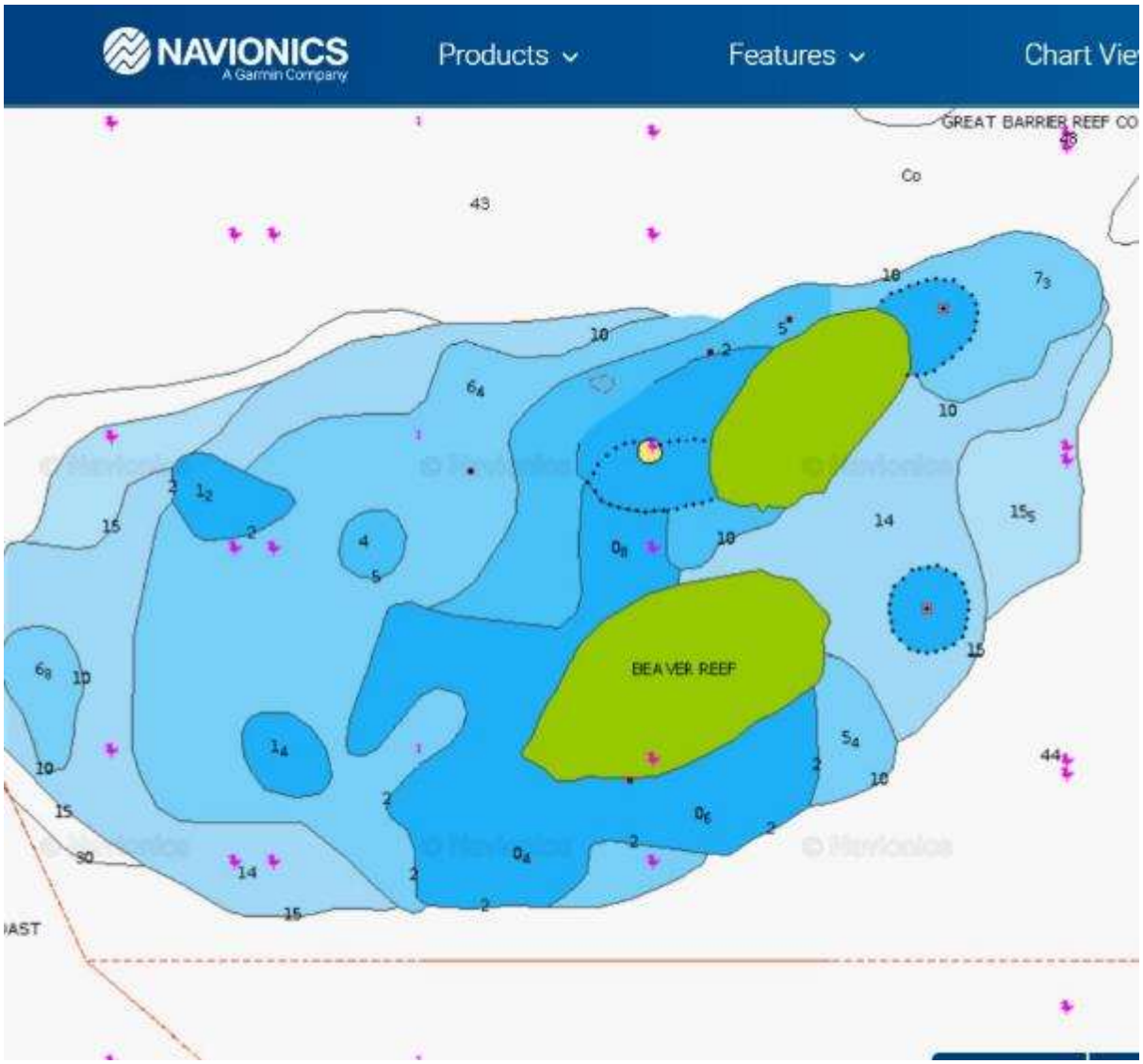
Some 30 miles east of Dunk Island, Taylor reef is a stunning spot. We were lucky to be there on a calm day and the graduation of colours from ultramarine to turquoise was to die for! It is one of those “pinch ourselves, we are really here” spots.

Anchoring at Taylor Reef is stress free in 7 meters of aqua water over sand at high tide, with a large area totally clear of bommies. There is a sizable cay which attracts a lot of sea birds such as black-napped terns, brown boobies and noddies.

With the reef being in a green zone, you can see the effect on the marine life: abundant fish species and not too worried about people. But what is most striking at Taylor Reef is the attractive coral gardens. More than at any other reef, you will see many odd dwellers such as the tunicates and the crinoids as well as the beautiful red gorgonian fans. An interesting fact shared with us by locals from Mission Beach is that Taylor Cay exchanges sand with nearby Beaver Cay from year to year. At times Taylor Cay disappears all together at high tide, while Beaver Cay expands… When we were there it was Beaver Cay which played shy and only poked its sandy head out at low tide.


Si-Anui.com

B eaver R eef & C ay



Beaver Reef is only about 20 nautical miles east of Dunk Island, so an easy spot to get to when the weather is calm. It is a little closer inshore than nearby Taylor Reef. It has a small cay which appears mainly at low tide, and a mooring to tie up to, although you could anchor there quite easily.


Si-Anui.com


Si-Anui.com

Snorkeling happens in mainly shallow water. In fact in some areas the coral was out of the water at low tide.

Being reasonably close to the mainland, the water clarity is not ideal. We were there on an overcast day in 15 knots of abating wind, which would not have helped. But we were still able to explore and find intriguing creatures such as the tunicates, the crinoids and lacy gorgonian fans, species you normally tend to find at greater depth. To find out more about these, go to our “Intriguing Marine Species” section.


Sv-Anui.com

Far North Queensland – Offshore of Cairns & Port Douglas

This region is where we spent the most time. It was all new to us, and very scenic. Over a period of two months we explored the following reefs:

Sudbury

Milln

Flynn

Green Island

Upolu

Vlassof

Michaelmas

Low Isles

Norman

Undine

Mackay

Sudbury Cay & Reef

Offshore of Fitzroy Island, Sudbury Cay is the centerpiece in one of the most beautiful reefs near Cairns. We only explored near the sand cay, at the north-west end of the reef complex. There are two public moorings there and lots of sandy clear patches to anchor in 10 to 12 meters of crystal clear water.

As with most reefs with a sand cay, snorkeling and diving happens in fairly shallow waters, but the reef system here is home to marine life you would expect to see at much deeper sites. With masses of soft corals swaying in the current, weird feather stars, lots of parrotfish who can't help but dive bomb your underwater photos, poking their fins at every opportunity, it is a delight to explore. And then there are the endearing green sea turtles. I spent a fair bit of time swimming with one particular turtle who kept coming back to me. I suspect he was utterly bewitched by my figure hugging wetsuit, finned feet and oh-so-sexy snorkel!

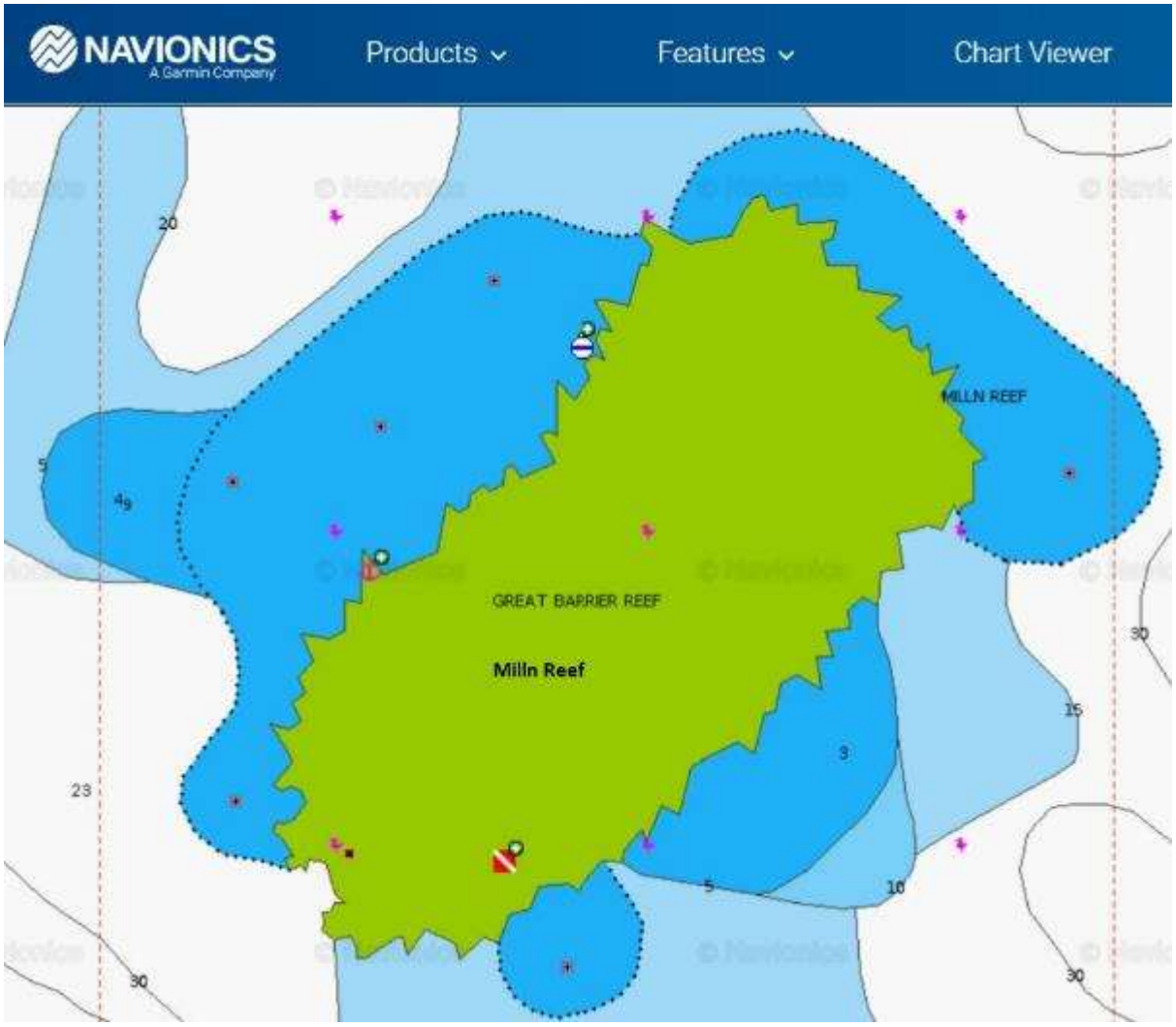
Sudbury is another one of those sights that will erase all your worries in a nanosecond. Down below, there are no bills to pay, no project deadlines, no boat repair task list… Once you are below the waterline, nothing else matters, you are in this very moment.


Si-Anui.com


Si-Anui.com

M illn R eef

Not very far from Sudbury, but a bit further offshore, is the absolute splendour of Milln Reef. The colours at low tide are just mesmerising. It is an easy 30 miles sail from Cairns, and if you are lucky there is a free public mooring when you get there, or you can squat on one of the tour operators' buoys.



The anchor on the chart marks the spot for the public mooring. The chart also shows where the dive sites are. The reef wall all along the northwest side is magic for snorkelling.

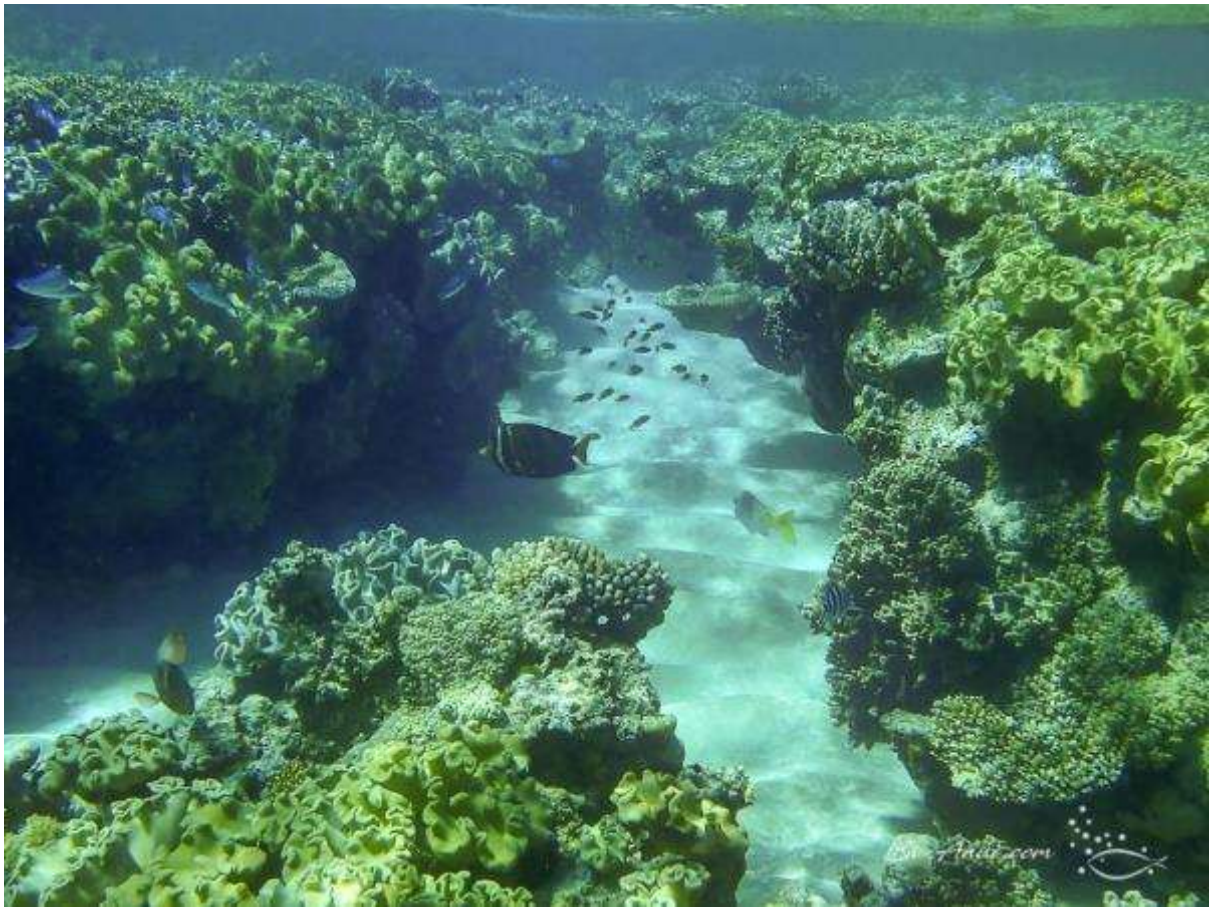
We went to Milln Reef several times and were generally on our own, apart from the occasional dive boat visit. Anchoring is in deep water: 18m plus, too deep for our liking. But tour operators have several moorings, which they are happy for you to use when they are vacant. One of the skippers of the tour boats came to visit us and we had a good chat about the mooring etiquette.

What we found at Milln Reef were lots of BIG fish: some colourful and pretty, others like the green humphead parrotfish only a mother could love!

With a hump on the head, teeth like a horse and a very large size, the Humphead Parrotfish is not the most attractive fish we have seen, but it certainly grabbed our attention!

There is a maze of trenches where a multitude of big and small fish patrol. It is great fun to swim along these gutters; sometimes you get through to different areas, other times you reach a dead end and have to turn around. The seascapes are stunning. And all this in the middle of a huge expanse of hard and soft corals. What a treat! And no rubble, no bleaching, no crown of thorn starfish. We had our friend Sue with us on one of the trips we made to Milln Reef, a very special time.

Milln Reef was where I started using my birthday present: an Ikelite Housing for my Olympus camera with a dome lens. The beauty of this combination over the camera alone was that it would lengthen the life of the camera by not having it in and out of salt water, would improve the focus in wide angle shots, and give me the capability to take split shots – part under the waterline, part above. But first I had to get used to the controls and the grab handle. I got accustomed to the new set up quickly and found it allowed me to get clearer shots, and be more stable when I aimed. So all in all, a very pleasing result.




Si-Anni.com


Si-Anni.com

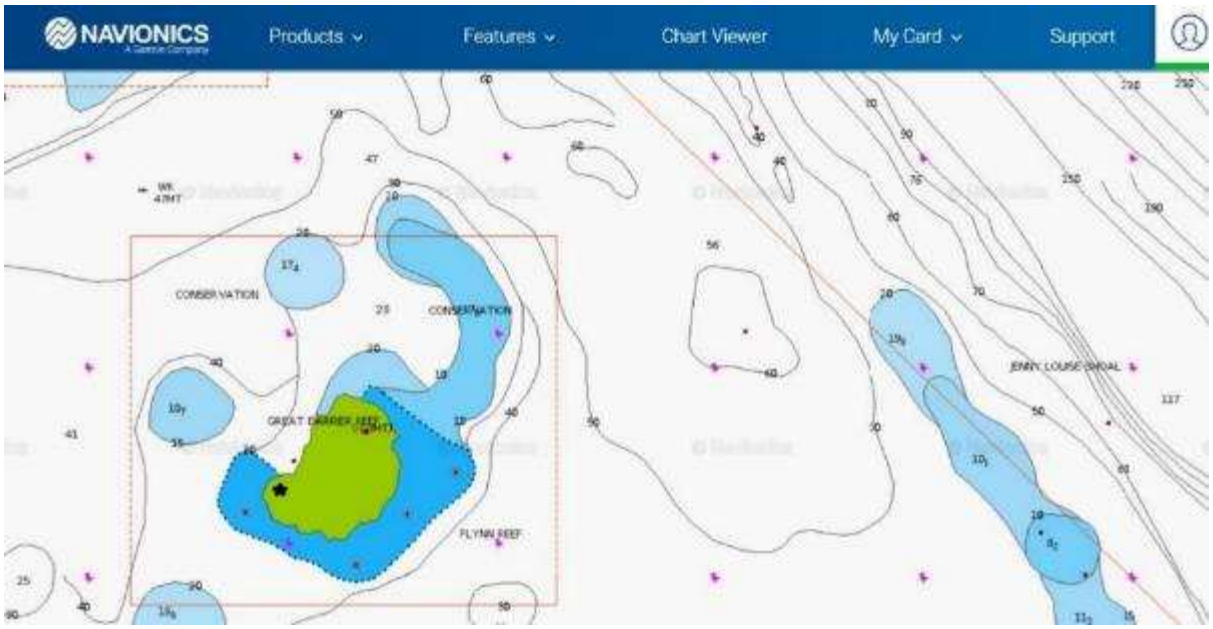

Si-Anui.com


Si-Anui.com


Se-Ahui.com

Flynn Reef

One of the outer most reefs on the edge of the continental shelf and the Coral Sea Trench, Flynn Reef is one of our favourites. We spent several days there. There is one public mooring, marked with a black star on the chart, and several tour operator moorings. Anchoring is in deep water – 18m – so it is best to pick up a mooring.



Because of its location, Flynn Reef feels remote, wild; it feels deep, immense; it feels different from every reef we have been to with its great visibility and dramatic underwater seascapes.

It is the sheer size of what you are navigating through that seems most striking here: huge boulder corals, terraces of coral plates, deep trenches, big drops, and all surrounded by deeper water. You do have to dive down further, but it is so worth the effort. And the water is so blue and so clear.

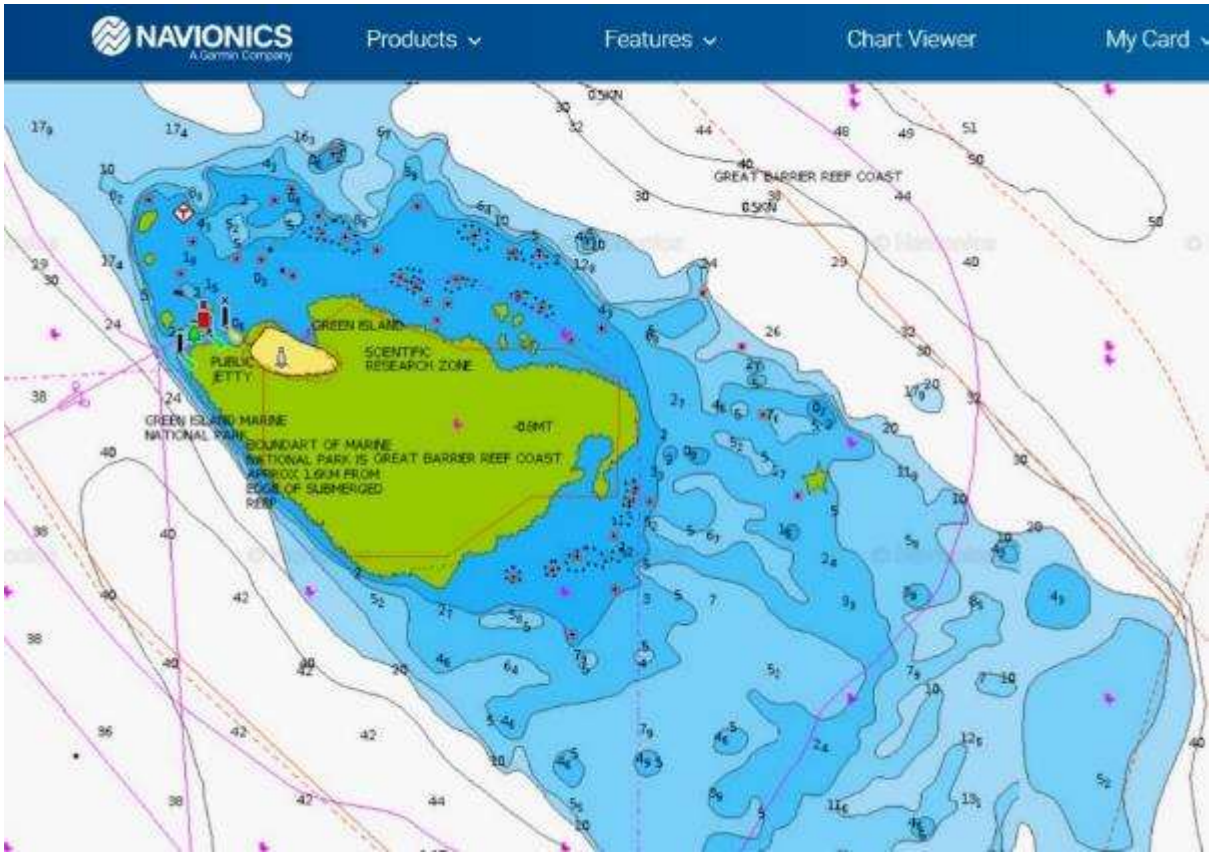

Si-Amui.com


Su-Anni.com


Su-Anni.com

Green Island

The closest coral cay to Cairns and the spot where hordes of landlubber tourists go to for “a reef experience” courtesy of commercial vessels, it may come as a surprise that we went there at all!



But this place has its uses, particularly after spending a week on the outer reef in strengthening conditions. We needed a break in a more sheltered spot and having never gone there before, we thought we might as well check it out!

Green Island is close to the mainland and as such the large reef which stretches for miles on the southern side of the island is much damaged. But the island is very well maintained with a board walk leading through it and interpretive signs. It also has restaurant facilities and a small resort.

There are two moorings north of the island, and a good anchoring area in clear sand. We anchored there and thought we’d visit ashore while we waited for the strong wind to abate.

In years gone by, Green Island probably was a nice spot for a dive, but these days the coastal runoff has done its destructive deed and there is very little left to see. Suiting up for a snorkel did not enter our mind!

The bird life on Green Island is interesting, it is a safe spot for a swim, even if you have to share it with lots of tourists. Good for a small rest and a meal ashore though!


Si-Anni.com


Si-Anni.com

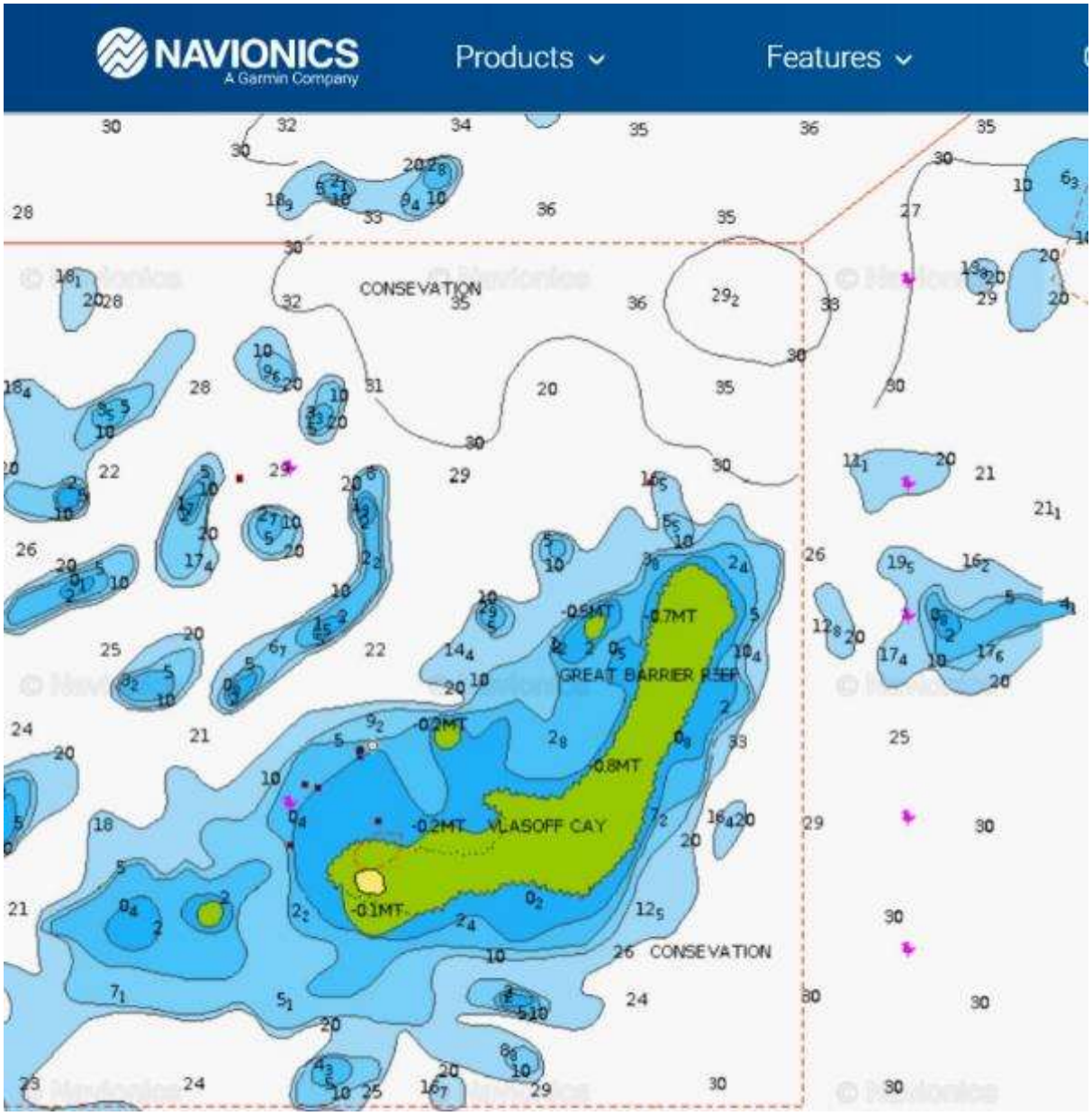
Upolu Cay

The Upolu Reef and its cay sits on its own at the western end of the Arlington Reef. We went to Upolu to see the shy cay, because it was there, close to Michaelmas Cay where we had come from, begging for a visit.

We were impressed by the colour graduations, but were not impressed by the cay which never appeared, even at low tide. It had its top swept off clean by Cyclone Yasi in 2011, and it can now only be described as a shallow bank. As for the reef, we did not explore it. It was quite windy when we were there, and we hooked on to the one and only mooring, but would not recommend this as an overnight stop. It is not protected and very choppy.

This is the cay at low tide. Can you see it? You can walk on the sandbank with water to mid-thigh, but that's about it! We had visions of a proper sand cay where we could launch the drone for some aerial shots, but it was not to be! Despite this, this spot stands out because of the colours: blue sky, emerald water and the sunsets back towards the mainland aren't too bad either!

Vlasoff Reef & Cay



About twenty nautical miles from Cairns through a network of reefs, is the tiny Vlasoff Cay, not vegetated, gleaming in the sunshine and nestled in the middle of turquoise waters.

You can anchor in 8 to 10 meters of water over sand or pick up one of four public mooring buoys. You will gaze at unbelievably beautiful graduations of aqua and ultramarine as far as the eye can see.

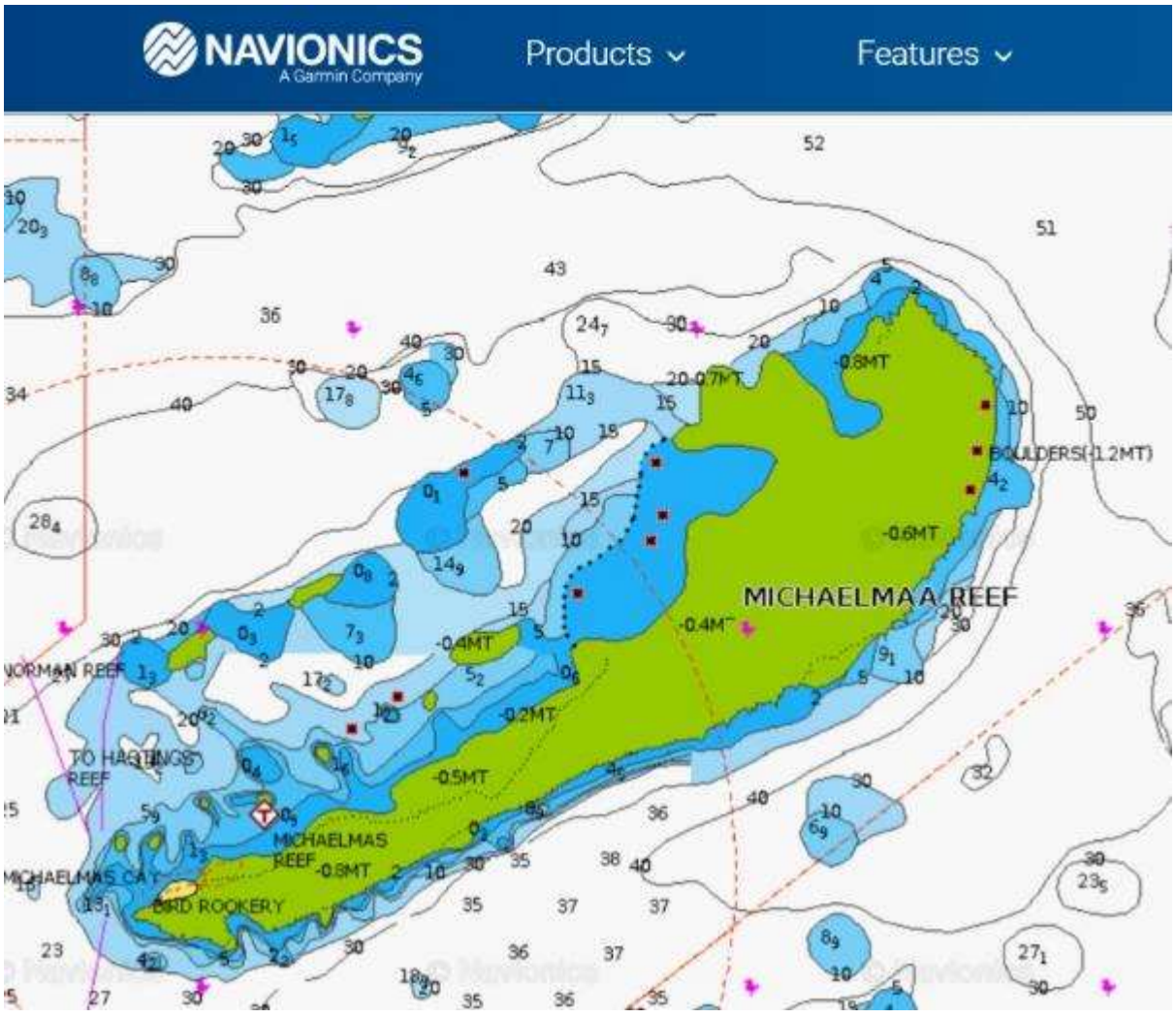
We snorkelled off the boat there, but found it a little on the ordinary side: sparse corals and not many fish. Maybe if we had taken the dinghy right around, we might have found the reef more appealing.

You wish you could get Vlasoff to yourself. But you possibly won't. It is a favourite with choppers from Cairns, which fly over quite often; some land there and drop couples for a brief visit, complete with sun umbrella, deck chairs and a glass of bubbly. But here is a little secret: as long as there is someone on the cay, no helicopter will land – a safety precaution. So if you sail to this gorgeous little islet, we think it is a rather cool place to take a picnic and a bottle of fine wine and celebrate the joy of being there on your own deserted island.

M ichaelmas C ay

The sandy lagoon next to the cay is one of the rare spots that are wind protected. This is because it is sheltered by not only Michaelmas reef and cay, but also Arlington Reef. There are two public moorings close in and space to anchor in clear water over sand a little further out. You can also hook onto the moorings of several tour operators when not in use. They are well maintained. You just have to be prepared to vacate if the tour boats turn up.

Because of the extra protection it offers, you can stay at Michaelmas and withstand stronger wind conditions without feeling like you are in a washing machine. So we came back to it several times during our sojourn in Far North Queensland waters.



Michaelmas Cay is a small low sand islet on the western tip of the Michaelmas Reef. It covers an area of 1.5 hectares and rises to the dizzy height of 3.5 metres above sea level. As you approach the sand cay, you are astounded by the number of birds and the noise level… and the smell of guano! There are so many that at a distance it looks like a black cloud hovers over the sand. With 20,000 pairs of seabirds recorded nesting at Michaelmas Cay it is no wonder! The cay is an extremely important nesting habitat for migrating birds, the largest in the Southern Hemisphere.

People often come to Michaelmas Cay for the birdlife, more so than the snorkeling. You will see brown boobies with their odd blue beak and green feet (the males), lots of sooty and bridled terns, beautiful common noddies, even a frigate bird or two. It really is a special spot for birdwatching.

Michaelmas Cay is frequented by tour boats which bring their load of tourists and spend four or five hours there, sharing their time between bird photography and snorkeling off the cay.

Being an important site for migratory birds and a national park, the cay has an area that is roped off, to ensure people don't disturb the nesting birds. You have to stay within a small area and don't have access to the rest of the island. But you still get an amazing view of the thousands of birds there and their constant flying in and out.


Si-Anui.com


Si-Anui.com

Once you are done with the birdwatching, it is time to get suited up for a snorkel. The coral is immediately adjacent to the beach. The waters around the cay are a haven for turtles resting and foraging all over and have a rich marine fauna including giant clams. Another cool thing: dozens of schooling batfish mingle under your hulls… It is great to jump off the back of the boat and join in the action. They are really inquisitive, swimming under you, around you, at you, totally unafraid. And the black trevallies are very tame too, even if a little more daunting when they come close.

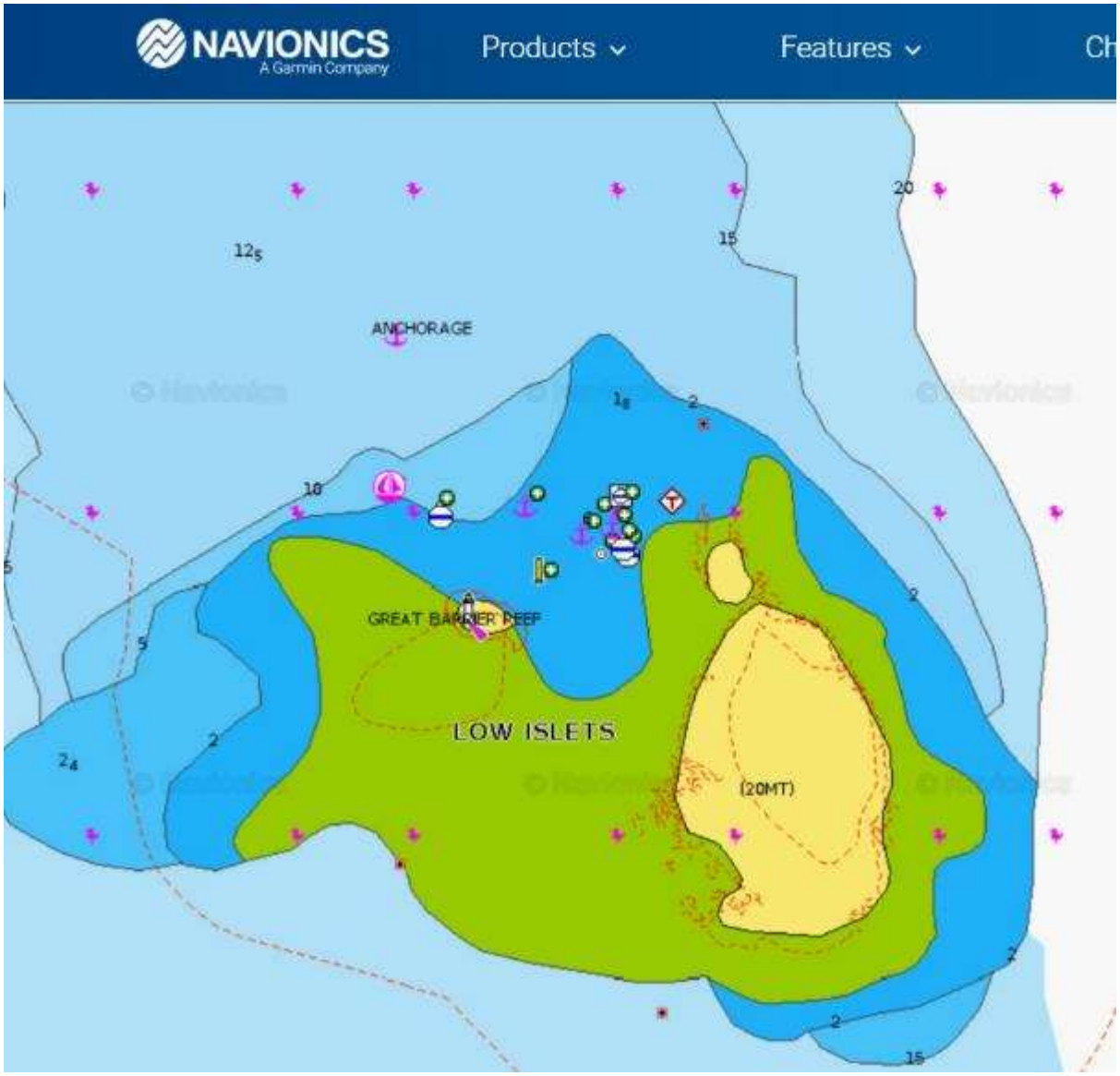

ANAI
Si-Anai.com


Si-Anai.com


Si-Anui.com


Si-Anui.com

Low Isles



The Low Isles are made up of two islets: Low Isle, a small vegetated sand cay, complete with lighthouse and caretaker home, and the much larger Windy Isle, a mangrove islet. They are situated only 10 nm from the mainland, offshore of Port Douglas which makes them very much an inner reef.

Low Isles have several public moorings, three in the quasi-lagoon between Woody Isle and Low Isle, and a couple more on the outside where you can also anchor. They offer great protection from south-easterlies and we hid there for several days during a blow.

You won’t get Low Isles to yourselves though. It is frequented by several tour boats who bring their load of tourists twice a day. From 8.30 to 3.30, there is a constant ferrying of passengers between the mother ships and the sand cay.

At Low Isles you can bird watch, walk around the cay, have a lie down on the beach, and if you are desperate, try a snorkel. During October to April, Woody Isle is out of bound to visitors to allow migrating birds to roost undisturbed.


Si-Anui.com


Si-Anui.com

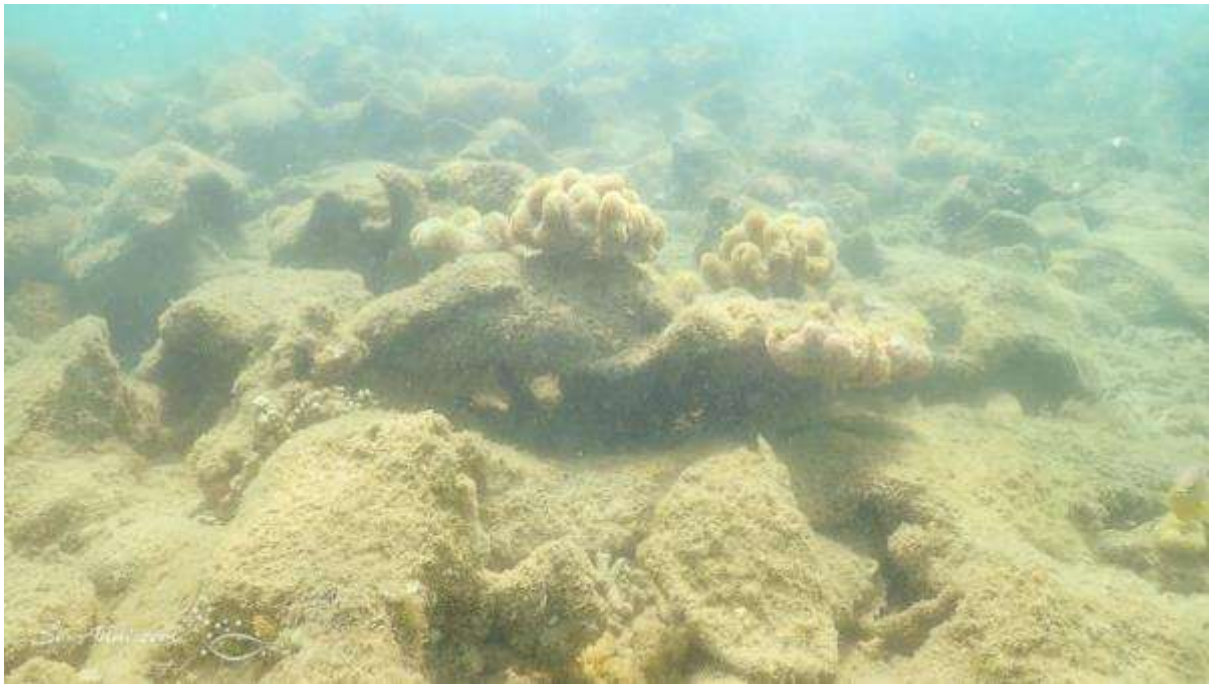
The beauty of Low Isles is the bird life: Beach Stone Curlews, Wimbrels, migratory Royal Pigeons, Sooty Terns and Black-naped Terns abound. If you get to Low Isle before the tour boats turn up, you have a chance of seeing some beautiful sea birds. You might also get a glimpse of the Osprey who has built its nest on the side of the lighthouse!


Sv-Anui.com

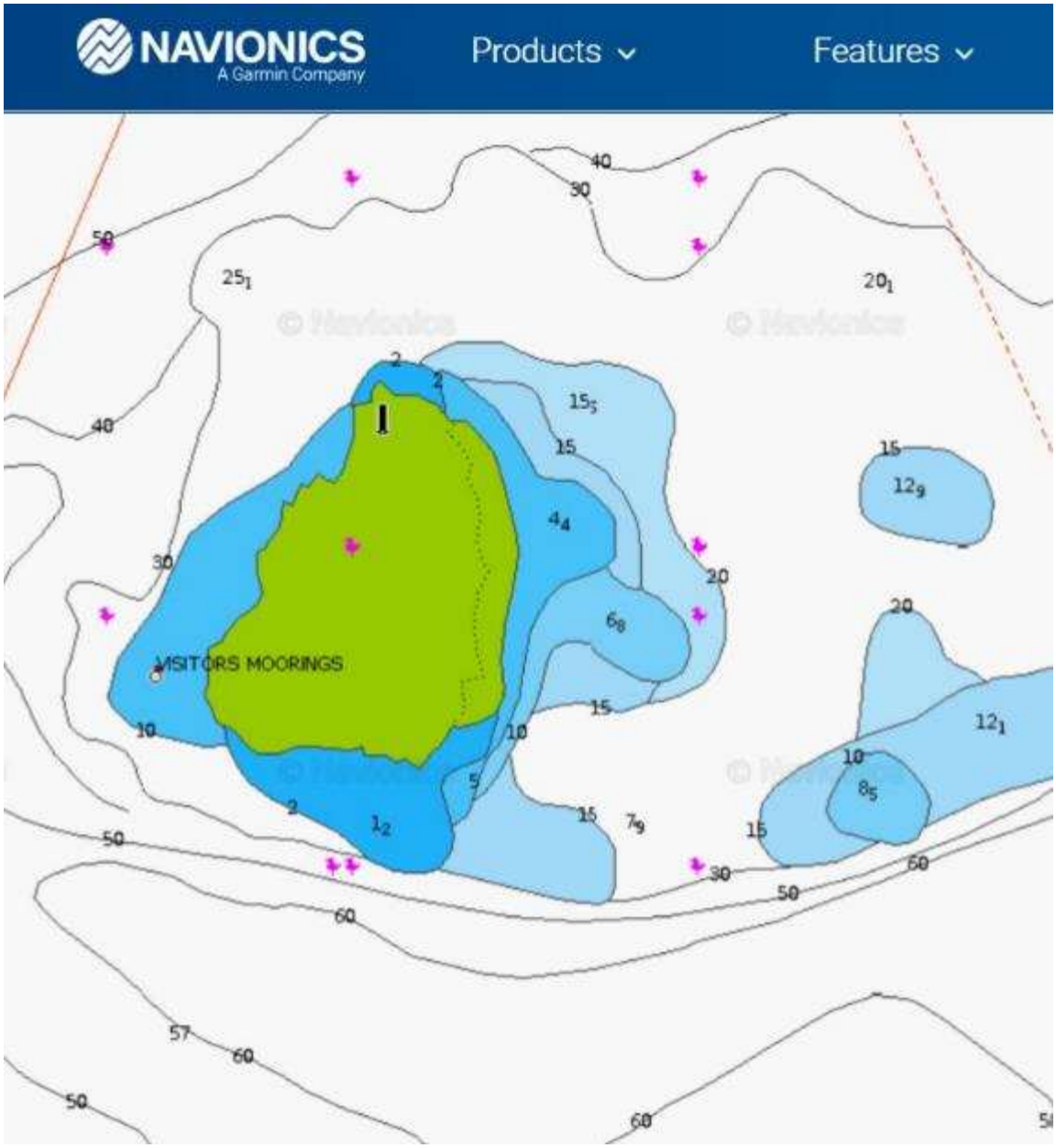
And every late afternoon, the Royal Pigeons come back to Woody Island from the Daintree in great numbers for roosting. It is an endless procession.

We loved the birds, although some of them liked settling on Anui each night, making a racket and a mess… another type of poop machines!

The disappointing thing at Low Isles was the state of the reef. Being an inner reef, the sea floor is unfortunately extremely damaged by coastal runoff. The coral is all but dead, smothered by filamentous algae and silt. It is a sad sight. Only a couple of years ago, friends of ours were singing the praises of a lovely garden of soft corals. Not anymore!



Norman Reef



Just north of Hastings and Saxon Reefs, Norman Reef was promising lots of exploring over a few days, but we only saw the southern end of it.

Norman Reef has the sad distinction of being where we broke away from a public mooring, or rather the poorly spliced mooring rope came away from the mooring buoy and stayed attached to Anui – and of course all this happened in darkness!

What we saw of Norman Reef was impressive: coral emerging over the surface at high tide, big gutters, lots of larger species of fish such as the Titan Triggerfish, the Maori Wrasse, Sharks, Rays Cods, a big Coral Trout. It felt like a wild place and we certainly will go back there.


Si-Anui.com


Si-Anui.com


Si-Anui.com


Si-Anui.com


Si-Anui.com


Si-Anui.com


Se-Anui.com

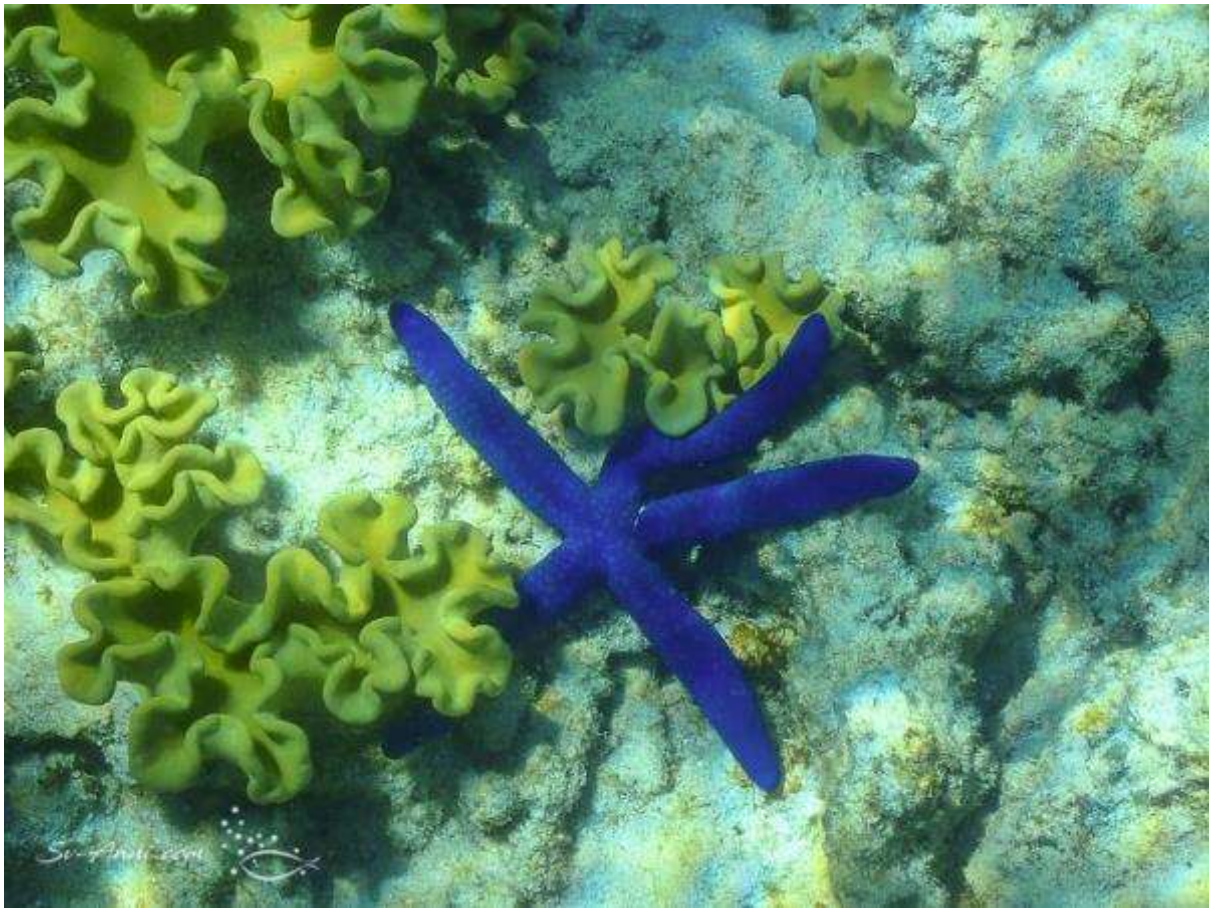

Se-Anui.com

Undine Reef & Cay

The Undine Reef is quite extensive and joins onto St Crispin Reef further east. There may well be a number of possible anchorages along its length, but we did not explore. We anchored overnight in front of the sand cay on the western extremity marked on the chart in orange, in 10 meters of water over clear sand. There is no public mooring there although there is one private mooring buoy close in.

We checked our beautiful surroundings both over and under the waterline, flying the drone at the cay and going for a snorkel in the shallows.

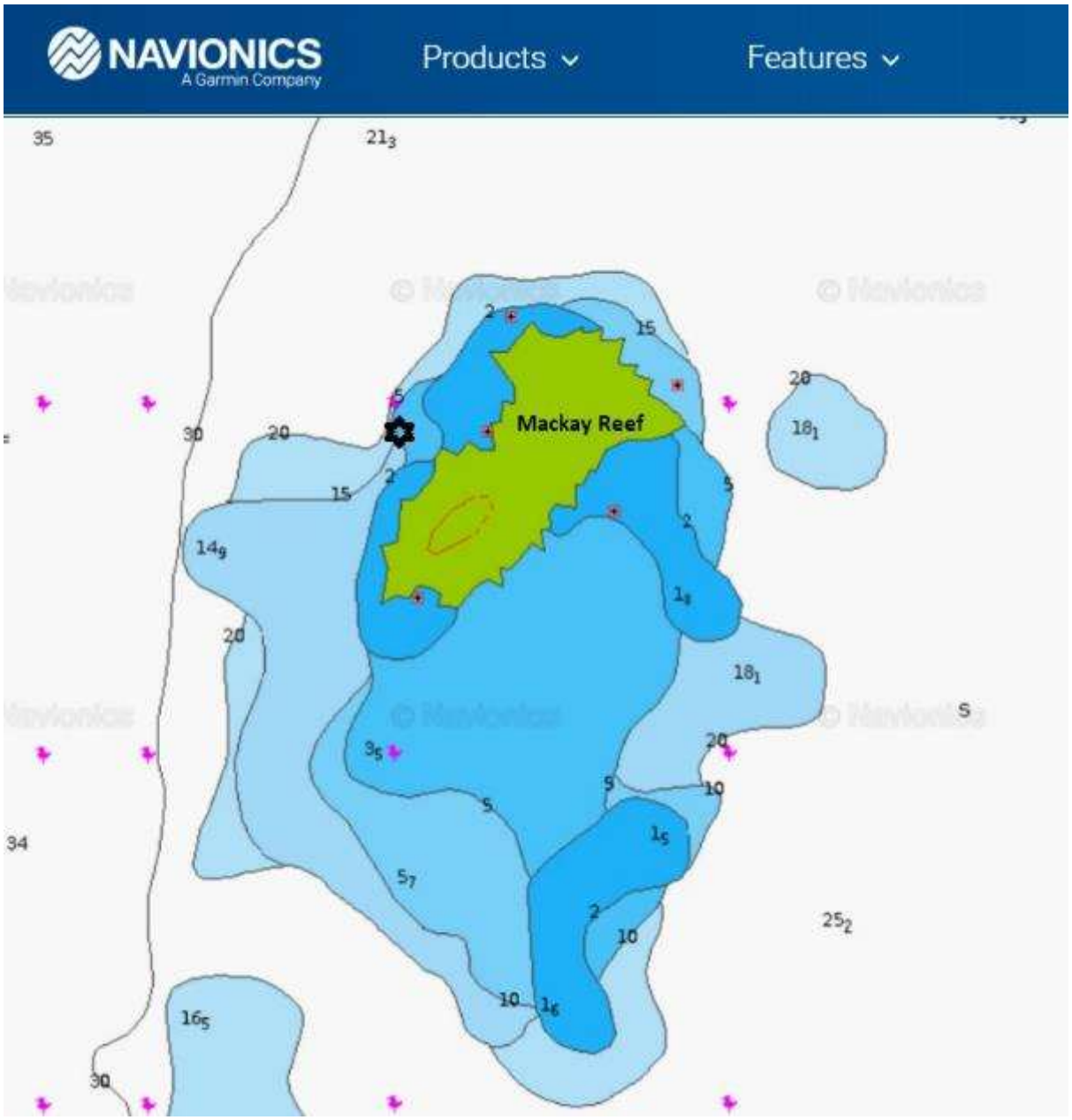

Se-Anni.com


Se-Anni.com

Mackay Reef & Cay

Mackay Reef was the furthest north we got to this year: latitude 16^0S.

As far as we are concerned, Mackay Reef has it all: plenty of space to anchor or you can hook onto one of two moorings if they are vacant (marked with a black star on the chart), a sand cay you can land on (circled in red inside the green reef) and varied snorkeling spots with a variety of marine life. It is not a big reef, but it has a lot to offer.



Wade is ready for action and so is Bengie!

Hopping into the clear water and seeing what lies beneath is one of those ‘OMG’ moments. The water is crystal clear.

We have snorkeled at dozens and dozens of sites, but Mackay Reef, particularly around the reef wall drop off impressed us. There are giant clams in neon shades that hardly seem real, nemos (yes you will find him and his family) in their favourite anemone, the usual array of colourful parrotfish and surgeonfish zooming in and out of ledges and hidey holes, and the larger pelagic species patrolling on the outside.


St-Anni.com


Si-Anui.com


Si-Anui.com

Sunrises are always worth getting up for! On one side, the cay, and on the other, looking towards the sun, our neighbor Mustang Sally! What a nice way to end our northern voyage!

The sun sets on the Great Barrier Reef as we end our Reef Hopping for the season.

A lovely way to end our voyage.

Intriguing Marine Creatures

We have a craving for new mysteries and when we see some very odd looking critters, we get very excited! In all our underwater explorations, we were lucky to observe a few very strange and fascinating creatures! Some of these are a sight that elate us as photographers: colour, elegance, intrigue. Others – fortunately few - are a source of concern as we know they are harmful to us and especially to the reef. So for our own information, we did a bit of research. This section documents what we discovered about six particular species:

Christmas Tree Worms

Crinoids

Crown-of-Thorns Starfish

Giga Giant Clam

Sponges

Tunicates

Christmas Tree Worms

These spectacular cone-shaped creatures are renowned for their colourful look and spirally shape. They put on an attractive display when in a small colony. Called the Christmas Tree Worm (Spirobranchus giganteus) for obvious reasons, they are sedentary worms which are also reef protectors. Much like the complex tree-root systems of a large forest, colonies of Christmas tree worms create a calcium carbonate tube that penetrates the corals they inhabit where they can live for up to 40 years, depending on animal size and reef health. Only the gills are exposed, which are also used for respiration. Much patience and good buoyancy skills are needed to photograph them. They withdraw their brachia into their tubes quickly when detecting a threat or movement around them and come again very reluctantly.

The plumes you see above are called "crowns", they come in all sorts of colours (light blue, dark blue, white, pink, orange, even red) and they appear in pairs. That is because each worm has two of them. By pumping water up and over the crowns, a Christmas tree worm can filter out tiny plants and animals to snack on. The feathery structures are lined with both sticky mucus and spiky bristles (called cilia), which help trap passing prey.

C rinoids

Also called Feather Stars, Crinoids are marine invertebrates. They are members of the echinoderm family which also includes sea stars and sea urchins.

These strange, plant-like creatures hide in plain sight among bright corals and anemones, firmly anchored to the sea floor, as their slender, branching limbs billow like colourful fern fronds.

You will often spot them perched on sponges, corals, or other substrate. The arms which have feathery fringes (pinnules) are used to feed on drifting micro-organisms, trapping them in the sticky grooves. They contain the reproductive organs and carry numerous tube feet with sensory functions. The tentacles have open grooves, along which cilia (minute, hairlike projections) sweep food particles toward the mouth.

But things get positively weird when they break free – swimming, floating, or even walking through the ocean like a tiny Triffid. They move by undulating their arms up and down in an elegant and mesmerising way. It is a rare but fascinating spectacle!


Si-Anui.com

Crown-of-Thorns Starfish

Most of the marine life we come across is a source of delight. But in October 2019, we saw something that shocked us. Walker Reef, offshore of Hinchinbrook Island, was our first experience at witnessing the damage inflicted to the reef when Crown-of-Thorns Starfish attack hard coral in large numbers. We had seen isolated Crown-of-Thorns Starfish only once before, at Hook Reef, offshore of the Whitsundays. But this time it was a disturbing sight which sent us on a quest to do something about our find. It started with learning more about these voracious coral eaters, then reporting their sighting and enquiring about individual action we could take. I ended up writing an article about them, to make other cruisers aware. It is scheduled for publication in January 2020 in Cruising Helmsman. So here is what we discovered.

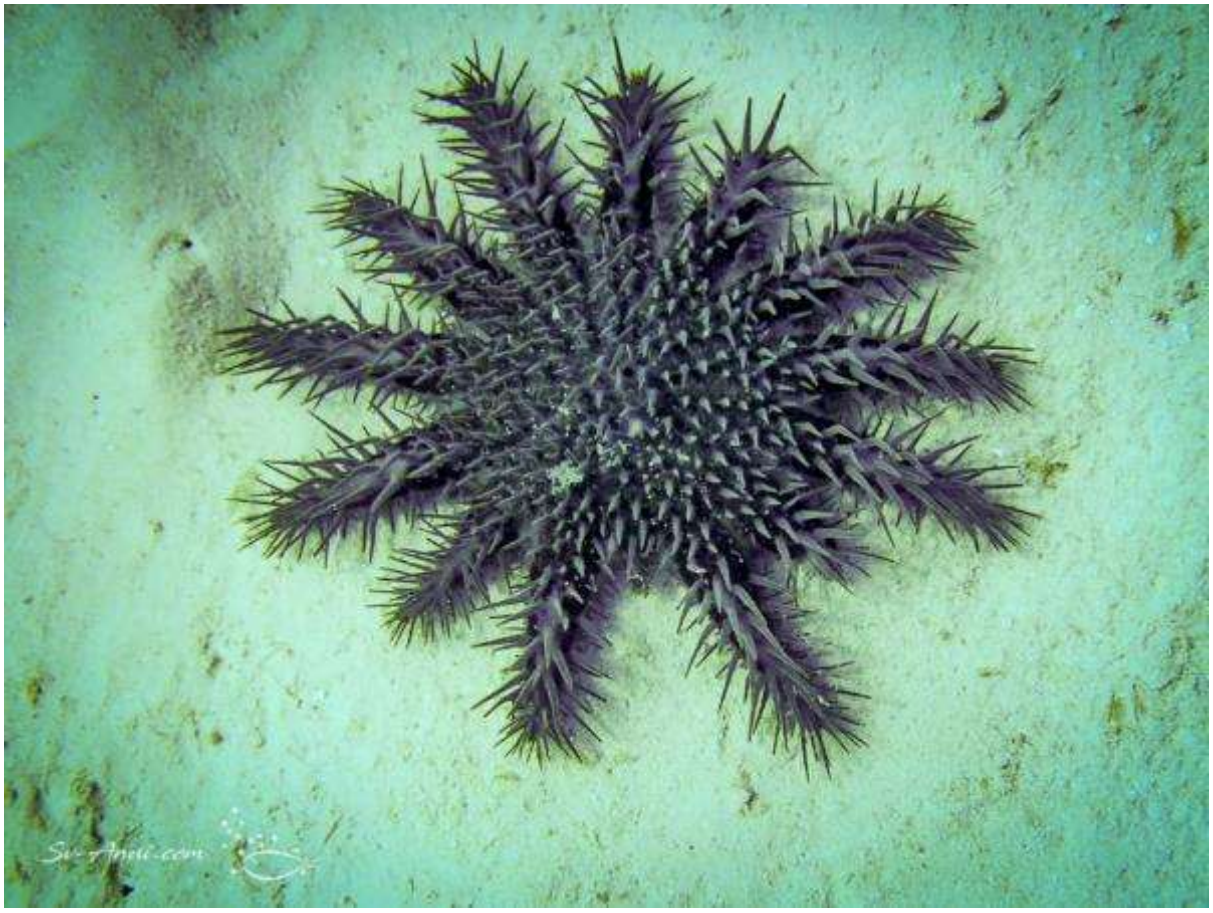
What Crown-of-Thorns Starfish look like

Crown-of-Thorns Starfish (COTS) are the largest specie of starfish. They get their name from thorn-like spines that cover their upper surface, resembling the biblical *crown of thorns*. They are generally 25 to 35cms in diameter, but can be as large as 80cms, with up to 23 radiating arms. Most of the ones we saw had 13 to 15 arms. Like other sea stars, if it loses an arm it can regenerate it in about six months. Covered with big venomous spikes, COTS are toxic to both marine creatures and humans. The thorns are sharp and can penetrate through a wetsuit or a glove, inflicting a puncture wound laced with venom that can induce sharp pain, swelling, nausea and vomiting… So look, but don't touch! Although the body of the Crown-of-Thorns Starfish has a stiff appearance, it is able to bend and twist to fit around the contours of the coral on which it feeds.

Feeding Frenzy

Crown-of-Thorns Starfish feed on branching and table corals such as Acropora species rather than more rounded corals with less exposed surface area, such as Porites. Like other starfish, they exude their stomach and start the process of digestion outside their body. They settle on a piece of hard coral, release chemicals which attract additional COTS to healthy reef sections. They then begin their destructive feeding frenzies, releasing digestive enzymes onto the reef, and liquefying the coral tissue. You will notice the white coral skeleton – the scar - where they have digested the polyps as they move around and eat their way through an area. The coral skeleton is then rapidly infested with filamentous algae. An older scar will look brown or grey.

During a severe outbreak, there can be many crown-of-thorns starfish per square metre, even piling on top of each other. They can eat so much that they can kill most of the living coral in that part of the reef, reducing hard coral cover from the usual 25 - 40% of the reef surface to less than 1%. Such a reef can take 10 years or more to recover its coral cover.



The Threat They Pose

In a healthy reef and in small numbers, COTS play an important role in the reef ecosystem. They prevent the fastest growing corals such as branching and staghorn corals, from taking over slower growing species like boulder shaped corals. They keep biodiversity high and enrich the environment. One COT in a hectare area is what is considered a normal, low risk number. Imagine a rectangle 500 meters long and 20 meters wide, or a square with 10 meter sides and put one COTS in there and you get the picture.

But like other animals that have caused problems when populations explode, it is when they reach plague proportions that they become a pest. In an outbreak, which is defined as at least 30 COTS in a one hectare area or when they consume coral tissue faster than the corals can grow, they inflict significant damage to the reef. What we saw at Walker Reef was an infestation of about 30 to 40 COTS in maybe half a hectare. So it was concerning.

With the cumulative effect of other threats such as climate change, coral bleaching, tropical cyclones and decreased water quality which weaken the Great Barrier Reef's resilience and threaten its survival, it becomes increasingly critical to address the impact of COTS predation.

Here is what makes COTS such a menace:

- They eat 250cm^2 of coral per night, or about their body diameter
- They prefer plates and branching corals which are already susceptible to bleaching.
- Females are extremely fertile and produce 2 million to 65 million eggs per spawning season (December to February) depending on their size.
- They grow rapidly, getting to maturity quickly, and can easily reach outbreak densities.
- They are cryptic, meaning they hide in the reef during the day and are hard to see, but they are active at night, moving at up to 20 meters an hour.
- Their own predators (the Giant Triton Snail, Maori Wrasse, Starry Pufferfish and Titan Triggerfish) have greatly decreased in numbers through over fishing,

Crown-of-Thorns Starfish Control Program

The Australian Institute of Marine Science runs a long term monitoring program at the Reef which looks at a range of aspects including crown-of-thorns starfish. This program has shown that outbreaks have begun in the north and migrated southward over about a 15-year period, with ocean currents transporting larvae between reefs. The surveys also show that healthy reefs generally recover between outbreaks, taking 10 to 20 years to do so. However, recovery takes longer on reefs that are affected by additional stresses, such as coral bleaching, cyclones or poor water quality, so the coral may not fully recover before the next wave of outbreaks occurs.

The Great Barrier Reef Marine Park Authority (GBRMPA) oversees a COTS control program. This is a combined surveillance and culling program involving a number of licensed vessels along the Reef and a team of divers. High profile individual reefs such as those used by the tourism industry have been protected by divers injecting COTS with poisons. The best practice method for undertaking COTS control is to use a modified drench gun to inject the starfish, using bile salts, sodium bisulphate or household vinegar. These injection methods minimise the risk of breaking corals, and are safer than manual removal which is not recommended due to the risk of spiking. Although direct injections are toxic to COTS, these solutions are not known to have a residual environmental impact. To date over 900,000 COTS have been killed by injections by divers.

This image has been provided under license by the Great Barrier Reef Marine Park Authority. He shows a diver safely injecting and removing a crown-of-thorn starfish.

Giant Clam Tridacna giga

True giant clams, the Tridacna giga are truly gigantic. These creatures are the world's largest bivalve molluscs and live for up to a century. They weigh 150 to 200kgs, and stretch between 90cms and 130cms in length. These are three to four times the size of the small giant clams – Tridacna maxima – which are much more common.

They are filter feeders. Water enters through the syphon visible in some of the photos, and passes through the gills where oxygen is extracted and plankton is filtered. The water is then expelled through their circular aperture. In fact as you swim over them and they sense the change in light, they squirt water like a geyser!

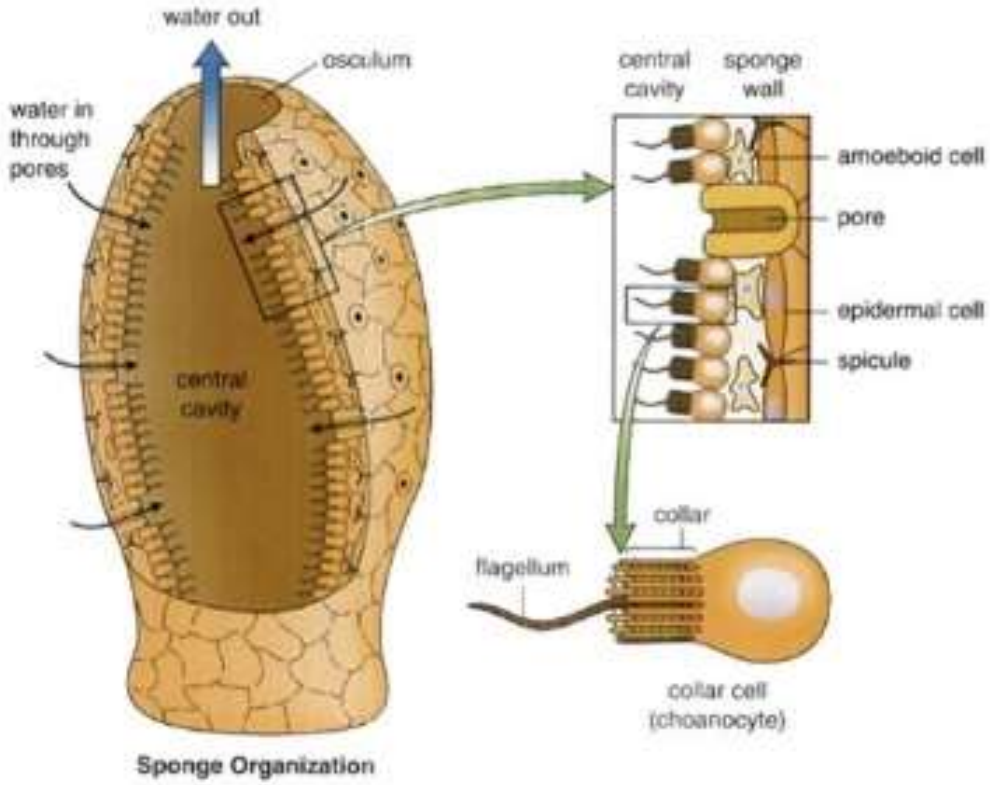
The population of giga Giant Clams is gravely declining and their survival is now threatened, impacted by a combination of increased commercial demand, coupled with technological advances in exploitation as well as climate change, pollution, habitat loss and coastal development.

So when we come across them during our dives we are enthralled and feel quite lucky. They have a rather drab exterior, but a huge colourful mantle mainly in greens and golds with blue speckles. Out of 31 sites in the world where natural wild population of Tridacna giga were known to be present, the species are either severely depleted or can no longer be found at 26 of them. The nursery at Orpheus is an example of a successful restocking and conservation project, with many of the clams transplanted onto various reefs and islands of Queensland. We saw them at Michaelmas and Mackay Reefs.

S ea S ponges

One animal that every snorkeler or diver has encountered because they don't hide or swim away is the sea sponge. These creatures are generally brightly colored. The word sponge for most of us relates to the scrubbing sponge or bath sponge. But there is more to sponges than that!

Sponges at the reef are living animals. They are attached to the bottom of the ocean and are quite primitive creatures. The typical body form consists of a hollow pitcher surrounded by lots of small holes (the pores from which they have received the name Porifera) and opens up at the top with a large hole. The body cavity of the sponge is large, open to the outside world and it enables the sponge to consume food. They don't have internal organs, or a nervous system. Their skeleton is made of tiny, needle-like splinters, or a mesh of protein called sponging. Here is a diagram obtained from the google site spongebobjfr.



Sponge Organization

Sponges are the reef's pharmacy as they produce many chemicals to ward off bacteria, fungi and predators. The amount of work done by these purifiers is incredible. Some sponges can remove as much as 99 percent of the bacteria from the water they filter, and some can filter their own volume of water in less than 30 seconds.

Sponges can form all kinds of shapes: barrels, tubes, slippers, fans, cups, blobs, and cone shapes are all possible when you have no body organs or tissues to get in the way!

This one is a barrel sponge, photographed at Hook Reef.

Vase sponges – Irunia campana

Tube sponges:

Is it a Sponge or a Tunicate?

Sponges and Tunicates look very similar and have a similar feeding process, but are different species.

The big difference is in their anatomy. Sponges are asymmetrical, have no true tissue, no nerve, and are just a simple aggregation of cells. They are suspension feeders. Tunicates have a tail, gills, dorsal nerve cord, are bilaterally symmetrical, and have a complete gut. Tunicates have two siphons to allow water in and out.

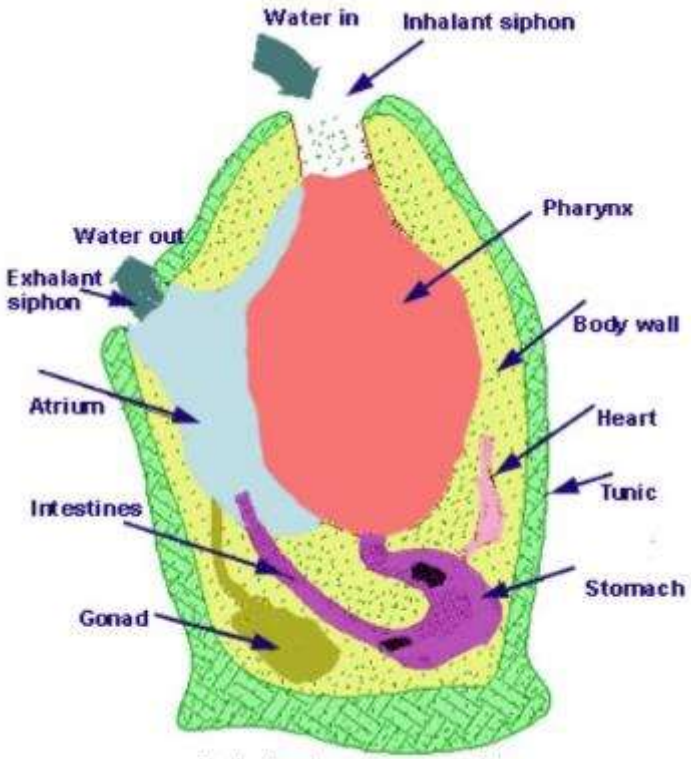
The easiest way to tell them apart when snorkeling is to gently waft your hand near the animal. If the animal contracts its siphon quickly it is likely to be a Tunicate. Sponges can contract, but they do it much more slowly, if at all.

Tunicates

Also called Sea Squirts because of their habit of contracting their bodies sharply and squirting out water, the tunicates are tethered to the sea floor, siphoning in water to collect food. They are immobile and permanently attached to rocks or other hard surfaces on the ocean floor.

A tunicate is built like a barrel. The name, "tunicate" comes from the firm but flexible body covering, called a tunic. Most tunicates live with the posterior, or lower end of the barrel attached firmly to a fixed object, and have two openings, or siphons, projecting from the other.

Tunicates are filter feeders, feeding by drawing often hundreds of litres of water each day through the inhalant siphon. This water passes through the pharynx where small particles are filtered out before the water is expelled through the exhalant siphon. The water current is caused by beating cilia. Water can also be pushed out of the atrial cavity by muscular contractions of the tunic if the tunicate is threatened. The small particles of plankton are trapped on a continually moving layer of mucous. This mucous is released by special cells and is moved across the surface of the pharynx by the beating of many small cilia, until it is passes into the digestive system where the food particles and mucous are digested. Here is a diagram that explains their structure. It was obtained from mesa.edu.au.



Body structure of a sea squirt

With a height of 5 to 12 cms, the Inkspot Sea Squirt or Polycarpa aurata, has an urn shaped body. This first one looks a bit scary with its spikes inside the exhalant siphon!

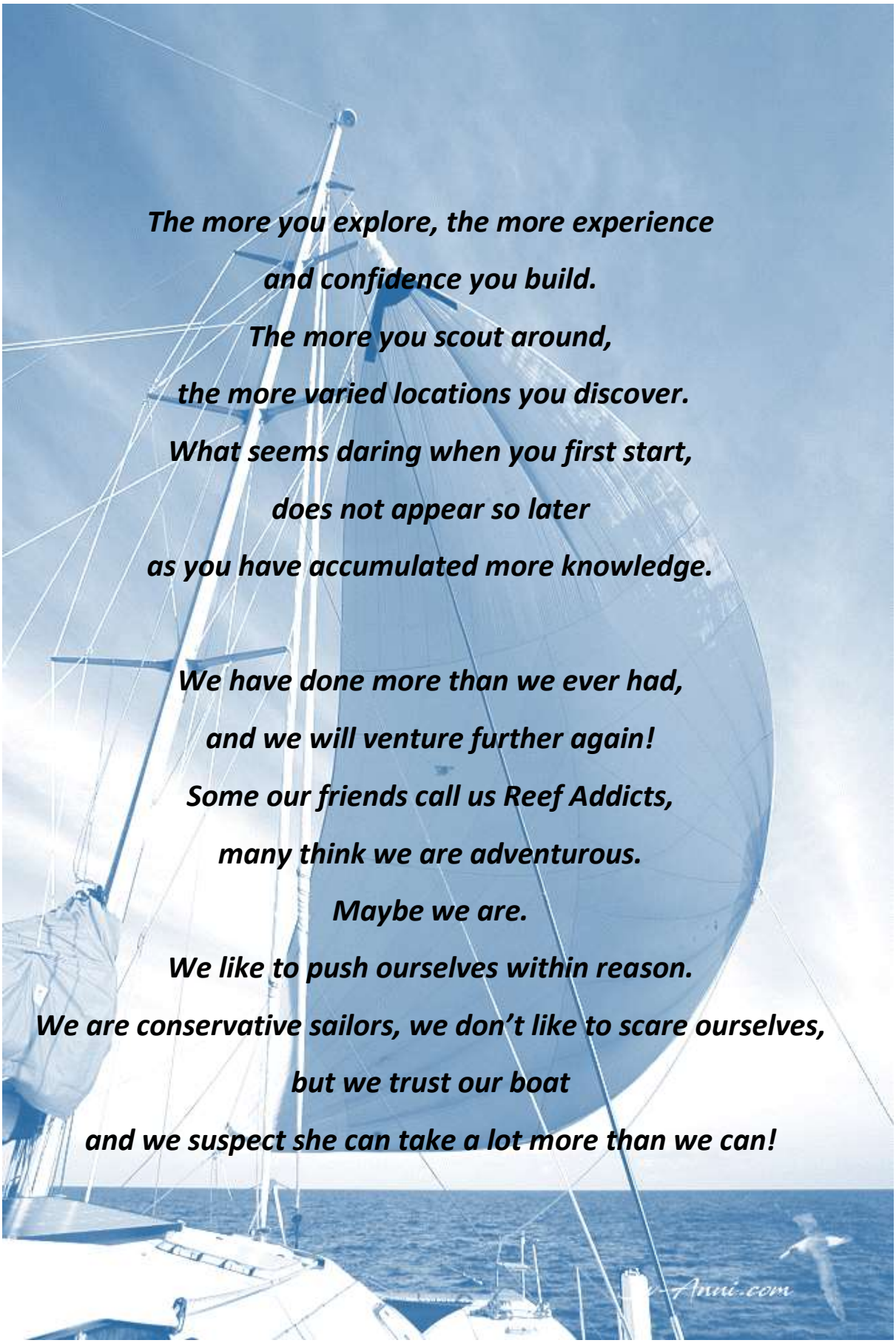
But there is another type of colonial tunicate. These form colonies consisting of several hollow urns each with a large circular terminal hole, the atrial siphon, and connected by an encrusting base. The tunic (body wall) is firm to the touch and is perforated by a number of pore-like buccal siphons.

The Verdict!

We visited 24 reefs in the six months we spent between latitude 25^0S and 16^0S and accumulated a wealth of experience as well as thousands of photographs!

Our absolute favourite reefs were in Far North Queensland and we will definitely go back next year to revisit some and explore further. The water clarity was amazing, the marine life abundant and the coral vibrant. But the best was seeing all this wonder without crowds.

One thing is certain, everywhere you go is different, even within the one reef. There is so much to discover, so many reefs to go to. You just need the time, the weather and a spirit of adventure. You also have to be a little daring because it is rare to have absolutely perfect conditions.


The more you explore, the more experience
and confidence you build.
The more you scout around,
the more varied locations you discover.
What seems daring when you first start,
does not appear so later
as you have accumulated more knowledge.
We have done more than we ever had,
and we will venture further again!
Some our friends call us Reef Addicts,
many think we are adventurous.
Maybe we are.
We like to push ourselves within reason.
We are conservative sailors, we don't like to scare ourselves,
but we trust our boat
and we suspect she can take a lot more than we can!