

REEF BUSTERS

CRUISING HELMSMAN - January 1993

By Richard Chesher, Ph.D.

Yacht anchors are contributing to the destruction of coral reefs in some popular Pacific locations. Cruising scientist RICHARD CHESHER investigates and offers some hints on how to stop the damage.

If you visited the botanical gardens, would you park your car in the middle of a flower bed? Of course not. Yet many sailors travel to coral reef areas and anchor their boats in the delicate living coral gardens. It takes skill and knowledge to sail a yacht to the islands and reefs of Oceania. It also takes skill and knowledge to anchor safely. Safety in anchoring includes both safety to the yacht and safety to the coral reef.

A coral reef is not just a home for fish, lobsters, sea shells, clams and beautiful corals. These creatures, and thousands more, are the coral reefs. When a yacht, weighing tonnes, drops the anchor and chain onto these living creatures and backs up to set the hook, the chain rips through and destroys hundreds, if not thousands of years of tropical teamwork. The anchor busts corals the way a wrecking ball busts buildings.

Coral reef areas may seem extensive on a map, but good anchorages are few and far between. Each year, thousands of boats anchor in the coral reefs of Australia and the Pacific. During the cruising season, in any one anchorage, hundreds of anchors crash down and thousands of meters of chain rip through the coral gardens. Each night the boats swing back and forth, dragging their anchor chains sideways, sawing through the delicate tissues of the reef.

Between 1985 and 1990 I documented the destruction of coral gardens in several anchorages in The Kingdom of Tonga. The people who caused this destruction were educated, well-fed yacht owners who simply did not stop to think of the damage their anchors and chains were doing. They would sail into a lovely tropical bay, admire the gleaming white sand beach and rows of stately palm trees, and park their yachts right in the middle of the coral gardens. Then they expressed surprise and dismay at the terrible condition of the reefs. Many of these people come to the tropics just to see the fabled beauty of the coral gardens yet fail to realize they are part of the reason coral reefs are dying all over the world.

It isn't easy, these days, being a coral reef. The blossoming population of people, combined with new technologies of destruction, have set up some heavy stresses. Commercial and subsistence fishing have severely depleted the fish populations and fish are one of the major food gathering mechanisms of the coral reef. Biocides and fertilizers, sprayed and dumped on the islands, seep into coastal waters and poison the life cycles of the reefs. Silt from dredging and construction on the shores smother the corals. Engineers blast channels through the reefs with dynamite.

Nobody knows what the increased ultra-violet rays from the thinning ozone layer are going to do to the corals, but scientists have recently found large areas of dying corals with no apparent explanation. On top of all this, the coral reefs must cope with natural stresses like storms, fluctuations of coral predators, shifts in weather and currents.

There is nothing anyone can do about the natural stresses and trying to cut down on stresses caused by people who live on the islands involves some hard choices. The islanders need to fish the reefs to get food to live but they also need to keep the reefs alive to provide them with food.

Over thousands of years, Pacific islanders developed a working relationship with the reefs. Unfortunately, there are more islanders now than ever before and they have far more potent technologies for catching reef creatures. Worst of all, the reef creatures have changed their status from family food to money for imported goodies. The appetite for money is infinitely more difficult to satisfy than family tummies. For the past 30 years islanders have, with the aid and advice of foreign experts, killed everything they could catch. Island fishermen sometimes resort to destructive fishing techniques, like dynamite or breaking coral to chase fish into nets.



ABOVE: An undisturbed, shallow water lagoon reef in Tonga. Yachts should keep clear of coral patches.

I have seen areas where fishermen bashed a reef to pieces eight years ago. They are still rubble. Once coral is broken, the fragments roll back and forth with each passing wave, making it impossible for new corals to settle and grow.

Left alone long enough, the pieces will cement together and new corals will settle and regrow. But if they are continually rebroken by anchors, they will never recover. When anchors abrade the reefs, or people break corals day after day, the regenerative powers of the coral are lost. Infections from marine bacteria and fungi begin to attack every injured coral. Destruction spreads from epicenters of coral breakage into adjacent areas. The whole coral reef ecosystem degrades from a place of color and life to a dull, grey, unproductive ruin.

Aside from the aesthetic and environmental hazards of anchoring in the gardens there are some very practical reasons to set the hook elsewhere. Coral can be very brittle and foul anchors. If the wind changes and blows hard, a yacht anchored in coral can wind up sitting on the reef or on the shore. Coral can also be hard as cement. An anchor dropped into a hole in a pavement area is sometimes impossible to retrieve without diving on it. And diving for an anchor in a blow is no fun at all. Only inexperienced sailors anchor in coral instead of setting the hook in sand or mud. But there are many inexperienced in cruising tropical waters.

The Australian Great Barrier Reef Marine Park Authority proposed a Code of Anchoring in Reef Environments (CARE). It reminds boats to anchor in sand or mud, not in the living coral. To do this, boats must be prepared to anchor in reef environments.

The first piece of gear you will need is a good pair of Polaroid sun glasses. Always arrive at a tricky or new anchorage when the sun is still high in the sky. Most seasoned sailors arrive before 3pm and, if the approach will be headed to the west (into the afternoon sun), they arrive even earlier. Polaroid sun

glasses make a significant difference in seeing through the surface glare and picking out suitable sandy areas for the anchor.

There are few or no moorings in most Pacific Islands, or in Australia's reef areas, so it is important to have a good anchor windlass. In most anchorages in coral reef areas the water is either very shallow and full of coral or more than 20 metres deep. In Great Barrier Reef waters, most depths over 15 metres are clear of coral. In some Pacific Island anchorages, where the water is very clear, corals may grow down to 30 metres. For those who have never tried to crank up their anchor from 30 metres with a hand windlass, believe me, a good powered windlass is a joy to cruising in reef environments. Only let out the chain you need. For a brief stop of a few hours on a calm day, a 2:1 scope will do. Letting out lots of extra chain makes it difficult to keep clear of the coral. When chain winds through the coral its retrieval can be very destructive.

A depth sounder that shows the bottom, not a digital one simply showing numbers, will be a great aid when the bottom is not visible. Look for smooth, flat bottoms where the anchor sets quickly and firmly. If the anchor and chain grumbles or bounces along, it is probably in coral and it is best to lift and relocate it. Don't stay there all night, because each time the boat swings the chain destroys more coral. Motor up over the anchor and lift it straight out if it gets dropped into the gardens.

Be wary of anchoring too close to a steep ledge or a coral patch. If the wind changes, the anchor chain will be in the coral. Also, sand or mud adjacent to steep slopes are often covered with pieces of loose, broken, anchor fouling coral.

Before venturing 1000 miles to see the tropics, buy a useful dingy with a serviceable outboard for it. It's so much easier to anchor when you do not have to worry about trying to get within 20 metres of the shore or a wharf. If you can nip along at 10 to 20 knots in the dinghy, the vistas of exploration expand dramatically. Many coastal sites are not easily accessible to a big yacht. Some bays with excellent corals have no suitable place to anchor. With a good dinghy, you can anchor in a nearby comfortable location and head off to see the lovely coral gardens for a day of snorkelling. Its small anchor can be placed by hand to avoid damaging the coral.

Flocks of yachts from cruising clubs or races quickly overcrowd small anchorages and pulverize the reef in the process. Please make absolutely sure the armada has ecologically conscious rules written into the race or cruise prospectus.

Some coral reef areas are restricted. Entry or anchoring in these places.



In the lee of Pacific Islands dark patches on the bottom are likely to be coral reefs. Anchor in the sand, and be sure your anchor chain will not drag over the delicate corals. When the coral is destroyed by anchors, the entire fauna is destroyed with it. Anchor chains, sweeping back and forth, create wide triangular paths of destruction on the reef.



Rich, full reef growth like this is endangered through reef bashing by local people and anchor damage. It gets worse each year.



require special authority. The Great Barrier Reef Marine Park Authority (P.O. Box 1379, Townsville, Queensland 4810) has a free Introductory Guide for Users showing marine park zones. They also sell excellent, and inexpensive detail zoning maps of the Great Barrier Reef generated from satellite imagery.

The park is divided into four sections: Far North, Cairns, Central, and Mackay/Capricorn. So when you write for the free introductory guide specify which regions you are interested in. Each section may have as many as 10 maps that cost \$3 each. The larger scale maps of the Cairns section cost \$5 each. They also sell a kit with all of the maps for \$15 per section. The Cairns kit is only \$9. Areas shown on the maps as Scientific Research or Preservation zones may not be entered except in an emergency. Boats may enter and anchor in Zone B areas but may not fish or collect specimens. If you goof up, the fines are stiff - \$10,000 for private individuals and \$50,000 if your boat is owned by a corporation. The guides also include other valuable information about the reefs. So get the information before cruising in the park.

There are several offshore reef areas where anchoring is restricted by the Australian National Parks and Wildlife Service (Canberra, ACT). These are: Coringa Herald National Nature Reserve and Lihou Reefs National Nature Reserve in the Coral Seas.

FACT FILE

Don't be a reef basher.



What would a 30 kg anchor and 20 metres of chain would do to this reef?

Reef bashing is a major cause of reef destruction and it includes damage done to the fragile coral environment by, anchors and anchor chains of fishing boats, tour boats and cruising yachts. Coral is a living organism. The live part of the coral is a thin, delicate tissue covering the outer portion of the hard skeleton. When abraded or broken by anchors and anchor chains - or even by careless divers and snorkelers - the coral can become infected and colonies representing hundreds of year of slow and steady growth can perish quickly.

Modern anchors are designed for soft bottoms. Anchoring in coral is also a bad idea from the standpoint of your vessel's safety. Coral in calm anchorage is often brittle and easily fouls anchors and snags anchor chains. Coral along exposed coastlines, can be extremely hard and trapped anchors or anchor chains may be difficult or impossible to free.

Anchoring tips

1. Don't anchor in the living coral. Anchor in sand. It is better to anchor deep than shallow if there is no shallow sand around. Most anchorages are free of coral in depths over 30 metres (100 ft).
 - Have sufficient chain or chain and line to anchor in 30m to 40m,

- Have a good depth sounder -- preferably a recording model which will show you sand or coral. The new video or LCD recording depth sounders are terrific.
- If you can't see the bottom and don't have a good depth sounder lower the anchor down until it just touches the bottom and feel the anchor rode as the boat drifts. If it grumbles, it is in coral. Lift it up to clear the bottom and drift a little and try again. When the anchor is in mud or sand there is no grumble of the anchor chain.

2. If you see another boat looking for a spot to anchor, help out, give suggestions..Like, "Hey, it's good over there in that sandy area." Or,. "Look out, don't anchor there, that's live coral'.

3. If someone has already anchored in the coral., take the plunge, go over and nicely explain that coral is a living creature and very delicate. Anchors and anchor chain really do a lot of harm. Most of the boats I've done this with have responded well, lifting anchor and re-anchoring. They really didn't think of this and were grateful to know so they could prevent further damage. Peer pressure can work wonders in educating each other in proper behavior;

4 Spread the word. Talk about it on the radio. "The coral Garden here is very pretty, be sure nobody drops their anchor in it, OK?.. "Come' on over here and anchor but you'll have to anchor deep as it's all live coral in shallow water and you don't want to destroy the reef." Or. It's a shame how much damage has been done to the reef here by inconsiderate or uninformed yachts." Talk about the problem during happy hour or when you have guests over.

6. Inform race committees to include a special `DO NOT ANCHOR IN THE CORAL' notice for all members of races bound for tropical island environments. This is important as `flocks' of racing boats, wishing to anchor all in the same location, can quickly overflow into coral areas and do considerable damage.

7. Yacht charter companies should inform all charterers not to anchor in the coral. It won't help a yacht charter business or the tourist industry to have coral gardens near the best anchorages bashed into rubble.

MANIFEST

January



28 SPECIAL
FEATURE

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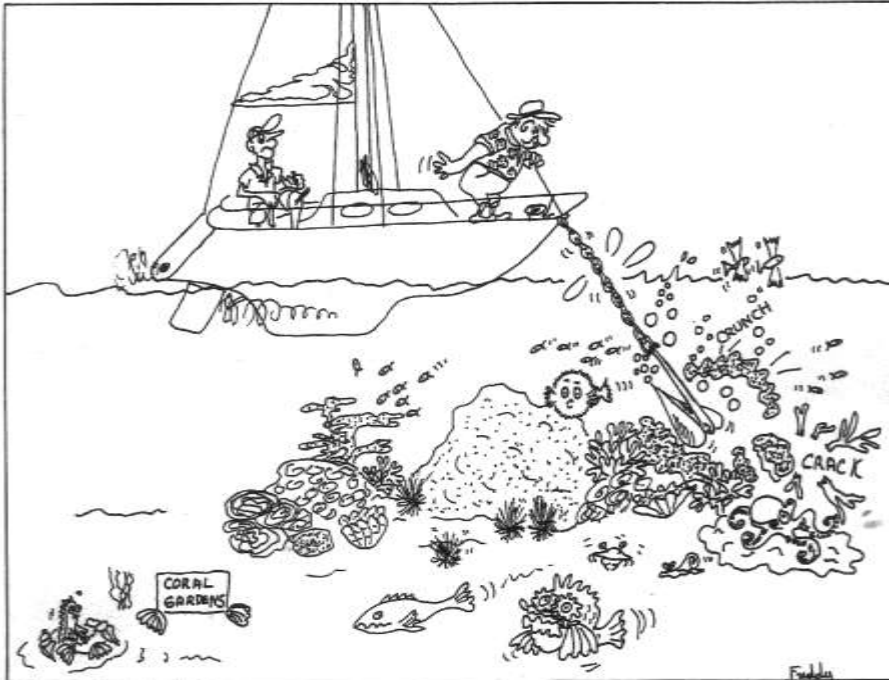
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Welcome to 1993. This issue marks the beginning of a new overseas Cruising Grounds series. The department is going international over the next 12 months in a bid to provide readers with a window to some of the best cruising locations around the world. Cruising Grounds will remain a lift-out and will contain information useful to global cruisers and charter boat sailors alike. Our coverage of the Australian coastline, however, is not complete and we will be returning to our shorelines at the end of this limited run on overseas cruising areas.

Cruising the South Pacific is a special experience, but it can also be detrimental to the local ecology if you are unprepared for anchoring around coral. Richard Cheshier is one sailor (he is also a scientist) who has devoted considerable time to the study of coral and the damage caused by various factors including yacht anchors. Cheshier explains, in a feature titled Reef Busters, how coral gardens in popular anchorages are being destroyed and he offers a guide to avoiding this destruction. If you are planning a cruise to the Whitsunday, South Pacific islands or any reef area, then Cheshier's article contains valuable information on anchoring techniques.

Poorly placed anchors can destroy coral formations. See feature titled Reef Busters inside for more on this important issue.

-Neil Patchett
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Anchor Damage Caption Competition

Supply a caption for this cartoon and you could win a copy of Discover the Great Barrier Reef Marine Park. The Great Barrier Reef Marine Park Authority produced the book which contains 96 full-colour pages depicting the wonders, ecology and marine life of this World Heritage Area. The Authority also invites comments on (1) specific areas where readers have noticed problems caused by anchor damage, (2) any specific idea people have for how these problems may be overcome and (3) any examples where readers have evidence of how specific strategies have worked to help reduce anchor damage on coral reefs. Send your caption and any comments to: 'Caption Contest', Education/Information Section, Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville Q1d 4810.