

# The Great Barrier Reef

In recent months the reef has shown me some of the world's most beautiful underwater scenery: I have had a minke whale come and look me in the eye; I have checked out, and been checked out by, lots of sharks and turtles; I have watched dolphins surf the bow-wave; I have drifted in calm mangrove creeks and seen the barramundis swirl; I have duck-dived under a coral head that was already huge when Captain Cook sailed this coast; I have watched giant swells crash onto coral crests that thrive in such turbulence. I enjoy the knowledge that the 3000 or so individual reefs of the Great Barrier Reef are all products of profuse coral growth – tempered by erosion and breakage – organised into predictable shapes and underwater seascapes by the currents and cyclonic waves of thousands of years. Despite any reports you may have heard about yesterday's impacts, and gloomy predictions about tomorrow's effects of climate change, today the Reef still has much that inspires!

*Dr Terry Done, retired coral reef research scientist and  
Honorary Associate at Australian Institute of Marine Science*

# Reef Encounters

The Great Barrier Reef is one of Australia's World Heritage areas and one of the Seven Wonders of the Natural World.

It's also one of nature's richest realms. Stretching 2000km from just south of the tropic of Capricorn (near Gladstone) to just south of Papua New Guinea, it is the most extensive reef system in the world, and one made entirely by living organisms.

There is a multitude of ways to see the magnificent spectacle of the reef. Diving and snorkelling are far and away the best methods of getting up close and personal with the menagerie of marine life and dazzling corals. Immersing yourself in the sea furnishes you with the most exhilarating appreciation of just how wonderful and rich this community is. The unremarkable surface of the water belies the colourful congestion less than a metre or so beneath.

Almost all the diving and snorkelling on the Reef is boat-based, although there are a few good reefs surrounding some of the islands. Free use of snorkelling gear is usually part of any cruise to the Reef and you can typically fit in around three hours of underwater wandering. Over-

## top five REEF EXPERIENCES

- Watching protected sea turtles hatch and make their first daring dash on **Lady Elliot Island** (p248) or **Heron Island** (p249), then watching their older relatives glide gracefully through the ocean while you're on a cruise.
- Taking a fast catamaran from Airlie Beach out to **Knuckle Reef** (p277), or a seaplane to **Hardy Reef** (p291), and immersing yourself in some of the best snorkelling spots in the world.
- Soaring above the reef on a **scenic flight** (p345) and watching its huge and vivid mass carpet the sea beneath you.
- Exploring the pristine southern end of the Great Barrier Reef, especially **Fitzroy Reef Lagoon** (p250), one of the least-touristed areas of the Reef.
- Embarking on a sailing adventure from Airlie Beach through the **Whitsunday Islands** (p275) and exploring exquisite fringing reefs on the islands' perimeters.

Exploring the reef's vast fissures

LEONARD ZELL





A starfish resting on Staghorn coral

BOB CHARLTON



Divers prepare to plumb the depths

LEONARD ZELL

night or 'live-aboard' trips obviously provide a more in-depth experience and greater coverage of the reefs. If you want to do more than snorkel but don't have a diving certificate, many operators offer the option of doing an introductory dive, which is a guided dive where an experienced diver conducts an underwater tour. A solid lesson in safety and procedure is given beforehand and you don't require a five-day PADI course or a 'buddy'.

You can surround yourself with the fabulous fishies without getting wet on a semisubmersible or glass-bottomed boat, which provide windows to the underwater world

circling below. Alternatively, you can go below the ocean's surface inside an underwater observatory, or stay up on top and take a reef walk. Another spectacular way to see the Reef while staying dry is on a scenic flight. Soaring high provides a macroperspective of the Reef's beauty and size and allows you to see the veins and networks of coral connecting and ribboning out from one another.

## top five THINGS YOU DIDN'T KNOW ABOUT THE REEF

- The Reef is longer than the Great Wall of China, and is larger than the UK, Switzerland and the Netherlands combined.
- The Reef is the only living thing visible from space. Astronauts call it the 'white scar on the face of the Pacific Ocean'.
- Each of the 2900-odd reefs that make up the Reef contains around the same number of fish species as the entire Atlantic Ocean.
- Most of the Reef's living corals are 'young'. They've developed over 18,000 years (see p119) since the last ice age. Many places where the Reef grows today were land before the last ice age.
- Polyps, the animals that form coral, are close relatives of jellyfish. They can reproduce asexually by a method called budding.

A Common Lionfish (*Pterois volitans*) flaunts its designer attire

MICHAEL AW



## Picking Your Spot

It's said you could dive here every day of your life and still not see the entire Great Barrier Reef. Individual chapters in this book provide in-depth information, but the following are some of the most popular and remarkable spots from which to access the Reef. Bear in mind that individual areas vary over time, depending on the weather or any recent damage.

### ISLANDS

Speckled throughout the Reef is a profusion of islands and cays. They offer some of the most stunning access to the Reef. The following is a list of some of the best islands, travelling from south to north.

For more information on individual islands, see the Whitsunday Coast (p260), Capricorn Coast (p232), Townsville & North Coast (p296), Cairns, Islands & Highlands (p335) and Far North Queensland (p373) chapters.



A green turtle, Briggs Reef

LEONARD ZELL

The coral cay of **Lady Elliot Island** (p248) is the most southerly of the Reef islands. It's awe-inspiring for bird-watchers, with some 57 species living on the island. Sea turtles also nest here and it's possibly the best location on the Reef to see manta rays. It's also a famed diving spot. There's a simple, pricey camping resort here, but you can also visit Lady Elliot on a day trip from Bundaberg.

**Heron Island** (p249) is a tiny coral cay sitting amid a huge spread of reef. It's a diving mecca, but the snorkelling is also good and it's possible to do a reef walk from here.

Heron is a nesting ground for green and loggerhead turtles and home to some 30 species of birds. It's an exclusive, utterly tranquil place, and the single resort on the island charges accordingly.

**Hamilton Island** (p289), the daddy of the Whitsundays, is a sprawling resort laden with infrastructure. While this doesn't create the most intimate atmosphere, it does provide a wealth of tours going to the outer reef. It's a good place to see patches of the Reef unexplored from the mainland and families are extremely well catered to.

The stunning intricacy of some corals – in this case the skeletal coral – are of endless wonder

LEONARD ZELL

**Hook Island** (p287) is an outer Whitsunday Island surrounded by fringing reefs. There is excellent swimming and snorkelling here, and the island's sizable bulk provides plenty of good bushwalking. There's affordable accommodation on Hook and it's easily accessed from Airlie Beach, making it a top choice for those on a modest budget.

**Orpheus Island** (p321) is a national park and one of the Reef's most exclusive, tranquil and romantic hideaways. This island is particularly good for snorkelling – you can step right off the beach and be surrounded by the Reef's colourful marine life. Clusters of fringing reefs also provide plenty of diving opportunities.

**Green Island** (p359) is another of the Reef's true coral cays. The fringing reefs here are considered to be among the most beautiful surrounding any island, and the diving and snorkelling are quite spectacular. Covered in dense rainforest, the entire island is national park. Bird life is abundant, with around 60 species to be found. The resort on Green Island is well set up for reef activities; several tour operators offer diving and snorkelling cruises, and there's also an underwater observatory. The island is accessible as a day trip from Cairns.

## top five DIVE SPOTS

The Great Barrier Reef is home to some of the world's best diving sites. Here's a list to get you started:

- **SS Yongala** (p303) – a sunken shipwreck that has been home to a vivid marine community for more than 90 years.
- **Spectacular Cod Hole** (p401) – go nose-to-nose with a potato cod.
- **Beautiful Heron Island** (p249) – straight off the beach and join a crowd of colourful fish.
- **Lady Elliot Island** (p248) – with 19 highly regarded dive sites.
- **Pixie Bommie** (p401) – delve into the after-five world of the Reef by taking a night dive.

'The Great Barrier Reef is the most extensive reef system in the world'

**Lizard Island** (p400) is remote and rugged and the perfect place to escape civilisation. It has a ring of talcum-white beaches, remarkably blue water and few visitors. It's also world-renowned as a superb scuba-diving location, with what is arguably Australia's best-known dive site at Cod Hole (p401). Here you can swim with giant, docile potato cod, which can weigh as much as 60kg. Pixie Bommie is another highly regarded dive site on the island.

Snorkellers will also get an eyeful of marine life here, with giant clams, manta rays, barracudas and dense schools of fish abundant in the waters just offshore.

If you're staying overnight you need to have deep pockets or no requirements whatsoever – it's either bush camping or five-star luxury.

The coral gardens at Kelso Reef never cease to delight

LEONARD ZELL

'Immersing yourself in the sea furnishes you with the most exhilarating appreciation of just how wonderful and rich this community is.'

## MAINLAND GATEWAYS

There are several mainland gateways to the Reef, all offering a slightly different experience or activity. Deciding which to choose can be difficult, so the following, in order from south to north, is a brief breakdown.

**Agnes Water & Town of 1770** (p249) are small towns and good choices if you want to escape the crowds. From here tours head to Fitzroy Reef Lagoon, one of the most pristine sections of the Reef, where visitor numbers are still limited. The lagoon is excellent for snorkelling but also quite spectacular just viewed from the boat.

**Gladstone** (p244) is a slightly bigger town but still a relatively small gateway. It's an excellent choice for avid divers and snorkellers, being the closest access point to the southern or Capricorn reef islands and innumerable cays, including Lady Elliot Island.

**Airlie Beach** (p279) is a small town with a full rack of sailing outfits. The big attraction here is spending two or more days aboard a boat and seeing some of the fringing coral reefs amid the Whitsunday Islands. The surrounding scenery is sublime, but you'll only touch the edges of the Reef. There are, however, a number of fast-catamaran operators that zoom across the 60km required to reach some spectacular reefs, which provide outstanding snorkelling, swimming and diving.

Airlie is also friendly to all wallets, so whether you're a five-star or no-star traveller, there'll be a tour to match your budget.

**Townsville** (p298) is a renowned gateway among divers. Whether you're learning or experienced, a four- or five-night onboard diving safari around the numerous islands and pockets of the Reef is a great choice. In particular, Kelso Reef and the wreck of the SS *Yongala* are teeming with marine life.



Fiery soft coral

LEONARD ZELL



Cool sea fan coral

ROBERT HALSTEAD



Fragile lace coral

LEONARD ZELL



Posh it up with a dive at Lady Musgrave Island

BOB CHARLTON

There are also a couple of day-trip options on glass-bottomed boats, but you're better off heading to Cairns for greater choice. **Reef HQ** (p301), which is basically a version of the Reef in an aquarium, is also here.

**Mission Beach** (p326) is closer to the Reef than any other gateway destination. This small, quiet town has a few boat and diving tours to sections of the outer reef. Although the choice isn't huge, neither are the crowds, so you won't be sharing the experience with a fleet of other vessels.

**Cairns** (p336) is undeniably the main launching pad for Reef tours: there is a bewildering number of operators here. You can do anything from relatively inexpensive day trips on large boats to intimate five-day luxury charters. The variety of tours covers a wide section of the Reef, with some operators going as far north as Lizard Island. Inexpensive tours are likely to travel to inner reefs, ie those close to the mainland, which tend to be more damaged than outer reefs. Scenic flights also operate out of Cairns. Bear in mind, though, that this is the most popular destination, so unless your budget stretches to a private charter you'll be sharing the experience with many others.

**Port Douglas** (p374) is a swanky resort town and a gateway to the Low Isles and Agincourt Reef, an outer ribbon reef featuring crystal-clear water and particularly stunning corals. Although Port Douglas is smaller than Cairns, it's still very popular and has a wealth of tour operators. Diving, snorkelling and cruising trips tend to be classier, pricier and less crowded than in Cairns. You can also take a scenic flight from here.

**Cooktown** (p396) is another one for divers. The town's lure is its close proximity to Lizard Island (see p400). Although you can access the island from Cairns, you'll spend far less time travelling on the boat if you go from here. Cooktown's relatively remote location means there are only a handful of tour operators and a small numbers of tourists, so your experience is not likely to be rushed or brief. The only drawback is that the town and its tour operators shut down between November and May for the wet season.

## Nature's Theme Park

The Great Barrier Reef is made up of about 2900 separate fringing reefs (which form an outer ribbon parallel to the coast and dot the lagoons around the islands and the mainland) and barrier reefs (which are further out to sea). The 'real' Reef, or outer reef, is at the edge of the Australian continental shelf. All of these reefs exist because of one teeny tiny organism called a polyp.

### THE BUILDING BLOCKS

There are two types of coral – hard and soft – but it's the hard corals that are the architects and builders of the Reef. Hard corals begin life as industrious little animals known as polyps, which look a little like tiny cucumbers with a mouth leading to their stomach. Polyps are soft and vulnerable, so they create an outer 'skeleton' to protect and support their bodies by excreting a small amount of hard limestone. This skeleton, with the polyp inside, is what we refer to as coral. When polyps die, their 'skeleton' remains as the architecture of the Reef, gradually building it up. Like a city in a state of constant

The pink anemonefish is not an enemy



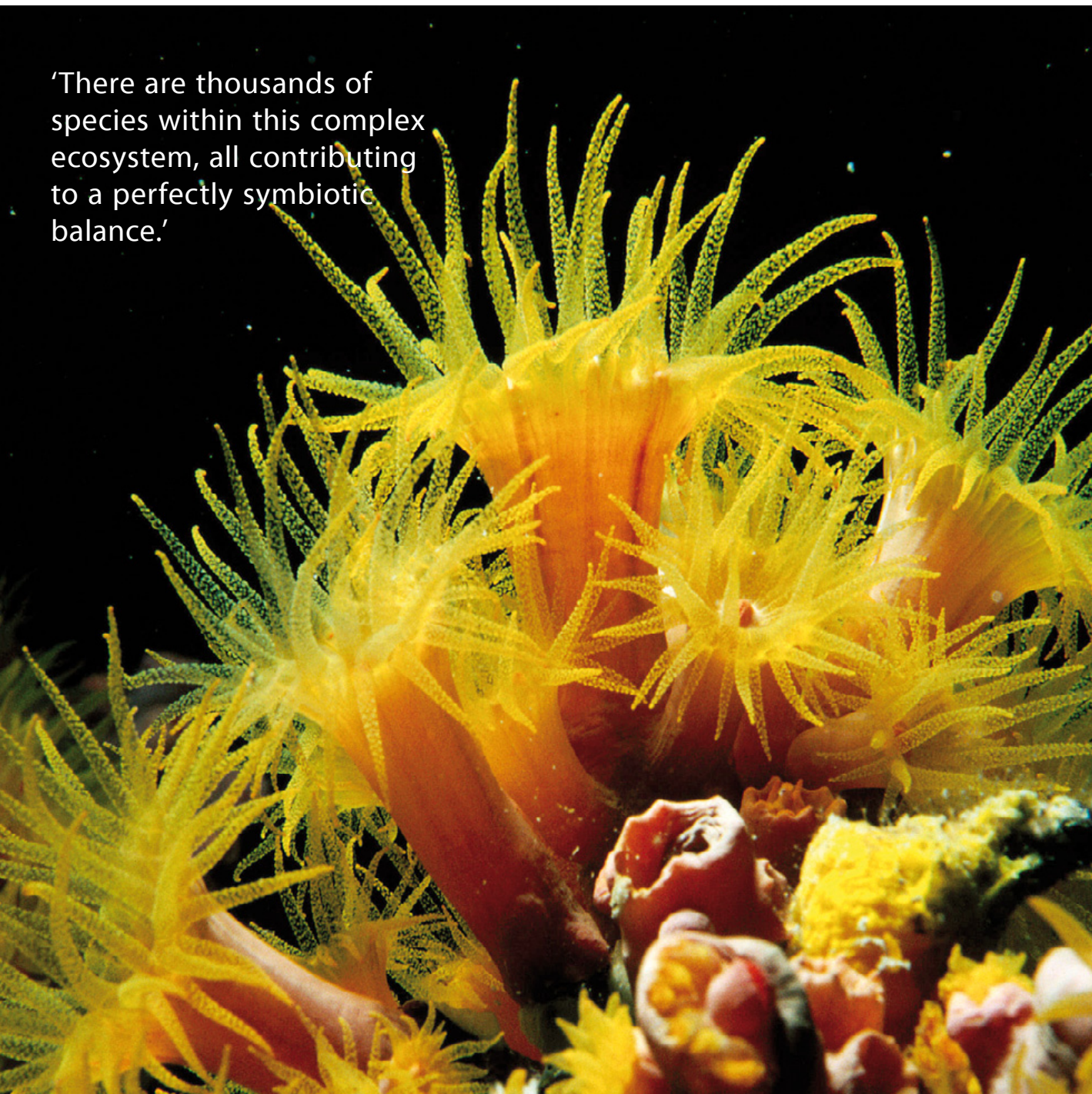
LEONARD ZELL

A Sweetlip Emperor eyes up dinner



LEONARD ZELL

'There are thousands of species within this complex ecosystem, all contributing to a perfectly symbiotic balance.'



renovation, new polyps grow on top of deceased corals, their billions of skeletons cementing together into an ever-growing natural bulwark. It's the new and living polyps that provide the reefs with their multitude of colour; when corals die they turn white. Different polyps form varying structures, from staghorn and brain patterns to flat plate or table corals.

Coral is dependent on sunlight, which is why it's so visible – to get sufficient light it can grow no deeper than 30m below the water's surface. It also needs clear and salty water to survive and consequently does not grow around river mouths – the Barrier Reef ends near Papua New Guinea because the Fly River's enormous water flow is both fresh and muddy.

One of the most spectacular sights of the Barrier Reef occurs for a few nights after a full moon in late spring or early summer each year, when vast numbers of corals spawn at the same time. The tiny bundles of sperm and eggs are visible to the naked eye, and together they look like a gigantic underwater snowstorm. Many other reef organisms reproduce around this time, giving their spawn a greater chance of surviving predators.

### MARINE COMMUNITIES

So what exactly lives in these vast coral cities? A lot! Marine environments demonstrate the greatest biodiversity of any ecosystem on Earth – much more so than rainforests. There are thousands of species within this complex ecosystem, all contributing to a perfectly symbiotic balance. To give you an idea of the quantities we're talking about, the Great Barrier Reef is home to 1500 species of fish; 400 types of coral; 4000 breeds of clams and other molluscs; 800 echinoderms, including sea cucumbers; 500 varieties of seaweed; 1500



Ouch! Watch out for sea urchins

LEONARD ZELL

different sponges; 30-plus species of marine mammals; 200 bird species; and 118 species of butterflies.

Among the common species of fish you're likely to encounter are dusky butterfly fish, which are a rich navy blue, with sulphur-yellow noses and back fins; large and lumbering graphic turkfish, with luminescent pastel coats; teeny neon damsels, darting flecks of electric blue; and six-banded angelfish, with blue tails, yellow bodies and tiger stripes.

The Reef is also a haven to many marine mammals such as whales, dolphins and dugongs (sea cows). Dugongs are listed as

vulnerable and a significant percentage of their number live in Australia's northern waters; the Reef is home to around 15% of the global population. Humpback whales migrate from Antarctica to the Reef's warm waters to breed between May and October. Minke whales can be seen off the coast from Cairns to Lizard Island in June and July. Porpoises and killer and pilot whales also make their home on the Reef.

One of the Reef's most-loved inhabitants is the sea turtle. Six of the world's seven species live on the Reef and lay eggs on the islands' sandy beaches in spring or summer. All are endangered, but spying their huge, graceful bodies gliding through the water is fairly common and is enough to make any animal lover melt.

Sharks are also prevalent and play a pivotal role in the Reef's fragile balance. These diligent cleaners free the reefs of ailing, injured or overproducing species. Reef sharks are a common sight throughout, but if you're under the water don't bother fleeing – their generally timid nature will often have them swimming away from you. Rays in all shapes

It showed off, splashin' around: a humpback whale breaching in Hervey Bay

BOB CHARLTON



Noddies flock to the beach on Heron Island

MICHAEL AW

and sizes also dwell here, swimming languidly through the water while feeding on fish and plankton.

There are several species you need to be wary of, but common sense will usually prevent any unpleasant encounters or injuries. See p481 for more information.

## Threats to the Reef

The sheer size of the Great Barrier Reef makes it difficult to fathom how this ecosystem's survival could be in danger, but global warming (see p56), land-based pollutants and overfishing jeopardise its future.

Sewage and agricultural phosphate runoff damage the Reef by promoting algal growth and blocking sunlight to the coral, as do pollution from development and increased tourist activity. Boat anchors cause damage to reefs, and trawling can accidentally trap animals such as sea turtles and birds. Shipping adds the possibility of oil spills: in 2000 a section of the Reef was blasted to release a ship that had become stuck. The crown-of-thorns starfish appears to chew through large areas of coral, and infestations occur when reef ecology is disturbed.

Some environmentalists and scientists predict that if current conditions continue, the coral cover of the Reef may be less than 5% by the year 2050. Because all the living organisms in the Reef are symbiotic, the colourful and diverse ecosystem we see today may be gone forever.



Fortunately, it's not all doom and gloom. In July 2004 the Australian Government introduced new laws that increased 'no-take' zones – areas where it is forbidden to remove animal or plant life (ie no fishing). They now apply to 33% of the Reef (up from 4.5%). The Queensland Government also unveiled the Great Barrier Reef Coast Marine Park, a state park encompassing 3600km of coastline from just north of Bundaberg to the tip of Cape York.

Most tour operators are conscientious and responsible, but if you see staff dumping dodgy substances, question them. Even the simple act of feeding fish can be highly detrimental. Aside from the environmental impact of this kind of behaviour, there is a multibillion-dollar tourism industry based on the Reef: its sustainability also relies upon the Reef remaining healthy.

For information on how you can make a positive contribution to the Reef, see p345.

Lady Elliot Island's waters would charm anyone into taking a dip

BOB CHARLTON



© Lonely Planet Publications. To make it easier for you to use, access to this chapter is not digitally restricted. In return, we think it's fair to ask you to use it for personal, non-commercial purposes only. In other words, please don't upload this chapter to a peer-to-peer site, mass email it to everyone you know, or resell it. See the terms and conditions on our site for a longer way of saying the above - 'Do the right thing with our content.'