

Shoreline Management Plan Ecological Processes

Subtidal Reefs of the Gold Coast Information Sheet, May 2007

What is a reef?



A subtidal reef is any solid surface under water that provides a home to a range of organisms. Reefs are one of the world's most diverse ecosystems and provide habitat for a huge number of marine animals and plants. Reefs may be found in both tropical and temperate areas of the world. Rocky reefs are usually found in temperate areas and are formed by existing rocky outcrops. On the other hand, coral reefs are found in the tropics and are built by small coral polyps which, once established, can grow and expand the size of the reef.

What type of animals and plants live on Gold Coast reefs?

Our reefs provide habitat for many different kinds of plants and animals, from the very small, such as single-celled algae, to larger animals, such as sharks, rays and dolphins. The rocky reefs of the Gold Coast are home to many encrusting organisms (such as sponges, hydroids, anemones, worms and soft and hard corals) as well as to a host of colourful mobile animals (such as shells, sea-slugs, crabs, crayfish and sea-stars).



Bull Ray © Ian Banks

Why are our reefs important?

- Rocky reefs provide habitat and shelter for many plants, invertebrates and fish communities.
- Reefs protect our coasts from strong currents and waves by slowing down the water before it gets to the shore. They provide a barrier between the ocean and the shore.
- Rocky reefs are important for commercial and recreational fisheries. A variety of fish depend on reefs

for food, shelter and spawning sites at some stage during their lives. While fish' communities on rocky reefs may not be as diverse as their coral reef counterparts, individual fish species may be just as numerous as in the tropics.

- Rocky reefs are popular spots for diving and snorkelling.

What are some of the threats to the health of reefs?

Because many of the Gold Coast's reefs are located close to shore, they are often the first diverse marine habitat to be affected by human activities on land or in nearshore areas. Human activities that are known to have an impact on reefs include:

- Beach nourishment practices;
- Alteration of coastline habitats (seawall construction, removal of mangroves);
- Urbanisation and coastal development;
- Destructive fishing techniques;
- Domestic and agricultural pollution;
- Oil pollution from boats;
- Stormwater runoff, especially where this carries debris and pollutants;
- Boat anchoring; and
- Over fishing.

In addition, there a number of natural threats such as cyclones and storms that often have an effect on reefs located near shore.

Our main reefs and their residents

Palm Beach Reef

Palm Beach Reef is made up of a series of rocky ridges and gullies covered by extensive growths of hard and soft coral, anemones, ascidians and sponges. This reef is also home to Wobbegong sharks and a range of other fishes and invertebrates. Palm Beach Reef is a popular site for fishing and diving and ranges in depth from 8-24 metres.



Nudibranch © Ian Banks

Palm Beach Bait Reef

Palm Beach Bait Reef is located very close to shore and, as the name suggests, often supports large schools of bait fish. For this reason, it is popular with local fishers. The marine life on the reef includes a range of animals

that thrive where there are lots of suspended food particles (hydroids, sponges and sea-squirts) as well as large patches of seaweeds and the small animals associated with them.

Narrowneck Reef

This artificial reef was initially designed as a coastal erosion protection structure but has also proved to be an ideal surface for brown seaweeds to become established. The habitat in the more sheltered sections of the reef, and in the crevices between the large sand-filled containers, is home to a range of colourful invertebrates and small fish. The diversity of life associated with this "young", easily accessible reef includes nudibranchs, shrimps and crabs, crayfish, wobbegong and nurse sharks, pineapple fish, lionfish, and cardinal fish. Further out from shore, and in the large sand patch between the two sections of the reef, shovelnose rays, cow tail rays, bull rays and turtles are commonly observed.



Hydra © Ian Banks

Gretas Reef

Gretas Reef is 30-50m long and has an average depth of 20 metres. It is located about 200 metres from the sand collection jetty at Southport. The reef is covered by soft corals, sponges, anemones and colourful molluscs including nudibranchs.



Porcupine fish © Ian Banks

Mermaid Beach Reef

This reef is located off Mermaid Beach and the deepest section is approximately 27 metres. The reef is covered by organisms such as ascidians, tunicates, nudibranchs, sea stars and feather stars.



Ascidians © Ian Banks

Kirra Reef

Kirra Reef is by far the most threatened and damaged reef in the Gold Coast region. Most of the reef is currently under sand which has been pumped for beach nourishment purposes from south of the Tweed River. Prior to sand-inundation, Kirra Reef supported a high diversity of marine life, especially of fish and molluscs. The more elevated sections of the reef also provided habitat from corals and large, colourful sponges. Its close proximity to shore made Kirra Reef a popular site for snorkellers and divers.

What can we do to protect our reefs?

There are a number of things we can all do to protect our reefs.

1. Get to know and respect the regulations that apply to collecting animals including fish, crayfish and shellfish.
2. When on a boat try to anchor over clear sandy patches and avoid the use of heavy sinkers in order to minimize damage to corals and other marine organisms.
3. You can also concentrate on simple things like putting your litter in the bin and using good household and garden practices (e.g. reducing the use of fertilisers and detergents).
 - Plastic material, cigarette butts and other items of rubbish can be mistaken for food by some marine organisms causing stress and often death. If you see plastic on your beach pick it up and bin it.
 - Detergents containing phosphorus pollute our oceans. When possible, choose environmentally friendly laundry/dishwashing detergents.
4. Remember that stormwater ends up in the ocean and can severely affect reefs.
 - Leaking oil from your car will find its way into stormwater drains. This can cause harm to reef organisms in both the short and long term.
 - Remember stormwater drains are only for rain water.

If you are worried about the health of our reefs, tell the appropriate government agencies and your elected officials. In this way you can help to influence decision-making processes and environmental management.



Anemonefish © Ian Banks

How do I get more information?

More information is available online at:

Griffith Centre for Coastal Management
 Griffith University Gold Coast Campus
 PMB 50
 Gold Coast Mail Centre, Qld 9726
 P: (07) 5552 8506
 F: (07) 5552 8067

References

- Australian Museum. 2002. Rocky reefs and kelp beds. www.livingharbour.net/fish/where_reef.htm
 Ian Banks. 2007. Personal communication.
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