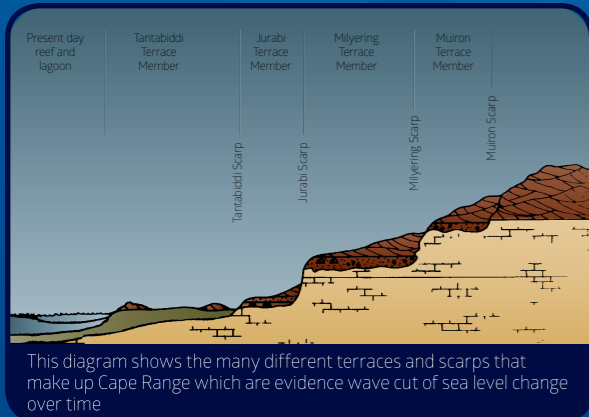


Ningaloo

Ancient Reef

Ningaloo Reef has formed over the last 7000 years as the sea level rose since the end of the last ice age. The reef forms on the end of the limestone peninsula on which Cape Range lies.

The Cape Range peninsula has played an important part in the evolution of Ningaloo Reef. Cape Range is an anticline, a fold in the earth's terrain that is formed by upward shifting blocks of bedrock several kilometres under the surface. Around 23 million years ago the Cape Range anticline started to take shape on the seabed, this was kilometres out to sea from the mainland coast. Calcium carbonate was laid down in intervals forming differing layers of limestone.



Over time the anticline slowly emerged from the sea, this can be seen through the wave cut terraces - stair like structures - on the west side of the range. These are erosion marks left by previous sea levels with the highest on the range being the oldest and from a time when most of the peninsula was still under water. The limestone of Cape Range illustrates the history of the peninsula with countless marine fossils still seen today embedded throughout the entire range.

The addition of the Cape Range peninsula has brought the mainland closer to the edge of the continental shelf and the Leeuwin Current. Over time this has enabled the development of the Ningaloo Reef and its biodiversity.



Extensive fossil remains can be seen throughout Cape Range, which was formed on the seabed millions of years ago.



Megalodon (*Charcharodes megalodon*) shark tooth at Cape Range. This shark was up to 18 m long about three times the size of Great White sharks. They became extinct about two million years ago

Ningaloo Reef today

The Ningaloo Reef today is part of the Indian Ocean and stretches nearly 300km along the coast from Exmouth to Red Bluff. It is recognised as one of the most pristine, longest and biodiverse fringing reefs in the world.

The Ningaloo Reef is a biodiversity hotspot with more than:

- 200 coral species
- 500 fish species
- 650 mollusc species (e.g. mussels, abalone, snails, squid and octopus)
- 25 echinoderm species (e.g. sea stars and urchins)
- 155 sponge species (many of which have only recently been discovered and are only found at Ningaloo)
- 1000 species of marine algae.
- 20 marine mammal species including whales, dolphins and dugongs
- 6 of the 7 species of turtles worldwide



Go for a snorkel on Ningaloo Reef where there are hundreds of species of coral and fish

More on Ningaloo



Staghorn/branching hard coral is the fastest growing at 10-15 cm per year and most widespread, providing a protected home for small fish.



Porites/boulder hard coral is the slowest growing at 1 - 3 cm per year. Colonies can grow to several metres in diameter and be hundreds of years old

The high biodiversity is attributed to the warm Leeuwin current coming from the north and the close proximity of the continental shelf to shore allowing coral reef and oceanic species to coexist in a small area.

The Ningaloo Reef ecosystem has many interconnected habitats providing homes for this wide range of marine life. The shallow areas consist mostly of reef building hard corals as well as soft corals, seagrass, sandy beds, algal beds and mangroves. These areas provide refuge for smaller species and juveniles to grow as well as dugongs and turtles. The deeper seafloor from 30 to 500m is a mosaic of sponge gardens, soft corals, rhodolith beds, sand and mud with larger marine life such as manta rays, whale sharks, whales and fish inhabiting the oceanic waters above.

Reef Building Hard Corals

Hard corals provide habitat, food and shelter for a variety of marine plants and animals. Despite their 'rocky' appearance, corals are living animals - an interconnected colonies of up to thousands of tiny animals called coral polyps within a limestone/calcium carbonate skeleton.

Over time, each polyp secretes layers of calcium carbonate skeleton which is how coral reefs grow. During the day, the polyp tentacles are retracted for protection but emerge at night to catch food such as plankton. This however only provides a small proportion of a corals food - the majority is produced by algae called *zooxanthellae*



Gorgonian sea fan. This soft coral is found in high current areas which maximise food capture by the coral polyps



A leather soft coral with distinctive coral polyps. When the polyps are retracted, the coral has a smooth leather like appearance

(pronounced zoo-zan-thel-lee) in the polyp tissues through photosynthesis. This is why coral reefs grow in shallow and clear tropical waters.

Corals often come in a variety of shapes, sizes and colours.

Soft Corals

Soft corals lack a solid, limestone skeleton instead having tiny calcium 'spicules' in their tissues. Their flesh also has toxins which they can release in the water to keep surrounding coral and predators away. Soft corals are very colourful and range from small fleshy lobes to fans two metres or more in length. They do not need much light to survive so can be found in deeper waters, in caves or under ledges.

Coral Spawning

Corals mainly reproduce through an amazing phenomenon called 'Coral Spawning'. One, and sometimes multiple nights each year, corals release millions of tiny eggs and sperm into the water. This allows fertilisation from surrounding colonies to occur, resulting in coral larvae. These 'planulae' travel in ocean currents for about a week until they find a suitable rocky reef to settle and grow into a new coral colony. This mass of coral spawn also provides a feast for marine life with masses of krill and other tiny marine creatures swarming on the reef to feed on the spawn, which in turn attracts larger visitors like the whale sharks.



Coral spawning is how corals reproduce. At Ningaloo, this occurs around March each year, 7-10 days after the full moon

Helping Hand

Ningaloo Reef is in better condition than many other coral reefs around the world helped by high water quality, low human impacts, low rainfall and low impact from crown of thorns starfish. However it is still vulnerable to changing ocean temperatures and has suffered from coral bleaching in recent time. The Ningaloo Marine Park (both State and Commonwealth waters) help protect Ningaloo Reef.

You can help:

- Choose sand to stand when snorkelling - kicking or standing on the delicate reef may kill or damage the coral which takes many years to grow back
- Observe and enjoy the reef, but avoid touching coral and other marine life which can disturb them and cause disease.