

SOUTHERN AUSTRALIAN TEMPERATE REEFS

Temperate reefs are largely comprised of rock colonised by invertebrates and algae, not coral, as in the tropics. These reefs support a diverse array of communities, which differ depending on wave energy, nutrients, temperature and light.

Temperate reefs in southern Australia have a high diversity of plant and animal life and support a very high proportion of 'endemic' species – those found only in this part of the world. This uniqueness gives our southern waters a special ecological and conservation significance.



The unique south:

- 85% of the temperate fish species, 95% of the species of molluscs and 90% of the species of sea stars and their relatives (echinoderms) are **unique to temperate Australia**.
- A huge diversity of sea squirts (ascidians) is also found, with 189 species recorded. Many of these species are reef dwellers at some stage of their life cycle.
- In southern Australian waters, 1100 species of red algae have been described so far. This represents an astounding **25% of the world's total number of red algal species**, and 75% of them are endemic.

Incredibly, there are nearly three times as many species of macroalgae (seaweeds) in temperate Australian waters than there are corals in the entire Great Barrier Reef! This is significant because macroalgae and coral are the two main structural habitat components in each of these ecosystems.

Macroalgae are classified into three major groups according to the colour of their photosynthetic pigments:

- **Brown** – often the largest and most visually dominant form within the photic (light) zone

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- **Red** – generally much smaller than the browns and include a unique group of encrusting and ‘coralline’ species, which incorporate calcium carbonate into their structures to create an internal ‘skeleton’
- **Green** – generally smaller than the browns with a wide diversity of colours and shapes, these are usually found in shallow waters or intertidal areas

The animal communities found living on reefs consist mainly of mobile and sessile (fixed) invertebrates. Mobile invertebrates include animals such as crabs, lobsters, sea stars, urchins, snails, slugs and some worms. The sessile invertebrates include a range of some of the stranger marine animals such as sea squirts, sponges, anemones, bryozoans and tube worms. Then there are the reef-associated fish and other free-swimming animals such as squid and cuttlefish, which are often found on or near reefs. Many fish are site-associated, e.g. harlequins and blue devils, which both inhabit small areas of reefs for their entire life, whilst other fish are more ephemeral but still use reefs for shelter and camouflage.

Types of reef

Jetty pilings, shipwrecks and other man-made structures often support the same animals as rocky reefs.

Natural temperate reef habitats in southern Australia include a range of rocky substrates (generally limestone, sandstone and/or granite) that support:

- **Kelp forests** (including bull kelp, *Durvillaea potatorum*, and common kelp, *Ecklonia radiata*)
- **Furoid-dominated reefs** (‘furoids’ are a group of brown macroalgae including *Cystophora*, *Sargassum*, etc.)
- **Sponge and ascidian communities** such as those found on jetty pilings

