

## MANAGEMENT AND PROTECTION

### A. IMPORTANCE OF MANAGEMENT AND PROTECTION

#### Values of the Great Southern Reef

*"Some people might not be interested in seaweed. But they may be interested in fishing, or their beachfront property not getting washed away, or making sure that their coastal waters are clean. All of those things are intimately tied to kelp forests."*

Cayne Layton. Source: <https://www.greenbiz.com/article/can-forests-worlds-oceans-contribute-alleviating-climate-crisis>

*"Kelp is SO much more than slimy beach debris. It's the habitat building, carbon storing and tooth-paste thickening, algae-extraordinaire responsible for maintaining and regulating cool, rocky shores across the globe."*

Source: <https://www.themarinediaries.com/tmd-blog/help-whats-kelp>

#### HERITAGE VALUES

##### i. Aboriginal heritage

'Aboriginal cultural heritage includes tangible and intangible values, such as Song Lines, Dreaming stories and ceremonies passed from generation to generation, as well as physical objects and places'. (Heritage NSW)

Aboriginal people have been sustainably using and managing Sea Country and its resources for tens of thousands of years, in some places since before rising sea levels created the current GSR marine environment. Aboriginal people do not separate land from sea and many *Song Lines* cross from land to nearshore to deep coastal waters. **Figure 20**

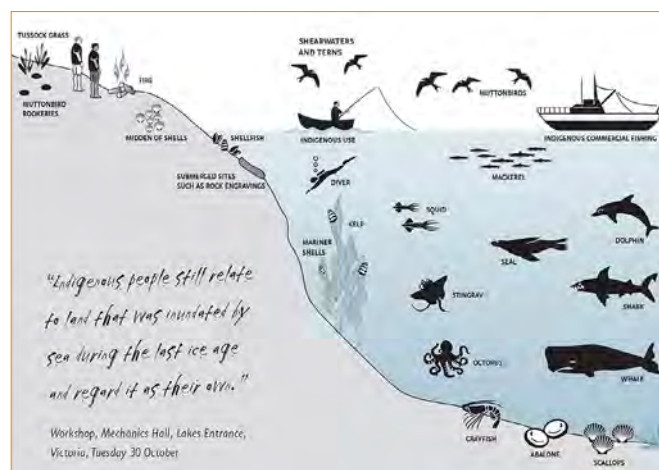
Evidence of Aboriginal use of marine resources across the GSR region include *middens* and *fish traps* such as those at Arrawarra in northern New South Wales and Whyalla in South Australia. These sites were used to provision food, cultural and spiritual activities. Other heritage artefacts including items made from kelp and shells.

Marine plants and animals have a special spiritual place in stories passed through generations and that value is also demonstrated through the social system of *totems* that carry with them a responsibility for the management and protection of species.

*"Indigenous Australians have lived off the sea's abundant resources for tens of thousands of years. Tidal fish traps and productive coasts would act as camping grounds where knowledge was shared through storytelling, including the sustainable fishing and preparation of local fish, shellfish and crustaceans. Jason Billny, a representative of the Barnjarla people in South Australia explains, "Part of our connection to land and sea is that every flora and fauna has a story to it, so you treat it with respect." He continues, "This connection to our country is why these resources have survived for so long."*

Source: <https://greatsouthernreef.com/about>

**Figure 20: Indigenous use of oceans & marine resources**



Source: Sea Country: An Indigenous perspective <https://www.environment.gov.au/system/files/resources/271c0bfc-34a2-4c6c-9b02-01204ebc0f43/files/indigenous.pdf>



Source: Great Southern Reef [https://www.youtube.com/watch?v=LKO\\_YNPizvE](https://www.youtube.com/watch?v=LKO_YNPizvE)

#### **WATCH:** Indigenous connection to the GSR

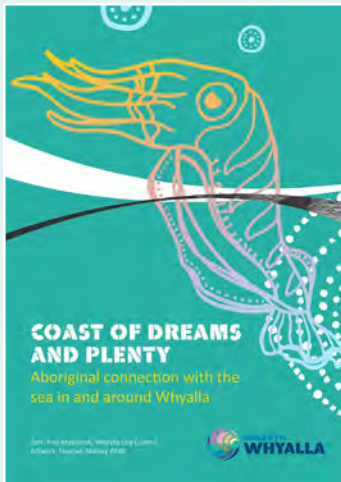
Bunna Larwie is a Mirning elder and Whale songman (totem) on the Great Australian Bight whose ancestors cared for country for 3000 generations.

In Mirning language "Goonminyerra" means "to keep protecting that place". It describes a gratitude to Country and everything that lives on it.

Source: Great Southern Reef Lesson 1 Teacher Guide

# AUSTRALIA'S GREAT SOUTHERN REEF

**READ:** Coast of Dreams: Aboriginal Connection with the sea in and around Whyalla (SA) to learn more about the past use of the GSR



**SINGING TO THE SHARKS RITUAL**

**Where:** Point Lowly.

**When:** Summer.

All three tribal groups – Barngarla, Andymanthanha and Kokatha agreed that Point Lowly was a place where people used to sing to the sharks. At Weeroona Bay, the men gathered at the rocks while the women danced on the beach. The men sang to the sharks. The sharks gathered schools of fish and drove them towards the beach. The men then entered the water and collected fish. The last person in Whyalla who was able to sing to the sharks passed away in the late 1960s.

**Explainer:**  
In general terms, fish are not drifters, they swim with a reason. They have a well-developed

Source: <https://www.whyalla.com/sites/whyalla/media/images/cuttlefest-2020/coast-of-dreams-for-website.pdf>

## ii. European Heritage

Australia has a long non – indigenous maritime history. The 8000 km coastline of the Great Southern Reef with its extensive rocky outcrops and headlands experiences some of the most treacherous seas in the world, particularly during storm events. There are over 1,000 known shipwrecks in Tasmanian waters where jagged cliffs and submerged rocky reefs posed huge risks in the days of sailing ships. The wrecks include the Sydney Cove, the eighth oldest known shipwreck in Australia. These vessels form part of Australia’s Maritime Heritage and are protected under government legislation.

## iii. Natural heritage

All of the habitats and species of the Great Southern Reef make up a significant component of the Australian Marine Estate. It is important for intergenerational equity that this natural heritage is protected for future generations.

## UTILITY VALUES

### i. Economic services

It’s estimated that the Great Southern Reef contributes more than \$10 billion a year to the Australian economy. Some major economic contributions from **fisheries** and **tourism** per year include:

- rock lobster fisheries ≈ \$375 million pa
- abalone fisheries ≈ \$134 million pa
- direct tourism activities ≈ \$10 billion pa
- total tourism (reef and adjacent coastal areas) ≈ \$40 pa



**WATCH:** Australia’s Southern Rock Lobster (Crayfish) fishery  
<https://www.youtube.com/watch?v=uz2zP2j1Dp8>

Source: Great Southern Reef

Many **regional coastal communities** along the Great Southern Reef rely on **tourism** to provide employment and generate income. On Phillip Island in Victoria, Tasmania’s west coast, and Kangaroo Island in South Australia, the reef contributes ≈15% to total economic activity.

The protection of the marine estate is essential to maintain and grow that value.



**WATCH:** Cuttlefest Annual Event in Whyalla  
Source: <https://www.whyalla.com/cuttlefest>

# AUSTRALIA'S GREAT SOUTHERN REEF

Each year thousands of tourists visit marine parks to enjoy unique natural environments and species. The *Giant Australian Cuttlefish aggregation* in South Australia attracts tourists from around the world, who come to snorkel or SCUBA dive at this unique breeding site. In 2020 tourists visiting during the aggregation period contributed over \$17 million to the city's economy (ABC News).

## See Illustrative Example on Marine Protected Areas

### ii. Environmental Services

The Great Southern Reef kelp forests perform important **environmental functions** that include:

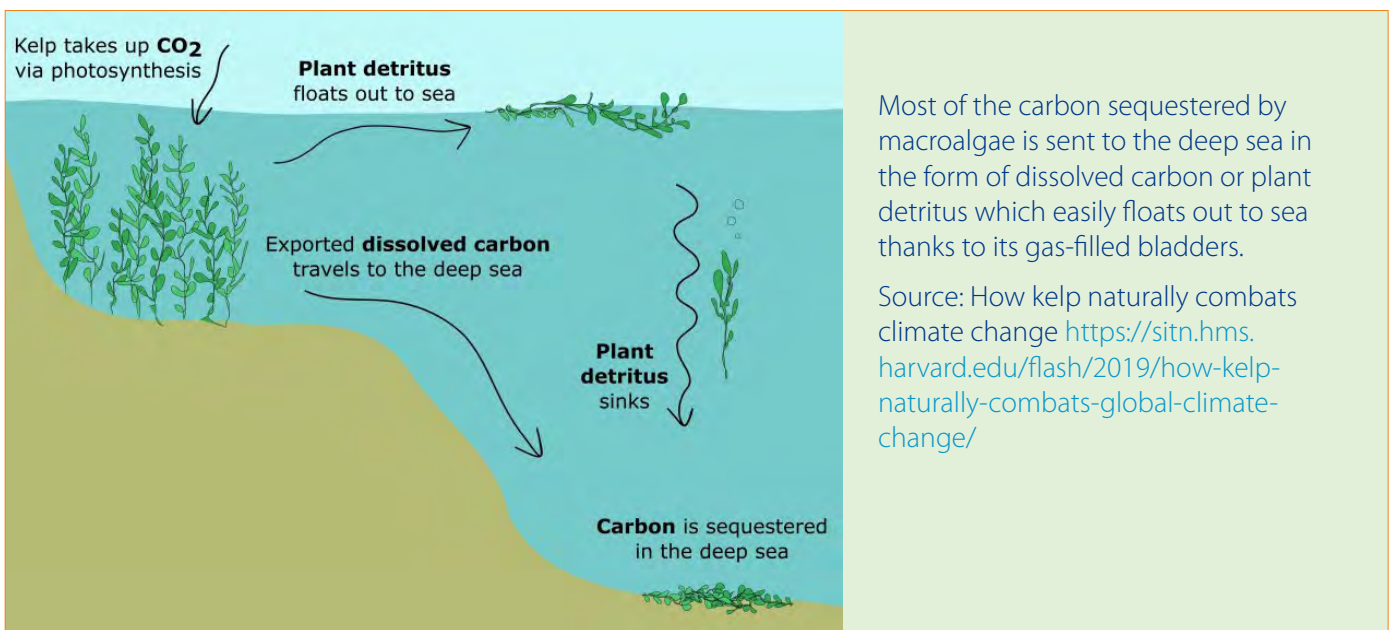
- helping to **prevent coastal erosion** (by absorbing and deflecting wave energy)
- acting as a **'biofilter'** trapping sediments and absorbing nutrients
- providing **habitats** for courtship, mating, egg laying and juvenile fish (nurseries)

- supporting a huge **diversity of species** in all tropic levels in complex food webs

One of most important features of productive ocean ecosystems such as kelp forests is their role absorbing Carbon Dioxide and producing Oxygen. Kelp and other seaweeds (macroalgae); microalgae (phytoplankton); and marine plants (seagrass) absorb CO<sub>2</sub> during photosynthesis to grow biomass. They produce oxygen as a byproduct of photosynthesis, oxygenating the ocean for consumer organisms.

When marine algae die, carbon locked in its tissues is transported to the deep ocean where it remains, potentially forever. This is known as 'carbon sequestration' and is why kelp forests are referred to as 'carbon sinks', and the carbon they hold is known as 'Blue Carbon'. It is estimated that at a global scale, seaweeds are thought to sequester nearly 200 million tonnes of CO<sub>2</sub> every year. **Figure 21**

**Figure 21: Sequestration of carbon into the deep sea**



**LISTEN** to a PODCAST from the Manly Seaweed Forest Festival Podcast: Episode 2 <https://www.seaweedforestsfestival.com/podcasts/>

Professor Tim Flannery speaks about the value of seaweeds as carbon pumps

Also in this podcast, the impact of climate change

### Episode #2



SEAWEED FORESTS FESTIVAL

2. Seaweed: Victim and unlikely hero in the fight against climat...

# AUSTRALIA'S GREAT SOUTHERN REEF

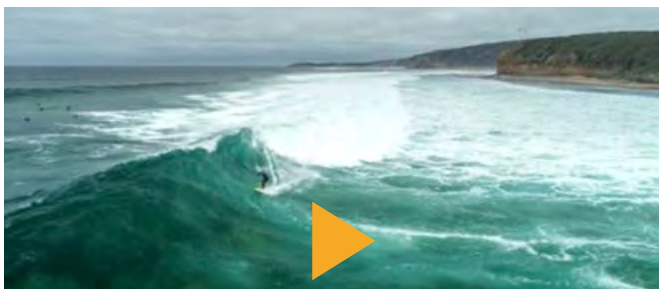
## iii. Cultural Services

*'Due to its sheer scale and close proximity to almost 70% of the Australian population, the reef forms an integral part of Australian culture and society'*

Cultural services are the non-material benefits people gain from an environment such as recreational use, aesthetic appreciation, spiritual enrichment, sense of place, health and well-being. Bells Beach in Victoria has a reputation developed through surf culture and folklore as an internationally renowned surfing icon. As well as hosting the longest running annual international surfing contest, Bells Beach's surfing history is commemorated in its status as a Surfing Recreation Reserve.

*'National Surfing Reserve status recognises surfing as a sport that is part of the social and economic fabric of many coastal communities across the Great Southern Reef and beyond.'*

## MAINTENANCE OF GENETIC DIVERSITY



**WATCH:** Bells Beach – how a world first became a model for conservation <https://www.youtube.com/watch?v=sn66TPpDChI>

Source: Ocean Imaging | Great Southern Reef

**Genetic diversity** is an important contributor to the resilience of kelp and other kelp forest organisms. The Great Southern Reef is rich in biodiversity with one of the highest rates of endemism in the world with an estimated 10,000 species not yet identified. The reef supports a greater diversity of marine life (especially flora and invertebrate fauna) than the GBR leading scientists referring to it as Australia's Unique South

**Biological diversity** is a bank of genetic material made up of the individual genes of each species. Over long periods of time species have adapted to change through a process of **natural selection** in which the best characteristics for survival are maintained and passed to future generations.

The **genetic database** in Great Southern Reef is a potential safety net for adapting to future change, in particular Climate Change. Scientists are already

experimenting with the selection of species they believe to be more resilient to climate change for the restoration of lost kelp forests across the Great Southern Reef. The science is new, and the research and restoration trials are dependent on the maintenance of genetic diversity.

## See Illustrative examples

There is growing interest in kelp and other seaweeds (macroalgae) and microalgae (phytoplankton) for the chemical compounds and nutrients they contain for food and health applications. This has implications for using selected genetic material in **seaweed aquaculture** with the potential to produce food and nutritional supplements while benefiting the environment through carbon sequestration. A loss of genetic diversity will hinder this potential by limiting the available genetic database.



**WATCH:** BBC Report – The miraculous power of the humble seaweed [https://www.bbc.com/reel/video/p09bqf8t/the-miraculous-power-of-the-humble-seaweed?fbclid=IwAR1Lwhvpni-vkJ4fZAI91m5eANDVgSiTXGAu1Y3\\_sQ2OPJKwRGhNuvZQLDw](https://www.bbc.com/reel/video/p09bqf8t/the-miraculous-power-of-the-humble-seaweed?fbclid=IwAR1Lwhvpni-vkJ4fZAI91m5eANDVgSiTXGAu1Y3_sQ2OPJKwRGhNuvZQLDw)

## INTRINSIC VALUE

The Great Southern Reef ecosystems have a right to exist irrespective of other values.

This value links very closely to spiritual values and our sense of belonging to the natural world that comes from appreciating nature.

## NEED FOR UNIMPEDED NATURAL CHANGE

Many scientists believe it is important that evolutionary processes that have created the Great Southern Reef continue to function. With well protected areas where this can happen, the causes of future change can be determined as being human induced or evolutionary. This will assist with future management and also bring new genetic diversity. The challenge is in creating large marine parks or zones in existing parks designated as 'scientific use only'.

# AUSTRALIA'S GREAT SOUTHERN REEF

## Conclusion

Learn more about the values of the Great Southern Reef and the need to manage and protect

Using the following webinar panel discussion and the media reports provided as references.



**WATCH:** Great Southern Reef Webinar: Uncovering the value of Australia's GSR  
<https://marinesocioecology.org/great-southern-reef-webinar-uncovering-the-value-of-australias-gsr/>

## References

Review of Coast and Marine Ecosystems in Temperate Australia Demonstrates a Wealth of Ecosystem Services <https://www.frontiersin.org/articles/10.3389/fmars.2020.00453/full>

Australia's forgotten other 'Great Reef' <https://www.bbc.com/travel/article/20200922-australias-forgotten-other-great-reef>

The remarkable power of Australian kelp <https://www.bbc.com/future/article/20210406-how-kelp-can-help-solve-climate-change>

All eyes on Whyalla's spectacular cuttlefish aggregation, as numbers may have come in lower than hoped <https://www.abc.net.au/news/2021-07-10/whyalla-cuttlefish-numbers-aggregation-fishing-ban-kingfish-farm/100281726>

Substantial role of macroalgae in marine carbon sequestration <https://www.nature.com/articles/ngeo2790>

Biodiversity photographs and information <https://greatsouthernreef.com/marine-life>

## B. MANAGEMENT

### 1. TRADITIONAL AND CONTEMPORARY ABORIGINAL MANAGEMENT

Over thousands of years Aboriginal people have developed and used sustainable management practices on the Great Southern Reef. Resources were taken to satisfy needs and maintain biodiversity and ecosystem functioning. Two examples of traditional cultural practices focused on sustainability are **totems** and **resource** use based on seasonal calendars.

#### Totems

Totems are about responsible stewardship.

*'Each clan/family is responsible for the stewardship of their totem: the flora and fauna of their area and the stewardship of the sacred sites attached to their area. This stewardship includes the sustainable management of the resources and the spiritual management and ceremonies needed to ensure adequate resources for each season.'*

<https://australianstogether.org.au/discover/indigenous-culture/aboriginal-spirituality/>



**WATCH:** Aboriginal responsibility of caring for country and the Great Southern Reef <https://www.youtube.com/watch?v=Q5dnkvNW0s>

The Wadandi (Saltwater) People from the Noongar nation, in the SW corner of Australia have a continuous cultural, physical and spiritual relationship with the land and sea. Zac Webb, a Wadandi custodian explains the concept of totems.