

AUSTRALIA'S GREAT SOUTHERN REEF

2. CONTEMPORARY MANAGEMENT

INFLUENCES ON MANAGEMENT



Ocean Imaging | Great Southern Reef – <https://mission-blue.org/2019/12/the-great-southern-reef-of-australia-honored-as-new-hope-spot/>

Identity of the Great Southern Reef

Despite bordering 78% of coastal electorates and 50% of all rural and regional electorates in Australia, the now Great Southern Reef was the perfect example of *'out of sight, out of mind'*.

A lack of knowledge has hindered investment in research and protection. Compared to tropical marine ecosystems in Australia, temperate marine ecosystems have only received a small portion of research funding. For example, between 2015 and 2021 funding from the Australian Research Council for temperate reef research was just 21% of coral reef funding (AU\$6.5 vs AU\$29.6 million) despite temperate ecosystems having higher economic value and the majority of Australia's commercial fisheries.

The identity *Great Southern Reef* was first used in an academic paper written by a group of concerned scientists in 2016 to give an identity to the interconnected rocky reef ecosystems. This occurred at a time when the degradation and loss of kelp forests ecosystems was becoming more common in Australia and overseas. Research scientists saw a growing need to raise awareness and develop strategies for its protection and management.

The GSR identity has been adopted by the scientific community in Australia and increasingly overseas. It was named a *Mission Blue Hope Spot* in 2019 in recognition of the values of the reef and to promote the need for increased protection.

"People protect what they love, and they love what they understand. We want to help everyone recognise the GSR's importance, and to wholeheartedly understand what a special place we have here."

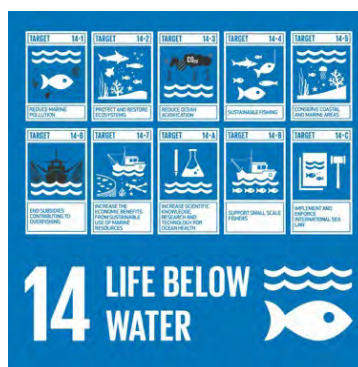
Sahira Bell, <https://mission-blue.org/2019/12/the-great-southern-reef-of-australia-honored-as-new-hope-spot/>

It remains to be seen if increased government funding for research and management follows.

International Agreements and Targets

At a global scale large IGO's, NGO's and research organisations promote environmental protection and management and the conservation of species, habitats and ecosystems. Examples include the IUCN, Mission Blue, Marine Conservation Institute (Blue Parks initiative), and the United Nations Environment Program (UNEP). International agreements aim to galvanise countries to act. Three recent actions link directly to the future of the GSR.

Paris Agreement – is an international treaty on climate change, adopted in 2015 to tackle climate change and its negative impacts. Government leaders became signatories to the agreement to set long-term goals to guide their nations to net-zero emissions. Leaders will meet again in 2021 at Glasgow to consolidate their commitments.



The UN Sustainable Development Goals – a collection of 17 interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all" agreed to by world leaders. The SDGs were set up in 2015 by the

United Nations General Assembly and are intended to be achieved by the year 2030. Goal 14 is Life Under Water. Goal 13 is Action to combat climate change and its impacts.

UN Decade of Ecosystem Restoration focuses attention taking action to protect and restore degraded ecosystems

International action has the potential to make a difference to the future of the Great Southern Reef.

3. MANAGEMENT STRATEGIES

Management for the GSR can be categorised by the intent of the strategy. These include:

- Protection and Regulation
- Restoration
- Community action / Citizen Science
- Education

PROTECTION AND REGULATION

a. Legislation – State / Federal

Protection for the natural and cultural values of the Great Southern Reef is provided by state and Commonwealth legislation. Laws incorporate requirements for management plans and the regulations needed to enact and enforce the protections granted.

Examples of legislation relevant to protecting the GSR in NSW include:

- **Environment Protection and Biodiversity Conservation Act 1999** (Cwlth)- to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places of national environmental significance. This legislation was used to list the Giant Kelp Forests of Southeast Tasmania as an endangered ecological community in 2012.
- **The Fisheries Management Act 1994** (NSW) applies to all coastal waters under NSW jurisdiction. The legislation requires management plans and regulatory controls for all fisheries. Permits, catch limits, seasonal restrictions and species or habitat protection are some of the regulations included under the act.
- The **Fisheries Management Act 1991** defines the Australian Fishing Zone (AFZ) and sets out responsibilities for ecologically sustainable development. The **Environment Protection and Biodiversity Conservation Act 1999** requires an assessment of all Commonwealth-managed fisheries before permission is given to export catch.
- **Marine Estate Management Legislation 2015** (NSW) 2015 controls the establishment of Marine Parks for conserving biological diversity, ecosystem functioning in the marine estate, and its management and use.
- **Underwater Cultural Heritage Act** (2018) (**UCHA**), effective from July 2019. A federal law to protect underwater cultural heritage in Commonwealth waters.
- The **NSW Heritage Act 1977** (within State waters of NSW)

Example: Legislation, sustainable fisheries and the Great Southern Reef

The Southern Bluefin Tuna Fishery is managed by Australian Fisheries Management Authority, under the Fisheries Management Act 1991. To manage the catch of Southern Bluefin Tuna off the Australian east coast, AFMA uses zones. These are reviewed weekly and set in relation to sea surface temperature and currents.

Southern Bluefin Tuna are an important apex predator in the Great Southern Reef ecosystem and one of the top predators in the marine food chain. Young fish travel south in the Leeuwin Current along the reef and congregate in The Bight during summer to feed.

“Southern Bluefin Tuna gain about 80-90% of their annual growth as they feed for four months along the Great Southern Reef. This reefy system is vital to the nourishment and success of the species.”

Kirsten Rough, Tuna Researcher & Fisher, Port Lincoln, SA. Great Southern Reef at <https://greatsouthernreef.com/southern-bluefin-tuna>



WATCH: Story of Southern Bluefin Tuna.

In the 1960s and 70s, the southern bluefin tuna was highly overfished and were a high-volume low value fishery. Kirsten Rough explains how research and strict regulations helped make fishery sustainable with a low volume yet high value output. <https://www.youtube.com/watch?v=v2a88TWhCyY>

b. Marine Protected Areas (MPAS)

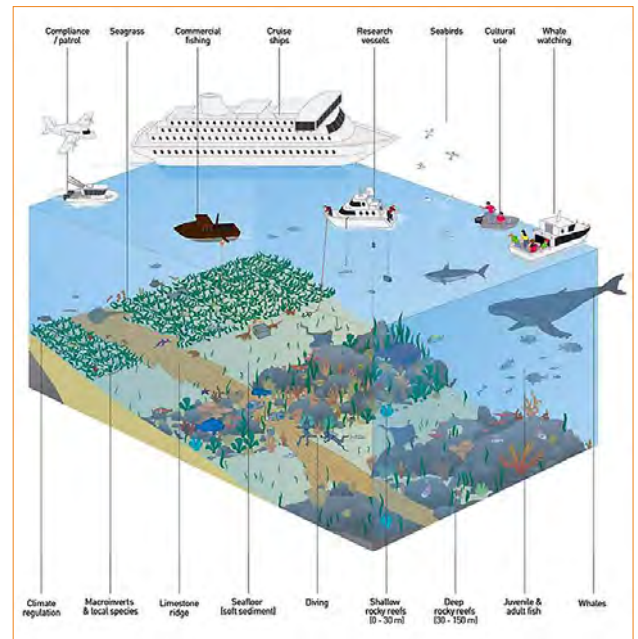
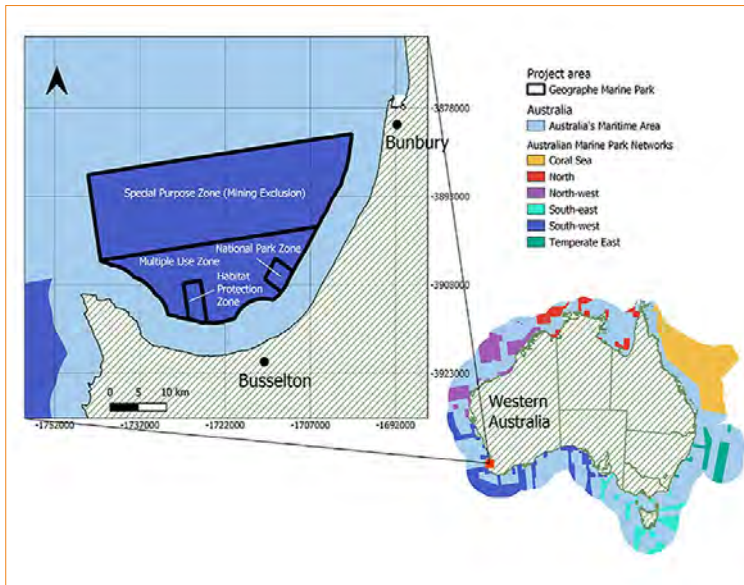
Marine protected areas are a system of parks and reserves established by governments to protect and manage large marine environments.

See Illustrative Example 4

Two of the main tools used successfully in marine parks on the Great Southern Reef are **zoning** and allowing **multiple uses**. Figure 3 illustrates the multiple uses that need to be managed by zoning in the Geographe Marine Park (WA).

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Figure 24: Geographe Marine Park



Source: <https://eea.environment.gov.au/accounts/ocean-accounts/geographe-marine-park>

RESTORATION /FUTURE PROOFING

Restoration programs are used where kelp forests have been degraded or lost. Three significant programs on the Great Southern Reef involve using different methods to restore lost kelp forests.

See Illustrative Examples 1– 3

There is discussion in the scientific community about the need to go beyond restoring what was there before (Restore or Revive) and looking to improving the species (Reinforce) or even introducing or creating a new species (Replace or Redefine) such as those resilient to warmer temperatures.

The idea of **future proofing** sections of kelp forest on the Great Southern Reef at greatest threat from climate change is an option that raises bioethical issues around using genetic engineering to save species and ecosystems. **See Illustrative Example 3**

Effective restoration is based on scientific research, data collection and monitoring. Organisations working at a range of scales are conducting research on kelp forests and other reef habitats and species including Australia universities and research facilities such as SIMS in Sydney..

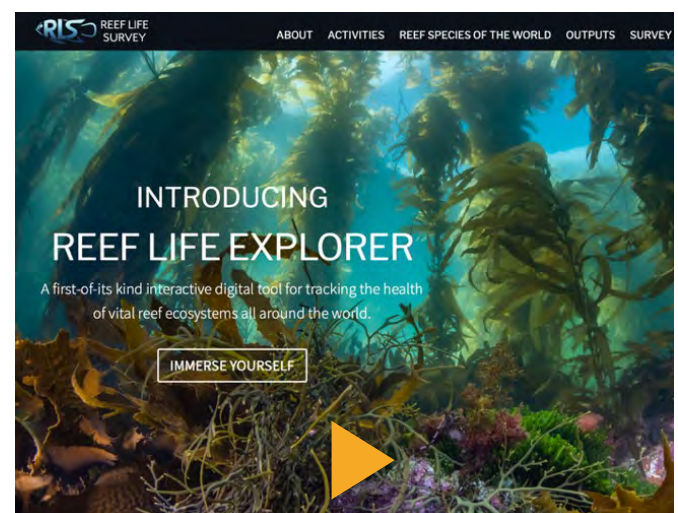
VOLUNTERISM / CITIZEN SCIENCE

Many management activities at a local scale depend on the work of **volunteers** concerned about local environmental issues. Often these are research trials such as Operation Crayweed conducted at 11 locations along the Sydney Coastline. **See Illustrative Example 1**

Citizen Science activities provide opportunities for community members to collect valuable data through surveys and Apps. Kelp Tracker is an App being used in Tasmania to locate remnant areas of Giant Kelp to create a database of locations for potential restoration.

See Illustrative Example 3

Reef Life Survey (RLS) is a large team of citizen scientist SCUBA divers using the same methods to record the abundance of all species on rocky and coral reef around the world, including the Great Southern Reef. The aim is to make the underwater world visible – to scientists, governments, managers, artists and anyone interested. The data is made visually accessible through Reef Life Explorer the interactive website for RLS.



Reef Life Survey team at work Source: <https://www.youtube.com/watch?v=grq8dfblm8Q>

EDUCATION

Education is an essential component in the protection of the Great Southern Reef and is particularly important to making kelp forests visible and developing appreciation of the values they hold. Raising awareness through community events, school programs, social media, documentaries and recognition such being a Mission Blue Hope Spot are increasing knowledge, understanding and care.

See Illustrative Example 1.

HARVESTING PEST SPECIES

To restore the ecological balance created by invasive species such as sea urchins a viable option is to commercially harvest species. The benefits of harvesting sea urchins include:

- mitigating the spread and restore degraded kelp forests.
- protecting the biodiversity that other fishermen rely on, particularly abalone.

Tasmania has successfully expanded the commercial fishing of Long Spined Sea Urchins into a large-scale operation with 400 tonnes now harvested each year.

In NSW, native urchins are decimating kelp forests along the south coast where the dynamic equilibrium of the ecosystem has been altered by overfishing of consumer species and climate change. Scientists are calling on the NSW government to change fishing regulations and incentivise the expansion of commercial urchin harvesting. The move is supported by the local traditional owners who were being involved in consultation meetings in 2021.

A Sea urchin harvesting operates out of Pambula on the far south coast to take advantage of the exploding population.

READ

South Coast Sea Urchins
<https://www.southcoastseaurchins.com.au/about>

WATCH the harvesting of sea urchins on the NSW far south coast for their roe.

South Coast Sea Urchins
<https://www.youtube.com/watch?v=ICdl6YKioO4&t=20s>

READ

Sea urchin harvest could limit spread of 'barrens'
<https://www.naroomanewsonline.com.au/story/5173459/sea-urchin-harvest-could-limit-spread-of-barrens/>



Purple sea urchins Source: Shutterstock

References

Scientists push to raise awareness of Great Southern Reef <https://www.abc.net.au/news/2020-05-19/great-southern-reef-needs-more-attention-scientists-say/12227998>

Landline <https://www.abc.net.au/landline/gamay-rangers:-indigenous-rangers-share-unique/12811904>

La Perouse Local Aboriginal Land Council
www.laperouse.org.au

Heritage NSW <https://www.heritage.nsw.gov.au/about-our-heritage/maritime/>

The great southern reef of Australia honoured as new Hope Spot <https://mission-blue.org/2019/12/the-great-southern-reef-of-australia-honored-as-new-hope-spot/>

New ocean Hope Spots, vetted by IUCN and Mission Blue, to ignite global support for ocean protection
<https://www.iucn.org/news/secretariat/201609/new-ocean-hope-spots-vetted-iucn-and-mission-blue-ignite-global-support-ocean-protection>

UN Decade of Ecosystem Restoration
<https://www.decadeonrestoration.org>

Arrawarra Fact Sheets http://www.arrawarraculture.com.au/fact_sheets/index.html

Paris Climate Agreement in Australia <https://www.industry.gov.au/policies-and-initiatives/australias-climate-change-strategies/international-climate-change-commitments>