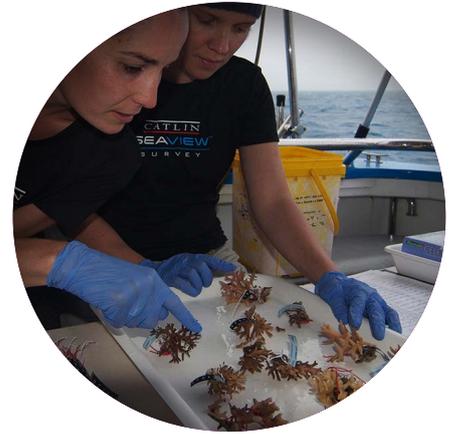
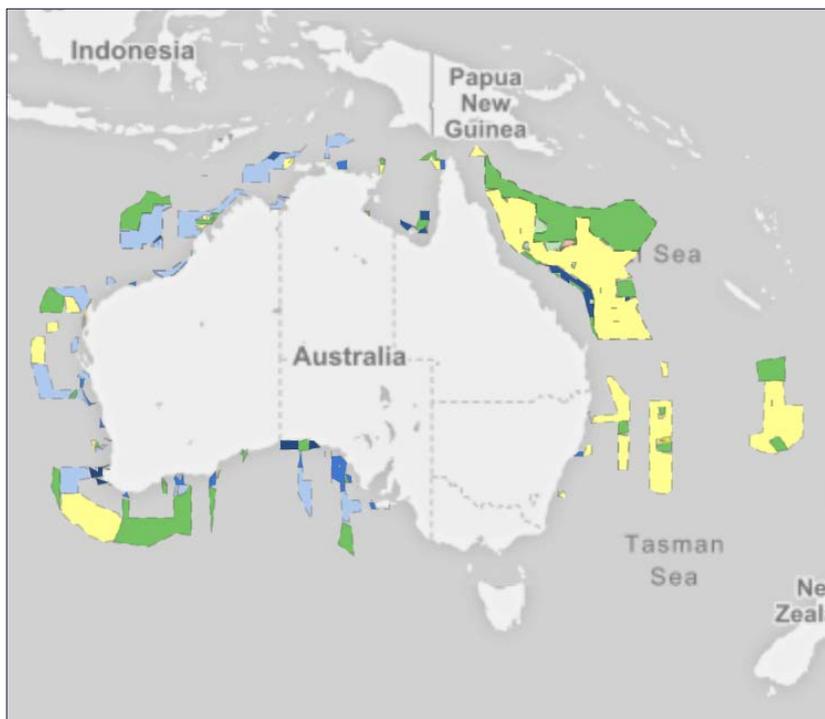


Mitigation strategies information sheet



Australia

In 2002 the world's largest network of marine parks was created when the number of marine parks in Australia increased from 27 to 60. They are part of the National Representative System of Marine Protected Areas to create a network of marine environments including coral reefs which protect important marine habitats and species whilst allowing people to use and enjoy the unique environments.



- Sanctuary zone
- Marine national park zone
- Recreational use zone
- Habitat Protection Zone
- Habitat protection zone (Lord Howe)
- Habitat protection zone (reefs)
- Special purpose zone
- Special purpose zone (A)
- Special purpose zone (B)
- Special purpose zone (C)
- Multiple use zone
- Multiple use zone (A)

Please refer to the [BAP Report](#) for a full explanation of allowed and prohibited activities in each zone type. A summary is provided below.

Map data © OpenStreetMap contributors, CC-BY-SA, Imagery © Mapbox

Zones are used (shown in picture above) to regulate activities within the marine reserve.

STUDENT SHEET 7b

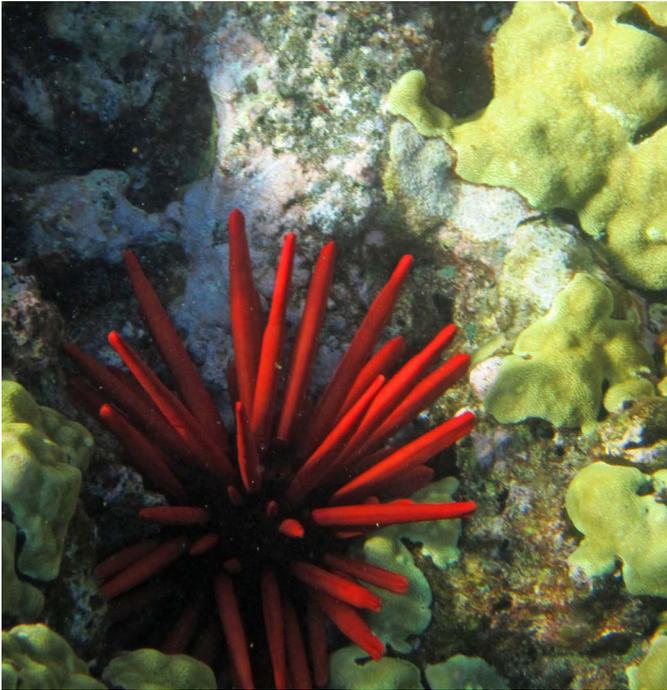
| Zone | Uses and restrictions IUCN Protected Area Categories |
|----------------------------------|--|
| Sanctuary Zone (SZ) | This is a strict nature reserve (Ia). It is managed primarily for scientific research and to protect biodiversity and geological features. Human visits are limited and controlled. |
| Marine National Park Zone (MNPZ) | Large areas are categorised as a National Park (II) the area is preserved to its natural condition therefore all extractive activities are prohibited such as mining and fishing to protect large-scale ecological processes, characteristics and species. |
| Special Purpose Zone (SPZ) | Special Purpose Zones (VI) are areas designated for specific commercial activities. They contribute to the sustainable development at national, regional and local level. |
| Multiple Use Zone (MUZ) | Multiple use zones (VI), are areas where socio-economic activities such as sustainable fishing and petroleum exploration and production are acceptable as long as they do not compromise conservation values. |
| Habitat Protection Zone (HPZ) | These areas are protected with the aim to protect specific species or habitats (IV). Active management of the area required to maintain the natural ecosystem. |

USA, Florida

Coral reef restoration – exploits the natural process called ‘fragmentation’ which is when a branch of coral breaks away and falls onto the reef it can reattach and grow a new colony. Large numbers of corals have been cultivated using this method. To ‘farm’ corals, coral trees are used. Shown in picture they are tethered to the ocean floor and coral fragments are hung from the branches of the trees using fishing line. After six to nine months the coral colonies will be large enough to be outplanted to the reef. This is the process when the coral colonies are secured to reef habitats. The success rate has been proven in the Florida Reef Tract, where more than 74,000 corals have been outplanted since 2012.



Hawaii



Many of the coral reefs off the coast of Hawaii are vulnerable to invasive species that threaten the corals survival. The Department of Land and Natural Resources uses a tool known as the 'Super Sucker' a barge based underwater vacuum to remove the bulk of the algae. Over two years, divers removed more than 40,000 pounds of invasive macro-algae which covered six acres of coral reef off Oahu. To prevent the algae from just growing back the team adds native sea urchins that are grown specifically for the restoration. Sea urchins are grazers and will keep the algae levels low and allow the coral to recover.

Jamaica

In 2009 the National Environmental and Planning Agency gave permission for the Port Authority of Jamaica and Royal Caribbean Cruise lines to develop a cruise ship terminal at the historic town of Falmouth. The Environmental Impact Assessment showed there was sensitive marine resources within the footprint of the proposed port. A condition to the permit was the 'protection and care' of the coral reefs. The redevelopers decided the best way to 'protect and care' for the coral reefs was to relocate them.

The corals were removed in a process called harvesting, using hydraulic chain saws and disc saws the corals are removed from the reef and placed in transportation baskets. Those corals were then attached to appropriate reef structures using a glue-like substance called epoxy. Over 8 months a team of 93 people successfully relocated 147,947 organisms. Monitoring since shows that 86% of the colonies relocated in 2009 were accounted for in 2011 and only 4% of the monitored colonies showed total colony death overall very successful.



Nev ena, CC BY-SA 4.0, from Wikimedia Commons

Jordan

To meet the increasing tourist demand along the Gulf of Aqaba the rate of urban development has increased rapidly. To protect the marine life several coral reefs were relocated by the Aqaba Special Economic Zone Authority with the support of the United Nations Development Program. In 2012 some corals from the coast were moved 2 miles north to damaged reefs and cave site and some smaller colonies were moved to a nursery site. The relocation is being closely monitored. The 6,000-year-old corals aren't just surviving in their new homes but also regenerating. The replanted corals are growing up to 2 inches per year and have a survival rate of 85%.

The focus of this relocation was not only the impact the loss of the coral reefs will have on the economy of the area, but also how it can be used to encourage tourism.



Yuvalr, CC BY-SA 3.0, from Wikimedia Commons

Australia

Recreational use of coral reefs is an incredibly important economic contributor to the nations near coral reefs. As countries rely on tourism as a source of income it becomes increasingly important they play a role in reef conservation and management.

A strategy used in Australia is the Eco Certification. This certification offers different levels, this assures travellers that the business they are using will provide a service that will leave minimal impact on the environment, uses resources in the most efficient way, offers interesting ways to learn about the environment and contributes to not only conserving the environment but also helping the local community.

Other strategies to mitigate the damage to coral reefs:

- Temporary ban on the use of specific coral reefs during a time of stress such as a bleaching event.
- Reduce land-based pollution – using strategies that reduce erosion in both agricultural and urban settings, such as road drainage and sediment traps (ponds) and rotational grazing/cropping. Reducing chemical inputs from agriculture.
- Marine Conservation Agreements (MCAs) – a contractual agreement that aims to achieve conservation goals. Parties involved voluntarily agree to certain actions or refrain from certain actions in exchange for economic incentives.
- Management of Ocean Acidification – Ocean Acidification represents one of the most serious long-term threats to coral reef ecosystems. It affects the growth of coral reefs as decreasing pH levels of the ocean reduces the corals capacity to create calcium carbonate and ultimately grow. Some key strategies to address ocean acidification include enforcing emission limits, reducing runoff and control coastal erosion.