

The Great Barrier Reef Marine Park Authority is implementing the Representative Areas Program to help ensure better protection of the Marine Park's biodiversity. This will involve a review of the existing zoning throughout the Marine Park. This information sheet is part of a package of materials that help explain various technical elements of the Representative Areas Program and the zoning review.

The benefits of no-take areas

Maintaining biodiversity

Marine plants and animals at various stages of their life may swim or drift throughout the water column. Sand, gravel and mud between reefs provide homes for complex biological communities and feeding grounds or corridors for species moving between inshore nursery areas and offshore reefs. Many marine species migrate and use different habitats at different stages in their life cycle. Some locations act as 'source' areas for the production of eggs and larvae of commercial and recreational species, which may then be carried to settle in adjacent areas.

This marine system is like a chain with many links – if any are broken, entire species may disappear. Every species plays an important role in maintaining healthy ecosystems and the loss of biodiversity generally weakens entire natural systems.

Setting aside some areas that contain different types of plants, animals and habitats means that we protect the immense variety of life, **biodiversity**, which makes these areas so special. We also need to protect key ecological functions and processes, such as upwellings, which are important 'engines' for marine systems.

Protecting rare and threatened species and habitats

While many rare or threatened species (such as turtles and dugong) have direct protection by legislation, it is also important to protect their habitats. Seagrass beds in particular need special consideration, because of their importance as feeding grounds for these species. Often, we don't know where these habitats occur – enormous seagrass meadows covering thousands of square kilometres have just recently been discovered in deep waters north of Cairns. For this reason, it is important to ensure that the design of new networks of no-take areas considers such uncertainty.

Enhancing fish stocks

No-take areas can protect important fish breeding and nursery areas such as seagrass beds, mangrove communities and reefs. Here, eggs, larvae and young fish can develop unhindered. Once fish stocks have increased, surplus adult fish, plus their offspring, can then move into adjoining areas, effectively creating a spill-over effect that helps replenish fish stocks in areas where fishing is allowed. The effect of no-take areas on fish stocks has been likened to a retirement savings plan, with the accumulated interest on natural capital paying valuable and sustained dividends in the long term. This 'superannuation for the fish' can lead to future benefits.

Improving local economies

Many no-take areas hold the same attraction for visitors to the marine environment as national parks do for visitors on land. Tourism can benefit greatly from no-take areas and help bring prosperity to an area. Because many no-take areas contain special and unique natural features, they often become popular for tourism and recreational activities such as snorkelling and diving (mainly at reefs or around islands). The fact that they are highly protected can become a distinct marketing advantage in attracting visitors to an area.

Providing opportunities for research

By providing natural areas that are protected from most human impacts, many no-take areas have an important role in scientific research. These areas provide research opportunities for long-term ecological and population studies. They can also be used to study the effects of human activities by comparing an area that has little impact from humans to nearby areas that allow a range of activities including fishing or trawling.

Providing opportunities for education

Educational use of no-take areas is compatible with their protection, and is an important function. Educating students and the wider community about marine conservation and ecologically sustainable development is a very important role of the GBRMPA. People can visit and study the no-take sites as an example of protecting and managing a complex marine environment.

Providing a safety margin against disasters

No-take areas can't be fenced off from all harmful impacts, either natural or man-made. Sea currents carry sediments, nutrients, pollutants and organisms throughout an area. Events that happen in one area may affect populations or habitats tens or hundreds of kilometres away. For example, a catastrophic decline in dugong numbers occurred in the Hervey Bay area in 1992–93 after the disappearance of 1,000km² of seagrass beds due to heavy silt runoff from the mainland. Therefore no-take areas need to be of sufficient number, size and configuration to minimise risks. No-take areas represent all habitat types in the Marine Park, effectively creating a network of areas that provide ecological safety margins against natural disturbances and man-made disasters.

Providing opportunities for future uses

Biodiversity represents one of our greatest natural resources. Oceans contain innumerable raw materials that could provide new sources of food, fibre or medicines, and new discoveries continually contribute to important scientific and industrial innovations. Which species will be of importance in the future is not known, but the potential of, for example, thousands of yet-to-be discovered marine products to provide lifesaving or commonly used drugs, is virtually untapped but expanding every year.

Fulfilling a number of commitments to protect biodiversity

Australia has made a number of national and international commitments toward protecting biodiversity. The systematic identification of marine habitats and the selection of a representative network of no-take areas will ensure all the essential elements of the marine biodiversity may be protected.

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