Seagrass Friendly Mooring Replacement Project

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Abstract

Seagrass meadows form one of the most important marine habitats globally and occur in shallow coastal waters including Moreton Bay. Traditional block and tackle boat moorings affect up to 15 per cent of seagrass beds in Moreton Bay by producing “crop circles” as the tide moves in and out, impacting on seagrasses, algae and other marine plants growing on the marine substrate. The Australian designed seagrass friendly mooring system was the first Environmentally Friendly Mooring design rolled out in Queensland in an effort to repair the marine habitats of Moreton Bay. Environmentally friendly moorings cause less damage to the seagrass bed, by ensuring there is minimal contact with the sea bed, while still being able to safely secure vessels in the environmental conditions of Moreton Bay. Boat owners have embraced the environmentally friendly system and during the last year over 100 traditional moorings were replaced within priority seagrass beds across three areas in Moreton Bay. Seagrass is expected to regrow over an area about the size of 18 football fields and improve a further 120 Ha of marine ecosystems.

Introduction

Seagrass meadows form one of the most important marine habitats globally and occur in shallow coastal waters including Moreton Bay. This ecosystem provides habitat for juvenile fish and crustaceans that in many parts of the world form the basis of economically valuable subsistence and/or commercial fisheries. In Moreton Bay there exists seven species of seagrass that form important habitat areas for a number of marine species and an important food source for dugongs and green turtles.

Aerial shot of crop circles in Moreton Bay

One of the threats facing seagrass beds is from conventional boat moorings. Studies have shown that traditional block and tackle boat moorings affect up to 15 per cent of seagrass beds in Moreton Bay. This is caused by the chain dragging on the sea floor as the tide moves in and out, ripping out seagrass and creating ‘crop circles’ in a classic halo shape which are clearly visible from aerial imagery. Each mooring removes the seagrass from a 1,400m_2 area (approximately 2 house blocks) and degrades the surrounding 1.2 ha of seagrass and other marine habitats.

Background

Between 2009-2011, SEQ Catchments were involved with an Environmentally Friendly Mooring trial, assessing the effectiveness of three different types of environmentally friendly moorings designs in several locations throughout Moreton Bay, whilst also raising awareness on the benefits of these moorings compared to block and tackle boat moorings designs.

The mooring found to be most suitable to Moreton Bay conditions was the Seagrass Friendly Mooring, designed by On-Water Marine Services. The trial was successful in showing a significant recovery of seagrass species surrounding these moorings within 6-9 months of installation (identified in research

carried out by the University of Queensland[1]) and helped identify minor changes that need to be made to the design to make them adaptable to local conditions, provided input on their ease of use from local boat owners and identified people's willingness to pay for these moorings as well as a need for local manufacturers. It also demonstrated that the mooring provided comprehensive security for boat owners in Moreton Bay conditions due to well thought out elements of the design.

The Seagrass Friendly Mooring System uses a screwed in mooring post as an anchor point. Load spreaders attached to the mooring post just below the sea bed stabilise the post. Above the seabed swivel heads and a shock absorber are attached to a hawser rope and a surface buoy. This design results in all mooring components being suspended in the water column and prevented from dragging across the seafloor.

Currently there is no legislation requiring existing block and tackle moorings to change to environmentally friendly designs. However, moorings installed in new positions within Moreton Bay Marine Park are required to be an environmentally friendly design (this has been the case since 2006).

Following this initial trial a project was set up, coordinated by SEQ Catchments funded through the Australian Government's Caring for our Country Program, the State Government's Marine Offset Program as well as WetlandCare Australia and Oceanwatch Australia to install 100 moorings across three priority areas identified in Moreton Bay. Project partners include Queensland's Department of Agriculture, Fisheries and Forestry, Maritime Safety Queensland, Queensland's Department of National Parks, Recreation, Sport and Racing and South East Queensland's boating community.

Methods

A steering committee made up of project partners used extensive mapping and input to short list three priority areas that would be selected for the environmentally friendly mooring installations, based on areas that had experienced the most extensive damage to seagrass as well as areas that represented the best opportunity for seagrass bed recovery (the installation of several seagrass friendly moorings in close proximity to each other was preferred as opposed to localised installations). The priority areas selected included Dalpura Bay - Macleay Island, Dunwich - Stradbroke Island and Point Halloran - Victoria Point.

The collaboration commenced with engaging the mooring owners to secure installation agreements and to plan, schedule and deliver the works. SEQ Catchments inspected installation sites, including establishing photo-point monitoring sites and taking initial photos. Information sessions and events were held for the Moreton Bay boating community on the relative impacts of traditional boat mooring designs, and the benefits of the seagrass friendly mooring design for use in Moreton Bay, and training materials developed for each mooring being installed.

Following the initial engagement period, 100 seagrass friendly moorings were installed in the three locations of Moreton Bay. The unit cost of each installation sat at approximately $3000 (excluding the cost of engagement activities).

SEQ Catchments was responsible for overseeing the installation of the moorings in the specified locations, and for monitoring and reporting on the results. Indigenous involvement was included through the employment of an Indigenous Project Officer during the mooring installations.

[1] Ash, D., Keogh, E., Baldock, T. Environmentally sustainable moorings in Moreton Bay, Engineering study, Final Report, University of Queensland, 2011.

Results

Key to the success of the trial and the subsequent installation of the Seagrass Friendly Moorings has been the enthusiasm and cooperation of the Moreton Bay boating community in general and of mooring owners in particular, who responded so positively that the program was oversubscribed.

Initial feedback from mooring owners includes:

- 88 per cent would recommend the Seagrass Friendly Mooring to others.
- 94 per cent believe their old mooring caused more damage to the marine environment than their new seagrass friendly mooring.
- 50 per cent were not aware of the damage to marine caused by moorings before this program.
- 94 per cent were very satisfied with the information provided.
- 88 per cent were very satisfied with the installation process.

Des Maslen from On-Water Marine Services inventor of the Seagrass Friendly Mooring

This project has also enhanced community understanding of the impact of personal and collective actions on the environment. For the mooring owner, protecting seagrass became about more than just reducing their impact on the seagrass beneath their vessel. Restoring and protecting the marine ecology enhances their recreational fishing experience with fish numbers increasing as seagrasses return.

Discussion

South East Queensland is experiencing one of the most challenging population growth periods in Australia's history. In Moreton Bay, increasing boat ownership and demand for sheltered, secure moorings is significantly affecting seagrass meadows.

The importance of seagrass meadows has been widely documented and degradation of this environment in Moreton Bay has important implications for tourism, the fishing industry and the delicate marine ecosystems.

The opportunity to restore some of this degraded habitat through the installation of seagrass friendly moorings has proved successful so far and further monitoring will help pinpoint more closely their rate of recovery.

Engagement with the community has proven to be a key ingredient for the success og this project, with 50% of boat owners unaware of the impact traditional block and chain moorings were having on the environment. Results from the initial trial in 2009-2011 helped add weighting and increase confidence among users that the new design was able to secure their boats under the same conditions as the traditional design.

The collaborative approach from different partners also brought together a range of input and expertise, with the steering committee providing much guidance on the delivery of the program.

Take Home Messages

The damage being caused to seagrass beds by traditional moorings has been documented in Moreton Bay, however this has not necessarily always translated to increased community awareness about the issue. The success of introducing the use of seagrass friendly moorings to a new boating community is heavily reliant on a well-targeted community engagement process, through information sessions and consultation.

As a result of these installations, seagrass beds are now on their way to recovering in the three priority area of Moreton Bay, and it is hoped that there will be future opportunities to support the local boating community with further installations.