

# Joondiburri Country – Bribie Island

## This is my country





# A Growing Problem

- Not even our ancestors could predict this...
- How do you bring a place back from the brink?
- Council wrote an action plan
- BUT
- Like many action plans it missed some important parts!
- What about the oyster reefs...?





## Historical epidemiology indicates water quality decline drives loss of oyster (*Saccostrea glomerata*) reefs in Moreton Bay, Australia

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(Received 19 December 2012; accepted 7 February 2013)

Sydney rock oysters (*Saccostrea glomerata*) were historically abundant throughout the intertidal and subtidal zones of the Pumicestone Passage. However, today subtidal oyster reefs are extinct, and loss of around 96% of the vertical zonation suitable for oyster habitation has occurred. European land use practices caused large increases in sediment flux into inshore regions by 1870. This may explain why subtidal oyster reefs declined after major flood events in the late nineteenth century, associated with infestations by spionid polychaete mudworms. Today, mortalities of *S. glomerata* in the region are associated with QX disease caused by *Marteilia sydneyi*. Increased virulence of *M. sydneyi* is likely due to a combination of increased abundance of intermediate hosts in habitat utilised by oysters, together with immunosuppression of the oysters. These processes are all driven by declining water quality derived from anthropogenic catchment development. Recently expanded marine park sanctuary zones fail to protect the ecosystem against continuing water quality decline. Rehabilitation of the ecosystem will require effective catchment management targeting reductions in nutrient and sediment loading, as well as restoration of oyster reefs using QX-resistant oysters.

**Keywords:** MPA; diseases; water quality; recruitment failure; ecosystem management; shifting baselines

## The Problem

- Oysters are tasty like other fisheries species
- And their shells make good for road base and lime for cement
- Overharvesting has contributed to their decline globally
- It seems poor water quality has prevented them coming back



# Oyster Harvesting – Economically Important

- Live oysters and dead shell base extracted
- Transportation of oysters to market along the east coast
- Overharvesting key component in decline





# Oyster Reefs Globally Threatened

- 85% lost or severely degraded
- Oyster reefs are immensely valuable fish habitats and provide substantial ecological services
- Ecosystem Engineers – creating structural habitat provides hiding places for fish and other creatures
- Lungs of an estuary – each oyster filters a bathtub of water per day!
- Shoreline protection
- Total value estimated at US\$99,000.Ha<sup>-1</sup>.Yr<sup>-1</sup>







Extensive rock  
oyster reef at  
Toorbul Point -  
1906





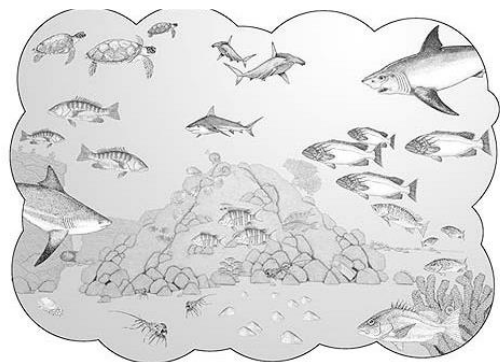


Rock oysters left  
at Toorbul Point -  
2011

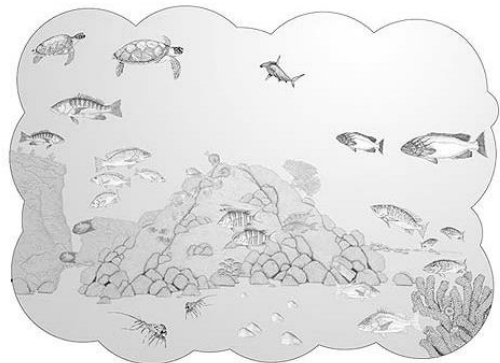




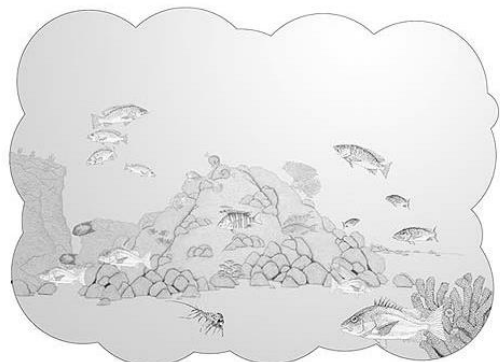
# Unfortunately, Historic Changes Shape our Contemporary View



The past Gulf of California for the old fisher (1940's).



The past Gulf of California for the middle-aged fisher (1970's).



The past Gulf for the young fisher (today).

- Shifting Baselines present a conundrum for knowing what to restore and where
- Easily forgotten with generational change
- Good baselines are needed for restoration to:
  - RECOVER what has been lost
  - OR MAINTAIN what remains







# Restoration - A Possible Solution

We could try to restore the place  
BUT unlikely to get back to the way it was





# Restoration Is A Positive Growth Industry

- A mechanism to maintain or improve functional habitats now, for the future
- 'Blue Infrastructure' that has valuable ecological functions is a good investment
- Great generator of 'green' jobs (17 jobs per US \$1 million spent)
- You need to know where you have come from to know where you are going
- Success needs strong vision vested in the community that will benefit from change





# Traditional Knowledge can help...

- Engaging with indigenous people is important
- Existing framework for engagement through the EPBC Act... BUT...
- Sometimes just asking a question or starting the conversation makes all the difference... and can be the difference between a Boiler Maker & Environmental Restoration Practitioner





We can't change the past, but  
can set us on the right track  
for the future...

Ensure that critical habitats remain part  
of a healthy & functional seascape  
capable of weathering the storm,  
providing clear water and productive  
food sources for generations to come.





# This is Joondiburri Country – Fred Palin – Joondiburri Elder



What we do here matters!  
We all live here so we all have a duty to protect and look after the place

*Through healing our Country, we are all healed*

