The NSW Marine Estate Management Strategy

And

Oyster Reef Restoration in Port Stephens

**“A healthy coast and sea,
managed for the greatest wellbeing of the community,
now and into the future”**

Our marine estate

Up to tidal limit. Out to 3nm

- 1,750 km of coastline
- 6,500 km of estuarine foreshores
- almost 6 million people live within 50 km of the coast
- 11 coastal Aboriginal nations
- $16.8B in tourism / recreational activities
- 6 marine parks
- $160M fisheries value

Community survey 2014

Immediate perceived threats – unprompted responses

Priority threats – environmental

1. urban stormwater discharge	14. passive recreational use – swimming, surfing and dog walking
2. estuary entrance modifications	15. recreational fishing - shore-based line & trap fishing
3. agricultural diffuse source runoff (in estuaries)	16. beach nourishment & grooming
4. clearing riparian & adjacent habitat including wetland drainage (in estuaries)	17. commercial fishing - ocean trawl
5. climate change (20 year outlook)	18. commercial fishing - ocean trap & line
6. modified freshwater flows (in estuaries)	19. commercial fishing- estuary general (in estuaries)
7. foreshore development	20. deliberate introduction of plants and animals – foxes, bitou
8. boating & boating infrastructure (in estuaries)	21. shipping - small commercial vessels
9. navigation & entrance management & modification, harbour maintenance (in estuaries)	22. oyster aquaculture
10. sewage effluent & septic runoff (in estuaries)	23. commercial fishing – ocean haul
11. stock grazing of riparian & marine vegetation (in estuaries)	24. recreational fishing – hand gathering
12. four wheel driving (in estuaries)	25. charter activities – whale and dolphin watching
13. recreational fishing - boat-based line & trap fishing	

Priority threats – social, cultural &economic

1. water pollution on environmental values – urban stormwater	14. overcrowding/congestion
2. water pollution on environmental values – agricultural diffuse-source runoff	15. conflict over resource-use access
3. water pollution on environmental values – litter, waste, debris and microplastics	16. habitat disturbance
4. inadequate social and economic information	17. loss or decline in marine industries
5. lack of compliance with regulations (by users) or lack of compliance effort (by agencies)	18. seafood contamination
6. limited or lack of access infrastructure to the marine estate	19. modified hydrology/hydraulics and flow regime
7. reductions in abundances of species and trophic levels	20. water pollution on environmental values –septic runoff, point-source pollution and sewage overflows
8. anti-social behaviour and unsafe practices	21. wildlife disturbance (shorebirds, turtles, whales) – e.g by dog walkers, four wheel drives and vessels
9. climate change over the next 20 years	22. lack of community awareness of the marine estate, associated threats and benefits
10. loss of public access (private development or Government closures)	23. lack of, or ineffective community engagement or participation on governance
11. inadequate, inefficient regulation, overregulation(agencies)	24. other water pollution and contamination affecting human health and safety
12. pests and disease	25. excessive or illegal extraction
13. sediment contamination	

Marine Estate Management Strategy (MEMS)

- August 2018
- $45.7 million for the first stage of a 10 year Strategy
- Address some of the biggest threats first
- Set the strategic direction for the next decade
- Links with other reforms

Marine Estate Management Strategy Initiatives

Initiative 1	Improving water quality and reducing litter
Initiative 2	Healthy coastal habitats with sustainable use and development
Initiative 3	Planning for climate change
Initiative 4	Protecting the Aboriginal cultural values of the marine estate
Initiative 5	Reducing impacts on threatened and protected species
Initiative 6	Ensuring sustainable fishing and aquaculture
Initiative 7	Enabling safe and sustainable boating
Initiative 8	Enhancing social, cultural and economic benefits
Initiative 9	Delivering effective governance

Improved development

- Planning for water quality outcomes - Councils
- Clarifying responsibilities
- Water quality monitoring

Photos – Midcoast Council

Bank and Marine Vegetation Plans

- Estuary wide planning and approvals

Habitat Education Programs

- Targeted education programs for local councils
- Works crews and Managers

On-ground works - LLS

- Riparian Improvements
- $3M+ over first 2 years

On-ground works - LLS

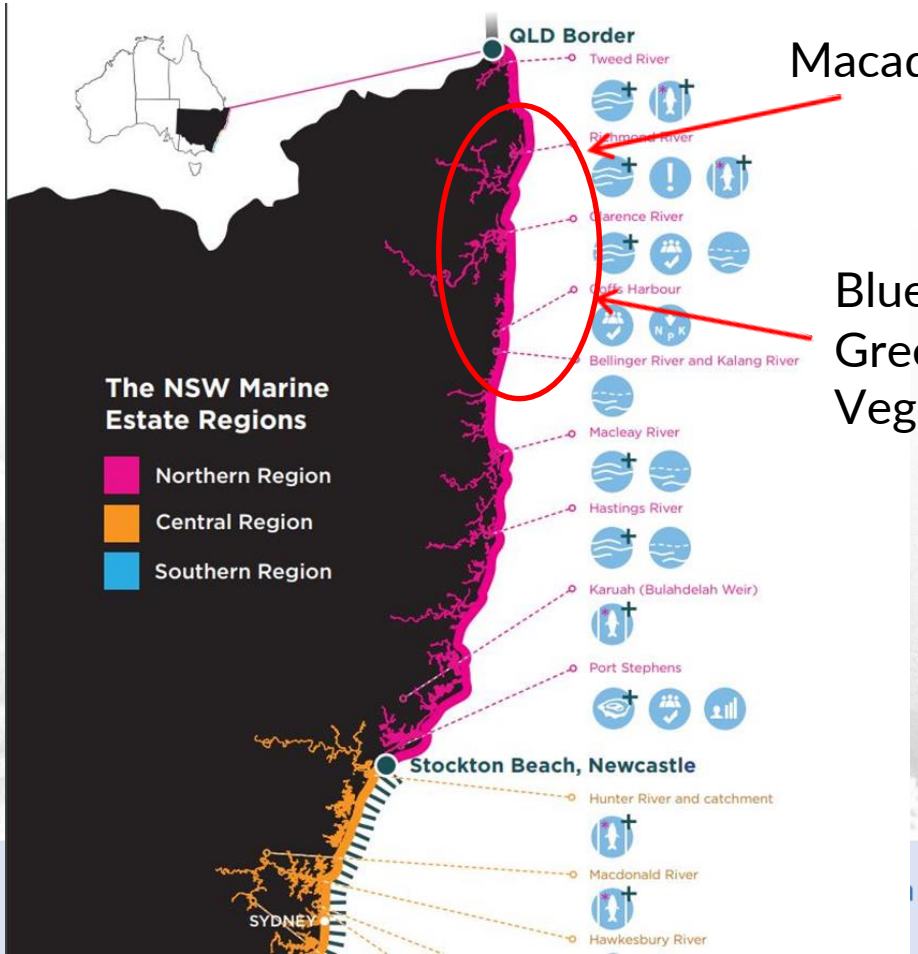
- Bank Stabilization
- $1.2M over first 2 years

On-ground works - LLS

- Gravel Road improvements
- $3M+ over first 2 years

On-ground works – DPI Ag

- Clean Coastal Catchments program
- Approx $1m in first 2 years
- Social Research



Floodplain Projects

Oyster Reef Restoration

- Large scale pilot in Port Stephens
- Increase awareness and engagement
- Planning for next locations & Research
- Lay ground work for others to follow


Andy Myers

What are the benefits?

- Enhanced biodiversity
- Increased estuary productivity
- Waste product (shell) management
- Enhanced industry sustainability
- Enhanced recreational and passive tourism opportunities
- Boost jobs and regional economies
- Positive community engagement

A forgotten ecosystem

"In the 1860's a man could work his warp-stake into the bed and not leave that spot for sixteen or twenty days, getting ten to fifteen bags a day all that time; and that for a long time ten to twelve or even fifteen boats were so employed, until only three or four bags could be got, when all left one after the other. Some came back in about three years only to get at most six or seven bags per day."

Inspector of Oyster Fisheries, Black 1876 Oyster harvesting of natural reefs, Camden Haven estuary.

Oyster farming at Limeburners Creek
L to R: Jack McLaren, Harry & Dick McLaren
State Library of NSW

Conservation Biology

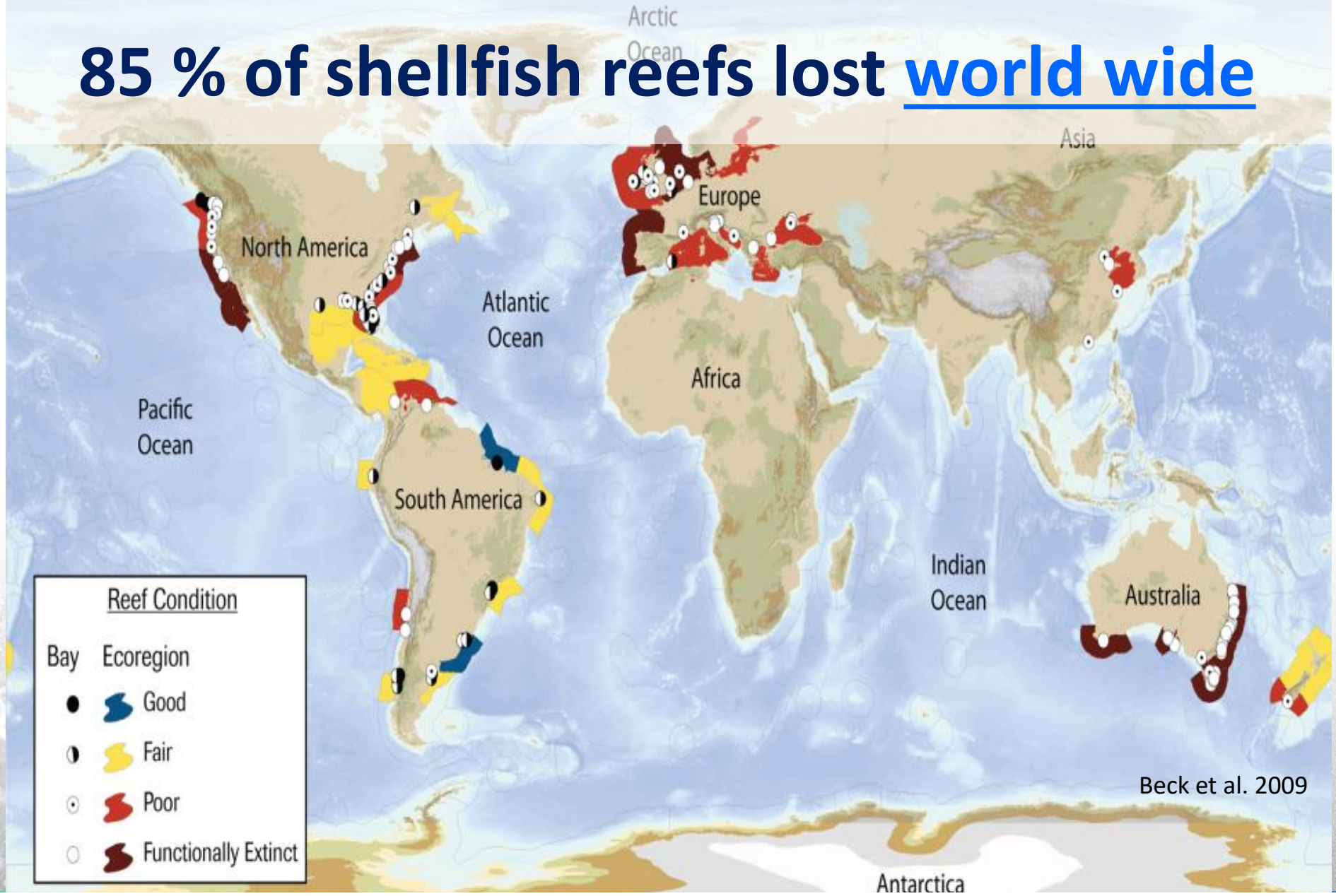
Contributed Paper

Loss of an ecological baseline through the eradication of oyster reefs from coastal ecosystems and human memory

Heidi K. Alleway * and Sean D. Connell

Southern Seas Ecology Laboratories, School of Biological Sciences and The Environment Institute, University of Adelaide, South Australia, 5005, Australia

85 % of shellfish reefs lost world wide



99 % ‘functionally extinct’ in Australia

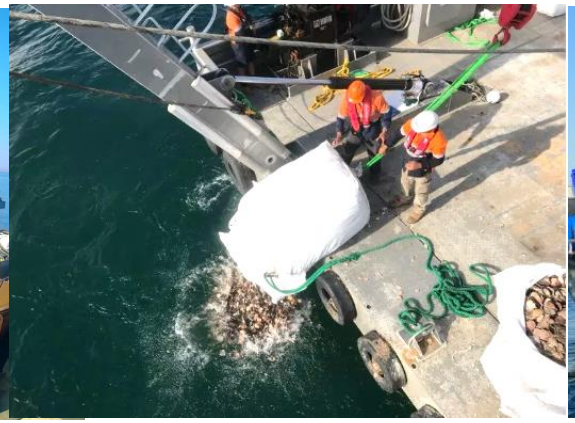
What happened?

- **Historical overfishing** – food, lime
- Destructive practices – **dredging**, **removed** all oysters **PLUS** the **hard substrate**
- Water pollution, **sedimentation**
- **Disease**. Major mudworm outbreaks in late 1880s

One of the largest shell lime kilns, Bennelong Pt , Sydney

Oysters in mortar Vaucluse House. Jacquie Newling

What is oyster reef restoration?



Port Phillip Bay, All images TNC

- Reintroduction of hard substrate e.g. sterile shells, limestone or other rock types, in some cases overseas, concrete
- Known good levels of natural spat-fall needed
- Over time, in the right conditions, a self-sustaining complex ecosystem forms

NSW GOVERNMENT

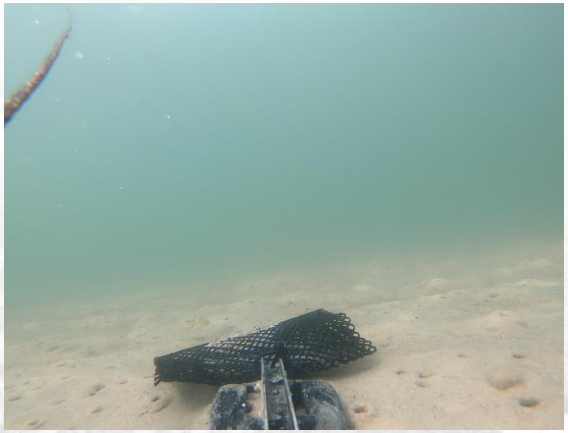
Pilot ORR sites Karuah (left) Myall (right)

Stockpiling of old shell

Port Stephens Pilot

Substrate trials – rock and/or shell at multiple sites

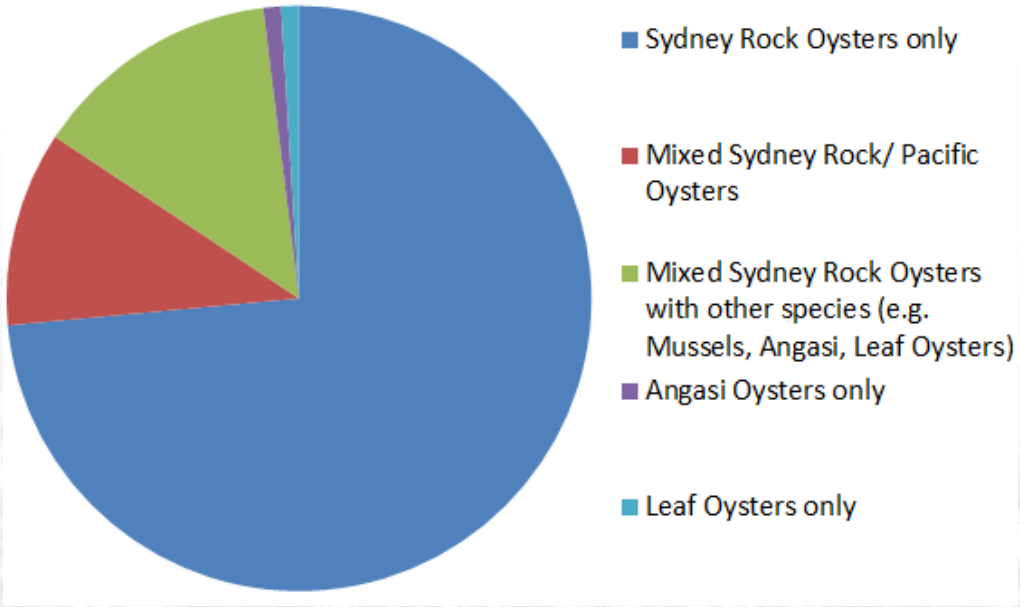
Existing reef surveys - to determine species composition, density & distribution



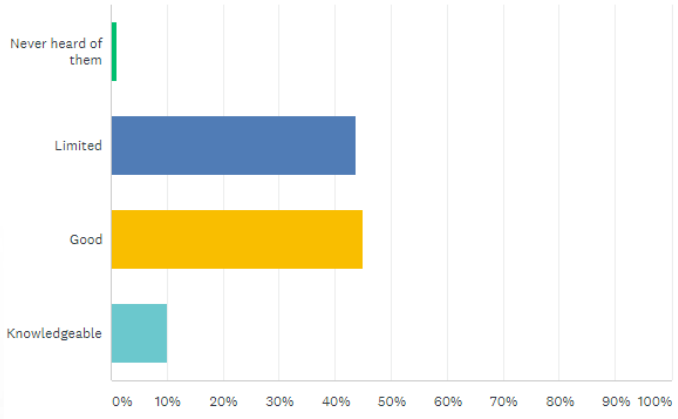
Pre-restoration monitoring of associates - e.g. recreational & commercial fish (BRUVs), invertebrates (cores)

Oyster Farmer Survey

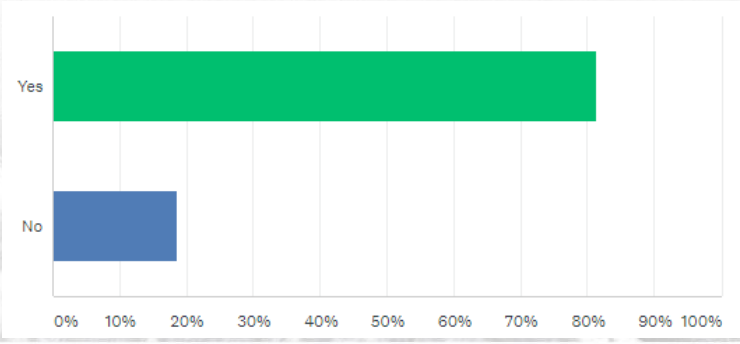
- Almost 100 respondents – WOW, Thanks!!!
- 102 remnant reefs identified



Species composition of existing reefs in NSW (%)



Knowledge of oyster reefs



Like to learn more

www.marine.nsw.gov.au

SERIOUSLY…

Thank you to all survey participants