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MARINE ESTATE MANAGEMENT AUTHORITY

Working together to manage our marine estate

www.marine.nsw.gov.au

C. JENKINS, J. KEATING, K. RUSSELL, K. DAHLE, V.COLE - NSW DPI FISHERIES

NSW marine estate management strategy

REBUILDING REEFS AND THEIR CONNECTION TO COMMUNITY

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Presentation summary

- Introducing NSW oyster reefs
- The loss of an ecosystem
- Oyster reef restoration – the NSW story… so far!
- (Re)connecting community - Oyster Industry Survey
- Where to from here?

Image: David Harasti

Oyster reefs (or beds) – what are they?

Complex, 3D living structures

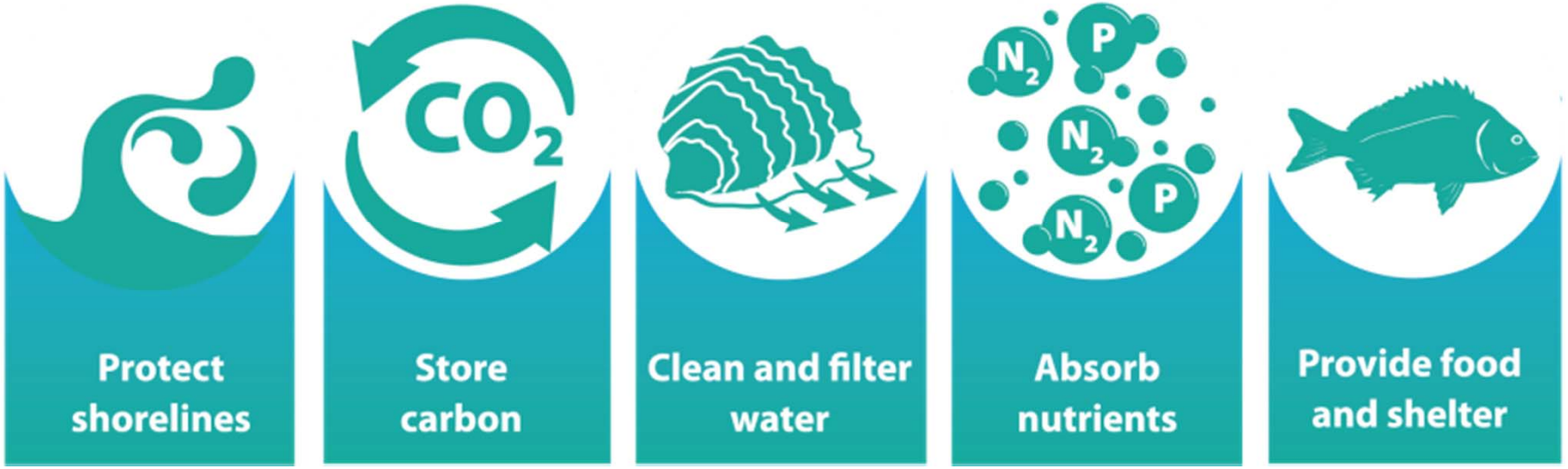
Aggregations of living and dead oysters

4 reef-forming species NSW :

- Sydney Rock Oyster (*Saccostrea glomerata*)
- Leaf Oyster (*Isognomon ephippium*)
- Flat or Angasi Oyster (*Ostrea angasi*)
- Pearl Oyster (*Pinctada albina sugillata*)

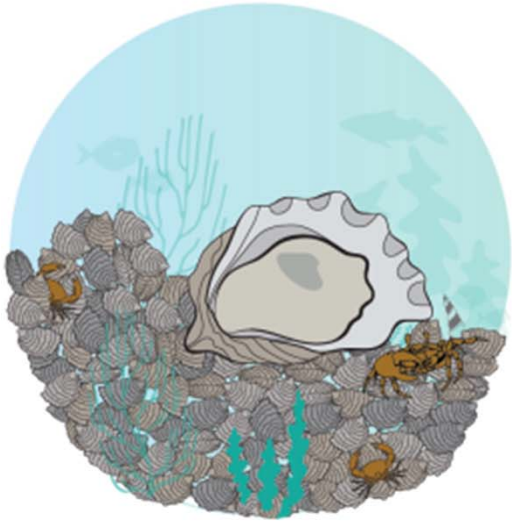
Why are they important?

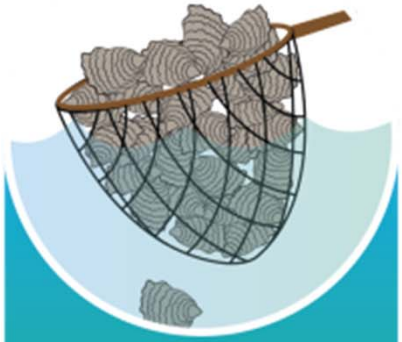
Little creature BIG impact



Where have our oyster reefs gone?

HISTORICAL LOSSES





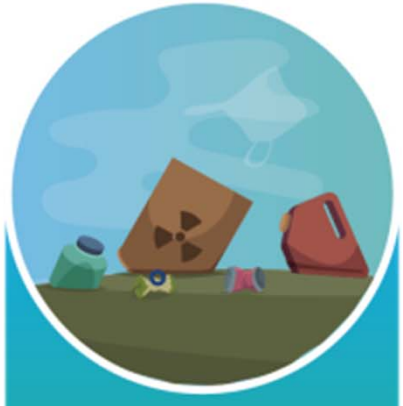
Overharvesting

Habitat destruction

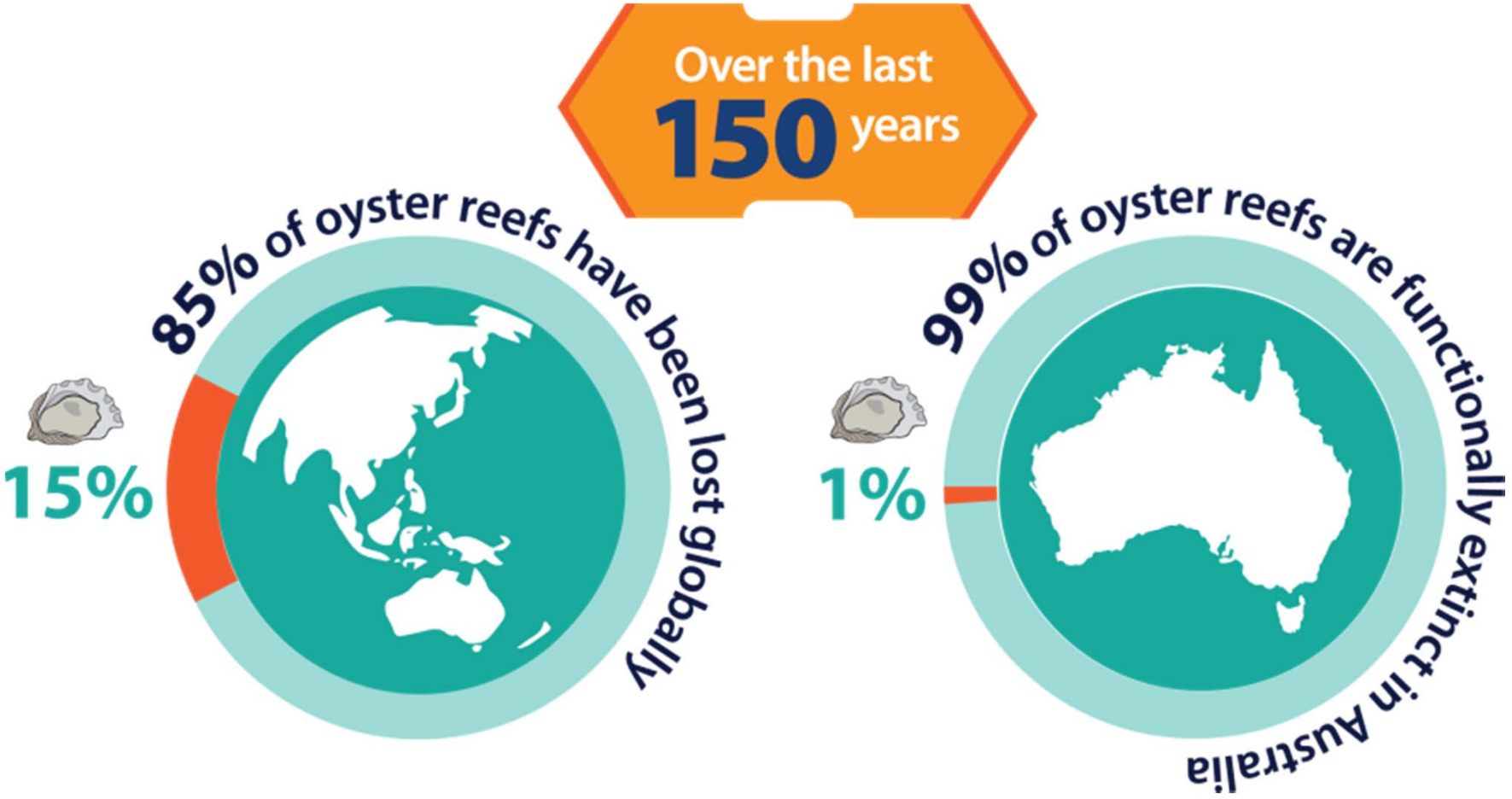
Catchment clearing

Disease

Land fill



Water pollution



Beck *et al,* 2011

What is oyster reef restoration?

Port Phillip Bay Restoration site , All images TNC

- Reintroduction of hard substrate
- Known good levels of natural spat-fall (usually)
- Formation of a self-sustaining complex ecosystem (& ecological function)

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- Large-scale pilot in Port Stephens
- Monitoring and Research
- Planning for next locations (incl mapping)
- Lay ground work for others to follow
- **Increase awareness and engagement**

The challenge – reconnecting coastal communities

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

(Re)connecting community

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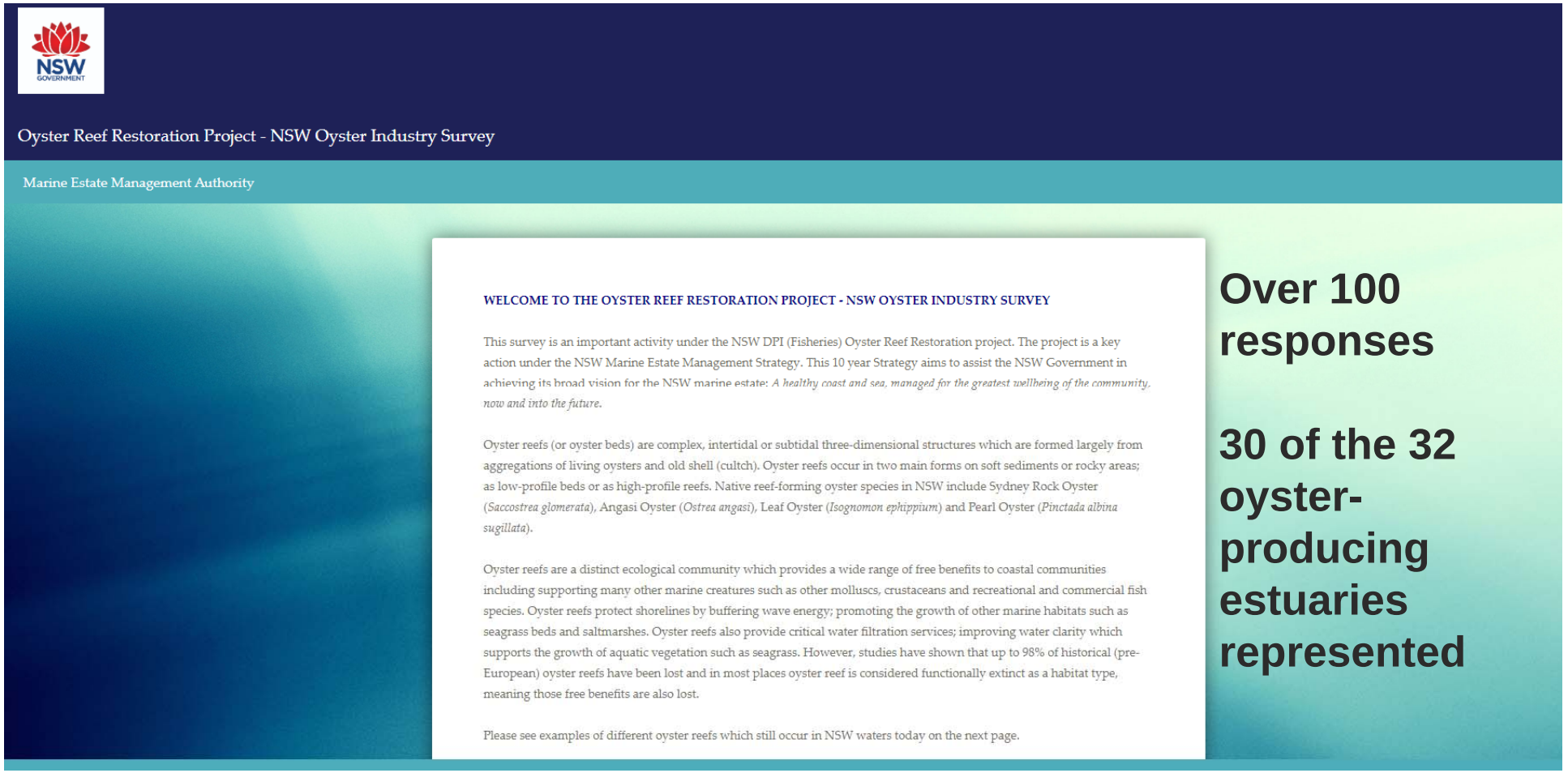

Over 100 responses

30 of the 32 oyster-producing estuaries represented

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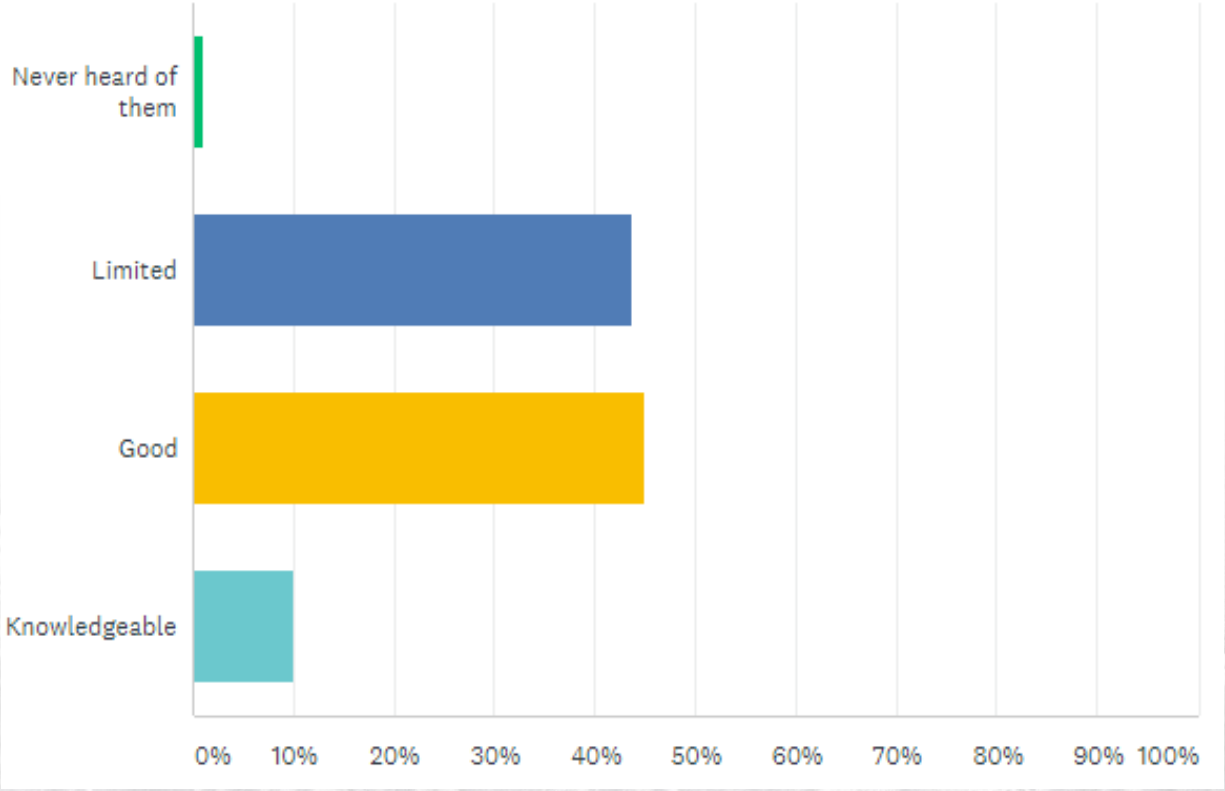
The Results:
Knowledge of oyster reefs

10% considered themselves knowledgeable about oyster reefs

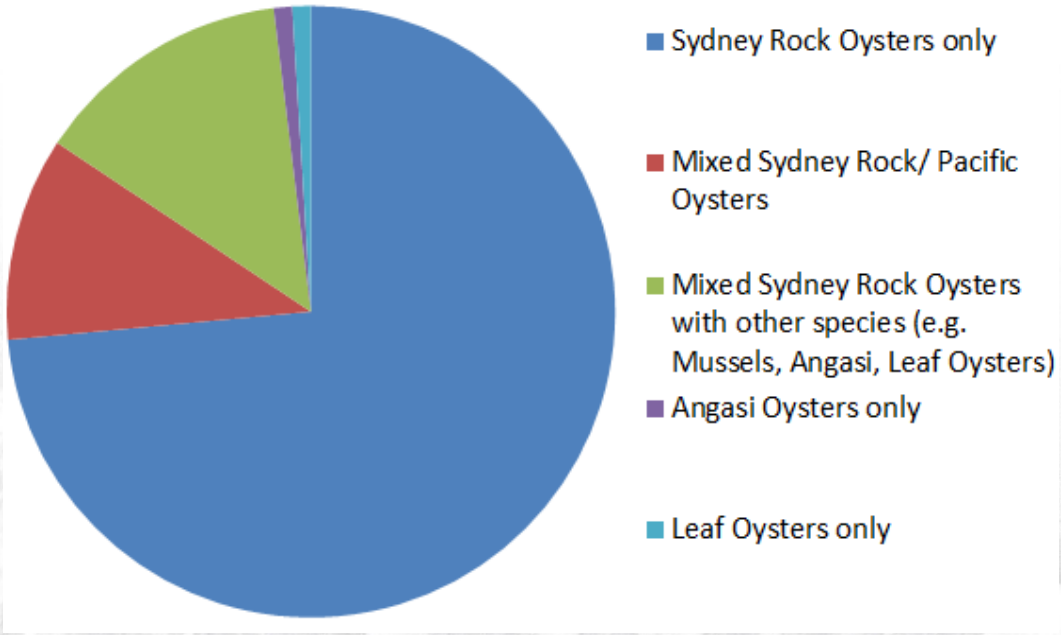


Farmers rated their knowledge of oyster reefs

Location of current reefs

102 descriptions of oyster reefs (41% ‘historic cultivation’ type)

98% offered further assistance to locate reefs



Species composition of existing reefs

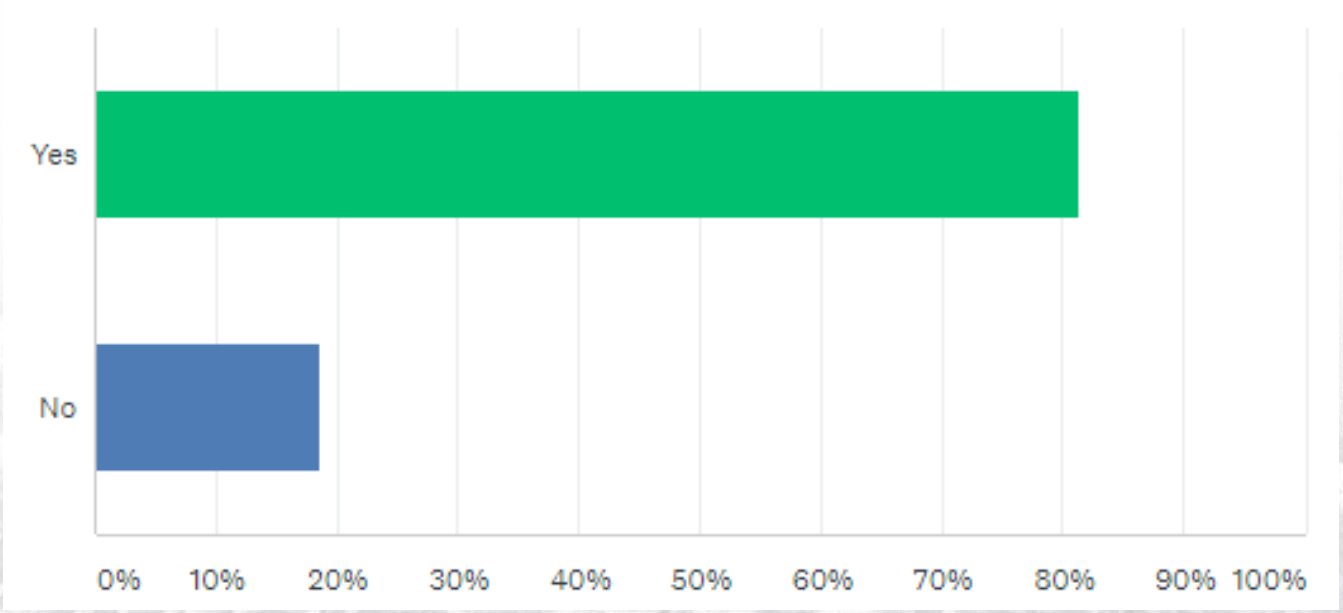
Knowledge of oyster reef restoration

69% limited or no knowledge of oyster reef restoration

81% keen to learn more about oyster reef restoration (see graph)

Electronic sources preferred method

71% keen to participate



Concerns raised about oyster reef restoration

- potential shelter for disease and pest species (52%)
- competition with cultivated oysters (11%)
- impacts (e.g. reduction) on current leases (11%)
- effects on farming infrastructure and stock (7%)
- lack of knowledge (7%)
- whether the restored reefs will be self-sustaining (7%)

Image: Francisco Martinez-Baena

Where to from here?

Bridging the knowledge gap - community

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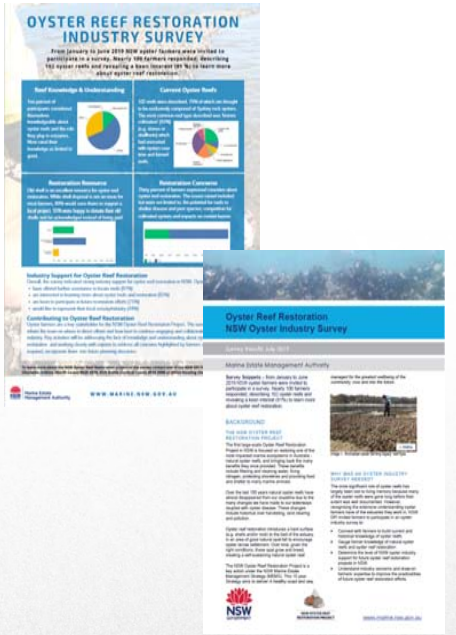
Targeted resources

Community talks

20th International Shellfish Restoration Conference
17-20 March

Citizen Science (Stage 2)



INTERNATIONAL CONFERENCE ON SHELLFISH RESTORATION

SHELLFISH REEF RESTORATION NETWORK

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Bridging the knowledge gap (AND paving the way) - Government

Councils Guide “How to embed ORR in a CMP” – future opportunities

Inter and intra agency education & collaboration (Is a simpler legislative pathway feasible?)


Oyster Reef Restoration

A guide to help local government embed Oyster Reef Restoration into a Coastal Management Program

Marine Estate Management Authority

Oyster reef restoration – improves water quality, enhances habitat and helps to support healthy, vibrant coastal communities.

WHAT ARE OYSTER REEFS?

Oyster reefs are complex, intertidal or subtidal three dimensional living structures which are formed from clusters of living oysters and dead shell. Oyster reefs occur on soft sediments or rocky areas, as low profile beds or as high profile reefs. Native reef-forming oyster species in NSW include Sydney rock oyster (*Saccostrea glomerata*), Angasi oyster (*Ostrea angasi*), Leaf oyster (*Isognomon ephippium*) and Pearl oyster (*Pinctada albina sugillata*).

WHY ARE OYSTER REEFS IMPORTANT?

Oyster reefs are a distinct ecological community which provide a wide range of ecosystem services to coastal communities. Oyster reefs provide complex structural habitat which supports many other marine species including other molluscs, crustaceans and fish species.

Oyster reefs protect shorelines by buffering wave energy and enhancing sediment deposition. Reefs create stable conditions which promote the growth of other marine habitats such as seagrass beds and saltmarshes.

Oyster reefs also provide critical water filtration services, improving water clarity which further encourages the growth of marine plants such as seagrass.

Image 1: A fringing Sydney rock oyster reef

WHERE HAVE OYSTER REEFS GONE?

Australia's coastal environments have changed considerably since European arrival. The cumulative effects of increasing urbanisation, industrialisation and landuse intensification coupled with outbreaks of oyster disease have decimated oyster reefs.

In Australia, it is estimated that 99% of natural oyster reefs are 'functionally extinct'. The loss of this significant ecosystem is not confined to Australian waters. Globally over 85% of reefs have been lost or severely degraded making oyster reefs the world's most degraded marine ecosystem.

In NSW, small oyster populations still exist in most bays and estuaries but at very low densities compared to the pre-European period.

As identified in the state-wide Threat and Risk Assessment (TARA) natural oyster reefs (see subtidal rocky reef environmental asset) still face considerable pressure from a number of contemporary threats. These include climate

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Questions?

Thank you for your time

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