

# Oyster Reef Restoration NSW Oyster Industry Survey

Survey Results July 2019

Marine Estate Management Authority

**Survey Snippets** – from January to June 2019 NSW oyster farmers were invited to participate in a survey. Nearly 100 farmers responded; describing 102 oyster reefs and revealing a keen interest (81%) to learn more about oyster reef restoration.

## BACKGROUND

### THE NSW OYSTER REEF RESTORATION PROJECT

The first large-scale Oyster Reef Restoration Project in NSW is focused on restoring one of the most impacted marine ecosystems in Australia - natural oyster reefs, and bringing back the many benefits they once provided. These benefits include filtering and cleaning water, fixing nitrogen, protecting shorelines and providing food and shelter to many marine animals.

Over the last 150 years natural oyster reefs have almost disappeared from our coastline due to the many changes we have made to our waterways coupled with oyster disease. These changes include historical over harvesting, land clearing and pollution.

Oyster reef restoration introduces a hard surface (e.g. shells and/or rock) to the bed of the estuary, in an area of good natural spat-fall to encourage oyster larvae settlement. Over time, given the right conditions, these spat grow and breed, creating a self-sustaining natural oyster reef.

The NSW Oyster Reef Restoration Project is a key action under the NSW Marine Estate Management Strategy (MEMS). This 10 year Strategy aims to deliver *A healthy coast and sea,*

*managed for the greatest wellbeing of the community, now and into the future.*



Image 1. 'Encrusted oyster farming legacy' reef type

### WHY WAS AN OYSTER INDUSTRY SURVEY NEEDED?

The once significant role of oyster reefs has largely been lost to living memory because many of the oyster reefs were gone long before their extent was well documented. However, recognising the extensive understanding oyster farmers have of the estuaries they work in, NSW DPI invited farmers to participate in an oyster industry survey to:

- Connect with farmers to build current and historical knowledge of oyster reefs.
- Gauge farmer knowledge of natural oyster reefs and oyster reef restoration.
- Determine the level of NSW oyster industry support for future oyster reef restoration projects in NSW.
- Understand industry concerns and draw-on farmers' expertise to improve the practicalities of future oyster reef restoration efforts.



## SURVEY RESULTS

### WHO RESPONDED?

Ninety-eight farmers took the time to complete the survey online or in person with the project team.

These farmers operate in 30 of the 32 oyster production estuaries in NSW. The majority of participating farmers hold leases in at least one South Coast estuary, (60%), whilst 26% are based on the North Coast and the rest in the Sydney/Central Coast region.

### WHAT SHELLFISH HAVE THEY SEEN?

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*). Planning for future restoration projects requires information on which of these shellfish species, and others which don't form reefs but may grow on a reef, are surviving and thriving in each estuary.

As expected, Sydney rock oysters inhabit all of the estuaries represented in the survey. Leaf oysters are observed in estuaries north of Sydney, whilst 90% of Angasi were reported in southern estuaries. Although widely distributed, mussels were reported as more common on the South Coast, as were Pacific oysters. Other shellfish species described include cockles, Pearl oysters (Akoya), scallops and Razor clams.

### WHERE DOES OLD SHELL GO?

Old oyster shell is an excellent resource for oyster reef restoration. It can be used in piles, bags or in combination with rock as the hard surface for natural spat settlement. Sourcing local shell is an important consideration for oyster reef restoration.

Over half of the farmers periodically stockpile relatively small amounts of shell (< 10m<sup>3</sup>) at their land-based depots. The majority (78%) indicated their shell is used primarily for driveway and local road maintenance.

So while shell disposal isn't an issue for the majority of oyster farmers, 80% of respondents would, in principle, save theirs to support a local environmental project that used the shell. In addition, most respondents (55%) were happy to donate their old shells and be acknowledged instead of receiving payment (Image 2).

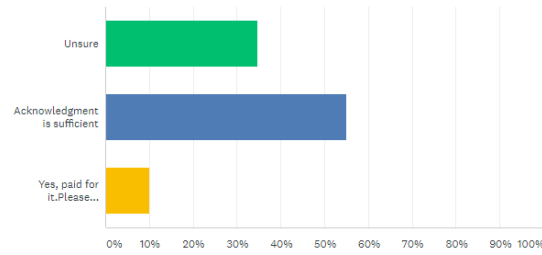


Image 2. Fifty five percent of farmers believe acknowledging their old shell donation would be sufficient

### WHAT DO OYSTER FARMERS KNOW ABOUT OYSTER REEFS?

Of the farmers who took part in the survey, 10% considered themselves knowledgeable about oyster reefs and the role they play in estuaries, with most respondents rating their knowledge as limited to good (Image 3).

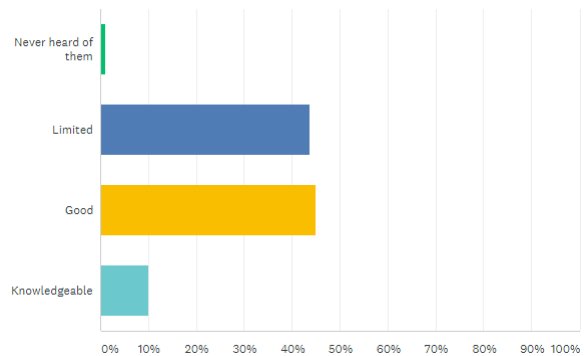


Image 3. Farmers rated their knowledge of oyster reefs

Many (over 90%) were, however, able to provide information on current reefs once an explanation of oyster reefs was provided.

### DO OYSTER REEFS STILL EXIST?

Overall, farmers described 102 significant oyster reefs, 75% of which are thought to be exclusively composed of Sydney rock oysters. Of the mixed species reefs, 11% contain Pacific oysters and the remaining 14% comprise other species such as Leaf oysters, Angasi and mussels (Image 4).

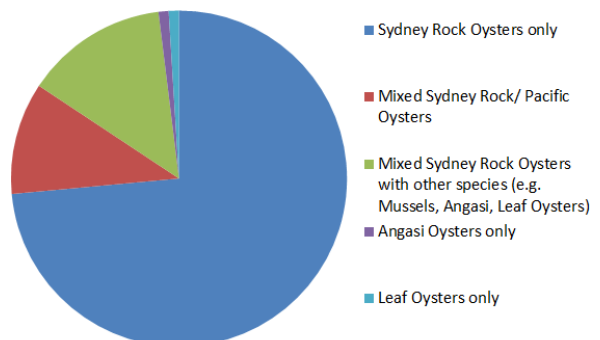


Image 4. Species composition of existing reefs in NSW (%)

In terms of reef type, 41% of reefs were described as historic cultivation (e.g. stones or shellbeds) which had encrusted with oysters over time and formed reefs. It is likely some of the 'complex high profile natural reefs' (17%) are also part of NSW's considerable oyster farming legacy. In some estuaries, farmers also highlighted large areas of shoreline fringing reef beneath mangroves. Seventy four percent of the identified reefs are >10m<sup>2</sup> in size.



Image 5. 'Complex high-profile natural' oyster reef type

The survey results provide a snapshot of current oyster reef status in NSW. There are still a lot of details which need to be captured to inform future restoration efforts. The oyster industry is a critical resource and firm partner in this project, with 98% of farmers offering further assistance to the project team to locate and map oyster reefs.



Image 6. 'Fringing mangrove aggregation' reef type

### WHERE HAVE REEFS BEEN LOST?

In comparison to the 91% of farmers who shared information on the extent and distribution of current oyster reefs, only 23% had knowledge of reefs which no longer exist in their local estuaries.

Species-wise, Sydney rock oysters still dominated these historic reefs (58%); however 33% were reported as subtidal Angasi reefs which have disappeared, particularly on the South Coast. Most of these lost oyster reefs were identified as 'low-profile banks'.

*'The subtidal Angasi oyster reefs are all dead now... I used to dive the channel for live ones for my dad about 40 years ago'*  
Wapengo oyster farmer



Image 7. 'Low-profile bank' oyster reef type

### WHAT DO FARMERS KNOW ABOUT OYSTER REEF RESTORATION?

With oyster reef restoration only just starting in NSW it was no surprise that 69% of oyster farmers had limited or no knowledge of oyster reef restoration. This lack of awareness is likely to extend to an even greater proportion of the broader NSW community.

Recognising their level of understanding of the issue, farmers are keen to learn more about oyster reef restoration (Image 8). Overall, they would prefer to receive information electronically in brochures, fliers or industry newsletters (48%) or on a webpage (14%).

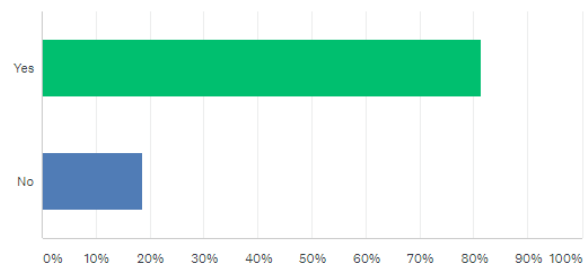


Image 8. The majority (81%) of farmers indicated they would like to learn more about oyster reef restoration

### WERE THERE ANY CONCERNS ABOUT OYSTER REEF RESTORATION?

Thirty per cent of farmers expressed concerns about oyster reef restoration. The issues raised included but were not limited to:

- the potential for reefs to shelter disease and pest species, particularly Pacific oysters, and their ongoing management (52%)
- likely competition for 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%).

## DO FARMERS SUPPORT OYSTER REEF RESTORATION?

Overall, the survey indicated strong industry support for oyster reef restoration in NSW. Oyster farmers:

- have offered further assistance to project staff to locate reefs (97%)
- are interested in learning more about oyster reefs and restoration (81%)
- are keen to participate in future restoration efforts (71%)
- would like to represent their local estuary/industry to discuss issues, concerns and/ or requirements in their region (44%).

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*'Anything that assists with improving water quality is a good thing and I'll be on board with it!'*  
Camden Haven oyster farmer

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## HOW WILL THESE RESULTS CONTRIBUTE TO OYSTER REEF RESTORATION?

The Oyster Reef Restoration Project team is committed to ensuring the valuable information gained from the survey is used to progress the Oyster Reef Restoration Project. The feedback informs us on where to direct our efforts and also, importantly, how best to engage and collaborate with the oyster industry.

### REDUCING THE KNOWLEDGE GAP

One of the standouts of the survey results is the lack of knowledge and understanding about oyster reefs and oyster reef restoration. A key challenge for the Oyster Reef Restoration Project is to address this knowledge gap. This will be achieved

via targeted learning and engagement opportunities with a focus on the farmers' preferred delivery method – electronic newsletters and other digital media.

### ADDRESSING CONCERNS

The concerns highlighted by farmers largely align with potential challenges pre-identified by the project team. By working closely with Industry, experts in Aquaculture Management, Aquaculture Research and various research institutions and specialists in shellfish restoration, all concerns will be addressed and where required, incorporated into future planning decisions.

### WORKING WITH THE INDUSTRY

Oyster farmers continue to be a key stakeholder for the NSW Oyster Reef Restoration Project. They will be invited to be part of regional steering committees to guide planning at the local level, and will be welcomed to participate in implementing reef restoration through activities such as stockpiling shell and supplying oysters.



Image 9. The start of the Port Stephens pilot reef shell stockpile, deployment starts early 2020

## WHO CAN I CONTACT FOR MORE INFORMATION?

To learn more about the NSW Oyster Reef Restoration Project or the oyster industry survey contact one of the team's Fisheries Managers.

- Charlotte Jenkins (North Coast) 6620 9319
- Kirk Dahle (Central Coast) 4916 3998
- Jillian Keating (South Coast) 4478 9104

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