

2.21.001 – Scoping the need and feasibility for offshore Pacific oyster aquaculture in Tasmania SHORT SUMMARY

INTRODUCTION

Tasmanian oyster farmers contribute approximately one third of the total Australian oyster production of 9,000 tonnes. While globally, oyster aquaculture produced 6 million tonnes in 2020. The substantial domestic appetite for oysters is evident through the considerable quantities of imported oysters consumed in Australia, with over 8,000 tonnes of frozen oysters sourced from New Zealand annually. Considering the global oyster production levels and the consistent demand in the oyster market, the Tasmanian industry is presented with a significant opportunity for expansion.

The project involved reviewing examples of global research in offshore oyster farming, describing initiatives from several countries that have invested significantly in offshore oyster research activities. Overseas, coastal areas that face spatial limitations and pollution have led oyster producers to explore offshore farming. Other countries have explored offshore expansion driven by the increasing demand for high quality domestically produced seafood, and the economic potential in meeting this demand.

The Tasmania's oyster industry was involved in the scoping process. The project team held theme meetings that interested farmers were encouraged to join. Divided into biophysical, operational, and economic considerations, these meetings involved the team of experts and industry participants. Attendees were briefed on the literature review findings and encouraged to provide feedback and commentary.

KEY POINTS

In the examples of overseas research cited, key themes emerged relating to identifying and assessing site

suitability, and the importance of efficient farm systems and processes. Favourable growth performance was reported offshore, as were challenging conditions, with an emphasis on biofouling as a key constraint.

Key knowledge gaps identified through the project include:

- Limited data on local environmental conditions hindering a developed understanding of offshore site potential.
- Uncertainty about the applicability of inshore site selection models to offshore settings.
- Limited information of the specific traits that should be targeted in selective breeding for offshore oyster farming.
- An absence of return-on-investment data and clear comparisons of quality attributes between offshore and inshore oysters, impacting the economic viability and pricing of offshore oyster production.
- An absence of specialised, durable equipment, more efficient and automated processes.



Figure 1. Project Team site visit at Dart Island hosted by Steve Leslie and Yvonne Young. *Figure courtesy of Oysters Tasmania*

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To enhance the development of Australia's sustainable blue economy through the delivery of world-class, industry focussed research into integrated seafood and renewable energy production systems.

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THE CHALLENGE

The offshore oyster aquaculture scoping project faced several key challenges. A significant one was the limited availability of literature on this relatively new and globally emerging field, with a notable absence of data on cost-benefit analysis. Additionally, the team grappled with ensuring that the project's outcomes remained pertinent to the existing industry. Securing and maintaining the industry's engagement and endorsement is imperative for oyster research within the Blue Economy CRC to be considered successful. Furthermore, we were challenged to deliver a research plan that was not only relevant but also feasible, capable of positively influencing the expansion of offshore/high-energy oyster aquaculture within the specific time frame of the Blue Economy CRC.

THE OPPORTUNITY

Production expansion opportunities were identified in the number of unlicensed oyster leases located in deeper, higher energy waters around the Tasmania. Feedback from industry indicated that there were several barriers in developing the vacant leases, including equipment suitability, logistical concerns, and a lack of confidence around the primary productivity of the sites to justify investment. The project highlighted that research, development, and extension through the Blue Economy CRC would contribute toward addressing these barriers.

OUR RESEARCH

PROJECT AIMS

The aims for this scoping project were:

- Define the need for offshore or higher energy water expansion within the Tasmanian Pacific oyster industry;

- Provide a brief review of global approaches to offshore oyster aquaculture; and
- Assess the feasibility of offshore aquaculture in Tasmania – identifying key considerations and challenges, knowledge gaps, and opportunities.

LITERATURE REVIEW AND DISCUSSION THEMES

- Review of global approaches to offshore oyster farming.
- Biophysical feasibility of offshore oyster production (e.g., Hydrodynamics, water quality, environmental productivity, biofouling).
- Methodology and considerations for site selection (Data availability and limitations, application of established models).
- Selective breeding for offshore oyster traits.
- Operational factors (Farming equipment, production processes, materials, logistical considerations)
- Economic factors (marketability and product quality, cost/benefit analysis)
- Collaborative opportunities



Figure 2. Oyster farm at Dart Island, Tasman Peninsula.
Figure courtesy of Oysters Tasmania

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OUTCOMES

International research projects have provided very promising results for offshore oyster farming, and this gives further assurance that oyster farming expansion to higher energy environments is likely to be viable in Tasmania if approached in the right way. A high market demand for quality half shell oysters in the domestic market would likely underwrite a stepwise transition to higher energy nearshore sites, and potentially to farming further offshore.

NEXT STEPS

This scoping project has identified key knowledge gaps and challenges that are barriers to offshore oyster farming development in Tasmania. Within the remaining years of the Blue Economy CRC, pursuing the future research needs outlined should allow the Tasmanian oyster industry to farm existing available high energy areas, and consider the viability of developments further offshore.

This scoping project concluded to outlining a recommended three-part research, development, and extension approach for the Tasmanian oyster industry within the 10-year duration of the Blue Economy CRC.

- Part 1: Scoping Project**
- Part 2: Understanding site suitability and potential**
Oyster performance and economics: criteria, techniques, and approaches.
- Part 3: Equipment, engineering, and field assessment**

PROJECT TEAM

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PROJECT REPORTS/PUBLICATIONS

Huddleston, F. et al (2023). Scoping the need and feasibility for offshore Pacific oyster aquaculture in Tasmania, 2.21.001 – Final Project Report. Blue Economy Cooperative Research Centre.

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