



Australian Government
**Department of Industry,
Innovation and Science**

Business
Cooperative Research
Centres Program



Species diversification to provide alternatives for commercial production

FRDC 2016-807

Steven Clarke and Marty Deveney, SARDI

August 2019



Background:

Oyster Australia IPA Workshop in 2016 identified key Native Oyster / Angasi R&D needs:

- Having a constant and reliable spat supply
- Development of a selective breeding program
- Establishment of good husbandry practices
- Increase the shelf life/improve packaging/develop processing methods





Industry R&D priorities based on subsequent survey

Experiments	Priority
Investigation into key factors/parameters that affect shelf life of <i>angasi</i> oysters	1
Comparison between different farm methods/equipment that have been trialled by growers in Australia	2
Development of techniques to extend the shelf life of <i>angasi</i> oysters	3
Comparison between <i>angasi</i> performances farmed at different heights	4
Investigation into seasonal effects on <i>angasi</i> performance and quality	5
Comparison between <i>angasi</i> performances farmed at subtidal and intertidal leases	6
Optimization of stocking densities for different size/grade <i>angasi</i> oysters	7
Investigation into handling effects on <i>angasi</i> performance	8
Comparison between different grading methods/equipment (if available)	9
Comparison of performance between Pacific and <i>angasi</i> oysters with methods optimised in this project.	10





Future Oysters Project 2016-807 Objectives:

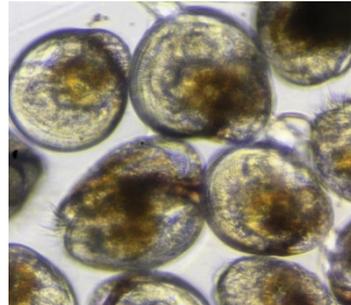
1. To develop Native Oyster on-farm growing methods that maximise survival and growth in South Australia and Tasmania
2. To compare the performance between Pacific Oysters and Native Oysters in South Australia
3. To establish a Native Oyster farmers network to share new techniques and knowledge
4. To develop translocation protocols for the safe translocation of Western Rock Oysters to South Australia
5. Trial Western Rock Oysters in the field in South Australia to assess their performance and viability of a potential industry if agreed by industry and regulators



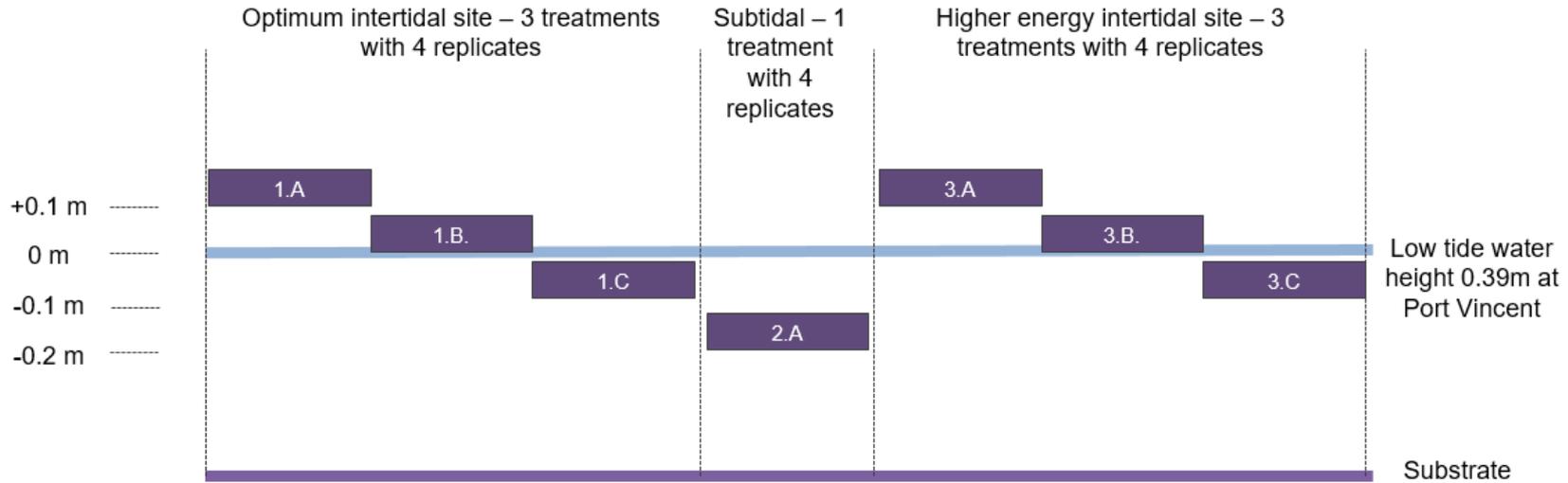
SA Component: Develop Native Oyster on-farm growing methods that maximise survival and growth in South Australia

- Xiaoxu Li, Mark Gluis and Penny Ezzy

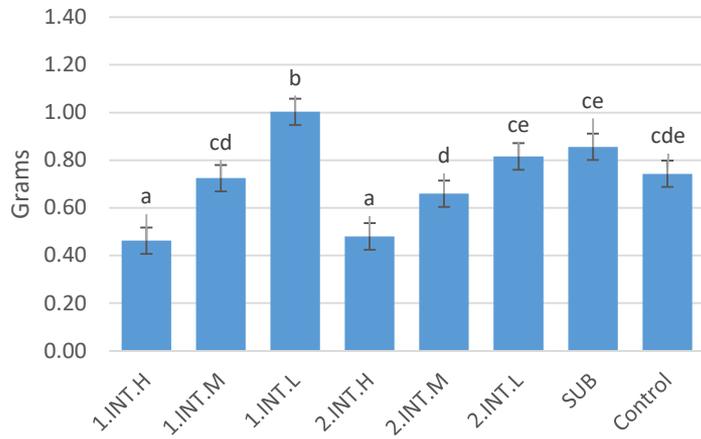
- Focus was on the establishment of good husbandry practices
- SARDI produced the spat when they did not become available from industry
- 100,000 spat were stocked onto 3 commercial farms in close consultation with farmers, 2 on Yorke Peninsula and 1 on Kangaroo Island



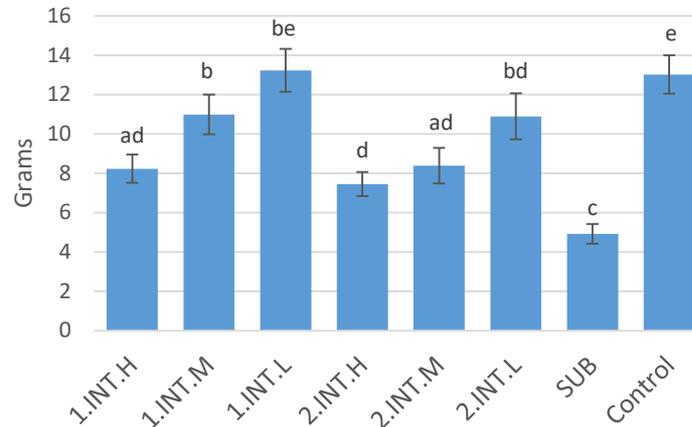
Farm 1



November 2018

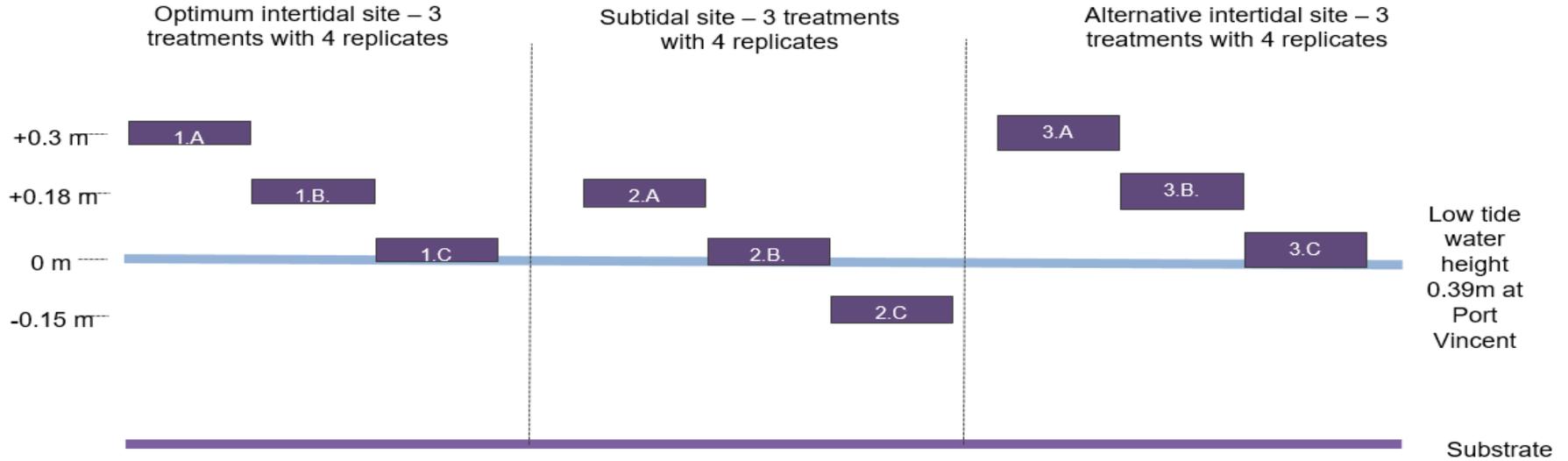


May 2019

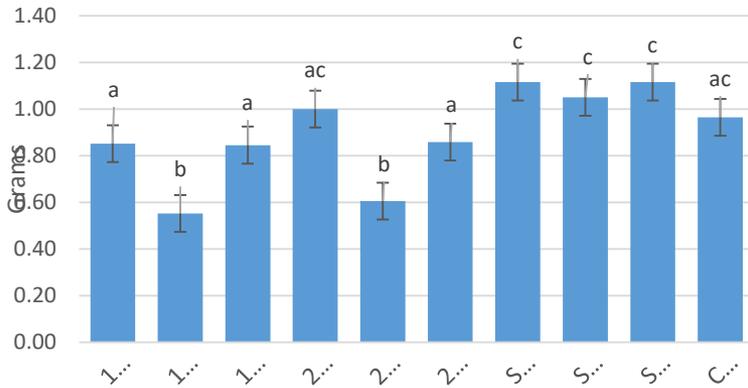


Mean weight (g) at Farm 1
 Different lower case letters represent significant differences ($p=0.05$).
 Error bars represent 2x standard error.

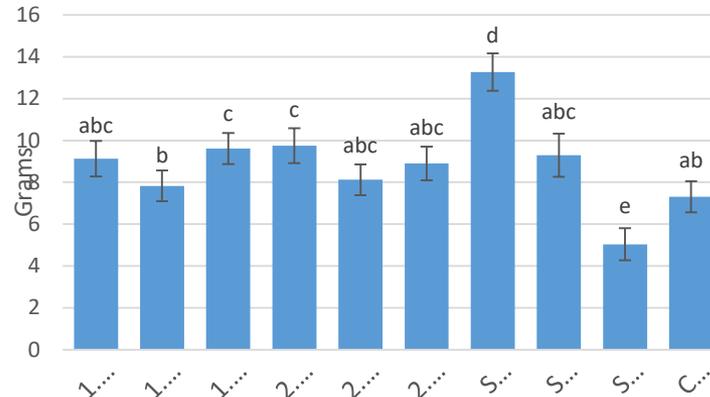
Farm 2



November 2018



May 2019



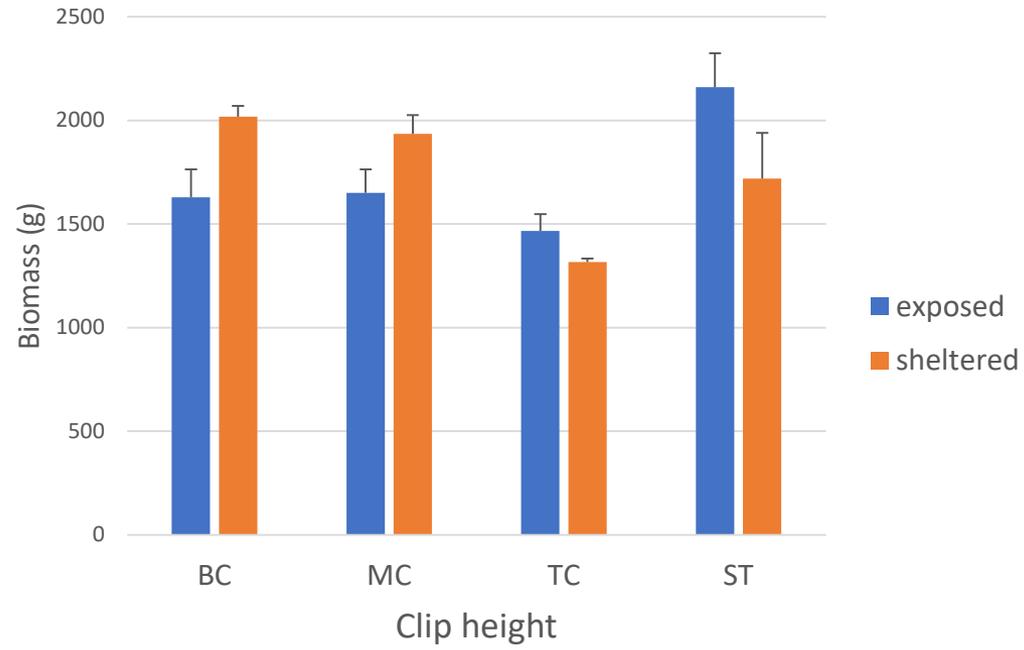
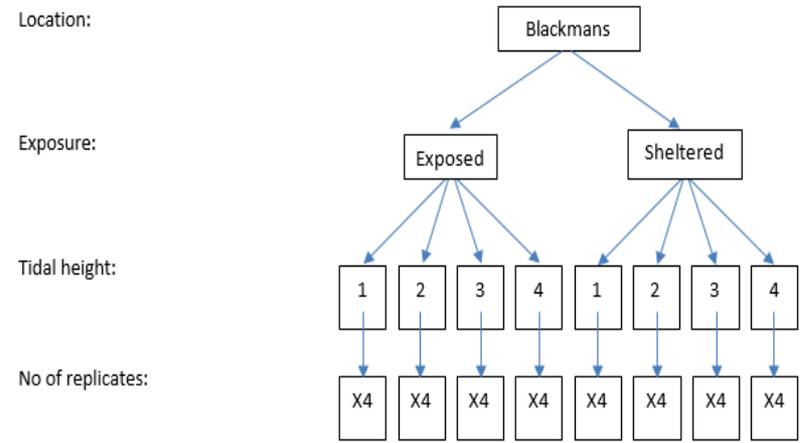
Mean weight (g) at Farm 2. Different lower case letters represent significant differences ($p=0.05$). Error bars represent 2x standard error.



Develop Native Oyster on-farm growing methods that maximise survival and growth in Tasmania

- Christine Crawford and Deborah Gardner

Field Experiments-Tidal height and Exposure



Biomass (g) of oysters after growing at Blackman Bay under different environmental conditions of exposed or sheltered, and clip heights of BC= bottom clip, MC=middle clip, TC=top clip and ST=subtidal.



Conclusions so far:

- Survival has been very high across the established experiments
- Growth as measured by weight and shell length typically improved with decreasing intertidal height
- Subtidal growth varied but was typically good
- The effects of wave exposure/water movement on growth on the sites monitored were inconsistent
- The overall results suggest that both site and height in the water column impact on Angasi growth
- The final field measurements (winter) will be completed in August 2019



Co-habitation experiment of Rock Oysters (*Saccostrea* sp.) from Western Australia with Pacific Oysters (*Crassostrea gigas*) and Native Oysters (*Ostrea angasi*)

- Marty Deveney, Jessica Buss and Kathryn Wiltshire

Assess if WA Rock Oysters carried any pathogens which may pose a risk to existing industry, and to assess if WA Rock Oysters are likely to survive co-habitation with oysters grown by the existing industry.



Western Rock oyster assessment background

- Western Rock Oysters assessed to import to SA
- Species diversification in SA to mitigate POMS risk
- Risk assessment + co-habitation trial + risk management measures development
- Hazards identified for management:
 - OsHV-1/POMS
 - Haplosporidium sp. / Minchinia occulta
 - Marteilia sydneyi / Martelioides sp.
- Unknown risks remain, manage using basic biosecurity



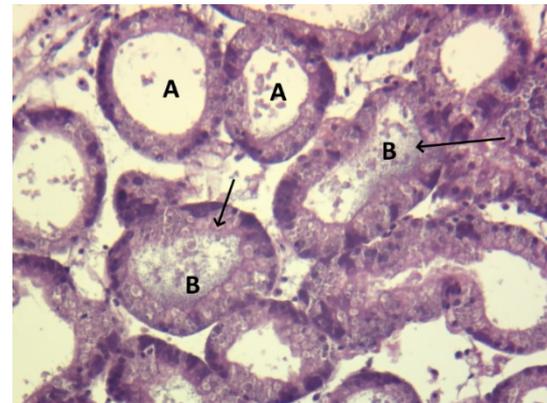
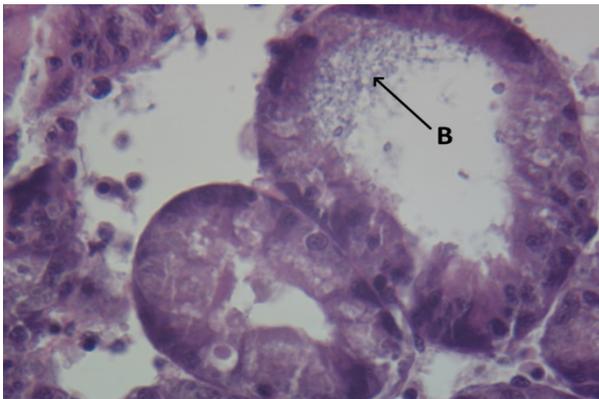
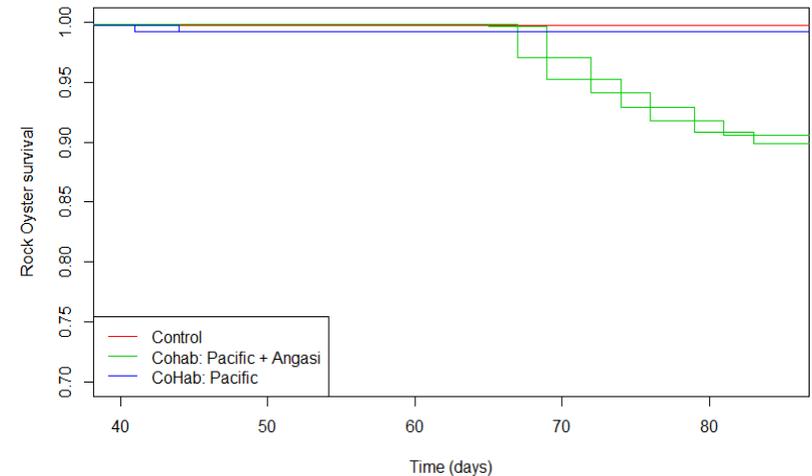
Rock oyster co-habitation

- Cohabited Rock, Pacific and Native Oysters
- Fed algae for 90 days
- Assessed transfer of unknown pathogens from Western Rock Oysters to SA Native and Pacific Oyster industry species



Rock oyster co-habitation

- No unusual mortality in Pacific and Native Oysters
- Elevated mortality in Western Rock Oysters
- Bacterial infection observed in digestive tubules



Proposed controls

- Translocation likely to meet appropriate level of risk if:
 - Basic biosecurity:
 - Biosecurity plan that meets national guidelines
 - 3rd party audited
 - Specific controls
 - Demonstrated hatchery freedom from translocation relevant diseases
 - Receiving zone controls and communication
 - Industry agreement on importation
 - Identification of trial zone
 - Assessment of initial farming in SA
- Proposed controls now with regulator





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