

# **National oyster R & D – strategic R & D project commissioning, management and path to commercialization**

Rachel King



Project no. 2010/747

## 2010/747 National oyster R & D – strategic R & D project commissioning, management and path to commercialization



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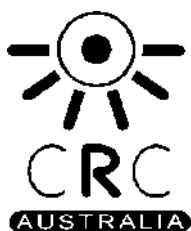
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## Non-Technical Summary

**2010/747: National oyster R & D – strategic R & D project commissioning, management and path to commercialization**

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### PROJECT OBJECTIVES:

1. Manage a national strategic approach to oyster research and development that is aligned to the Business Plan.
2. Manage project development
3. Manage and implement a communications plan to keep end-users, researchers and funding agencies informed and ensure research results are rapidly and widely adopted.
4. To establish and maintain collaboration within projects for the oyster industry
5. Represent the Oyster consortium (Oysters Australia) at Seafood CRC core participant meetings

### ABSTRACT:

Seafood CRC project 2010/747 'National oyster R & D – strategic R & D project commissioning, management and path to commercialization'. Project 2010/747 continued the core functions of Seafood CRC project 2007/715 but within the newly incorporated Oysters Australia Ltd (OA). OA became responsible for delivering three main outputs:

1. **A complete research portfolio within the Seafood CRC effectively implemented against the high priorities of the Australian Edible Oyster Industry 2009-2014 Business Plan.**
2. **An agreed strategy for long term management of R&D for Australian Edible oysters developed and sustainably resourced.**  
While the industry considers a national levy to fund non R&D activities an interim arrangement applies;
  - a) an industry agreed increase in R&D management
  - b) OA's non R&D related overheads shared by member states
  - c) Oysters Australia's R&D management/co-ordination shared with FRDC under an Industry Partnership Agreement.
3. **Optimised uptake of R&D outputs from CRC research and BCA completed with CRC**  
Not always successful in each completed project, a path to commercialisation became part of OA's routine approach during 2010/747.  
Benefit:cost ratio is calculated at 2.3 for projects completed and up to 18.5 potential ratio if estimating the cost of a POMS outbreak.

## OUTCOMES ACHIEVED:

The path towards national industry managed R & D was completed via the successful formation of Oysters Australia Ltd (OA). This is evidenced by OA's entry into a FRDC Industry Partnership Agreement (IPA) under a new 2014-2019 strategic plan. It has also incorporated a demonstrated best return on investment communication package into its operations. 26 R&D projects funded from the oyster budget were managed on behalf of the industry. At least another 20 industry beneficial projects, funded communally or directly through the Seafood CRC, were managed on behalf of industry.

## OUTPUTS

2010/747 has produced:

**1. A complete research portfolio within the Seafood CRC effectively implemented against the high priorities of the Australian Edible Oyster Industry 2009-2014 Business Plan**

46 projects were completed and delivered outputs to industry. Oyster funded projects are listed below. There are at least 20 other projects funded communally or via Seafood CRC funds which span genetics, market and communications projects and also included industry bursaries.

2003/209: Seafood CRC: Sydney rock oysters: overcoming constraints to commercial scale hatchery and nursery production

2005/209: Seafood CRC: Industry management and commercialisation plan for the Sydney rock oyster breeding program

2006/226: Protecting and enhancing the Sydney Rock oyster breeding program

2006/227: Enhancement of the Pacific Oyster selective breeding program

2009/743: Selection for condition marketability and survival in Sydney rock and Pacific oysters and 2008/775: A one day workshop to define oyster 'condition' and to review the techniques available for its assessment

2012/728: Visiting Expert: Dr Standish Allen - Enhancement of tetraploid and triploid production in the Australian Pacific Oyster industry

*2012/773: (CRC legacy) Oyster breeding program transition to full commercialisation*

2012/760: Genetic selection for resistance to Pacific oyster mortality syndrome

*2013/709: CRC legacy: Commercialisation of a breeding program for Sydney Rock Oysters*

2010/734: Oyster over catch - cold shock treatment

2013/708: Safe spat rearing experiment

2008/777: Australian Oyster Industry Supply Chain Analysis & Improvement Strategy

2009/701: Australian Oyster Industry Benchmarking Program Development

2007/700: A critical evaluation of supply-chain temperature profiles to optimise food safety and quality of Australian oysters

2007/706: Establish the technical and market data to assess the feasibility of live bivalve mollusc (Australian oysters) access in USA - Stage 1

2007/719: Protecting the safety & quality of Aust oysters with integrated predictive tools

2008/741.20: PhD (Operating Funds) Human enteric viruses in Australian bivalve molluscan shellfish (Felicity Brake)

2008/763.10: PhD (Operating Funds) Quality, shelf life and value adding of Australian oysters

2012/060: Review of the 2012 paralytic shellfish toxin non-compliance incident in Tasmania

2008/753: Review for the Australian Oyster Consortium on their strategic market direction

2009/770: Chilled Pre Packaged Seafood Category Development (CRC Syndicate Project)

2012/740: Evaluating the impact of an improved retailing concept for oysters in Fishmongers

2007/310: Oyster Consortium Strategic Plan (2007 - 2014)  
2007/715: CRC Oyster Consortium - communication, extension and management of R&D results  
2009/729 (and 2008/798): Australian Edible Oyster Industry Business Plan  
2010/747: National oyster R&D - project commissioning, management and commercialisation  
2012/757: Funding options for the Australian oyster industry

**2. An agreed strategy for long term management of R&D for Australian Edible oysters developed and sustainably resourced.**

While the industry considers a national levy to fund non R&D activities, an interim arrangement applies;

- a) the oyster industry agreed to increase funding for R&D management for 2013-2014
- b) the overheads of Oysters Australia (ie non R&D project related) are underwritten by South Australia Oyster Research Council and billed to member states at the end of the financial year
- c) Oysters Australia plans to enter a Partnership Agreement with FRDC who have indicated willingness to share fund an R&D management/co-ordination project with Oysters Australia

**3. Optimised uptake of R&D outputs from CRC research and Benefit Cost Analysis completed with CRC**

Need to be project specific here, Eg four projects were commercially successful, 3 did not met goals fully, or similar..... Some duplication of output 1 here so could be split.

Benefit:cost ratio is calculated at 2.3 for projects completed and up to 18.5 potential ratio if estimating the cost of a POMS outbreak.

## **ACKNOWLEDGMENT**

**Oysters Australia members** who were involved throughout project 2010/747, many who have given generously of their time and resources to assist with the industry's investment in Research and Development:

Australian Seafood Industries: Matt Cunningham

NSW Aquaculture Research Advisory Committee: Tony Troup, Steve Jones, Kevin McAsh, Ewan McAsh

Qld Oyster Growers Association: Jane Clout

South Australian Oyster Research Council: Steve Bowley, Gary Zippel, Jill Coates, Trudy McGowan, Jedd Routledge, Carl Jaeschke

Shellfish Culture: Scott Parkinson

Select Oyster Company: Tony Troup

Tasmanian Oyster Research Council (Oysters Tasmania): Ian Duthie, Tom Lewis, Ray Murphy, Hayden Dyke, Giles Fisher, Scott Brooks, Bob Cox

**Industry members**, who were involved or contacted on particular issues and projects.

**CRC staff** for assisting the oyster industry invest within its Business Plan and within the cross sector

Seafood CRC strategy: Len Stephens, Graham Mair, Miles Toomey, Jayne Gallagher, Emily Mantilla, Debra D'Aloia and support staff.

**FRDC staff** for support of the national oyster industry's steps to manage and direct its own R & D investment: Patrick Hone, John Wilson, Crispian Ashby, Annette Lyons

**Project PIs and R & D providers** for commitment to the industry's development and for delivering tangible outcomes of commercial benefit. Of particular mention, NSW DPI, CSIRO, SARDI, University Sunshine Coast, RDS Partners, Rural Directions, Ridge Partners.

**KEYWORDS:** Oyster, management, co-ordination, communication

# 1. Introduction and Background

Seafood CRC project 2007/715: "Oyster consortium - communication, extension and management of R&D results" was instrumental in forging the initial national co-operation and communication needed to manage oyster industry R&D investments in the Seafood CRC and elsewhere. This project finished in 2010.

Seafood CRC project 2008/798 "Australian edible oyster industry Business Plan" was then initiated and recommended that the formation of a national entity for the oyster industry was essential for the continuation of the Oyster Consortium's achievements.

The formation of Oysters Australia Ltd was the subject of FRDC project 2009/224 and was formed in October 2011 and became the lead entity in this project. The main producing state bodies (NSW, South Australia and Tasmania) are constitutional members of OA. There are other entities who have co-invested in R&D as participants through the Seafood CRC.

The formation of a R & D Committee within OA to continue the function of the Oyster Consortium, was supported by its participants; Australian seafood Industries Pty Ltd, Qld Oyster Growers Association, NSW Aquaculture Research Advisory Committee, Select Oyster Company Ltd, South Australian Oyster Research Council, Shellfish Culture Limited, and Tasmanian Oyster Research Council.

OA's R & D Committee was responsible for investing R & D funds according to the Australian edible oyster industry Business Plan. Its actions are a critical component to achieving the Business Plan objectives.

Project 2010/747 was intended to ;

- establish and maintain a national approach to industry R&D planning, project management and extension.
- define and implement the oyster industries priorities in the Seafood CRC and collaborate with research providers who have committed to invest in the Seafood CRC.

## 1.1. NEED

This project was needed to:

### 1. Phase the Oyster Consortium into the R & D body within 'Oysters Australia'

This project is intended as an extension of Seafood CRC project 2007/715: "Oyster consortium - communication, extension and management of R&D results" during phase in of a national entity, OA, which was formed in 2011. This formalised the defragmentation of a state based approach to R&D.

### 2. Advise and co-ordinate oyster specific CRC projects for Seafood CRC

In 2010, the Oyster Consortium was engaged in 50 projects. These projects required varying levels of intervention. The oyster industry's investment benefits from a co-ordinated approach to project linkages and industry communication so as to maximise return on investment. Co-ordination and communication will continue with stakeholders including industry, CRC and R & D providers.



## 1.2. OBJECTIVES

2010/747 objectives, along with the extent to which they have been achieved, are as follows:

**1. Manage a national strategic approach to oyster research and development that is aligned to the Business Plan.**

Achieved – through meeting the R&D High Priorities of the Australian Edible Oyster Industry Business Plan (2009-2014) with investments. A subsequent strategic plan (2014-2019) also informed investment decisions for projects to be completed beyond 2015.

**2. Manage project development**

Achieved – projects required varying degrees of development intervention depending on whether an R&D provider was involved from the beginning.

**3. Manage and implement a communications plan to keep end-users, researchers and funding agencies informed and ensure research results are rapidly and widely adopted.**

Achieved – various combinations of small and large forums, face to face communication, digital communication and updates to state groups were trialled. The current communication ‘package’ contains face to face presence at state conferences, an enews and recorded ‘talking heads’ by mobile, email news and associated blog site, and an annual brief ‘return on investment’ report to growers.

**4. To establish and maintain collaboration within projects for the oyster industry**

Achieved - in the process of commissioning new (and related) projects and in the communication of results from related projects.

**5. Represent the Oyster consortium (Oysters Australia) at Seafood CRC core participant meetings**

Achieved.

## 2. Method

1. **R & D project concept development was assessed against the Business Plan and was the primary responsibility of the Principal Investigator/Executive Officer.** The commercialisation path was also designed at this point rather than later at the point of communication/extension. The input of both R & D provider and industry was sought in design phase.
2. **R & D project development, and review/report occurred at 2 face to face industry meetings/yr plus working group teleconferences (approx 6-7/yr).** These meetings also acted as a forum for two way feedback and input. Where possible, meetings were held on the back of other meetings to reduce cost and time away from businesses.
3. **Communication with industry** involved the following;
  - a. Presentations of completed work including business orientated case studies at state conferences (industry audience average of 70/meeting)
  - b. A 3 day field trip\* attached to state conference so that, by 2014, growers in all regions were visited once. This information exchange is as important for the Principal Investigator as it is for the grower State R & D Board updates
  - c. Written and/or multimedia communication to industry members

*\*Note: This method was altered during the course of the project. Regional growers groups were trialled in place of this field trip but agreed not to continue into 2014. The changes to the approach to communication were made effective for operations from 2014.*
4. **Cross sector/participant joint project concept discussion and reporting** took place at CRC forums/meetings and at any other opportunity as needed.

OA's R&D Committee consists of elected representatives from each of the CRC oyster participants. These are industry leaders, progressive, often with prior training and extensive business experience. The OA's R&D Committee acts as an advisor on the projects best aligned to industry needs. OA, as an incorporated entity, also acted as a project contractor.

### 3. Results and Discussion

Results and milestone outputs are discussed by project Objective where applicable:

**Objective 1: Manage a national strategic approach to oyster research and development that is aligned to the Business Plan.**

Managing a national strategic approach to R&D investment was entirely hinged around the Business Plan. Project milestone 1 required that the *“Oyster Consortium business plan R&D effectively implemented including finalised and complete research portfolio agreed with CRC.”*

It was not until 2013 that Oysters Australia had allocated its Seafood CRC funds against its Business Plan high priorities. The main reason for this was the effect of POMS outbreak on the rate of industry’s fund allocation. The detection of Pacific Oyster Mortality Syndrome (POMS) created shock waves that caused the industry to halt consideration of funds allocation during much of 2011 and 2012.

POMS was not detected in Australia in 2009 and the Business plan was built without POMS resistance in mind. Reprioritising POMS resistance as the highest priority for the collective Australian industry took some time as did prioritising which POMS research areas should attract oyster R&D funds first.

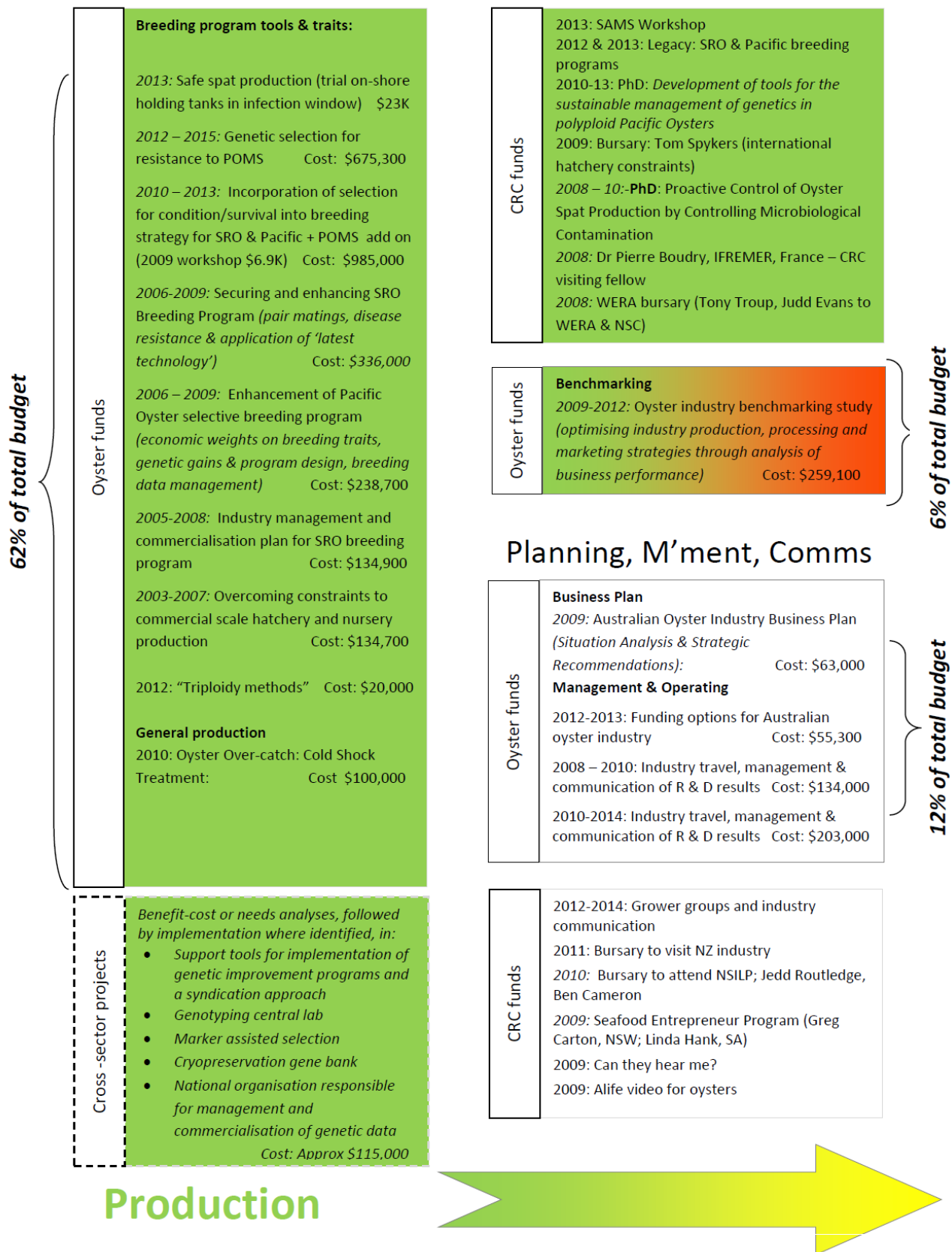
Significant POMS investment through a group of R&D providers was eventually made. The delay in commencement of high priority disease management project on biotags and food safety/market access project on norovirus was a result of the reprioritisation.

Within 2010/747 the Business plan has determined investment but has also needed amendment in response to industry events. All high priorities have been addressed through investment.

Oysters Australia’s list of investments are illustrated by priority area:

# Australian Seafood CRC – Oyster: Strategic map of projects

## Genetics/production



## Supply chain/ product integrity

## Market/product development

20% of total budget

FRDC: industry	2013: Norovirus survey of Australian waters \$190,000
Oyster funds	<p>2008-09: Australian Oyster Industry Supply Chain Analysis (<i>volume flows, margins &amp; recommendations</i>) Cost: \$45,400</p> <p><b>Cool chain &amp; refrigeration index</b> 2007-2008: A critical evaluation of supply-chain temp profiles to optimise food safety &amp; quality of Aust oysters Cost: \$77,000</p> <p>2009-10: Protecting Safety &amp; Quality of Aust Oysters with Integrated Predictive Tools (<i>predicting shelf life based on time &amp; temp in transit/storage</i>) Cost: \$60,000 + extension to model <i>Salmonella</i> &amp; <i>E Coli</i> in SRO + \$21,300</p>
CRC funds – Oyster ‘top up’	<p><b>Product integrity (post package)</b> 2009-11: <b>PhD</b> - "Quality, shelf-life and value-adding of Australian oysters" (<i>shucked</i>) Operating cost: \$38,000</p> <p><b>Product integrity (pre package)</b> 2008-10: -<b>PhD</b>: Protecting Safety &amp; Quality of Australian Oysters using Predictive Models Integrated with ‘Intelligent’ Cold Chain Technologies (<i>unshucked</i>)</p> <p>Postdoctoral Research Fellow - SARDI Shellfish Food Safety (<i>building Australian shellfish safety capacity</i>)</p> <p>2009-11: <b>PhD</b>: Human enteric viruses in Australian bivalve molluscan shellfish Operating cost: \$46,000</p> <p>2010-2013 <b>PhD</b>: Improving Safety &amp; Marketability of Aust Oysters in China</p>

Oyster funds	<p><b>Oyster retail trial &amp; semi commercialise</b> Display and info trial Cost: \$110,000</p> <p><b>Consumer research &amp; chain audit</b> 2009 - 2010: Standard audit, consumer research quantitative, qualitative, product concepts Cost: \$83,500</p> <p><b>Market strategy</b> 2008: Oyster Oyster marketing projects investment meeting (<i>direction &amp; strategy for marketing projects</i>) Cost: \$7,600</p> <p><b>Market access</b> 2007-2008: Establish technical &amp; market data to assess feasibility of (Aust oysters) access in USA Cost: \$31,100</p>
Cross-sector projects	<p>2009-11: Omnibus Seafood Consumer Survey</p> <p>2009-13: Market Intelligence (export)</p> <p>2008-2014: Seafood trade, market access forum (export &amp; domestic) &amp; expert panel</p> <p>2008-14: Market access database continuation</p> <p>2008-14: Australian seafood diagnostic capability map and advisory service</p> <p>2008-14: Establish basic platform for composition profiles for seafood products sold by CRC participants</p> <p>2008-14: National Seafood Productivity Improvement Centre</p> <p>Cost: Approx \$115,000</p>
CRC funds	<p>2014: Oyster retail commercialisation</p> <p>2013: Market strategy (oyster chain)</p> <p>2013: ICMSS sponsorship</p> <p>2012: Commercial trial of predictive data logger</p> <p>2011: New oyster product (Innovat’n fund)</p> <p>2010: Operation China (James Calvert)</p> <p>2009: Bursary: Greg Carton (<i>South Coast NSW grower market link</i>)</p> <p>2008: Desktop review of industry market reports &amp; recommendations</p> <p>2009: High priority export targets for Australian oyster industry</p> <p>2009: Market plan (with industry partners) to address underserved domestic &amp;</p>



**Market**

## Objective 2: Manage project development

Each project required varying levels of intervention depending on what point the R&D provider was involved. Inevitably the projects involving R&D providers from the outset required less input at project scoping and design stage. Table 1 describes development required by project.

Project	R&D provider initiated	R&D provider scoped in response to industry request	Industry (OA) scoped for an R&D provider
POMS Breeding project (through CSIRO/ASI/DPI)		Yes, via ASI & OA	
Breeding program review (through CRC)		Yes, via ASI	
Biotags (through CSIRO)	Yes, via CSIRO		
Benchmarking alteration (through CDI then Rural Directions)			Yes, via OA
Oyster retail project (through USC)		Yes, via SAORC	
Supply chain (via PIRSA - didn't proceed)		Yes, via OA	
Norovirus (through SARDI)		Yes, via ASQAAC	
Oyster industry funding mechanism (through Ridge Partners)		Yes, via OA	
Oyster retail stage 2 (through USC)		Yes, via OA	
Communications project (through RDS Partners)			Yes, via OA
POMS resistance stage 2 (through CSIRO, DPI/EMAI)		Yes, via ASI & OA	
Market strategy meeting (with CRC & Brand Council)			Yes, via OA

Table 1: project development required by project as a relationship to involvement of the R&D provider

## Objective 3: Manage and implement a communications plan to keep end-users, researchers and funding agencies informed and ensure research results are rapidly and widely adopted.

In 2011 the Seafood CRC examined the products and outputs produced through the course of investment and proposed communication packages for industry sectors and also by theme. It was at this point that Oysters Australia felt that its current communication approach required change. OA had communicated via annual state conferences, a newsletter, state executive updates and had trialled video news in 2009.

A number of project results were identified as being 'unmined' and not communicated. It was quickly identified that these project results; eg benchmarking, cool chain, genetics, required more investment than a quick presentation at an annual state conference or a 1 page newsletter. Better two way communication and greater accessibility to results was needed than we had budgeted. The regional grower group concept was born in this process as was interactive news dissemination ie

web based news, blog & Youtube posted footage of a grower explaining relevance of results and industry news.

Through project 2012/732 “Trialling regional grower groups to extend and build on CRC outputs” RDS Partners and OA jointly opted not to repeat the grower group concept for cost benefit reasons. Instead a more sustainable model is currently running and can be absorbed into routine OA operational expenses on the completion of project 2010/747:

- continued use of annual state meetings with bolt on focused topics, eg benchmarking when needed
- continuation of virtual news (enews, blog site)
- continuation of updates as requested by OA member Executives (usually quarterly)
- video news, a short version of the full enews, called ‘Australia’s Talking Oysters’ based on a similar model from ‘Seafood Industry News’ as was tested in CRC project 2009/747 *“Can they hear me? Modern and innovative strategies to communicate with the seafood industry”*
- annual ‘return on investment’ one page report sent by mail via states

A survey of growers on completion of project 2012/732 will confirm the best model for ongoing oyster communication.

#### **Objective 4: To establish and maintain collaboration within projects for the oyster industry**

Where applicable research projects are linked and results inform further research or are commercialised. A measure of the uptake of R&D outputs via a Benefit-Cost analysis is the ideal way to measure how efficiently how well Objective 4 has been achieved.

Project milestone 3 required evidence of optimised uptake of R&D outputs from CRC research and BCA completed with CRC. Detail on R&D uptake and a Benefit:Cost analysis is dealt with under Benefits and Adoption.

#### **Objective 5: Represent the Oyster consortium (Oysters Australia) at Seafood CRC core participant meetings**

OA has been represented at AGMs, CRC roundtables/participant meetings and CRC bid meetings. OA has made some inroads in working with other seafood sectors in a co-investment framework but could make improvement.

Much of the cost in 2010/747 is directly related to keeping the OA investment in order and the 500 growers aware of what investments are being made. This was a difficult task for two main reasons;

1. ensuring all investing parties were supportive of the benefit of proposals coming across the table AND that investment struck the balance between emergent crises and long term industry growth

2. When there are 3 main producing states, between 100 and 300 growers in those states spread geographically, all with a different preference for communication styles, and affected from time to time by the political views of the state on R&D, it creates a challenging task for effective communication on a limited budget of 10 hours per week.

Managing the portfolio and keeping people up to date and engaged left little time for cross sector networking and co-investment. Table 4 describes the proportion of PI project expenditure by activity from project 2007/715 and 2010/747:

Project objective	Proportion of PI time
Manage a national strategic approach to oyster research and development that is aligned to the Business Plan	56%
Manage project development	12%
Manage and implement a communications plan to keep end-users, researchers and funding agencies informed and ensure research results are rapidly and widely adopted	17%
To establish and maintain collaboration within projects for the oyster industry	5%
Represent the Oyster consortium at Seafood CRC core participant meeting	11%

Table 4: Expense by 2010/747 and 2007/715 project objective



## 4. Benefits and adoption

Oysters Australia's projects can be broadly summarised into four main categories in Diagram 1. A summary statement as to whether or not the investment was taken up is provided.

One thing that OA has learnt through the Seafood CRC is that a project without a path to commercialisation and a potential private co-investor is a low return project. Projects without a path to commercialisation rely too heavily on a 'push through' communications strategy ie trying to tick the industry uptake box by giving a 20minute presentation at a conference . There is also no clear way of measuring uptake.

Including a path to commercialisation in commissioned projects became part of OAs routine approach during 2010/747. Uptake hasn't always been as successful as forecast, eg benchmarking. But by attempting commercialisation the results have been more accessible than they would have been had all OA's projects been purely scientific studies.

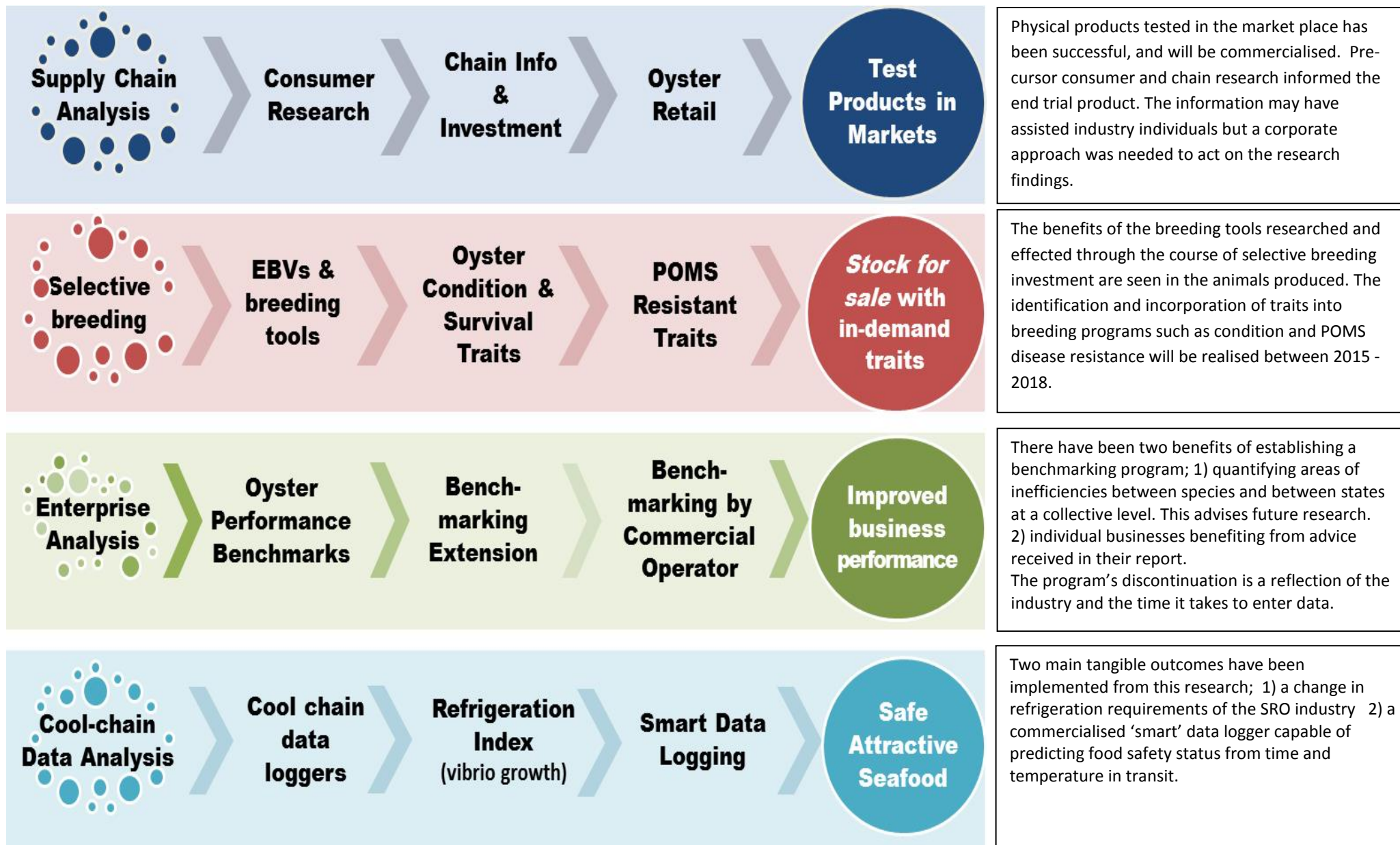


Diagram 1: Outcomes of projects by priority area

### **Benefit cost analysis:**

Measuring the cost against benefit of management and industry travel is a difficult thing to do. Best return on investment is realised when funds are allocated according to the priorities of an industry's strategic goals. This sort of investment doesn't happen without management or co-ordination. Management is sometimes seen as a necessary evil. But the value of Oysters Australia is in the projects it commissions, made possible through strategy, co-ordination, management and communication.

The benefits are calculated by the expected (or estimated) benefits of projects commissioned through the life of the Seafood CRC. These projects met the industry's highest strategic priorities. There is no way of measuring the benefits of a good communication strategy which is the other objective of this project. It is rarely known whether a grower implements what he hears in a conference and if it makes a financial difference in his business. But the cost of a poor communication strategy is the fragmentation of an industry, loss of vision and common investment goals.

The cost is defined as the total oyster specific investment ie \$4M over the life of the Seafood CRC.

Comments of the commercialisation path of projects along with their benefits are in Table 3. The costs and benefits are estimated for projects between 2007 and 2014. CRC project 2008/791 "*Summary of the Seafood CRC Economic Analysis*" results were used to calculate aggregated benefits by project theme for projects commissioned between 2007 and 2010.

Benefit:cost ratio is calculated at 2.3 for projects completed and up to 18.5 potential ratio if estimating the cost of a POMS outbreak.

Project	Commercialisation	Status	Cost (rounded)	Benefit (2007-2010 benefits taken from 2008/791 "Summary of the Seafood CRC Economic Analysis")	Benefit : Cost ratio
2007-2010 projects 'Productivity in Aquaculture projects': 2003/208, 2005/209; 2006/226, 2006/227, 2008/775, 2009/743, 2010/734, 2008/798, 2009/729	Commercialisation through breeding animals and tools taken up within the breeding programs. Business Plan incorporated into OA project approval process	Complete	\$2.05M	Benefit ratio 3.3 ie \$6.15M	
2007-2010 projects 'Consumer Research and Awareness 2009/770, 2008/753,	Precursor to 2012/740	Complete	\$79,000	Benefit ratio 1.4 ie \$110,000	
2007-2010 projects 'Technical Service' 2007/700, 2007/719, 2008/763, 2008/741, 2007/706	Precursor to ConTag device. Others are precursors to future work.	Complete	\$253,000	Benefit ratio 5.6 ie \$1.42M	
2007-2010 projects 'Process efficiency' 2008/777	Precursor to future work	Complete	\$45,000	Benefit ratio 3.4 ie \$153,000	
2012/760: Genetic selection for resistance to POMS ( <i>and variation</i> )	A 70% resistant adult available for hatchery production by 2018	Current	\$443,000	Not yet realised. If 30% of the Pacific industry were to be impacted before 2018, it would cost <u>\$65.2M</u> due to 100% crop mortality and increased volume of spat purchase to compensate for losses for every year that a resistant animal is not available.	
2009/701 (from 2009-2014) Benchmarking in the Australian oyster industry (variation to commercialise under Rural Directions)	An oyster benchmarking program open for participation at subsidised rates (from 2014)	Final round about to close. Uncertain future	\$260,000	Participant businesses have had the opportunity to analyse business operation and make profitability changes: 30 participants between CDI's Round 1 and Round 2. (CDI's Round 2 not included). 25 participants between Round 1 (under Rural Directions) and Round 2.	

				15 participants between Round 2 & 3. Indirect benefits for non participants. Estimate \$1.23M <sup>2</sup>	
2012/740: Oyster retail experiment	First stage experiment complete. A commercialised pilot trial is planned	Current	\$110,000	Results not yet released. Expected benefits to farm gate price for participating farmers & retailers	
2012/757: Funding options for the Australian oyster industry	N/A	Complete	\$55,000	Benefits not yet realised	
2007/715 and 2010/747	Processes and communication package incorporated into Oysters Australia	Complete	\$348,000		
			<b>\$4,000,000</b>	<b>\$9,06M benefit now Over \$65M potential benefit in future Other results not yet available</b>	<b>2.3 now 18.5 potential</b>

Table 3: Benefit:cost analysis of the oyster industry investment through the Seafood CRC 2007-2014

<sup>1</sup> POMS resistance breeding. Potential benefits will not be realised until the expected delivery date of 2018. It is not known when or where POMS will be detected. If 30% of the approx. \$62M Pacific production is impacted by POMS in 2018 the loss would be immediate and 100% loss of 2 years of crop ie \$37.2M. If a 70% resistant spat were not available, it would cost growers a further 3 times the usual annual spat purchase to compensate for mortality to produce the same value crop per annum ie .

Workings: 10.5M doz Pacific oysters produced in Australia per annum @ \$5.85/doz = \$62M. If 30% are impacted by 2018 by POMS (ie \$18.4M of the \$62M total) a total 2 year crop loss equates to \$37.2M. Further cost per annum until a resistant oyster is available is purchase of higher quantities of spat (industry estimate 3 times higher quantities). Current spat cost equates to \$1/doz of the \$5.85/doz with future cost estimated at \$3/doz. 30% of Pacific production (ie 3.5M doz) paying \$2/doz greater equates to an additional \$7M per year for 4 years for those affected.

<sup>2</sup> Benchmarking benefit estimation. There was a change in average profit % of income from -6% in 2010-11 to 6% in 2011-12. Most of this would be attributed to stock condition and mortalities between those years. Even if 2% of the 12% difference (as was estimated by CDI Pinnacle) was due to implementation of benchmarking findings, it would be a successful project for the industry to have invested in.

Workings: Average business production = 150,000 doz @ \$5.85/doz. 70 business adjustments over the course of the project; 2% of the income = \$1.23M

## 5. Further Development

Further development of Oysters Australia's management of its R&D investments can be broken into 1) national levy and R&D management 2) strategic approach to R&D 3) project development 4) communications plan 5) collaboration between projects and 6) representing the oyster industry.

### **5.1. National levy and R&D management**

The further development of Oysters Australia's management of its investments lies, in the short term, within the FRDC Industry Partnership Agreement (IPA). In the long term it also needs to include the establishment of a national levy enabling non R&D investment alongside its R&D investments to ensure OA delivers on ALL of its priorities.

Oysters Australia's successful management of R&D investments has been co-funded through the Seafood CRC. The push to investigate replacing state R&D levies with a national levy was initially driven by the need to find an equitable mechanism for industry to pay for R&D management. OA commissioned 2012/757: "Funding options for the Australian oyster industry" which began in late 2012.

But to enable Oysters Australia to fully deliver on its strategic plan, the industry will need to invest in non R&D ie market based investment, nationally focussed biosecurity and some overheads. Without these streams, OA's investment is R&D-centric and lopsided.

The PIERD Act changes in 2013 enabled an industry sector to invest in non R&D projects/activities. Even though Future R&D management will be co-funded through the FRDC via a FRDC IPA, the opportunity was seen to discuss the proposal of adding non R&D streams to a national levy. The discussion was more about non R&D investment opportunity (market, biosecurity, overheads) than it was simply about finding a way to share overhead costs.

OA has agreed that the national levy discussion will continue and has a planned implementation date of 2018. . Implementation of a new national levy by the original plan of January 2013 was too ambitious. The POMS resistance breeding levy became a greater emergency and was fast-tracked ahead of a replacement national levy. OA will be proving and promoting its effectiveness before beginning the arduous task of reintroducing the concept of a national levy.

### **5.2. Strategic approach to oyster R & D**

A strategic plan for 2014-2019 has been drafted in consultation with the oyster industry, will be submitted with the IPA and will guide R&D investment for the next 5 years.

### **5.3. Project development**

In the absence of a CRC OA will need to widen its scope to search for other funding avenues, private co-investment and cross sector co-investment. A process of calling for, reviewing and communicating project proposals has been drafted.

### **5.4. Communications plan**

The current communications plan has been costed into the management budget in the IPA. Any adjustments will be made on completion of an industry survey within CRC project 2012/732 "Trialling regional grower groups to extend and build on CRC outputs"

#### **5.5. Collaboration between projects**

In the absence of the Seafood CRC leverage, collaboration will need to shift focus from 'within oysters' to between oysters and other sectors in an attempt to derive greater return on funds available.

#### **5.6. Represent the oyster industry**

As the oyster industry completes its CRC investment, it must shift its focus to forging links and like interests with other seafood sectors.

## 6. Planned outcomes

Significant project outputs are:

1. OA business plan R&D effectively implemented including finalised and complete research portfolio agreed with CRC
2. an agreed strategy for long term management of R&D for Australian Edible oysters developed and sustainably resourced for June 2013
3. optimised uptake of R&D outputs from CRC research and BCA completed with CRC

The original outcome from project 2010/747 was to “complete the path towards national industry managed R & D”

This was to involve;

- Oyster R & D commissioned, managed and ‘commercialised’ according to priorities contained in the “Australian edible oyster industry Business Plan” achieving best return against identified industry priorities
- Streamlined communication path between Seafood CRC participants and staff with multiple oyster industry partners
- An agreed strategy for long term management of R&D for Australian Edible oysters developed and sustainably resourced by industry

The planned outcomes have been achieved with further work to be completed to implement a sustainable model for industry investment into non R&D.



## 7. The Evolution of Oysters Australia Ltd

### The Creation of Oysters Australia Ltd

*The formation of The Oyster Consortium Ltd and its evolution into Oysters Australia Limited was the culmination of a seven year process of increased cooperation and improved social interaction among Australia's oyster farmers. This "output" from the Seafood CRC was just as important as the technical outputs resulting from R&D projects. Rachel King has been the executive officer for the national Oyster industry for most of that time and has a unique insight into the factors contributing to the changes that have occurred in the industry. Olivia Fuller, from brand communications agency FULLER in Adelaide interviewed Rachel about the people aspects of development of Oysters Australia Ltd and what it means for the future of the industry. Here is the report:*

#### The Context

The Australian oyster industry is Australia's third largest single seafood product sector with an estimated farm gate value of \$90-\$100 million per annum. Production is primarily based in the states of New South Wales (NSW), South Australia (SA) and Tasmania (Tas) with much smaller volumes grown in Queensland and Western Australia.

The two principal species grown in Australia are the Sydney Rock Oyster and the Pacific Oyster. Pacific Oysters account for 60% of Australian oyster production, and Sydney Rock Oysters around 40%. There is a minor demand for Flat and Black Lipped Oysters, but these are only produced semi-commercially and represent less than 1% of the total industry supply.

Sydney Rock Oysters were first grown commercially in NSW from around 1870 using a dredge bed system, which has since disappeared.

Pacific Oysters are an introduced species, which were first produced commercially in Tasmania in the 1960s. Hatchery production of Pacific Oysters commenced in the 1980s at approximately the same time that the basket production system evolved. In the 1970s the South Australian industry developed, using almost entirely Tasmanian Pacific Oyster hatchery stock. The growth in the 1980s of the South Australian industry was rapid, outstripping that of the Tasmanian industry due primarily to larger areas available for production.

Flat Oysters were harvested in Victoria, Tasmania and South Australia from 1865 onwards, but due to overfishing had almost disappeared by the turn of the century.

There are around 865 active oyster leases in Australia operated by approximately 550 growers.

#### The Challenge - Disunity

By its geographic nature, the Australian oyster industry is fragmented and disunited.

NSW growers have operated in their waters for at least 130 years and are predominantly small family businesses. Tasmania on the other hand established an industry in the 1960s with a strong business focus, investing heavily in mechanisation. South Australia followed Tasmania's lead, and has achieved exponential growth since the 1970s, doubling production in the last 10 years.

According to Oysters Australia Ltd Executive Officer Rachel King, this history of diversity and individuality set up an environment of commercial rivalry between operators within states, as well as between states.

"By the early 2000s, NSW was feeling the impact of South Australian Pacific Oysters, which were taking market share on the east coast," Rachel said.

"Growers in NSW branded all the southerners as competitors. They saw them taking their markets with a cheaper alternative species, and they labelled them disparagingly as those 'six fingered people'...which was only half joking.

"They were generally opposed to talking to each other, and suggestions of national collaboration from industry leadership was laughed at on the water."

In this environment there was no interest, incentive or mechanism for the industry to work collaboratively – on market expansion or research and development.

"The states were often unaware of each other's research funding proposals, sometimes applying for projects of a similar nature.

"There was duplication of energy. By the mid 2000s the government strongly encouraged the industry to work collaboratively and more efficiently."

### **The Solution - Collaboration**

Oyster growing states saw the opportunity to work together when the Australian Seafood CRC was being proposed and collectively participated in the bid.

When the Australian Seafood Cooperative Research Centre launched in 2007, \$3.9 million of research and development funds was allocated to the Australian oyster industry to improve its commercial competitiveness.

"The very nature of the CRC program is to encourage collaboration and cooperation rather than competition and duplication," Rachel said.

"The Seafood CRC was the catalyst for change and the incentive the industry needed to start working together.

"State oyster industry leaders were told that by pooling the R&D levies collected from growers in each of the states and forming a national body with nationally relevant research, they would be better positioned to leverage federal government funding."

As a result of these discussions, an informal alliance called The Oyster Consortium was established in 2007 charged with coordinating, reviewing and presenting R&D funding applications to the Australian Seafood CRC.

It comprised four state based entities and four commercial entities:

- New South Wales Aquaculture Research Advisory Committee (ARAC)
- South Australian Oyster Research Council (SAORC)
- Tasmanian Oyster Research Council Ltd (TORC)
- Queensland Oyster Growers Association (QOGA) (joined in 2009)
- Shellfish Culture
- Tasea (left in 2009)
- Australian Seafood Industries
- Select Oyster Company

"The Consortium had some priorities but not a clear direction as to how \$3.9 million was going to be allocated in seven years," Rachel said.

The initial priorities were unsophisticated but practical, setting five common goals to guide future national research and development priorities.

1. Improved genetics and breeding
2. Benchmarking, identifying and reducing costs of production
3. Improved food safety and investment in supply chain to deliver a high quality product
4. Market research and product development
5. Animal health and disease

"They could either approach it on an *ad hoc* basis or define a strategy and work towards a common goal for the improvement of the industry overall."

The Consortium chose to develop an industry strategic plan, but its first challenge was coming to an agreement on a common set of goals for the industry.

In 2009 the Australian Seafood CRC responded to the industry's first strategic plan, granting funding to develop a five-year business plan.

"2009 was the first time that an average grower in each state was required to consider the needs of the industry on a national level," Rachel said.

"It required significant cultural change.

"When you have people who essentially have the same ideas but different perspectives sitting around the table, it's crucial to listen.

"Unless people feel heard, and see their suggestions reflected in a course of action, they will feel disenfranchised.

"My favourite saying is 'there's always truth in the middle'. When you have two opposing people or bodies, both will have something valid to say but the answer is to find commonality. If you can find an option that appeals to both of them, they will see merit in joining forces."

"We used a combination of face-to-face discussions with growers, informal discussions with key industry stakeholders and a written survey to arrive at our three goals.

"We also had to do a lot of desktop research and ran several industry surveys to determine need."

The Business Plan identified three core objectives for the Oyster Consortium to address:

1. *Production and Profitability*

To sustainably increase production to 20 million dozen, net profit by 10% and industry Gross Value of Production (GVP) to \$120 million per annum.

2. *Consumption and Quality*

To increase oyster consumption by 13% to 0.93 dozen per capita and achieve an 80% satisfaction rating from our markets and customers through the supply of consistently high quality oysters.

3. *Capacity and Confidence*

Through the formation of a national industry organization, build capacity, leadership and confidence in the industry through the services it provides to growers and others.

## **The Outcome - Unity**

Two years later, in 2011, the fledgling Oyster Consortium was incorporated as company owned by the oyster growers of Australia, and renamed Oysters Australia Ltd, a symbolic victory for collaboration and a practical breakthrough in industry unification.

Oyster Australia Ltd is also responsible for policy and manages the strategic direction of the national industry.

"Oysters Australia Ltd is not just an incorporated body, it is a future proofing plan for the industry.

"Apart from the obvious achievements in unity and strategy, the real value of Oysters Australia Ltd is the cost efficiencies we have achieved by funding one significant project across multiple states rather than allocating funds to lots of individual projects.

"It provides the structure which was missing previously, to help the industry remain focused on its priorities.

"When an industry invests without clear direction it can miss its goals. If your R&D money is more targeted – and a national strategic plan enables that – that is money well spent," Rachel said.

Rachel said projects commissioned by the Oyster Consortium (and now Oysters Australia Ltd) have provided the industry with new tools that can help growers improve and sustain their businesses.

One of the projects produced a time based temperature sensor tag that is included with oyster shipments. The tag monitors the time of transit and temperature and analyses the data using the Oyster Refrigeration Index (ORI) to model the food safety of the shipment.

Another project is breeding oysters for resistance to Pacific Oyster Mortality Syndrome (POMS), a disease that wiped out millions of dollars' worth of production in 2010. Oysters Australia hopes that a resistant species will be commercially available by 2018.

Another project in NSW, discovered through bacterial modelling that Sydney Rock Oysters could actually kill off bacteria while still alive, enabling them to be stored at slightly higher temperatures reducing the cost of shipping. This led to a change in legislation about refrigeration protocols in 2010.

"In 2007 I asked a cartoonist to draw a picture of an archaic oyster industry," Rachel said. "He drew a picture of a fisherman sitting in his boat shucking oysters.

"In 2014 that guy is sitting in a suit operating from a desktop and he has an online tool for everything.

"That was the vision – improve profitability through the use of technology to sustain the oyster industry."

## **The Legacy - Sustainability**

Oysters Australia Ltd has just signed off its 2014-2019 strategic plan and from July 2014 will be working directly with the Fisheries Research and Development Corporation as its funding agency.

"As the Seafood CRC will finish in 2015 we will deal directly with FRDC in future," Rachel said. "The most significant impact will be losing 30% of R&D investment budget.

"So we will have to look outside the square to get additional funding leverage.

"A change such as this threatens to undo some of our good work. We are starting to see a bit of tension and a tendency to want to go back to the way things were before. I have had to work hard to keep the states on track with their common challenges and remind them about the value of a shared and united voice."

Rachel says nothing speaks louder than actions and by visiting each state conference every year and presenting the results achieved against the strategic plan, and the R&D dollars spent towards achieving those outcomes, she has kept the barriers to collaboration down.

"If people can't focus on a result they will focus on each other," she said.

"While I am very proud of the work the Seafood CRC and FRDC have done in welding together this industry, we need to remind ourselves that unless there is a bottom line outcome, growers won't be interested.

"Our focus in 2014-19 will certainly be about commercialisation.

"But I hope growers recognise that Oysters Australia Ltd is their company that is enabling the research that is improving their business."

### **The Lessons – Communication**

Rachel said the one thing she would have liked to do better was industry communication.

"We didn't communicate well," she said. "I assumed that there would be a ripple effect; that information on priorities and outcomes would reach most growers.

"We didn't have the resources to communicate professionally which led to a lack of understanding about what the Oyster Consortium was and its roles and responsibilities.

"It's really easy to make the mistake to say I don't have time to communicate down the line. But you can't afford not to because it comes back to bite you."

Rachel said that in 2012 the industry started talking about the possibility of replacing the state R&D levies with a national R&D levy under one piece of legislation.

"There was a mixed response and we opted to put the proposal on hold. But it reinforced that we have a problem. The average producer knows very little about where their R&D dollar is going," she said.

"If I was to do anything differently it would be to reorganise how time was allocated to spend more time talking directly to growers.

"I now understand you need to use lots of different methods of communication – some growers prefer face to face, some prefer email. Increasingly we are using mobile devices and SMSs to communicate.

"But at the end of the day you also have to remember when to stop talking and start listening. That's the art of good communication."

### **Oysters Australia case study - Giles Fisher, Freycinet Marine Farm**

*Collaboration for the (oyster) nation.*

As a first generation oyster grower from Tasmania, Giles Fisher has a positive outlook on the Australian oyster industry thanks to the support given from the Australian Seafood CRC.

“Oysters is one of the last bastions of agribusiness where you can run an operation without the poor returns and huge overheads,” said Giles.

“The oyster industry is dynamic and there is still space for pioneering work and thinking. There is not a settled path for production systems so you can still be inventive. Our markets are constantly evolving – and demand outstrips supply every year,.” he said.

Giles grew up on a livestock property and worked in the salmon industry for a decade before becoming the owner and operator of Freycinet Oysters – a business producing about 75,000 dozen oysters annually with everything sold through Freycinet’s on site retail outlet.

He says the main challenges for the industry are production of a robust and dependable product for year round market expectations.

“The biggest challenge for the industry is still based around the oyster itself.

“We need to be able to produce a very good oyster all year and it needs to be a quality product irrespective of the water it’s grown in,” he said.

This, he says, is a challenge faced by all oyster growers and something that requires a national approach, which has been made possible for the oyster industry thanks to support from the Australian Seafood CRC.

“We all have our individual and state based struggles, but the significant challenges we face are the same. Therefore they require a national R&D approach.

“The industry is in better shape to tackle national issues than it ever has been, thanks to the establishment of with our peak body, Oysters Australia, up and running to drive national research priorities which was borne out of a Seafood CRC project.

“Not only has the formation of Oysters Australia improved relationships across the industry, having a national research focus gives us very good multiplier benefits through the research dollar.”

As the former R&D representative on the Oyster Consortium and now the treasurer of Oysters Australia, Giles believes industry collaboration couldn’t be better.

“A lot of the goals mapped out for the industry has been achieved through good communication – by getting the message out there that ‘here is the future that we’re aiming towards and you can be a part of it’.”

Giles said one of the most successful communication mechanisms has been the presence of Oysters Australia at each state conference.

“Our Executive Officer uses the state conferences to present the national strategy and gain feedback from industry. She will clearly say: here is the strategy you agreed to; here are the outcomes; and this is how we spent your research dollar.

“At the grass roots level, we have blogs and email newsletters from Oysters Australia; we have text messages coming from the Seafood CRC. You want to know the status of the breeding program? It’s on the web. All of our communication is accessible on mobile devices and we are using video for “talking head” updates more and more.”

Giles believes future challenges will always be around the animal, but there will also be business related issues to consider.

“We need to maintain a focus on achieving greater returns and looking at better marketing of the product so that when supply does meet demand we can continue raising demand,” he said.

“While I would like Oysters Australia to maintain its focus on R&D, I can also see opportunities for it to play a broader role across policy and marketing in the near future.”

## 8. Conclusion

2010/747 has produced:

**1. A complete research portfolio within the Seafood CRC effectively implemented against the high priorities of the Australian Edible Oyster Industry 2009-2014 Business Plan**

46 projects completed and delivered outputs to industry. Oyster funded projects are listed below. There are at least 20 other projects funded communally or via Seafood CRC funds which span genetics, market and communications projects and also included industry bursaries

**1. An agreed strategy for long term management of R&D for Australian Edible oysters developed and sustainably resourced.**

While the industry considers a national levy to fund non R&D activities an interim arrangement applies;

- a) the oyster industry agreed to increase funding for R&D management in 2013-2014
- b) the overheads of Oysters Australia (ie non R&D project related) are underwritten by SAORC and billed to member states at the end of the financial year
- c) Oysters Australia plans to enter a Partnership Agreement with FRDC who have indicated willingness to share fund an R&D management/co-ordination project with Oysters Australia

**2. Optimised uptake of R&D outputs from CRC research and BCA completed with CRC**

Including a path to commercialisation became part of OAs routine approach during 2010/747. Commercialisation hasn't always been as successful as forecast, eg benchmarking but the results were more accessible through an attempted commercialisation than they would have been had all OA's projects been scientific studies resulting in additional capacity with the R&D sector.

Benefit:cost ratio is calculated at 2.3 for projects completed and up to 18.5 potential ratio if estimating the cost of a POMS outbreak.



## References

## Intellectual Property

There is no Intellectual Property associated with this project

## Staff

No direct staff. See Acknowledgments for those involved