

**THE AUSTRALIAN BLUE MUSSEL INDUSTRY
GROWING THROUGH COOPERATION**

**THE 2000–2005 RESEARCH AND
DEVELOPMENT PLAN**

Simon Bennison



AQUACULTURE COUNCIL OF WESTERN AUSTRALIA



**F I S H E R I E S
R E S E A R C H &
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C O R P O R A T I O N**

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The Australian Blue Mussel Industry – Growing Through Cooperation

The 2000–2005 Research and Development Plan

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Postal address: Aquaculture Council of Western Australia (Inc), PO Box 55 MOUNT HAWTHORN WA 6915

Telephone: 08 9244 2933; from overseas + 61 8 9244 2933

Facsimile: 08 9244 2934; from overseas + 61 8 9244 2934

E-mail: acwa@wafic.org.au

Internet: <http://www.Aquaculturecouncilwa.com>

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The Australian Blue Mussel Industry – Growing Through Cooperation

The 2000–2005 Research and Development Strategic Plan

This plan describes the strategic research and development of the Australian blue mussel industry. It has been prepared to provide direction on investing in R&D for the Australian blue mussel industry, the R&D investment community, research providers and other people who are interested in the Australian blue mussel industry and the business environment it depends on.

Vision

A united, sustainable and profitable blue mussel industry

Mission

To produce premium quality blue mussel for domestic and overseas consumers in an ecologically sustainable and profitable manner.

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NON TECHNICAL SUMMMARY

1999/378 The Australian Mussel Industry – Growing Through Cooperation. The 2000-2005 Research and Development Plan

PRINCIPAL INVESTIGATOR: Simon Bennison

ADDRESS: Aquaculture Council of Western Australia
PO Box 55, Mount Hawthorn, Western Australia, 6915
Telephone: 0892442933 Fax: 0892442934

OBJECTIVES:

- To develop a national mussel industry profile giving recognition to the fact that the industry is expected to expand production fourfold over the next five years;
- To develop a strategy for national cooperation and collaboration amongst producers, particularly in regard to supply, demand and product quality, including the development of a 'Code of Practice' that addresses post harvest handling and the adoption of a Condition Index;
- To develop a research and development strategy that will ensure viability and improved international competitiveness;
- To commission a suitable person to document the market development issues facing the industry. This will address consumption habits and evaluate the green-shell industry in New Zealand, with emphasis on consumption dynamics in Auckland. It will address the dynamics of the 'Chilli Mussel' promotion in Western Australia, which has resulted in the highest per capita domestic consumption of locally produced mussels. It will evaluate the viability of developing a processing facility that will allow value-adding as well as accommodating future production; and
- To develop an effective communication strategy.

OUTCOMES ACHIEVED

- A cohesive national mussel industry;
- Optimisation of the economic potential of the Australian mussel industry;
- Improvement in the average quality of mussels to the consumer;
- Identification of opportunities available to participants in the mussel farming industry; and,
- Industry ownership of all the outcomes from the workshop that will ensure the development of a sustainable national mussel industry.

The following report has been prepared from presentations, discussions and documents presented at a national Mussel Industry workshop held in Melbourne on 28 and 29 March 2000. The workshop was organised by the Aquaculture Council of WA, and funded by FRDC and followed discussions between industry stakeholders at several meetings during 1999, and their concerns about an anticipated quadrupling of production capacity by 2005.

The objectives of the workshop included:

- the establishment of a current and future industry profile in the various States;
- the development of a National strategy for collaboration between producers;
- the development of an R & D strategy;
- the commissioning of a consultant to develop a market development strategy; and
- the development of a National Communication Strategy.

The workshop was well attended by industry representatives from New South Wales (NSW), South Australia (SA), Victoria (VIC), Tasmania (TAS) and Western Australia (WA).

The outputs included:

- a clear definition of current and future industry production profiles provided by leading producers in each State;
- an agreement to continue a substantial level of future collaboration including annual workshops or whenever considered appropriate. These to form the basis of the communication strategy;
- the identification of research needs;
- an agreement by farmers to contribute towards the funding of a consultant to produce a National Code of Practice, a product promotional strategy and the appointment of a National steering group with one representative from each State, including: Glenn Dibbin, W.A; Andy Dyer, S.A; Michael Bamford, N.S.W; David Harris, Victoria; Graham Schroter, Tasmania.

This group has been charged with the responsibility to implement the R&D Plan and organise national workshops when necessary.

KEYWORDS: Blue Mussels

ABOUT THIS PLAN

This document provides a Five Year Plan for the investment in research and development in the blue mussel industry. It was approved by the blue mussel industry through its various state industry bodies at a workshop held in Melbourne.

The plan also provides a description of the operating environment in which the industry works and describes where the industry wants to be in 10 years.

This R&D strategy has benefited greatly from consultations with interested parties, culminating in a workshop held in July 2000. The plan was then prepared collaboratively by members of the Australian blue mussel industry with valuable advice by the Fisheries Research and Development Corporation (FRDC). It has been prepared with appropriate regard for Government policy and Ministerial directions.

The Australian Blue Mussel industry will manage the strategic plan and will formally review it every two years. The Plan will be implemented through cooperation and collaboration of the State industry organizations.

Acknowledgments

On behalf of the Australian mussel farmers thanks are extended to the Fisheries Research and Development Corporation for sponsoring the workshop and this report, Patrick Hone, Louis Vorstemans, Nick Ruello and the attendees of the workshop for the effort they have invested in the long term sustainability of the industry. In particular to their contribution to this manuscript.

On behalf of Nick Ruello thanks are extended to the mussel farmers, fish wholesalers, retailers and others around the country that provided information for this study. Paul Lupi from the New Zealand Mussel Council and librarians at the New Zealand Seafood Industry Council provided data on NZ exports to Australia.

Simon Bennison

Editor

1.0 EXECUTIVE SUMMARY

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2.0 WORKSHOP OBJECTIVES

- To develop a national mussel industry profile giving recognition to the fact that the industry is expected to expand production fourfold over the next five years;
- To develop a strategy for national cooperation and collaboration amongst producers, particularly in regard to supply, demand and product quality, including the development of a 'Code of Practice' that addresses post harvest handling and the adoption of a Condition Index;
- To develop a research and development strategy that will ensure viability and improved international competitiveness;
- To commission a suitable person to document the market development issues facing the industry. This will address consumption habits and evaluate the green-shell industry in New Zealand, with emphasis on consumption dynamics in Auckland. It will address the dynamics of the 'Chilli Mussel' promotion in Western Australia, which has resulted in the highest per capita domestic consumption of locally produced mussels. It will evaluate the viability of developing a processing facility that will allow value-adding as well as accommodating future production; and
- To develop an effective communication strategy.

3.0 PROPOSED OUTCOMES AND OUTPUTS

Outcomes

- A cohesive national mussel industry;
- Optimisation of the economic potential of the Australian mussel industry;
- Improvement in the average quality of mussels to the consumer;
- Identification of opportunities available to participants in the mussel farming industry;
and,
- Industry ownership of all the outcomes from the workshop that will ensure the development of a sustainable national mussel industry.

Outputs

- A status report on the mussel industry in Australia and its future directions of development;
- A research and development strategy;
- A communication strategy
- A quality assurance strategy;
- A consumption study;
- Documentation of the workshop outcomes;
- Methods to increase consumption of mussels in Australia and overseas;
- An evaluation of the benefits of national annual meetings of mussel farmers

4.0 INTRODUCTION

A meeting was held in Sydney during the Aquafood Show in May 1999, to discuss the way forward for the expanding mussel industry in Australia. This meeting was attended by:

Victoria: Barry Dance, Secretary, Victorian Aquaculture Council;

Tasmania Graham Schroter; Jeff Wayman; Chris Wayman; Brian Leahy, Tassea;

Western Australia: Glenn Dibbin; Simon Bennison, Executive Director, Aquaculture Council of WA and

Paul Jensen.

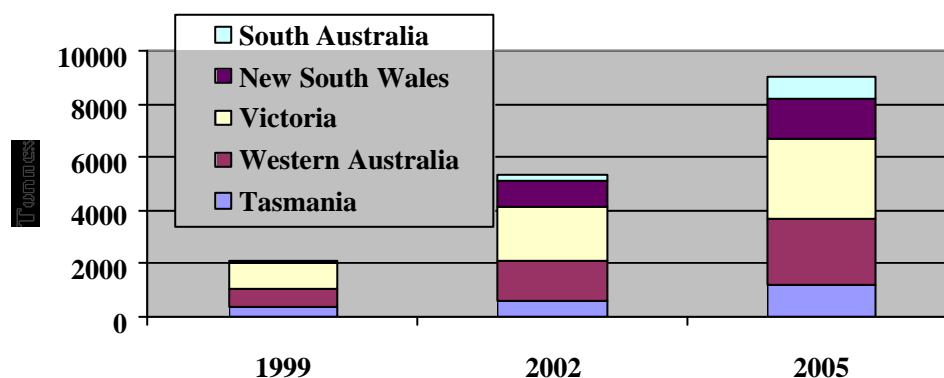
The intention was to evaluate the development of a National strategy for the Australian mussel industry, particularly in regard to supply, demand and promotional issues

Attendees to the meeting provided the following production estimates:

TABLE 1 Forecast for Australian Mussel Production

Production (t)	1999	2002	2005
Tasmania	350	600	1,200
Western Australia	683	1,500	2,500
Victoria	957	2,000	3,000
South Australia	81	200	800
New South Wales	50	1,000	1,500
Totals	2,121	5,300	9,000

GRAPH 1 Forecast of Australian Mussel Production



Consideration was given to the fact that Australia imported 2,338 tonnes of mussels in 1997/98, at a value of \$6.873 million according to ABARE. Virtually all of this came from

New Zealand.

The issues that were raised as needing to be addressed included:

1. The development of a profile on the Australian mussel industry giving full recognition to the fact that the industry will expand production four-fold over the next five years;
2. The development of a strategy for national cooperation and collaboration amongst producers, particularly in regard to supply, demand and product quality. Activities to be included are the evaluation of the development of a Code of Practice that addresses 'post harvest' handling with the emphasis on freshness and quality, and the adoption and implementation of a condition index.

It is accepted that there are companies such as Tassea that have already adopted the above and it may be an option to adopt some of their practices, or those of another group. It was intended that this workshop should look at the various ways of identifying best practices in the industry, and encouraging National acceptance and adoption in order to raise the quality of the Australian product in the market place, thereby raising consumption and returns to producers and,

3. The development of a 'Research and Development' strategy that will ensure viability and improved international competitiveness.
4. An evaluation of the market and consumption attitudes.
5. Evaluation of the dynamics of the 'Chilli Mussel' promotion in Western Australia which has resulted in the highest domestic per capita consumption of local mussels in Australia.
6. Consideration given to industry dynamics and consumption elsewhere, such as in New Zealand and other States of Australia.

The mussel industry is typical of many of Australia's aquaculture sectors in that 20% of the farmers produce 80% of the product.

The meeting concluded with the decision to hold a national mussel industry workshop as the way forward.

The workshop was held in Melbourne on 28th and 29th March 2000, and the following report is a summary of proceedings and papers presented.

5.0 INTRODUCTION TO THE BLUE MUSSEL INDUSTRY

Business environment

The taxonomy of the blue mussel is still in doubt as is the period in which it was imported from the northern hemisphere as another passenger on the outside of vessels visiting Australia. It rapidly spread and due to its popularity in Europe was caught to feed early immigrants. Early blue mussel farming started some 50 years ago and was based on the raft methods used in Europe. In the early 70s, Professor John McIntyre with funding (1972/025) from FRDC's predecessor surveyed the coast for sites where reliable spat fall occurred and assessed raft culture techniques. The industry is characterised by small work units with a small capitalisation base. Due to freight costs the more successful farmers have been based close to regional markets with very little interstate production sales. Tasmania with its small population has had to develop a more interstate market focus. This has been successfully done to date with its joint marketing arm Tassea (share with Pacific oyster industry). The blue mussel industry is currently based from temperate NSW around to Fremantle in WA. It currently (2000) reports production at between 1500 and 2000 tonnes (\$3 - 5m). By 2005 production is anticipated to grow to 5000 tonnes. There is considerable differences in production techniques and product produced both inter and intra state. This difference provides one of many opportunities for this industry to develop to be worth \$8 - 15m by 2005. There is considerable difference in how industry views its future, which is reflected in the difference in priorities for research and development. In contrast to the development of the New Zealand greenlip mussel industry the majority of industry perceive development to be based on a lifestyle industry servicing a small but loyal market. In contrast, some in the industry see opportunities for a considerably larger industry. The success of such an expansion would depend on considerable production cost reductions, improved freight methods and storage techniques, and a very aggressive marketing and promotion program. The later vision would depend on the development of new products that may extend beyond blue mussels as just a food item. It would also capitalise on Australia's growing reputation as a producer of green and clean product. This vision is supported by both state and commonwealth governments initiative for food and fibre export industries (eg Supermarket to Asia)

This R&D plan is to be seen as part of process of continual improvement for a whole of chain approach to R&D investment that reflects the industry's diversity. Through time it should be re-visited and performance measured against the outcomes for each of the strategies. Funding for the necessary R&D can be obtained from a variety of sources with industry needing to show a commitment to matching any public investment. This plan should be promoted widely to encourage scientists from a wide range of disciplines to become involved in blue mussel research. Importantly, there is an opportunity for industry to develop its own research capacity or commission directly what it requires. This model has successfully been employed by the NZ mussel industry and results in research being directly accountable to the primary user. In keeping with recent trends in R&D planning, the development of this plan followed an outcomes, output and input model.

Twenty Year Vision for the Blue Mussel Industry

Producers recognise the challenge ahead to become internationally competitive. Quality assurance programmes will be very significant issues as importing countries tighten the requirements for mussel quality. Australian producers will invest strategically in production technology that will ensure economic sustainability. They will vastly improve their efforts to collaborate and ensure the economies of scale are achieved so that processing will be economically viable and improve product diversification.

6.0 THE MUSSEL MARKET IN AUSTRALIA

Nick Ruello compiled the following market report. It has been edited to meet the needs of the Plan

6.1 Introduction

This discussion paper on the mussel market in Australia was prepared expressly for the Melbourne Mussel Initiative meeting on 28th and 29th March 2000. It is based almost exclusively on desk research of published and unpublished material and telephone discussions with mussel producers and fish merchants who handle mussels as part of their normal business. Some information presented by farmers at the meeting was included in this final version of the paper.

Topics nominated for discussion in this paper and at the meeting were:

- Generic promotion and ideas for increasing consumption,
- The high per capita consumption of mussels in Perth and Auckland,
- A code of practice,
- Quality index,
- Opportunities for processing and value adding.

6.2 Historical Observations

The mussel industry has a relatively long history in NSW but the industry as a whole has had a rather slow growth. The first attempt at commercial farming was in Quibray Bay inside Botany Bay in the mid 1950s by Nino Ruello. Predation by bream, fouling and the rapid rusting of the galvanized wire trays beat him in an era when mussels were mostly pickled or sold as bait. Interestingly, at the Melbourne meeting it was revealed that bream remain a problem today although there is now a thriving industry in five states.

There once was a big volume of trade in wild dredged mussels from Port Phillip Bay in the 1970s and 1980's in Melbourne and Sydney with 1100 tonnes dredged in the early 1980s. A new wave of mussel farming began in the late 1970s in Jervis Bay NSW stimulated by University of NSW research, funded by the then Fishing Industry Research and Development Council, the NSW Electricity Commission and others, led by Dr John McIntyre.

A Mussel industry seminar was held in Hobart December 1980. There were many papers and ideas and samples of locally processed mussels on the half shell from SAFCOL. The Tasmanian industry continued to grow and became the major producer of farmed mussels in the 1980s but SAFCOL soon discontinued producing mussel meat and half shell because it was not a profitable undertaking.

In October 1984 the Victorian Mussel Growers Association had a seminar on "Marketing and Promotion of Cultured Mussels". At this meeting Nick Ruello gave an overview of the mussel market in Sydney and advised growers to avoid a price war in Sydney.

In 1986 the Victorian Department of Conservation Forests and Lands released a 156 page report on "Marketing survey for cultured blue mussels *Mytilus edulis planulatus*" by C. Lightfoot and S. O'Connor. In September 1987 a major algal problem emerged in Port Phillip Bay and harvesting was suspended in October. This algal problem continues to impact on the Victorian farmers and onto the national industry on a smaller scale.

In 1998 the South Australian Department of Primary Industry commissioned Anderson Collins to prepare a short and medium term marketing plan for the SA mussel industry. There have also been a number of studies on the mussel market in Australia undertaken for various private companies over the past decade.

6.3 World Trade in Mussels

Australia is a minor player in the world mussel trade. China, Spain and Italy are three major producers with each producing more than 100,000 tonnes per annum, with China producing about 500,000 tonnes per year. Belgium, France and Italy are the three largest importers and all import more than 20,000 tonnes pa. The Netherlands, New Zealand and Spain are the three major exporters each exporting more than 20,000 tonnes pa.

Australia is a relatively large importer of mussel products despite the existence of a growing domestic mussel farming industry. Almost all of the imports are New Zealand green mussels as whole in shell, cooked half shell and cooked meat. Significant volumes of marinated and smoked meat are also coming into Australia from New Zealand in addition to the smaller volumes of canned smoked mussels from Asia and mussel salads, in jars, from Europe.

Sealord Shellfish is the world's largest green shell mussel processor. It employs 420 staff. In 1998/9 it processed 20,000 tonne, substantially more than its nearest competitor. According to Seafood International magazine of March 2000 Sealord built a new plant in 1996 at a cost of more than A\$6 million.

6.4 Mussel Farming Industry Situation Analysis

The Australian mussel industry is based on the production of whole blue mussels from NSW, Victoria, Tasmania, South Australia and Western Australia and which are marketed in the live chilled form both locally and interstate.

Producers in NSW and Western Australia are able to sell their entire product locally while the other three states rely on NSW, and Sydney in particular, for a large part of their sales. This reliance on a single product focused on one major common market, in Sydney, is a major weaknesses identified in the consultant's situation analysis, on the next page.

Farmers in all states acknowledge the futility of recent price slashing and that the domestic market for live chilled mussels is saturated at current price levels and faces downward price pressures if landings increase from recent levels. Farmers interviewed during the course of the desk research agreed that there was a need to increase demand for the raw mussels for table consumption or as a raw material for processing and value adding.

Many farmers have said that they did not harvest all of the mussels they grow during the year. The production for last year and the industry's predictions for the situation in five years time, are all based on information provided by the major producers in each state and are summarised in TABLE 1.

The greatest strength of the blue mussels is that they are a clean fresh or live product that is quick and easy to cook. These are attributes that are highly sought after in this era of quick and easy light meals. Australian mussels are also cheap and therefore the industry has many opportunities for further growth in the fresh market as well as a number of interesting opportunities for value adding.

SWOT Analysis

STRENGTHS	WEAKNESSES
Fresh, not frozen	Shelf life highly variable
Cheap seafood	Poor quality sold at times
A live/fresh product	Doesn't get a lot of attention /care from distributors
Australian product, preference for local product	Much dearer than NZ product
Grown in 5 states	Industry communication is poor, industry uncoordinated
Clean, no guts, scales or smell	Eastern States market is focused on one product (live) in Sydney
Shellfish is cool/'sexy'	Consumption is restaurant dominated
Low price makes taste testing & promotion very economical	No generic promotion, just local
Well known, but still untouched by many	Mussel industry price cutting
Versatile product for home cooking, quick and easy meals	Well known but still untouched by many
Lots of processing/ new products options	General uncertainty & apprehension about "new" seafood
Great flavour	Almost all companies not asset rich

OPPORTUNITIES	THREATS
Demand for seafood is growing faster than supply growth	Live or chilled blue mussels from New Zealand
Processing machinery and technology available for processing mussels	Most growers don't have funds for processing plants.
Government increasingly supportive of aquaculture	Food poisoning or other public health problems SQAP
Improve practices and standards through a code of practice.	Poor quality product.
Cooperative marketing.	Animal Disease; Parasites, Predators
Wholesalers and retailers believe local consumption can be increased	Apathy
Better collaboration amongst farmers	

6.5 Pricing

Below are typical price profiles in the main trade channels in Sydney and Perth, March 2000 (based on information supplied by farmers).

PERTH

Farmers delivering loose bulk mussels directly to a wide variety of trade customers.

Farmers sell at \$2.50 per kg.

Retailer sells at about \$5.00-6.00 per kg.

Wholesaler sells at about \$3.50 per kg.

Restaurants and cafes sell at \$15 -\$18 for plate of 1kg or less.

SYDNEY

Most of the trade is with 10 kg styrene cases from farmers and distributed via fish wholesalers.

Farmers sell at \$3 per kg

Wholesalers at Pymont resell at \$3.50 per kg

Retailers resell at about \$6.00-7.00 per kg

Secondary wholesalers resell at \$4.50-5.00 to Restaurants

There is also a premium market in Sydney for larger well-graded mussels (from NSW and Tasmania), which operates at a significantly higher price than the mass market depicted above.

TABLE 2. High and Low Supply Periods

State	Peak Supply	Low Supply
NSW	Xmas –Easter	July-Oct
Vic	Sep-Feb	Easter-Aug
Tas	Feb-Sep	Dec-Jan
SA	Jul-October	Feb- March
WA	Jul-Dec	Jan-Feb

6.5.1 Australian Imports and Price Levels

New Zealand is the major exporter of mussels to Australia and the trade is dominated by cooked meat although it is closely followed by whole product and then half shell. The import of other products is very small other than marinated (in bottles/ plastic jars).

TABLE 3. Imported Mussel Products

PRODUCT	1989 (t)		1995 (t)		1999 (t)	
	Fresh	Frozen	Fresh	Frozen	Fresh	Frozen
Whole	162	343	16	767	36	874
Half shell	39	224	4	957	19	582
Meat	150	296	40	635	128	874
Marinated		22		352		262
Total (including others* category)		1,597		2,751		2,848

*This includes smoked, powder in capsule, freeze dried powder and other forms.

It should be noted that the table shows product weight thus the whole shell weight equivalent of 1999 imports into Australia translates to more than 5000 tonnes of whole mussels.

Table 4 shows how aggregate import levels have grown in the past ten years and that there has been a strong shift from fresh to frozen product over the years, where frozen product is now the norm and fresh is unusual. Also of interest is the growth and then decline in the level of imports of marinated products; these products now appear to be losing interest.

The growth in New Zealand green mussel sales has come about with relatively little expenditure on promotion in recent years, principally because New Zealand industry has been targeting Europe, Japan and USA for sales promotion.

TABLE 4. Unit Value FOB of Frozen Imports

Product	1995	1999
Frozen Whole	1.58	1.98 (4.50 for fresh)
Frozen Half shell	3.58	4.68
Frozen Meat	4.31	4.29 (7.11 for fresh)
Marinated	4.40	4.45
Smoked		10.64

One Australian dollar approximately equaled 1.15 NZ for 1999

Promotion in the USA by NZ has been very successful and the USA is now the major market for NZ exports. Supply has not grown as fast as demand and there has been a substantial price rise in mussel

meat and half shell product in the last six months in Australia and this represents good news for the Australian mussel industry; the price rise has been so significant that much of the meat now imported into Australia is the B grade, broken meat or otherwise damaged.

TABLE 5. AUSTRALIAN MUSSEL IMPORTS

	NEW ZEALAND		Other		Total	
	\$,000	t	\$,000	t	\$,000	t
1996/97	6,197	2,348	210	23	6,407	2,371
1997/98	6821	2,333	52	5	6,873	2,338
1998/99	7,975	2,473	22	3	7,997	2,476
1999/00	7,391	2,252	172	32	7,563	2,284

Source: ABARE

6.6 Australian Trade And Consumers' Attitudes

6.6.1 Trade Attitudes

Fishmongers and supermarket operators in Sydney were interviewed on their perceptions and predictions on a range of underutilised and aquaculture products including mussels last year as part of a major study of seafood consumption and retail sales. The fishmongers and supermarket operators are very confident that sales of farmed mussels can be increased, far more so than they were when the National Seafood Consumption Study was undertaken in 1991. However both parties insist that the mussel industry needs to provide promotion and other market support (full details in Ruello & Associates 1999).

The phone and personal interviews conducted this year for the mussel workshop confirmed the widespread positive findings from last years study. Discussions on the mussel trade revealed that most fish wholesalers in Sydney and in Perth, felt that the mussel industry was undermining itself when farmers delivered mussels to restaurateurs for the same price as that charged to wholesalers.

Wholesalers recognised that some farmers wish to sell direct to restaurateurs but that they would be

better served if there were different price levels for the different points in the marketing chain, that is, cheaper prices for wholesalers than for restaurateurs or retailers.

Farmers cannot expect support from seafood wholesalers if they are supplying restaurants at the same price. The wholesalers' margins on mussels are very slim. In fact there is no real profit on mussels at 50c per kilo markup if the wholesaler opens up a styrene case and weighs out a particular order. Even if the case is sold unopened, as is, at the nominal weight, there is little profit compared to other, dearer, seafood.

6.6.2 Consumer Attitudes.

Consumer focus group discussions conducted in Sydney as part of the 1999 Seafood Consumption Study revealed that mussels have a positive image. Whole mussels are commonly seen as a good seafood for dining with friends, more for casual dining rather than trendy or formal dining and the smoked or pickled mussels were seen as an easy, no fuss appetizer for a party or at a restaurant.

More than 59% of the consumers in Sydney and Perth that have tried mussels report that they like them (taste/flavour is the main dislike). Consumption is still mostly in restaurants so there is a vast number of people that can be converted to regular consumers of mussels at home too.

6.7 Processing and Value Adding

Processing and value adding are often used interchangeably although they are not always synonymous, so you should differentiate between the two. It is possible to process seafood and not necessarily add value. Producers can often add value without any processing simply by looking after the product better and achieving a better price through improved quality. The mussel producers who put more effort in the cleaning, grading and distribution of mussels and gain a premium price effectively add value with just elementary processing — some would say without any processing.

At the moment there are several companies processing mussels on a relatively small scale looking at various mussel processing options but details remain commercial in confidence. A number of farmers expressed an interest in processing. A number of issues must be considered. The profitability of these processing opportunities is unknown as an economic analysis was outside the scope of this project.

There are a large number of mussel products that can be produced in Australia and marketed for human consumption if the raw material is available at an attractive price. Some products are listed below. The list is not exhaustive. There is an opportunity for packaged bait that could be explored.

- Frozen raw: bulk (10kg) food service (5kg) and retail pack (1kg),
- Cooked half shell-fresh in bulk, food service and retail pack,

- Cooked meat-fresh in bulk, food service and retail pack,
- Cooked half shell frozen: bulk, food service and retail packs,
- Cooked meat frozen: bulk, food service and retail packs,
- Frozen crumbed blanched meat: food service and retail packs,
- Smoked range, different flavours: food service pack (2kg) and retail (250 g); plastic and glass packaging options for smaller retail packs,
- Simple marinated range different flavour options: food service and retail packs. (Similar to the NZ 375g bottles with their five flavours, classic etc),
- Salad range (sophisticated marinated) with different vegetables options: food service and retail packs; plastic and glass packaging options for smaller retail packs,
- Pasta sauce mixes different flavour options: food service pack (2kg) and retail (250g); plastic and glass packaging options for smaller retail packs,
- Frozen stuffed mussels microwave pack: food service and retail packs,
- Other frozen/microwaveable mussel based meals,
- Canned product range for retail sale eg smoked mussels
- Mussel powders and extracts.

6.7.1 Why Get Into Processing and Value Adding?

Why do farmers want to get into processing and value adding? The following reasons could apply:

- Because the local market for fresh product is too hard/unattractive,
- Because consumers are increasingly demanding “ready to eat” food products,
- Diversify product range and increase market size,

- A product for everyone,
- Because the domestic market is oversupplied,
- Like to get into processing,
- Like the idea of vertical integration ,
- Want to raise the overall profitability of your mussel business.

Farmers need to think hard about this because processing means adding cost through the additional packaging, and storage. This is an issue when compared to fresh whole seafood and the obvious delayed income. There are far greater risks than just farming and selling a fresh whole product. If something goes wrong with the finished product or the product is lost, farmers stand to lose a whole lot more.

Anyone who is thinking of getting into processing because they find the market for live/chilled mussels difficult, should think again because the marketing of processed goods is more costly and generally more competitive than that for raw seafoods.

6.7.2 How to Get Into Processing

Farmers can get into the processing sector by “going it alone” if they have ample financial resources and technical know how to do so, or can access these resources directly. Another option is to consider a joint venture or a cooperative approach with other parties (not necessarily a cooperative registered under the relevant legislation) who can contribute some of the needed resources. By passing the processing on to another party they can concentrate on the growing or farming aspect.

A third option is to invite another party to buy the mussels and convert them into other products and they take the risk and profits/loss from being the processor.

All of the mussel producing states have experienced seafood processing companies that can be approached as potential buyers or prospective partners in a joint venture. Given the high weight/low price of mussels, processing near the production area and shipping of the finished product to distant markets would appear to be more profitable than the alternate option of shipping a heavy raw material to distant factories.

6.7.3 Fresh or Frozen?

As a general rule fresh product is preferred to frozen and gets a premium over frozen product (and carries greater packaging and distribution costs) but the New Zealand frozen products are well established. Australian restaurateurs, retailers and wholesalers are now regularly using frozen

processed product and are happy with it. There is relatively little enthusiasm for the idea of chilled Australian processed mussels from the seafood wholesalers and retailers. Fresh Australian product was seen as too much trouble to handle or not worth the expected higher cost over frozen product (NZ or Australian).

Frozen product would be well received by the seafood trade if it is not seen as too expensive but the risk in opting for frozen product is that it is more difficult to differentiate from the New Zealand product. Fresh gourmet lines for delicatessens, cafes and the better fishmongers may nevertheless be the more successful approach in the long run.

6.7.4 Costs

Costs will depend on the type of product produced but a semi automatic cooking line will probably cost about half a million dollars to have set up and ready to go. Farmers can do it themselves perhaps for less. There is no shortage of equipment from New Zealand or Europe if farmers have the money, second-hand equipment is also available. A simple marinating and manual packing line is inexpensive and can be obtained for less than \$50,000. A relatively small but commercial size batch smoker would cost about \$15,000.

On top of the fixed costs of plant and equipment a processor will have to pay in advance for packaging materials and any other raw materials. Producers must take account of fixed costs for plant and equipment and running costs. As indicated earlier there is considerable cost involved in getting into processed goods including that for the development of the soon to be mandatory food safety programs.

Another cost to consider is promotion. Promotion of new products is essential no matter how good they are. Furthermore promotion of packaged goods is usually far more expensive than that for live /fresh seafood.

6.7.5 Benefits

This will depend on exactly what types of products are produced, the scale of production and how good they are. Profits are basically revenue less costs. But who knows what sales success will be in the marketplace. The bottom line is that farmers should think and plan carefully before they decide to go processing.

6.8 Promotion

6.8.1 Objectives

The first question to answer is: what are the objectives of any promotion? They could include:

- To increase prices?
- To increase consumption?
- To increase demand for live mussels to maintain current and future prices and help to increase prices over the long term?
- Sustain prices during the peak production period?

Its best to look at the objectives in regard to the immediate or short term (this and next year) the medium term (about 5 years) and the long term (about 10 or more years).

6.8.2 Product Types and Market Location

Currently there is no processed product to promote therefore the focus of this section will be on the live-chilled product. In the case of live mussels, consider either the retail or restaurant sectors.

The current business in the retail segment is dominated by “wet fish” or specialist fish outlets as the supermarkets are mostly stocking New Zealand product. The wet fish outlets are probably the best option here given the limited resources of the mussel industry at this time, and the fact that most supermarkets prefer the cheaper, New Zealand product. Producers should increase promotion to supermarkets in selected socio/economic or ethnic areas.

Sydney, Melbourne or Australia?

Sydney is more attractive at the moment given its large population and strong interest in mussels but other capital cities and opportunities for local promotion should not be overlooked or under rated. Brisbane is a particularly interesting area because it is currently under-supplied with Australian mussels, but offsetting this is the added transport costs to such a distant market and the entrenchment of the New Zealand mussel products.

At this time, with live mussel supply exceeding demand, and supply growing steadily, the generic promotion of Australian live-chilled mussels appears very worthwhile given the low price, many attributes of the product and the very positive consumer and trade attitudes described earlier.

Brand and local promotion can also be carried out within a national generic promotion of the Australian blue mussels. Generic and local/brand promotion are not mutually exclusive. It is recommended to continue the local promotions of the past but suggest that they are reinforced and magnified by an umbrella national promotion program supported by all producers.

6.8.3 How to Promote.

Sydney and Melbourne are the two largest population centers and both currently have strong markets for mussels, which can be expanded further via the Catering Trade Show and the Fine Foods Show, which are held for the food trade in both cities every second year. The Tasting Australia Festival in Adelaide biennially is attended by the general public and “foodies” and gets a lot of Australian and international media coverage and is also a very worthwhile avenue for promotion.

Festivals and tourism are inexpensive vehicles for promotion. A Mussel Festival is held at Rockingham in WA to promote the mussel industry to the community at large. This festival has been a huge success. There are other examples around the country that can serve as useful models for profitable promotional exercises.

There are also opportunities to market with other product promotions such as wine.

Promotion is just one of the four marketing P's - product, place, price and promotion. Good product available at the right price and distribution channels ready and willing. This is where many of the seafood industry's promotions have failed in the past. The wholesalers and retailers in the distribution channels were not really involved in the program or there were product shortages during the program.

6.8.4 Promotional Messages

The messages to consumers should include:

- Clean shellfish,
- Tasty,
- Inexpensive,
- Versatile, quick & easy to cook,
- Fresh Australian,
- Nutritious - lots of poly-unsaturated fatty acids),
- Available all year round.

6.8.5 Cooking Demonstrations and Tastings.

Cooking demonstrations and tastings are a very cost effective way of demonstrating how quick and easy and tasty mussels are. It is important to have a competent, enthusiastic person who can do a good job of the demonstration (not all demonstrators are naturally good). Have an appropriate leaflet ready for the consumers or the trade as the case may be.

6.8.6 Chilli Mussels

Based on the production and sales figures for WA blue mussels it appears that Perth residents have the nation's highest per capita blue mussel consumption. Research reveals that much of the success of the mussel industry has been built on the popularity of an inexpensive dish of chilli mussels in many cafes and restaurants.

The reasons behind this appear to be based on relative prices and restaurant profits. Restaurants in Perth can buy live local mussels for about \$2.50 per kilogram (and sometimes even cheaper) and charge about \$15 to \$18 for a plate of mussels cooked in a chili flavoured tomato stock sauce. With no more than \$2.50 of shellfish on the plate the restaurateur is delighted with the extra high profit margin (raw material costs are commonly budgeted at about a third of the dishes selling point) and the consumer is pleased with a seemingly cheap seafood dish.

Glenn Dibbin quite sensibly suggested at the Melbourne meeting that the mussel industry should find a willing partner to establish a model chilli mussel café in Sydney, Melbourne etc.

The high per capita consumption of green mussels in Auckland New Zealand is also price related, although it was founded on home consumption rather than restaurant use. Mussels have long been popular with the Maori people and remain a cheap shellfish and very popular today with Maori, the newer Pacific Island communities and others living in Auckland.

6.8.7 Marketing Channel Support

The marketing of mussels by farmers is highly variable, ranging from good to disorderly. Most farmers just sell their product with little attention to packaging, the place of sale, or promotion. Newcomers have "bought" market share by undercutting the price offered by more established producers or those offering better service or product.

The marketing of mussels is also disorderly in that size grading is not always practiced. No uniform size grades are in use and many farmers are seeking the same price from retailers, restaurateurs and wholesalers and thereby create some conflict in the seafood marketing channels, and yet some farmers wonder why they get little support from most wholesalers.

Nick Ruello believes the development of the mussel industry would be better served if the farmers agreed on a Code of Practice for post harvest handling (discussed below) and had different price

levels according to the position in the marketing chain rather than just the volume of sale. Hence each individual farmer would have a lower price for a wholesaler than that for a retailer or restaurateur. (He is not suggesting that farmers get together to fix prices that would be contrary to Competition regulations). The support of fish wholesalers, and others in the marketing chain, is needed for any effective national promotion of mussels for in home consumption.

6.8.8 Promotion Costs

There is no magic figure on what sum should be spent on promotion. It is worthwhile noting however that most businesses allocate several percent of turnover each year for promotion.

Some observations on costs are presented here for consideration. About ten thousand dollars plus the cost of any consumables (leaflets and mussels) would be a minimum figure for a trade show stand. Farmers should take advantage of any opportunity for free local and national publicity on mussels. Be ready and be quick.

Develop good relations in the community and with the local and state media so that there is ongoing support from the community and the media in any time of need.

Look for opportunities for cross promotions and joint promotions to save on costs e.g. with restaurants, wine companies or complementary products such as garlic, tomato sauce, chili etc that are used with mussels.

Recommendations for a \$50,000 promotional budget

Following a specific request at the Melbourne Meeting for suggestions for generic promotion Nick offers the following \$50,000 program for consideration.

Project :Australian Mussel Industry Promotion Program

Objectives: Raise community and trade awareness and stimulate demand for Australian blue mussels.

Principal Activity: Launch the Code of Practice and a National Mussel Week with the food media and the seafood trade in Sydney and Melbourne.

This generic industry wide promotion will assist in raising demand for all size ranges of live/chilled mussels (and any new processed products) across the nation because the key food magazine editors and writers are based in Sydney. Their editorial reaches and influences consumers and the restaurant and catering trade around the country. This type of media and trade function will have widespread

impact and should help to raise demand for restaurant and home use.

If more funds are available then try a concurrent media launch in other cities. Alternatively use the material developed for the Sydney event and run a media launch yourself at a local level.

It is recommend that the mussel industry arrange for a Mussel Week each year to draw national attention to the industry and capitalize on the work of the first media launch.

7.0 CODE OF PRACTICE

The development of a Code of Practice for post harvest handling of mussels is needed given the fast growing status and widely differing handling and marketing practices in the industry today and it is strongly recommended to the industry.

The following was recommended:

- Product labeling with product name, packers name and date. (Farmers are not complying with the spirit/letter of the law if you do not put a label on in response to customer's request).
- Nominal net weight. The industry should agree on an overpack weight to counter the weight loss due to escape of water from the mussels. The figure of 10% was recommended by N Ruello.
- Product specifications: Uniform name: preferably blue, not black. N Ruello also suggested using the word farmed rather than the word cultured in order to gain uniformity and reduce confusion.
- Shell size and cleanliness (minimal tube worm and fouling)

Uniform size grades and names

For example Jumbo 80+ mm, large 70-80. standard 60-70 cocktail <60 or whatever size or weight industry deems appropriate (again to reduce confusion over size). Agreement on size grading and names would allow for a more competitive playing field as all farmers would be able to quote a price for a defined size grade or for product not graded.

Condition index (volume or meat condition?) Any other matters which affect public health or marketing

Nick recommended the industry to develop an information sheet for customers new and old. It was important to assist them to pass on safe, good quality mussels to consumers. This should include the following information, (the actual wording can be altered as needed).

- Blue mussels are sold chilled, mostly alive
- Do not remove packers label, this is needed for product traceback and recall.

- Keep refrigerated for maximum weight, flavour and shelf life
- Note they only lose water, not meat.
- Shelf life is about 1 week if kept refrigerated at about 5°C. It is important to drain the water off from containers for longer shelf life and minimum odours.
- Mussels do not like bright light, heat or wind so take care with retail displays.

8.0 RESEARCH AND DEVELOPMENT PLAN

The Blue Mussel industry has adopted an outcome, output and input model in developing this plan. This model requires stakeholders to identify outcomes as the first step in the planning process. By identifying where the industry want to be in the future the plan has identified the key programs that will deliver the outputs that will realise these outcomes.

Outcomes are the specific directions that industry has identified need to be achieved to secure its future.

Outputs are the consequences, results and products of the research undertaken.

Inputs are resources — in the form of people, expertise, materials, energy, facilities and funds.

Strategies are groupings of activities that produce the outputs required to achieve planned outcomes.

Mission

To produce premium quality blue mussels for domestic and overseas consumers in and ecologically and profitable manner.

TABLE 6. RESEARCH AND DEVELOPMENT PROGRAMME

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Quality Assurance	A safe and consistent product that exceeds market requirements	<ul style="list-style-type: none"> • Development of a national QA Manual • A generic certification manual • Code of practice 	<ul style="list-style-type: none"> • Shelf life • tastes (sweetness test) • packaging - type, temp control and chilling rate, and integrity • product safety • certification methods (eg SQF 2000, ISO 9000) and manual • Training to implement the code of practice • Needs to include all blue mussel product and not just farmed product (wild harvest) 	<ul style="list-style-type: none"> • Tas - 10 • Vic - 25 • NSW - 30 • SA - 20 • WA - 10 <p>National - 19 (2)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Post Harvest	<ul style="list-style-type: none"> • Best quality and freshness of product • New products that meet customer need and improve product diversification and industry profitability 	<ul style="list-style-type: none"> • Develop new products • Develop fact sheets on product handling guidelines • Trade manual on product handling • Develop knowledge on what causes stress in blue mussels during transport • Develop knowledge and economic assessment on improved freight methods 	<ul style="list-style-type: none"> • temperature for shelf life • Identification of new product types • developing product grading • development of convenient and cost effective uniform condition index • HACCP - plan as generic model for industry risk assessment 	<ul style="list-style-type: none"> • Tas - 20 • Vic - 12 • NSW - 10 • SA - 5 • WA - 20 <p>National - 13 (4)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
People Development	<ul style="list-style-type: none"> Personnel with a technical understanding of the industry, market awareness, multi skilled and acknowledged as industry leaders An environment of on-going education that meets industry needs and changing environment 	<ul style="list-style-type: none"> A mechanism for sharing industry knowledge An extension strategy Annual workshop A training program for trade buyers on product handling and promotion Document new and developing technologies for improved farm practices 	<ul style="list-style-type: none"> hold a biennial meeting resourcing Aquafest (Hobart Oct 2000) Undertake overseas trade and technology visits encourage immigration to select migrants with skills in blue mussel farming identifying leaders and ensuring they nominate for leadership training eg Australian Rural Leadership Program 	<ul style="list-style-type: none"> Tas - 10 Vic - 3 NSW - 20 SA - 5 WA - 5 <p>National - 8 (6)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Marketing	A marketing and promotion strategy that delivers economic benefits to the industry and increases the consumption and price for blue mussel products	<ul style="list-style-type: none"> • A national marketing strategy • A national promotion strategy • A report on new market opportunities for blue mussel processed product • Develop a process for product specification and use of correct marketing names 	<ul style="list-style-type: none"> • implementation • resourcing • The industry can be either a local based supplier that would possibly supply 3-5,000 tonnes of product by 2005 - OR - considerably larger if effort is put into marketing • linkages with other products (eg. wine etc) and other aquaculture products • Development of annual schedule of activities - including presentations at trade shows, aquaculture conferences, and seafood fairs • Product development • Promotion of products • Place and location - understand market demographics • Price - develop agreement to develop a pricing framework for wholesalers and retail 	<ul style="list-style-type: none"> • Tas - 30 • Vic - 28 • NSW - - • SA - 20 • WA - 30 <p>National - 21 (1)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Production systems, husbandry and technology	New farming methods that reduce production costs, improve product quality and ensure a sustainable industry for future generations	<ul style="list-style-type: none"> • Improved farming technologies • Increased knowledge on best practice farming methods • Development of technologies for farming blue mussels in exposed open sites • Assessment of hatchery blue mussel spat as a viable alternative 	<ul style="list-style-type: none"> • limited blue mussel research expertise in Australia • majority of interest is in WA • Develop stock inventory computer system • Lack of sites in embayments due to public perception and amenity value - means that exposed sites offer one of the few opportunities for expansion • Development of industrial blue mussel farming will require considerable advances in adopting technology • Develop a benchmarking system so industry can assess performance on an economic and environmental basis • Blue mussel market size may mean that product diversification is a method to maintain growth (eg scallops, Japanese pearl oyster, sponges, oysters etc) 	<ul style="list-style-type: none"> • Tas - - • Vic - 2 • NSW - - • SA - - • WA - 20 <p>National - 4 (8)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Strategic Planning	A unified direction for industry at a regional, state and national level that acknowledges opportunity for joint benefits and implements these	<p>Develop a planning framework that incorporates a strong industry ownership</p> <p>Establish an industry vision and goals that are objectively measured to assess performance</p>	<ul style="list-style-type: none"> • Need to establish effective communication mechanisms in each state • Commitment • Capability to develop a unified vision that is acceptable to majority of industry 	<ul style="list-style-type: none"> • Tas - 10 • Vic - 23 • NSW - 10 • SA - 20 • WA - 5 <p>National - 14 (3)</p>
Health	Best practices that result in healthier blue mussels and minimise exotic introductions	<ul style="list-style-type: none"> • Preventative disease manual • Emergency response plan • Methods for reducing risk of exotic introduction and translocation 	<ul style="list-style-type: none"> • Unexplained mortality of blue mussels in Tasmania • Understand etiology and ecology of major pest and fouling organisms (eg flatworm, barnacles etc) 	<ul style="list-style-type: none"> • Tas - 10 • Vic - 3 • NSW - 10 • SA - 10 • WA - 5 <p>National - 8 (6)</p>

STRATEGY	OUTCOMES	OUTPUTS	ISSUES	PRIORITY *
Communication	An effective communication strategy that provides for intra and inter industry information and extension	<ul style="list-style-type: none"> • Develop a national WEB site • Workshops • Extension personnel • Data base on best practice 	<ul style="list-style-type: none"> • Identify media format most appropriate for industry • Establish a committee responsible for reviewing publications and supporting extension activities 	<ul style="list-style-type: none"> • Tas - 10 • Vic - 5 • NSW - 20 • SA - 20 • WA - 5 National - 12 (5)

* The priority was determined by asking attendees what they would spend 100 points on across the whole of chain. There were three Victorian representatives so there scores were averaged. The national score is the average of the 5 producing states.

TABLE 7. PRIORITISATION OF RESEARCH AND DEVELOPMENT INITIATIVES

%	TAS	NSW	SA	WA	Total s
1 QA	10	30	20	10	70
2 Post Harvest	20	10	5	20	55
3 People Development	10	20	5	5	40
4 Marketing	30	-	20	30	80
5 Production Systems Husbandry/Technology	-	-	-	20	20
6 Strategic Planning	10	10	20	5	45
7 Health	10	10	10	5	35
8 Communication	10	20	20	5	55

8.1 Research And Development Outcomes

8.1.1 Code of Practice for Food Quality

It was proposed to apply to the FRDC to develop a Code of Practice that would look at post harvest handling. It was agreed Nick Ruello complete the application. The proposed budget would be \$25K with \$5K from industry.

A working group was appointed comprising: Glenn Dibbin, Andy Dyer, Michael Bamford, David Harris, Graham Schroter.

8.1.2 Blue Mussel Industry Promotion Strategy

A major outcome of the meeting was to develop a promotion strategy. It was agreed that this could be part of the project to develop the Code of Practice. There is a clear need for a detailed promotion strategy, both local and Australia-wide.

A few suggestions were made to assist in the development of the framework for this project. A suggested budget has been provided.

It was agreed that promotion of mussels is important to overcome a reluctance by non-ethnic people to cook and serve them.

Components of a promotion strategy to include:

- Launch of CoP and Mussel Week. Budget:

Code of Practice	\$15,000
Sydney Media launch	25,000

Melbourne Media Launch	<u>10,000</u>
Total	<u>\$50,000</u>

- Fine food show, catering at \$25,000 per year
- Tasting Australia – Adelaide
- The Sydney Oyster launch
- Mussel Launch each year
- Market research needs to be done and incorporated into the strategy.
- Restaurants should help fund promotion
- Promote chilli mussels in Perth concept through restaurants
- Involve the National Seafood Centre
- Launch Code of Practice in Year one - Blue mussel week (link with other product eg Guinness)
- Sydney media event and launch (\$25K)
- Melbourne (\$10K)
- Fine foods/catering show - Sydney/Melbourne (\$25K per year)
- Tasting Australia – Adelaide
- Develop product info leaflet for trade, Consumers and restaurant leaflet
- Include regional efforts (eg. link in with other seafood event - seafood festivals, from the sea to the vine (SA) etc)
- Need to develop a promotion plan that has national and local components.

These promotional activities have to be linked in to the production schedule provided by farmers.

TABLE 8. Mussel Production Periods for Each State.

State	Best time	Gap in production
New South Wales	Christmas- Easter	July – October
Victoria	September - February (bitter August)	Easter – August
Western Australia	July – December	January-February
South Australia	November – March	Autumn and late winter and early Spring
Tasmania	February – September	December – January

8.1.3. Financial Resources

The question was asked how the money would be raised to finance these initiatives. It was agreed the only way would be to introduce a national levy.

8.1.4 Performance Indicators

These included:

- Increased production
- Improved prices
- Increased consumption
- Increased profitability
- Improved quality
- Improved meat recovery and agreed condition index
- National agreement on a code of practice for industry
- Biennial review of the R&D Plan.

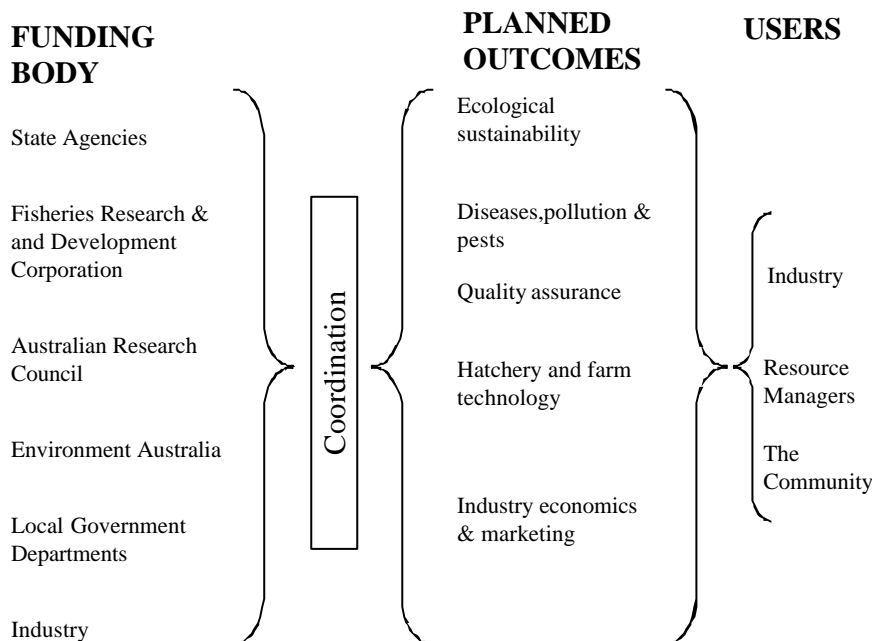
8.2. Implementing The Plan

It is important to ensure that plans and management processes are kept “fine-tuned” to maximum effectiveness and efficiency by adjusting them to changes in operating environments. This will enable activities to be continually focused on objectives to ensure that resources, including the allocation and re-allocation of funding, are used efficiently.

The Australian blue mussel industry recognises that the success of this plan will largely depend on its commitment to:

- implementing the plan’s strategic elements;
- continually focusing on the best outcomes for blue mussel research and, by regularly evaluating and reviewing the plan, ensuring that all strategic elements reflect that focus;
- ascertaining emerging issues and adapting quickly to them and to other changes in the Blue mussel industry’s business environment; and
- securing and allocating resources to achieve the industries mission for R&D.

The over-riding strategy proposed for this R&D Plan is cooperation and collaboration. It is clear that there are many agencies whose responsibilities include blue mussel aquaculture, many agencies who might fund research, and many stakeholders who will use the results (directly or indirectly). The complexity of possible relationships is illustrated in the following figure. Any of the agencies (not a comprehensive list) in the left-hand column (and some of those entries are themselves collective) may be interested in several, or most, of the planned outcomes in the central column. In turn, various stakeholders (right-hand column) are concerned with multiple research topics.



In fact, however, a number of the agencies and stakeholders have common interests in particular topics, and their funds may be limited so it may be necessary to pool their resources to accomplish their respective goals. The key to success is a coordinating agent of some kind, indicated by the rectangle in the above figure, who will bring together the responsibilities, interests, and funding capacities of the players so that they can effectively address the priority research topics, without dissipating their resources. For the purpose of the implementation of this plan a meeting of producers will be held every two years to fulfil this coordination role.

8.3. Management Of The Plan

This is a dynamic plan that will be kept under review to determine:

- the extent to which planned outcomes have been met, and
- whether returns on investment of resources can be enhanced through better integration or through supplementary or complementary funding.

The national industry will manage the strategic plan and will formally review it every two years. It will:

- ensure that the plan is effectively monitored by reference to achievements against planned outcomes,
- ensure that technical and scientific expertise is utilised for quality control,
- monitor project outputs so that they are as relevant as possible to the plan's strategic directions, and
- encourage the transfer and adoption of results of projects.

8.4. Communicating The Plan

The plan will be communicated through the workshops held by the industry and the Aquaculture Yearbook. Industry Magazines will be encouraged to promote the existence of the plan. It will be reviewed at future meetings and updated.

APPENDIX 1. MUSSEL WORKSHOP ATTENDEES AND CONTACTS FOR THE VARIOUS STATES

VICTORIA

LANCE WIFFEN
SEA BOUNTY
PO BOX 31
PORT ARLINGTON VIC 3223

Tel: (03) 5257 1343
Fax: (03) 5257 1598
Mob: 0412 520 842

LOUIS VORSTEMANN
VIC AQUACULTURE COUNCIL
PO BOX 3027
SOUTH MELBOURNE VIC 3205

Tel: (03) 9372 5666

JOHN MERCER
MARINE FRESHWATER RESOURCES INSTITUTE
NATURAL RESOURCES AND ENVIRONMENT
PO BOX 114
QUEENSCLIFF VIC 3225

Tel: (03) 5258 0111
Fax: (03)5258 0270
Mob: 0407 540 562

Email: john.mercer@nre.vic.gov.au

ALEX DRYSDALE
MARROSE CULTURED MUSSELS
155 STEIGLITZ ROAD
MOORABOOL VIC 3221

Tel/Fax: (03) 5276 1429
Mob: 0417 050 617

SHERYL RAINES
UNITED MUSSEL GROWERS
PO BOX 76
PORTARLINGTON VIC 3223

Tel: (03) 5259 1024
Fax: (03) 5259 1116
Mob: 0409 591 024

WESTERN AUSTRALIA

GLENN DIBBIN –

Mob: 0411 22 4682

BLUE LAGOON MUSSELS

Hm: (08) 9434 6118

10 TUNIS PLACE

COOGEE WA 6166

Email: glenn@mail.networx.net.au

SOUTH AUSTRALIA

BRENTON HAGE

26 SMITH STREET

PORT LINCOLN SA 5606

ANDY DYER – PRESIDENT

Tel: (08) 8682 3065

SA MUSSEL GROWERS ASSOC

PO BOX 456

PORT LINCOLN SA 5606

DAVE HOCKADAY

Tel/F: (08) 8682 4816

WEST COAST ENTERPRISES

PO BOX 456

PORT LINCOLN SA 5606

TANIA KILEY

Tel: (08) 8683 2534

PO BOX 2023

Fax: (08) 8683 2520

PORT LINCOLN SA 5606

Mob: 0417 852 418

NEW SOUTH WALES

MIKE BAMFORD

Tel: (06) 2496 1116

EDEN SHELLFISH

35 COCORA STREET

EDEN NSW 2551

PETER MORRIS

Tel: (02) 6495 9872

8 ENDEAVOUR COURT

TURA BEACH NSW 2548

Email: morrisp@acr.net.au

CARL POSSELTON

Tel: (02) 6495 1288

PO BOX 98

MERIMBULA NSW 2548

NICK RUELLO

Tel: (02) 9817 4652

4 SHERWIN STREET

Fax: (02) 9879 6501

HENLEY NSW 2111

Mob: 0418 210 031

TASMANIA

GRAHAM SCHROTER

Mobile: 0418 810 176

PO BOX 111

Tel: (03) 6278 9013

NEWTOWN, TAS 7008

Email: schrotas@telstraecasy.com.au

PAUL REECE

Mobile: 0418 125 624

PO BOX 570

KINGSTON TAS 7051

JEFF WHAYMAN

Tel(hm): (03)6278 9013

GREAT BAY MUSSELS

Mobile: 0417 592 170

PO BOX 289

KETTERING TAS 7155

ACT

PATRICK HONE

Tel: (02) 6285 0400

FRDC

Fax: (02) 6285 4421

PO BOX 222

Email: patrick.hone@frdc.com.au

DEAKIN WEST ACT 2600

APPENDIX 2. REFERENCES

Collins Anderson, 1999. Black South Australian Mussels Marketing Plan. Short and medium term marketing plan and Long term marketing plan.

Lightfoot RC and M S O'Connor, 1986. Marketing survey for cultured blue mussels *Mytilus edulis planulatus*. Marine Fisheries Report 9, Department of Conservation Forests and Lands.

Ruello & Associates, 1999. A study of the retail sale and consumption of seafood in Sydney. FRDC Project Report 98/345 Vol 1 and 2.

APPENDIX 3. PAST AND CURRENT RESEARCH LIST

Fisheries Research & Development Corporation:

1999/378 A workshop to address the cooperative development of the Australian mussel farming industry - Aquaculture Council of Western Australia (Inc)

1999/229 A quantitative assessment of the environmental impacts of mussel aquaculture on seagrasses - International Risk Consultants

1996/264 Dynamics of harmful *Rhizosolenia* cf. *chunii* blooms in Port Phillip Bay – Victorian Department of Natural Resources and Environment

1992/115 Evaluation of mussel spat catching areas and techniques and oceanic longline farming techniques in Twofold Bay Eden - NSW Cultured Mussel Growers Association

1989/056 New methods - mussel polyculture - University of New South Wales

1985/037 New product development of scallops and mussels - Royal Melbourne Institute of Technology

1984/002 Marketing survey for cultured blue mussels - Victorian Department of Natural Resources and Environment

1972/025 Feasibility study of raft culture of the edible mussel on the east coast of Australia - University of New South Wales

APPENDIX 4. WORKSHOP AGENDA

Day 1

- 0900 Registration
- 0930 Welcome & Introduction by Simon Bennison
- 0940 A review of the Industry, past present and future production information by each state
- 1030 A national approach to developing a strategic and R&D plan for the Industry by Patrick Hone (FRDC)
- 1100 Marketing/Consumption Strategy by Nick Ruello
- 1140 Opportunities for cooperative processing by Brian Leahy, Tassea
- 1230 Lunch
- 1330 Quality Assurance by each state
- 1420 Workshop session on Code of Practice
- 1440 Workshop session on how to promote consumption
- 1600 Developing a strategy for Research
- 1630 Workshop session identifying national industry issues
- 1700 Evaluation of the need for a Quality Assurance Strategy

Day 2

- 0900 Workshop Development Issues
- 1000 Finalising Research Strategy
- 1100 Workshop to finalise communication strategy
- 1130 Workshop finalising QA strategy
- 1200 Further issues affecting the networking of a national industry
- 1300 Conclusion
- Representation
- Future meetings

APPENDIX 5. OVERVIEW OF THE BLUE MUSSEL INDUSTRY IN AUSTRALIA BY PARTICIPANTS AT THE WORKSHOP

Welcome & Introduction by Simon Bennison

After backgrounding participants on the events leading up to the workshop, Simon Bennison highlighted the pressures faced by the Mussel Industry as a consequence of substantial anticipated increases in production by all states over the next five years.

Mike Bamford – New South Wales

Mike Burford related how the industry in New South Wales started with the extensive knowledge and enthusiasm of Professor McIntyre in the 1970's, with a grant to study the industry around Australia. He took over his McIntyre's raft in the mid-seventies and proceeded on an annual research permit until the granting of a lease in 1978.

He indicated that the long gestation period for the industry in NSW was caused by delays in the allocation of leases. Initially he used raft culture, which was easy to work. Blue mussel grew well, had good meat weight and growth could be regulated by controlling where on the raft they were hung.

Developed a market in Sydney, with Doyles Restaurant as the first and principal customer. Aimed for spring cup (racing) for start of the season. There was a need to assess the product before harvesting. By Christmas the product was good, with summer currents off NSW coast providing food. The best product is around March/April (in time for Easter). Can hold good product until June and developed a marketing strategy around those parameters. Now doing around 8 tonnes for the local market and the winter season.

In 1990 obtained a container of de-filibrated light blue propylene rope - 14-16 mm. chopped strand from the UK. With current exchange rate of Sterling this is now too costly. Very good production rope. Still in service, but with import duty added means that now do not buy.

Spat-fall in Eden is reliable in spring, but Flat Worm gave some this year (not normally a problem. Are using Christmas tree rope this year in new 6 ha site, but this is causing a lot of problems with parasites. We agreed to use of this system to overcome licensing requirements (bureaucracy). Became very fouled with mud etc, so the season has been a drought.

Limited in space, originally had 7 ha (for raft culture) - new 6 Ha. site (15-year lease - for long line only). The rafts are expensive with high maintenance costs.

The association has 2 ha for R&D. Trials with Japanese oysters look good.

Q - you get some of the highest prices, what is your experience.

A. We originally started with \$4, now \$5 landed in Sydney (comprises Freight fish boxes of 33 Kg which includes 3 kg allowance for water). We have had good experience with weight control, rewatering everything before sending to market. Under the privatisation of Sydney fish Market they will take control of the product once it hits the market floor. We also send direct to market and pay 4% for handling to Sydney FM, plus \$0.25 per kilo for freight. Do not have trouble in spawning out during the re-watering. If they are going to spawn out this can happen in any part of the process. The re-watering does condition them up. Gives you a chance to re-check the product for empty shells prior to sending them off to market. As part of marketing, we discuss matters with buyers and see what product is about. We have 15.5 Ha. in total with 5 long-lines (3 fully stocked and 2 in trials) and have 2 R&D lines as part of the association to trial production. We have had considerable trouble with public perception.

Q What is the potential of the industry in NSW?

A Enormous, but will not be able to get access. Part of the plan is for access to 37.5 Ha. By Bob Martin on a 15 by 15 year lease, we are not sure if he will get it. Temp is 9° to 26°, normal range is 12° and 24°, the optimum range is 16° to 19°. Current production in NSW is 40 tonnes p.a., but our objective is 100 tonnes with an additional 6 Ha. under production.

Q What is the market for half shell etc. in restaurants?

A - In our market the answer is whole product mainly for Italian cooking.

Q After harvest, de-clumping etc., do you put them back in the water for re-watering?

A Yes, this is covered as part of our quality assurance; it has to be in the same area as your product's origin.

(Harris commented that in Victoria it was found that chilling after processing is better than re-watering. They found that re-watering results in subsequent rapid water loss.)

Q Does everyone over- pack

A Yes, it seems a majority do this.

Harris: in Victoria sold on the number of blue mussels (25 -35 /kg because we sell to customers direct. Customers are interested in meal portions.

Mike: we do the same stating the numbers per kilo, at 20 - 24/kg.

Q Jervis Bay?

A Pending planning approvals for Marine Park.

Graham Schroter - Tasmania

We have considerable lease space for Aquaculture in Tasmania, mostly for oyster and salmon production. Some of these leases, particularly those used for salmon are good for blue mussel spat collection. We have good supplies of spat now. Also have a hatchery providing spat.

Of 1,000's of hectares available, only 50 are suitable for mussel production. Production is required for 12 months, about 250 tonnes of production - need to allow for 2 crops because of timing of new spat. New sites are available, but they are often too rough.

Could quadruple production if we could get access to available space, but we compete with other sectors. Estimate for 2002 is 600 tonnes. There is enough spat production to achieve this target. A good natural spat allows this to off-set.

There are areas that are affected by dinoflagellates - but class this as unavailable. We only sock to what we can sell; this year and last we dumped spat because we did not have enough demand. We could double production per ha. and with an extra 50 Ha. - we would have the production potential of 1000 tonnes

Q What are the options for the Tribuna scallop farm?

A Problems with fish (bream etc) and rough waters. Do not consider that this is an option.

Most of the production areas do not get over-catch. Spat collection is different between production sites

Temp 8 -20° (have had 23°); best conditioning is winter, 8-15° best is 10 -12° in spring.

New farms in the north have not been considered in these figures, they may have health problems. In the last 18 months they have had losses of up to 20%; something attacking the product on the ropes. Government cannot tell what it is, and we are keen to find out. Do not know if it is a disease. We have found a parasite, but we do not know if this is the cause. We thought we were safe, farming a product that had been there for such a long time. During the winter months it attacks the larger blue mussels. We lost up to 2 tonnes per line from lines that would normally produce 6 tonnes.

David Harris - Victoria

Industry peaked in 80s at 700 tonnes, which is more than we report as production now. We used to compete with dredged blue mussels at \$10 per bag, but dredging was stopped in 1977. We also competed with mussels harvested from Lakes Entrance.

In 1987 we experienced our first bloom of bitter algae, *Rhizosolenia cf. chunii* (see FRDC final report 96/264), which causes a bad bitter taste. It has now happened four times and has dominated the industry, including policy-making by Fisheries Victoria.

The bitterness has declined each time, but even the shellfish produced by Rankin in salt fields were bitter, and scallops were also affected. We had to dump the whole crop the first time, the taste lasted for 24 hrs in the mouth. By December the bitterness was gone, and since then have been able to hold stock until taste disappears. The blooms are losing their impact and we can now predict their occurrence. In 1996 sand was pumped onto a beach and caused a bloom, but two weeks later it had disappeared. It is now a manageable problem and after the 1987 bloom, production has started to rise again.

535 tonnes of production is reported currently. Sheryl Raines commented that she felt that local sales are not recorded and production could be as high as 700 tonnes.

David Harris reported that 25% of his production was sold retail.

Conservation Department have almost completed an assessment on sites for aquaculture.

130 Ha. at Grassy Point	Potential	115 tonnes
220 Ha. at Clifton Springs	Potential	220 tonnes
440 Ha. at Flinders	Potential	440 tonnes
25 Ha. at Beaumaris (spat)	Potential	25 tonnes
300 Ha. at Mount Martha	Potential	300 tonnes
400 Ha. at Dromana	<u>Potential</u>	<u>400 tonnes</u>
Total Potential		1,500 tonnes

Only two species are allowed to be farmed, blue mussel and abalone. Already there are zones allocated for Abalone. Only 186 Ha. are currently in production. Problem at the moment is that we cannot increase the current market - similar to NZ when they were at 3,000 tonnes now at 60,000 tonnes. We need new markets

Price in 1982 was about \$2/kg. We did not want to join the same market and the Growers' Association asked for a limit on production. We talked with existing buyers and determined exactly what they wanted and now average \$5/kg, going from 11 tonnes production in 1992 to 60 tonnes today.

Always an over-supply in summer, but now use safety socks to hold blue mussels to keep production for later in the Autumn period. The beauty of Victoria is that we can supply blue mussels all year round. This has helped keep price more stable. Main price pressure is the December/January period when most producers want to clear their stocks.

Q Do you see the farmers restricting themselves to 700 tonnes?

A I believe there is market for many tonnes of product, but the market needs developing. Processing developments will allow farmers to reduce the impact of bitter taste and will allow farmers to harvest larger quantities.

There are 27 license holders in Victoria, and there are 12 active marketing entities with about 20 farmers in total. In Tasmania 80% is produced by 20% of growers. In Victoria, 90% is produced by one company with 10 shareholders.

This year spat is limiting - had a lot fall-off.

Temp 14 -24, optimum winter is the best time, algae is the determining factor.

Glenn Dibbin - WA

Cockburn sound is the main producing area, but also a main recreation area. Originally WA production was 300 to 400 tonnes, taken by divers. Originally an area of 15 Ha. was allocated by the Harbour Master on a 15-year lease, but the area was returned as unsuited. We now have five-year leases until this year, after which they revert to 1-year leases (at the grain loading terminal).

New 52 Ha. Lease from 7 to 15 m deep (Refer Appendices).

There are concerns with water quality, eg TBT, but this was not considered a danger to human health. There is a change in attitude by the Navy with regard to using defence waters for Aquaculture.

David Harris commented that there is concern about the destruction of seagrass under mussel lines, but where is the evidence?

Pearl farmers pay \$135 per sq. nautical mile, whilst mussel growers are asked to pay \$600 - \$700 per ha. plus other charges. Water quality is good, but rain is a problem and the grain-loading terminal attracts pigeons.

We test regularly. The area is one of the most intensively monitored waters in the world, and the sounds have been cleaned up substantially.

Prices in WA are \$2.50 to \$3.00 per kilo, sometimes only \$1.50. The market is for small mussels and the best taste is in the 30 – 40 mm size range in March and April.

Water temperature is 15° to 23°.

South Australia – Tanya Kiley

1998/99 production 84 tonnes from Boston Bay and Broba Bay.

400 Ha. At Kangaroo island has gone to oyster production. On the Lower Eyre Peninsula 15 licences are at various stages of development. Most are 'experimental licences' on 3-5 Ha. Will go to approx. 10ha, no lease tenure except 3 or 4 who have a 40 year lease.

Currently under production approx 60 ha, producing 84 tonnes of mussels. The forecast for the industry is 1,000 tonnes from new players, but realistically 100 – 120 tonnes during the next two years.

There are 200ha available north of Kangaroo Island. More areas in other remote parts. Management plans are being reviewed at the moment.

Temperature range is 12° – 23° in Boston Bay. Prices range from \$2.50 to \$3.50 per kilo, retailing at \$4.00 per kilo.

Q Will production reach 500 tonnes in 2005?

A The market is not there. There is plenty of water available. SA uses low-density lines, all small young producers, the big players have moved out.

Patrick Hone suggested that freight from Kangaroo Island is too high and there are other problems such as a small market of 1,000,000 people, storage problems, etc. Oysters are easier, more money.

Consumption is driven by cultural preferences in food, such as Greek and Italian.

APPENDIX 6. FISHERIES RESEARCH AND DEVELOPMENT CORPORATION (FRDC)

The FRDC's three-fold vision is as follows:

For the industry

An Australian fishing industry in which:

- the commercial, recreational and traditional sectors are forward-looking, innovative and socially resilient, and use fisheries natural resources in an ecologically sustainable way; and
- the commercial sector is profitable and internationally competitive.

For the community

A community that is well-informed about, and supportive of, the fishing industry and the natural resources on which it depends.

For fisheries research

An excellent fisheries research sector that is forward-looking, innovative and responsive in supporting the industry and the community.

Mission

The FRDC's mission is to increase economic and social benefits for the fishing industry and the people of Australia, through planned investment in research and development, in an ecologically sustainable framework.

Key features of the Fisheries R&D Corporation

- The rural R&D Corporations (RDCs) are not research grant agencies; the PIERD Act requires them to treat R&D as an investment in economic, environmental and social benefits to their respective industries and to the people of Australia.
- The RDCs are empowered to intervene anywhere in the innovation process — not just in traditional research.
- RDCs are required to focus their activities around strategic R&D plans and annual operational plans that must be approved at Ministerial level.
- RDCs are fully accountable to their major stakeholders and to the wider community.
- Because of the tight focus on achieving outcomes, RDCs emphasise brokering active collaboration between researchers, and between researchers, resource managers and primary industry interests.
- RDCs apply significant resources to the challenging task of translating research outputs into practical outcomes.

In addition to their collaboration on specific R&D matters, RDCs work closely together on policy issues to increase the effectiveness and efficiency of the national application of rural R&D.