

AQUACULTURE DEVELOPMENT COUNCIL



PROCEEDINGS AND OUTCOME OF THE INDUSTRY DEVELOPMENT WORKSHOP FOR THE WESTERN AUSTRALIAN MARRON AQUACULTURE INDUSTRY

September 2005

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industries – greenlip abalone and southern bluefin tuna (Figure 2). Twenty percent of the ADC's resources would be devoted to other species, a group that includes marron. The ADC has the ability to adjust its resource focus if there is reasonable reason for its current prioritisation strategy to change. These priorities will be reviewed on a regular basis.²

1.2 The Marron Industry Workshop

The ADC has decided to undertake a review of the WA marron farming industry to determine what, if any, action should be taken and resources devoted to support the further development of the industry. Preliminary discussions held with selected members of the industry suggest the major producers in the industry generally favour this initiative.

The ADC uses the following four principles to guide its advice to the Minister in relation to supporting the future development of the WA marron farming industry.

- i. Any specific initiative supported by the ADC must be an element of an agreed industry development strategy.
- ii. The specific initiative must make a considerable contribution to the development of a sustainable marron aquaculture industry in Western Australia.
- iii. The specific initiative must be such that without it being undertaken, there is little chance that the industry will reach higher productivity in the short to medium term.
- iv. The specific initiative must be such that it is unlikely that the industry would be able to undertake it without support from the ADC.

With the support of selected marron industry producers and marketers, the ADC hosted a strategy development workshop, the purpose of which was to identify and resolve the key issues currently inhibiting the development and production capability of the WA marron aquaculture industry. The issues outlined in this paper were compiled from information provided by industry members and the Western Australian Department of Fisheries.

This workshop was held on Wednesday, 14th September 2005, from 0830 h to 1230 h, at the WA Department of Fisheries Marine Research Laboratories, 39 Northside Drive, Hillarys.

The following people participated in the workshop:

Bob and Jill Wilson, Julie Dupe	Mount Barker Marron Mount Barker
Carey Nagle	Gidgegannup
Dianne Parry	Black Claw Marron
Peter McGinty, Steve Vidovich	Aquatic Resource Management
Dan Machin	CEO, Aquaculture Council of WA
Craig Lawrence	Research Scientist, Dept of Fisheries
Peter Rogers	Department of Fisheries, ADC member
Russell Barnett	Australian Venture Consultants, ADC member
Steve Nel	Mariculture Development Pty Ltd, ADC member
Jo McCrea	Department of Fisheries, Manager Pearling and Aquaculture
Tania Cowley	Department of Fisheries, ADC Executive Officer

Seven marron producers attended the workshop; however, this small number is not considered indicative of a lack of interest by those of the major producers who were invited.

² Because a sector has been placed in a Priority 2 or 3 status it does not mean that individual projects will not be successful or that smaller local industries would not be viable in these sectors. Sectors afforded a Priority 3 status are those for which there is little evidence to support the notion that a national or world-class industry will develop in WA at this point in time.

All but one of these targeted producers expressed their strong support for the concept and, further, provided substantial input to the issues affecting the industry sector, by expressing their views by telephone and email, prior to the workshop. These growers were unable to attend because they were committed to their farming or other activities. Those who did attend did so at some personal cost in time and expense.

2 THE DEVELOPMENT AND STATUS OF THE MARRON INDUSTRY

2.1 Production and Value

Western Australian Marron production has remained relatively consistent. The Department of Fisheries has indicated that production capacity is increasing and production should be rising, even allowing for water supply issues.³

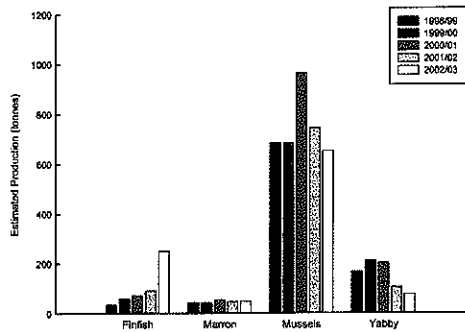


Figure 3 Fluctuations in estimated production of selected industry sectors in WA over the past five financial years.

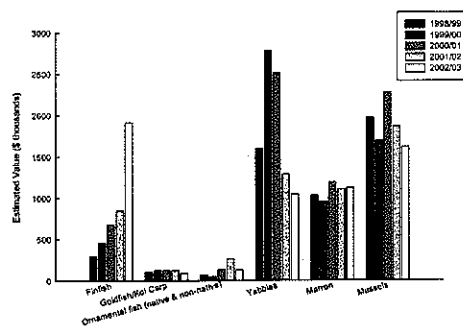


Figure 4 Estimated values of six selected aquaculture industry sectors in WA over the past five financial years.

Figures 3 and 4 show the production quantity and value of marron and other industry sectors in WA over the past five financial years. Figure 5 plots these data for marron only. These figures are likely to be estimates and may not reflect actual numbers; nor do they show the relative production from trapping and farming; which may be an important distinction for planning industry growth.

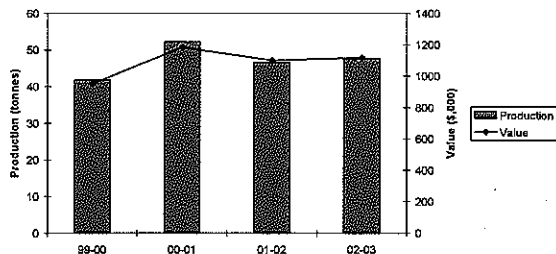


Figure 5 Marron production and value in WA from 1999-2000 , to 2002-03.

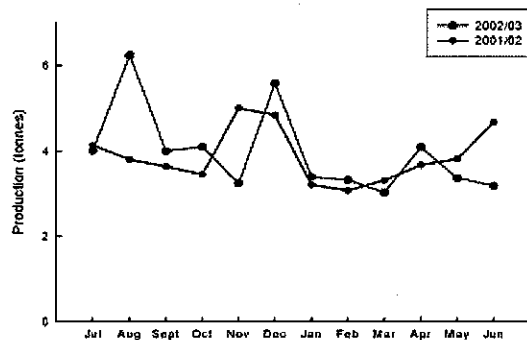


Figure 6 Estimated WA monthly marron production 2001-02 and 2002-03.

In 2002-03, the average ex-farm price for marron was \$23.50/kg and the annual range \$18-32/kg. The price is reasonably consistent through the year. Figure 6 illustrates the production trends for the 2001-02 and 2002-03 financial years.⁴

Participation has grown from 120 to 282 licences, of which 176 are productive. The number of licensed producers providing returns appears to be declining. A feature of the marron aquaculture industry in WA is that over 50% of the production is grown by 10% of the farmers (Figure 7).⁵ While it may seem reasonable to suggest it is these growers who will be responsible for driving future industry development, this may not be the case if they are

³ Aqua Info 28. Estimated WA Aquaculture Production for 2002-03.

⁴ In real terms, this flat production curve represents a decline in value.

⁵ This is typical of many sectors of primary industries.

already achieving their commercial or other objectives. Future industry growth might be achieved by professionally managed marron farms developed and operated according to established "best-practice methods".

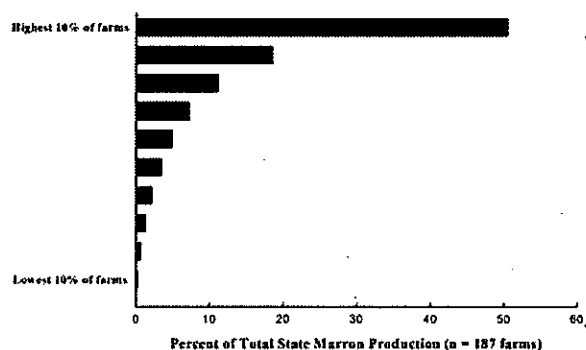


Figure 7 Percent of total WA marron production (187 farms)

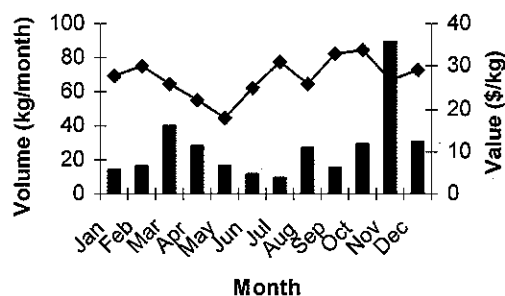


Figure 8 Historical price and availability data for marron (Sydney Fish Markets)

Historical price and availability data for marron from the Sydney Fish Markets show the production peaks during November and price is only moderately seasonal (Figure 8). In WA, production peaks in July and December, targeting overseas summer sales and Christmas sales respectively.

2.2 Marron Research and Extension

The Department of Fisheries has invested in marron aquaculture research and extension programmes since the 1980s (see box).

More recent marron research trials have involved commercial growers and the Department of Fisheries, using facilities at Shenton Park and Pemberton and at commercial farms in WA and South Australia. Led by Dr Craig Lawrence of the Department of Fisheries, the FRDC genetic improvement project has shown there is potential for improving the size and growth rate of commercial marron farming lines. The Department of Fisheries is of the opinion that the outcome of this work supports its view that the husbandry procedures it has developed are adequate and that genetic improvement is the best strategy for reducing size variation in marron and improving growth. Inefficient selection of broodstock led to a steady decline in marron growth rates over a 25-year period. This trend has been reversed over the five-year genetic research programme.

Department of Fisheries investment in marron

From 1975 to 2000, the DoF invested \$1.2 million in marron research; FRDC provided an additional \$78,000, for an approximate total of \$1.3 million. This amount is not considered significant when compared with expenditure on other industry sectors. Further, the investment in marron has resulted in a return in the order of \$5 million through the sale of product. These costs do not show the employment that has been created or the additional benefits that have ensued.

Despite the increase in the number of marron farming licences, a high proportion of marron farmers have not adopted best practice farming methods.⁶ Reasons for this may include deregulation, inaccurate information about marron aquaculture being provided to potential producers and the type of business. Some marron businesses recognise the need for the industry to grow substantially if it is to exploit export market opportunities; other producers are in the business for the lifestyle it affords and are content for the industry to remain at its current level.

⁶ The average marron farm produces approximately 139kg/ha/yr, compared to industry best practice of 2200kg/ha/yr.

Whatever the reason for best-practice farming methods not being taken up more readily, the traditional extension model used has not been effective in improving individual production. A new extension model, entitled Extension Strategic Campaigns, was proposed and implemented by December 2002. This "Marron SEC" aimed to build the capacity of new-entrant marron farmers so they could increase the area of best-practice marron farms in Western Australia by 20 ha in 3 years (2005). An interim assessment of the efficacy of the Marron SEC indicated that farmers planned to implement 17-57 ha of marron ponds over the ensuing three years, thereby increasing production to meet the target figure; however, production data for 2002-03 show that this production has not been met.⁷ Further, anecdotal information for 2003-04 and 2004-05 suggest annual production is remaining below 50 tonnes.

It has been argued that the new ponds were not constructed due to the deregulation of the industry and the consequential availability and marketing of marron obtained by trapping. However, if both production methods – trapping and semi-intensive production – were profitable, there would be new entrants and consequential development in both. It could equally be argued that trapping from farm dams has enabled aquaculture to bridge a supply breach that has stabilised and possibly improved prices. It has been proposed that the reason for few additional semi-intensive ponds being built is that there exists no good business case for purpose-built ponds below 10 ha.

2.3 Production Methods

Two main production models are commonly used to grow marron: the so-called Fisheries model, which uses purpose-built ponds; and the model that stocks marron in impoundments such as farm dams, which are not purpose-built.⁸ The efficiency of these two methods varies. The latter, unfed farm dams, usually produces 100-300 kg/ha/yr. Purpose-built, semi-intensive experimental ponds with a daily feeding regime can produce 1000-4000 kg/ha/yr, depending on the stocking rate.⁹ Subject to market price, a yield of 2000 kg/ha/yr is considered commercially viable, for well designed and managed ponds.¹⁰ The draft "South West Marron Industry Development Plan" states that some producers are recording yields of 2000 kg/ha.

Some techniques to improve production include the use of aerators, daily feeding, annual draining, breeding in separate ponds, compacted or hard pond bottoms, the use of hides and the use of bird netting to exclude native bird predators. A cheaper but equally-effective alternative to electric fencing to prevent escapes is the use of rabbit-proof fencing.

⁷ Only 5 ha of ponds were constructed.

⁸ The latter model is currently uneconomic.

⁹ The production from each pond can vary substantially according to the productivity of the pond in question and management factors such as stocking rate, feeding rate and the size at which the marron are harvested.

¹⁰ Extension staff of the WA Department of Fisheries have developed a proven design for marron pond, design details of which are available on the DoF website.

3 MARRON WORKSHOP – IDENTIFICATION AND DISCUSSION OF ISSUES

3.1 Marron Industry Plan

The lack of a marron industry plan is seen as an impediment to the development of a cohesive and growing industry. Stakeholders attending a meeting hosted by the South West Development Commission on 23rd September 2004 indicated their support for the development of an industry plan to ensure that research, production, training, marketing and supply chains are coordinated for the benefit of all industry partners. This issue requires further debate. To date, a Marron Industry Strategic Development Plan has not been produced.

Among other benefits, an industry plan would provide the means for growers and marketing organisations to agree about a whole-of-industry production and marketing strategy, which is essential to ensure the production level, the continuity of supply, the quality of product and the stable pricing needed for industry growth.

Three groups of marron producers can be identified, according to their business objectives and production methods. These are:

1. lifestyle producers (those who produce marron to take advantage of the lifestyle);
2. farm diversification producers (generally, these are farmers who have existing infrastructure); and
3. core business producers (those who invest specifically in marron farming for commercial reasons).

It has been suggested that, if developed, an industry development plan should focus predominantly on the second and third groups.

Inherent in the production of an industry plan is the appointment of a person to "drive" the plan to ensure its provisions are identified and implemented.

A study carried out for ACWA by Braincells and Australian Venture Consultants Pty Ltd in December 2004 included a SWOT analysis of the marron industry. This analysis would be fundamental to any marron industry development plan. Tables 1 and 2 provide, respectively, the industry development and marketing components of the analysis.

Table 1 SWOT analysis: marron industry development

<p>Strengths</p> <ul style="list-style-type: none"> • Existing operations are relatively geographically concentrated; potential for cluster economics • The majority of current production is concentrated among a few large producers • The production process is a proven technology • Zoning and licensing are well established
<p>Weaknesses</p> <ul style="list-style-type: none"> • The industry is currently highly fragmented with a long standing culture of non-collaboration • The industry demonstrates low adoption rates of best-practice farming methodologies • There is currently no industry leadership; most projects have under-developed management teams
<p>Opportunities</p> <ul style="list-style-type: none"> • Faster growing pedigree stock that has been developed under a Department of Fisheries research and development project has the potential to improve the economics of marron farming, particularly in relation to the production of large animals • A production and distribution model based on the Western Australian chicken meat industry could be implemented to better integrate smaller growers
<p>Threats</p> <ul style="list-style-type: none"> • Increasing competition for land use in the South West Region • There is increasing competition for water resources in the South West • Rising land values in the South West present marron farmers with an opportunity cost dilemma • Potential scale production from South Australia and other countries could create an economies of scale barrier to entry

Table 2 SWOT analysis: marron marketing

<p>Strengths</p> <ul style="list-style-type: none"> • Super premium product • Uniquely native to WA • Distinctive appearance and flavour • Growing regions offer strong branding support, based on eg 'clean and green', 'natural' environment • Absence of crayfish plague • Competitively strong position versus other freshwater crayfish • Can be shipped live. Live product supports a premium positioning in Asian and European markets • Ability to offer a range of product sizes • Tests indicate marron can be frozen without diminishing quality
<p>Weaknesses</p> <ul style="list-style-type: none"> • Not widely known in overseas markets and is therefore under valued by markets • Availability of a number of substitute products • Product quality/size is dependent on rainfall • Seasonal supply (WA winter), although increased trap harvesting may reduce this • Larger sizes currently uneconomic and smaller sizes limit the market to entrée usage. • Inconsistent product standards • Lack of market presence as a result of inconsistent supply and low production volumes.
<p>Opportunities</p> <ul style="list-style-type: none"> • Faster growing strain has potential to increase supply quantities leading to competitive advantages • Position a range of products according to size • Utilise frozen product for year round availability • Develop a seasonal market for live product at higher price premium • Value- add through processing, pre-preparation and packaging • Increase market value and reduce substitution through market education • Potential to benefit through national branding project and marketing activities
<p>Threats</p> <ul style="list-style-type: none"> • Price is vulnerable to fluctuations in price of other freshwater crayfish and supply and demand of indirect competitors • Expansion of production from other marron-producing competitors such as South Africa, Brazil, Zimbabwe, Chile and South Australia. • Variability of product quality impacts ability to position as super premium species.

The study by Braincells and Australian Venture Consultants Pty Ltd concluded there was a risk associated with the industry's historical inability to establish and maintain significant global markets for the product and to develop a large enough production base of quality product to service international markets. However, there was a consensus that this has been primarily the result of an absence of a sophisticated industry strategy and collaboration.

3.1.1 Workshop Discussion

Some of the participants believed that the development of a marron industry strategic plan would not represent good value for money, given the nature of the industry and the disparate methods and objectives of the different types of growers. It was agreed that the absence of a strategic development plan was not impeding the growth of the industry at present.

3.2 Industry Association

The draft South West Marron Industry Development Plan notes that the industry is uncoordinated, that there is a history of lack of coordination and that the majority of growers make up a cottage industry that has not adopted best-practice. Some growers believe there is an absence of strong industry leadership and collaboration and that the Marron Growers' Association, which represents the marron growers, has been ineffective in performing this function. This has been identified as an issue in the development of the industry and an area in which the MGA should be performing better.

On the other hand, although they concede the MGA has a credibility problem, some stakeholders believe the Association has performed reasonably well. The key functions of an

association representing aquaculture sector interests are communication, representation and skill development. It can be argued that the MGA has provided these services adequately. It has organised successful field days, publishes a bulletin, has lobbied for changes in the criminal code and negotiated spray drift arrangements in Plantagenet Shire. The MGA represents core group of 78 licensed farmers and is known as the first point of contact for new entrants to the industry.

There is a view that the need for strategic development of the marron industry should come from sector association. The majority of issues facing the industry need to be dealt with by a strong and representative industry association, which would ideally be chaired by a producer who could lead by example and demonstrate the commercial viability of marron farming using best-practice.

3.2.1 Workshop Discussion

While the participants agreed there is a need for an industry association, there was some debate as to whether the industry association performed more a social function rather than actively driving the growth of the industry. The MGA is a volunteer organisation and would not have the financial resources to fund a full-time executive officer. The ideal situation that the main growers be adequately represented on the Board of the Association was not considered practicable, due in part to the numerous licences issued for marron and the time constraints of the key producers.

There was some criticism of the MGA, in that some participants believed it was ineffective in its existing format. It was thought that there is no cohesion within the industry, nor is there any clear vision as to its direction or growth.¹¹ It was proposed that the only effective way to develop an effective association is through research and development and marketing frameworks. Should they arise, issues of equity have the capacity to divide an association. The Chairperson has to be quite clear about those differences. Should these issues be managed effectively by the Chairman, the association can be effective. In any event, it is clear that any change to or restructuring of the organisation would have to be driven by the industry members.

3.3 Production

The Interim Report of the Marron Aquaculture Strategic Extension Campaign provides a figure that shows past and projected figures (Figure 9). The projected figures indicate the growth required if the industry is to reach a stated production objective of 200 tonnes by 2010. The projected yield of approximately 70 t in 2002-03 was not met. Further, anecdotal information for the financial year 2004-05 indicates the projected yield of 110 tonnes for that year has not been met and that the annual production remains below 50 tonnes. This production level has remained much the same for the past five years. Commercial producers on Kangaroo Island in South Australia are the only other major suppliers.

A minimum production threshold will need to be identified and attained for the industry to be "noticed" and become both competitive and influential in domestic and export markets. The target set by stakeholders of 200 tonnes per year by 2009-10 was considered to be the production for which critical mass and economies of scale would ensure sustainability.

¹¹ Workshop participants did not believe the lack of a strategic plan is impeding industry development at present (Section 3.1.1). This may be correct, but is inconsistent with the views that industry growth is generally best driven by the development and application of a strategic development plan and that the industry lacks vision as to direction and growth.

Given the current status of the marron industry, it appears unlikely the target yield of 200 tonnes will be met by 2010. This minimum production threshold could be 200 tonnes, but it has been suggested that it may be substantially higher.¹² As for other issues, further debate will be required to determine what is a realistic target that will achieve the threshold required to supply demand in export markets sustainably.

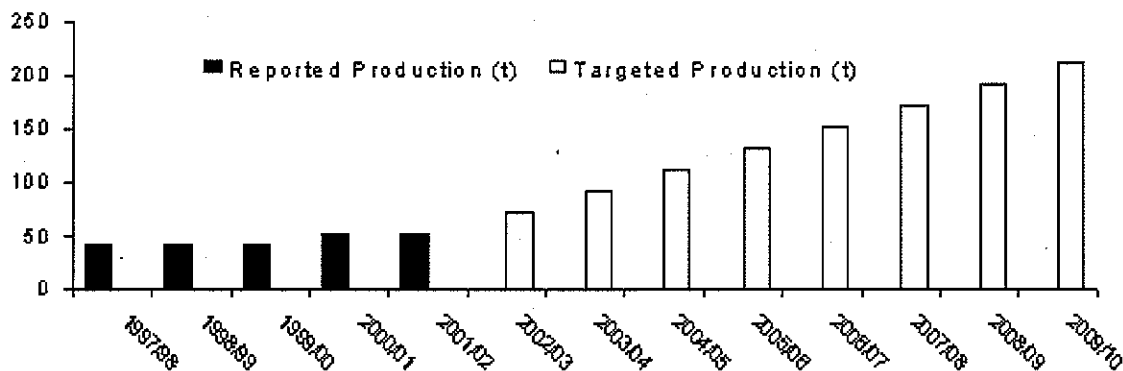


Figure 9. Production figures for WA marron sector over the financial years 1997-98 to 2001-02.

The reasons the production targets have not been met and the production has remained stable may include:

- the deregulation of the industry to allow dam harvesting effectively removed the incentive to build best-practice marron farms;
- there being no good business case to invest in the development of a marron farm based on a semi-intensive, best-practice production system;
- producers building production systems inconsistent with the design proved by the Department of Fisheries; and
- consultants or advisors were appointed who provided advice that often diverged from the proven best-practice methods and advice available from the Department of Fisheries.

Some fundamental questions concerning industry growth include:

- what is needed to increase production up to and beyond a critical commercial and market threshold (i.e. what are the main impediments and how can they be overcome);
- what is the threshold quantity;
- which groups will drive growth (will they include the current main producer groups or are these satisfied where they are); and
- what impact will the genetically-improved stock have on production?

3.3.1 Workshop Discussion

There was general agreement that the derivation of a production target for the industry was a low priority and relatively meaningless in relation to increasing production. Future industry growth would probably be driven by the current key producers and possibly new entrants to the industry who would develop dedicated, semi-intensive production systems. The production from current key producers would be grown using extensive as well as semi-intensive methods.

¹² One proposed rationale for the production of 200 t/yr was that there are approximately 560 ha of pond or dam surface area suitable for marron production in the Southern Region, so if fewer than a quarter of this surface area was to produce the 2000 kg/ha average yield, the industry would be able to meet this target.

The participants agreed that the single most important issue in respect of increasing production as well as profitability in the marron industry is the availability of the genetically-improved marron stocks. Additional information in respect of this issue is provided in section 3.5.1 of this paper. Dr Craig Lawrence has a program that allows farmers to carry out mass selection on their properties; however, Dr Lawrence elaborated the difficulty of evaluating the data for the genetic selection programs.

Other steps that could be taken to drive industry growth include the development and application of new methods to transfer suitable husbandry skills, to support the University of WA in its marron genetics work and to new entrants to the industry in terms of type, scale and location of marron production facilities.

There is a danger that marron growers not using best practice could in time reverse the improved growth likely to ensue from the availability of the genetically-improved marron. Some discussion was devoted to the possible means of ensuring that this could be prevented. Some strategies include education through seminars and field days. One solution, based on extensive production, proposed stocking dams with the genetically improved stock, then completely harvesting the dams rather than trap the larger marron.

3.4 Cost of Production and Profitability

Marronprofit is a financial data entry computer program designed to help marron farmers to assess their financial situation and make better-informed business decisions using a cost benefit analysis technique. Marronprofit models a farm using data on its physical size, number of marron supplied, feeding and production practices and marketing and processing of the product. The program can give an indication of the impact of changes to any of these elements on production and cost.

The adjacent box provides information taken from an Agency Executive Group briefing note concerning the financial feasibility of marron aquaculture in October.

The results of the modelling through Marronprofit indicate the following.

- Marron farms can provide a good farm diversification opportunity to provide additional income to an existing agribusiness; and as such could be valuable in social capital building.
- A 5ha marron farm is not of sufficient scale to be stand alone business enterprise, unless production rates or marron prices increase or capital expenditure is significantly reduced. The likely stand-alone farm size will be greater than 7 ha in size.
- Capital costs are the main driver for costs of production (61.6% to 65.7% of the cost of production) as such site selection and costs to remedy site inadequacies will drive the financial feasibility and viability of the farm.
- The marron farming risk reward profile is unlikely to attract investment from venture capitalists or business angels, and as such, marron farming will be likely to be funded by family and friends or from other business earnings.

Because of the commercial confidences of existing marron farms, accurate information on income and operating costs can be hard to obtain. According to the RIRDC Handbook for Farmers and Investors, economic evaluations suggest a properly constructed and managed, marron farm will return a gross income of \$40,000/ha/yr, with operating costs around \$15,000/ha/yr and hence a net income of around \$25,000/ha/yr.¹³ These data suggest a marron farmer can expect to receive a return on investment of around 30%, which compares favourably with other forms of primary production. More recent data generated from the FRDC marron project will be available as soon as the results are published.

¹³ These data are based on 1997 prices.

A previous study estimated that average farm production is 139 kg/ha/year, for a gross income of \$3197/ha/yr. In contrast, best-practice marron farms that yield 2200 kg/ha/yr, can achieve a gross income of \$50,600/ha/yr. It has been suggested that the potential income from marron farming could enable a typical marron farm in south-west WA to become profitable and increase annual farm income and that, although there is still a need improve growth rates, marron production has significant potential as a means of farm diversification.

The introduction of a best-practice 5 ha marron farm on a typical SW farm is said to have the ability to increase annual income by over 300%.¹⁴ A farm with 50 ponds occupying 5 ha should be able to produce 15 tonnes of marron annually, for a profit of \$100,000 (or \$150,000 if the farmer provides the labour him- or herself).¹⁵ These are estimated figures but are considered reasonably representative. More accurate figures will be available when the FRDC report is published by the end of October.

Several growers are dubious about the accuracy of these models, particularly in relation to production costs and prices. They believe that it will be critical to prove the figures and calculations through the establishment of a trial in production-scale ponds and dams under commercial conditions. One grower claims the real cost of production to be \$25/kg if capital infrastructure is taken into account. If this estimate is correct, the verification of production costs needs urgent confirmation, given that, in 2002-03, the average ex-farm price for marron was \$23.50/kg.

There is the potential for gross margins to be greatly improved by an increase in growth rates resulting from improved genetics and production strategies.

3.4.1 Workshop Discussion

The models so far developed to assess the profitability of marron farming can vary substantially according to the input data and the assumptions made. The costs of production provided to the ADC by email and in person at the workshop suggest the models can be too optimistic and the production cost can be substantially higher if all inputs are taken into account. However, this was not considered an impediment to industry development and the expenditure of ADC resources was not warranted. A model developed by Dr Lawrence would be published in the FRDC project report, which is due in October 2005. Among other benefits, this work would determine the level of genetic improvement required to sustain viable marron farming.

3.5 Genetic Improvements, Research and Training

Research and the Genetically-Improved Marron

The marron genetics research programme undertaken by the Department of Fisheries under an FRDC-funded research project has produced marron that grow substantially faster than existing industry stocks. Pedigree marron stocked at Pemberton and Shenton Park facilities have been used to evaluate genetic lines developed from the best-performing wild marron populations. A commercialisation process has been proposed to provide the industry with access to the improved marron stocks for rapid commercialisation of the improved genetic

¹⁴ This figure is based on a number of assumptions.

¹⁵ It has been suggested that 5 ha of ponds could produce up to 23 tonnes of marron per year.

lines.¹⁶ It is anticipated that the major long-term benefit to industry will occur through productivity increases arising from commercialisation of these faster-growing marron strains.

The research done by the Department of Fisheries to develop the genetically-improved marron is considered likely to make a significant difference to marron production, since the new strain offers an opportunity for growers to nearly double growth. Some growers have stated that the delays experienced in the release of results and the genetically-improved stock being made available are a major impediment to industry growth. The complaint in relation to the release of results is not considered valid because, although they have not been published, the results have been made available by Dr Lawrence to all licensed growers at annual intervals, through seminars and field days.¹⁷ The delay in making the faster-growing broodstock available to the industry is being dealt with through the determination of an appropriate commercialisation strategy.

There is an opinion among producers that the research carried out by Dr Lawrence should be extended, through a project designed to apply the results of the FRDC project.

There is a strong interest in industry to adopt research outcomes, particularly genetic improvements. Some stakeholders have provided a cautionary note that it will take some time for the full benefits to be realised. The industry would also benefit substantially from the software developed by Dr Morrissy to predict feed rates and production.

Training

The draft South West Marron Industry Development Plan has raised training as an issue that needs to be dealt with if the industry is to grow. Apart from periodic industry workshops run by the Department of Fisheries there is limited on-farm advice available, although past extension support was well received. TAFE training delivered at Manjimup and Collie has attracted small numbers of certificate 2 and 3 students. Challenger TAFE, Curtin University, Murdoch University and the University of Western Australia offer certificate, diploma, graduate and postgraduate aquaculture training; however, some critics believe that graduates from some of the training courses do not appear to have the skills and knowledge that enable them to add value to the project on which they may be employed. To overcome this problem, it may be sensible to promote specific operator training, targeted at active producers.

3.5.1 Workshop Discussion

Participants agreed that one of the critical requirements for industry growth is the maintenance of a repository of the pedigree and mass-selected marron stocks at facilities at Shenton Park and Pemberton.

The maintenance of repository stocks will ensure that these genetically-improved lines will always be available for industry. It is proposed that the

The following explanation is provided to distinguish between the "mass-selected" and the "pedigree" breeding marron lines.

"Mass-selected" marron are those domesticated lines that originated from farm dams. They were selected only on the basis of growth.

"Pedigree" marron were bred from wild stocks captured from selected rivers in the south-west. They were selected for simultaneous multiple traits, including growth, shape and maturity.

¹⁶ It is anticipated that documents for Expressions of Interest and ordering marron will go out to farmers during mid-September 2005.

¹⁷ The lack of publication of the results may be considered an advantage, since these results have been made available only to the licensed growers. The results will be published more rapidly and will be available within the next few months.

pedigree lines only would be maintained at the University of Western Australia's Shenton Park facility, while the Department of Fisheries would keep the mass-selected lines as well as some pedigree lines at its Pemberton facility.¹⁸

There was also a well-supported view that research efforts to further improve the genetic composition of the stock should be maintained. An argument in favour of this view is that the research capability and technical skills for maintaining and improving genetic stocks now exist in WA. It is worth noting that these skills would extend to other aquaculture species, are consequently of strategic interest to the aquaculture industry in WA and should be nurtured and supported. There is, however, an economic impediment to maintaining the research programme, since neither Commonwealth nor State funding would be available.

3.6 Marketing and Branding

Marron is a luxury product that generally commands premium prices; however, the fact that the price increases with increasing size (Table 3) is considered a development constraint.¹⁹ One of the issues facing the industry is the periodic supply to the market of animals weighing 300 g or more. Some growers believe this "educates" the market into having a preference for this larger size, while the current production economics are such that it is uneconomic to produce marron weighing more than 100-150 g. Prices up to \$44/kg have been attained for 400-500 g animals. A marron marketing organisation has commented that different export markets can be targeted for marron of different size and that the sale of larger animals does not necessarily disrupt the marketing efforts of those producing smaller marron. There is considered to be a long-term future for 160g+ marron and for those within the size range 160-250 g.

Table 3 Average farm gate prices for different-size marron (RIRDC Handbook for Farmers and Investors).

Size grade	Farm-gate price (\$/kg)
71-100g	17.00
101-130	18.00
131-160	20.00
161-190	22.00
191-220	24.00
220g+	26.00

In this context, it should be noted that increasing supplies are unlikely to satisfy demand – before its decline, the supply of fresh water crayfish from Turkey peaked at 8000 tonnes per year. Notwithstanding these figures, the full potential of the market has yet to be determined. At present, no integrated, state-wide marketing strategy is in place, although existing sales and buyer expressions of interest are promising.

Industry members generally agree that marketing is less serious an issue than increasing production. The risk that demand for marron might decline without strategic marketing activities is considered low; however, a cohesive and co-operative industry marketing strategy will be critical to maintain a high price and ensure demand is maintained for the smaller 100g+ marron that are more profitable to grow. Generally, the consumer preferences for marron of different sizes is no longer considered a key marketing barrier, since different export markets will often prefer different size ranges.

Key objectives from a marketing perspective are to have uniform size grades, consistency of supply, stable prices and adequate production volume. The first three of these objectives have been largely met; the fourth has not.

¹⁸ UWA has agreed to supporting an ongoing genetics programme at Shenton Park and will continue paying for that project.

¹⁹ The figures provided in Table 1 are 1997 prices, but they would be reasonably similar today. They are provided not for their absolute values but rather to illustrate the correlation between price and size.

Although some co-operative marketing groups have been formed, the establishment of a Western Australian brand is considered an important step in industry development. This factor is clearly linked to the issue of production.

3.6.1 Workshop Discussion

Marketing and branding were not considered key issues in respect of industry development. Basically, demand is high and all current production can be sold relatively easily. This is likely to remain true in the short to medium term, even if production increases substantially.

3.7 Water Supply

The availability of new and larger sites may be a prerequisite for increasing production. Currently, licensed, purpose-built marron farms extend from Esperance to Hutt River, north of Geraldton; however, most of the farms are in the higher-rainfall areas in the south-west of the State. The viability of larger, high-yield marron farm sites in the more northern areas may present an option for future industry growth.

The industry is considered vulnerable to drought. The use of efficient water re-use systems and improved husbandry methods have had the effect of maintaining production during drought years, but have not substantially increased the annual WA total production of marron. Some stakeholders believe there is an urgent need to utilise existing water infrastructure more efficiently through the better utilisation of knowledge and expertise; however, others consider rainfall and water availability to be less sensitive an issue.

In some areas, water supplies from vineyards could be used for marron production, particularly irrigation water from the Harvey-Wokalup area that is considered too salty for horticulture.

3.7.1 Workshop Discussion

Water supply and zoning will be an issue in the Perth hills area. The relevant local government authorities are resistant to allowing new marron farms and future growth will be capped. The issue in this area is the water used to grow marron being discharged into creeks and other watercourses.

Most local government authorities in the south-west region remain supportive of aquaculture. Water supplies in more northern areas, to the north of Gingin, are not threatened since most of the creeks are dry in summer.

The opportunities presented from the use of irrigation water may be high, but the concept has been at hand for some time without being adopted despite the low cost of the water.

In the south-west, several industries, such as dairy farming, horticulture and viticulture, are declining and seeking alternate sources of income. This trend was considered to present good development opportunities for marron aquaculture, since large volumes of water as well as existing water bodies are becoming available. There exists a unique opportunity to make use of this water and these water bodies, if there is no issue with chemicals or spray drift.

Generally, water supply in itself was not considered an impediment to industry growth, but water quality, including the effects of pesticides, remains an issue.

3.8 Crop Spraying

An issue of some concern is that of agricultural chemical sprays drifting over and impacting on marron ponds. A code of practice is being developed to help reduce risks.

3.8.1 Workshop Discussion

There are substantial risks involved from spray drift. Marron growers cannot control the use of chemicals by neighbours, so chemical usage will remain a key issue in the industry. It was considered unlikely that the introduction of legislation will manage the issue properly.

3.9 Investment

The lack of investment was not identified by many growers as a significant obstacle to industry development. However, comment has also been made that major investors have been deterred from investing in marron farming by unduly-pessimistic and inaccurate information about the commercial potential of the industry sector.²⁰

Many farmers have adopted a low-input-cost, low-yield strategy. It is likely that on-farm investment will continue to be limited until there is better overall industry cohesion and proven best practice production methods demonstrate an adequate return on investment.

3.9.1 Workshop Discussion

Investment was clearly important for future industry development but was not considered a serious impediment at this stage. Some investors had been discouraged from investing in marron farming in the past.

3.10 Licensing

The draft South West Marron Industry Development Plan proposes that the current legislation, regulations and licensing regime is satisfactory; however, some growers have expressed a different view.

Current licensing requirements make it difficult for individual growers who wish to produce marron in farm dams that may be located on separate properties in the south-west and possibly other regions. Some deregulation of the licensing process or other means to enable growers to have access to many dams distributed over a number of farms could have a positive impact on production.

Conversely, it has been argued that this proposed licensing regime would make it difficult for the farmers using purpose-built ponds and, further, is not sustainable. The yabby industry may provide an indication of this: for the first five to eight years, trapping of yabbies from

²⁰ Examples of this inaccurate information include opinions that marron farming is only good for farm diversification and is marginally profitable or unprofitable.

farm dams achieved bumper yields, but now the smaller yabbies predominate and production has fallen dramatically (although drought may have had some effect).

3.10.1 Workshop Discussion

Licensing was considered adequate for industry growth.

4 MARRON WORKSHOP – ACTION

The workshop participants agreed that the two most important issues in respect of marron industry development and increasing production were:

- to remove the legislative impediments to permit and facilitate the stocking of marron in a wider range of water bodies, with particular reference to the south west region; and
- to make the genetically-improved stocks available to the industry and to maintain the mass-selected and pedigree stocks at Shenton Park and Pemberton facilities.

The following process was proposed to the ADC to achieve the above outcomes.

1. The ADC to appoint a person to organize the process and draft the necessary report and documentation. This draft would be compiled in collaboration with two or three of the marron producers who attended the workshop.
2. The ADC to organise a meeting with all marron producers who attended the workshop to ensure the draft is correct and likely to achieve its objectives.
3. The ADC would then use the final document to progress the regulatory issues through to the Minister.