IMPROVEMENTS IN POST HARVEST HANDLING

AND MARKETING STRATEGY FOR BLUE CRABS

FINAL REPORT

R.N. STEVENS

FOR THE COCKBURN SOUND PROFESSIONAL FISHERMEN'S ASSOCIATION, W.A.
AND
THE NATIONAL SEAFOOD CENTRE, BRISBANE

ABERCROMBY MANAGEMENT SERVICES PTY. LTD.

SUMMARY

Fishermen involved in the project have developed a simple method of handling live crabs at sea. The crabs thus landed survive alive in holding tanks for sufficiently long to enable considered marketing decisions to be made.

An in-depth marketing study has shown that Sydney is the best domestic market, but that it is viable only in the late Spring and early Summer. Japan is the best export market and, as a result of this project, a six tonne trial export order has been shipped. This has been followed by two requests, each for a further five tonnes for the Japanese. These are the first export shipments of WA blue crabs.

Crabs unsuitable for premium markets have been successfully picked for meat, although more work is required to make this a viable proposition.

The study has shown that the industry will accept the change from netting to potting for crabs, that the superior quality of crabs caught in pots can be maintained, and that markets exist for these crabs that will ensure an increased return for the product.

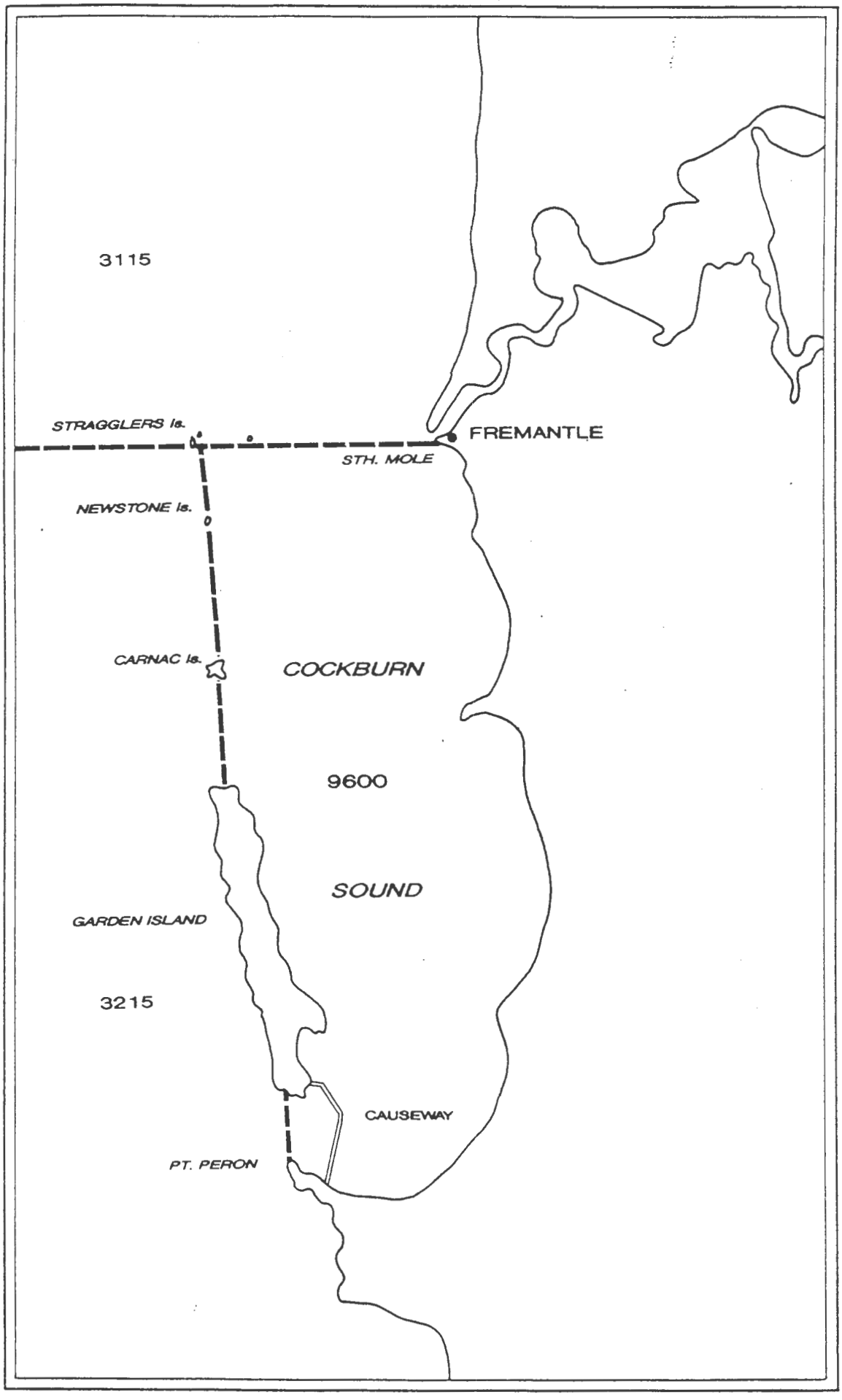
Introduction

Cockburn Sound is a small embayment near Fremantle, WA. Open to the North it is bordered on the East and South by the mainland and to the West by Garden Island. Between Garden Island and the mainland is a causeway and bridge that allows only minimal exchange of water between the Sound and the Indian Ocean. (Fig.1).

The Sound has consistently produced 150-170 mt of crabs commercially each year, plus an unknown, but considerable, recreational catch. (Ref. 1). Seventeen commercial crab development licences were issued in 1984 and the fishery remained in "development" until March 1995 when it was declared a limited entry fishery. Sixteen licences to fish crabs have been issued, of which eight are fully transferable and the balance non-transferable. Some of these are still the subject of appeal. Effort is also limited by either the use of 1,200m of gill net or 100 crab pots per vessel, and vessels are limited to lengths, between 5.5m l.o.a. and 7.5m l.o.a. In the last two years fishermen have come under pressure to cease gill netting and use pots for a number of reasons. Firstly the by-catch of fish (mainly rays) in gill nets often drowns and therefore cannot be returned alive to the water. Secondly out-of-grade crabs (undersize, berried) are also frequently moribund. Thirdly, by the time the net is brought aboard and inspected, the vessel has usually moved some distance from the point of capture. The chances of survival of fish and crabs returned was, therefore, considered to be very low. Gill netting is, however, a cost efficient catching method. Capital costs are, relative to pots, low. The nets are difficult to pull by hand and thus less subject to poaching by non-fishermen.

Gill netting has an added advantage over potting as it is difficult to operate 100 pots from 7.5m boat, almost impossible from a 5.5m boat. Finally, there was no incentive to change to pots as there was no known method of keeping the crabs alive, and no premium for live crabs in the market.

Fig. 1 Cockburn Sound, W.A.



However, it was recognised that if crabs could be held alive after capture, the frequent gluts in the local market could be avoided. Furthermore, to ensure a good quality frozen cooked or frozen raw product, crabs must be alive at the start of the process. This project aimed at resolving the practical problems; that it helped resolve some of the management problems was a bonus.

Methodology

A market survey was completed to ensure that improved handling would be rewarded, and to demonstrate that alternative markets exist for WA blue crabs. This report is attached. (Appendix 1).

The first stage in the handling process was to determine if netted crab could be handled alive. This proved to be not possible. Gill net fishermen typically set 4 X 300m nets, hauling them 24 hours later and replacing them with another four nets. (Figs. 2-5) During, or more usually, after, hauling the nets are cleared of by-catch and out-of-grade crabs. Some fishermen clear the nets on board, others take the nets ashore and clear them there. The process of clearing the marketable crabs from the nets takes from 1 - 3 hours. The crabs are placed in crates for transport to local buyers. Most fishermen sell crabs to a number of buyers by private bargain. Some go to auction, particularly when catches are heavy. Removing the crab from the net is extremely stressful, and frequently causes physical damage to the crab. It was deemed impractical to try to devise a post harvest handling method to improve the quality of crabs landed to any great extent. The use of chilled (with ice) insulated "xactics" type bins, covered with hessian sacking improved the longevity of the crabs, but the damage and stress of removal from the tangle of netting was unavoidable.

A number of on-board techniques were trialled for crab pot fishermen.

Pots are set individually, and hauled 24 hours later. Crabs are removed from the pot by unlacing the netting in the top of the pot and inverting it, allowing the crabs to fall into a basket. (Fig. 6) Crabs that attach themselves to netting are shaken free. The problem in handling the crabs is that they attach themselves to each other, and separating them inflicts limb loss and stress.

This has been resolved by tipping the crabs into an ice slurry, at between 0 deg.C and 5 deg. C, for about 30 seconds (Fig. 7). The shock causes the crabs to release their grip and become comatose. A problem arises when the crabs recover from the shock as their aggressive behaviour returns.

For this reason, and because of space and stability problems, on board live tanks were not considered advisable for blue crabs. A system for spraying the crabs with a fine mist of water was developed, but again this warmed the crabs and engendered aggressive behaviour. Finally, crabs were placed carapace down in baskets in chilled (with bags of ice) insulated bins where they remained inactive, but alive, until landed. As the process from hauling the first pot to landing the crabs takes only four hours (maximum) this was the simplest and most cost effictive system trialled. It has been adopted by the crab pot fishermen.

The second trial involved testing the market for frozen raw crabs. Crabs must be alive at the start of this process. Four hundred and twenty kilogrammes of crabs were used for the trial (Table 2). The crabs were chilled again prior to grading by weight, then individually bagged. Cartons of 10kg of graded crabs were frozen at -40deg.C and stored at -25deg C before shipping to Sydney.

The crabs were held in cold storage until June when they were released for sale and comment.

The reason for this is that during February there are frequent gluts of crab in WA and the Eastern States. Prices can fall below $2.00/kg. By removing crabs from the WA market the local price will not fall so far, and, if in good condition, crabs could be held until supplies are low (i.e. in the winter months) and prices improved. Costings for this trial are given in Table 3.

Table 3

Frozen Raw Blue Crabs -Costing.

		/kg
1.	Cartons	0.23
2.	Inner Plastic	0.06
3.	Dry Storage	0.10
4.	Transport (packaging)	0.06
5.	Processing	0.75
6.	Freight (to Sydney)	0.32
7.	Cold Storage (Sydney)	0.10
8.	Freight (to customer)	0.06
9.	Finance Charge	0.06
10.	Marketing	0.75
	Total:	**2.49**
	Sale Price	**4.99**
	Return to Fishermen	**2.50**

Market reaction was good, although a few crabs were reported being "light weight" for their size (recent post moult). A positive response was received from samples sent to South Korea. The major difficulty with the Korean market lies in maintaining supply, as buyers are looking for relatively large volumes (20 MT + /month).

Reaction from Sydney and Melbourne included a strong desire to access more product.

The drawback with the market for frozen crabs is that the return to the fishermen ($2.50/kg) was below their expectation. Nevertheless, the ability to use this market to set a floor price in WA for premium quality crabs has now been established.

Table 2 Frozen blue crabs by size and grade

21/02/95																		
FISHER	BOAT	GROSS	NETT	<250g	%	250-300g	%	300-400g	%	400-500g	%	>500g	%	TOTAL	REJECT	Recovery		
	(Method)	Kg	Kg	Kg		Kg		Kg		Kg		Kg		Kg	Kg	%		
Moss	FB188(N)	68	62	4.6	7.42	15	24.19%	31.33	50.53%	11.3	18.23%	0	0.00%	62.23	0.26	100.37%		
Winter	FB57(N)	32	28	4.86	17.36	12	42.86%	7	25.00%	1.74	6.21%	1	3.57%	26.6	1.52	95.00%		
Alexander	FB562(N)	33.5	29.5	4.05	13.73	11.92	40.41%	10.5	35.59%	2.13	7.22%	0.56	1.90%	29.16	0	98.85%		
Merendino	FB101(P)	40.5	37.5	3.18	8.48	11.82	31.52%	13.68	36.48%	5.48	14.61%	0	0.00%	34.16	2.16	91.09%		
Abbot	FB47A(P)	37	34	0.49	1.44	5.13	15.09%	17.58	51.71%	6.72	19.76%	2.07	6.09%	31.99	0.63	94.09%		
Styles	FB573(P)	32.5	30	0.92	3.07	11	36.67%	11.01	36.70%	5.29	17.63%	0.5	1.67%	28.72	0.9	95.73%		
Raffia	?	32.5	30	2.06	6.87	9.66	32.20%	10.14	33.80%	3.85	12.83%	0.52	1.73%	26.23	3.18	87.43%		
					0.00													
		276	251	20.16	8.03	76.53	30.49%	101.24	40.33%	36.51	14.55%	4.65	1.85%	239.09	8.65	0.95255		
28.02.95																		
FISHER	BOAT	GROSS	NETT	<250g	%	250-300g	%	300-400g	%	400-500g	%	>500g	%	TOTAL	REJECT	Recovery		
	(Method)	Kg	Kg	Kg		Kg		Kg		Kg		Kg		Kg	Kg	%		
Moss	FB188(N)	30	26	0	0.00%	10	38.46%	13	50.00%	2.5	9.62%	0	0	25.5	0.26	98.08%		
Winter	FB57(N)	0	0	0	0.00%	0	0.00%	7	0.00%	0	0.00%	0	0		0	0.00%		
Alexander	FB562(N)	19.5	17	3	17.65%	5	29.41%	6	35.29%	2	11.76%	0	0	16	0	94.12%		
Merendino	FB101(P)	27	24	2	8.33%	7	29.17%	12	50.00%	1.8	7.50%	0	0	22.8	1	95.00%		
Abbot	FB47A(P)	29	26.5	0	0.00%	6	22.64%	14	52.83%	3	11.32%	2	7.55%	25	1	94.34%		
Styles	FB573(P)	0	0	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0	0.00%		
Raffia	?	0	0	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0	0	0.00%		
		105.5	93.5	5	5.35%	28	29.95%	52	55.61%	9.3	9.95%	2	2.139037	96.3	2.26	102.99%		
07.03.95																		
FISHER	BOAT	GROSS	NETT	<250g	%	250-300g	%	300-400g	%	400-500g	%	>500g	%	TOTAL	REJECT	Recovery		
	(Method)	Kg	Kg	Kg		Kg		Kg		Kg		Kg		Kg	Kg	%		
Moss	FB188(N)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Winter	FB57(N)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Alexander	FB562(N)	30.8	26.8	4	0.149254	8.5	31.72%	11.5	42.91%	2	7.46%	0	0	26	0.19	97.01%		
Merendino	FB101(P)	32.5	29.5	1.5	0.050847	10	33.90%	13.5	45.76%	1.5	5.08%	0.5	1.69%	27	1.5	91.53%		
Abbot	FB47A(P)	29	26.5	0	0	3	11.32%	15.5	58.49%	5.5	20.75%	2.07	7.81%	26.07	0.63	98.38%		
Styles	FB573(P)	0	0	0	0	0	0.00%	0	0.00%	0	0.00%	0.5	0.00%	0	0	0.00%		
Raffia	?	0	0	0	0	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0	0.00%		
		92.3	82.8	5.5	0.066425	21.5	25.97%	40.5	48.91%	9	10.87%	3.07	3.71%	79.57	2.32	96.10%		

The third trial involved cooking and freezing crabs. Again, crabs must be alive entering the process. Crabs are drowned in iced fresh water then cooked for twelve minutes at 105 deg. C in 3% salt water. The live crabs from Cockburn Sound were compared with a sample of live crabs shipped from Albany (400km to the South) overnight. The results of the cooking trial are given in Table 4.

Table 4

COCKBURN SOUND SAMPLE

Time (Min)	Process	Wt In	Wt Out (@ core temp of 8 deg/C) 10 min	15 min	20 min
0	Into ice slurry @ 0.3degC	17.71			
5	Into cooker @ 105 degC	-			
20	Into ice slurry @ 0.3 degC	-			
30	Weighed		17.17		
35	Weighed			17.32	

ALBANY SAMPLE

0	Into ice slurry @ 0.3 deg C	20.45			
5	Into cooker @ 105 deg C	-			
20	Into ice slurry @ 0.3 deg C	-			
25	Weighed	21.05	-		
30	Weighed	20.83			
40	Weighed	20.53			19.91

Weight loss in the cooking process was considered to be negligible.

The difference in the time taken to reach a core temperature of 8 deg C was because the Cockburn Sound sample was spread through the ice slurry, the Albany sample remained in the cooking basket. The sample from Albany, which had been chilled and was thus dead before cooking, was unsuitable for further use as the flesh had suffered severe autolysis (mushiness).

The Cockburn Sound sample was frozen to -40 deg C, held at -25 deg C and shipped to Japan as a sample. It resulted in a trial order for 6MT, supplied in June 1995. (Figs. 15-18) (Appendix II).

Two follow-up orders for each 5MT of raw crabs were received in September 1995.

A fourth trial was conducted. As some crabs would always be unsuitable for use whole, a sample was cooked and the meat extracted. To undertake this trial, Mrs Jean Davenport from Queensland was employed to demonstrate the picking process, and train two WA people. The trial used cooked crabs rejected from the export order and raw crabs.

From 27kg of raw crabs, 8.5kg (31.5%) of meat was extracted by two people in 6 hours.

From 59kg of cooked crab 22.5kg (38.2%) of meat was extracted by two people in 7 1/2 hours.

A simple costing was made for each process.

Raw Crabs

			$	$
Crabs	27kg	@	4.50	121.50
Labour	8.5kg	@	5.00	42.50
Packing/Freezing	8.5kg	@	1.00	8.50
Overheads	8.5kg	@	0.70	5.95
Freight	8.5kg	@	0.50	4.25
Total Cost:				**182.70**
Wholesale Price 8.5kg @ $25.00				**212.50**
Balance:				**28.80**
Margin (on whole raw crabs)				**$1.07/kg (23.7%)**

Cooked Crabs

			$	$
Crabs	62.1kg	@	4.50	279.45
Labour	22.5kg	@	5.00	112.50
Packing/Freezing	22.5kg	@	1.00	22.50
Overheads	22.5kg	@	0.70	15.75
Freight	22.5 kg	@	0.50	11.25
Total Cost:				**441.45**
Wholesale Price 22.5kg @ $26.40				**594.00**
Balance:				**152.55**
Margin (on whole raw crabs)				**$2.45/kg (54.6%)**

The critical factor is the labour cost. The experienced person picked over 2kg of meat per hour, inexperienced people less than half that amount. Other soft tissues were also recovered as they have a value in the preparation of 'miso' in Japanese restaurants. (Figs. 19-21)

Trials are continuing on these products, and the use of a South Australian devised crab picking machine is to be explored.

The use of cooked crab meat in food service products e.g. crab salad was also being explored on an ad-hoc basis by an ex-chef, now operations manager of the company that conducted the cooking trials.

Conclusion

The project determined that crabs caught by potting could be maintained alive at sea and onshore for sufficiently long to enable their orderly marketing.

It demonstrated that crabs so handled could command a premium and that, at times of peak catches, the crabs could be processed and thus removed from the local market, preventing gluts and consequent price crashes.

Crabs could be shipped to chilled markets in Japan where they are well received.

Crabs could also be frozen raw, or cooked and frozen for both domestic and export markets where they are well received.

The export market would return a premium price to the fishermen ($4.50/kg +) for both cooked and raw product. The domestic market was not as profitable, but would remove crabs from the local market at peak season.

Crabs unsuitable for sale whole can be successfully converted to meat.

Further work is necessary if crabs are to be exported alive, and arrive with acceptable mortalities. Further work may also be done on value-added crab meat products, particularly recipe style food service items.

Reference

Reference: 1. Anon 1994
Annual Report, Fisheries Department of Western Australia 84pp.

Acknowledgements

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APPENDIX I

Market Study for Blue Crabs

AN ANALYSIS OF SELECTED DOMESTIC AND OVERSEAS MARKETS FOR BLUE CRABS (PORTUNUS PELAGICUS) FROM COCKBURN SOUND W.A.

1. Current Markets

A small proportion of blue crabs are sent to the Sydney markets. Market reaction has generally been unfavourable due to poor quality and inconsistent supply. Crabs trawled from Shark Bay by prawn and scallop trawlers, and snap frozen at sea, are however, well known and accepted in New South Wales. This option is not open to Cockburn Sound fishermen due to vessel and gear restrictions.

The vast majority of Cockburn Sound crabs are sold on the domestic (Perth) market.

The market is relatively small (Perth metropolitan population 1.1 million) and is easily saturated. The major demand for crabs occurs over the weekend (Friday, Saturday and Sunday). Demand is poor on weekdays.

Thus prices fluctuate dramatically. The Perth Auction does not keep records but strong anecdotal evidence points to a weekly price pattern thus is low ($2-3/kg) at the midweek and higher ($4-6/kg) at the weekend.

Major buyers (KFM, Mulataga, Catalano, Sealanes) have sufficient live tank or cool-room or blast freezer capacity to hold crabs landed midweek for the weekend, if the crabs are in fit condition to do so.

Most complained of poor and inconsistent quality.

2. Sydney Market

Crabs may be sold privately or through the Sydney Fish Marketing Authority.

Buyers are wary of WA blue crabs, having bought them in the past and suffered from poor quality. Most would prefer to buy through the auction, at least until they were satisfied as to quality. It is usual for NSW buyers then to approach sellers direct, with higher offers. These should be treated with utmost caution, and product never sent without the invoice being paid in cash, in full, in advance. As most buyers will not accept these terms, the Auction remains the safest route for live crab sales. It is strongly advised that fishermen sell to a local (Perth) agent who can pack and ship to Sydney as the slightly lower price is more than offset by reduced risk, and the agent can ensure a consistent supply to the auction.

Buyers of frozen crabs would generally also prefer to deal with an agent who has established facilities, preferably DPIE export registered. This is for the obvious reason that they can trust that the killing and freezing process is

of the highest standard. It also allows individual catches to be pooled and thus reduces freight costs.

An analysis of the Sydney Auction price is given below. An analysis of the packaging and freight costs is given in Appendix 1.

Sydney Auction Prices - Blue Crabs

Month	Kg Sold	Total Value ($)	$/Kg (AU)
Nov 93	6,229	43,161	6.93
Dec 93	5,669	47,907	8.45
Jan 94	6,348	46,001	7.25
Feb 94	12,682	61,499	4.85
Mar 94	17,303	78,847	4.56
Apr 94	11,602	63,302	5.46
May 94	16,291	95,649	5.87
June 94	18,864	103,260	5.47
July 94	16,646	100,075	6.01
Sept 94	5,959	47,507	7.97
Oct 94	3,035	25,554	8.41
TOTAL	**172,664**	**766,341**	**6.00**

Two points are obvious, firstly prices are firming and secondly, prices are highest, and quantities lowest in October-January. December and January are the peak months for Cockburn Sound.

This may be analysed as follows:

	$	$
Sydney Auction Price (December 1994 - projected)		9.00
Less Auction costs @ 12½%		(7.88)
Weight Loss Allowance	0.40	
Labour	0.66	
Packaging	0.45	
Airfreight (nett)	1.44	
Unallocated Overhead	0.45	(2.74)
Net Return		4.48

This is below the "target" price of $5.00/kg, a $0.50/kg lift in the average would bring the market into line with fishermens expectations. A close watch on the market by the Association is, therefore, warranted.

One private buyer, which specialises in IQF product is anxious to enter into contract arrangements, via an export registered Perth processor. The agreements are usually for five years, with an annual agreed "beach price". Currently this is $4.50/kg for pot-caught crabs in the 300-400g range ($1.00/Kg less for netted). Such prices are always negotiable but a contract price of $4.50/kg would compare favourably with the current annual average beach price.

Overseas Markets

S.E. Asian countries were very reluctant to provide even 'spot' prices, and had no market analysis. Some information was provided by AUSTRADE, but this too was sparse. Japan and Taiwan were better, and a ready market exists in S. Korea for IQF crabs.

1. Singapore

The blue crabs are well known in Singapore where they fit below mud-crabs in the price chain. Local supply is steady but sizes are generally small and there are fears of reduction in supply. Sources of imports include Sri Lanka, Indonesia and Malaysia. Buyers would not commit to price but were keen to see samples.

2. Kuala Lumpur

As Singapore. This market would be better served by direct sales to individual companies. Pok Brothers expressed interest, as did Eden Gardens (a restaurant chain). Neither would reveal prices but did ask for samples.

3. Hong Kong

There is a consistent high demand for seafood of all types in Hong Kong. Generally crabs retail at HK$100 to $150 per kilo for the popular 400 size (AUSTRADE). At HKD5.85 to AUD1.00 these prices equate to $17.09 to $25.64 per kilo.

This may be analysed as follows:-

	AUD	AUD
Median Retail Price (AUD)		21.35
Less Retail Margin (40%)	8.54	12.81
Less Importers Margin (20%)	2.56	10.25
Less		
Weight Loss - Allowance	0.40	
Labour @ $0.66/kg	0.66	
Packaging @ $0.45/kg	0.45	
Airfreight @ $4.08/kg (nett)	4.08	
Unallocated Overhead @ $0.45/kg	0.45	(6.04)
Net Return		4.21

At $4.21 return to the processor, the business would be marginal at the median price quoted. It would be profitable at the higher end of the retail market. It is suggested that this market be approached when others are well established.

4. South Korea

One processor has been approached to supply IQF crabs to Korea @ USD8.10 C&F Seoul. The client requires one Full Container Load (FCL) per month (Approximately 13mt). Thus crabs would need to be stored at peak catch times to allow for off season shipments.

This equates to AUD10.66/kg, and is analysed as follows:

	AUD	AUD
C&F Value		10.66
Less Labour $0.66/kg	0.66	
Packaging $0.10/kg	0.10	
Freezing @ $0.15/kg	0.15	
Freight @ $0.31/kg	0.31	
Unallocated O/H $0.45/kg	0.45	(1.67)
Net Return		8.99

Clearly, this is an attractive option.

5. Taiwan

Two importers contacted stated that imports were few and mainly from the USA. However, the Taiwanese market now closely resembles the Japanese market in terms of price and importers tend to be less risk averse than the Japanese. Taiwan has excellent potential and would be an obvious target when consistent supplies of high quality product are available.

6. Japan

Imports of Live Blue Crabs are as follows:

Period	Tonnage	Total Value (JPY)	JPY/kg (av)
1991	6,658	5,500,000,000	826
1992	6,692	5,900,000,000	881
1993	4,682	5,376,000,000	1,148

Figures are not yet available for 1994 but contacts claim that tonnages are trending down, and prices firmer, around JPY1,500/kg. This equates to AUD20.00/kg.

This may be analysed as follows:

	AUD	AUD
Value C&F Tokyo (Narita)		20.00
Less Losses @ 8%	0.40	
Labour @ $0.66/kg	0.66	
Packaging @ 0.45/kg	0.45	
Airfreight @ $4.74/kg (Gross)	5.70	
Unallocated O/H @ $0.45/kg	0.45	(7.66)
Net Return		12.34

Clearly this market has tremendous potential. It should, however, be approached only when shippers are satisfied that they will continually produce product of the highest standards. The Japanese are patient and will sustain losses if they believe there is a long term benefit. The Japanese specialise in long-term relationships based on mutual trust and respect. Once that is gained, it is very difficult to shake but the Japanese expect loyalty and will expect constancy of supply even when other markets (temporarily) may offer better returns.

In conclusion, it can be seen that there are markets in Asia and Australia that will give the industry a major lift in value. Those markets are accessible from Perth and will reward fishermen who consistently produce top quality product.

Appendix

Cost Analysis

1. Exchange rates were taken from the Australian newspaper on 24.11.94.

2. Packaging/Freight Costs

   (a) Weight Loss: Expected to be 8% on airfreighted live crabs at a beach price of $5.00/kg.

   (b) Labour: Based on Rock Lobster Industry standards i.e. 6 people @ $11.00 per hour packing 1000 kg/Hr

   (c) Packaging: (10kg nett/carton)

   Airfreight

-	Foam Eskie @	$2.70
-	Bottle @	$0.90
-	Wood Shavings	$0.10
-	Outer and label @	$0.80
	TOTAL	**$4.50 or $0.45/kg**

   Seafreight (10Kg nett)

-	Carton @ $1.00 ea.	$0.10/kg
-	Freezing (Ind. Standard)	$0.15/kg

   (d) Airfreight

Sydney $1.20/kg x $\frac{12 \text{ Gross}}{10 \text{ nett}}$	$1.44/kg
Hong Kong * $3.40/kg x $\frac{12 \text{ gross}}{10 \text{ nett}}$	$4.08/kg
Tokyo ** $4.75/kg x $\frac{12 \text{ gross}}{10 \text{ nett}}$	$5.70/kg

   (e) Seafreight (FCL)

13 mt @ $4,000/FCL	=	$0.37/kg

   (f) Unallocated Overhead

Documentation, Administration, (Industry Standard)	$0.45/kg

* Singapore & Kuala Lumpur are similar.

** Taiwan and Seoul are the same rate.

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APPENDIX II

Interest created by first export of Blue Crabs from Western Australia

Exporters target Japan with pincer movement

BY PETER KERMODE

FOR THE past seven weeks staff at Central Oysters Supply WA have processed about 200kg of crabs each day to prepare for WA's first export of blue manna crabs to Japan.

The Cockburn Crab Fishermen's Association joined the party, working overtime to provide enough crabs during a traditionally slow period.

Central Oyster Supply, which processes and sells seafood to the domestic and overseas market, bought the crabs and processed and cooked them in preparation for export to the Japanese market.

The Japanese importer sent representatives to Perth to ensure Central Oysters followed a number of labour intensive specifications.

The crabs have to be cooked, spiked through the mouth to release fluid, wrapped individually and snap frozen.

The first batch of five tonnes leaves this week.

The crabs have been packed in foam boxes and will be sent to Japan in a refrigerated ship container.

The managing director of Central Oyster Supply, Mostyn McAullay, is hopeful the crab export market will grow and help the company export other seafood to Japan.

A crayfisherman in Geraldton for 35 years, he firmly believes in the future of exporting WA seafood.

Crab cargo: Ken Styles, left, and Mostyn McCaullay with the frozen crabs ready for export.

"We don't expect to make a lot of profit out of this one, we just wanted to learn how to do it properly," Mr McAullay said.

"We are hoping this will lead to other things."

The new market is good news for the fishermen because they get a market for the crabs in a slow period, without encroaching on the domestic market.

"The fishermen are very active around December and January but things quieten down for the rest of the year," Mr McAullay said.

"They see it as a supplement to their income."

Central Oysters were approached by the Japanese importer after being referred by other customers.

"We were getting a name around the place and people knew we were experienced with the Japanese," marketing manager Michael Osborne said.

"For small companies like us it's hard to get into abalone, crayfish or prawns, but crabs have not had much attention."

Japan gets most of its crabs from China, Korea and Vietnam, which have the same blue manna species as WA but generally of a smaller size.

Japanese crab grab means local jobs

FREMANTLE HERALD
15 JUL 1995 P 5

by STELLA GLORIE

IT'S no small wonder Mostyn McAulley and Michael Osborne can rest easy at night. They both feel personally responsible for helping to lift Australia's balance of payments.

Earlier this week the two Pakenham Street businessmen, through their business Central Oysters, exported some five tonnes of cooked crabs to Japan. A significant exporting breakthrough – the first of its type in WA.

In collaboration with Cockburn Fishermen's Association and the WA Fishing Industry Council, Central Oysters won the contract against some heavy contenders.

Mr Osborne put success down to the quality of their product and their professional attention to detail.

Long-winded

"It was a long-winded trial and error process. Basically we spent two months conducting a feasibility study," he said.

Then came the labour-intensive work that would guarantee the superb end product.

"The crabs were fist drowned in an ice slurry, then cooked in specially devised cookers, spiked to release intestinal fluid and then individually packed in ice," explained Mr McAulley.

Japanese representatives were present to supervise.

"I think this says a lot about their level of commitment to the project," said Mr McAulley. "They took it very seriously; it's going to be an on-going undertaking."

Mr McAullay paid tribute to marketing manager Michael Osborne's dedication in promoting the company.

"The whole endeavour needed a very gentle approach. We didn't want to barge in there and bombard them with our ideas. We really wanted to build our reputation, which I feel we have," said Mr McAulley.

"It has been a great learning experience. In comparison the profit factor is really secondary."

Photo by Michael Wagone

• Managing Director of Central Oysters Mostyn McAullay - happy with the new export deal with Japan.

Fig. 20 Cooked crab meat by-product for 'miso'.

Fig. 21 Cooked picked crab meat (500g packs).

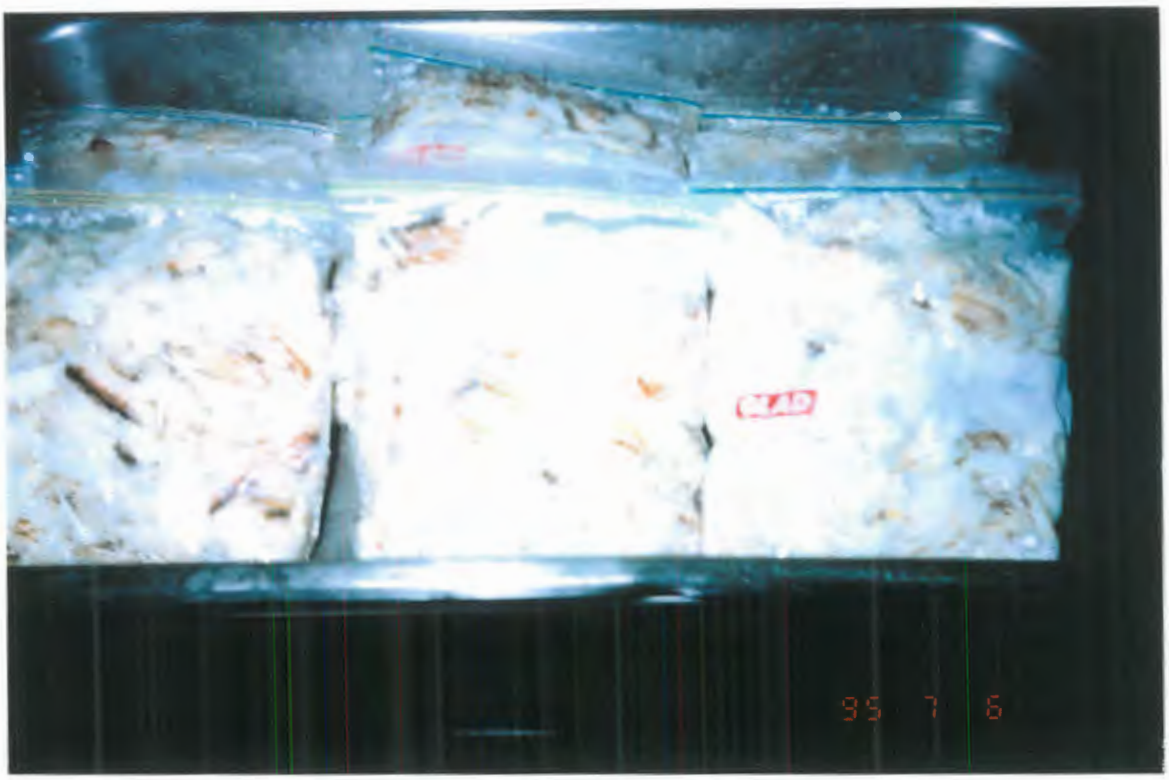

Fig. 16 Crabs leaving cooker

Fig. 17 Cooked crabs in ice slurry @ 0°C

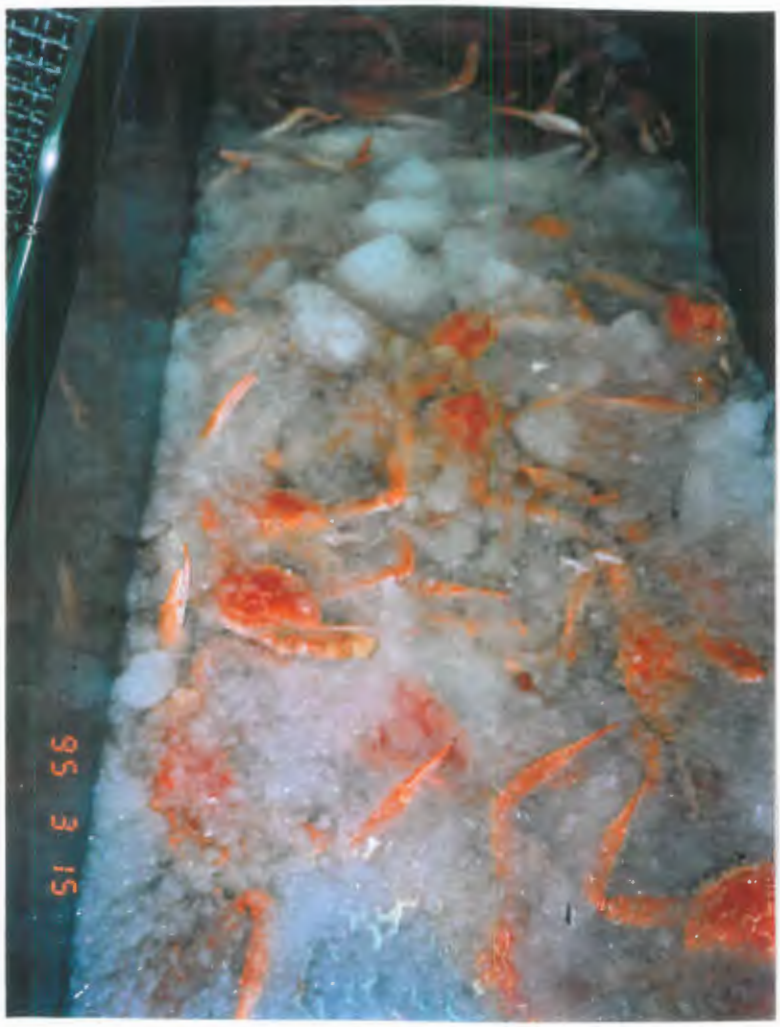

Fig. 18 Cooked crabs draining prior to packing for export

Fig. 19 Picking crab meat

Fig. 2 Hauling a gill net over the bow.

Fig. 3 Hauled net, with crabs ready for sorting.

Fig. 4 Shooting a gill net (Figs 1-4 B. Patterson IFIQ)

Fig. 5 Gill net shot over stern tray to avoid tangling net in O/B motor.

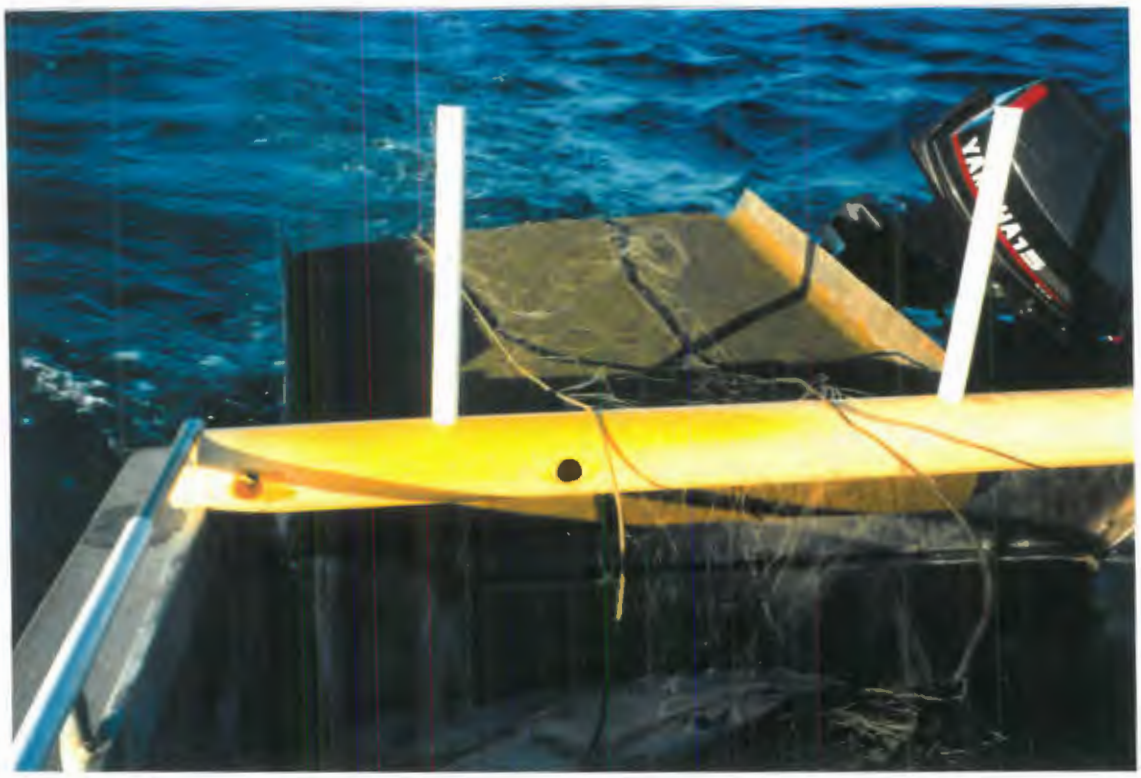

Fig. 6 Crab pot coming aboard.

Fig. 7 Transfer of crabs to ice slurry in insulated bin.

A number of methods of tying the claws at sea were attempted. Given the success of the chilling and holding method, and the time and extra labour involved in tying claws, it was eventually deemed unnecessary at sea. (Figs. 8-9)

Once landed, crabs were held alive in both recirculating seawater and flow through seawater tanks, both in current commecial use.

In the first trial, in December 1994, fifty crabs were held for a period of six weeks, without feeding, in a recirculating seawater tank with bilogical filter. During the first three days, considered the minimum for live shipment, three crabs (6%) died. At the end of the trial, thirty crabs (60%) remained alive. The majority of the mortalities appeared due to injury from other crabs, as the claws were unbound. Actual results are given in Table 1.

Table 1

Live Holding of Blue Crabs - Trial One

Days	No. Dead	Percent
0 - 3	3	6
3 - 7	4	8
7 - 14	2	4
14 - 28	3	6
28 - 42	8	16
	20	**40**

In the second trial, crabs were held in a flow through rock lobster holding tank (February 1995) and packed for simulated shipment to Japan. (Figs. 10-11)

Twenty three crabs, weighting 9 kg were held for three days prior to packing. During the holding period, three crabs died. Twenty crabs, weighing 8 kg were packed, using standard rock lobster packaging techniques and held for twenty-four hours. (Figs. 12-14)

On opening, five crabs were found dead (1.5kg), a mortality rate of 18.75%. While this mortality would be unacceptable to a customer, it is comparable with mortalities in the early years of live lobster shipments.

The remaining crabs were returned to the tank where the remaining crabs stayed alive for a further three days, a typical shelf life in a live seafood restaurant.

In March 1995, trial shipments of two cartons (9kg each) were sent to both Taiwan and Japan. In both cases mortality rates were unacceptable for the live market. The Japanese market structure, however, separates live from chilled. Buyers believed that crabs packed alive would be favourably received by buyers of chilled crabs. This is because the 80% survival rate would be excellent in a market that expects to receive its product fresh, but dead. Further commercial trials are expected in the 1995-6 crab season.

Fig. 8 Tying crab claws at sea (electrical ties)

Fig. 9 Tying crab claws at sea (elastic bands)

Fig. 10 Flow-through live tanks used for holding crabs alive.

Fig. 11 Crabs after seven days in live tank.

Fig. 12 Crabs chilled prior to packing (@ 5°C for 30 seconds)

Fig. 13 Packing for live export (1st layer)

Fig. 14 Packing for live export (2nd layer + 1L Ice Bottle)

Fig. 15 Crabs entering cooker