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# RESEARCH REPORTS IN THE ECONOMICS OF GIANT CLAM MARICULTURE

**Working Paper No. 3**

**Market for Giant Clams as Aquarium  
Specimens: Report on a Survey of Retailers of  
Supplies for Saltwater Aquariums. Southeast  
Queensland, Australia**

by

**Clem Tisdell**

With the assistance of René Wittenberg

**November 1989**



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MARICULTURE**

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Southeast Queensland, Australia<sup>1</sup>**

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**Clem Tisdell<sup>2</sup>**

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Research for the project *Economics of Giant Clam Mariculture* (Project 8823) is sponsored by the Australian Centre for International Agricultural Research (ACIAR), G.P.O. Box 1571, Canberra, A.C.T. 2601, Australia. The following is a brief outline of the Project:

The technical feasibility of culturing giant clams for food and for restocking tropical reefs was established in an earlier ACIAR project. This project is studying the economics of giant clam mariculture, to determine the potential for an industry. Researchers will evaluate international trade statistics on giant clams, establish whether there is a substantial market for them and where the major overseas markets would be. They will determine the industry prospects for Australia, New Zealand and South Pacific countries, and which countries have property right factors that are most favourable for commercial-scale giant clam mariculture. Estimates will be made of production/cost functions intrinsic in both the nursery and growth phases of clam mariculture, with special attention to such factors as economies of scale and sensitivity of production levels to market prices.

Commissioned Organization: University of Queensland.

Collaborators: James Cook University, Townsville, Queensland; South Pacific Trade Commission, Australia; Ministry of Primary Industries, Fiji; Ministry of Natural Resources and Development, Kiribati; Silliman University, Philippines; Ministry of Agriculture, Fisheries and Forests, Tonga; Forum Fisheries Agency, South Pacific; ICLARM, Manila, Philippines.

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# **Market for Giant Clams as Aquarium Specimens: Report on a Survey of Retailers of Supplies for Saltwater Aquariums, Southeast Queensland, Australia**

## **ABSTRACT**

Retailers in Southeast Queensland of supplies for saltwater aquariums were surveyed in August 1989 with a view to obtaining some indication of the likely demand in this region (and more broadly in Australia for giant clams as aquarium specimens. Information was gathered on the size of the market, the possible demand in Australia for giant clams from clam farms for the aquarium trade, prices, attitudes of aquarium retailers to clam farms and about economic prospects for supplies from clam farms, as well as other factors such as the desirability or otherwise of allowing imports of live clams for the aquarium trade. It emerged that the Australian market for giant clams is likely to be small. Possibly it could absorb about 5,000 clams per year but it seems that these will need to be sold to retailers at a price of \$10 each or less (possibly \$6 each or less) if a market of this size is to obtain. The market is so small that to supply it would be a sideline for a clam farm and indeed one farm could more than supply the whole market. At a turnout of say 1 00,000 clams per year by a farm, it would only require 5 per cent of its production to satisfy the whole Australian market for clams as aquarium specimens.

Keywords: Aquarium, giant clams, Australia

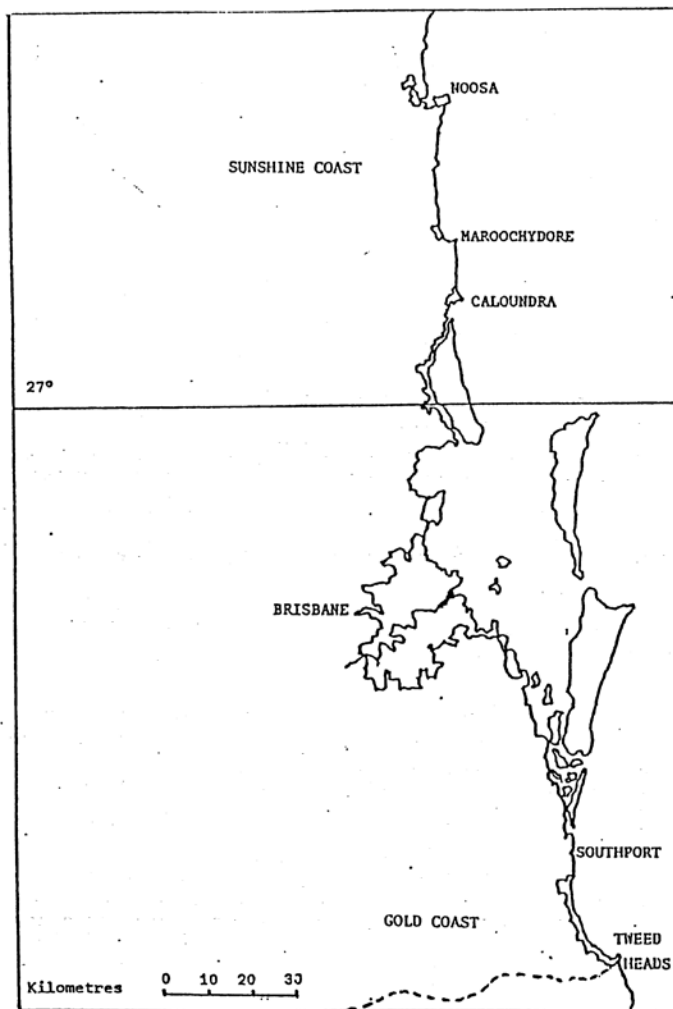
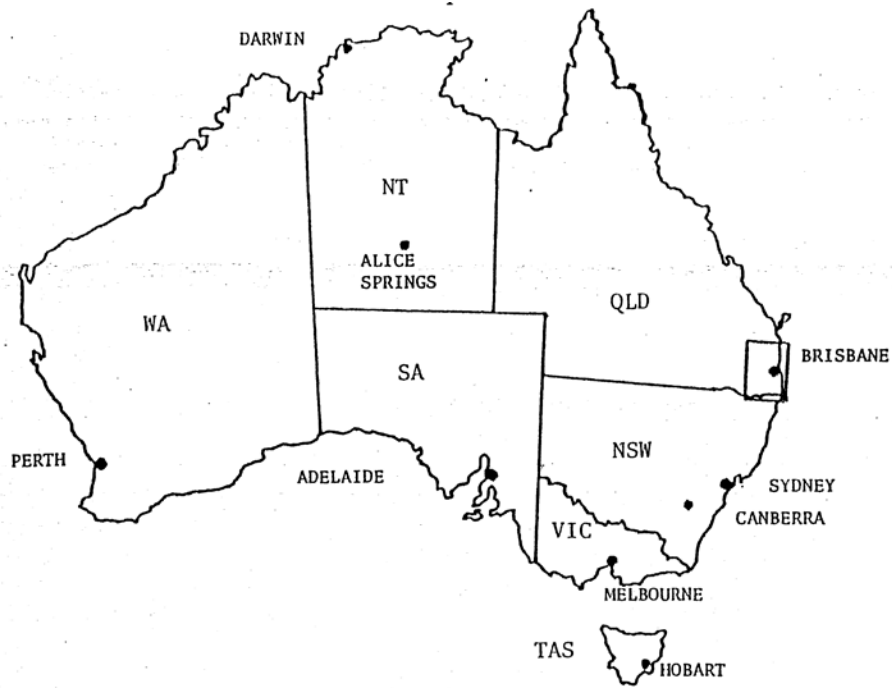
JEL Classifications: Q57, Q31

# **Market for Giant Clams as Aquarium Specimens: Report on a Survey of Retailers of Supplies for Saltwater Aquariums, Southeast Queensland, Australia**

## **1. Introduction**

The Micronesia Mariculture Demonstration Center (MMDC), Palau, has reported a substantial demand for giant clams as aquarium specimens. It began marketing 1- and 2-year old *Tridacna derasa* as aquarium specimens in 1987-88. "Exports from the MMDC hatchery are routed to Honolulu, then to the US mainland and Europe (England and West Germany). The potential size of this market is not known but the current demand exceeds the MMDC's available supply. Opportunities exist for other hatcheries in the region to begin supplying aquarium markets" (Heslinga et al. 1988). There are as yet no exports from Australia for this trade by the three clam farms which currently exist in Australia in northern Queensland. The purpose of our survey reported here was to gather some information about the potential Australian market for giant clams as aquarium specimens.

The survey was limited to Southeast Queensland (Sunshine Coast- Brisbane- Gold Coast) because this was effective from a cost point of view given the location of the researchers. It was also possible to make joint use of journeys undertaken for the purpose of interviewing retailers of giant clam shells. This region also has a relatively large population - about 1.6 million. The general location of the survey is in Map 1.



**Map 1: Map showing general area of survey – Sunshine Coast – Brisbane – Gold Coast Region.**



There were 10 retailers in the survey and they were initially contacted by telephone using the “Yellow Pages” (Trade Directory) and all, except one, were directly interviewed at their shops using the questionnaire attached as Appendix A. In the case of the New South Wales respondent, the interview was conducted by telephone.

A list of the retailers responding with their addresses is attached as Appendix B. Note that one retailer is from outside the region, namely at North Bondi, Sydney, and is a large supplier of aquarium specimens. Of the respondents, 5 were located in Brisbane, 1 in New South Wales, 1 on the Gold Coast and 3 at the Sunshine Coast. We contacted all retailers of supplies for saltwater aquariums in the Sunshine Coast- Brisbane - Gold Coast area and completed the interviews in August, 1989.

## **2. Sales of Giant Clams for Saltwater Aquariums**

None of the aquarium retailers in the sample were selling live giant clams at the time of the survey. Two main reasons were given, (a) lack of availability of supply, or (b) lack of adequate demand for them. Five of the ten retailers of aquarium supplies had sold clams in the past but only in very small quantities. They appear to have sold not more than three clams each in the past six years or so and supplies appear to have been obtained in response to special requests by customers. It seems that in the past these supplies came from the wild and were collected by divers in the region. It seems likely that they were mostly *Tridacna maxima*. Giant clams being protected species and the import of live giant clams to Australia being illegal; it is understandable that supply is a problem. Up until now supplies have not been available from Australian giant clam farms. However, one retailer, “Wonderfish Aquarium”, said that it had been approached by a giant clam cultivator 'south of Cairns' offering live clams for sale for aquariums. But they were only available in minimum batches of 1,000 at a time. This minimum amount is uneconomic for a retailer to purchase since he would expect to sell only a few a week. Ideally he would like to buy in batches of 10 - 12 at a time.

### **3. Possible Demand in Australia for Giant Clams from Clam Farms for the Aquarium Trade.**

Retailers were asked (Question 3), "Do you think that there would be a demand in Australia for supplies of clams from clam farms for the aquarium trade?" and asked to give reasons for their answer and if they said 'Yes', to indicate the extent of the demand. Seven of the ten respondents said that there would be demand in Australia for supplies of clams from clam farms for the aquarium trade.

The owner of the Southern Cross Aquatics shop (North Bondi, NSW), believes that there is a good local demand for clams in the aquarium trade, as he received enquiries constantly, and a strong overseas demand for clams in the aquarium trade. He has not been able to sell any clams as it has been illegal to obtain them, either from overseas (because the species is protected under CITES) or domestically. A few months prior to the survey, he was contacted by a clam-farm operator from 'around Townsville' but he has not been supplied with any specimens to date. Thus he is very interested in the development of clam farms. Two of the retailers interviewed (Scott's Aquarium and Clayfield Aquarium) stated that most of the demand for clams in the aquarium trade would come from people keeping special live coral tanks. Thus, as these are not great in number, current sales would be limited. However it appears that these coral tanks are becoming more popular and some individuals with normal saltwater tanks would also be interested in stocking them with live giant clams.

It is worthwhile considering individual answers to Question 3. Of those saying 'Yes', the following responses are of interest:

1. Argonaut Aquarium: "100 saltwater aquarium shops in Australia. 5 in Brisbane and 10 in Southeast Queensland".
2. Wonderfish Aquarium: "We could possibly sell 100 giant clams per year".
3. Scott's Aquarium: "Demand would only be from individuals having special live coral tanks. These need special lighting and few people have these tanks".
4. Clayfield Aquarium: "Yes, but limited sales because the main purchasers would be those stocking live corals and crustaceans in their aquariums. This is not a large group".

5. Westside Pets: “Yes, demand for a very small number. Not many invertebrates are stocked in aquariums. Biggest problem is transport because clams are heavy”.
6. Something Fishy: “Yes, if they would stay alive. It is difficult to keep clams and other shellfish alive”.
7. Southern Cross Aquatics: “Good local demand. Strong overseas demand. Constantly get enquiries”.

Of those saying ‘No’, two did not give any reason but Sunshine Aquariums and Pets said, “Not for this shop but in Brisbane probably hundreds could be sold”.

Question 7 was as follows: “Do you have or know of any figures on the number of saltwater aquariums in Australia? How many are there? Are they common? Are they increasing in number?” This was asked since it was believed that the number of saltwater aquariums would place a limit on the demand for giant clams as aquarium specimens.

Estimates varied considerably by those providing answers. Westside Pets suggested a maximum of 100,000 but pointed out that individuals involved in saltwater aquariums usually have than more one aquarium. Wonderfish Aquarium suggested possibly 50,000. Another said there were 5,000 to 10,000 in Brisbane and a Gold Coast supplier suggested 2,000 saltwater aquariums in the Gold Coast area. If there are a hundred retailers of saltwater aquarium supplies in Australia this suggests an average of 500 - 1,000 saltwater aquariums for outlet Australia-wide. Many suppliers pointed out that saltwater aquariums are more common in the southern Australian states. The number of such aquariums is increasing as technology improves.

From these figures it seems likely that the demand for giant clams for aquariums in Australia would not exceed 5,000 clams per year. That would involve sales on average of one clam for 5 - 10 per cent of saltwater aquariums per year, or an average of about 100 per retailer. Not all retailers will sell giant clams and not all aquariums will be stocked with the species, but in some aquariums more than one giant clam may be stocked. In reality, of course, this will be virtually a new market. Sales may be slow at first, then take off and subsequently be limited to replacement demand and that associated with expansion of the number of saltwater aquariums. The amount of replacement demand will depend on how long the clams live in private aquariums. However, it is clear that the Australian market for giant clams as aquarium

species is small (even if the figure of 5,000 is doubled) and would absorb only a small percentage of the expected total annual turnout from a commercial giant clam farm.

#### **4. Prices**

Since the market for giant clams was extremely thin, little information was available on the prices of aquarium specimens. Wonderfish Aquarium said that burrowing clams, *Tridacna crocea* in the range of 2 - 5 inches would sell for approximately Aus. \$20 retail, with slight price variation with size. A clam farmer quoted Aus. \$10 - 15 per clam delivered to Southern Cross Aquatics. Sunshine Aquarium said that it would expect to sell clams of 2- 4 inches in size to customers for about Aus. \$10 - 20. Clearly at these retail prices a price of \$10 - 15 per clam delivered to retailers from clam farms would appear to be too high. This tends to be confirmed by Question 12.

Retailers were asked how many giant clams they might sell annually if a ready supply happened to be available at a 'reasonable' price. They were also asked what prices they thought would be reasonable for them to buy at. Answers varied from very few clams (Westside Pets), to 20 - 100 clams (Sunshine Aquarium) and 100 clams (Argonaut and Wonderfish). Reasonable wholesale prices for giant clams ranged between Aus. \$3- 6 (Sunshine Aquarium), Aus. \$4- 6 (Westside Pets), Aus. \$5 - 10 (Argonaut Aquarium), Aus. \$10 (Wonderfish Aquarium) per clam. From this one might infer that a price per clam of \$5 - 10 might be reasonable but \$10 - 15 'too high'.

#### **5. Attitudes to Clam Farms and Advice to Clam Farms**

All of the retailers who answered Question 11 (a total eight respondents) were in favour of the farming of giant clams in Australia. The owner of Westside Pets welcomed the farming of any natural resource, as long as the environment is protected. As well, he welcomed it because it would keep the species alive and it would be of benefit to Australia, if export markets were established. On the other hand, the manager of Clayfield Aquarium believes that clam farming would only have a small impact on sales, as there is little demand for giant clams. The owner of Argonaut Aquarium believed there would be only limited sales as the giant clam is a long-living animal.

Retailers were asked (Question 5), "If clam farmers are breeding clams for the aquarium

trade, are there desirable characteristics that they should try to breed for? Is there some preferred size or species for the trade? Is there any species which you would prefer?”. Eight out of the ten respondents answered this question. Most indicated that clam farmers should try to breed for colourful mantles (especially blue-green) and indicated preferred sizes to be in the range two inches to eight inches. No retailer suggested a preferred species.

However, it seems that species of smaller size and brightly coloured mantles would be preferred, presumably more so if they happened to be more robust. It is possible therefore that *Tridacna crocea* would be ideal for the aquarium trade as it reaches a maximum length of only 15 cm and its mantle is usually brightly coloured and includes combinations of blue, purple, brown and orange. However Rosewater (1965), mentions that “living specimens of one of the smaller species, the *Tridacna maxima* are occasionally on sale in the Washington D.C. area and probably in other cities. These specimens were imported from Singapore several times a year”. The mantle of this species is often brightly coloured and variable in colour and pattern. It is also robust and grows to a larger size than *T. crocea*. One of the retailers in our sample reported sales of *T. crocea* in the past and it seems that others have had sales of *T. maxima* collected in the Moreton Bay area. It is also reasonable to infer that the retailer reporting a sale of giant clams on substrata was selling *T. crocea*. It is clear that large clams are not in demand for most aquariums, and most retailers are looking for clams of less than 6 inches in size.

Question 13 to retailers asked, “What advice would you want to give to someone planning to breed and grow giant clams to supply the aquarium trade?” The following interesting suggestions were received:

1. “Find a wholesaler to distribute. Otherwise it will not be economically viable because retailers want to buy in small quantities.”
2. “Prepare an information sheet which can be handed to the purchaser by the retailer.”
3. “Grow baby turtles instead. They sell for \$20- 30 each. Also explore the export market.”
4. “Pricing is important if you want to sell clams.”
5. “Look for overseas markets.”

6. “Growers of clams will go broke if they concentrate on the Australian aquarium market because locals are a bit skeptical about clams. Concentrate on the Asian aquaculture market and have the Australian market as a sideline.”

## **6. Transportability of Clams, Storage and Import of Giant Clams from Overseas**

Respondents to Question 9 indicated that they have not encountered any difficulty in the transport and storage of clams. They were said to be easy to keep but overcrowding could facilitate the outbreak of disease. However, ‘Wonderfish’ indicated that summer heat can cause excessive mortalities.

Out of the seven retailers who answered the question about whether it should be legal to import giant clams from overseas (Question 19), two respondents believed they should not be allowed to be imported into Australia for environmental reasons and because there was no need for such importation. Among the five people replying ‘Yes’, one person believed that legal to import farmed clams provided Australian animals are allowed for sale in Australia. The other shop-owners believed that imports of giant clams should be legal if they are farmed and as long as there are no problems with disease. They would rather see overseas clam stocks exploited rather than Australia’s. One commented, “If you can import other marine fish, why not clams as long as they go through quarantine”.

## **7. Discussion**

One of the problems in carrying out a survey of this nature is that giant clams are protected species in Australia and any supplies which might have been obtained in the past were presumably obtained through private divers and collectors. Retailers might therefore have been reluctant to discuss their trade, if any, in these species. Nevertheless, it is quite clear that the current trade is extremely small. None of the aquarium retailers interviewed had received shipments as yet from commercial farmers of giant clams although two retailers had been approached about this possibility. One of the main reasons why those approached appeared not to have taken up the offer of supplies from clam farms was the requirement of purchase of a minimum batch of 1,000 clams which is too large a quantity for most retailers.

It seems that the Australian market for giant clams for aquariums is likely to be limited to about 5,000 clams per year and may fall below this level once the market is “saturated”. On

the other hand, the number of saltwater aquariums is increasing so this may help to maintain demand. Nevertheless, the market would not be adequate to support a clam farm, assuming that a commercial farm turns out at least 50,000 to 100,000 clams per year. Not even a small specialist could survive in the market, for the total annual revenue generated, assuming an average price to the grower of \$6 per clam, would only be \$30,000. So the Australian aquarium market would seem at most only to provide scope as a sideline to other activities or to the supply of clams for other end-uses. Whether or not Australia could compete in the export-market (which undoubtedly is a larger market) remains to be explored. The potential world market for aquarium clams probably does not exceed 150,000 clams per year (30 times the possible Australian market) and so the whole world demand could be supplies by say two clam farms.

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## APPENDIX A

*Confidential*

*August, 1989.*

### **SURVEY OF RETAIL OUTLETS OF SUPPLIES FOR SALTWATER AQUARIUMS**

1. Name, address and telephone number of outlet

.....  
.....  
.....

2. Do you sell giant clams for saltwater aquariums? (Please circle your answer)

Yes

No

If Yes, from where do you get your supplies?

Also give some details about the size and type of clam shells, numbers sold and total value of sales.

.....  
.....  
.....  
.....

If No, why don't you sell giant clams?

.....  
.....  
.....



Did you sell giant clams in the past and discontinue sales? (Please circle your answer)

Yes

No

(Please give reasons if you discontinued)

.....  
.....

3. As you may know, it is now possible to farm giant clams. Do you think there would be a demand in Australia for supplies of clams from clam farms for the aquarium trade? (Please circle your answer)

Yes

No

Please give some reasons for your answer. If Yes, how much demand do you think there would be?

.....  
.....  
.....

**The remaining questions need only be answered by retailers who have sold or sell giant clams**

4. How much do giant clams for the saltwater aquarium trade cost the retailer and the customer? Please indicate price variations according to size, quality or type of clam, if possible.

.....  
.....  
.....  
.....  
.....

5. If clam farmers are breeding clams for the aquarium trade, are there desirable characteristics that they should try to breed for? Is there some preferred size or species of giant clam for the trade? Is there any species which you would prefer?

.....  
.....  
.....  
.....

6. If you are selling or have sold giant clams what are the main difficulties that you have faced in marketing them (that is, in dealing with them)?

.....  
.....  
.....  
.....

7. Do you have or know of any figures on the number of saltwater aquariums in Australia? How many are there? Are they common? Are they increasing in number?

.....  
.....  
.....  
.....

8. If you have sold giant clams, what type of customer tends to buy them?

.....  
.....  
.....



13. What advice would you want to give to someone planning to breed and grow giant clams to supply the aquarium trade?

.....  
.....  
.....

14. Would you like a complimentary copy of the report on this survey? (Please circle your answer)

Yes

No

Thank you for your co-operation,

Clem Tisdell,  
Department of Economics,  
University of Queensland,  
St Lucia, 4067. Tel. (07) 377-2049

## APPENDIX B

### Names and Addresses of Respondents to Questionnaire

<b>NAME OF RETAILER (Saltwater Aquarium Supplies)</b>	<b>ADDRESS</b>
Argonaut Aquarium	250 Kingston Road, Slacks Creek.
Clayfield Aquarium	507 Park Avenue, Clayfield
Mooloolaba Aquarium Centre	110 Brisbane Road, Mooloolaba
Ocean Reef Aquarium	49 The Esplanade, Maroochydore
Scott's Aquarium	266 Lillian Avenue, Salisbury
Something Fishy	3315 Gold Coast Highway, Surfers Paradise
Southern Cross Aquatics	North Bondi, N.S.W.
Sunshine Aquarium & Pets	Kawana Commercial Centre, Warana Beach, Nicklin Way
Westside Pets	179 Moggill Road, Taringa
Wonderfish Aquarium	101 Seville Road, Holland Park

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