Evaluation of the markets for dried seafood (revised addition for the Australian Seafood Industry)

Stephen Thrower and Andrew Forrest

July 2005

SEAFOOD SERVICES AUSTRALIA

Queensland Government
Department of Primary Industries and Fisheries

Australian Government
Fisheries Research and Development Corporation

Project no: 2003/418

Evaluation of the markets for dried seafood (revised addition for the Australian Seafood Industry)

Project no: 2003/418

July 2005

PRINCIPAL INVESTIGATOR Stephen Thrower and Andrew Forrest
ADDRESS Emerging Technologies DPI&F Qld
19 Hercules Street
HAMILTON QLD 4007

Phone: 07 3406 8555
Fax: 07 3406 8665

ISSN: 0727-6273
ISBN: 0 7345 0318 0
QI05058

Table of Contents

Non-Technical Summary

2003/418	Evaluation of the markets for dried seafood revised addition for the Australian Seafood Industry

PRINCIPAL INVESTIGATOR Stephen Thrower and Andrew Forrest
ADDRESS Emerging Technologies, Department of Primary Industries and Fisheries Queensland (DPI&F) Qld
19 Hercules Street
HAMILTON QLD 4007

The Department of Primary Industries and Fisheries (DPI&F) was commissioned by Seafood Services Australia Ltd (SSA) to prepare an update of the publication "Evaluation of the Market for Dried Seafood 1993-96". This was done as a desk study using data from State and Commonwealth governments' officers in the field. The report takes the form of a short publication that can be used either as an insert in the original comprehensive report or as a stand alone booklet.

There is a short introduction to the considerations involved in setting up a dried seafood operation followed by an analysis of markets. The discussion concentrates on the three main exports for Australian dried seafood, Hong Kong, Singapore and Japan.

Acknowledgements

Funding for this project was provided by the Australian Government's Fisheries Research and Development Corporation through the Seafood Industry Development Fund administered by Seafood Services Australia Ltd. The assistance is also gratefully acknowledged from individuals in the Commonwealth and State government agencies listed in the Sources of Information section namely:

Margaret Than-West, AUSTRADE, Singapore

Yumi Ozaki, QGTIO, Osaka

Darryl Schaffer, ABS, Brisbane

Ellen Kwok, QGTIO, Hong Kong

Background

There is a small but active trade in dried seafood products in Australia. In general, Australian producers export comparatively small quantities of premium quality

product to Asian markets. In return, we receive larger quantities of less expensive product which is sold in localities where there is a large multicultural mixture.

Many dried seafood products are prized for their health promoting properties, and are regarded as highly priced nutraceuticals. The trade in these is very well established and there is considerable scope for establishing a number of profitable small scale seafood drying ventures.

Need

The 1994 report was one of the most popular and most profitable of all the reports sold by Seafood Services Australia Ltd. It contains a wealth of information on such factors as how the different drying processes work, how the product is eaten, and what are the costs incurred and prices received. Unfortunately market information has a fairly short shelf life since it varies with the economic conditions of the day, and so reports must be regularly updated. This report attempts to update some of the key statistics available in the 1994 report.

Objectives

- Validate and update the data in the report “Evaluation of the Market for Dried Seafood 1993-96” and survey industry where possible.
- Inform and improve market access confidence of dried seafood producers in Australia.

Methods

A number of avenues were pursued in this research. The funding for the original project in 1994 had generous provision for travel to overseas markets. We had no such funds so we attempted to contact sources listed in the original report. This proved unsuccessful. We set up a web site posing as buyers and sellers of dried product with little more success in getting specific prices. We contacted government agencies charged with gathering trade statistics which proved more fruitful. Finally we paid a visit to Asian businesses in Richmond Victoria and Chinatown in Sydney to observe retail trade in Australia.

Results

The results of this work are presented in the attached publication. Because the data is taken from a variety of sources, the groupings of products vary. The reader is advised to concentrate on the general trends involved rather than specific details.

Benefits

This report will benefit people interested in establishing a dried seafood venture.

Further Development

Market statistics must be current to be useful. Further updates of market reports should be done on a regular basis to both keep the information current, and make the original information available to entrepreneurs.

Planned Outcomes

The market statistics used in this report are the most recent currently available to us. The listing of considerations behind the design and operation of a dried seafood processing venture should assist in planning and costing.

Conclusion

The combination of the original report with this update provides a powerful tool for planning a dried seafood venture. It would be very useful if there was greater transparency and uniformity in the way that market data is reported.

References

ABARE, 2005 *Australian Fishery Statistics 2004,* ABARE and FRDC, Canberra

Appendix 1 Intellectual Property

The SSA's share of the intellectual property based on the relative values of the contributions is 59%, and the DPI&F share is 41%.

Appendix 2 Staff List

Several staff have been involved in this project. Mr Rossven Naidoo was the original principal investigator for the project. Stephen Thrower was then assigned as PI and he and Andrew Forrest finally completed the work and wrote the report.

Appendix 3 The report

"Evaluation of the markets for dried seafood (Revised addition for the Australian seafood industry)".

Evaluation of the markets for dried seafood (Revised addition for the Australian seafood industry)

Prepared by:
Stephen Thrower and Andrew Forrest

Date: 18 July 2005

Queensland Government
Department of Primary Industries and Fisheries

Table of contents

Introduction

In 1994 the Fisheries Research and Development Corporation funded the Queensland DPI to carry out a project applying modern technology to the drying of seafood. Part of that project was a study of markets for dried seafood. This resulted in a publication entitled "Evaluation of Markets for Dried Seafood 1993-1996". This was a very comprehensive document that proved to be so popular that in 2004 Seafood Services Australia Ltd commissioned Queensland DPI to carry out a small exercise to update some of the data in the original publication. This report is the result of that work. Interested readers are encouraged to read the original report for a more detailed discussion of the whole topic.

A brief introduction is given to highlight some of the most important factors to consider in setting up a seafood drying venture. This is followed by a summary of markets for Australian dried seafood.

Dried fish has been a staple item in the human diet since Palaeolithic times. The technique of preserving fish by salt drying was well established by the Bronze Age. Drying techniques varied depending on the climate and the availability of salt, but most involved some combination of brining, air drying and smoking. Improvements in transport and maintenance of low temperatures by ice and later mechanical refrigeration, meant that fresh fish could be kept longer and transported longer distances, thus reducing the reliance on dried fish in many countries. Demand for dried seafood was restricted to a few select species such as cod, valued for their unique characteristics developed in the drying process. These products are blander and more convenient to use than other traditionally dried fish.

How does drying preserve fish?
All living things require water to function properly and spoilage organisms such as yeasts, moulds and bacteria are no exception. The water content of fresh, lean fish is about 80%. Oily fish have lower water content, because the oil displaces some of the water. For example, a jack mackerel with 17% oil will have 63% water. When the water content is reduced to below 25%, bacterial growth ceases, and when it falls below 15%, moulds cease to grow.

A similar drying effect to removing water from a product can be achieved by adding compounds called humectants. Salt is a humectant. The addition of salt prior to drying reduces the level to which the water content must be reduced to prevent growth of spoilage organisms.

Rather than speak in terms of water content, it is better to consider the proportion of free water in the flesh that is available for supporting growth of spoilage organisms. The water present in food is held in a number of states, most is in the muscle cells, some is in the intercellular spaces, some is free. The water available for bacterial growth is expressed in two ways:

- It may be expressed as "percentage of available water" or "relative humidity"
- It is may be expressed as "Water Activity" (Aw) - the proportion of available water

A product with 70% available water has an Aw of 0.7, if the available water is 95%, water activity Aw is 0.95.

The Aw of a product determines whether spoilage organisms can grow in it. The lower limits for water activity for growth of some different spoilage organisms are:

Organisms	**Lower Limit of Aw**
Some moulds	0.9
Most moulds	0.8
Salt loving bacteria	0.65
All microorganisms	0.6

The Aw of a product seeks to be in equilibrium with the relative humidity in the air surrounding it. Aw will thus tell us whether a product will pick up water from the surrounding air or lose water to it. For example, a product with an Aw of 0.75 exposed to air with a relative humidity of 80% will pick water until the Aw is 0.8, a product with an Aw of 0.95 exposed to air at 85% relative humidity will lose water until its Aw is 0.85.

Optimum drying involves lowering the Aw at the deepest part of the fish to a level at which spoilage will not occur before significant spoilage can take place. As noted above, this can be achieved by removal of free water or penetration of humectants such as salt or both.

How does the drying process work?
At its most basic, drying is the process of removing water, either by physically removing it from the product by evaporation, pressing etc., or by immobilising it within the product by adding humectants such as salt.

Air drying involves two processes, the evaporation of water from the surface of the product, and the diffusion of water within the product to the surface. These require energy, and so can be accelerated by raising the temperature and the rate of movement of air over the surface. Care must be taken to avoid rapid, uneven drying or a hard, impermeable layer will form that prevents further drying (case hardening).

Salt drying involves exposing the surface to either dry salt or a strong brine solution. Water is drawn out of the product whilst at the same time salt begins to move into the product. Thus the product will continue to dehydrate, even while immersed in a salt solution. The removal of water together with the uptake of salt can bring about changes in the structure of the proteins in the flesh, which can further accelerate the drying process.

There are several ways in which the drying processes can be modified. Here are some examples of modifications and improvements:

- The oldest is probably **smoke curing** where fish is brined then dried over a wood based fire, raising the temperature and allowing uptake of smoke components that enhance the flavour and have some bacteriostatic and antioxidant effects.

- At its simplest, **solar drying** involves leaving fish on racks exposed to the sun and wind. Solar driers have been designed which improve the rate of drying by putting the racks in chambers set up to enhance normal convection and expel the moist air. There are numerous different designs for solar dryers.

- **Heat pump drying** enables a product to be dried at low temperatures even under conditions of high ambient humidity. The fish is placed in a chamber in a forced flow air

stream that then passes through a condensing unit to remove the water before being re-circulated over the product.

- **Vacuum drying** exploits the increased evaporation rate at reduced pressure combined with radiant heat or conduction from a heated surface to accelerate removal of water, which is then removed by the vacuum line.

- **Freeze drying** uses highly efficient vacuum pumps to achieve very low pressures in a sealed chamber fitted with refrigerated plates. The fish freezes, the ice sublimes from the surface and is removed by the vacuum.

There are a number of factors to keep in mind when drying fish:

- The ability to dry fish will obviously be affected by weather. Drying is easiest in a location with a dry climate. Whilst it is possible to dry fish in a hot, humid climate, there will be added costs such as the cost of a heat pump drying kiln, the energy costs in operating the kiln, costs of suitable packaging and storage facilities to prevent water uptake etc.

- Drying should not be regarded as a rescue operation for poor quality fish. Particularly during the early stages, the process concentrates spoilage enzymes and raises the temperature, which can exacerbate any spoilage that is already beginning to occur.

- The polyunsaturated fatty acids present in fish oil are very vulnerable to oxidation that can result in development of rancidity.

- Storage of the dried product can present problems if ambient conditions are such as would support growth of spoilage or pathogenic organisms

There are so many variables in the design and operation of a drying factory that it is impossible to provide reliable cost estimates. Fish drying can be very expensive and labour intensive, so it is instructive to consider some of the factors to consider from the earliest planning stages.

How much of the operation do you want to control?

There are many steps in the drying process from delivery of whole raw fish to storage of the final packaged product. Some operators choose to purchase semi processed raw material such as gutted fish or fillets, making the operation simpler in terms of skilled labour, waste disposal etc. The use of frozen raw material can overcome problems with continuity of supply. It is important to ensure that the raw material matches the safety and quality standards of the rest of the process, since drying is not a way to “salvage” poor quality fish.

Raw Material

Seafood is a very expensive commodity, so you must strictly monitor recoveries and minimise wastage. Some key questions to consider:

- What is the product you are planning to produce?
- What raw material (species, form etc.) will you use?
- How reliable is the supply of raw material?
- Do you have several products in mind to cover seasonal gaps in availability?
- What are the recovery rates from different species?
- Do recovery rates vary with season?
- Is chilled or frozen storage to be used for raw material?
- Can you use waste material profitably?

Energy

Removing water from fish consumes large amounts of energy. There are a number of ways of reducing this. One is to consider setting up in a location where the climate is close to ideal (maximum relative humidity 65%, temperature ~10^{o}C).

- What will be your main energy source in drying?
- Have you made maximum use of natural energy sources: wind, solar, geothermal?
- How efficiently does the kiln use energy?
- Can you reduce the costs of power by using off peak rates, recycling energy etc.?

Mechanisation

Traditional fish drying is a very labour intensive business subject to vagaries of the weather. Mechanisation is now available to reduce this, but at what cost? It is important to use only an appropriate level of mechanisation for the operation.

- Is your process very labour intensive?
- Have you minimised the handling of materials?
- Could appropriate use of machinery replace human labour economically?

Hygiene

Dried seafood presents numerous public health problems. The product is held for considerable periods under conditions where pathogens may flourish. Good hygiene is therefore very critical

- Is the product's exposure to contamination and growth of pathogens minimised?
- Has the equipment been designed to facilitate cleaning and sanitation?
- How will you monitor hygiene standards?
- Are appropriate chemicals and cleaning equipment available?
- Do staff need training in personal hygiene and operation of cleaning equipment?

Packaging and storage of finished product.

One of the features of dried seafood is its long shelf life under ambient conditions. Storage and packaging play an important role in achieving this as they protect the product from adverse ambient temperature and humidity conditions.

Different products obviously require different storage conditions. A semidried product will need to be stored under refrigeration, whilst a fully dried product can sit on a clean dry shelf at room temperature.

- Is the packaging used intended to protect the product from exposure to the ambient humidity and oxidation?
- Is packaging robust enough to resist attack from insects, rodents etc.?
- How close are the storage conditions to ideal for the product being stored?
- How well can these conditions be maintained during transport?

Costings

Whilst it is not possible to provide a general comprehensive costing platform for a drying plant, some of the factors that should be considered are:

Land and Buildings

- Cold Storage for raw material
- Processing rooms
- Drying kilns
- Storage facilities for chemicals, packaging, etc. with comparatively large area for storage of finished product

Plant and Equipment

- Sorting and washing
- Gutting and dressing tables
- Brining facilities
- Kilns, racks etc. including heat source
- Packaging equipment
- Waste disposal equipment
- Cleaning and sanitising equipment
- Storage, maintenance and transport facilities

Quality Assurance

- Sampling equipment for on line monitoring such as accurate weighing stations.
- Laboratory facilities for assessment of raw materials, finished product and line operations.

Management

- Facilities for managing operations, logistics, shipment, maintenance sales etc.

Labour

- Employment of appropriately skilled and trained labour.
- Human resource people experienced in payroll, health and safety, and labour relations.

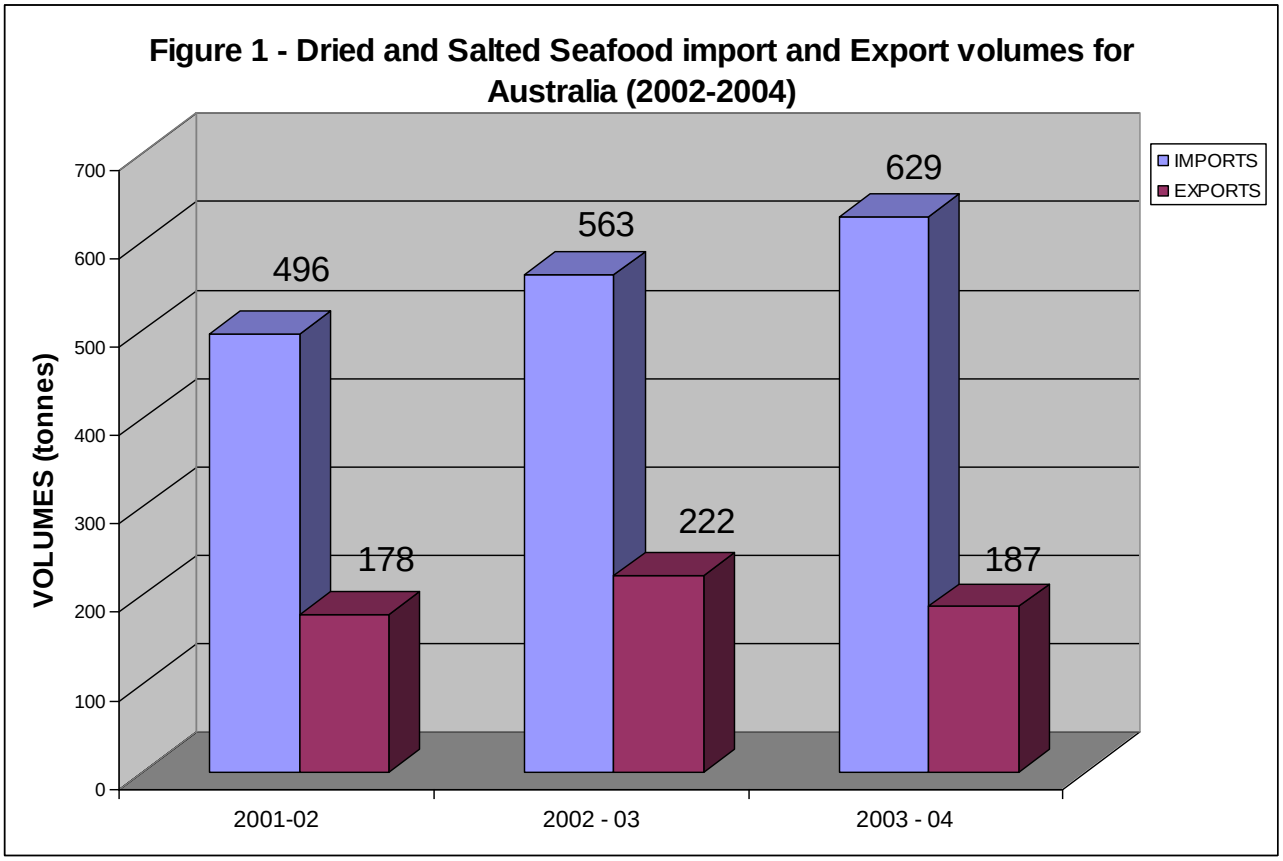
Market Statistics for Dried Seafood

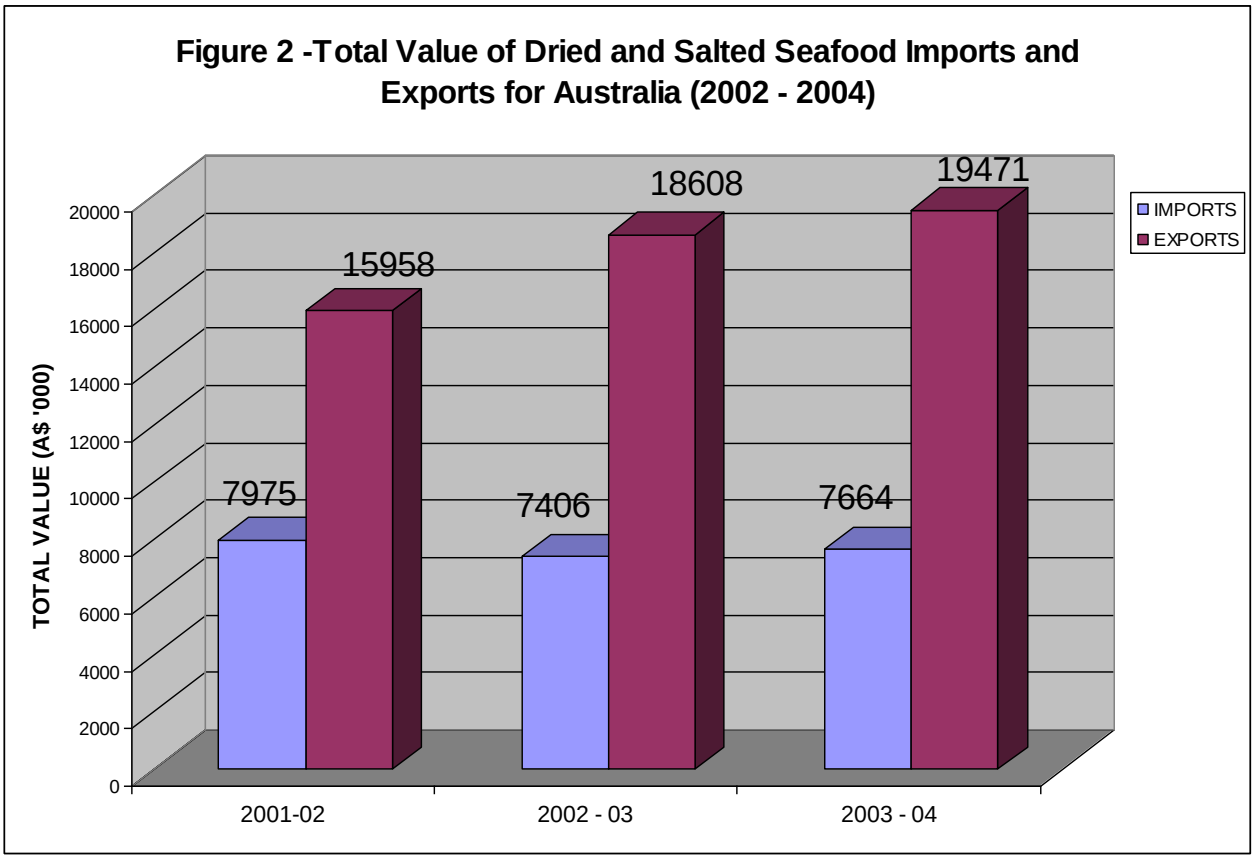
This report on market statistics draws on several sources. The broad figures on exports and imports come from the publication *Australian Fisheries Statistics* (ABARE, 2005), and the more specific material on individual products comes from statistics gathered in the overseas market place. There are discrepancies in these figures caused in part because of the different way in which products are grouped, for example in reporting the annual statistics for seafood in the publication *Australian Fisheries Statistics,* the figures for dried seafood are combined with figures for salted and smoked products, whereas in some Asian reports, dried products are identified specifically. This makes a direct comparison of figures from different sources impossible.

The big picture – 'The Balance of Payments'

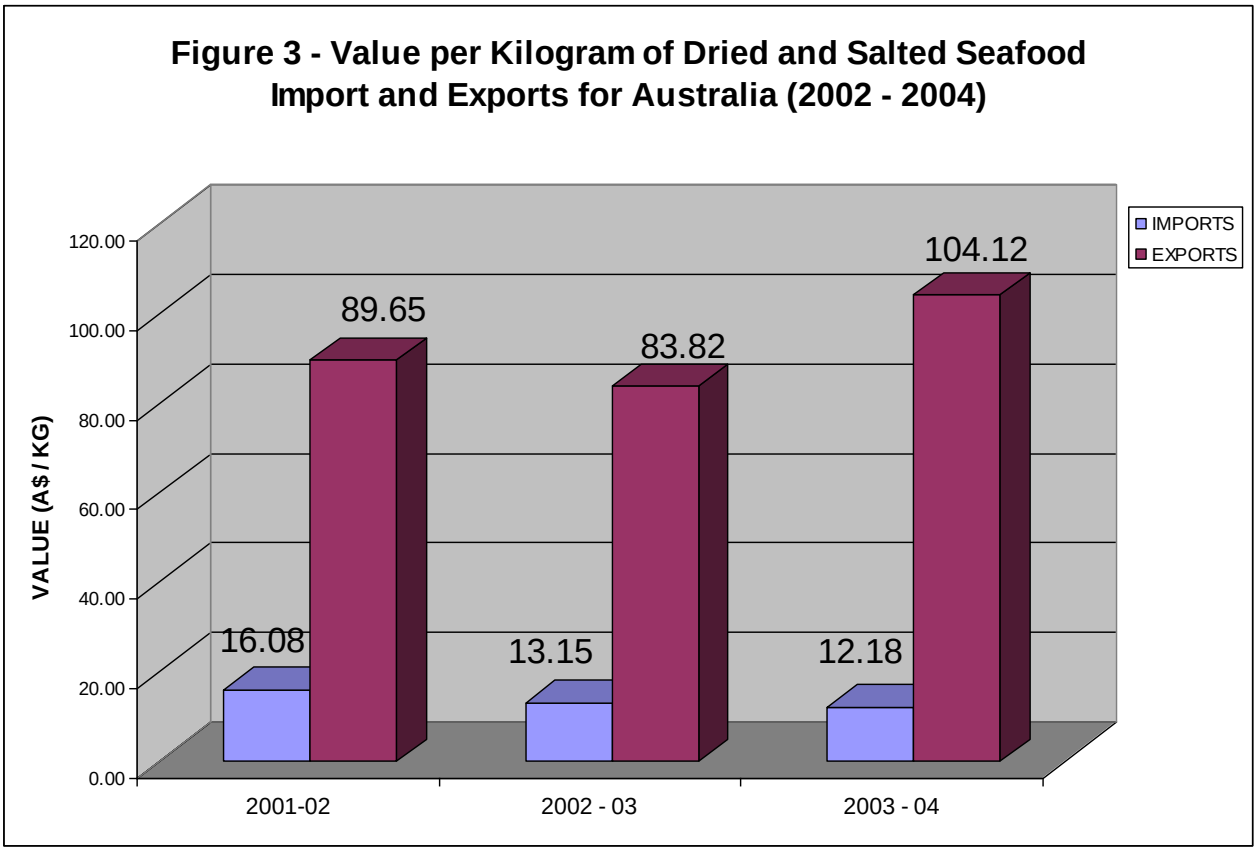
A useful way to initially approach the data for dried seafood markets in the Australian context is to consider it from a 'balance of payments' perspective using the statistics in the ABARE report. There is some confusion in the way that these figures are reported. For example in reporting import statistics, figures are given as "Total Dried Products", but in reporting figures for imports from individual countries, the figures include "Dried or Salted", and hence are considerably higher than the totals.

The first point to note is that the volumes of dried/cured seafood exported are much smaller than those imported (Fig1). By contrast, the receipts for exports are considerably higher than the payments for imports of dried/cured seafood (Fig 2). Inevitably this results in a large disparity between export and import prices.





There was a small but steady increase in the volume of dried seafood imported from 496t to 629t over the years 2001-2004 (Fig1), The value of imports did not show this trend (Fig 2) and the value/kg declined slightly (Fig 3).



There was a steady increase in the value of exports from $16M to $19.5M (Fig 2) but this trend was not evident in the volumes exported or in the value/kg (Fig 3). The total volume of dried, salted and smoked seafood products exported from Australia fell from 222t in 2003 to 187t in 2004. The value of these products rose from $18.6M to $19.5M. This was despite the appreciation of the Australian dollar against virtually all other currencies. The three main recipients of these exports were Hong Kong (China), Japan and Singapore.

Imports

Data for the sources of dried or salted seafood imports are presented in Figs 4-6. The sources are spread widely across Europe and Asia. Norway supplied the largest single volume of product, probably in the form of cured product. Visits to Asian food shops in Sydney and Melbourne (see below) confirmed that imports of dried seafood came from a spread of Asian countries as shown in Figs 4-6.

Figure 4 - Total Volumes of Imported Dried and Salted Seafood into Australia by Source (2002-2004)

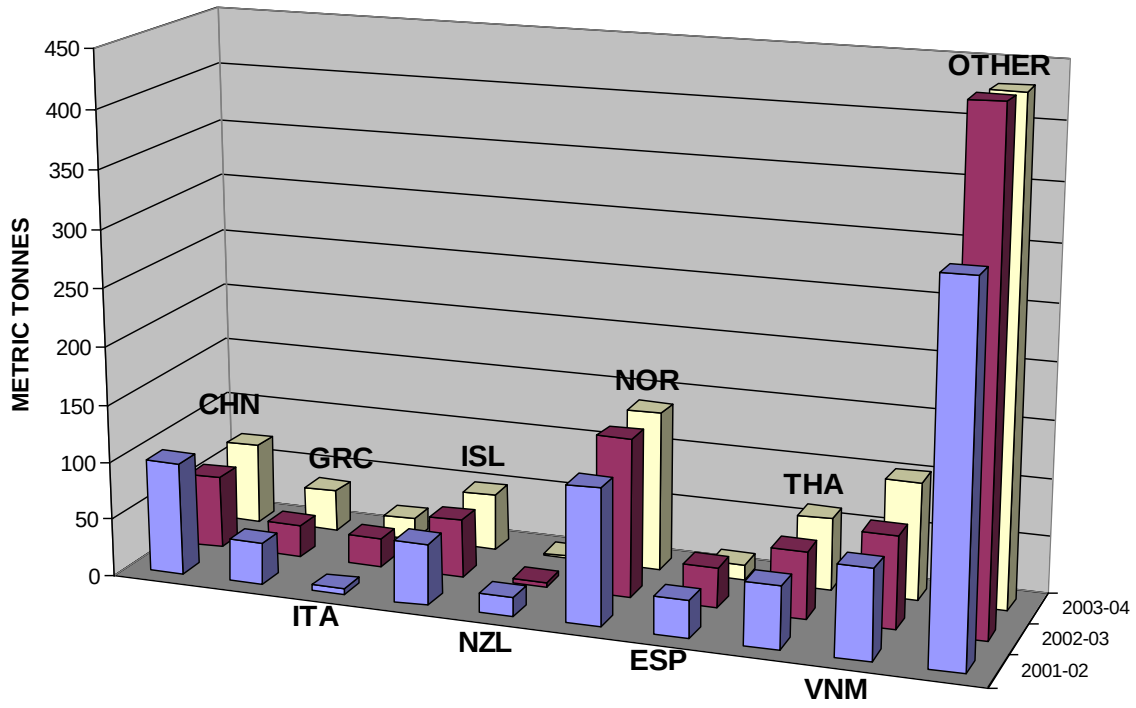


Figure 5 - Total Value of Imported Dried and Salted Seafood into Australia by Source (2002-2004)

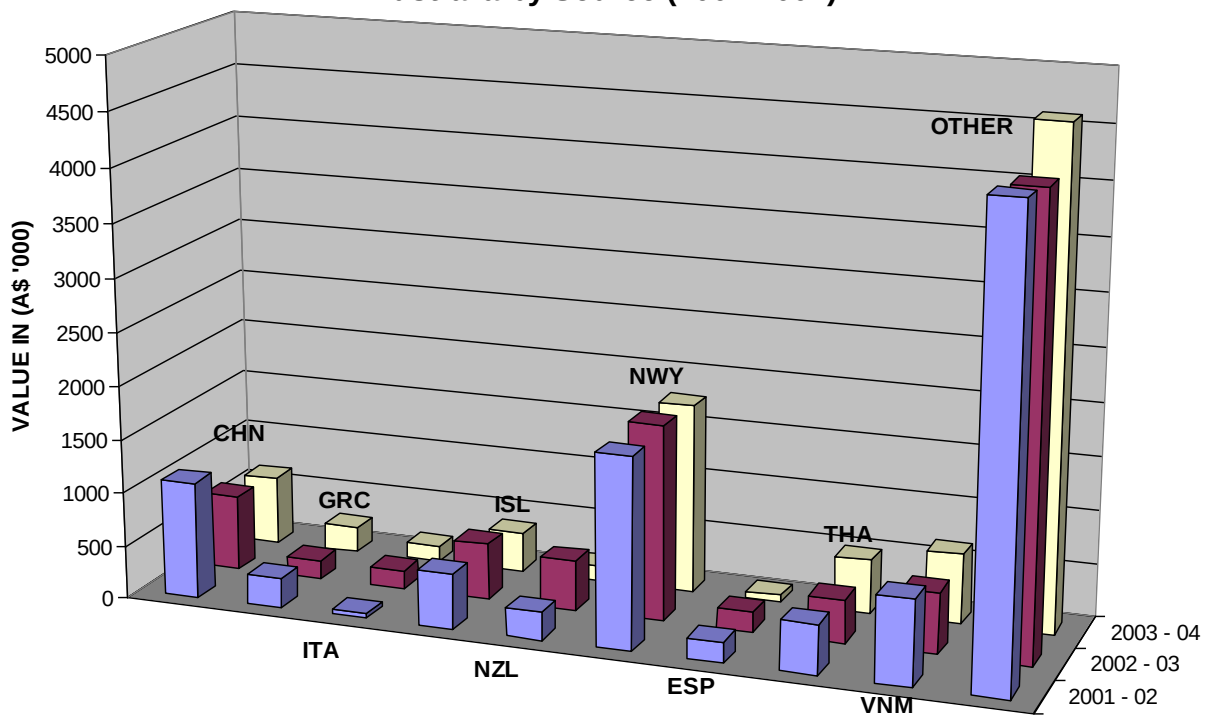
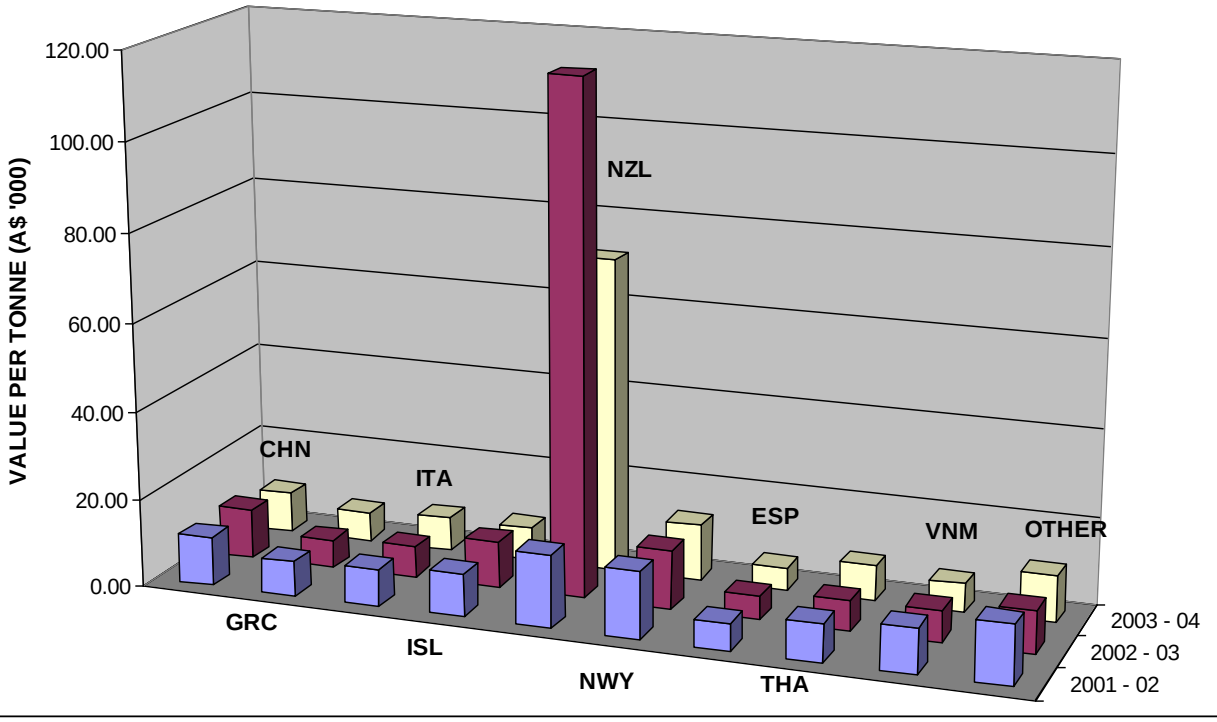


Figure 6 - Value per tonne of Dried and Salted Seafood into Australia by Source (2002-2004)



Because of the small volumes in trade, a “spike” in volume or value in a particular shipment of high priced product can dramatically skew the data. For example in 2002-03 a small (4t) shipment of

highly priced ($463K) product from New Zealand led to a large spike in the value/kg ($115.75) for that year. Enquiries as to the nature of the product were unsuccessful.

Exports

Asia is Australia's main target for exports of highly priced dried/cured seafood exports with Hong Kong being by far the largest market (Figs 7&8). The prices received in Singapore and Hong Kong are markedly higher than for other countries (Fig 9), so this report will focus on exports to Hong Kong, Singapore and Japan. As noted above, there are discrepancies between the data supplied by ABARE and the figures obtained directly from the overseas markets, for example the ABARE figure for exports to Hong Kong for 2003 is 106t worth $14.8M whilst that reported from Hong Kong sources is 273t worth $24.2M The raw data used for rhe following analysis was that obtained directly from the overseas markets.

Figure 7 - Volumes of Dried and Salted Seafood Export from Australia by Destination (2002-2004)

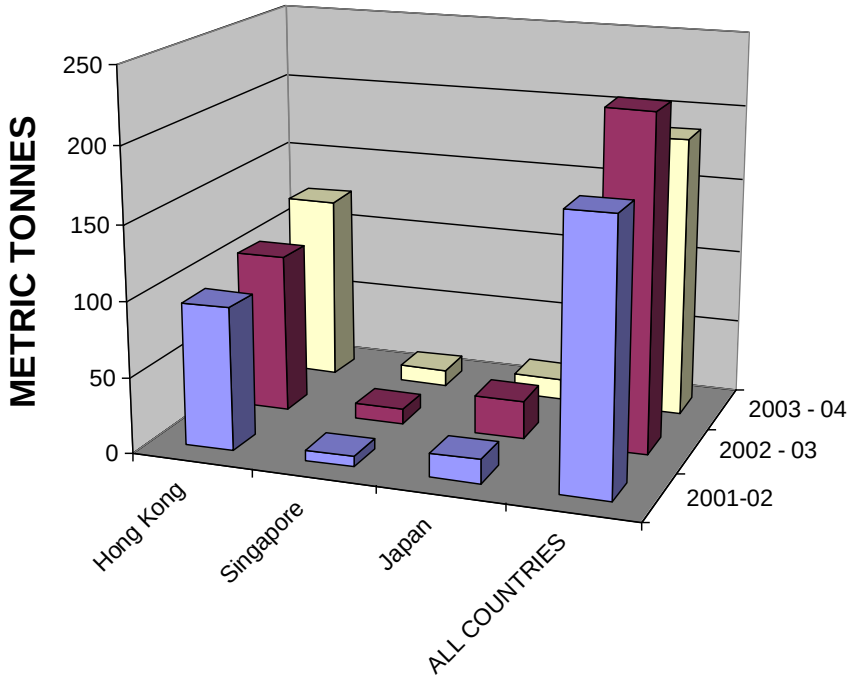


Figure 8 - Total Value of Dried and Salted Seafood Exports from Australia by Destination (2002-2004)

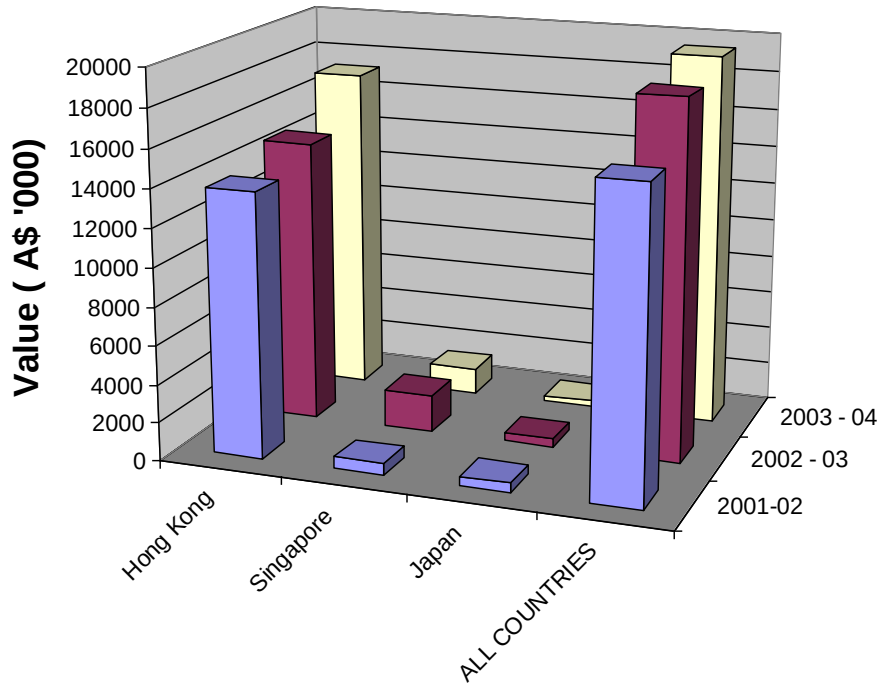
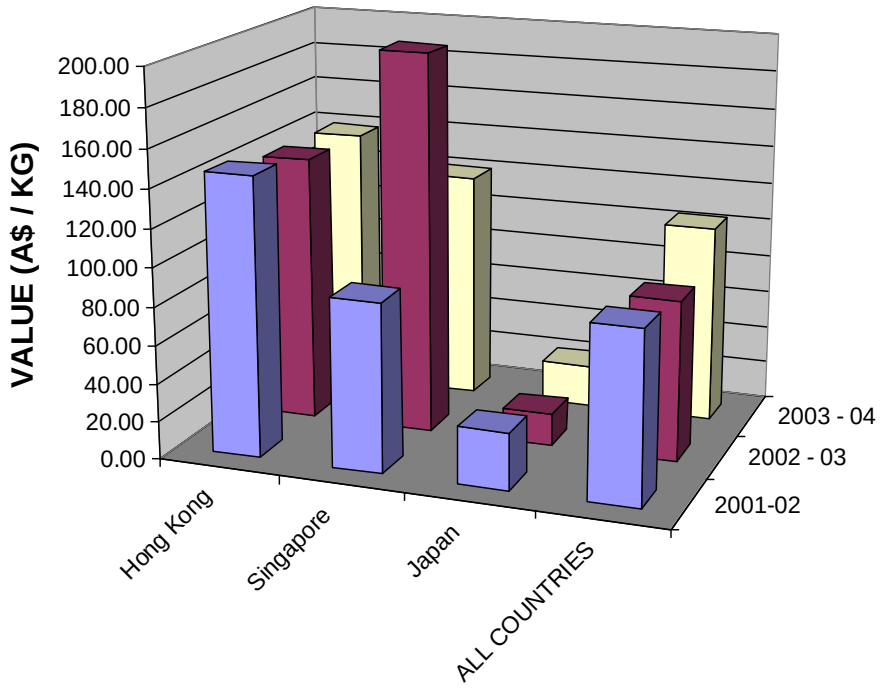


Figure 9 - Value per kilogram of Dried and Salted Seafood Exports from Australia by Destination (2002-2004)



The Hong Kong Market

Hong Kong is the global hub of trade in dried seafood products. Highly lucrative premium products are traded alongside much cheaper commodity products, many of which are sold to exporters to third party countries. Australian producers primarily supply the premium sector of this market. Hong Kong is also rapidly becoming the centre of all dried seafood trade into mainland China.

Exports to Hong Kong increased during the period 2002-2004, from 114t ($16M) in 2002, to 270t ($28M) in 2004 (Figs10-12). The largest single product categories into Hong Kong (2004 figures) were shark fin (107t, $18.5M)), beche de mer (105t, $5.6M) and abalone (53t, $4.1M). These three products represent the most significant market opportunities for Australian suppliers.

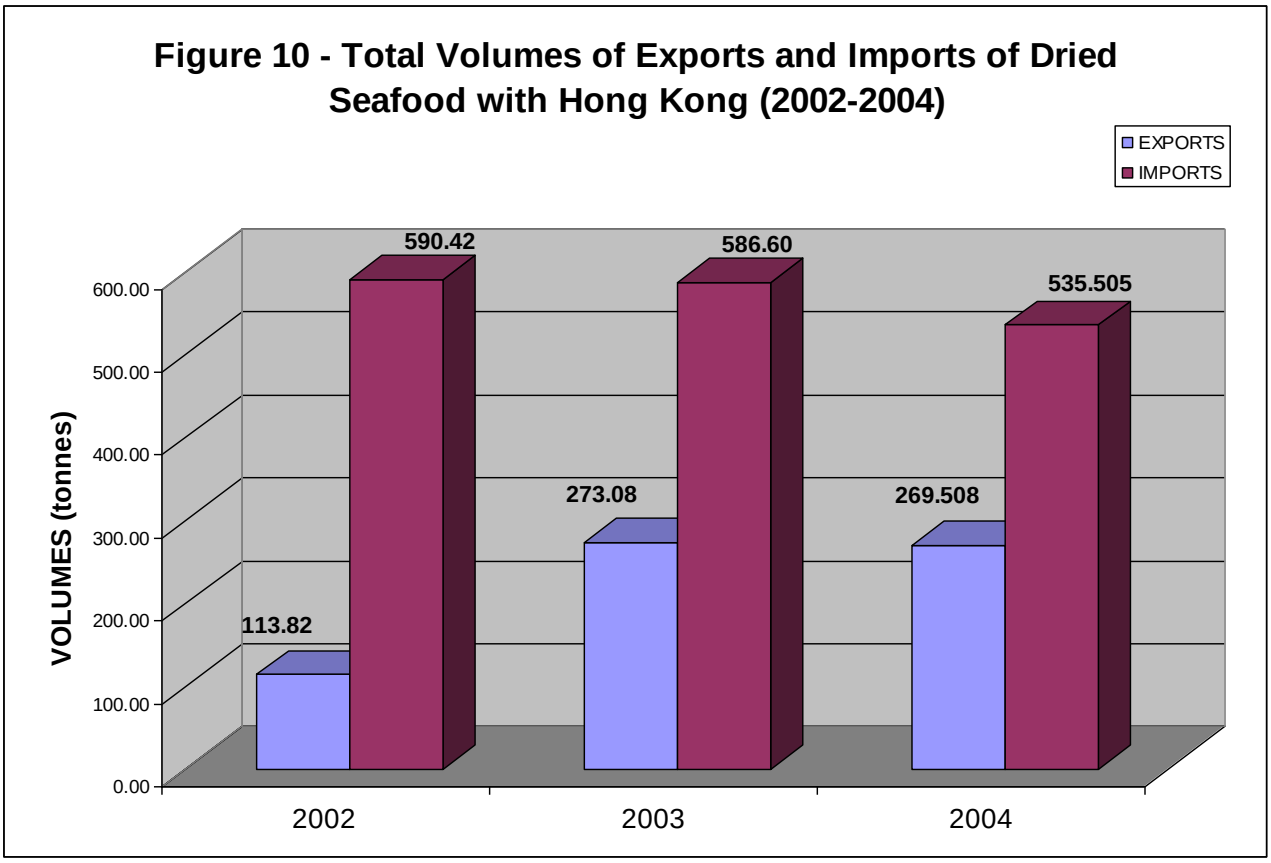


Figure 10 - Total Volumes of Exports and Imports of Dried Seafood with Hong Kong (2002-2004)

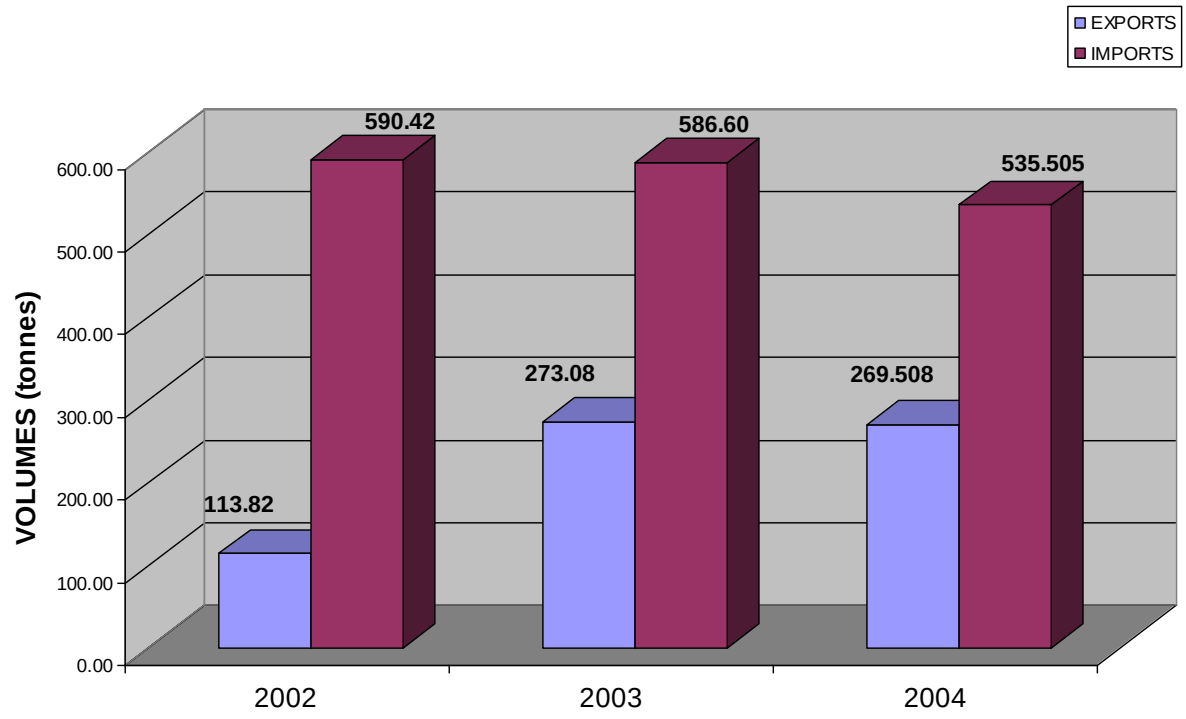
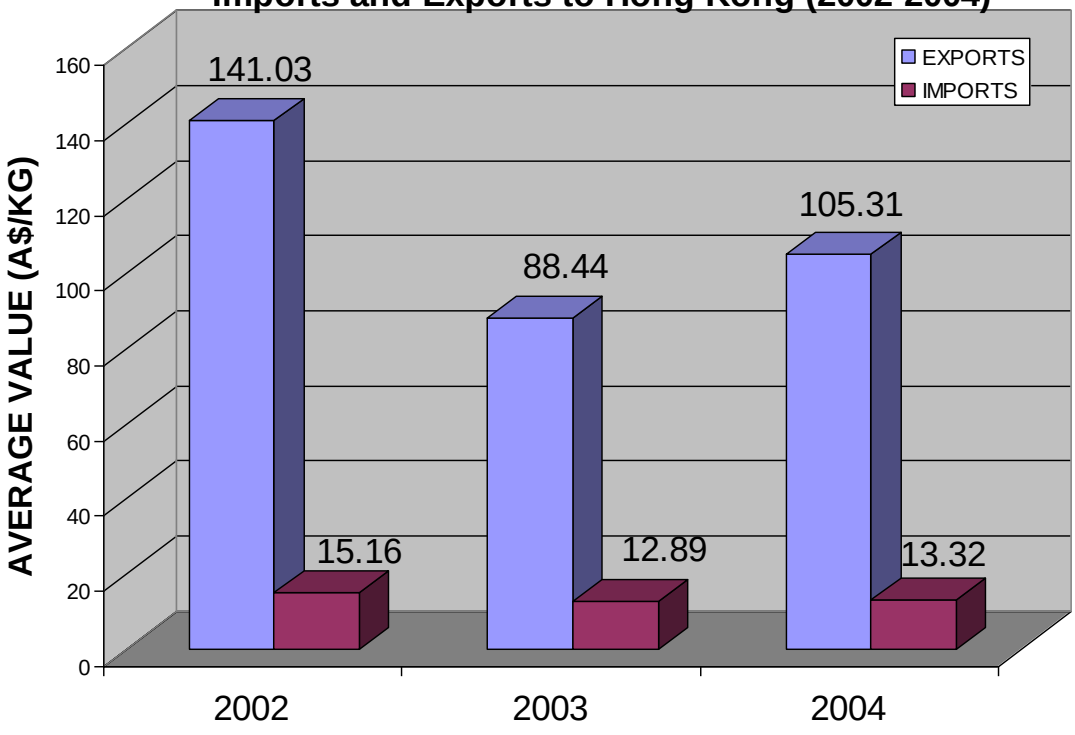


Figure 12 - Average Value per Kilogram of Dried Seafood Imports and Exports to Hong Kong (2002-2004)



Imports

Imports from Hong Kong are usually cheaper commodities with an overall value in 2004 of $13/kg vs 105/kg for exports. The detail in statistics for these is obscured by the massive contribution of a category simply reported as “other” (Figs13a&14a), so we have also presented the graphs with that category removed (Figs13b&14b. When this is done, it can be seen that shark fin is a very significant component in imports just as it is in exports. The most expensive commodity is pipefish, seahorse and seadragon (Fig 15). Aquaculture ventures for these species have now been set up in Australia.

Figure 13a - Total Volumes of Dried Seafood Imports from Hong Kong by product (2002-2004)

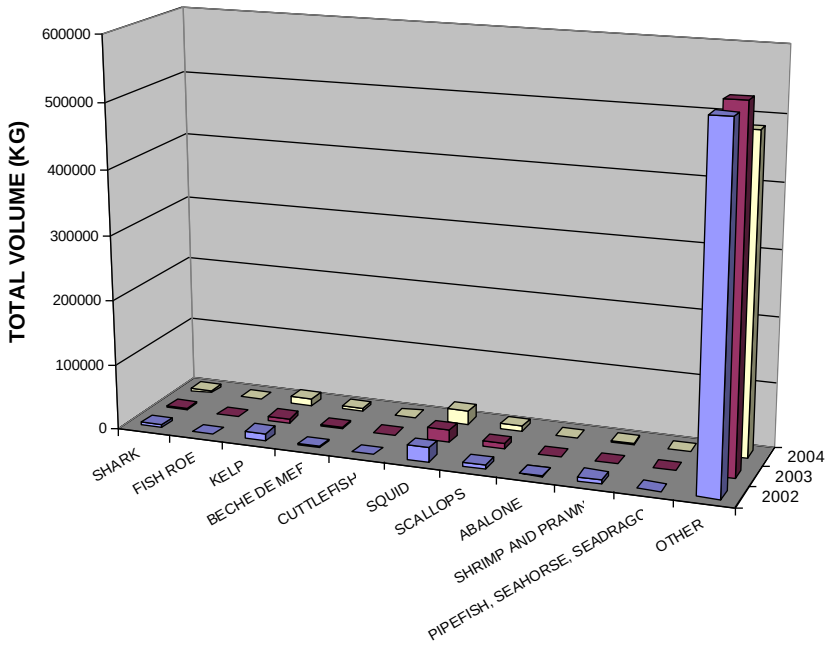


Figure 13b - Total Volumes of Dried Seafood Imports from Hong Kong Excluding Others (2002-2004)

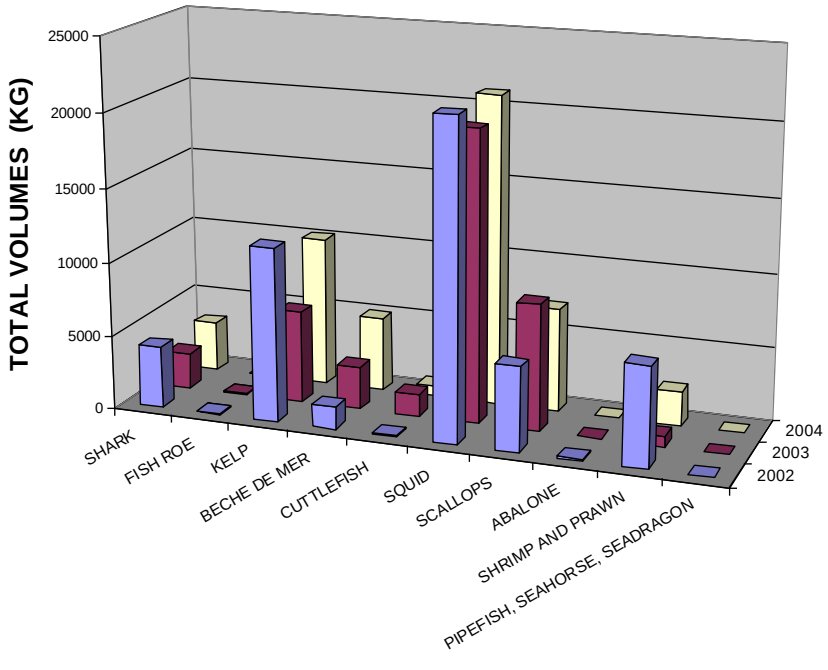


Figure 14a - Total Value of Dried Seafood Imports from Hong Kong by Product (2002-2004)

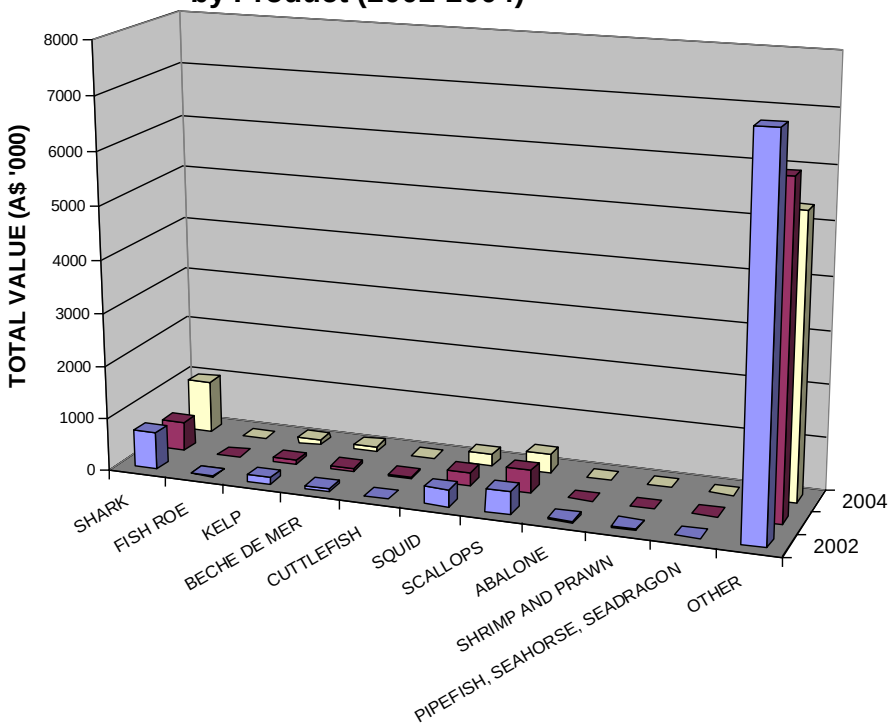


Figure 14b - Total Value of Dried Seafood Imports from Hong Kong Excluding Other (2002-2004)

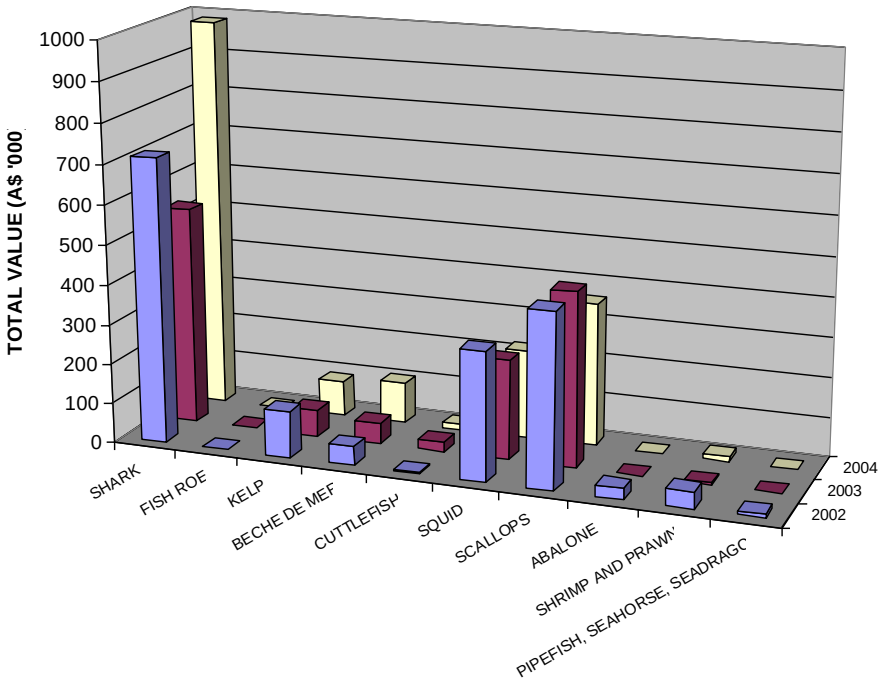
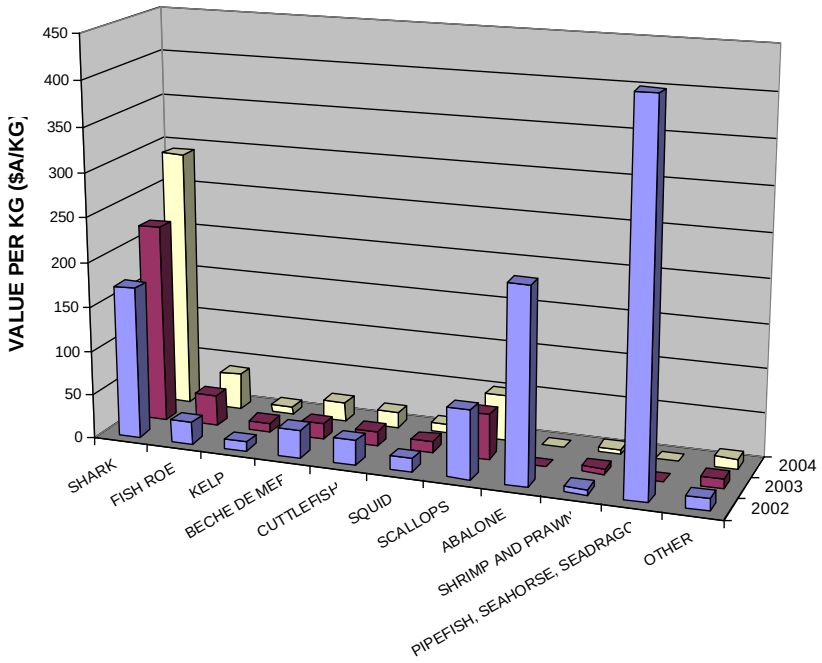


Figure 15 - Value per Kilogram of Dried Seafood Imports from Hong Kong by Product (2002-2004)



Exports

Export data from the Hong Kong market is particularly interesting, as value and volumes of exports have increased even as the Australian dollar has increased in value by over 25% during the period (Figs 16-18). So even with increasing pricing pressure in Hong Kong, the volumes are still increasing. This situation suggests robust consumption and trading conditions, thus presenting good opportunities for Australian exporters to consolidate market share.

Figure 16 - Total Dried Seafood Export Volumes to Hong Kong from Australia by Product (2002-2004)

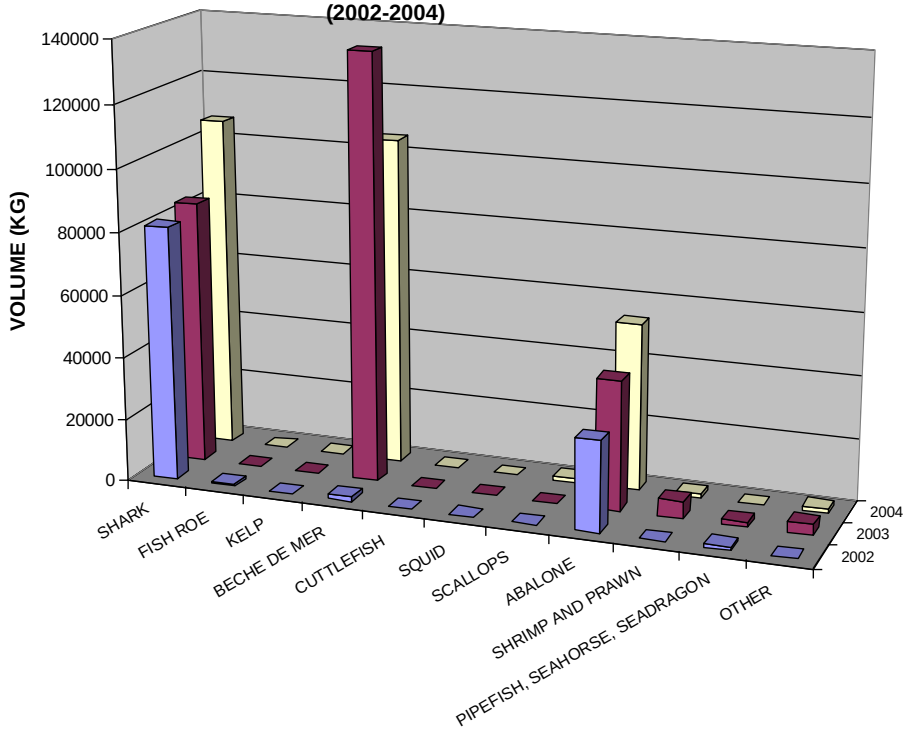


Figure 17 - Total Value of Dried Seafood Exports to Hong Kong from Australia by Product (2002-2004)

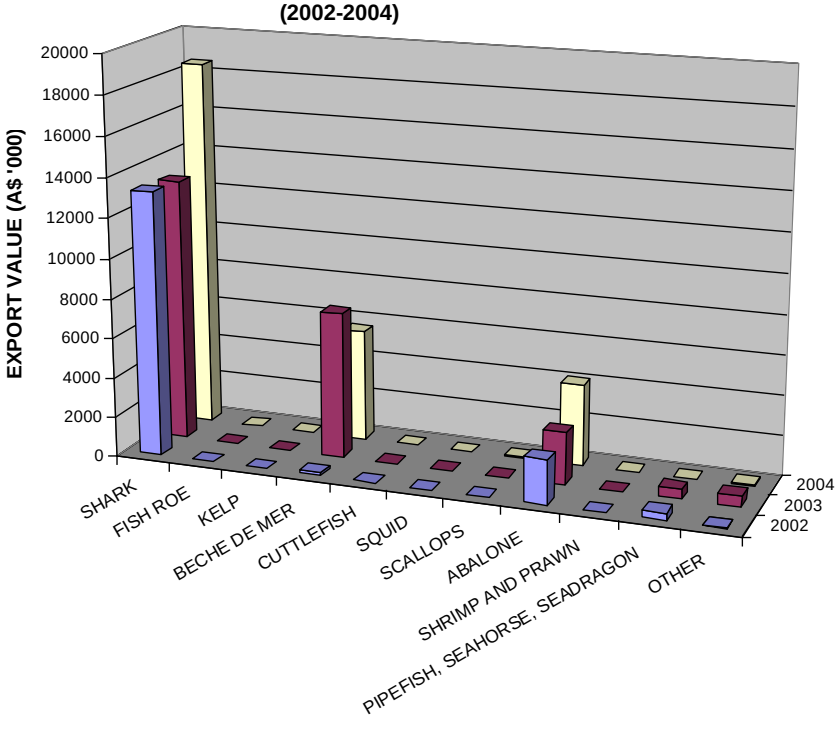
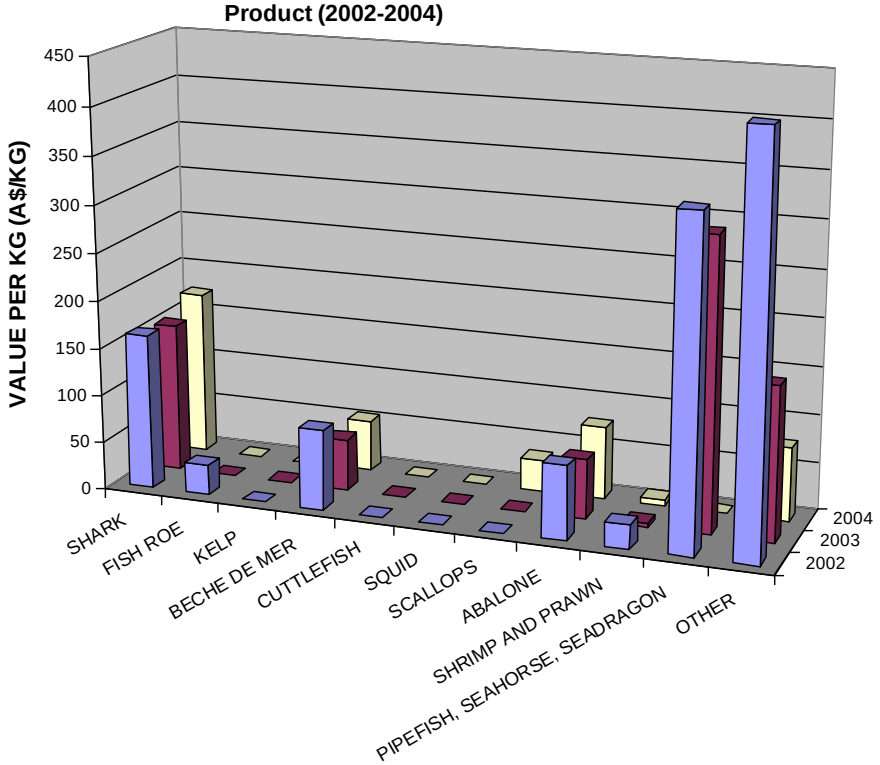


Figure 18 - Value per Kilogram of Dried Seafood Export to Hong Kong from Australia by Product (2002-2004)



Shark Fin

Shark fin volumes have increased over 30% from 2002 to 2004. The value per kilogram has also increased from $163/kg to $173/kg during this time.

Increasing supply to this market appears to have had little impact on returns to exporters, even after the appreciation of the Australian dollar relative to the Hong Kong dollar. Sustainability of the resource is certainly the most significant ongoing issue with exporting this product to Hong Kong.

Beche de Mer

Beche de Mer has grown from almost nothing in 2002 to 105t worth $5.6M in 2004. An increase in supply to the market has seen the market price fall from $83/kg in 2002 to $53/kg in 2003. Prices for 2004 have stabilised at this level.

This fact would suggest that this market is reasonably small and subject to oversupply at times. However, the data does suggest that the market can absorb volumes similar to, and sometimes greater than, those seen for Australian shark fin trade.

Abalone

Abalone exports from Australia into Hong Kong are performing well. Volumes have increased around a very impressive 25% per year from 2002 to 2004. Although market prices dipped slightly ($63/kg) during 2003, prices for 2004 have rebounded to the levels seen during 2002 ($77/kg). This product has established a solid market profile and presents exporters with excellent prospects for the future.

Singapore Market

Traditional ethnic Chinese cultural roots and a strong domestic economy provide Australian exporters with a viable premium dried seafood market. Exports of dried seafood to Singapore are summarised in Figs 19-21. Volumes of exports to Singapore increased marginally, but values fell during the period. This appears to be an artefact of currency fluctuations during the study period. Volume increased from 7t valued at $617K in 2002 to 11t valued at $1.3M in 2004 (ABARE, 2005).

Figure 19 - Total Volumes of Dried Seafood Exports to Singapore (2002-2004)

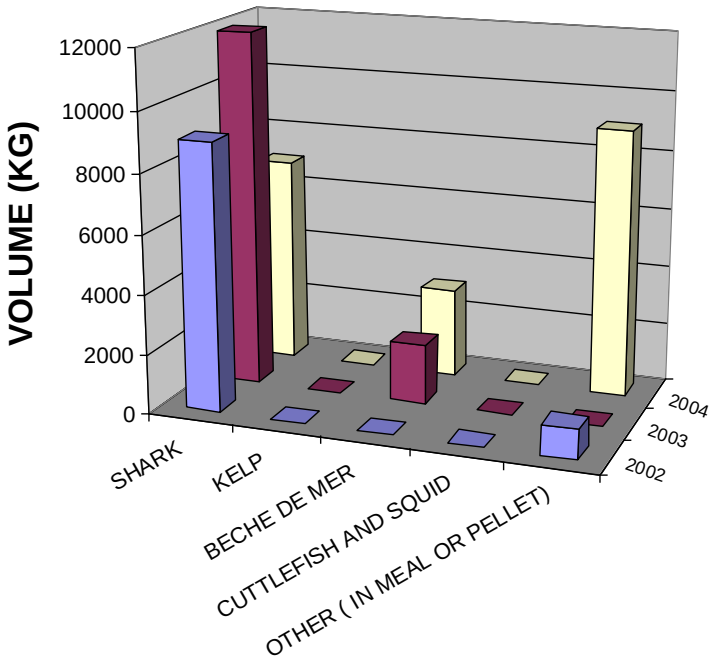


Figure 20 - Total Value of Dried Seafood Exports to Singapore (2002-2004)

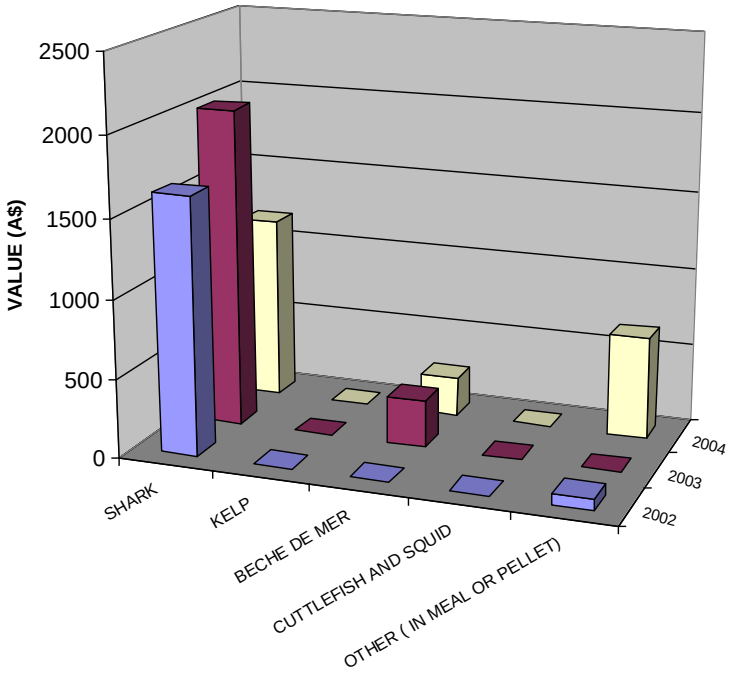
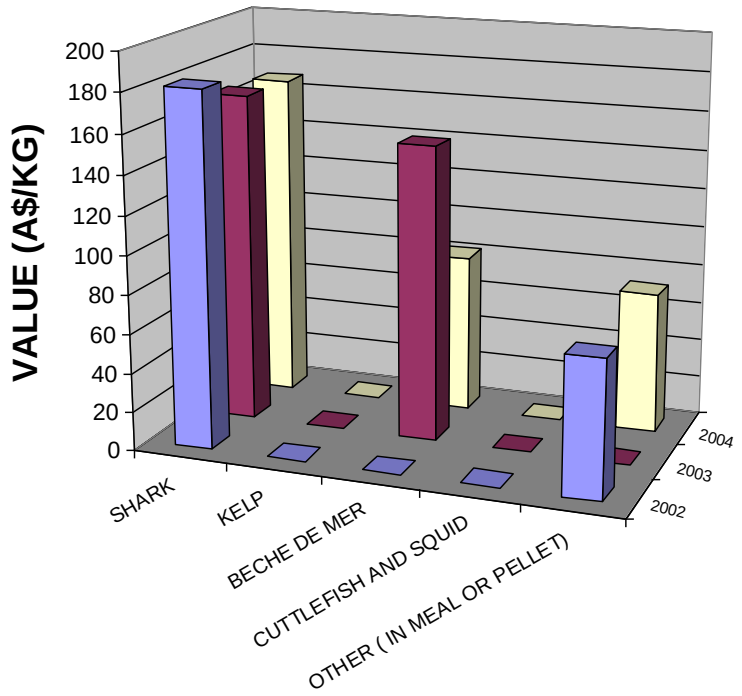


Figure 21 - Value per kilogram of Dried Seafood Exports to Singapore (2002-2004)



Shark Fin

Shark fin products provide excellent returns for export to Singapore ($168/kg), although the current volumes are small (7t). The value per kilogram of shark fin appears to have only fluctuated in line with currency valuations through the study period. This would suggest that the market is reasonably stable due to solid demand for a premium product.

Beche de Mer

The market for this product would appear to be highly volatile from the little data available from Australian exports. However, the high value per kilogram of this product ($81/kg), and the strong ethnic Chinese heritage of Singaporeans, may provide Australian exporters with opportunities in the future.

It is interesting to note that Singapore imports only slightly less than Japan in volume (in 2004, 11t to Singapore, 14t to Japan), however, the value of the product achieves almost four times that of the product into Japan ($88/kg Singapore, $29.5/kg Japan). This is because the leading export product (by value) is a premium abalone product.

Japanese Market

Although exports of dried seafood from Australia to Japan are of the same order of magnitude as those from Australia to Singapore, the returns from products entering Japan are lower and more closely in line with commodity markets than the premium markets observed in Singapore (Figs 22-24b). Abalone represents the only real exception.

Figure 22 - Total Volumes of Dried Seafood Exports to Japan (2002-2004)

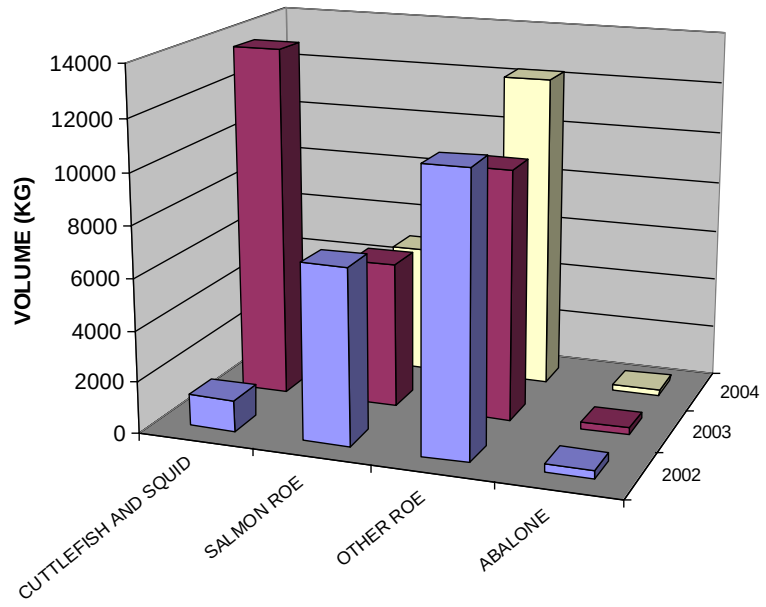


Figure 23 - Total Value of Dried Seafood Exports to Japan (2002-2004)

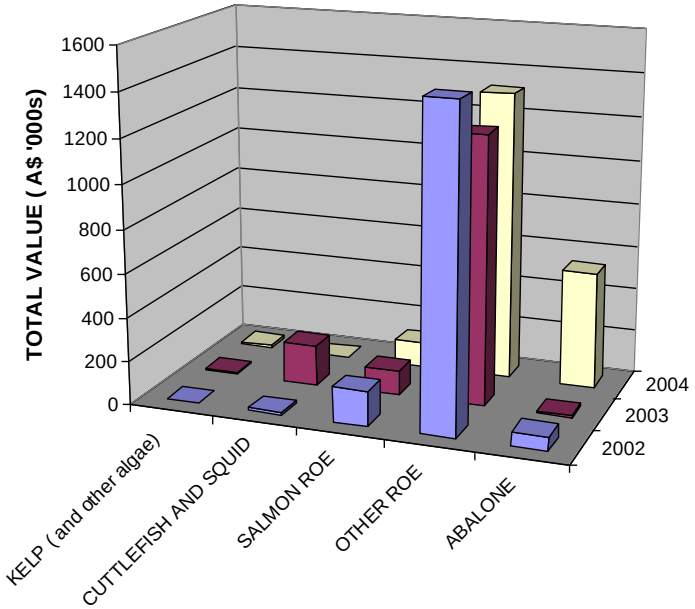


Figure 24a - Value per kilogram of Dried Seafood Exports to Japan (2002-2004)

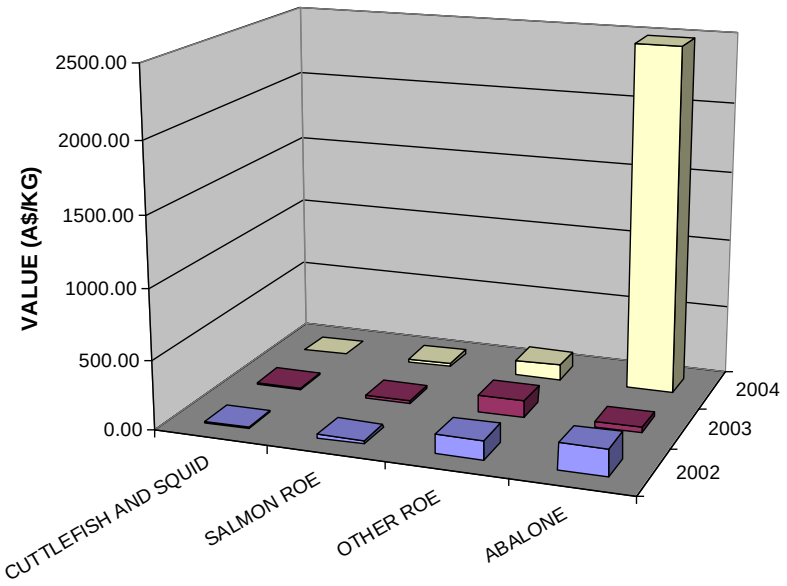
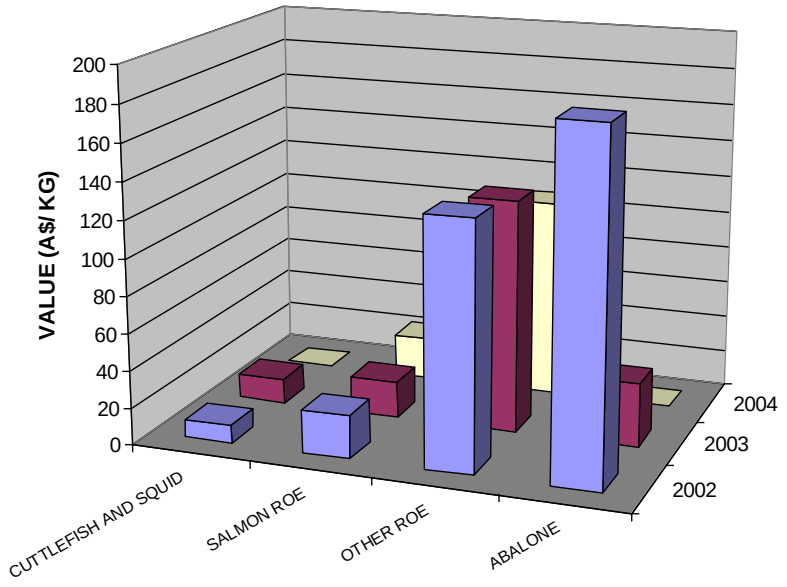


Figure 24b - Value per kilogram of Dried Seafood into Japan without Abalone value for 2004 (2002-2004)



Abalone

The data from Japan displayed massive fluctuations in value per kilogram during the study period. Values from 2002 ($185/kg) are in line with values observed in Hong Kong and Singapore. However, values dropped to $34.5/kg in 2003, and spiralled to a highly questionable $2481/kg in 2004.

After a query to the Australian Bureau of Statistics, the figures were traced to a single month (October 2004) but an input error cannot be verified. Further inquiries to Australian Customs, who input the data cannot confirm or rule out an inputting error.

Salmon and Other Roe

Another area of interest in the data from Japan is the salmon and other roes. Roes other than salmon attract prices per kilogram above $100/kg. However, recent appreciation of the Australian dollar or other market influences has placed downward pressure on these returns.

Retail Outlets in Australia

Asian food shops were visited in Sydney's Chinatown and in Richmond Victoria to get some idea of the range of dried seafood products available. These shops were supermarket style "emporiums" that sold a very wide variety of goods. Dried seafood was sold in cellophane or polythene packets, the contents of which varied from 25g to 200g. Most were labelled with country of origin and nutritional panels. The following table was constructed from the data collected in those visits. It should be regarded as anecdotal and in no way represents a formal survey.

Product	No.	Country of Origin	Mean $/kg	Range $/kg
Shrimp	6	H.K., Thailand, Vietnam, Malaysia	29.95	13.00-39.00
Cuttlefish	5	H.K., Thailand, China	46.67	39.75-57.50
Squid	7	H.K., China, Taiwan, Malaysia	37.98	14.00-49.92
Anchovies	5	H.K., Malaysia, China, Vietnam, Thailand	20.82	14.30-26.50
"Dried Fish"	5	H.K., Vietnam, Malaysia, Taiwan, Thailand Indonesia	31.68	16.60-52.94
Fish Maws	2	Vietnam, H.K.	135.00	81.0-189.00
Octopus	1	H.K.	37.50	N/A
Roast Fish	2	China	66.50	49.00-84.00
Scallops	1	H.K.	71.50	N/A
Mussels	2	H.K.	10.73	9.95-11.50
Swim Bladder	1	China	185.00	N/A
Mackerel	2	Thailand	40.34	32.11-41.58
Bonito	1	Japan	149.75	N/A
Fish Skins	2	China	28.43	28.10-28.75
Goby	1	Vietnam	46.00	N/A
Jambong	1	Indonesia	22.00	N/A
Trevalley	1	Vietnam	13.50	N/A
Tipo Fish	1	Vietnam	17.50	N/A
Top shell	1	H.K.	110.00	N/A
Roast Eel	1	China	40.91	N/A
Yellowfish	1	China	45.00	N/A
Cod fish	1	China	36.67	N/A
Jelly fish	1	China	12.00	N/A

Sources of Information

The assistance of the following people in providing raw data for analysis to allow this report to be compiled is gratefully acknowledged

Margaret Than-West
Assistant Business Development Manager
Food Team
Austrade, Singapore
3rd Floor, Australian High Commission
25 Napier Road, Singapore 258507

Yumi Ozaki
QGTIO Osaka.
T-4, 4F OCAT Bldg.
1-4-1 Minatomachi, Naniwa-ku
Osaka 556-0017
JAPAN

Darryl Schaffer
Information Consultant
Australian Bureau of Statistics
Ph: (07) 3222 6397
Fax: (07) 3222 6283

Ellen Kwok
Queensland Government Trade and Investment Office
Hong Kong and South China
Room 2506, Harbour Centre
25 Harbour Road, Wanchai, Hong Kong

References

The following publications were used in preparing this report

ABARE, 2005 *Australian Fishery Statistics 2004,* ABARE and FRDC, Canberra

Naidoo, R J, Slattery, S L and Bremner, H A (1996) *Evaluation of the Market for Dried Seafood 1993-96* FRDC Project No. 94/123

Appendix

Summary tables for data used in constructing graphs presented in this report

Table 1

TABLE OF COMBINED IMPORT AND EXPORT DATA FOR AUSTRALIA

DRIED AND SALTED SEAFOOD INTO AUSTRALIA	**2001-02**			**2002 - 03**			**2003 - 04**		
	t	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**
TOTAL DRIED PRODUCTS	496	7975	16.08	563	7406	13.15	629	7664	12.18

EXPORT FROM AUSTRALIA (INCLUDING DRIED, SALTED AND SMOKED)	**2001-02**			**2002 - 03**			**2003 - 04**		
	t	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**
TOP 3 COUNTRIES									
Hong Kong	95	13834	145.62	106	14792	139.55	124	17187	138.60
Singapore	7	617	88.14	10	1991	199.10	11	1323	120.27
Japan	16	474	29.63	26	432	16.62	14	305	21.79
TOTAL FOR ALL COUNTRIES	**178**	**15958**	**89.65**	**222**	**18608**	**83.82**	**187**	**19471**	**104.12**

Table 2

IMPORTS

DRIED AND SALTED SEAFOOD INTO AUSTRALIA	2001-02			2002 - 03			2003 - 04		
	t	$'000	$'000/t	t	$'000	$'000/t	t	$'000	$'000/t
TOTAL DRIED PRODUCTS	496	7975	16.08	563	7406	13.15	629	7664	12.18

DRIED OR SALTED PRODUCT BY SOURCE	2001-02			2002 - 03			2003 - 04		
	t	$'000	$'000/t	t	$'000	$'000/t	t	$'000	$'000/t
CHINA	98	1083	11.05	63	707	11.22	70	639	9.13
GREECE	36	280	7.78	28	178	6.36	36	241	6.69
ITALY	5	42	8.40	25	179	7.16	19	146	7.68
ICELAND	53	516	9.74	50	531	10.62	49	370	7.55
NEW ZEALAND	16	262	16.38	4	463	115.75	2	143	71.50
NORWAY	118	1777	15.06	137	1818	13.27	138	1769	12.82
SPAIN	32	193	6.03	35	190	5.43	13	67	5.15
THAILAND	54	461	8.54	58	403	6.95	62	499	8.05
VIETNAM	78	794	10.18	80	572	7.15	102	651	6.38
OTHER	318	4288	13.48	437	4210	9.63	431	4601	10.68

Table 3

EXPORT FROM AUSTRALIA	2001-02			2002 - 03			2003 - 04		
(INCLUDING DRIED, SALTED AND SMOKED)									
	t	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**	**t**	**$'000**	**$'000/t**
TOP 3 COUNTRIES									
Hong Kong	95	13834	145.62	106	14792	139.55	124	17187	138.60
Singapore	7	617	88.14	10	1991	199.10	11	1323	120.27
Japan	16	474	29.63	26	432	16.62	14	305	21.79
ALL COUNTRIES	**178**	**15958**	**89.65**	**222**	**18608**	**83.82**	**187**	**19471**	**104.12**

Table 4

EXPORTS TO HONG KONG	**2002** *HK$1.00 = AU$0.2361*			**2003** *HK$1.00 = AU$0.1980*			**2004** *HK$1.00 = AU$0.1746*		
EXPORT PRODUCT	t	A$ '000	A$ / KG	t	A$ '000	$A / KG	t	A$ '000	A$ / KG
SHARK	81.52	13292.08	163.06	84.50	13169.21	155.85	106.90	18518.68	173.24
FISH ROE	0.47	14.95	32.08	0.00	0.00	NA	0.00	0.00	NA
KELP	0.00	0.00	NA	0.00	0.00	NA	0.00	0.00	NA
BECHE DE MER	1.66	138.69	83.50	136.42	7309.69	53.58	105.16	5602.31	53.28
CUTTLEFISH	0.00	0.00	NA	0.00	0.00	NA	0.00	0.00	NA
SQUID	0.00	0.00	NA	0.00	0.00	NA	0.00	0.00	NA
SCALLOPS	0.00	0.00	NA	0.00	0.00	NA	1.14	38.19	33.44
ABALONE	28.98	2240.78	77.33	41.43	2606.15	62.91	53.61	4102.56	76.52
SHRIMP AND PRAWN	0.14	3.63	25.18	5.65	22.19	3.92	1.27	8.73	6.87
PIPEFISH, SEAHORSE, SEADRAGON	1.03	351.72	340.81	1.60	485.50	303.25	0.00	0.00	NA
OTHER	0.02	10.20	424.98	3.49	559.08	160.38	1.43	110.29	77.02
TOTALS	**113.82**	**16052.04**	**141.03**	**273.08**	**24151.81**	**88.44**	**269.51**	**28380.76**	**105.31**

Table 5

IMPORTS FROM HONG KONG	**2002** *HK$1.00 = AU$0.2361*			**2003** *HK$1.00 = AU$0.1980*			**2004** *HK$1.00 = AU$0.1746*		
EXPORT PRODUCT	t	A$ '000	A$ / KG	t	A$ '000	A$ / KG	t	A$ '000	A$ / KG
SHARK	4.18	713.74	170.71	2.46	548.57	223.27	3.38	985.82	292.01
FISH ROE	0.04	0.88	24.50	0.07	2.48	34.51	0.03	1.21	40.36
KELP	11.74	115.75	9.86	6.29	67.62	10.75	10.14	89.87	8.86
BECHE DE MER	1.51	47.91	31.81	2.90	51.16	17.63	5.00	103.82	20.77
CUTTLEFISH	0.12	3.19	27.28	1.48	24.22	16.32	0.73	12.44	17.16
SQUID	21.34	322.14	15.10	19.62	250.21	12.75	20.96	223.25	10.65
SCALLOPS	5.68	435.69	76.69	8.52	435.83	51.14	7.01	361.52	51.59
ABALONE	0.13	28.43	218.70	0.00	0.00	NA	0.00	0.00	NA
SHRIMP AND PRAWN	6.71	41.52	6.19	0.72	4.41	6.17	2.29	11.90	5.21
PIPEFISH, SEAHORSE, SEADRAGON	0.02	10.20	424.98	0.00	0.00	NA	0.00	0.00	NA
OTHER	538.96	7232.37	13.42	544.54	6174.37	11.34	485.98	5341.87	10.99
TOTAL	**590.42**	**8951.81**	**15.16**	**586.60**	**7558.87**	**12.89**	**535.51**	**7131.70**	**13.32**

Table 6

EXPORTS TO SINGAPORE	**2002** (AVG 1S$ = AU$1.02847)			**2003** (AVG 1S$ = AU$0.88478)			**2004** (AVG 1S$ = AU$0.80449)		
EXPORT PRODUCT	**KG**	**AU$ '000**	**AU$/KG**	**KG**	**AU$ '000**	**AU$/KG**	**KG**	**AU$ '000**	**AU$/KG**
SHARK	9000.00	1634.24	181.58	12000.00	2027.92	168.99	7000.00	1172.14	167.45
KELP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BECHE DE MER	0.00	0.00	0.00	2000.00	301.71	150.85	3000.00	244.56	81.52
CUTTLEFISH AND SQUID	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER (IN MEAL OR PELLET)	1000.00	69.94	69.94	0.00	0.00	0.00	9000.00	647.61	71.96
TOTAL	**10000.00**	**1704.17**	**170.42**	**14000.00**	**2329.63**	**166.40**	**19000.00**	**2064.32**	**108.65**

*** CURRENCY DATA FROM… http://www.oanda.com/convert/fxhistory ***

Table 7

EXPORTS TO JAPAN

2002 (Yen = A$ 0.01472) **2003** (Yen = A$ 0.01329) **2004** (Yen = A$ 0.01257)

EXPORT PRODUCT	KG	AU$ '000	AU$/KG	KG	AU$ '000	AU$/KG	KG	AU$ '000	AU$/KG
SHARK	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
KELP (and other algae)	not recorded	2.42	x	not recorded	11.82	0.00	not recorded	11.59	x
BECHE DE MER	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
CUTTLEFISH AND SQUID	1212.00	11.77	9.71	13694.00	184.41	13.47	0.00	0.00	0.00
SALMON ROE	6852.00	159.67	23.30	5676.00	111.40	19.63	5000.00	115.63	23.13
OTHER ROE	10919.00	1448.14	132.63	9777.00	1220.79	124.86	12282.00	1321.76	107.62
ABALONE	334.00	61.71	184.76	268.00	9.26	34.56	215.00	533.59	2481.80
TOTAL	**19317.00**	**1683.71**	**87.16**	**29415.00**	**1537.68**	**52.28**	**17497.00**	**1982.57**	**113.31**

*** CURRENCY DATA FROM… http://www.oanda.com/convert/fxhistory ***